

GENERAL NOTES

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410)313-1880 AT LEAST FIVE(5) WORKING DAYS PRIOR TO THE START OF WORK.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- ALL STORMWATER MANAGEMENT DEVICES AND ASSOCIATED PIPES WILL BE OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION. STORMWATER MANAGEMENT CONTROL FOR THE 1-YR STORM EVENT IS PROVIDED BY FOUR(4) MICRO-BIO FACILITIES AND ONE(1) PERMEABLE PAVEMENT AREA. A DESIGN MANUAL W/AVER TO PEAK MANAGEMENT OF THE 10-YR AND 100-YR STORM EVENTS WAS APPROVED BY DPZ ON 2/9/2015.
- THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
- DISTURBANCE TO THE FLOODPLAIN AND STREAM BUFFER FOR THE EXTENSION OF THE PUBLIC SEWER UTILITY HAS BEEN DETERMINED ESSENTIAL BY THE DEPARTMENT OF PLANNING AND ZONING IN ACCORDANCE WITH SECTION 16.116(C) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
- THE EXISTING TOPOGRAPHY IS TAKEN FROM A FIELD RUN SURVEY WITH 2 FOOT CONTOUR INTERVALS PREPARED BY A.B. CONSULTANTS, INC. IN OCTOBER 2007.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 3784 AND 3782 WERE USED FOR THIS PROJECT.
- WATER IS PUBLIC. CONTRACT NUMBER #14-4993-D.
- SEWER IS PUBLIC. CONTRACT NUMBER #14-5-PATASCO WASTE WATER TREATMENT PLANT.
- PROJECT SHALL BE DEVELOPED AS ONE PHASE.
- PRIOR DPZ CASES: ECP-15-020, WP-15-085, WP-18-043, WP-17-040, SP-17-005, F-17-027, SP-16-002, F-17-027, AND SP-16-002.
- BOUNDARY INFORMATION SHOWN HEREON IS BASED ON A FIELD RUN SURVEY PERFORMED BY MORRIS & RITCHE ASSOC., INC. IN DECEMBER 2007.
- A FOREST STAND DELINEATION WAS PERFORMED BY GEO-TECHNOLOGY ASSOCIATES, INC. IN 2007 AND RECONFIRMED/REVISED BY FIELD INVESTIGATION IN OCTOBER 2014.
- A TRAFFIC STUDY WAS PREPARED BY TRAFFIC GROUP, ENTITLED "TRAFFIC IMPACT STUDY", IN MAY 2015.
- A NOISE STUDY WAS PREPARED BY PHOENIX NOISE AND VIBRATION, LLC, ENTITLED "TROTTER'S KNOLL PHASE I NOISE ANALYSIS", IN MARCH 2015.
- THE FLOODPLAIN SHOWN ON THE SUBJECT PROPERTY IS PER SHA PLAT NO. 54587.
- WETLANDS AND WATERS OF U.S. SHOWN HEREON WERE DELINEATED AND GPS LOCATED BY GEO-TECHNOLOGY ASSOCIATES, INC. ON DECEMBER 17, 2007, RECONFIRMED ON AUGUST 24, 2011, PERMITTED ON FEBRUARY 12, 2016, AND EXPIRES ON FEBRUARY 15, 2025.
- THE GEOTECHNICAL REPORT FOR THIS PROJECT WAS PREPARED BY GEO-TECHNOLOGY ASSOCIATES, INC., DATED AUGUST 25, 2016.
- THE SUBJECT PROPERTY IS ZONED R-SA-8 PER THE 10/6/2013 COMPREHENSIVE ZONING PLAN.
- ON 02/18/15 A WAIVER PETITION, WP-15-085, TO SECTION 16.120(c)(7)(a)(10) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS WAS APPROVED TO REMOVE SPECIMEN TREE #4, BUT DENIED THE REQUEST TO REMOVE SPECIMEN TREE #5. APPROVAL IS SUBJECT TO THE FOLLOWING CONDITIONS: (1) SPECIMEN TREE #5 MUST BE SAVED, PROTECTED AND MAINTAINED AS SHOWN ON THE REVISED ENVIRONMENTAL CONCEPT PLAN UPLOADED TO PROJECTDOX. IN ORDER TO FURTHER PROTECT DISTURBANCE TO THE CRITICAL ROOT ZONE FOR SPECIMEN TREE #5, DPZ RECOMMENDS THE APPLICANT MOVE UNITS 95 & 98 AND RELOCATED THEM NEXT TO UNIT 27. THIS EXCHANGE SHOULD BE CONSIDERED AND EVALUATED DURING THE DESIGN AND REVIEW OF THE SUBDIVISION PLAN; (2) IN ACCORDANCE WITH THE DEPARTMENT OF RECREATION AND PARKS COMMENTS DATED JANUARY 21, 2015 - SPECIMEN TREE #5 SHOULD BE PROTECTED DURING CONSTRUCTION. A REGISTERED ARBORIST MUST INSPECT THE TREE AND IMPLEMENT RECOMMENDATIONS FOR PROFESSIONAL PRUNING OF ROOTS AND TRUNKS TO BE PERFORMED BY A MAINTAINED TREE EXPERT. TREE PROTECTION FENCING MUST BE INSTALLED AROUND THE TREE PERIMETER TO PREVENT ROOT AND FOLIAGE DAMAGE DURING CONSTRUCTION. AN ALTERNATIVE DESIGN OF THE SITE LAYOUT MUST BE CONDUCTED BY THE CONSULTANT IN ORDER TO MINIMIZE ROOT DAMAGE; (3) SPECIMEN TREE #4 SHOULD BE SAVED AND PROTECTED AS SHOWN ON THE CONCEPT PLAN. HOWEVER SHOULD GRADING CONDITIONS ASSOCIATED WITH THE PLAN PROHIBIT THE SAVING OF THIS SPECIMEN TREE, THE REMOVAL OF SPECIMEN TREE #4 IS APPROVED UNDER THIS WAIVER REQUEST. THE REMOVAL OF SPECIMEN TREE #4 WILL REQUIRE MITIGATION OF ONE 3" - 4" CALIPER TREE. THE MITIGATED TREE SHALL BE OF SIMILAR SPECIES AS THE REMOVED TREE, BE SHOWN AS PART OF THE LANDSCAPE PLAN AND SHALL BE BONED WITH THE LANDSCAPE OBLIGATION.
- AN ALTERNATIVE COMPLIANCE, #WP-17-040 FOR SECTIONS 16.120(a)(7)(a)(10) OF THE SUBDIVISION & LAND DEVELOPMENT REGULATIONS TO REMOVE SPECIMEN TREE #5 TO ALLOW INSTALLATION OF THE PUBLIC WATER LINE WAS VOIDED ON MAY 11, 2017.
- FOREST CONSERVATION SHALL BE MET THROUGH ON-SITE RETENTION OF 1.72 ACRES.
- WETLAND PERMIT, #15-MT-0329/201561582, HAS BEEN JOINTLY AUTHORIZED BY THE U.S. ARMY CORPS OF ENGINEERS AND MARYLAND DEPARTMENT OF THE ENVIRONMENT FOR THE PROPOSED DISTURBANCE TO THE ON-SITE WETLANDS, WETLAND BUFFERS, 100 YEAR FLOODPLAIN, ROAD CROSSING, AND SEWER TIE-IN EXPIRES 2/15/2025.
- ON NOVEMBER 3, 2015 THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING PLANNING DIRECTOR APPROVED THE REQUEST FOR AN INCREASED BUILDING LENGTH PER SECTION 111.0.D.1(E) OF THE ZONING REGULATION SUBJECT TO THE FOLLOWING CONDITIONS:
 - EACH TOWNHOUSE UNIT SHALL HAVE THE 2' JOG BETWEEN THE BUILDING FACADES OF EACH UNIT AND ADJACENT UNITS AS PROPOSED BY THE APPLICANT.
 - EACH UNIT SHALL HAVE THE DIFFERENT ARCHITECTURAL CHARACTER AS PROPOSED BY THE APPLICANT TO INCLUDE BUILDING MATERIALS, COLOR PALETTE AND/OR ARCHITECTURAL FEATURES. ADDITIONALLY, THE APPLICANT SHALL VARY THE ARCHITECTURAL CHARACTER OF THE ROOF DESIGN TO INCLUDE VARYING HEIGHTS, SHINGLE COLOR, DORMERS, ETC.
 - A FINAL DETERMINATION OF THE BUILDING ARCHITECTURAL DESIGN AND VISUAL IMPACT OF THE BUILDING LENGTH SHALL BE FURTHER EVALUATED BY THIS OFFICE WITH THE REVIEW AND APPROVAL OF THE SITE DEVELOPMENT PLAN.
- A PRE-SUBMISSION COMMUNITY MEETING FOR THIS PROJECT WAS HELD ON JULY 14, 2016.
- OPEN SPACE LOT 101 WILL BE DEDICATED TO THE HOME OWNERS ASSOCIATION.
- PROPOSED TROTTER'S CHASE IS AN EXTENSION OF THE TROTTER'S CHASE IN TROTTER'S KNOLL SECTION I.
- TRAFFIC CONTROL DEVICES:
 - THE TRAFFIC CONTROL DEVICE LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE FIELD APPROVED BY HOWARD COUNTY TRAFFIC DIVISION (410-313-2430) PRIOR TO THE INSTALLATION OF ANY OF THE TRAFFIC CONTROL DEVICES.
 - ALL TRAFFIC CONTROL DEVICES AND THEIR LOCATIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MDMUTCD).
 - ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL PERFORATED ("QUICK PUNCH"), SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. THE ANCHOR SHALL NOT EXTEND MORE THAN TWO "QUICK PUNCH" HOLES ABOVE GROUND LEVEL. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
- STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURES AND POLES SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME II (2007), SECTION 5.5.A AND THE DOWNTOWN COLUMBIA DESIGN GUIDELINES. A MINIMUM OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
- IN ACCORDANCE WITH SECTION 128.0.A.10 OF THE ZONING REGULATIONS TROTTER'S KNOLL SECTIONS I & II ARE CONSIDERED AN INTEGRATED DEVELOPMENT THEREFORE STRUCTURE AND USE SETBACKS ARE NOT REQUIRED BETWEEN PARCELS.
- ON NOVEMBER 16, 2017 AN ALTERNATIVE COMPLIANCE, WP-18-043, TO SECTION 16.121(a)(4)(v) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS WAS APPROVED TO INSTALL A 5 FOOT WIDE PATHWAY FROM THE PRIVATE ROAD TO THE PROPOSED RECREATIONAL OPEN SPACE IN LIEU OF PROVIDING THE REQUIRED 20 FEET ROAD FRONTAGE. THE ALTERNATIVE COMPLIANCE IS SUBJECT TO THE FOLLOWING CONDITIONS:
 - A 5 FOOT ASPHALT PATHWAY MUST BE INSTALLED AS SHOWN ON THE ALTERNATIVE COMPLIANCE EXHIBIT SUBMITTED WITH THE PRELIMINARY EQUIVALENT SKETCH PLAN ON OCTOBER 5, 2017. THE PATHWAY MUST EXTEND FROM THE PROPOSED TROTTER'S CHASE ROADWAY TO THE RECREATIONAL OPEN SPACE.
- ALL STREET PARKING SPACES ON SITE WILL BE MAINTAINED BY THE HOA.

TROTTER'S KNOLL - SECTION II

DEEP RUN PROPERTY

FINAL ROAD CONSTRUCTION PLAN

LOTS 85-100, OPEN SPACE LOTS 101-104

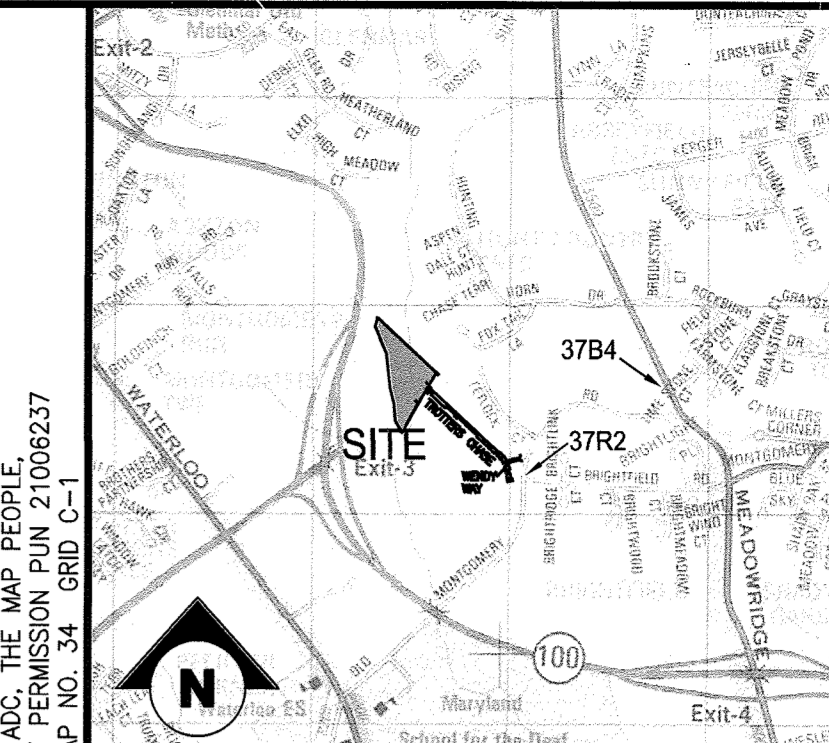
SUBDIVISION OF PARCEL 753

HOWARD COUNTY, MARYLAND

BENCH MARKS

3784
N 563,928.5542 E 1,373,109.1044
ELEV. 401.41'
NAD 83/91
NAVD 88

3782
N 562,811.4210 E 1,371,554.4972
ELEV. 399.73'
NAD 83/91
NAVD 88



VICINITY MAP

SCALE: 1" = 2,000'

SHEET INDEX

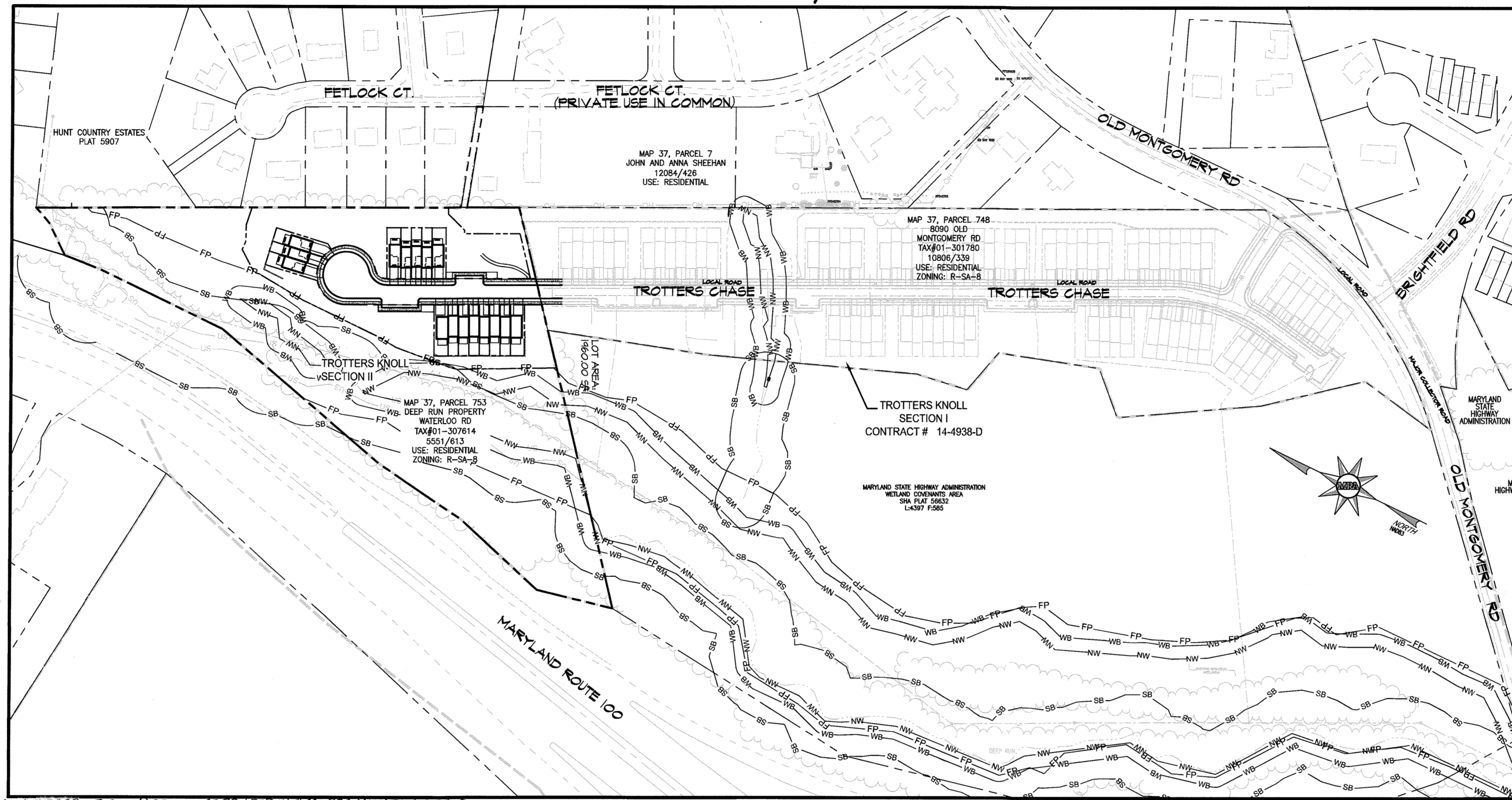
1	COVER SHEET
2	LAYOUT PLAN
3	ROAD PLANS & PROFILES
4	CROSS SECTIONS AND DETAILS
5	SOILS MAP AND GRADING PLAN
6	EROSION AND SEDIMENT CONTROL PLANS - PHASE I
7	EROSION AND SEDIMENT CONTROL PLANS - PHASE II
8-9	EROSION AND SEDIMENT CONTROL NOTES AND DETAILS
10	STORM DRAIN PLAN AND SCHEDULES
11	STORM DRAIN DRAINAGE AREA MAP
12	STORM DRAIN PROFILES
13	STORMWATER MANAGEMENT PLANS
14	STORMWATER MANAGEMENT NOTES AND DETAILS
15-16	LANDSCAPE PLAN AND LANDSCAPE PLAN DETAILS
17-18	FOREST CONSERVATION PLAN/FOREST CONSERVATION PLAN DETAILS
19	BORING LOGS
20-29	RETAINING WALL PLANS

ADDRESS CHART

LOT/PARCEL #	STREET ADDRESS
753	WATERLOO ROAD, ELICOTT CITY MD

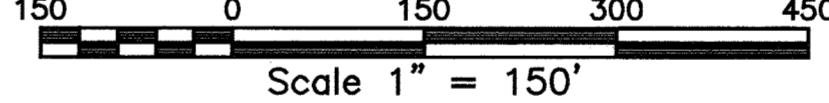
LEGEND

EX. PROPERTY LINE	EX. TV LINE
EX. ADJACENT PROPERTY LINE	EX. ELECTRIC MANHOLE
EX. RIGHT OF WAY	EX. TELEPHONE MANHOLE
EX. EASEMENT	EX. BORING LOCATION
EX. ZONING LINE	
EX. BUILDING	EX. NON TIDAL WETLANDS
EX. CONCRETE	EX. 25' WETLAND BUFFER
EX. PAVEMENT	EX. FLOODPLAIN
EX. ROAD CENTERLINE	EX. WATERS OF THE US
EX. FENCE	EX. STREAM BUFFER
EX. OVERHEAD LINE	EX. SPECIMEN TREE
EX. WATER LINE	EX. STREAM
EX. SEWER LINE	EX. 1' CONTOUR
EX. STREAM BUFFER	EX. 2' CONTOUR
EX. TRAIL	EX. 10' CONTOUR
EX. GUARD RAIL	EX. SLOPES 15%-25%
EX. ELECTRIC CONDUIT	EX. SLOPES >25%
EX. LIGHT POLES	EX. STEEP SLOPES BUFFER
EX. GAS LINE	
EX. STORM DRAIN	
EX. CONDUIT	
EX. FIBER OPTIC	



LOCATION PLAN

SCALE: 1" = 150'



OPEN SPACE TABULATIONS

	SECTION I	SECTION 2	TOTAL DEVELOPMENT
REQUIRED OPEN SPACE (25% OF GROSS)	2.84 ACRES	1.22 ACRES	4.11 ACRES
PROVIDED OPEN SPACE	5.40 ACRES	7.89 ACRES	12.71 ACRES
CREDITED OPEN SPACE	4.52 ACRES	7.27 ACRES	11.79 ACRES
NON-CREDITED OPEN SPACE	0.81 ACRES	0.11 ACRES	0.92 ACRES
NON-CREDITED COMMON OPEN SPACE	0.01 ACRES	0.01 ACRES	0.02 ACRES
RECREATIONAL OPEN SPACE REQ (400 SF/UNIT)	31,200 SF	6,400 SF	37,600 SF
RECREATIONAL OPEN SPACE PROVIDED	31,214 SF	6,414 SF	37,735 SF

SITE ANALYSIS AND DENSITY TABULATION

	SECTION I	SECTION 2	TOTAL DEVELOPMENT
GROSS AREA OF SITE	11.54 ACRES	8.82 ACRES	20.86 ACRES
NET TRACT AREA OF SITE	11.54 ACRES	4.86 ACRES	16.40 ACRES
FLOODPLAIN AREA	0.00 ACRES	3.73 ACRES	3.73 ACRES
STEEP SLOPE AREA	0.00 ACRES	0.23 ACRES	0.23 ACRES
MAXIMUM DENSITY ALLOWED	8 DU/NET ACRE	8 DU/NET ACRE	8 DU/NET ACRE
MAXIMUM UNITS ALLOWED	42 UNITS	39 UNITS	131 UNITS
TOTAL UNITS PROPOSED	78 UNITS	16 UNITS	94 UNITS
TOTAL DENSITY PROPOSED	6.75 DU/NET ACRE	3.25 DU/NET ACRE	5.71 DU/NET ACRE
WETLAND AREA	0.13 ACRES	0.74 ACRES	0.92 ACRES

LANDSCAPING FOR LOTS 85-100 ARE PROVIDED IN ACCORDANCE WITH CERTIFIED LANDSCAPING SHEETS 15 AND 16 INCLUDED WITH THE ROAD CONSTRUCTION PLAN SET IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. FINANCIAL SECURITY FOR THE REQUIRED LANDSCAPING SHALL BE POSTED AS PART OF 10 PERCENTUAL ENVIRONMENTAL TREES @ \$150.00 EACH.

SITE ANALYSIS DATA

- ZONING: R-SA-8
- PROPERTY AREA (GROSS): 8.82 AC.
- 100 YEAR FLOODPLAIN: 3.73 AC.
- TOTAL AREA OF PROPOSED LOTS: 0.821 AC.
- AREA OF PROPOSED ROADS: 0.613 AC.
- AREA OF PROPOSED OPEN SPACE: 7.27 AC.
- PROPOSED USE: RESIDENTIAL (SINGLE FAMILY ATTACHED) (39 (8 DWELLING UNITS/NET ACRE) 16
- NO. OF UNITS ALLOWED: 39
- NO. OF UNITS PROPOSED: 16
- NO. OF LOTS PROPOSED: 19
- RESIDENTIAL LOTS: 16
- OPEN SPACE LOTS: 3

1. PROPOSED WATER AND SEWER SHALL BE PUBLIC.	REQUIRED	PROVIDED
A. GENERAL BULK REGULATIONS:		
1. MAXIMUM HEIGHT:		
1.1. PRINCIPAL STRUCTURE:	40'	40'
1.2. NECESSARY STRUCTURES:	15'	15'
2. MAXIMUM LOT COVERAGE FOR STRUCTURES WITHIN SINGLE-FAMILY ATTACHED PROJECTS DEVELOPED WITH ONE DWELLING UNIT PER LOT:	60%	51%
3. MAXIMUM UNITS PER STRUCTURE:	8	8
4. MAXIMUM BUILDING LENGTH: (DIRECTOR MAY APPROVED UP TO 300')	120'	164'
B. MINIMUM SETBACK REQUIREMENTS:		
1. FROM ARTERIAL OR MAJOR COLLECTOR:		
1.1. STRUCTURES:		
1.1.1. FRONT OR SIDE:	30'	30'
1.1.2. REAR:	50'	50'
1.2. USES:	30'	30'
2. FROM OTHER PUBLIC STREET RIGHT-OF-WAY OR PRIVATE STREET:		
2.1. STRUCTURES:	20'	20'
2.1.1. FRONT OR SIDE:	20'	20'
2.1.2. REAR TO PUBLIC STREET:	40'	40'
2.2. USES (OTHER THAN STRUCTURES):	20'	20'
3. FROM VICINAL PROPERTIES:		
3.1. FROM AN RC, RR, R-20, R-12, R-E, OR R-SC DISTRICT OR A SINGLE-FAMILY LAND USE AREA OF A NT, PGCC, OR MIXD DISTRICT:		
3.1.1. SINGLE-FAMILY ATTACHED DWELLINGS:	50'	50'
3.1.2. OTHER STRUCTURES OR USES:	50'	50'
3.2 BETWEEN MULTI-FAMILY BUILDINGS:		
3.2.1 FACE TO FACE:	30'	MIN. 90'
3.2.2 SIDE TO SIDE:	15'	MIN. 146'

C. MODERATE INCOME HOUSING UNITS	REQUIRED	PROVIDED
AT LEAST 10% OF THE DWELLINGS IN EACH R-SA-8 DEVELOPMENT SHALL BE MODERATE INCOME HOUSING UNITS.	1.6 UNITS (10%)	2 UNITS (12.5%) (SPECIFIC UNITS TBD)
D. PARKING REQUIREMENTS:		
1. REQUIRED PARKING (16 SINGLE-FAMILY ATTACHED UNITS):	40 SPACES TOTAL REQUIRED	
1.1. RESIDENTIAL UNITS (2 SPACES PER DWELLING UNIT)	32 SPACES	
1.2. VISITOR PARKING (0.5 PER DWELLING UNIT)	8 SPACES	
2. PROVIDED PARKING:	48 SPACES TOTAL PROVIDED	
2.1. SINGLE FAMILY ATTACHED GARAGES SPACES:	12 SPACES*	
2.2. SINGLE FAMILY ATTACHED DRIVEWAY SPACES:	22 SPACES*	
2.3. OFF-STREET RESIDENTIAL SPACES:	8 SPACES**	
2.4. OFF-STREET VISITOR SPACES:	6 SPACES	
* UNITS W/ 1-CAR GARAGE AND 1-CAR DRIVEWAYS	UNITS 86-88, 91	
* UNITS W/ 2-CAR GARAGE AND 2-CAR DRIVEWAYS	UNITS 85, 89, 90, 92	
* UNITS W/ 2-CAR DRIVEWAYS	UNITS 93, 100	
* UNITS W/ 1-CAR DRIVEWAYS	UNITS 94-99	
** UNITS W/ 1-CAR OFF-STREET SPACE EACH	UNITS 94-99	

STORMWATER MANAGEMENT PRACTICE CHART

LABEL	TYPE
SWM#1	M-6 Micro-Bioretentation
SWM#2	M-6 Micro-Bioretentation
SWM#3	M-6 Micro-Bioretentation
SWM#4	A-2 Porous-Pavement
SWM#5	M-6 Micro-Bioretentation
SWM#6	A-2 Porous-Pavement

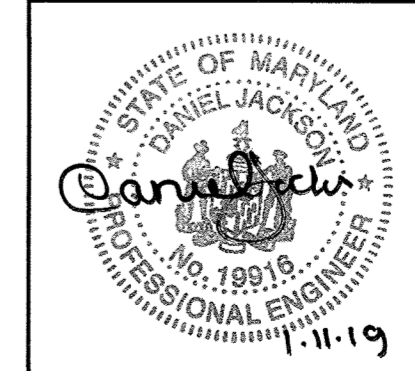
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

[Signature] 5/8/2019
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 5.10.19
CHIEF, DEVELOPMENT ENGINEERING DIVISION

[Signature] 5.21.19
CHIEF, LAND DEVELOPMENT DIVISION



MORRIS & RITCHE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
14280 PARK CENTER DRIVE
LAUREL, MD 20707
(410) 792-9792 / (301) 776-1690
FAX: (410) 792-7395
MRAGTA.COM

TROTTER'S KNOLL - SECTION II

DEEP RUN PROPERTY

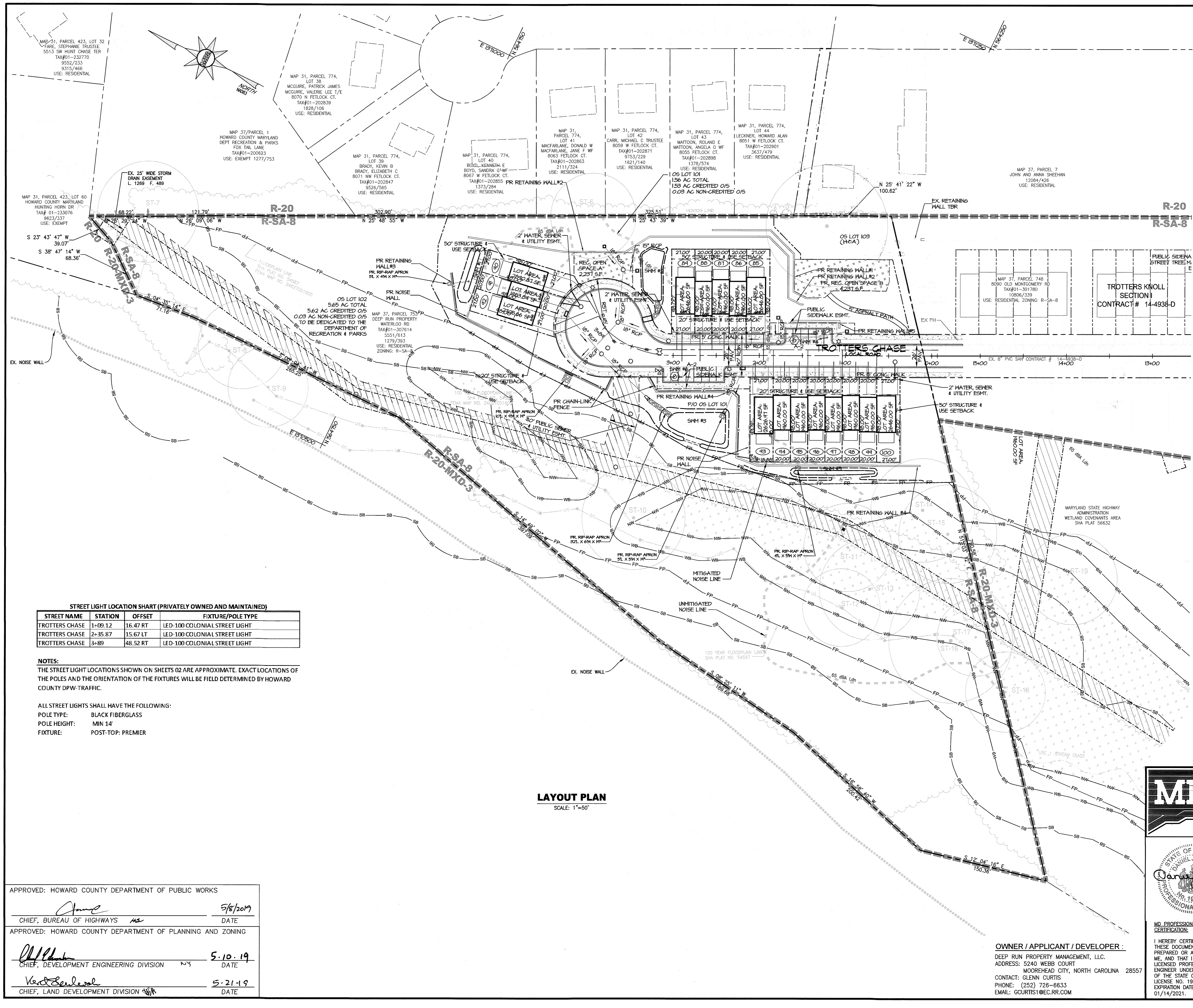
COVER SHEET

TAX MAP 37 GRIDS 2 PARCEL 753 ZONED: R-SA-8
1ST ELECTION DISTRICT
HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:	SCALE:
		15368 x 06	1" = 50'
			DATE: 6-6-18
			DRAWN BY: JGG
			DESIGN BY: JGG
			REVIEW BY: DJ
			SHEET: 01 OF 29

OWNER / APPLICANT / DEVELOPER:
DEEP RUN PROPERTY MANAGEMENT, LLC.
ADDRESS: 5240 WEBB COURT
MOOREHEAD CITY, NORTH CAROLINA 28557
CONTACT: GLENN CURTIS
PHONE: (252) 726-6633
EMAIL: GCURTIS1@EC.RR.COM

1 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. 19918, EXPIRATION DATE: 01/14/2021.

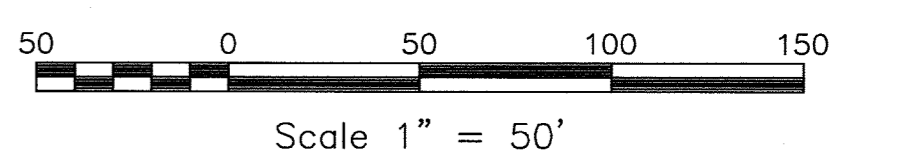


LEGEND

- EX. PROPERTY LINE
- EX. ADJACENT PROPERTY LINE
- EX. RIGHT OF WAY
- EX. EASEMENT
- EX. ZONING LINE
- EX. BUILDING
- EX. CONCRETE
- EX. PAVEMENT
- EX. ROAD CENTERLINE
- EX. FENCE
- EX. OVERHEAD LINE
- EX. WATER LINE
- EX. SEWER LINE
- EX. STREAM
- EX. STREAM BUFFER
- EX. TREE LINE
- EX. GUARD RAIL
- EX. ELECTRIC CONDUIT
- EX. LIGHT POLES
- EX. GAS LINE
- EX. STORM DRAIN
- EX. CONDUIT
- EX. FIBER OPTIC
- EX. TV LINE
- EX. ELECTRIC MANHOLE
- EX. TELEPHONE MANHOLE
- EX. BORING LOCATION
- EX. NON TIDAL WETLANDS
- EX. 25' WETLAND BUFFER
- EX. FLOODPLAIN
- EX. WATERS OF THE US
- PR. RIGHT OF WAY
- PR. LOT LINE/PARCEL LINE
- PR. EASEMENT
- PR. BUILDING
- PR. CURB & GUTTER
- PR. RETAINING WALL
- PR. ROAD CENTER LINE
- PR. CONC SIDEWALK
- PR. REC OPEN AREA
- PR. TREE LINE
- PR. HANDICAP PARKING
- PR. LOT NUMBER
- PR. UNIT ADDRESS
- PR. PARKING SPACE COUNT
- PR. CURB RADIUS
- PR. STREET LIGHT
- PR. STORM DRAIN
- PR. FIRE HYDRANT
- PR. WATER VALVE
- PR. SINGLE HOUSE CONNECTION
- PR. DOUBLE HOUSE CONNECTION
- PR. MICRO-BIORETENTION FACILITY (M-6)
- PR. PUBLIC STREET TREE MAINTENANCE EASEMENT
- UTILITY EASEMENT
- PR. PUBLIC SIDEWALK, UTILITY & PARKING EASEMENT
- PR. OPEN SPACE NON-CREDITED
- PUBLIC SIDEWALK EASEMENT

NOTES:

1. ALL ON-STREET PARKING TO BE PRIVATELY MAINTAINED, INCLUDING ROUTINE AND NON-ROUTINE MAINTENANCE.
2. INSTALL RETAINING WALL WITHIN 100 FEET OF EXISTING BEECH TREE WITHIN ONE MONTH OF THE CUT EXCAVATION AND NOT BETWEEN JUNE 15 AND SEPTEMBER 15.
3. REMOVE VEGETATION WITHIN 50 FEET OF EXISTING BEECH TREE AND STABILIZE WITH TALL FESCUE BLEND APPROVED BY THE UNIVERSITY OF MARYLAND (NOT K31).
4. CONTACT THE DEPARTMENT OF RECREATION AND PARKS AT (410)313-1695 WITH THE SCHEDULE FOR ALL CONSTRUCTION WITHIN 100 FEET OF THE EXISTING BEECH TREE AT LEAST 2 WEEKS BEFORE WORK TO BEGIN.



STREET LIGHT LOCATION CHART (PRIVATELY OWNED AND MAINTAINED)

STREET NAME	STATION	OFFSET	FIXTURE/POLE TYPE
TROTTERS CHASE	1+09.12	16.47 RT	LED-100 COLONIAL STREET LIGHT
TROTTERS CHASE	2+35.87	15.67 LT	LED-100 COLONIAL STREET LIGHT
TROTTERS CHASE	3+89	48.52 RT	LED-100 COLONIAL STREET LIGHT

NOTES:
 THE STREET LIGHT LOCATIONS SHOWN ON SHEETS 02 ARE APPROXIMATE. EXACT LOCATIONS OF THE POLES AND THE ORIENTATION OF THE FIXTURES WILL BE FIELD DETERMINED BY HOWARD COUNTY DPW-TRAFFIC.

ALL STREET LIGHTS SHALL HAVE THE FOLLOWING:
 POLE TYPE: BLACK FIBERGLASS
 POLE HEIGHT: MIN 14'
 FIXTURE: POST-TOP, PREMIER

LAYOUT PLAN
 SCALE: 1"=50'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[Signature] 5/6/2019
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 5.10.19
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 5.21.19
 CHIEF, LAND DEVELOPMENT DIVISION DATE

OWNER / APPLICANT / DEVELOPER :
 DEEP RUN PROPERTY MANAGEMENT, LLC.
 ADDRESS: 5240 WEBB COURT
 MOOREHEAD CITY, NORTH CAROLINA 28557
 CONTACT: GLENN CURTIS
 PHONE: (252) 726-6633
 EMAIL: GCURTIS1@EC.RR.COM

MORRIS & RITCHIE ASSOCIATES, INC.
 ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
 14280 PARK CENTER DRIVE
 LAUREL, MD 20707
 (410) 792-9792 / (301) 776-1690
 FAX: (410) 792-7395
 MRAGTA.COM

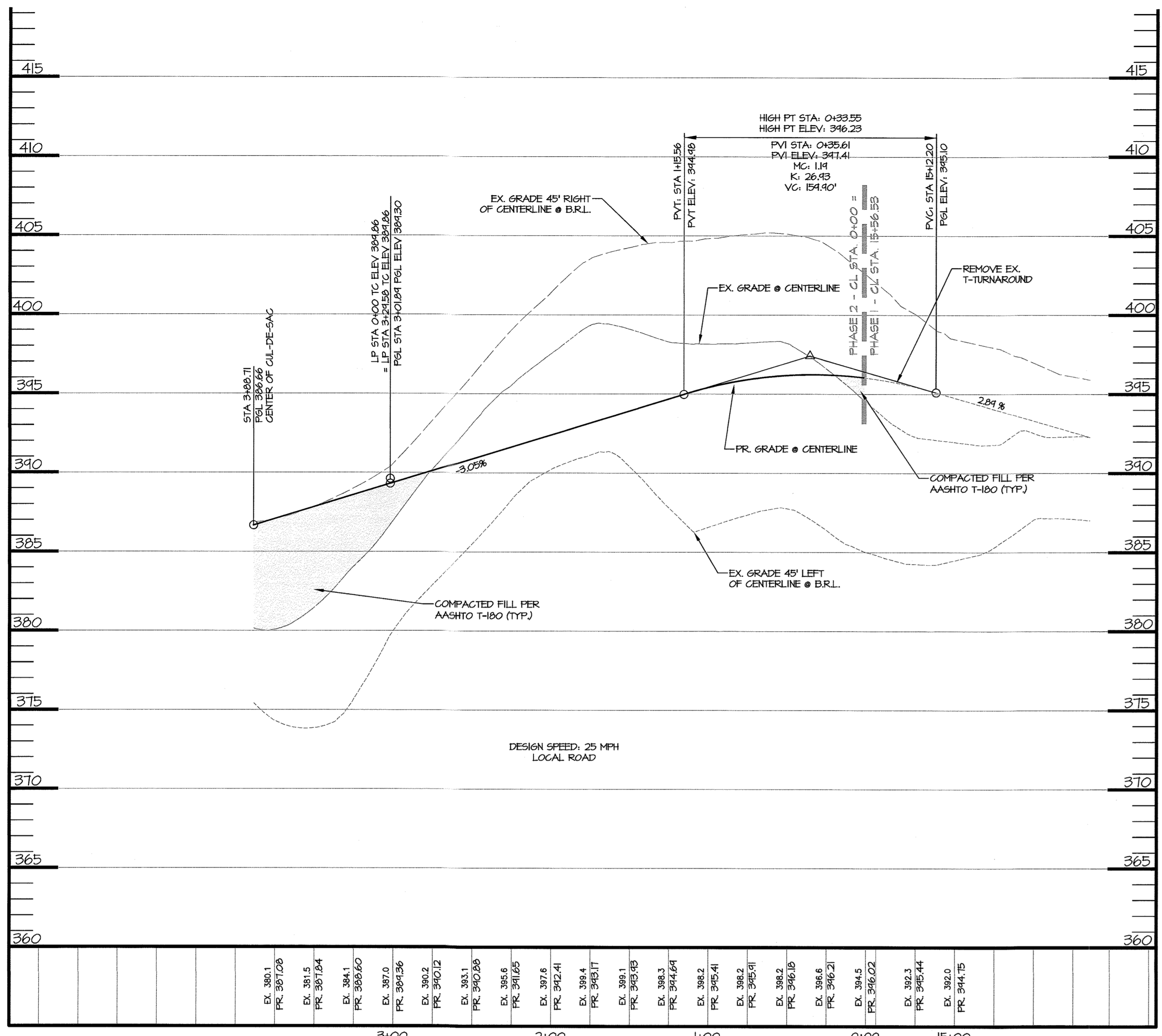
TROTTER'S KNOLL - SECTION II
DEEP RUN PROPERTY

LAYOUT PLAN

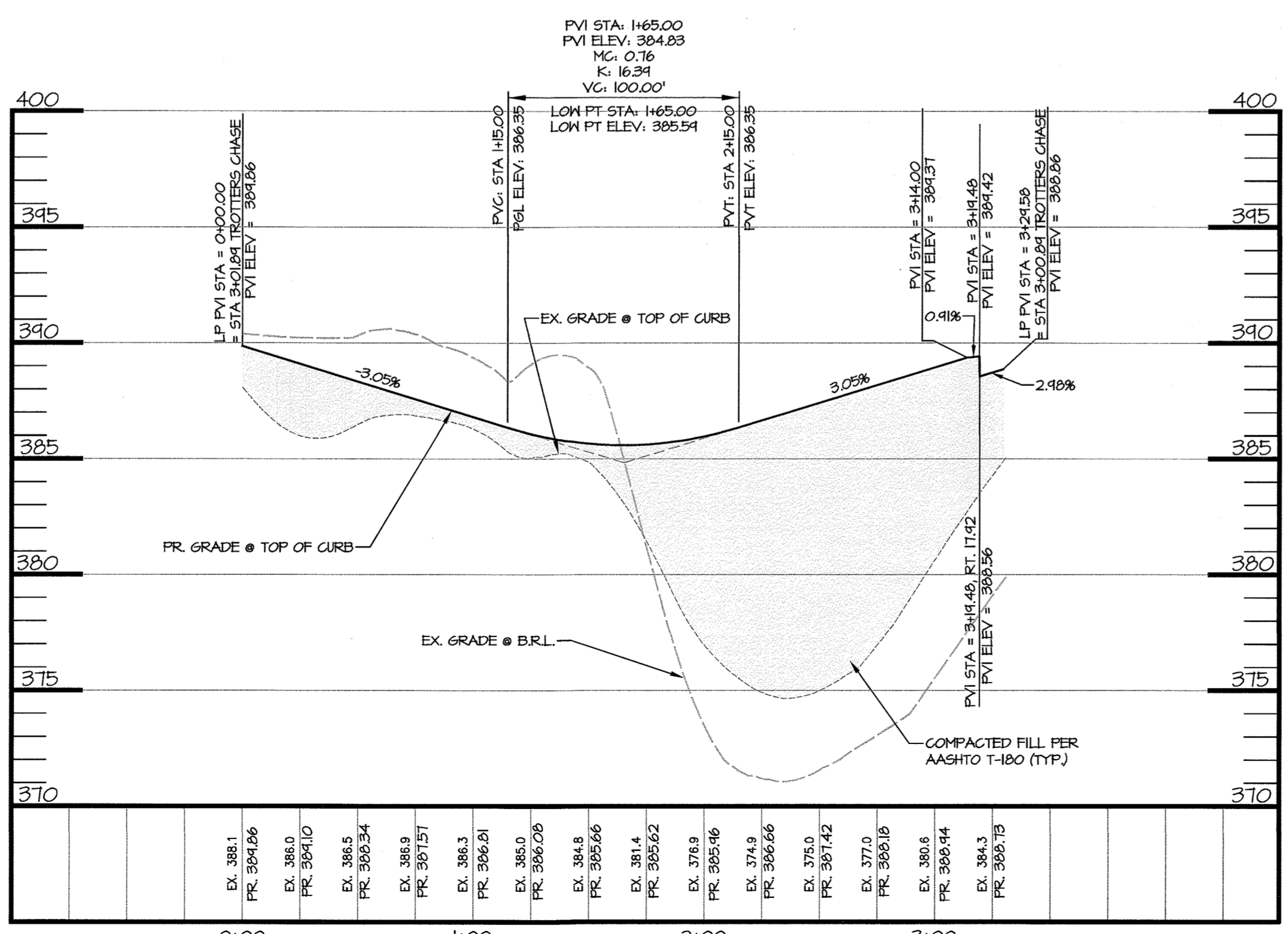
TAX MAP 37 GRIDS 2 PARCEL 753 ZONED: R-SA-8
 1ST ELECTION DISTRICT
 HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:
		15368 x 06
		SCALE: 1" = 50'
		DATE: 6-6-18
		DRAWN BY: JGG
		DESIGN BY: JGG
		REVIEW BY: DJ
		SHEET: 02 OF 29

MD PROFESSIONAL ENGINEERING
 DANIEL JACQUES
 LICENSE NO. 19918
 EXPIRATION DATE: 01/14/2021



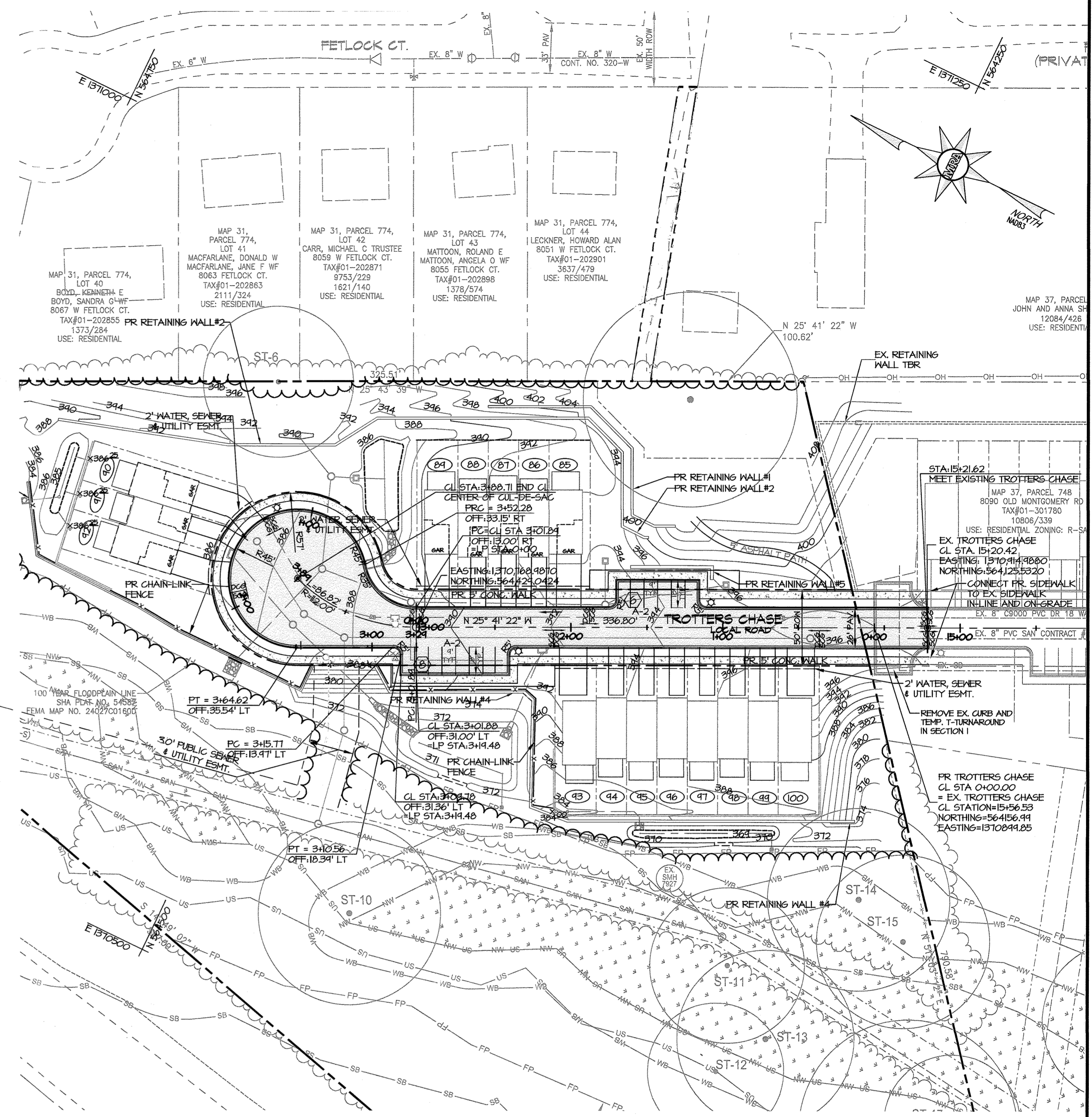
TROTTERS CHASE PROFILE
SCALE: H: 1"=50'
V: 1"=5'



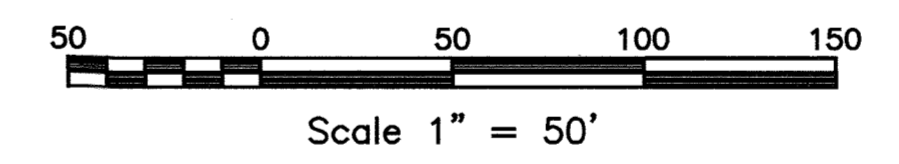
CUL-DE-SAC TOP-OF-CURB LINEAR PROFILE
SCALE: H: 1"=50'
V: 1"=5'

LEGEND

	EX. PROPERTY LINE
	EX. ADJACENT PROPERTY LINE
	EX. RIGHT OF WAY
	EX. EASEMENT
	EX. ZONING LINE
	EX. BUILDING
	EX. CONCRETE
	EX. PAVEMENT
	EX. ROAD CENTERLINE
	EX. FENCE
	EX. OVERHEAD LINE
	EX. WATER LINE
	EX. SEWER LINE
	EX. STREAM
	EX. STREAM BUFFER
	EX. TREE LINE
	EX. GUARD RAIL
	EX. ELECTRIC CONDUIT
	EX. LIGHT POLE
	EX. GAS LINE
	EX. STORM DRAIN
	EX. CONDUIT
	EX. FIBER OPTIC
	EX. TV LINE
	EX. ELECTRIC MANHOLE
	EX. TELEPHONE MANHOLE
	EX. BORING LOCATION
	EX. NON TIDAL WETLANDS
	EX. TIDAL WETLANDS
	EX. 25' WETLAND BUFFER
	EX. FLOODPLAIN
	EX. WATERS OF THE US
	EX. STREAM BUFFER
	EX. SPECIMEN TREE
	PR. STORM DRAIN
	PR. WATER LINE
	PR. FIRE HYDRANT
	PR. WATER VALVE
	PR. SINGLE HOUSE CONNECTION
	PR. DOUBLE HOUSE CONNECTION
	PR. FDC
	PR. RIGHT OF WAY
	PR. LOT LINE/PARCEL LINE
	PR. EASEMENT
	PR. BUILDING
	PR. CURB & GUTTER
	PR. RETAINING WALL
	PR. ROAD CENTER LINE
	PR. CONC. SIDEWALK
	PR. REC. OPEN AREA
	PR. 5' CONTOUR
	PR. 2' CONTOUR
	PR. 10' CONTOUR
	PR. LIMIT OF DISTURBANCE
	PR. TREE PROTECTION FENCE
	PR. SPOT ELEVATION
	UTILITY EASEMENT



ROAD PLAN
SCALE: 1"=50'



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
James 5/8/2019
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Ken Sandwick 5-10-19
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Kent Sandwick 5-21-19
 CHIEF, LAND DEVELOPMENT DIVISION DATE

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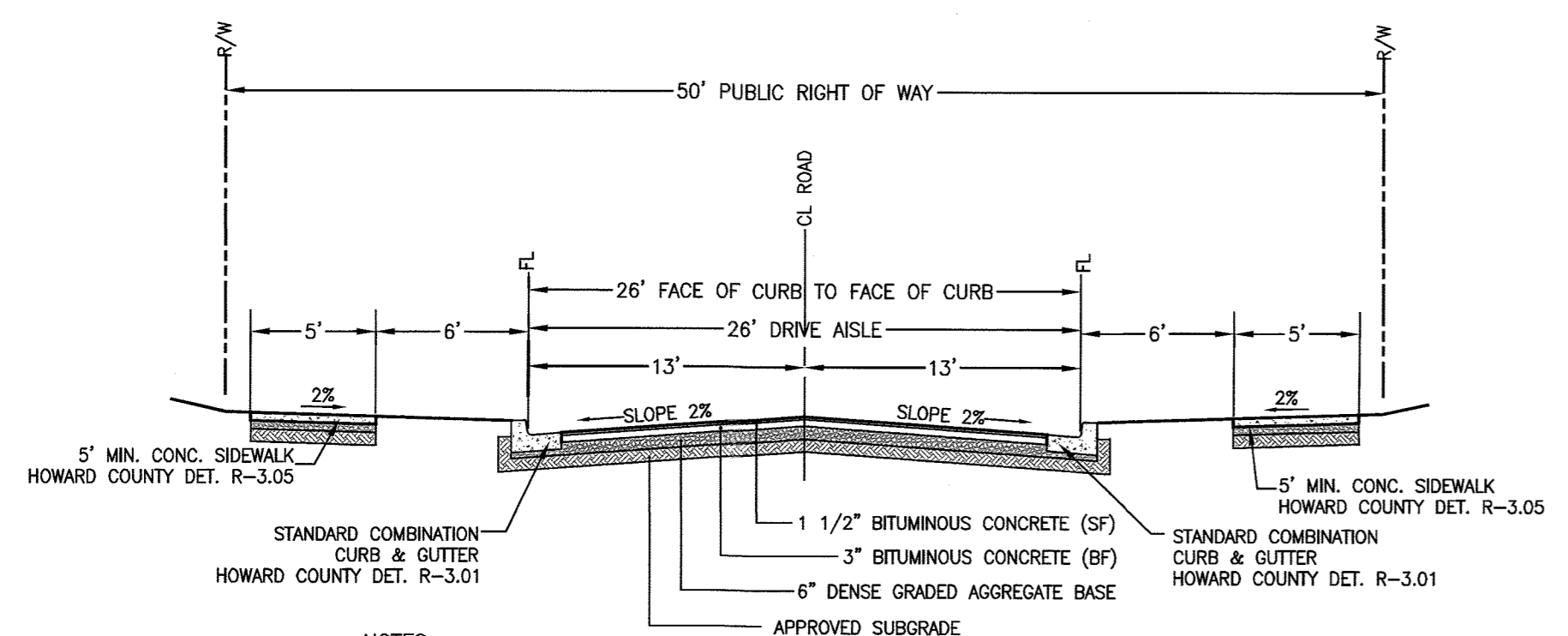
TROTTER'S KNOLL - SECTION II
DEEP RUN PROPERTY
ROAD PLAN AND PROFILE

TAX MAP 37 GRIDS 2 PARCEL 753 ZONED: R-SA-8
 1ST ELECTION DISTRICT
 HOWARD COUNTY, MD 21043

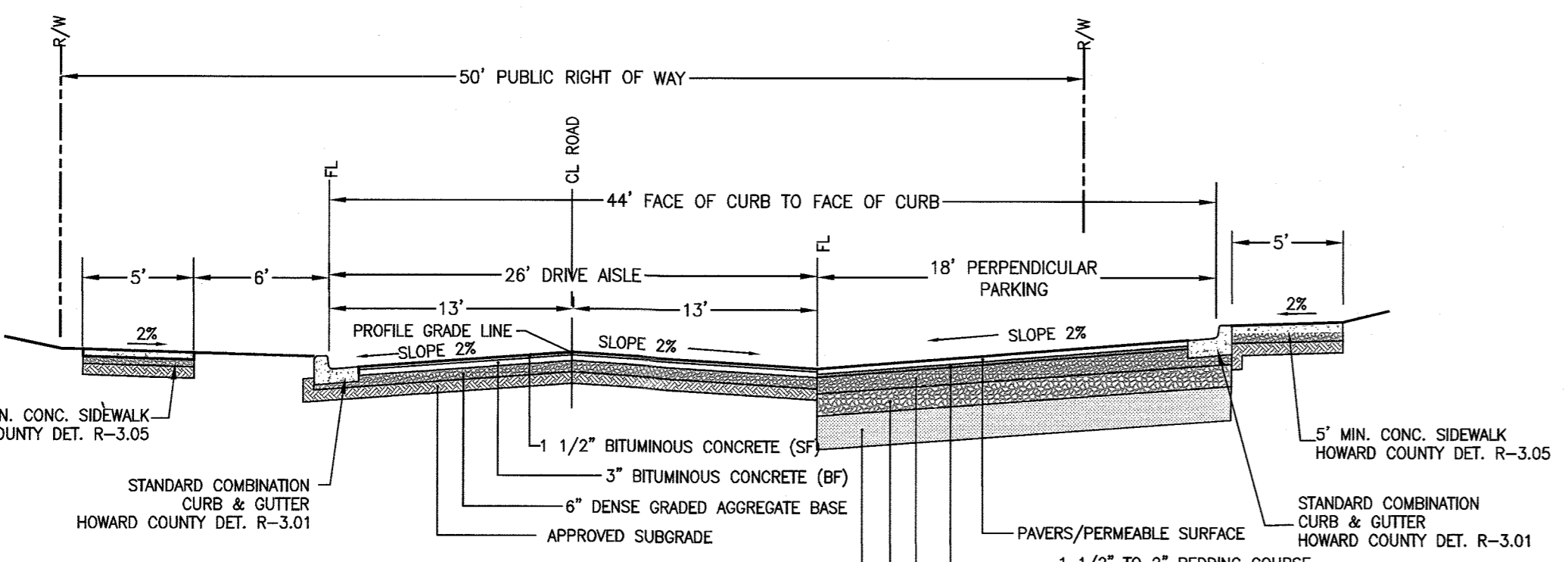
DATE	REVISIONS	JOB NO.: 15368 x 06
		SCALE: 1" = 50'
		DATE: 6-6-18
		DRAWN BY: JUG
		DESIGN BY: JUG
		REVIEW BY: DJ
		SHEET: 03 OF 29

MD PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19918, EXPIRATION DATE: 01/14/2021.

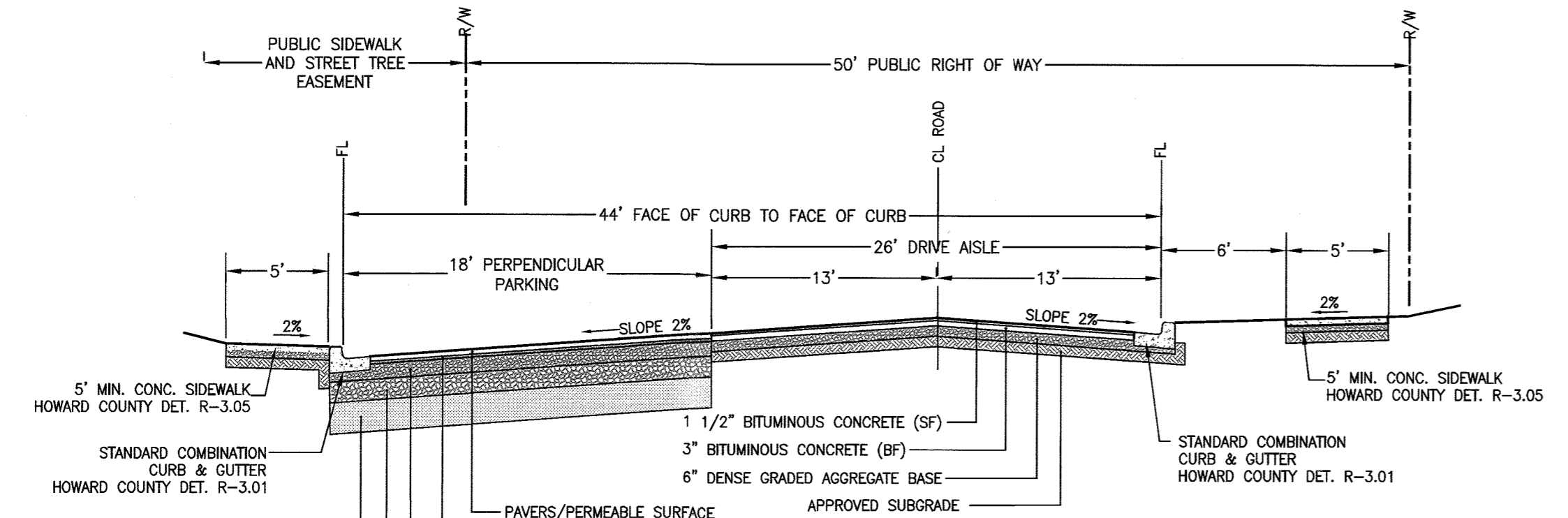
OWNER / APPLICANT / DEVELOPER :
 DEEP RUN PROPERTY MANAGEMENT, LLC.
 ADDRESS: 5240 WEBB COURT
 MOOREHEAD CITY, NORTH CAROLINA 28557
 CONTACT: GLENN CURTIS
 PHONE: (252) 726-6633
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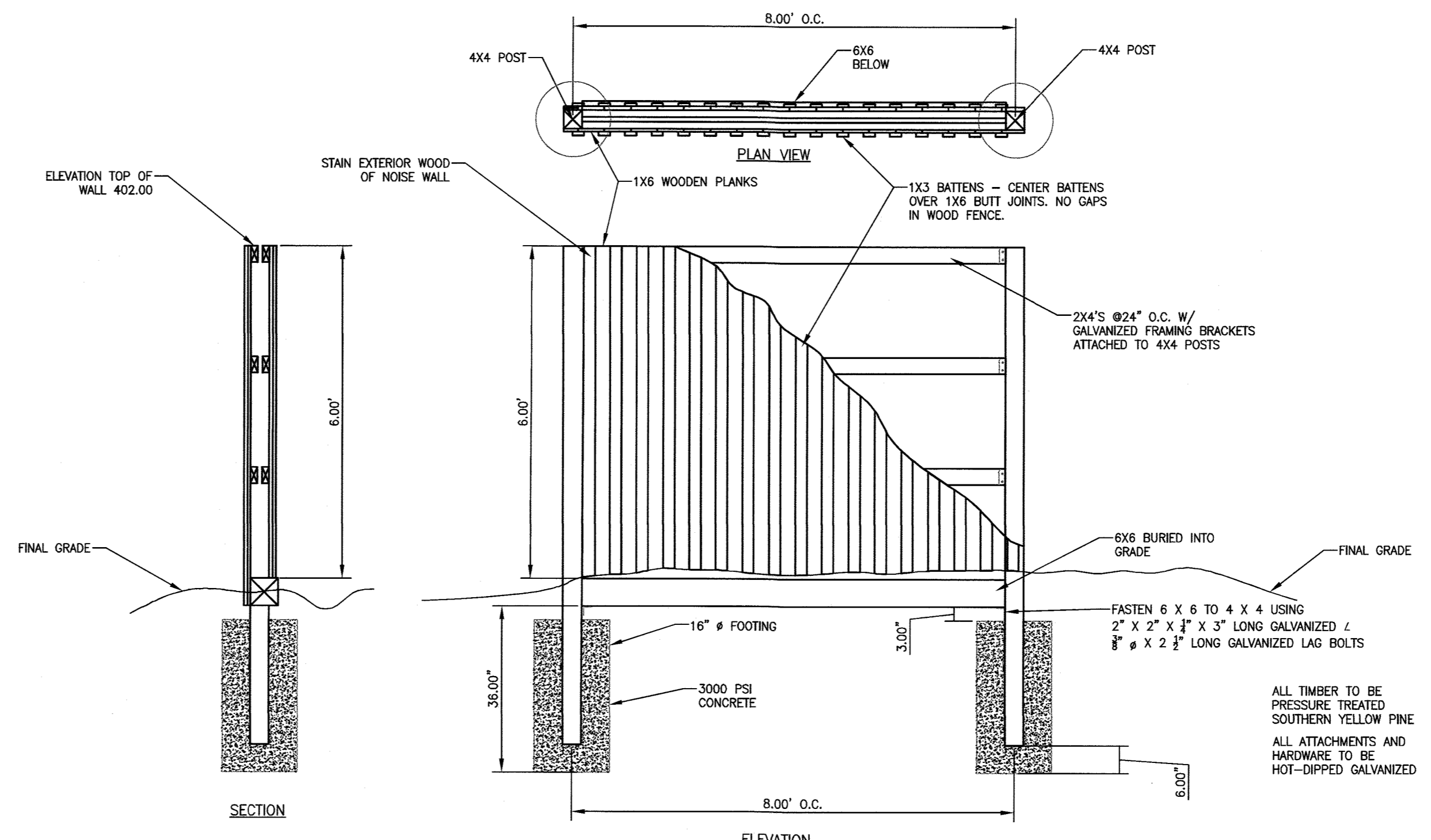
NOTES:
1. DEPRESSED CURB TO BE USED AT ALL DRIVEWAY LOCATIONS, SEE PLAN VIEWS.
TYPICAL SECTION PROPOSED TROTTERS CHASE
STA. 0+00 TO STA. 1+15
STA. 1+69 TO STA. 2+41
STA. 3+11 TO STA. 3+88
NOT TO SCALE



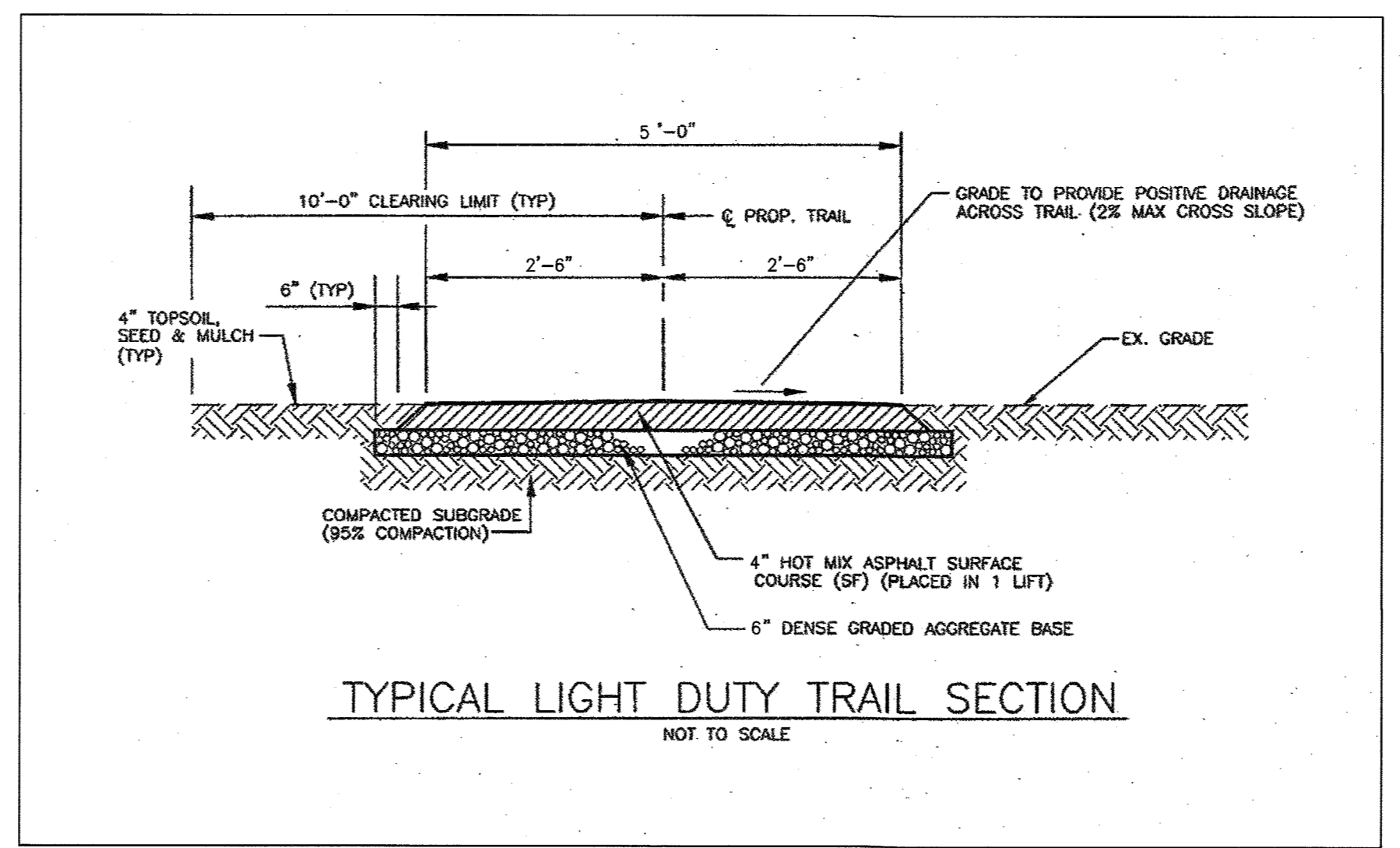
NOTES:
1. PER HOWARD COUNTY DETAIL R-3.06, DEPRESSED CURB TO BE USED AT ALL DRIVEWAY LOCATIONS, SEE PLAN VIEWS.
2. ALL ON-STREET PARKING MAINTENANCE WILL BE BY THE HOA.
TYPICAL SECTION PROPOSED TROTTERS CHASE
STA. 1+15 TO STA. 1+69
NOT TO SCALE



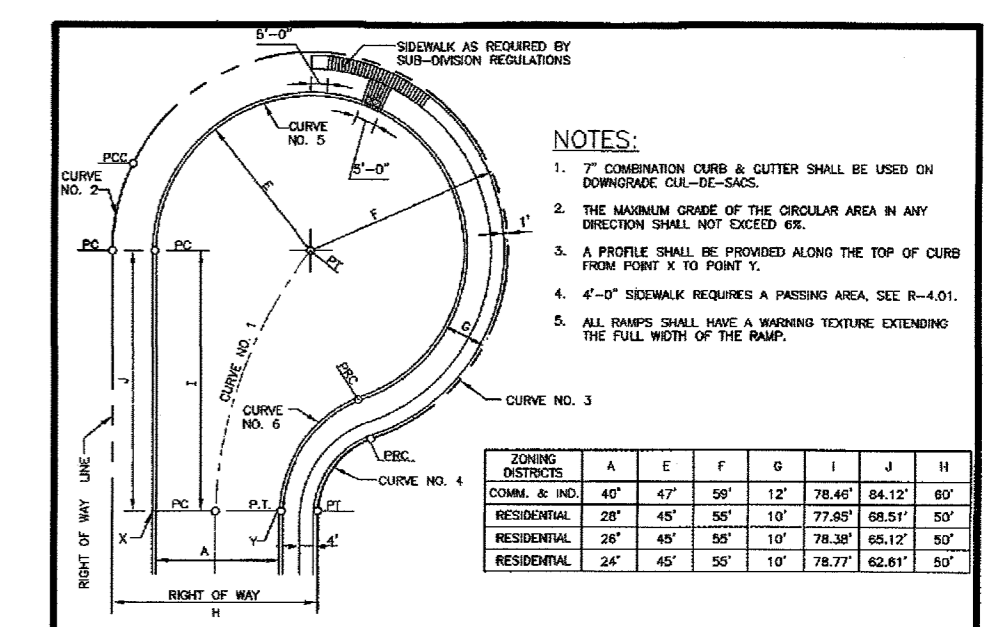
NOTES:
1. ALL ON-STREET PARKING MAINTENANCE WILL BE BY THE HOA.
TYPICAL SECTION PROPOSED TROTTERS CHASE
STA. 2+41 TO STA. 3+11
NOT TO SCALE



NOISE WALL - DOUBLE SIDED WOOD SOLID FENCE
NOT TO SCALE

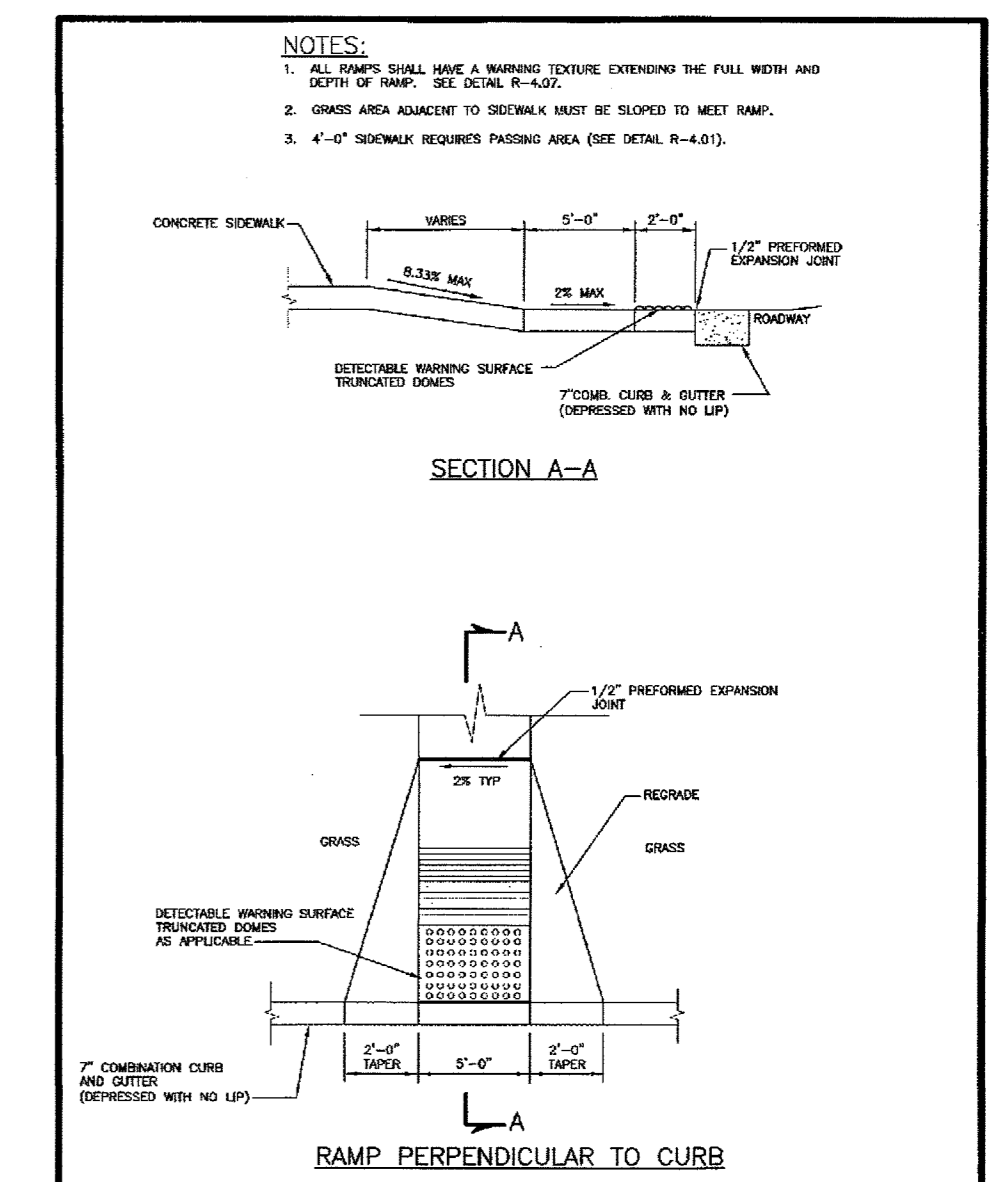


TYPICAL LIGHT DUTY TRAIL SECTION
NOT TO SCALE



CURVE DATA											
RESIDENTIAL 20' APPROX. L.P. 3.00-3.07						RESIDENTIAL 20' APPROX. L.P. 3.08-3.17					
CURVE 1	CURVE 2	CURVE 3	CURVE 4	CURVE 5	CURVE 6	CURVE 1	CURVE 2	CURVE 3	CURVE 4	CURVE 5	CURVE 6
127.50'	50.00'	50.00'	25.00'	47.00'	32.00'	111.50'	100.00'	50.00'	25.00'	25.00'	47.00'
1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
43.85'	17.66'	17.66'	17.66'	17.66'	17.66'	43.85'	17.66'	17.66'	17.66'	17.66'	17.66'
1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1

Howard County, Maryland
Department of Public Works
CUL-DE-SAC
Offset
without Island
Detail
R-5.03



RAMP PERPENDICULAR TO CURB
NOT TO SCALE

Howard County, Maryland
Department of Public Works
SIDEWALK RAMP
Layout & Grading
Perpendicular to Curb
Detail
R-4.05

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[Signature] 5/8/2017
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 5.10.19
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 5.21.19
CHIEF, LAND DEVELOPMENT DIVISION DATE

OWNER / APPLICANT / DEVELOPER :
DEEP RUN PROPERTY MANAGEMENT, LLC.
ADDRESS: 5240 WEBB COURT
MOOREHEAD CITY, NORTH CAROLINA 28557
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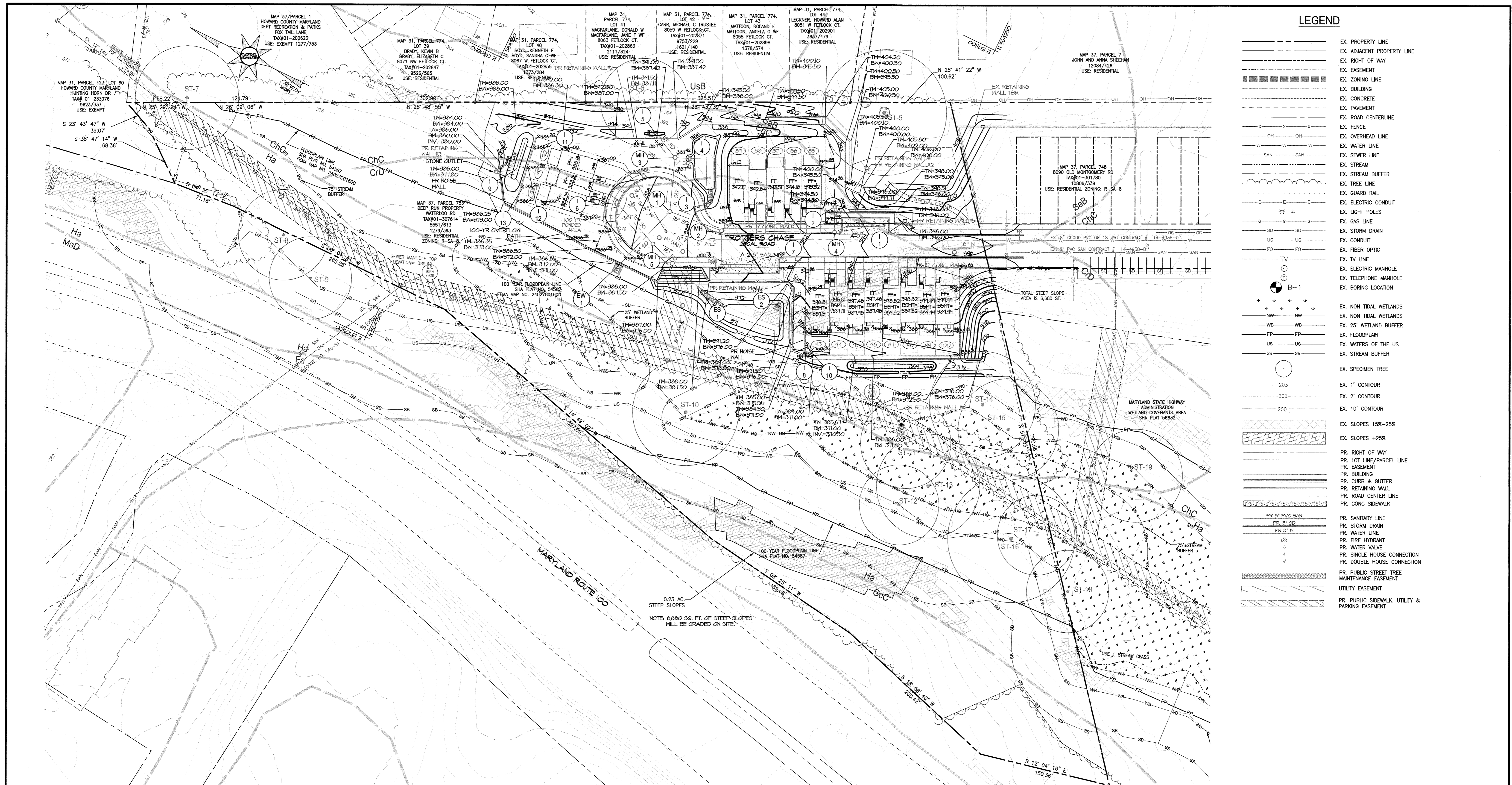
TROTTER'S KNOLL - SECTION II
DEEP RUN PROPERTY

TYPICAL ROAD SECTIONS

TAX MAP 37 GRIDS 2 PARCEL 753 ZONED: R-SA-8
1ST ELECTION DISTRICT
HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:
		15368 x 06
		SCALE: AS SHOWN
		DATE: 6-6-18
		DRAWN BY: JUG
		DESIGN BY: JUG
		REVIEW BY: DJ
		SHEET: 04 OF 29

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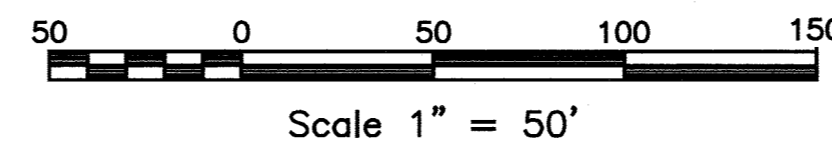


LEGEND

	EX. PROPERTY LINE
	EX. ADJACENT PROPERTY LINE
	EX. RIGHT OF WAY
	EX. EASEMENT
	EX. ZONING LINE
	EX. BUILDING
	EX. CONCRETE
	EX. PAVEMENT
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	EX. GUARD RAIL
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	EX. GAS LINE
	EX. STORM DRAIN
	EX. CONDUIT
	EX. FIBER OPTIC
	EX. TV LINE
	EX. ELECTRIC MANHOLE
	EX. TELEPHONE MANHOLE
	EX. BORING LOCATION
	EX. NON TIDAL WETLANDS
	EX. 25' WETLAND BUFFER
	EX. FLOODPLAIN
	EX. WATERS OF THE US
	EX. STREAM BUFFER
	EX. SPECIMEN TREE
	EX. 1' CONTOUR
	EX. 2' CONTOUR
	EX. 10' CONTOUR
	EX. SLOPES 15%-25%
	EX. SLOPES +25%
	PR. RIGHT OF WAY
	PR. LOT LINE/PARCEL LINE
	PR. EASEMENT
	PR. BUILDING
	PR. CURB & GUTTER
	PR. RETAINING WALL
	PR. ROAD CENTER LINE
	PR. CONC SIDEWALK
	PR. SANITARY LINE
	PR. STORM DRAIN
	PR. WATER LINE
	PR. FIRE HYDRANT
	PR. WATER VALVE
	PR. SINGLE HOUSE CONNECTION
	PR. DOUBLE HOUSE CONNECTION
	PR. PUBLIC STREET TREE MAINTENANCE EASEMENT
	UTILITY EASEMENT
	PR. PUBLIC SIDEWALK, UTILITY & PARKING EASEMENT

SOILS MAP, GRADING, EROSION AND SEDIMENT CONTROL PLAN

SCALE: 1"=50'



SOILS LEGEND				
SYMBOL	NAME/DESCRIPTION	SOIL TYPE	HYDRIC SOIL	'K' FACTOR
ChC	CHILLUM-RUSSET LOAMS, 5-10% SLOPES	C	NO	0.43
CrD	CROOM AND EVESBORO SOILS, 10-15% SLOPES	C	NO	0.37
FoaA	FALLSINGTON SANDY LOAM, 0-2% SLOPES	D	NO	0.32
Ha	HATBORO-CORDORUS SILT LOAMS, 0-3% SLOPES	D	YES	0.37
GcC	GLADSTONE-LEGORE COMPLEX, 8-15 % SLOPES	A	NO	0.28
SaB	SASSAFRAS LOAM, 2-5% SLOPES	B	NO	0.32
UsB	URBAN LAND-FALLSINGTON COMPLEX, 0-2% SLOPES	D	NO	0.37

HOWARD COUNTY SOIL CONSERVATION DISTRICT MAP NUMBER 14-036

MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
14280 PARK CENTER DRIVE
LAUREL, MD 20707
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FAX: (410) 792-7395
MRAGTA.COM

TROTTER'S KNOLL - SECTION II
DEEP RUN PROPERTY

SOILS MAP AND GRADING PLAN

TAX MAP 37 GRIDS 2 PARCEL 753 ZONED: R-SA-8
1ST ELECTION DISTRICT
HOWARD COUNTY, MD 21043

JOB NO.: 15368 x 08
SCALE: 1" = 50'
DATE: 6-6-18
DRAWN BY: JUC
DESIGN BY: JUC
REVIEW BY: DJ
SHEET: 05 OF 29

MD PROFESSIONAL CERTIFICATION:

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APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

[Signature] 5/8/2019
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

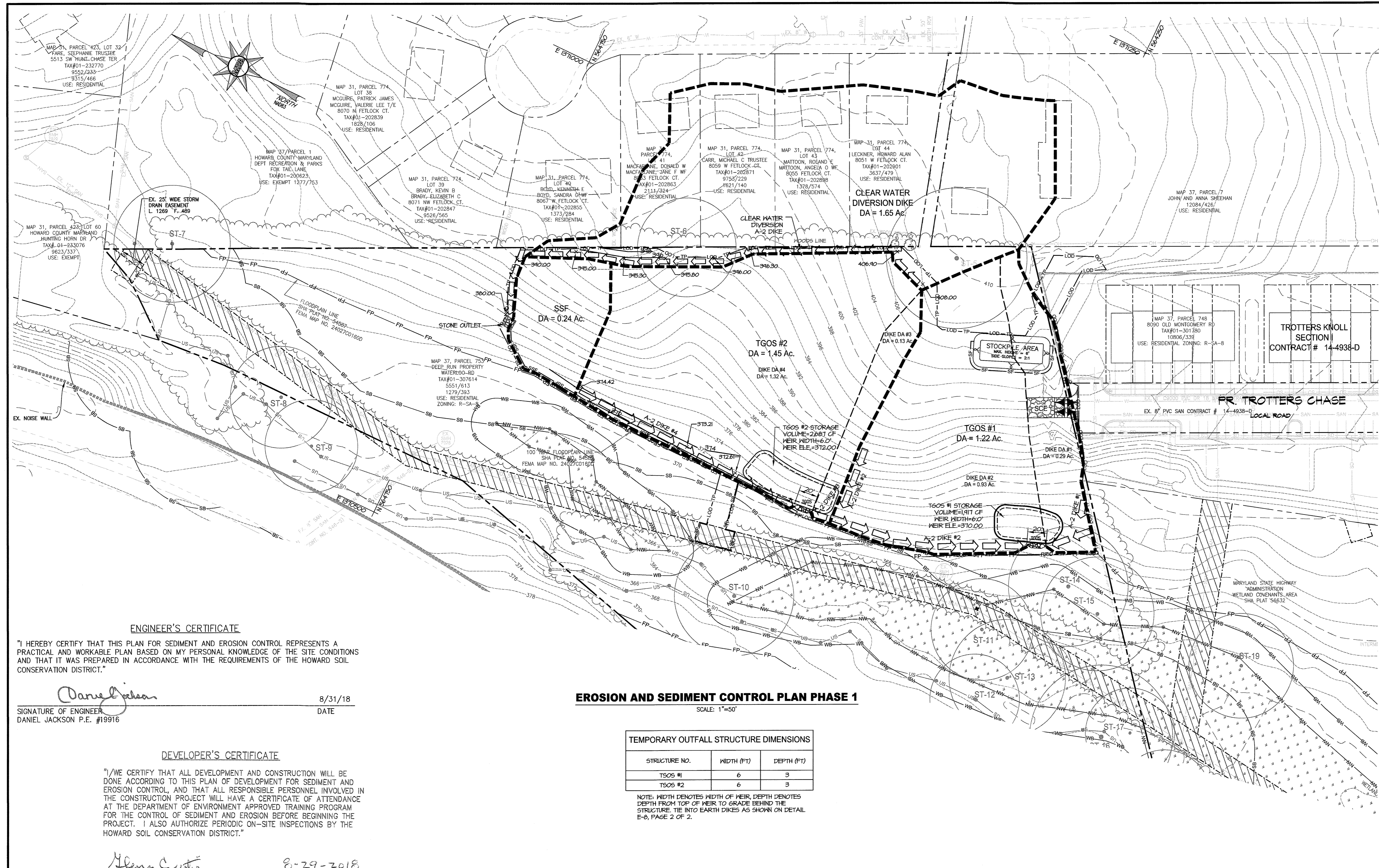
[Signature] 5-10-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 5-21-19
CHIEF, LAND DEVELOPMENT DIVISION DATE

OWNER / APPLICANT / DEVELOPER :

DEEP RUN PROPERTY MANAGEMENT, LLC.
ADDRESS: 5240 WEBB COURT
MOOREHEAD CITY, NORTH CAROLINA 28557
CONTACT: GLENN CURTIS
PHONE: (252) 726-6633
EMAIL: GCURTIS1@EC.RR.COM

P:\PROJECTS\15368 TROTTERS KNOLL\PLANS\15368 SEC 2\2019\PLAN SETS\FINAL\ROADS AND S/D\15368-FIN-05-GRADING.dwg, 1/9/2019 11:42:46 AM, JGundel, 1:1, Copyright 2019 Morris & Ritchie Associates, Inc.



- ### LEGEND
- EX. PROPERTY LINE
 - EX. ADJACENT PROPERTY LINE
 - EX. RIGHT OF WAY
 - EX. EASEMENT
 - EX. ZONING LINE
 - EX. BUILDING
 - EX. CONCRETE
 - EX. PAVEMENT
 - EX. ROAD CENTERLINE
 - EX. FENCE
 - EX. OVERHEAD LINE
 - EX. WATER LINE
 - EX. SEWER LINE
 - EX. STREAM
 - EX. STREAM BUFFER
 - EX. TREE LINE
 - EX. GUARD RAIL
 - EX. ELECTRIC CONDUIT
 - EX. LIGHT POLES
 - EX. GAS LINE
 - EX. STORM DRAIN
 - EX. CONDUIT
 - EX. FIBER OPTIC
 - EX. TV LINE
 - EX. ELECTRIC MANHOLE
 - EX. TELEPHONE MANHOLE
 - EX. BORING LOCATION
 - EX. NON TIDAL WETLANDS
 - EX. 25' WETLAND BUFFER
 - EX. FLOODPLAIN
 - EX. WATERS OF THE US
 - PR. LIMIT OF DISTURBANCE
 - PR. SILT FENCE / TREE PROTECTION
 - PR. REINFORCED SILT FENCE
 - PR. DIVERSION FENCE
 - PR. STABILIZED CONSTRUCTION ENTRANCE (SCE)
 - PR. EARTH DIKE A
 - PR. 1' CONTOUR
 - PR. 2' CONTOUR
 - PR. 10' CONTOUR
 - PR. TREE LINE
 - PR. TEMPORARY GABION OUTLET STRUCTURE

ENGINEER'S CERTIFICATE

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

Daniel Jackson
 SIGNATURE OF ENGINEER
 DANIEL JACKSON P.E. #19916
 8/31/18
 DATE

DEVELOPER'S CERTIFICATE

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

Glenn Curtis
 SIGNATURE OF DEVELOPER
 GLENN CURTIS
 8-29-2018
 DATE

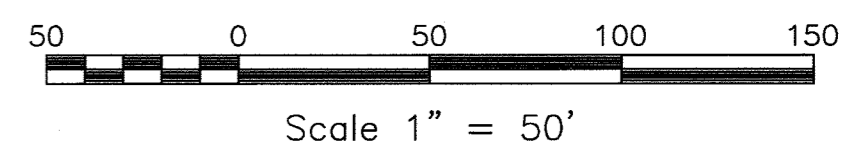
EROSION AND SEDIMENT CONTROL PLAN PHASE 1

SCALE: 1"=50'

TEMPORARY OUTFALL STRUCTURE DIMENSIONS

STRUCTURE NO.	WIDTH (FT)	DEPTH (FT)
TGOS #1	6	3
TGOS #2	6	3

NOTE: WIDTH DENOTES WIDTH OF WEIR. DEPTH DENOTES DEPTH FROM TOP OF WEIR TO GRADE BEHIND THE STRUCTURE. TIE INTO EARTH DIKES AS SHOWN ON DETAIL E-6, PAGE 2 OF 2.



HOWARD SOIL CONSERVATION DISTRICT

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

John R. Robinson / *os* 2/13/19
 HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

James 5/8/2019
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

John 5.10.19
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Kent 5.21.19
 CHIEF, LAND DEVELOPMENT DIVISION DATE

OWNER / APPLICANT / DEVELOPER :
 DEEP RUN PROPERTY MANAGEMENT, LLC.
 ADDRESS: 5240 WEBB COURT
 MOOREHEAD CITY, NORTH CAROLINA 28557
 CONTACT: GLENN CURTIS
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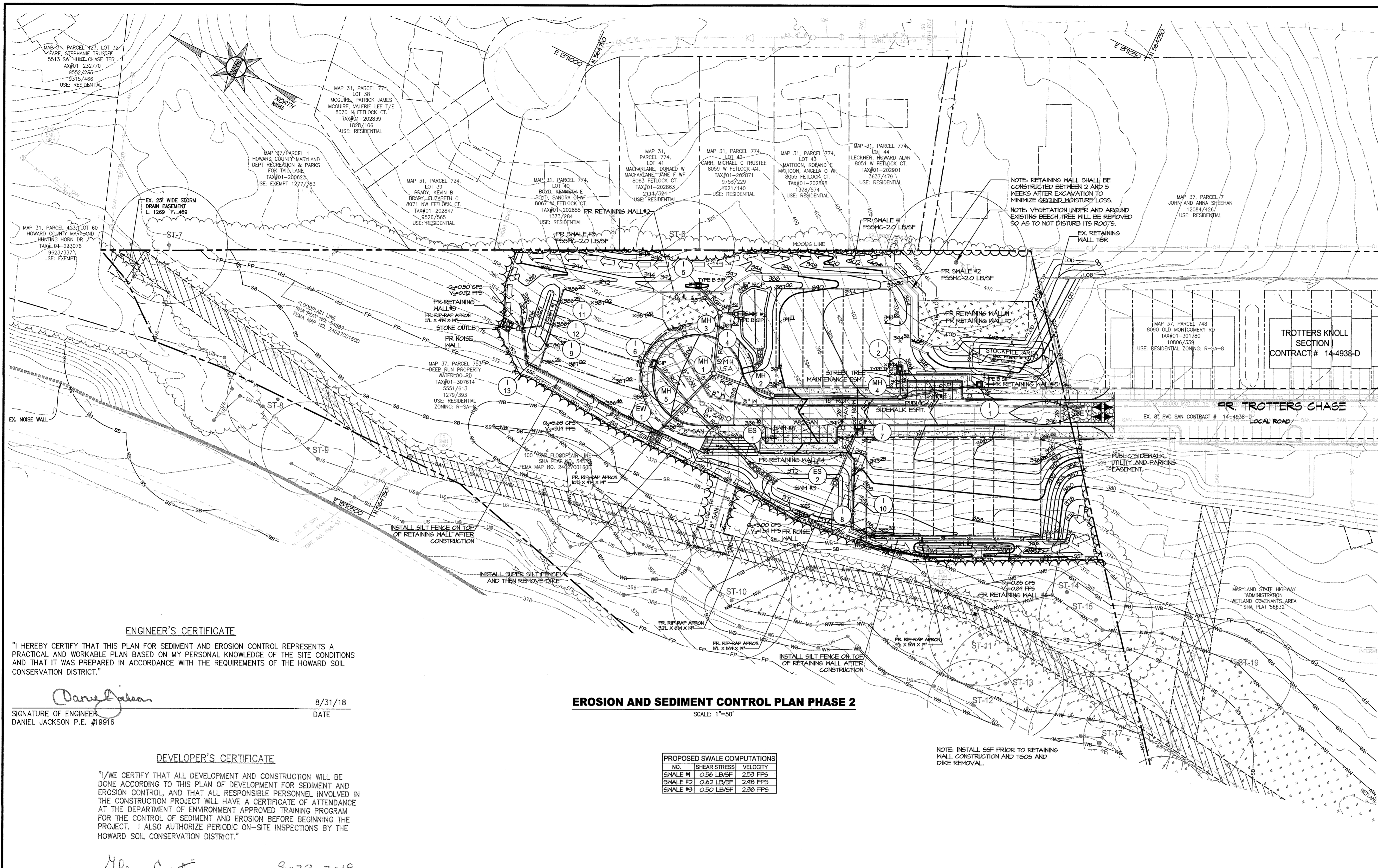
TROTTER'S KNOLL - SECTION II
DEEP RUN PROPERTY

EROSION AND SEDIMENT CONTROL PLAN - PHASE I

TAX MAP 37 GRIDS 2 PARCEL 753 ZONED: R-SA-8
 1ST ELECTION DISTRICT
 HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:
		15368 x 06
		SCALE: 1" = 50'
		DATE: 6-6-18
		DRAWN BY: JUG
		DESIGN BY: JUG
		REVIEW BY: DJ
		SHEET: 06 OF 29

MD PROFESSIONAL CERTIFICATION:
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19916, EXPIRATION DATE: 01/14/2021.



LEGEND

- EX. PROPERTY LINE
- EX. ADJACENT PROPERTY LINE
- EX. RIGHT OF WAY
- EX. EASEMENT
- EX. ZONING LINE
- EX. BUILDING
- EX. CONCRETE
- EX. PAVEMENT
- EX. ROAD CENTERLINE
- EX. FENCE
- EX. OVERHEAD LINE
- EX. WATER LINE
- EX. SEWER LINE
- EX. STREAM
- EX. STREAM BUFFER
- EX. TREE LINE
- EX. GUARD RAIL
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- EX. GAS LINE
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- EX. CONDUIT
- EX. FIBER OPTIC
- EX. TV LINE
- EX. ELECTRIC MANHOLE
- EX. TELEPHONE MANHOLE
- EX. BORING LOCATION
- EX. NON TIDAL WETLANDS
- EX. NON TIDAL WETLANDS
- EX. 25' WETLAND BUFFER
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- PR. REINFORCED SILT FENCE
- PR. DIVERSION FENCE
- PR. STABILIZED CONSTRUCTION ENTRANCE (SCE)
- PR. EARTH DIKE
- PR. 1' CONTOUR
- PR. 2' CONTOUR
- PR. 10' CONTOUR
- PR. TREE LINE
- PR. TEMPORARY GABION OUTLET STRUCTURE
- PR. PUBLIC STREET TREE MAINTENANCE EASEMENT
- UTILITY EASEMENT
- PR. PUBLIC SIDEWALK, UTILITY & PARKING EASEMENT
- PR. OPEN SPACE NON-CREDITED
- PUBLIC SIDEWALK EASEMENT

ENGINEER'S CERTIFICATE

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

Daniel Jackson 8/31/18
 SIGNATURE OF ENGINEER DATE
 DANIEL JACKSON P.E. #19916

DEVELOPER'S CERTIFICATE

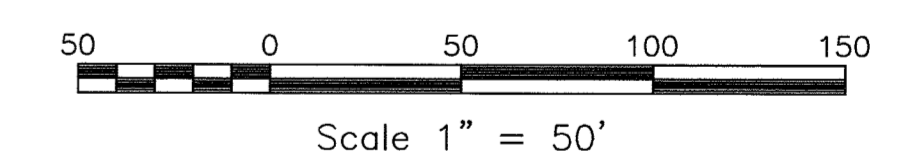
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Glenn Curtis 8-29-2018
 SIGNATURE OF DEVELOPER DATE
 GLENN CURTIS

EROSION AND SEDIMENT CONTROL PLAN PHASE 2
 SCALE: 1"=50'

PROPOSED SWALE COMPUTATIONS		
NO.	SHEAR STRESS	VELOCITY
SWALE #1	0.26 LB/FS ²	2.33 FPS
SWALE #2	0.62 LB/FS ²	2.49 FPS
SWALE #3	0.50 LB/FS ²	2.38 FPS

NOTE: INSTALL 95% PRIOR TO RETAINING WALL CONSTRUCTION AND T605 AND DIKE REMOVAL.



HOWARD SOIL CONSERVATION DISTRICT

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

John R. Robinson / JCS 2/13/19
 HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

James 5/6/2019
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Phil Clark 5-10-19
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Wendy 5-21-19
 CHIEF, LAND DEVELOPMENT DIVISION DATE

OWNER / APPLICANT / DEVELOPER :
 DEEP RUN PROPERTY MANAGEMENT, LLC.
 ADDRESS: 5240 WEBB COURT
 MOOREHEAD CITY, NORTH CAROLINA 28557
 CONTACT: GLENN CURTIS
 PHONE: (252) 726-6633
 EMAIL: GCURTIS1@EC.RR.COM

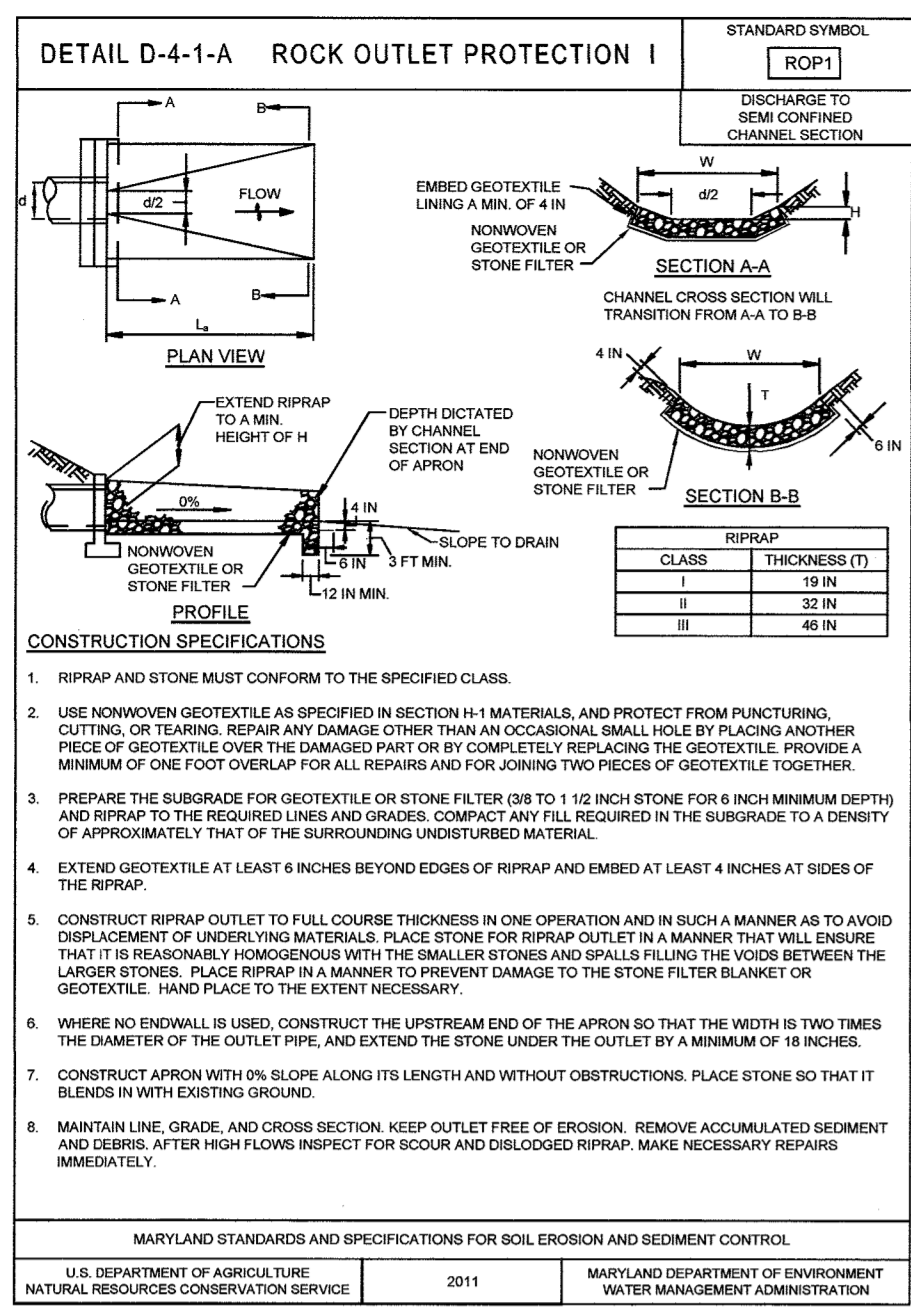
MORRIS & RITCHE ASSOCIATES, INC.
 ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
 14280 PARK CENTER DRIVE
 LAUREL, MD 20707
 (410) 792-9792 / (301) 776-1690
 FAX: (410) 792-7395
 MRAGTA.COM

TROTTER'S KNOLL - SECTION II
 DEEP RUN PROPERTY

EROSION AND SEDIMENT CONTROL PLAN - PHASE II

TAX MAP 37 GRIDS 2 PARCEL 753 ZONED: R-SA-8
 1ST ELECTION DISTRICT
 HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:
		15368 x 06
		SCALE: 1" = 50'
		DATE: 6-8-18
		DRAWN BY: JUG
		DESIGN BY: JUG
		REVIEW BY: DJ
		SHEET: 07 OF 29

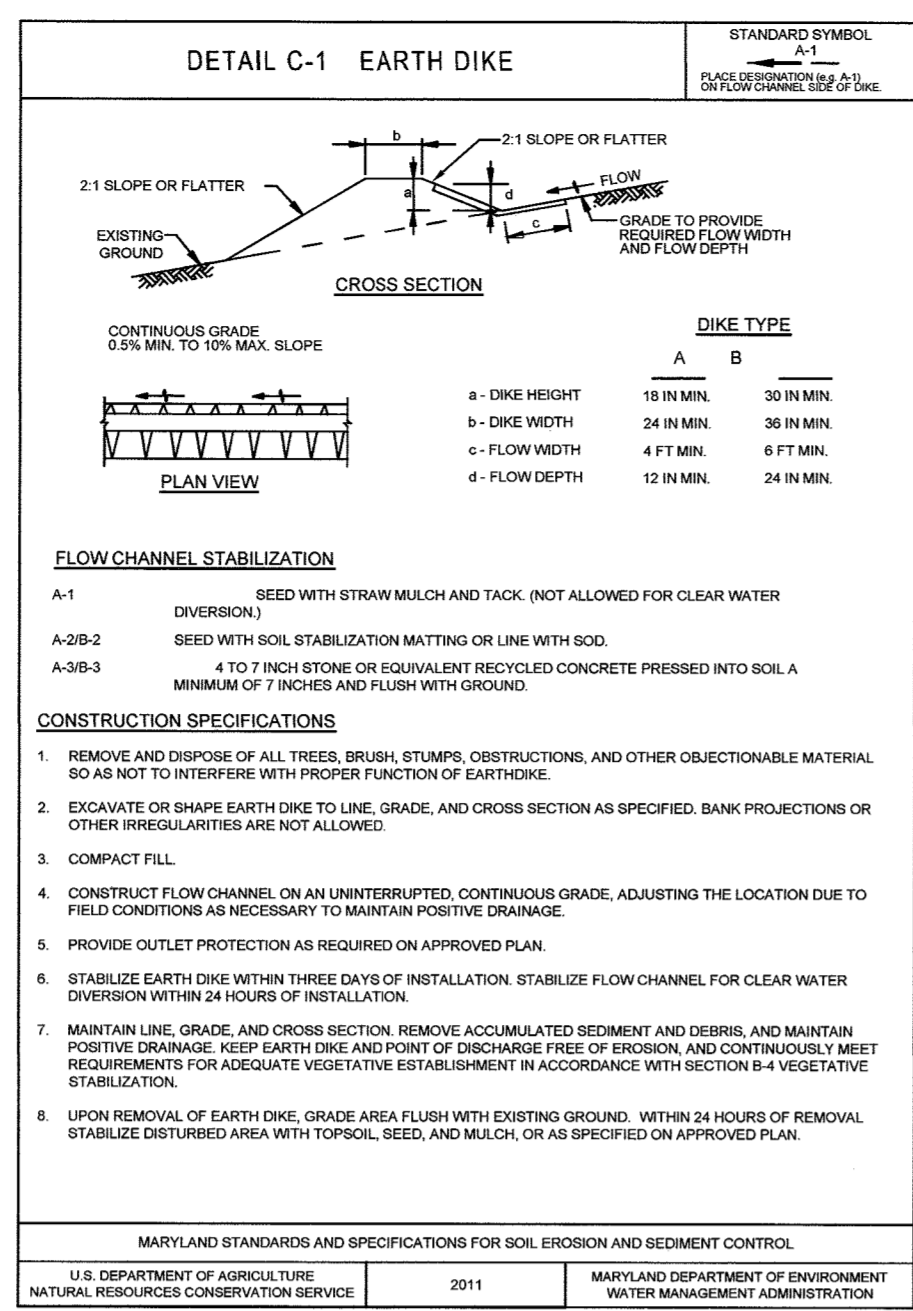


CONSTRUCTION SPECIFICATIONS

- RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
- USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN OCCASIONAL SMALL HOLES BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETLY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
- PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (DBT TO 1/2 INCH STONE FOR 8 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINE AND GRADE. COMPACT TO THE MINIMUM DENSITY SPECIFIED IN SECTION B-4. PLACE GEOTEXTILE OR STONE FILTER IN A MANNER TO PREVENT DAMAGE TO THE STONE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
- EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF THE RIPRAP.
- CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY WELL SPACED AND FULLY PLACING THE Voids BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE STONE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
- WHERE NO INDIUM 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.
- CONSTRUCT APRON WITH THE SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLEND IN WITH EXISTING GROUND.
- MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLETS FREE OF DEBRIS. REMOVE ACCUMULATED SEDIMENT AND DEBRIS AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISPOSED 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



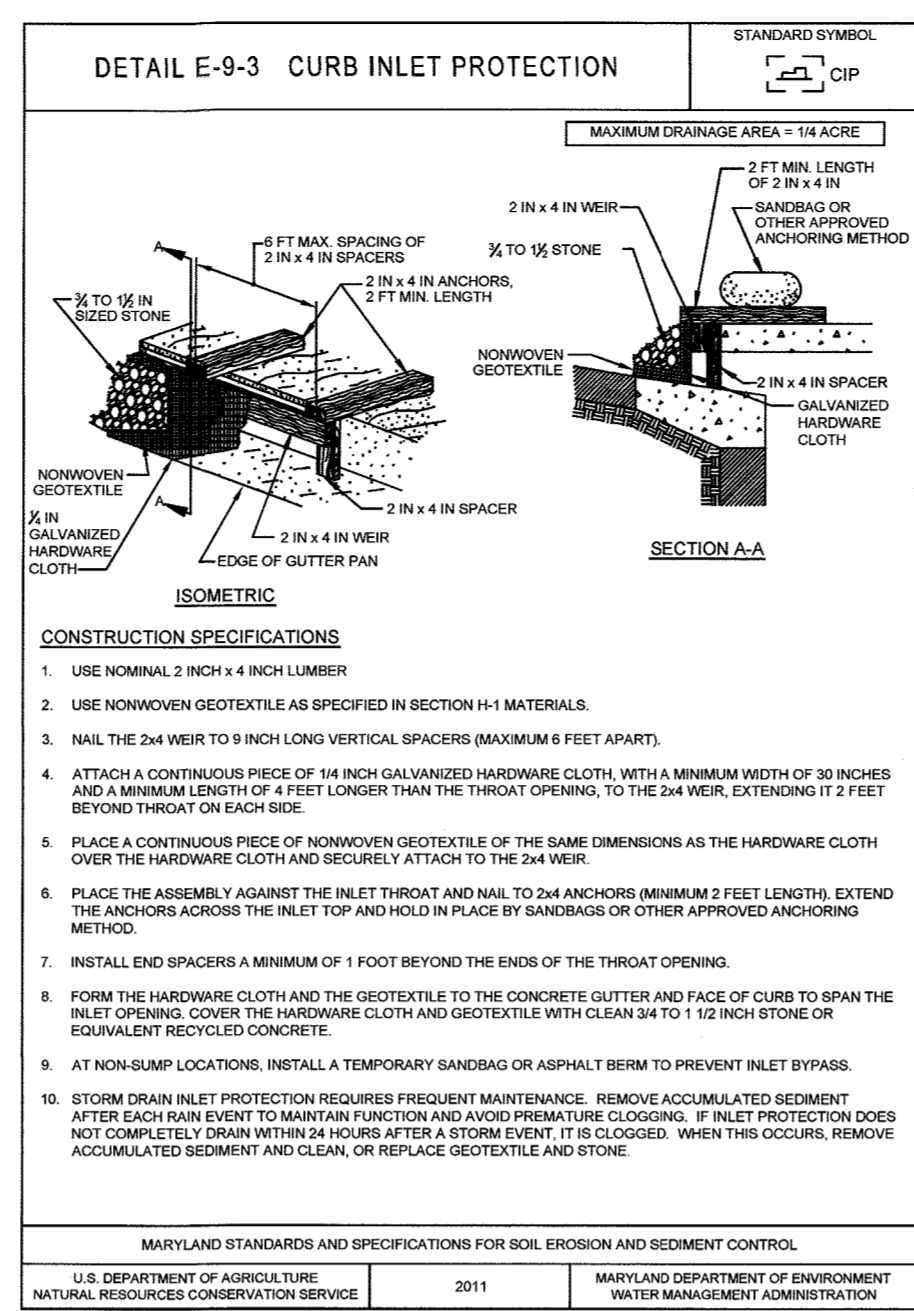
CONSTRUCTION SPECIFICATIONS

- USE 2 INCH DIA. OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO SOIL A MINIMUM OF 7 INCHES AND FLUSH WITH GROUND.
- CONSTRUCTION SPECIFICATIONS

 - REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBSTRUCTIONAL MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF EARTH DIKE.
 - EXCAVATE OR SHAPE EARTH DUE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.
 - COMPACT FILL.
 - CONSTRUCT FLOW CHANNEL ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.
 - PROVIDE OUTLET 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 MAINTAIN POSITIVE DRAINAGE. KEEP EARTH DIKE AND POINT OF DISCHARGE FREE OF DEBRIS, AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
 - UPON REMOVAL OF EARTH DIKE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL, STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, MULCH, OR AS SPECIFIED ON APPROVED PLAN.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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



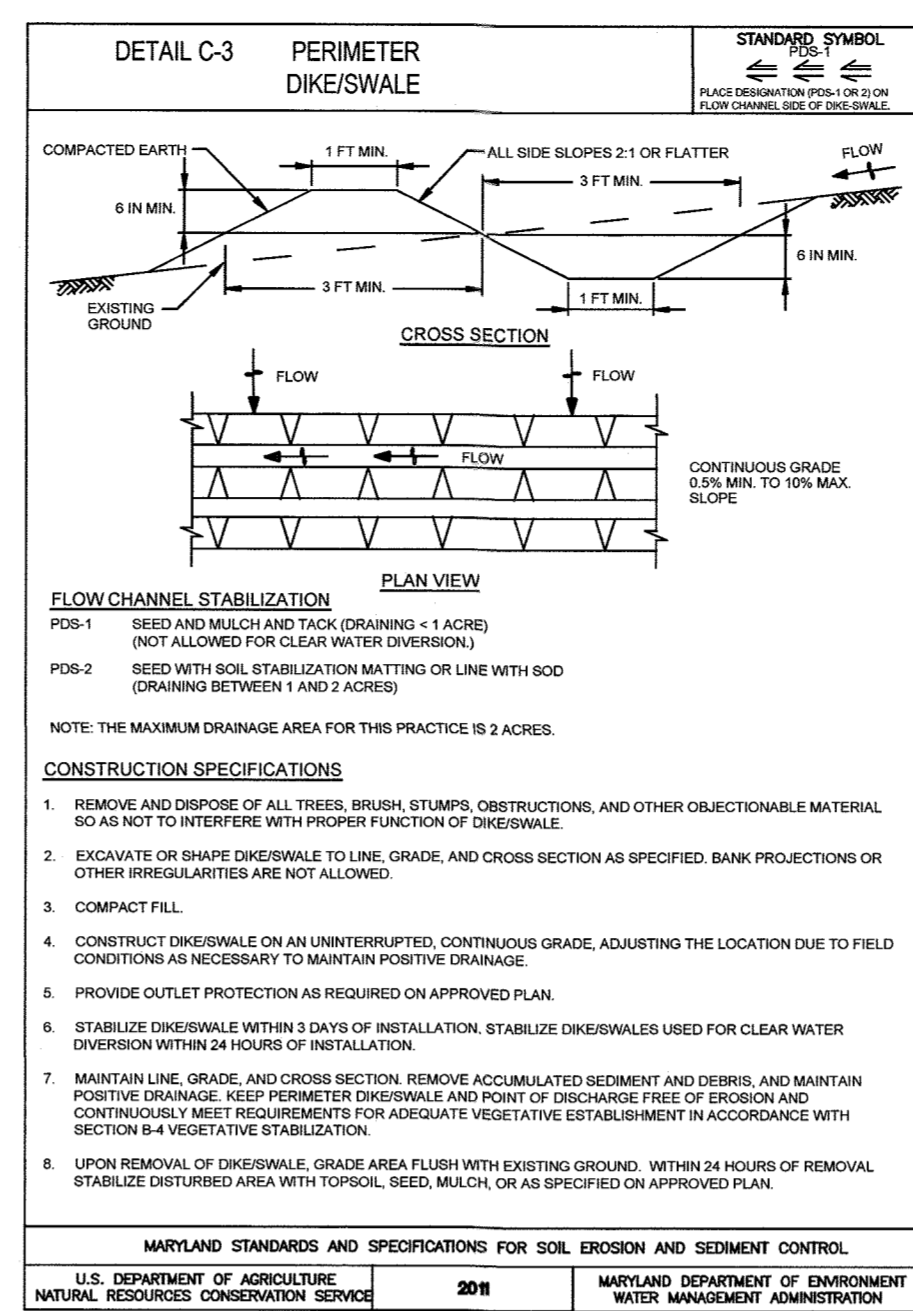
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 - EXCAVATE OR SHAPE EARTH DUE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.
 - COMPACT FILL.
 - CONSTRUCT DRAINAGE ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.
 - PROVIDE CURB INLET 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.
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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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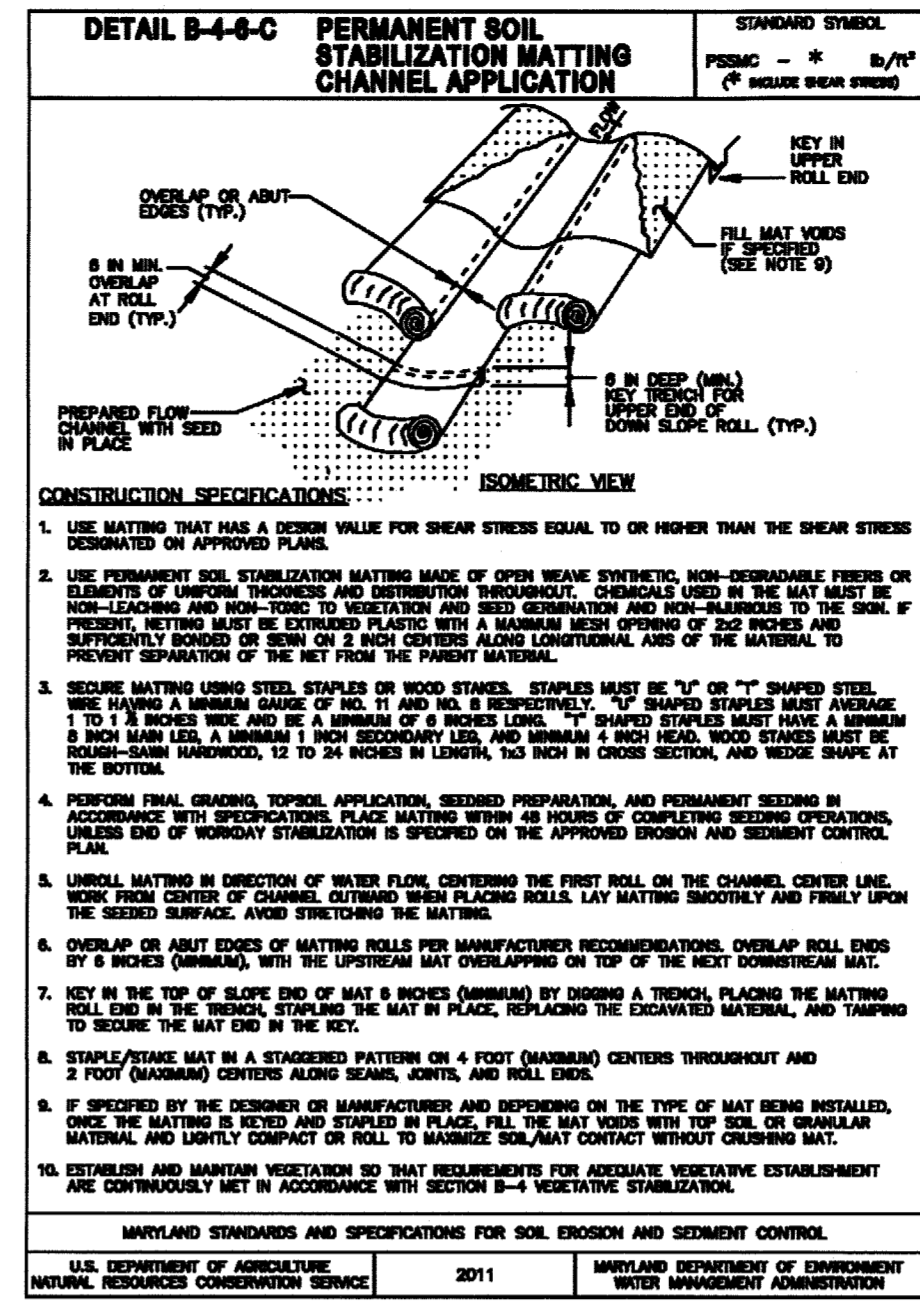
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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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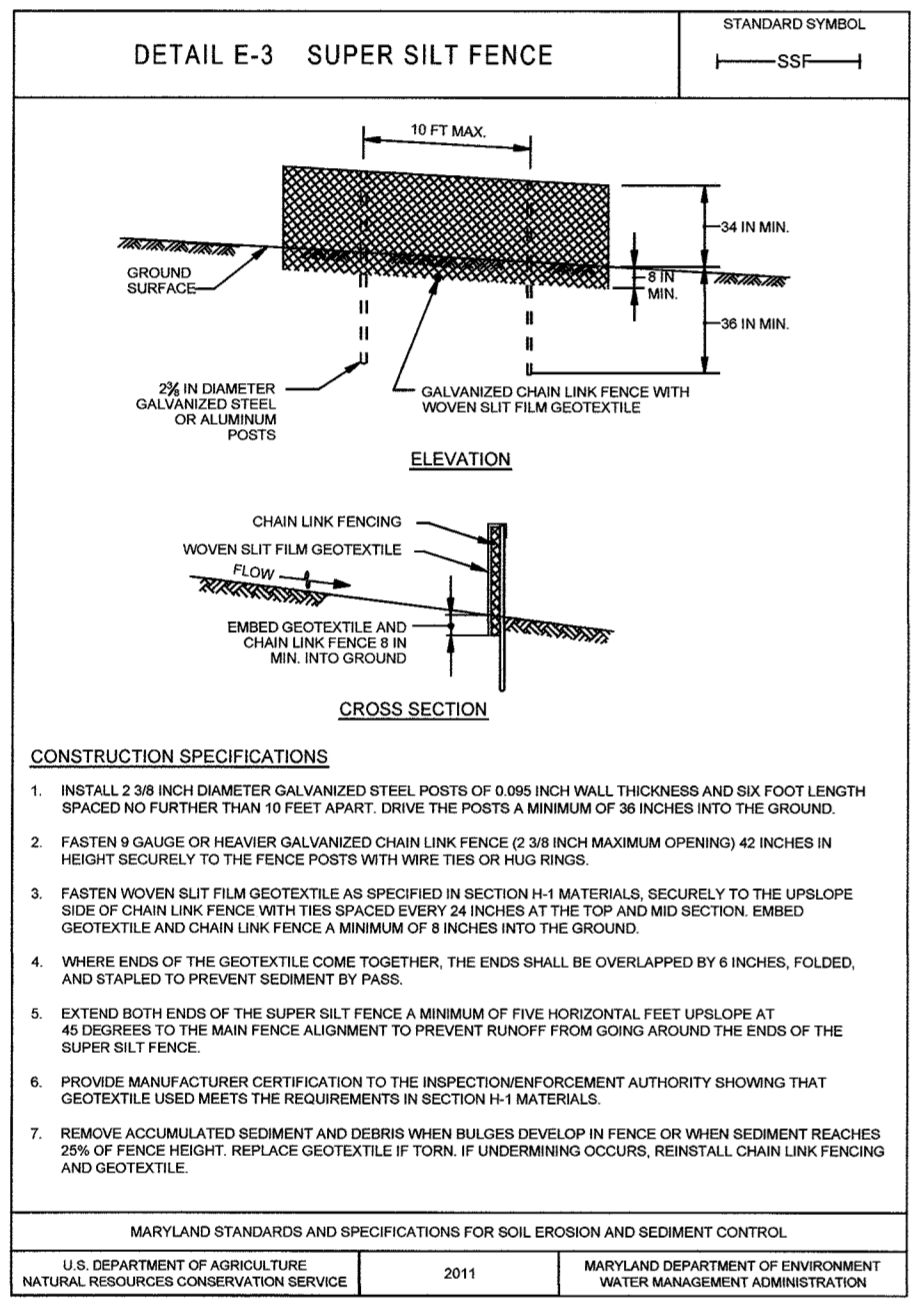


CONSTRUCTION SPECIFICATIONS

- USE MATTING THAT HAS A TENSILE STRENGTH EQUAL TO OR HIGHER THAN THE SHEAR STRESS OF SOIL ON WHICH IT IS TO BE USED.
- USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DISPERGABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHANNELS USED IN THE MAT MUST BE NON-LEAKING AND NON-POROUS TO PREVENT INFILTRATION AND SOIL DEGRADATION TO THE SOIL IF PRESENT. MATTING MUST BE EXTENDED BEYOND THE CHANNEL TO THE FULL WIDTH OF THE CHANNEL AND BE PROPERLY BOUND OR SEWN ON 12 INCH SPACES ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE MAT FROM THE FILL MATERIAL.
- SECURE MATTING USING STEEL STAPLES OR WOOD STAPLES. STAPLES MUST BE "U" OR "T" SHAPED STEEL. USE 1/2 INCH DIA. OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO SOIL A MINIMUM OF 7 INCHES AND FLUSH WITH GROUND. STAPLES MUST BE 1/2 INCH DIA. OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO SOIL A MINIMUM OF 7 INCHES AND FLUSH WITH GROUND. STAPLES MUST BE 1/2 INCH DIA. OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO SOIL A MINIMUM OF 7 INCHES AND FLUSH WITH GROUND. STAPLES MUST BE 1/2 INCH DIA. OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO SOIL A MINIMUM OF 7 INCHES AND FLUSH WITH GROUND.
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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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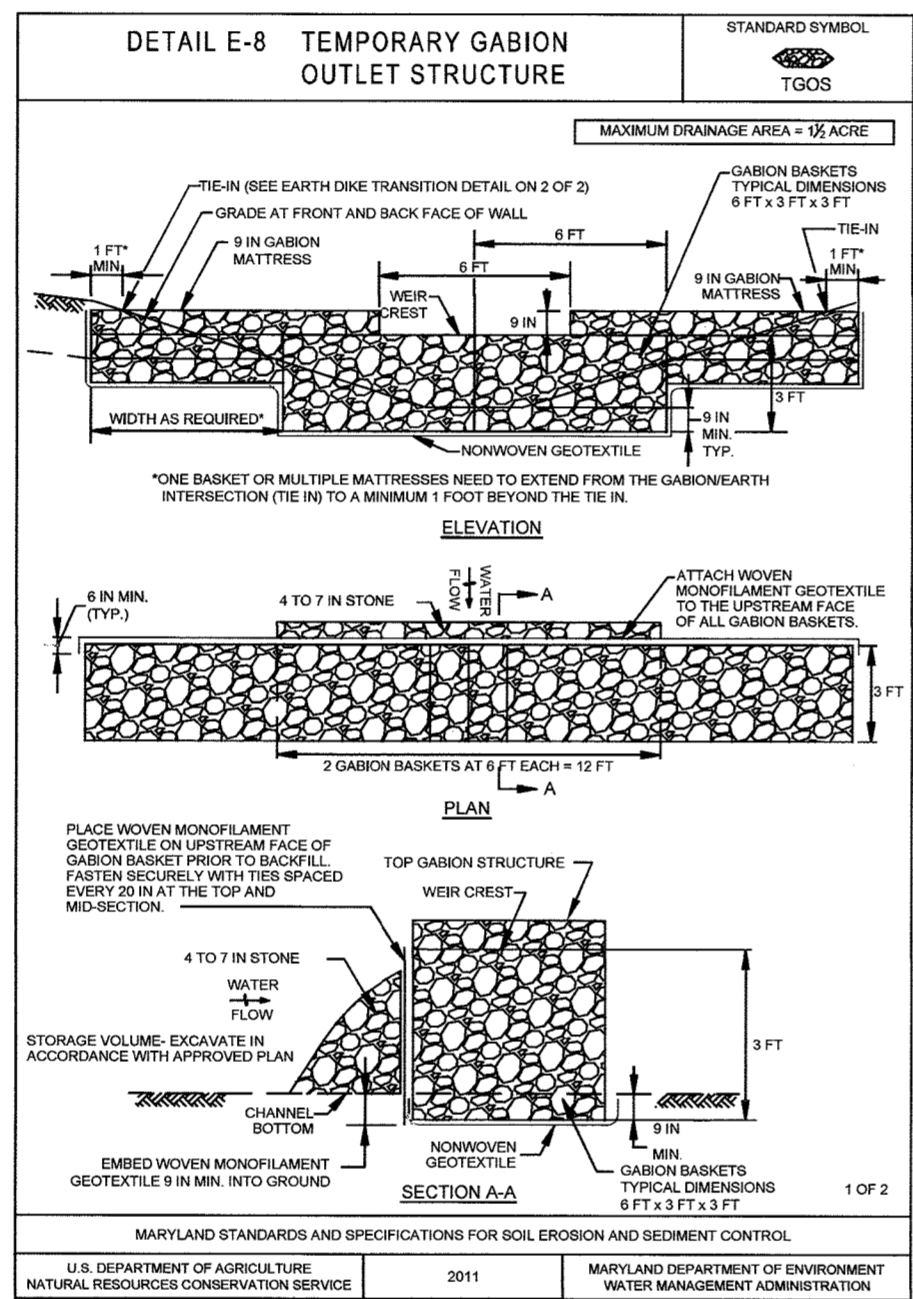


CONSTRUCTION SPECIFICATIONS

- INSTALL 2 3/8 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 A GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE OF 28 INCH MAXIMUM OPENING 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR RING RINGS.
- FASTEN WOVEN SILT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPRLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
- WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
- EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPRLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
- PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
- REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHED 2/3 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

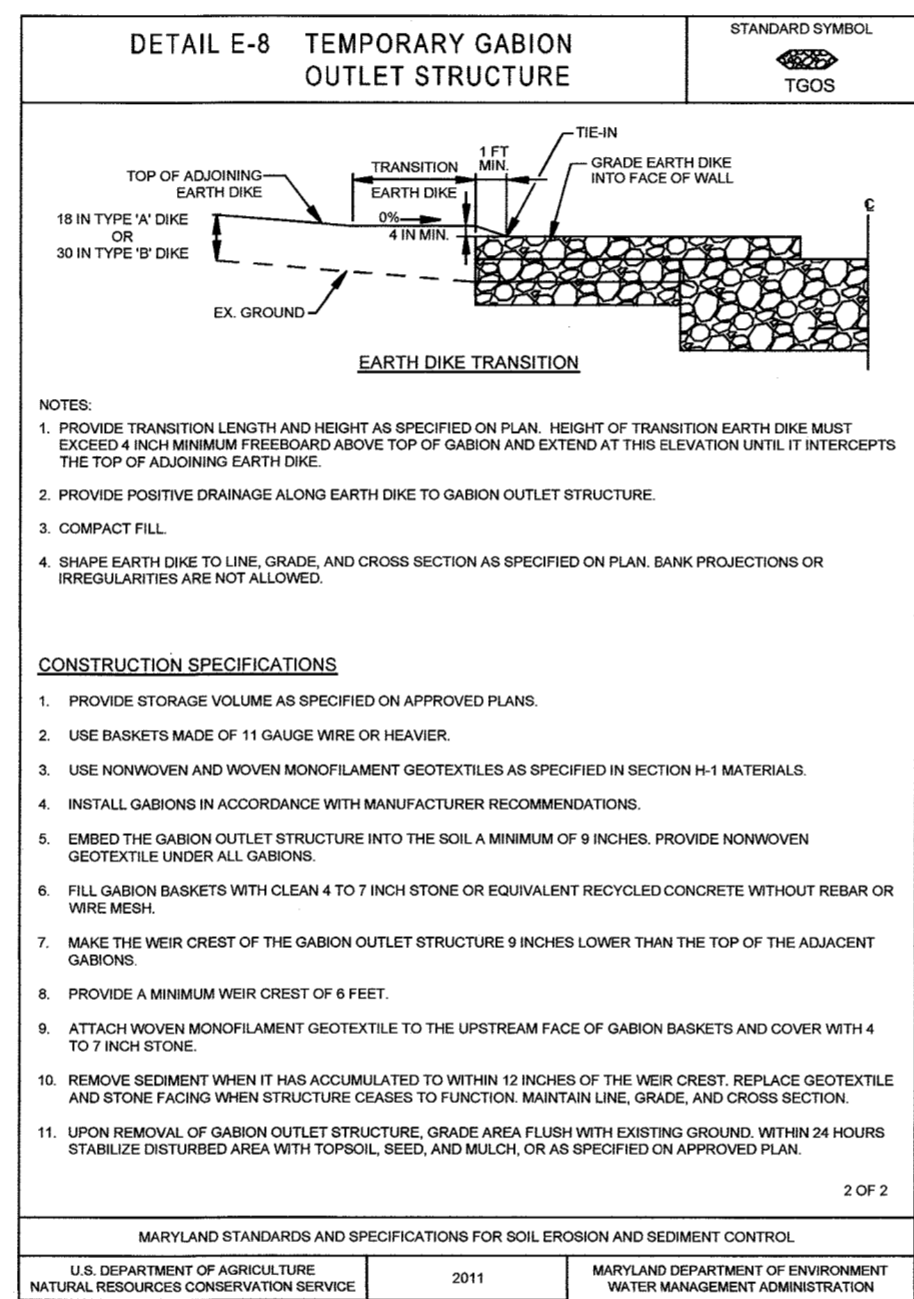


CONSTRUCTION SPECIFICATIONS

- PROVIDE STORAGE VOLUME AS SPECIFIED ON APPROVED PLANS.
- USE BASKETS MADE OF 11 GAUGE WIRE OR HEAVIER.
- USE NONWOVEN AND WOVEN MONOLAMENET GEOTEXTILES AS SPECIFIED IN SECTION H-1 MATERIALS.
- INSTALL GABIONS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
- EMBED GEOTEXTILE UNDER ALL GABIONS.
- FILL GABION BASKETS WITH CLEAN 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE WITHOUT REBAR OR WIRE MESH.
- MAKE THE WIER GREATER OF THE GABION OUTLET STRUCTURE 9 INCHES LOWER THAN THE TOP OF THE ADJACENT GARDENS.
- PROVIDE A MINIMUM WIER CREST OF 4 FEET.
- ATTACH WOVEN MONOLAMENET GEOTEXTILE TO THE UPRLOPE FACE OF GABION BASKETS AND COVER WITH 4 TO 7 INCH STONE.
- REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO WITHIN 12 INCHES OF THE WIER CREST. REPLACE GEOTEXTILE AND STONE FACIES WHEN STRUCTURE CHANGED TO FUNCTION. MAINTAIN LINE, GRADE, AND CROSS SECTION.
- UPON REMOVAL OF GABION OUTLET STRUCTURE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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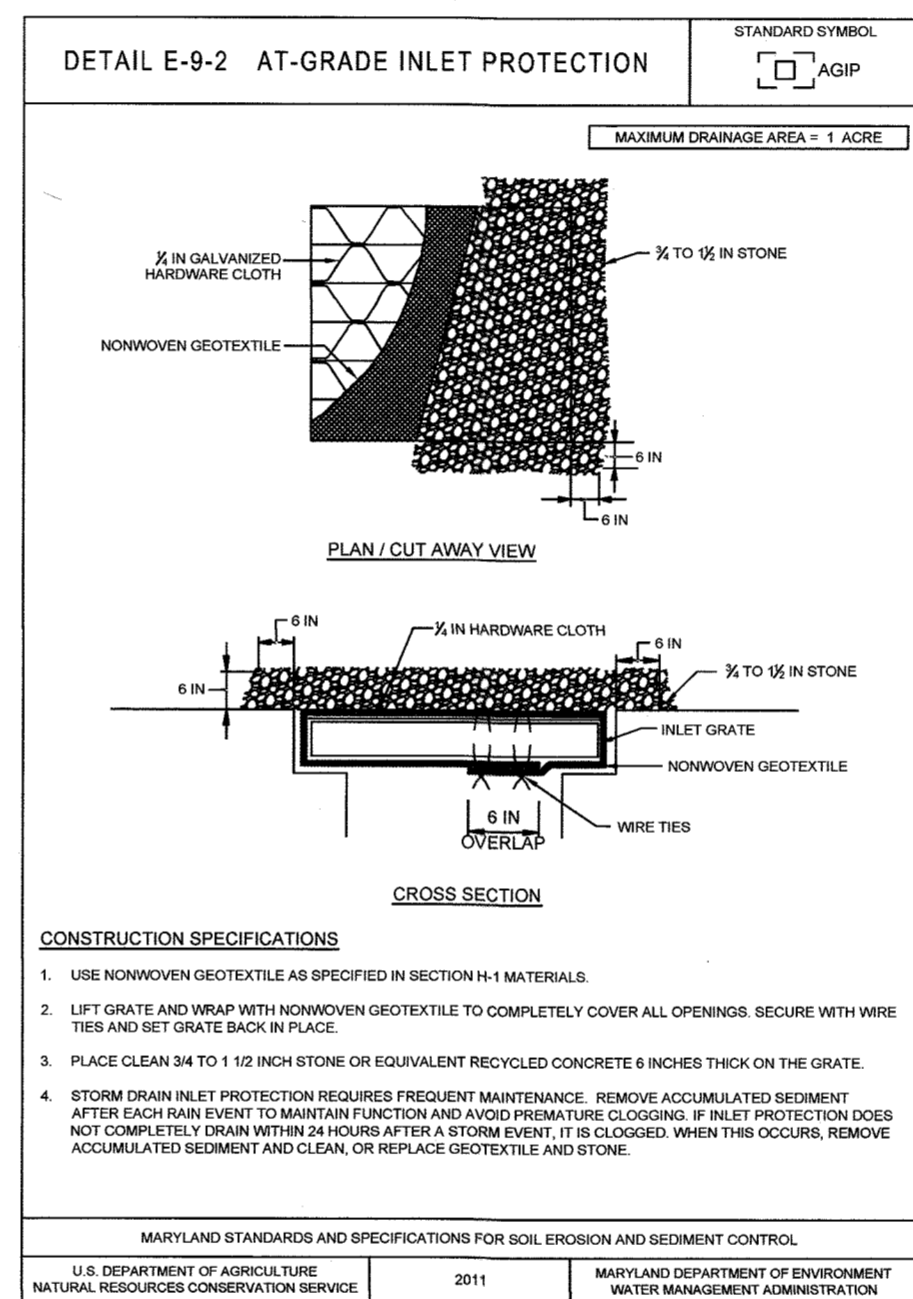


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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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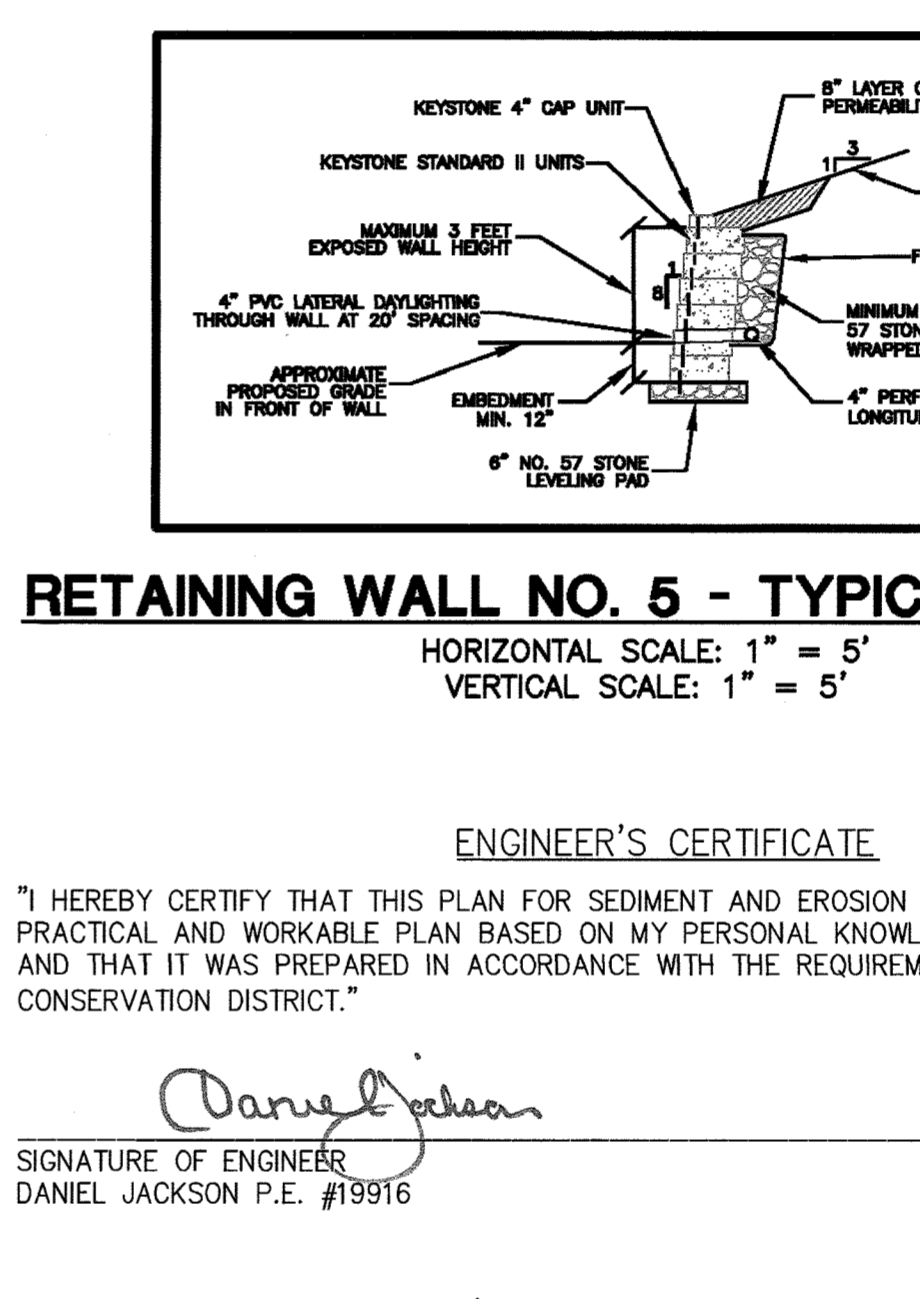


CONSTRUCTION SPECIFICATIONS

- USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
- IF TIE AND WRAP WITH NONWOVEN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS. SECURE WITH WIRE TIES AND SET GATE BACK IN PLACE.
- PLACE CLEAN 3/4 TO 1 1/2 INCH STONE OR EQUIVALENT RECYCLED CONCRETE 6 INCHES THICK ON THE GROUND.
- STORM DRAIN 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 DOWN EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

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



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

ENGINEER'S CERTIFICATE

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

Daniel Jackson
SIGNATURE OF ENGINEER
DANIEL JACKSON P.E. #19916

8/31/18
DATE

DEVELOPER'S CERTIFICATE

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

Glenn Curtis
SIGNATURE OF DEVELOPER
GLENN CURTIS

8-29-2018
DATE

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

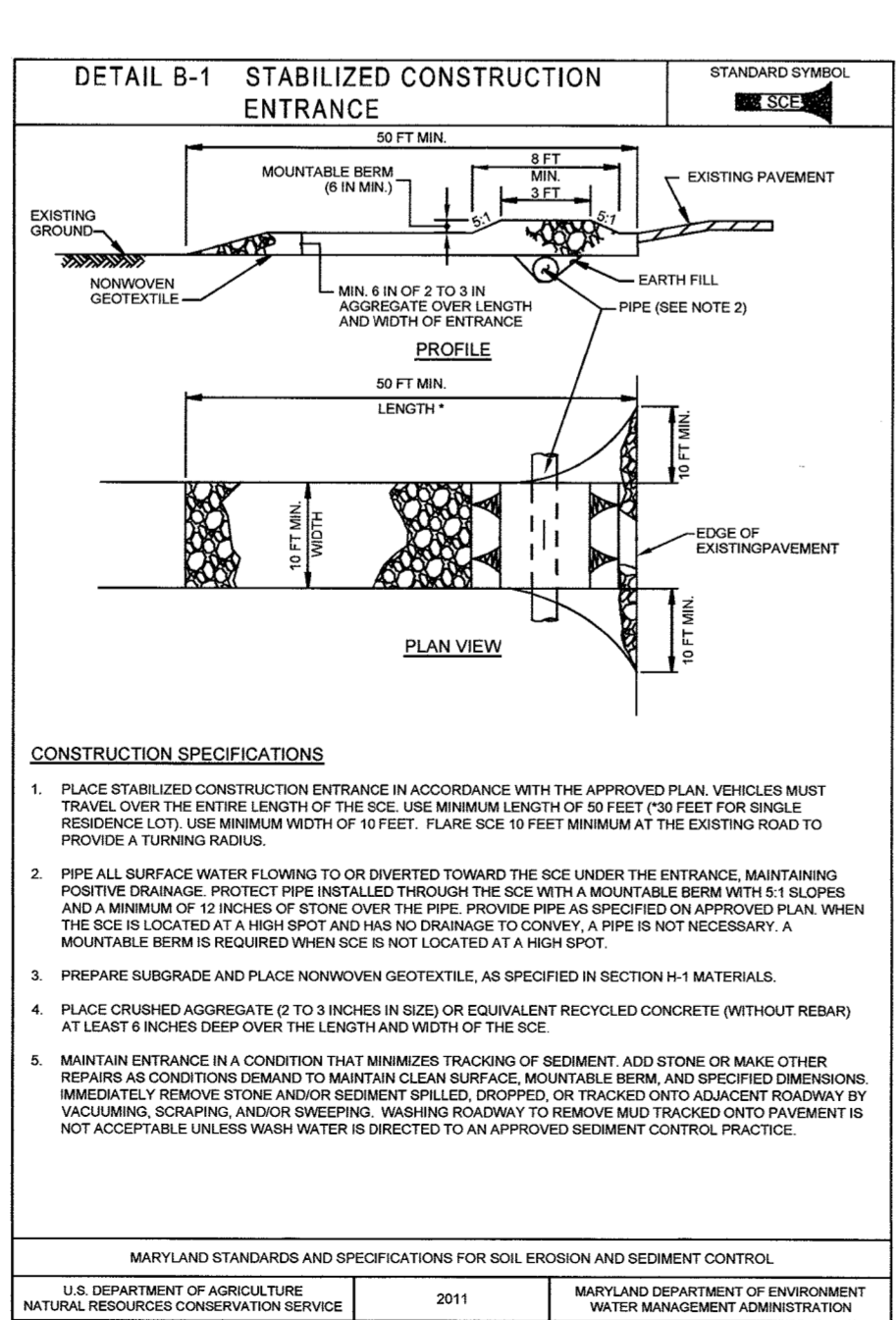
Jean P. Robinson / vs
HOWARD SOIL CONSERVATION DISTRICT

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

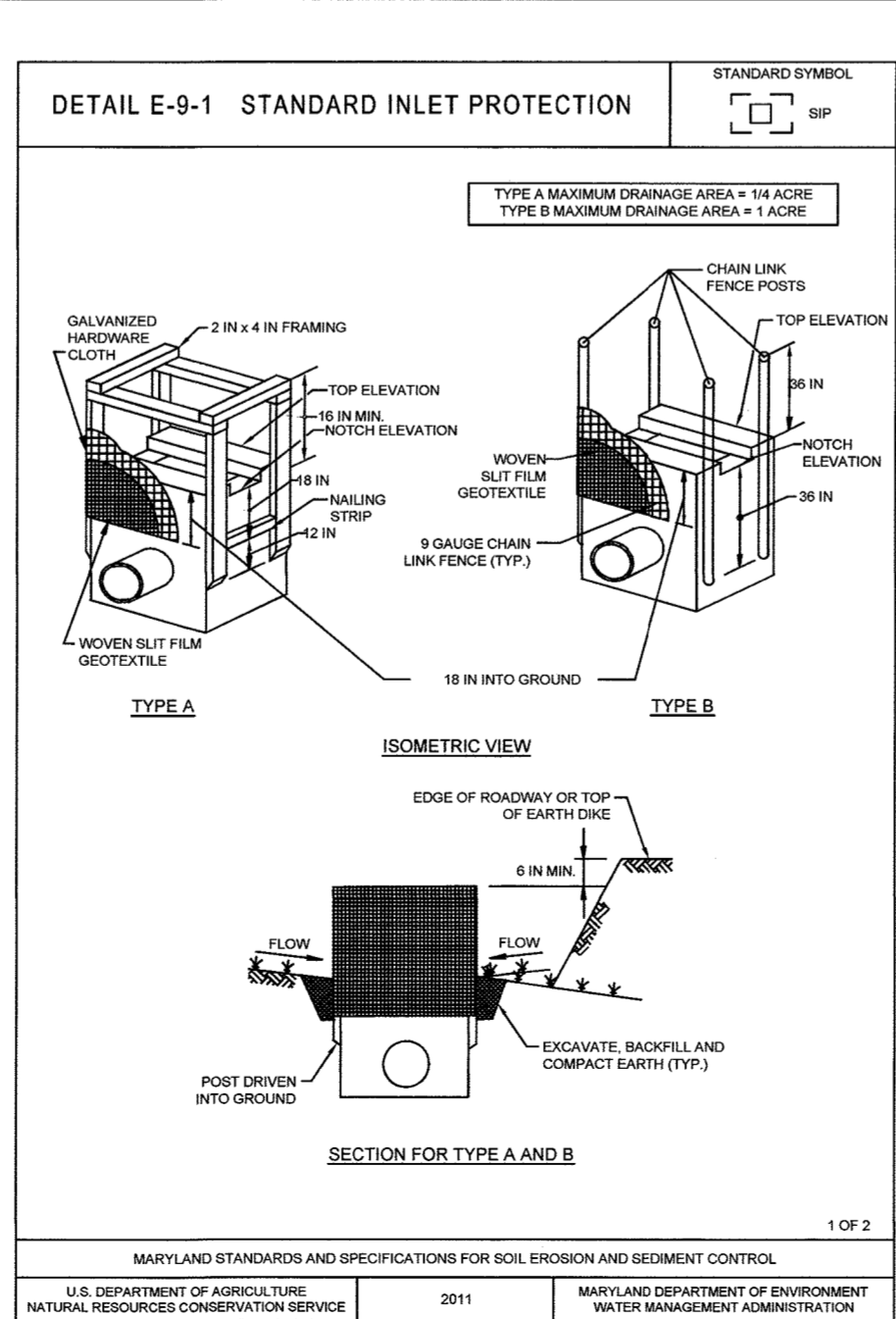


CONSTRUCTION SPECIFICATIONS

- PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET FOR SINGLE RESIDENCE LOT. USE MINIMUM WIDTH OF 18 FEET. PLACE SCE 18 FEET MINIMUM FROM THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
- PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SIDE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MINIMUM BENCH WITH 61 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND NO DRAINAGE TO DOWN, A PIPE IS NOT NECESSARY. A MOUNTAIN REBAR IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
- PRESERVE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
- PLACE CRUSHED AGGREGATE TO 1 1/2 INCHES IN SIZE OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 8 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
- MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZE TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN AND WORKABLE BENCH AND SPECIFIED DIMENSIONS IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VEHICLES, SCRAPERS, AND/OR SWEEPERS. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

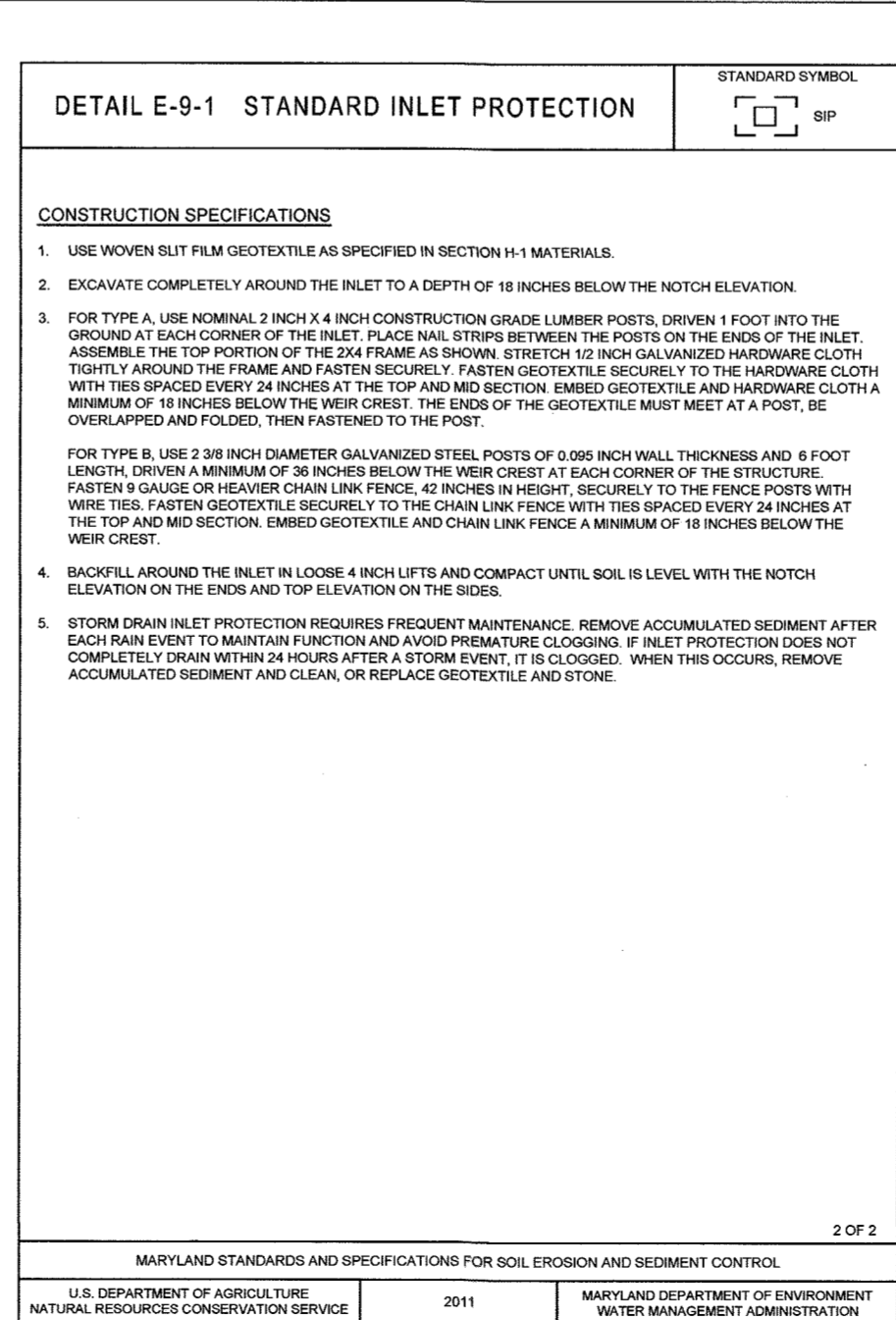


CONSTRUCTION SPECIFICATIONS

- USE WOVEN SILT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
- EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.
- FOR TYPE A, USE NOMINAL 2 INCH X 4 INCH CONSTRUCTION GRADE LAMBER POSTS, DRIVEN 1 FOOT INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE WALL STAPLES BETWEEN THE POSTS ON THE SIDES OF THE INLET. ASSEMBLE THE TOP PORTION OF THE 2X4 FRAME AS SHOWN. STRETCH 10 INCH GALVANIZED HARDWARE CLOTH TIGHTLY AROUND THE FRAME AND FASTEN SECURELY. FASTEN GEOTEXTILE SECURELY TO THE HARDWARE CLOTH WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND HARDWARE CLOTH A MINIMUM OF 18 INCHES BELOW THE WIER CREST. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLAPPED AND FOLDED, THEN FASTENED TO THE POST.
- BACKFILL AROUND THE INLET IN LAYERS 4 INCH THICK AND COMPACT UNTIL SOIL IS LEVEL WITH THE NOTCH ELEVATION ON THE END AND TOP ELEVATION ON THE SIDES.
- STORM DRAIN 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 DOWN EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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



CONSTRUCTION SPECIFICATIONS

- USE WOVEN SILT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
- EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.
- FOR TYPE A, USE NOMINAL 2 INCH X 4 INCH CONSTRUCTION GRADE LAMBER POSTS, DRIVEN 1 FOOT INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE WALL STAPLES BETWEEN THE POSTS ON THE SIDES OF THE INLET. ASSEMBLE THE TOP PORTION OF THE 2X4 FRAME AS SHOWN. STRETCH 10 INCH GALVANIZED HARDWARE CLOTH TIGHTLY AROUND THE FRAME AND FASTEN SECURELY. FASTEN GEOTEXTILE SECURELY TO THE HARDWARE CLOTH WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND HARDWARE CLOTH A MINIMUM OF 18 INCHES BELOW THE WIER CREST. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLAPPED AND FOLDED, THEN FASTENED TO THE POST.
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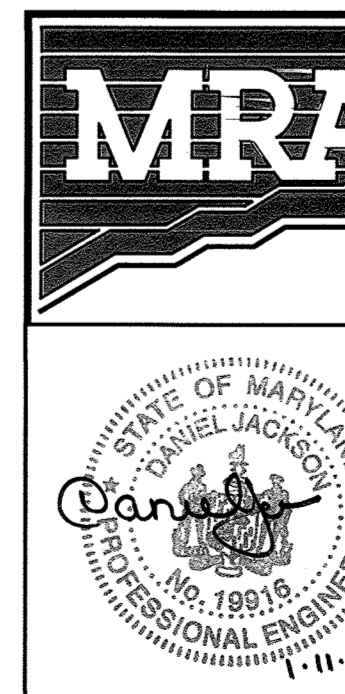
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

OWNER / APPLICANT / DEVELOPER:

DEEP RUN PROPERTY MANAGEMENT, LLC.
ADDRESS: 5240 WEBB COURT
MOOREHEAD CITY, NORTH CAROLINA 28557

CONTACT: GLENN CURTIS
PHONE: (252) 726-6633
EMAIL: GOURTIS1@CC.RR.COM



MORRIS & RITCHIE ASSOCIATES, INC.
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
14280 PARK CENTER DRIVE
LAUREL, MD 20707
(410) 792-9792 / (301) 776-1690
FAX: (410) 792-7395

MRA.GTA.COM
TROTTER'S KNOLL - SECTION II
DEEP RUN PROPERTY

EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

TAX MAP 37 GRIDS 2 PARCEL 753 ZONED: R-SA-8
1ST ELECTION DISTRICT
HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:
		15368 x 06
		SCALE: NO SCALE
		DATE: 6-6-18
		DRAWN BY: JGG
		ENGINEER BY: JGG
		REVIEW BY: TCN
		SHEET: 08 OF 29

REG. STANDARDS AND SPECIFICATIONS	B-4.4 STANDARDS AND SPECIFICATIONS
FOR PERMANENT STABILIZATION	FOR TEMPORARY STABILIZATION
Definition	Definition
To stabilize disturbed soils with permanent vegetation.	To stabilize disturbed soils with vegetation for up to 6 months.
Purpose	Purpose
To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils.	To use fast growing vegetation that provides cover on disturbed soils.
Conditions Where Practice Applies	Conditions Where Practice Applies
Exposed soils where ground cover is needed for 6 months or more.	Exposed soils where ground cover is needed for a period of 6 months or less. For longer duration of time, permanent stabilization practices are required.
Criteria	Criteria
A. Seed Mixtures	
1. General Use	
a. Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. If this summary is not put on the plan and completed, then Table B.4 plant fertilizer and lime rates must be put on the plan.	
b. Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special purposes such as wildlife or aesthetic reasons may be found in USDA-NRCS Technical Field Office Guide, Section 342 - Critical Area Planting.	
c. For sites having disturbed areas over 5 acres, use and show the rates recommended by the soil testing agency.	
d. For areas receiving low maintenance, apply urea from fertilizer (48-0-0) at 3 1/2 pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary.	
2. Turfgrass Mixtures	
a. Areas where turfgrass may be desired include tennis, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.	
b. Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixtures(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary table below is to be filled out by the plan.	
i. Kentucky Bluegrass: Full Sun Mixture. For use in areas that receive intensive management. Certified Kentucky Bluegrass Cultivars Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky Bluegrass cultivars with each ranging from 10 to 25 percent of the total mixture by weight.	
ii. Kentucky Bluegrass/Perennial Ryegrass: Full Sun Mixture. For use in full sun areas where rapid establishment is necessary and where turf will receive medium to intensive management. Certified Kentucky Bluegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky Bluegrass cultivars with each ranging from 10 to 25 percent of the total mixture by weight.	
iii. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture. For use in drought prone areas and/or for medium maintenance in full sun to medium shade. Recommended mixture includes Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.	
iv. Kentucky Bluegrass/Fine Fescue: Shade Mixture. For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf areas. Mixture includes; Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1 1/2 to 3 pounds per 1000 square feet.	
Notes: Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Manual #77, "Turfgrass Cultivar Recommendations for Maryland". Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line.	
c. Seed Types of Seeding for Turf Grasses	
Western MD: March 15 to June 1, August 1 to October 1 (Hardiness Zones: 5b, 6b)	
Central MD: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 5d, 6d)	
Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardiness Zones: 7a, 7b)	
d. Till soil to receive seed by disk or other approved methods to a depth of 2 to 4 inches, level and rake the area to prepare a proper seedbed. Remove stones and debris over 1/4 inch in diameter. The resulting seedbed must be in such condition that future mowing of grasses will occur on a difficulty.	
e. If soil moisture is deficient, supply soil seedings with adequate water for plant growth (1/2 to 1 inch every 3 to 4 days depending on soil security) until they are firmly established. This is especially true when seedlings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.	

Permanent Seeding Summary				Fertilizer Rate (10-20-20)				Lime Rate			
Hardiness Zone (from Figure B.3):		Seed Mixture (from Table B.3):		Application Rate (lb/1000)		Seeding Date		Rate (lb/1000)		Rate (lb/1000)	
No.	Species	Application Rate (lb/1000)	Seeding Date	N	P ₂ O ₅	K ₂ O					
1	T. FESC.	60	5/1-5/15	45	90	90	1/2	1/2	1/2	1/2	1/2
2	K. BLUE	40	5/1-5/15	16-16	16-16	16-16	1/2	1/2	1/2	1/2	1/2

BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAINS											
1) No excess fill, construction material, or debris shall be stockpiled or stored in nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.											
2) Place materials in a location and manner which does not adversely impact surface or subsurface water flow into or out of nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.											
3) Do not use the excavated material as backfill if it contains waste metal products, unsightly debris, toxic material, or any other deleterious substance. If additional backfill is required, use clean material free of waste metal products, unsightly debris, toxic material, or any other deleterious substance.											
4) Place heavy equipment on mats or suitably prepare the equipment to prevent damage to nontidal wetlands, nontidal wetland buffers, waterways, or the 100-year floodplain.											
5) Repair and maintain any serviceable structure or fill so there is no permanent loss of nontidal wetlands, nontidal wetland buffers, or waterways, or permanent modification of the 100-year floodplain in excess of that lost under the originally authorized structure or fill.											
6) Reify any nontidal wetlands, wetland buffers, waterways, or 100-year floodplain temporarily impacted by any construction.											
7) All stabilization in the nontidal wetland and nontidal wetland buffer shall consist of the following species: Annual Ryegrass (<i>Lolium multiflorum</i>), Millet (<i>Setaria italica</i>), Dyer's Woad (<i>Thapsus sp.</i>), and/or Rye (<i>Sorghum sp.</i>). These species will allow for the stabilization of the site while also allowing for the voluntary revegetation of natural wetland species. Other non-perennial vegetation may be acceptable, but must be approved by the Nontidal Wetlands and Waterways Division. Kentucky 31 fence shall not be utilized in wetland or buffer areas. The area should be reseeded and mulched to reduce erosion after construction activities have been completed.											
8) After installation has been completed, make post-construction grades and elevations the same as the original grades and elevations in temporarily impacted areas.											
9) To protect aquatic species, in-stream work is prohibited as determined by the classification of the stream: <ul style="list-style-type: none"> Use I waters: In-stream work shall not be conducted during the period March 1 through June 15, inclusive, during any year. Use III 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. 											
10) Stormwater runoff from impervious surfaces shall be controlled to prevent the washing of debris into the waterway.											
11) Culverts shall be constructed and any riprap placed so as to not obstruct the movement of aquatic species, unless the purpose of the activity is to improve the waterway.											

HOWARD SOIL CONSERVATION DISTRICT

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

John D. Robertson / 16. / 2/13/19
HOWARD SOIL CONSERVATION DISTRICT

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[Signature] / 5/8/2017
CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] / 5.10.19
CHIEF, DEVELOPMENT ENGINEERING DIVISION

[Signature] / 5-21-19
CHIEF, LAND DEVELOPMENT DIVISION

REG. STANDARDS AND SPECIFICATIONS	B-4.3 STANDARDS AND SPECIFICATIONS
FOR SOIL AMENDMENTS (Fertilizer and Lime Specifications)	FOR SEEDING AND MULCHING
Definition	Definition
Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.	The application of seed and mulch to establish vegetative cover.
Purpose	Purpose
Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Mixtures may be substituted for fertilizers with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.	To protect disturbed soils from erosion during and at the end of construction.
Conditions Where Practice Applies	Conditions Where Practice Applies
1. Lime materials must be ground limestone (hydrated or burnt lime) may be substituted except when hydrous lime which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 95 to 100 percent will pass through a #20 mesh sieve.	To the surface of all perimeter controls, slopes, and any disturbed area not under active grading.
2. Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Mixtures may be substituted for fertilizers with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.	
3. Lime materials must be ground limestone (hydrated or burnt lime) may be substituted except when hydrous lime which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 95 to 100 percent will pass through a #20 mesh sieve.	
4. Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disk or other suitable means.	
5. Where the subject is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.	
Criteria	
A. Seeding	
1. Specifications	
a. All seeds must meet the requirements of the Maryland State Seed Law. All seed must be subject to re-seeding by a recognized seed laboratory. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be available upon request to the inspector to verify type of seed and seeding rate.	
b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.	
c. Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. Use four times the recommended rate when hydrous lime. Note: It is very important to keep inoculants as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.	
d. Soil or seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phytotoxic materials.	
2. Application	
a. Dry Seeding: This includes use of conventional grid or broadcast spreading. <ul style="list-style-type: none"> Incorporates seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or other specific seeding summaries. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with a weighted roller to provide good seed to soil contact. 	
b. Drill or Cat/packer Seeding: Mechanized seeders that apply and cover seed with soil. <ul style="list-style-type: none"> All disturbed areas must be stabilized within the time period specified above in accordance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. For topsoil (Sec. B-4.2), permanent seeding (Sec. B-4.3), temporary seeding (Sec. B-4.4) and mulching (Sec. B-4.3). Temporary stabilization with mulch alone can only be applied between the fall and spring seeding dates if the ground is frozen. Incremental stabilization (Sec. B-4.1) specifications shall be followed in areas with 15 or less of soil fill. Stockpiles (Sec. B-4.8) in excess of 20 ft. must be benched with stable outlets. All concentrated flow, steep slope, and highly erodible areas shall receive soil stabilization matting (Sec. B-4.6). 	
c. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer). <ul style="list-style-type: none"> If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of soluble nitrogen; P₂O₅ (phosphorus), 200 pounds per acre; K₂O (potassium), 200 pounds per acre. Lime: Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding. Mix seed and fertilizer on site and seed immediately and without interruption. 	
iv. When hydroseeding do not incorporate seed into the soil.	
B. Mulching	
1. Mulch Materials (in order of preference) <ul style="list-style-type: none"> Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably bright in color. Straw is to be free of noxious weed seeds as specified in the Maryland Seed Law and not musty, moldy, colored, degraded, or otherwise unfit. Note: Only straw straw mulch is to be used where one species of grass is desired. Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state. WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry. WCFM, including dyed, must contain no germination or growth inhibiting factors. WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material must form a bottom-like ground cover, on application, having moisture absorption and permeation properties that must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings. WCFM material must not contain elements or compounds at concentration levels that will be phytotoxic. WCFM must conform to the following physical properties: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 1.6 percent maximum and water holding capacity of 90 percent minimum. 	
2. Application <ul style="list-style-type: none"> Apply mulch to all seeded areas immediately after seeding. When straw mulch is used, spread it over all seeded areas at the rate of 2 tons per acre to a uniform loose depth of 1 to 2 inches. Apply mulch to achieve a uniform distribution and depth so that the soil surface is not exposed. When using a mulch anchoring tool, increase the application rate to 2.5 tons per acre. Wood cellulose fiber used as mulch must be applied at a net dry weight of 1500 pounds per acre. Mix the wood cellulose fiber with water to obtain a mixture with a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water. 	
3. Anchoring <ul style="list-style-type: none"> Perform mulch anchoring immediately following application of mulch to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon the size of the area and erosion hazard: <ul style="list-style-type: none"> A mulch anchoring tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of 2 inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should follow the contour. Wood cellulose fiber may be used for anchoring straw. Apply the fiber binder at a net dry weight of 750 pounds per acre. Mix the wood cellulose fiber with water at a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water. Synthetic binders such as Acrylic DLR (Agro-Tack), DCA-70, Petrosol, Terra Tex II, Terra Tack AK or other approved equal may be used. Follow application rates as specified by the manufacturer. Application of liquid binders needs to be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks. Use of asphalt binders is strictly prohibited. Lightweight plastic netting may be applied over the mulch according to manufacturer recommendations. Netting is usually available in rolls 4 to 15 feet wide and 30 to 3,000 feet long. 	

HOWARD SOIL CONSERVATION DISTRICT (HSCD) STANDARD SEDIMENT CONTROL NOTES	
1. A pre-construction meeting must occur with the Howard County Department of Public Works, Construction Inspection Division (CID, 410-311-185) after the future LOD and protected areas are marked clearly in the field. A minimum of 48 hour notice to CID must be given at the following stages: <ul style="list-style-type: none"> Prior to the start of earth disturbance. Upon completion of the installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading. Prior to the start of another phase of construction or opening of another grading unit. Prior to the removal or modification of sediment control practices. 	
2. All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, and revisions thereto.	
3. Following initial soil disturbance or re-disturbance, permanent or temporary stabilization is required within three (3) calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes steeper than 1:horizontal to 1:vertical (3:1) and seven (7) calendar days as to all other disturbed areas on the project site except for those areas under active grading.	
4. All disturbed areas must be stabilized within the time period specified above in accordance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. For topsoil (Sec. B-4.2), permanent seeding (Sec. B-4.3), temporary seeding (Sec. B-4.4) and mulching (Sec. B-4.3). Temporary stabilization with mulch alone can only be applied between the fall and spring seeding dates if the ground is frozen. Incremental stabilization (Sec. B-4.1) specifications shall be followed in areas with 15 or less of soil fill. Stockpiles (Sec. B-4.8) in excess of 20 ft. must be benched with stable outlets. All concentrated flow, steep slope, and highly erodible areas shall receive soil stabilization matting (Sec. B-4.6).	
5. All sediment control structures are to remain in place, and are to be maintained in operative condition until permission for their removal has been obtained from the CID.	
6. Site Analysis: <ul style="list-style-type: none"> Total Area of Site: 11.5 Acres Area Disturbed: 3.0 Acres Area to be seeded or paved: 1.3 Acres Area to be vegetatively stabilized: 1.7 Acres Total Cat: 13,821 Sq. Yds. Total Fill: 10,815 Cu. Yds. 	
7. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.	
8. Additional sediment control must be provided, if deemed necessary by the CID. The site and all controls shall be inspected by the contractor weekly and the next day after each rain event. A written report by the contractor, made available upon request, is part of every inspection and should include: <ul style="list-style-type: none"> Inspection date Inspection type (routine, pre-storm event, during rain event) Name and title of inspector Weather information (current conditions as well as time and amount of last recorded precipitation) Brief description of project's status (e.g., percent complete) and/or current activities Evidence of sediment discharges Identification of plan deficiencies Identification of sediment controls that require maintenance Identification of missing or improperly installed sediment controls Compliance status regarding the sequence of construction and stabilization requirements Photographs Monitoring/sampling Maintenance and corrective action performed Other inspection items as required by the General Permit for Stormwater Associated with Construction Activities (NPDES, MDE). 	
9. Trenches for the construction of utilities is limited to three pipe lengths or that which can and shall be back-filled and stabilized by the end of each workday, whichever is shorter.	
10. Any major changes or revisions to the plan or sequence of construction must be reviewed and approved by the HSCD prior to proceeding with construction. Minor revisions may be allowed by the CID per the list of HSCD-approved field changes.	
11. Disturbance shall not occur outside the L.O.D. A project is to be sequenced so that grading activities begin on one grading unit (maximum acreage of 20 ac. per grading unit) at a time. Work may proceed to subsequent grading units when at least 50 percent of the disturbed area in the preceding grading unit has been stabilized and approved by the CID. 100% erosion control must be installed and approved by the HSCD, no more than 30 acres cumulatively may be disturbed at a given time.	
12. Wash water from any equipment, vehicles, wheels, pavement, and other sources must be treated in a sediment basin or other approved washout structure.	
13. Topsoil shall be stockpiled and preserved on-site for redistribution onto final grade.	
14. All Silt Fence and Super Silt Fence shall be placed pond-on-the-contour, and be imbricated at 25' minimum intervals, with lower ends curled up by 2' in elevation.	
15. Stream channels must not be disturbed during the following restricted time periods (inclusive): <ul style="list-style-type: none"> Use II and IP March 1 - June 15 Use III and IIP October 1 - April 30 Use IV March 1 - May 31 	
16. A copy of this plan, the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, and associated permits shall be on-site and available when the site is active.	

FOR UTILITY WORK ONLY OR FOR OFF-SITE UTILITY WORK

- PLACE ALL EXCAVATED MATERIAL ON HIGH SIDE OF TRENCH.
- ONLY DO AS MUCH WORK AS CAN BE DONE IN ONE DAY SO BACKFILLING FINAL GRADING, AND SEEDING AND MULCHING CAN OCCUR.
- ANY SEDIMENT MEASURES DISTURBED BY CONSTRUCTION WILL BE REPAIRED THE SAME DAY.

STOCKPILE NOTES

- NO STOCKPILING ALLOWED ON ASPHALT.
- ALL STOCKPILES LEFT AT THE END OF THE DAY NEED TO BE STABILIZED UNTIL THE NEXT REDISTURBANCE.

ENGINEER'S CERTIFICATE

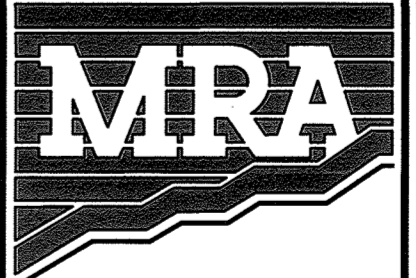
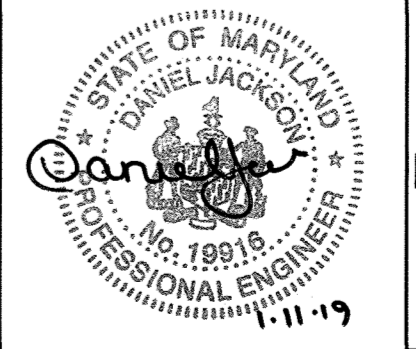
"I HEREBY CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

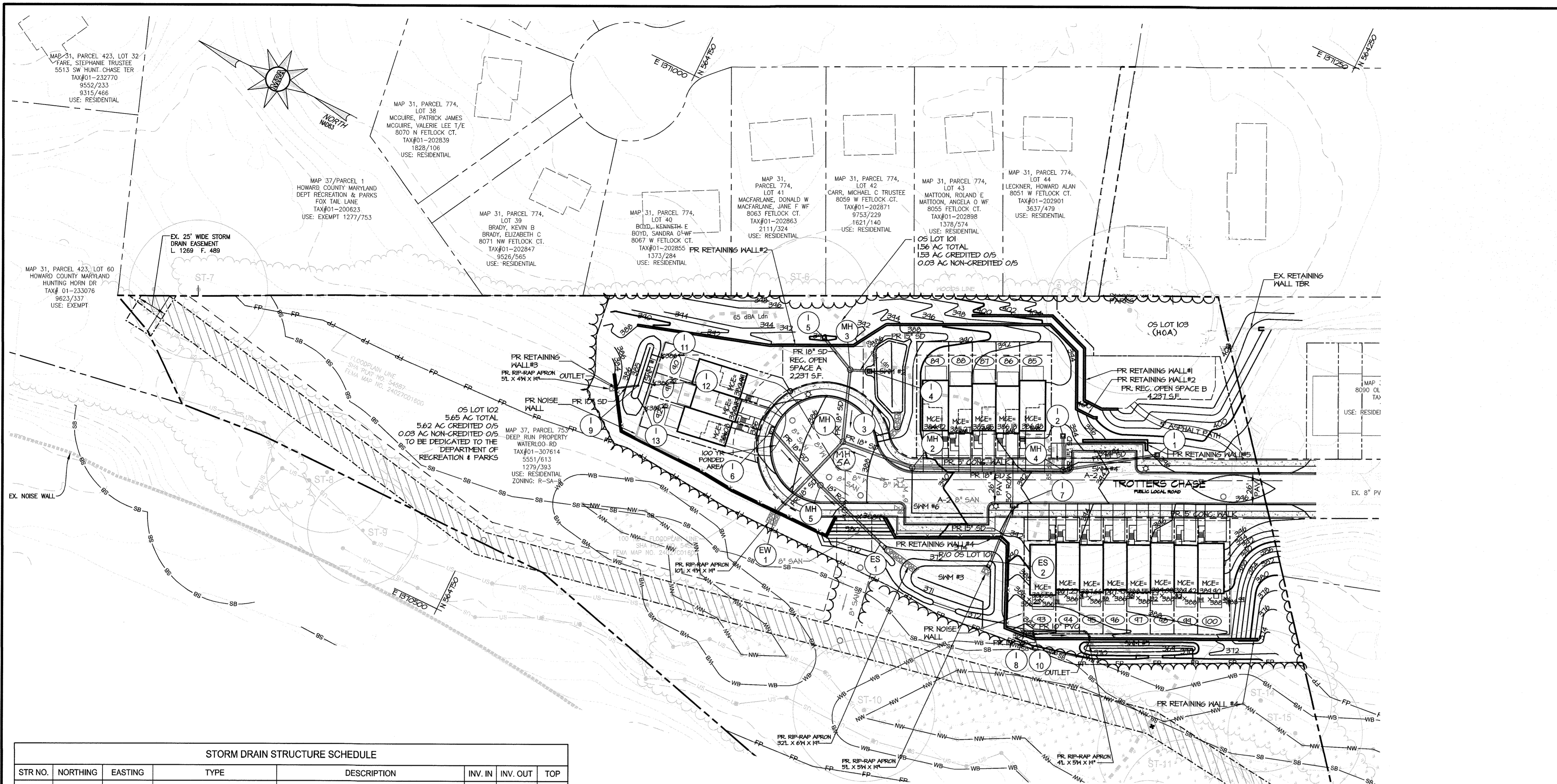
Daniel Jackson / 8/31/18
SIGNATURE OF ENGINEER / DATE
DANIEL JACKSON P.E. #19916

DEVELOPER'S CERTIFICATE

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

Glenn Curtis / 8-29-2018
SIGNATURE OF DEVELOPER / DATE
GLENN CURTIS

	MORRIS & RITCHE ASSOCIATES, INC. ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS 14280 PARK CENTER DRIVE LAUREL, MD 20707 (410) 792-9792 / (301) 776-1690 FAX: (410) 792-7395 MRAGTA.COM																								
	TROTTER'S KNOLL - SECTION II DEEP RUN PROPERTY EROSION AND SEDIMENT NOTES AND DETAILS																								
MD PROFESSIONAL CERTIFICATION: 	I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19916, EXPIRATION DATE: 01/14/2021.																								
OWNER / APPLICANT / DEVELOPER : DEEP RUN PROPERTY MANAGEMENT, LLC. ADDRESS: 5240 WEBB COURT MOOREHEAD CITY, NORTH CAROLINA 28557 CONTACT: GLENN CURTIS PHONE: (252) 726-6633 EMAIL: GCURTIS@EC.RR.COM	<table border="1"> <thead> <tr> <th>DATE</th> <th>REVISIONS</th> <th>JOB NO.:</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>15368 x 08</td> </tr> <tr> <td></td> <td></td> <td>SCALE: NO SCALE</td> </tr> <tr> <td></td> <td></td> <td>DATE: 6-6-18</td> </tr> <tr> <td></td> <td></td> <td>DRAWN BY: JUC</td> </tr> <tr> <td></td> <td></td> <td>DESIGN BY: JUC</td> </tr> <tr> <td></td> <td></td> <td>REVIEW BY: TCN</td> </tr> <tr> <td></td> <td></td> <td>SHEET: 09 OF 29</td> </tr> </tbody> </table>	DATE	REVISIONS	JOB NO.:			15368 x 08			SCALE: NO SCALE			DATE: 6-6-18			DRAWN BY: JUC			DESIGN BY: JUC			REVIEW BY: TCN			SHEET: 09 OF 29
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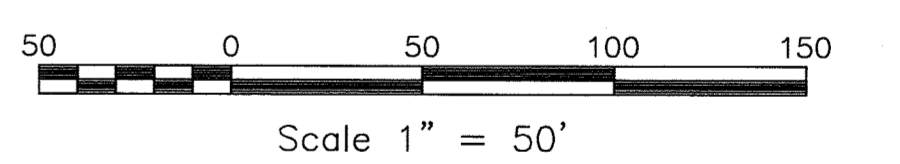
STORM DRAIN PLAN

SCALE: 1"=50'

LEGEND

- EX. PROPERTY LINE
- EX. ADJACENT PROPERTY LINE
- EX. RIGHT OF WAY
- EX. EASEMENT
- EX. ZONING LINE
- EX. CONCRETE
- EX. PAVEMENT
- EX. ROAD CENTERLINE
- EX. FENCE
- EX. OVERHEAD LINE
- EX. WATER LINE
- EX. SEWER LINE
- EX. STREAM
- EX. STREAM BUFFER
- EX. TREE LINE
- EX. GUARD RAIL
- EX. ELECTRIC CONDUIT
- EX. LIGHT POLES
- EX. GAS LINE
- EX. STORM DRAIN
- EX. CONDUIT
- EX. FIBER OPTIC
- EX. TV LINE
- EX. ELECTRIC MANHOLE
- EX. TELEPHONE MANHOLE
- EX. BORING LOCATION
- EX. NON TIDAL WETLANDS
- EX. NON TIDAL WETLANDS
- EX. 25' WETLAND BUFFER
- EX. FLOODPLAIN
- EX. WATERS OF THE US
- PR. RIGHT OF WAY
- PR. LOT LINE/PARCEL LINE
- PR. EASEMENT
- PR. BUILDING
- PR. CURB & GUTTER
- PR. RETAINING WALL
- PR. ROAD CENTER LINE
- PR. CONC SIDEWALK
- PR. REC OPEN AREA
- PR. TREE LINE
- PR. HANDICAP PARKING
- PR. LOT NUMBER
- PR. UNIT ADDRESS
- PR. PARKING SPACE COUNT
- PR. CURB RADIUS (LED=100 COLONIAL) (LED=100 COLONIAL) (LED=100 COLONIAL)
- PR. SANITARY LINE
- PR. STORM DRAIN
- PR. WATER LINE
- PR. FIRE HYDRANT
- PR. WATER VALVE
- PR. SINGLE HOUSE CONNECTION
- PR. DOUBLE HOUSE CONNECTION
- PR. MICRO-BIORETENTION FACILITY (M-6)
- PR. FOREST CONSERVATION AREA SIGN
- PR. PUBLIC STREET TREE MAINTENANCE EASEMENT
- UTILITY EASEMENT
- PR. PUBLIC SIDEWALK, UTILITY & PARKING EASEMENT
- PR. OPEN SPACE NON-CREDITED

STORM DRAIN STRUCTURE SCHEDULE							
STR NO.	NORTHING	EASTING	TYPE	DESCRIPTION	INV. IN	INV. OUT	TOP
ES 1	564,436.23	1,370,713.47	HOWARD CO STD DET D-5.51	18" CONCRETE END SECTION	373.90		375.69
ES 2	564,345.21	1,370,740.41	HOWARD CO STD DET D-5.51	15" CONCRETE END SECTION	371.25		372.77
EW 1	564,527.21	1,370,698.13	HOWARD CO STD DET D-5.21	TYPE 'C' ENDWALL	371.00		373.21
I 1	564,257.73	1,370,882.44	HOWARD CO STD DET D-4.22	TYPE 'S' INLET		389.59	396.58
I 2	564,336.24	1,370,882.09	HOWARD CO STD DET D-4.22	TYPE 'S' INLET		386.64	393.83
I 3	564,472.72	1,370,794.75	MD SHA STANDARD NO MD-374.68	PRECAST COG/COS OPENING		387.62	388.44
I 4	564,507.71	1,370,839.92	HOWARD CO STD DET D-4.22	TYPE 'S' INLET	381.83	375.00	385.99
I 5	564,554.29	1,370,848.54	HOWARD CO STD DET D-4.14	YARD INLET		381.98	390.00
I 6	564,560.27	1,370,759.28	HOWARD CO STD DET D-4.01	TYPE A-5 INLET PRECAST		380.00	385.59
I 7	564,348.02	1,370,791.41	HOWARD CO STD DET D-4.01	TYPE A-5 INLET PRECAST		373.42	391.96
I 8	564,293.77	1,370,699.79	10 INCH	NYLOPLAST DOME LIGHT-DUTY GRATE ON DRAIN BASIN		371.12	384.00
I 9	564,678.81	1,370,743.75	10 INCH	NYLOPLAST DOME LIGHT-DUTY GRATE ON DRAIN BASIN	381.83	381.00	386.00
I 10	564,287.03	1,370,703.00	10 INCH	NYLOPLAST DOME LIGHT-DUTY GRATE ON DRAIN BASIN	370.87	370.87	384.00
I 11	564,670.10	1,370,773.89	8 INCH	NYLOPLAST DOME LIGHT-DUTY GRATE ON DRAIN BASIN		385.15	386.50
I 12	564,666.52	1,370,750.11	8 INCH	NYLOPLAST DOME LIGHT-DUTY GRATE ON DRAIN BASIN		385.15	386.50
I 13	564,663.19	1,370,727.84	8 INCH	NYLOPLAST DOME LIGHT-DUTY GRATE ON DRAIN BASIN		385.15	386.65
MH 1	564,502.00	1,370,776.40	HOWARD CO STD DET G-5.12	PRECAST MANHOLE-STANDARD 4'-0"	373.10 373.00	372.90	387.02
MH 2	564,439.75	1,370,782.37	HOWARD CO STD DET G-5.12	PRECAST MANHOLE-STANDARD 4'-0"	386.64 376.00	375.90	389.84
MH 3	564,523.04	1,370,833.72	HOWARD CO STD DET G-5.12	PRECAST MANHOLE-STANDARD 4'-0"	379.00 374.50	374.00	387.23
MH 4	564,323.78	1,370,836.18	HOWARD CO STD DET G-5.12	PRECAST MANHOLE-STANDARD 4'-0"	390.00 385.64 385.64	379.74	393.36
MH 5	564,503.30	1,370,735.15	HOWARD CO STD DET G-5.12	PRECAST MANHOLE-STANDARD 4'-0"	377.23	377.01	386.73
MH 5A	564,474.74	1,370,725.92	HOWARD CO STD DET G-5.12	PRECAST MANHOLE-STANDARD 4'-0"	375.68	375.46	386.23



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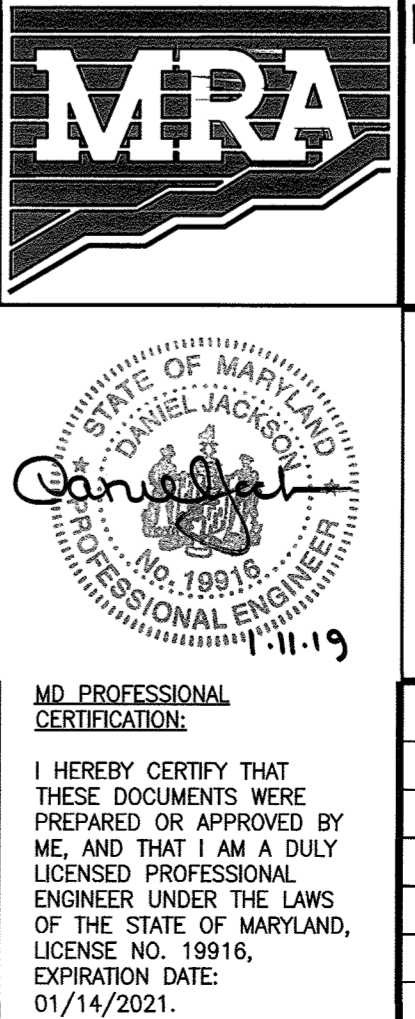
[Signature] 5/8/2019
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 5-10-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 5-21-19
CHIEF, LAND DEVELOPMENT DIVISION DATE

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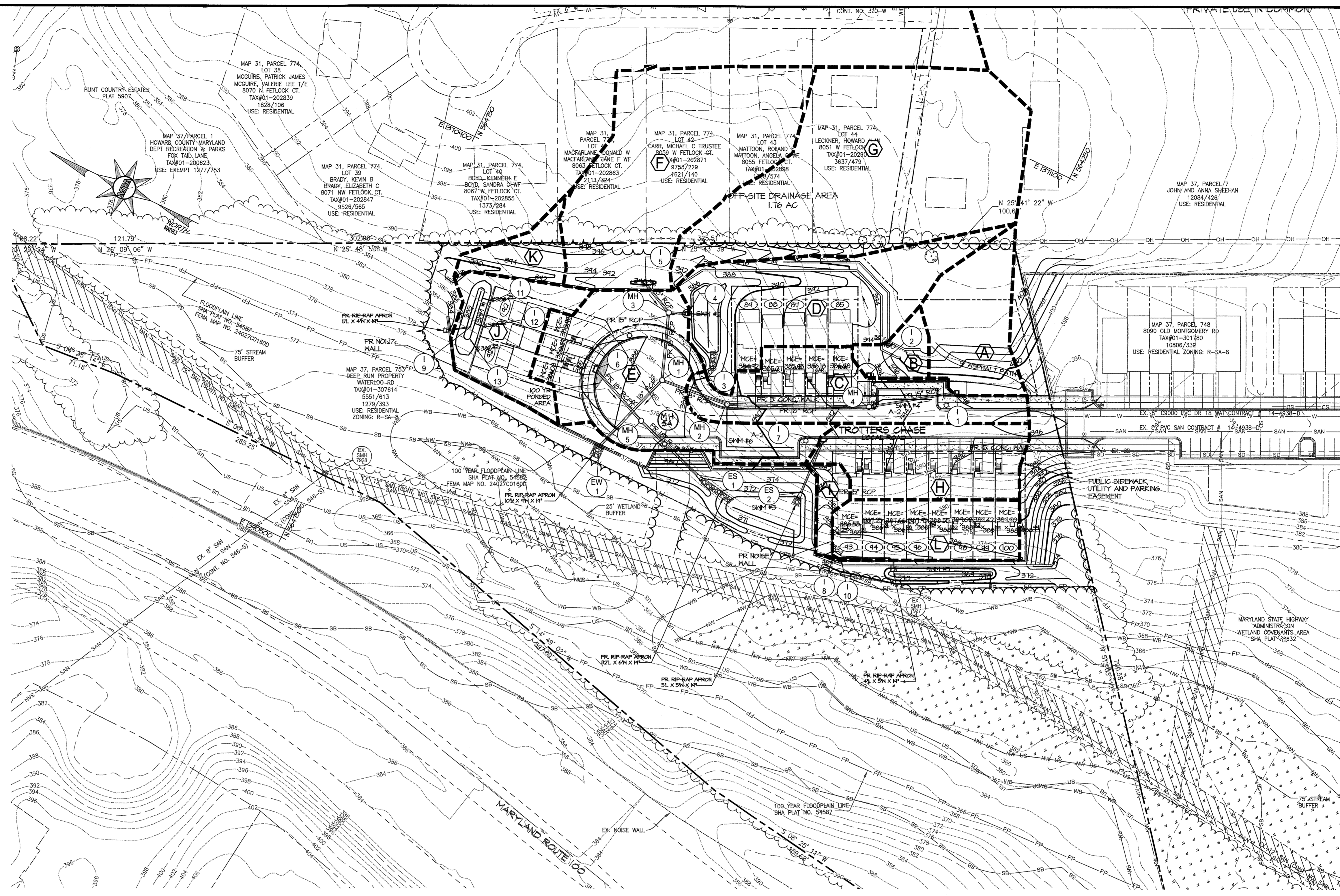
TROTTER'S KNOLL - SECTION II
DEEP RUN PROPERTY
STORM DRAIN PLAN

TAX MAP 37 GRIDS 2 PARCEL 753 ZONED: R-SA-8
1ST ELECTION DISTRICT
HOWARD COUNTY, MD 21043

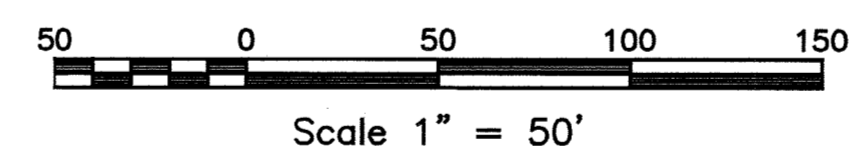
DATE	REVISIONS	JOB NO.:	15368 x 06
		SCALE:	1" = 50'
		DATE:	6-6-18
		DRAWN BY:	JJG
		DESIGN BY:	JJG
		REVIEW BY:	DJ
		SHEET:	10 OF 29

LEGEND

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- EX. ADJACENT PROPERTY LINE
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- PR. CONC SIDEWALK
- PR. REC. OPEN AREA
- PR. STORM DRAIN
- PR. DRAINAGE DIVIDE
- PR. DRAINAGE AREA



STORM DRAIN DRAINAGE AREA MAP
SCALE: 1"=50'



RUNOFF COEFFICIENT 'C' (Less than 25 years)

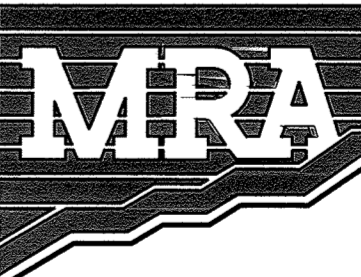
Drainage Area No.	A (Acres)	CW
A	0.22	0.35
I-1		0.84
C	0.31	0.43
I-3		0.78
D	0.45	0.42
I-4		0.38
E	0.48	0.85
I-6		0.43
F	0.66	0.43
I-5		0.21
G	0.88	0.35
I-7		0.09
H	0.26	0.69
I-8		0.21
I	0.04	0.35
I-9		0.09
J	0.21	0.35
I-10		0.35
B	0.09	0.35
I-2	0.06	0.35

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[Signature] 5/6/2019
 CHIEF, BUREAU OF HIGHWAYS DATE

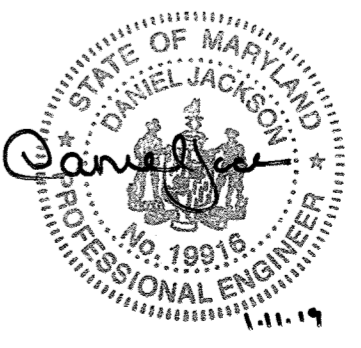
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[Signature] 5-10-19
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 5-21-19
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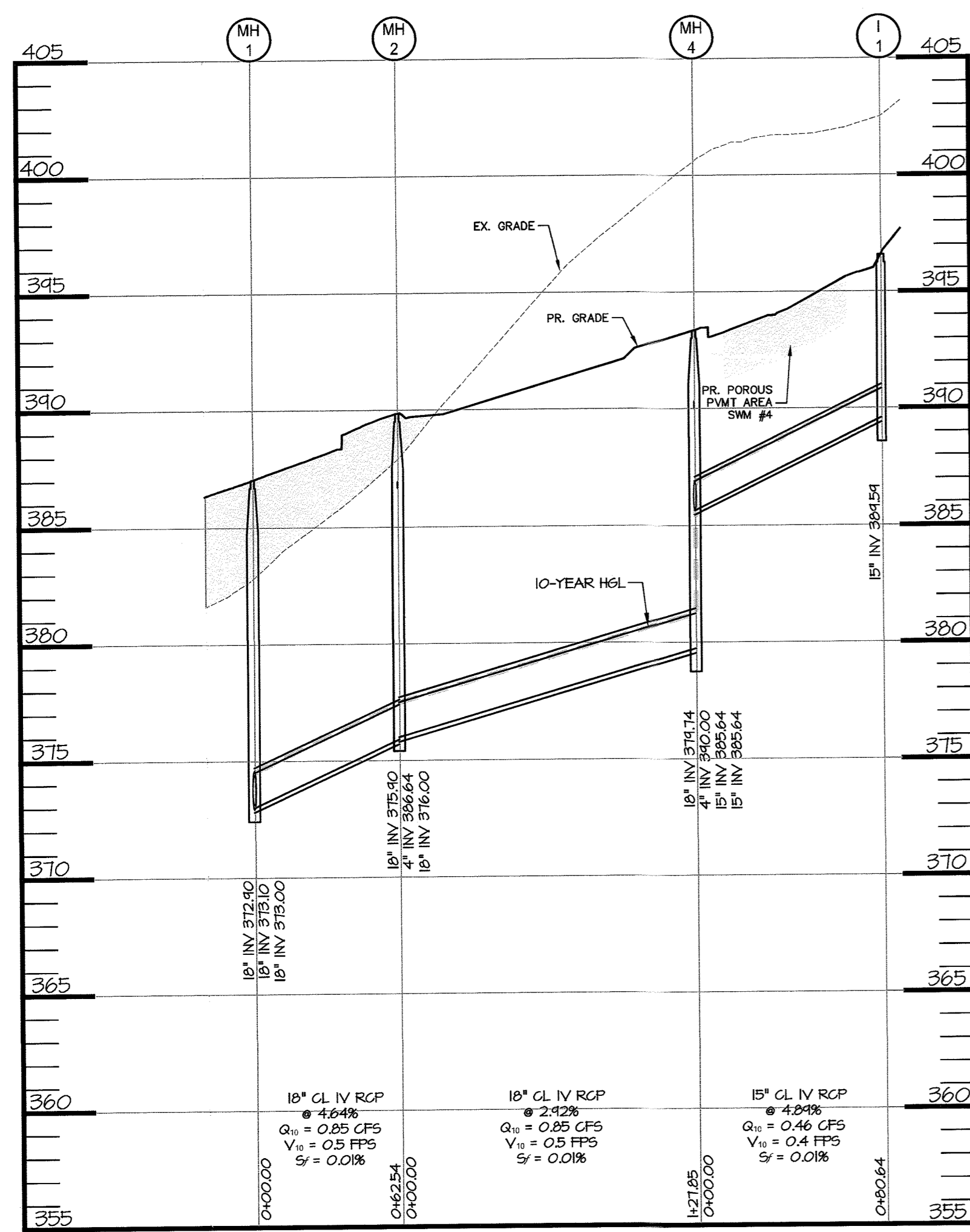


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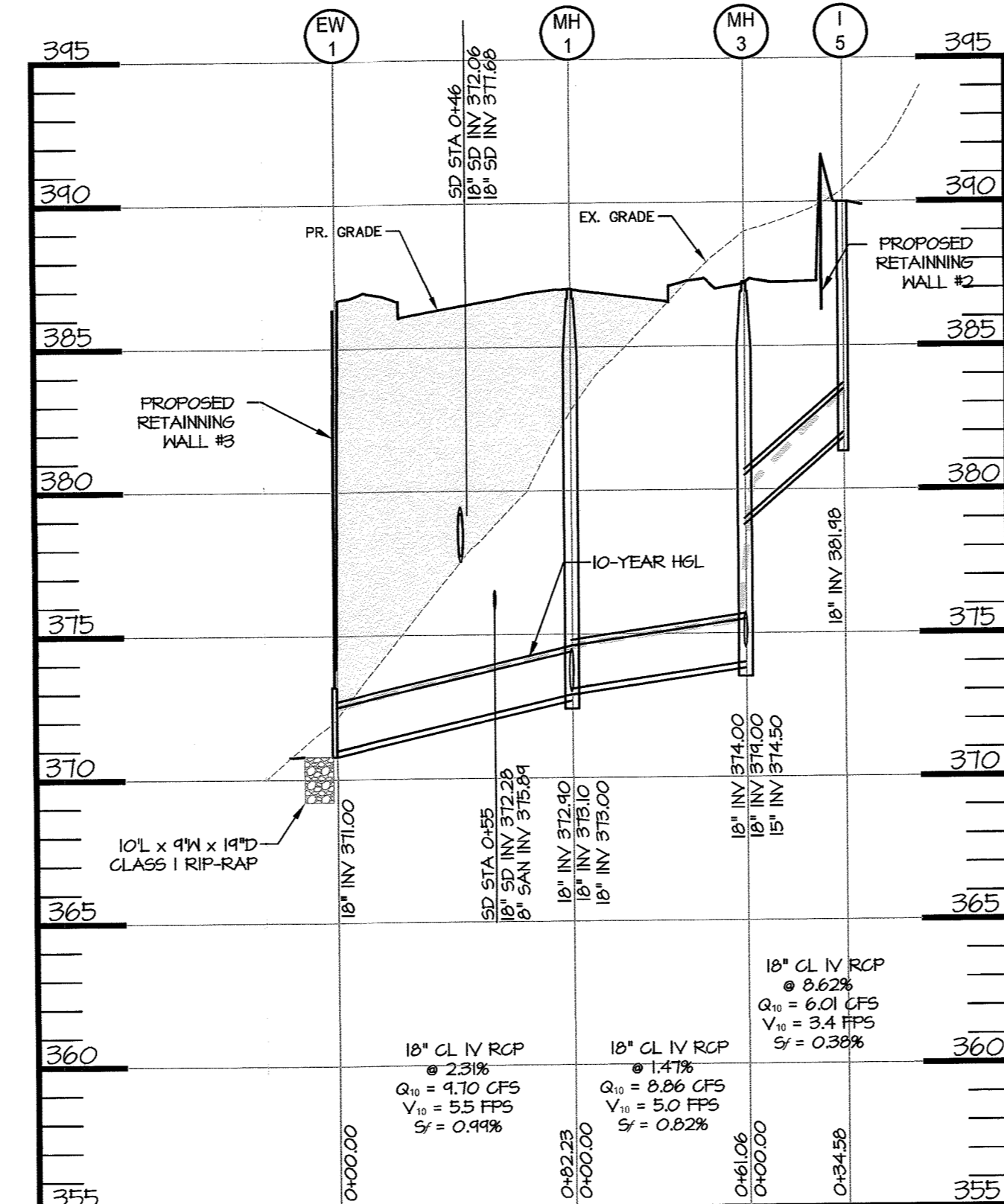


TROTTER'S KNOLL - SECTION II
 DEEP RUN PROPERTY
 STORM DRAIN DRAINAGE AREA MAP
 TAX MAP 37 GRIDS 2 PARCEL 753 ZONED: R-SA-8
 1ST ELECTION DISTRICT
 HOWARD COUNTY, MD 21043

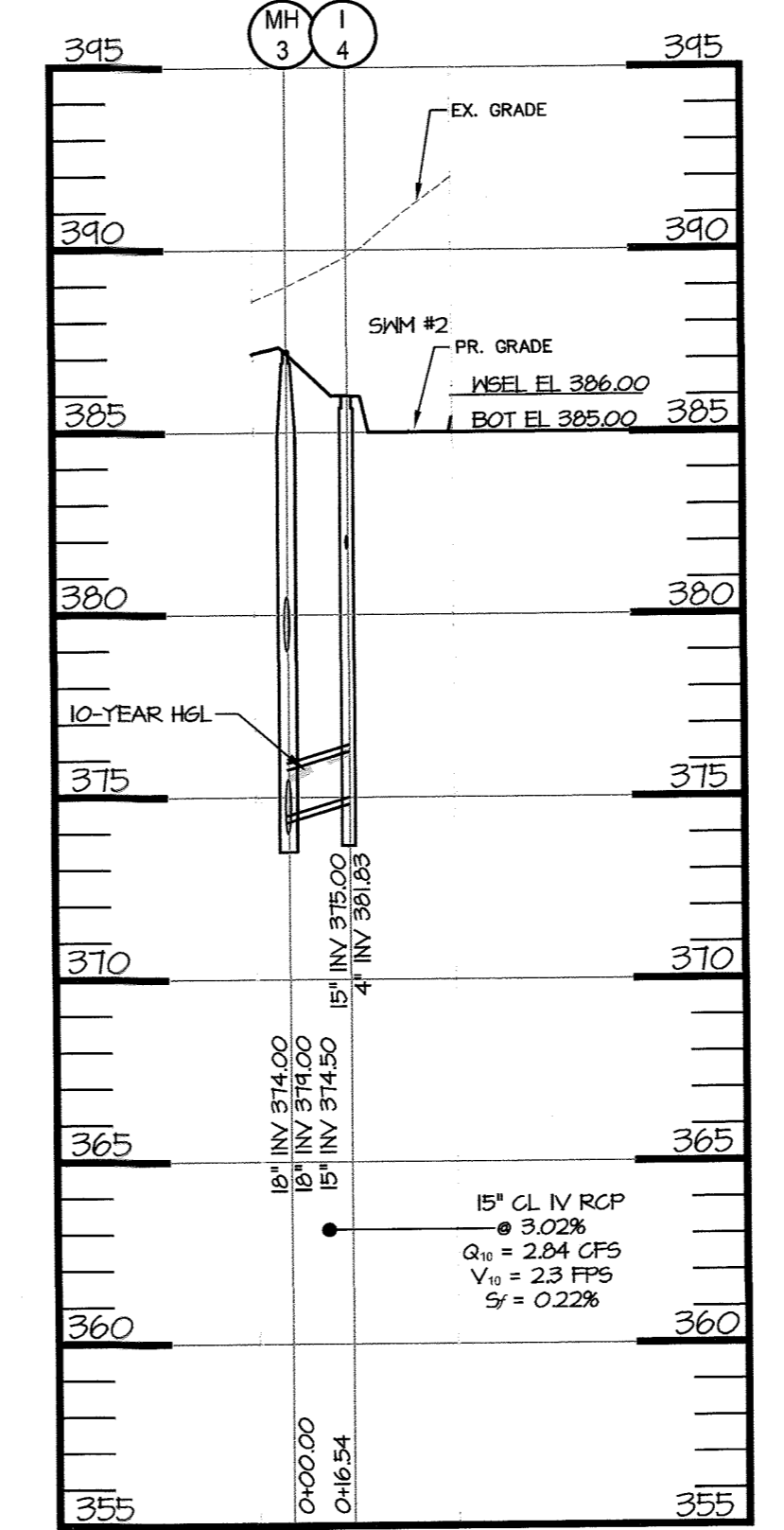
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		SCALE: 1" = 50'
		DATE: 6-6-18
		DRAWN BY: JUG
		DESIGN BY: JUG
		REVIEW BY: DJ
		SHEET: 11 OF 29



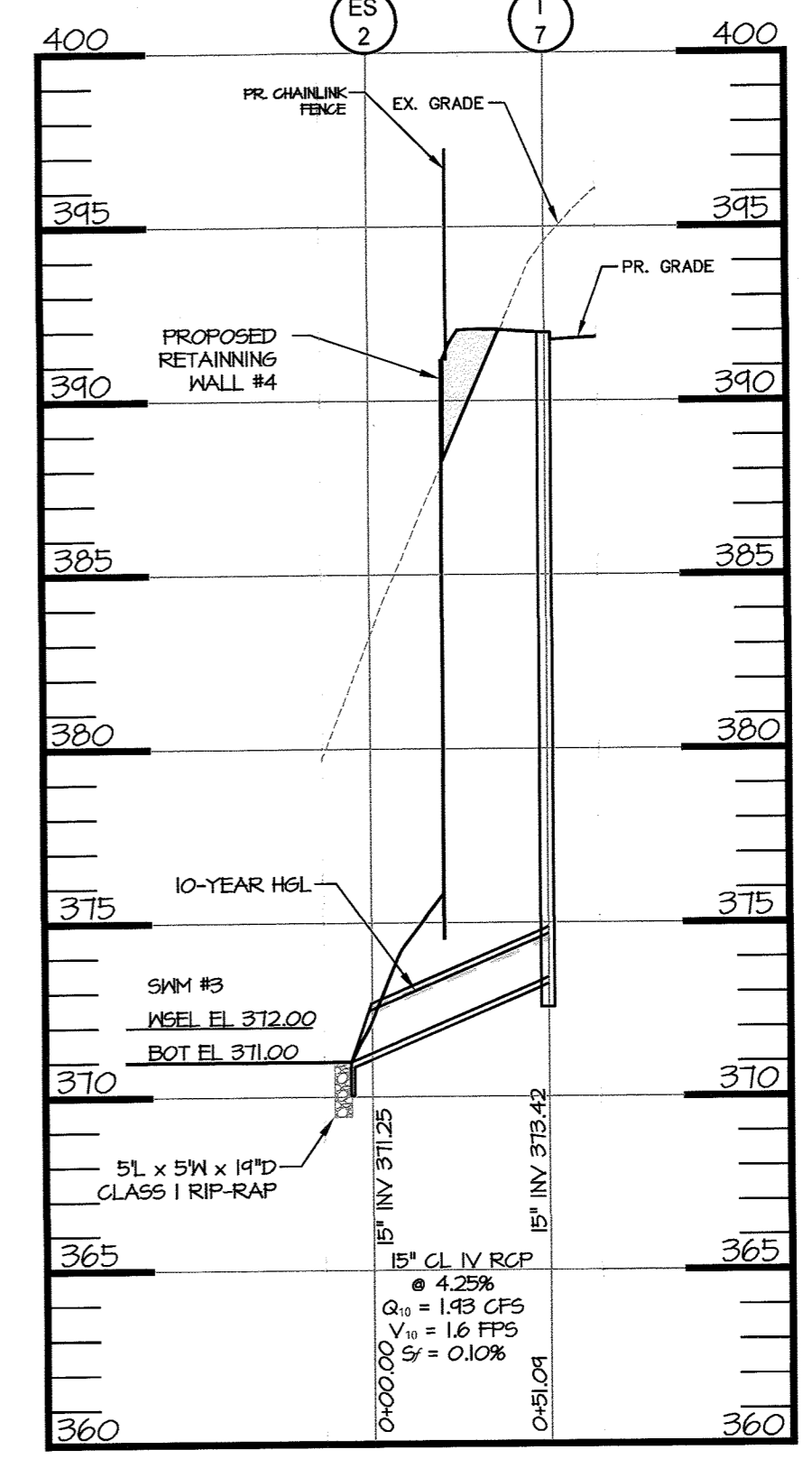
STORM DRAIN I-1 TO MH-1 PROFILE
SCALE: H: 1"=50'
V: 1"=5'



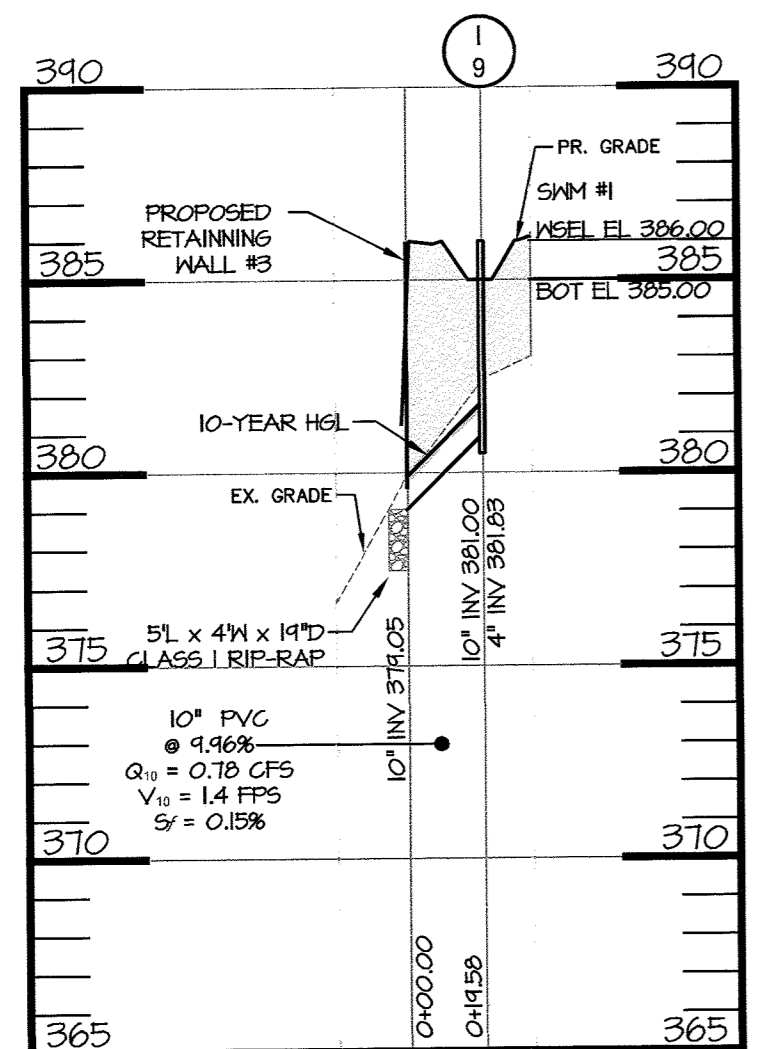
STORM DRAIN I-5 TO EW-1 PROFILE
SCALE: H: 1"=50'
V: 1"=5'



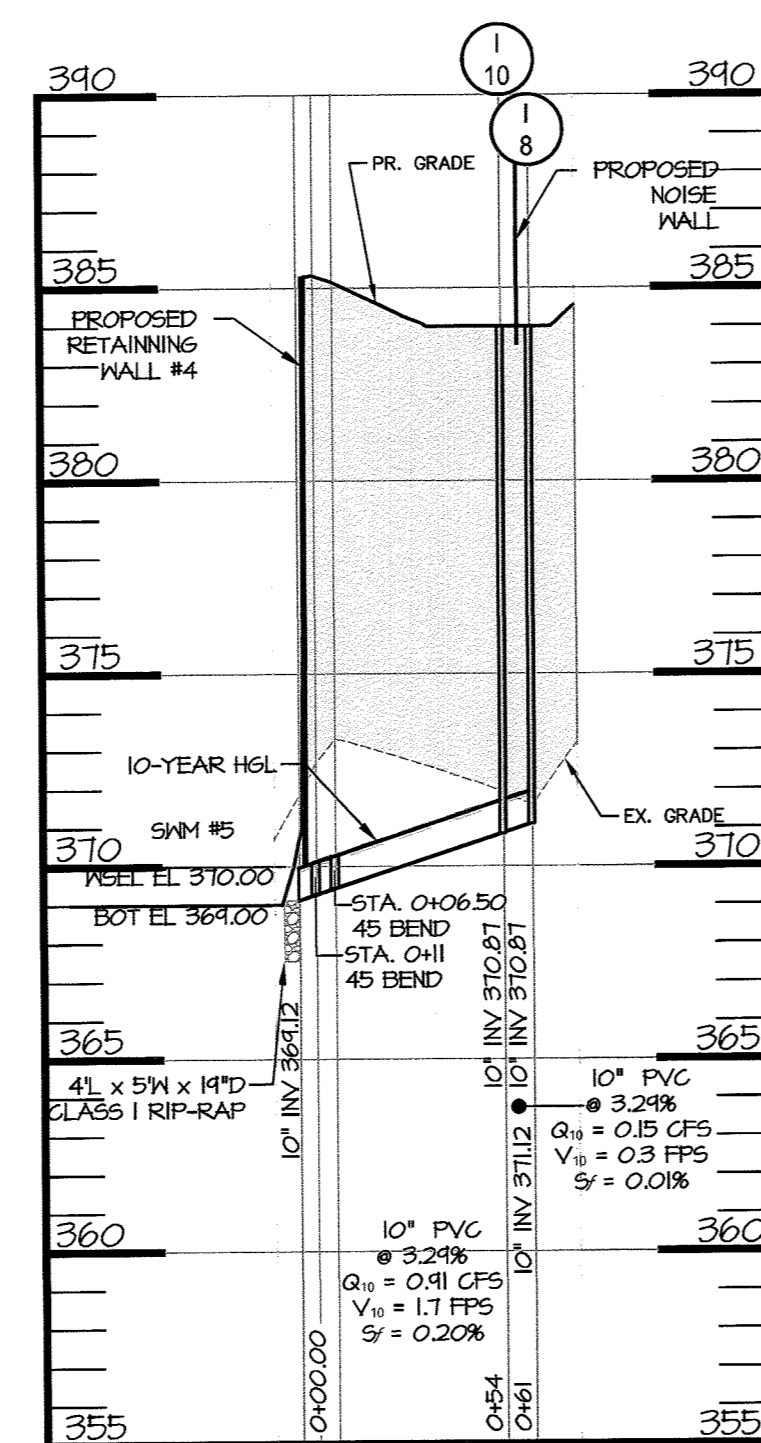
STORM DRAIN I-4 TO MH-3 PROFILE
SCALE: H: 1"=50'
V: 1"=5'



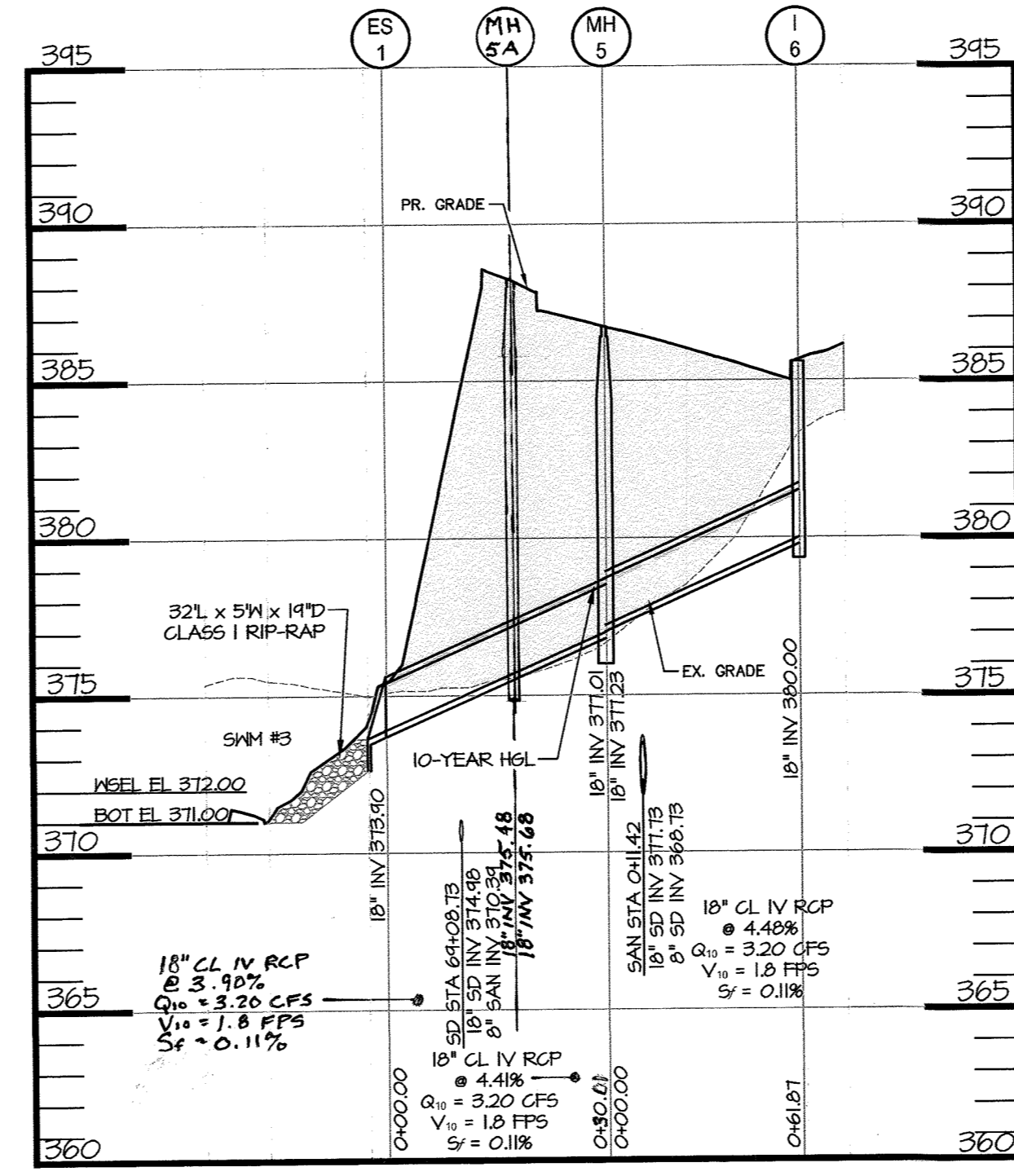
STORM DRAIN I-7 TO ES-2 PROFILE
SCALE: H: 1"=50'
V: 1"=5'



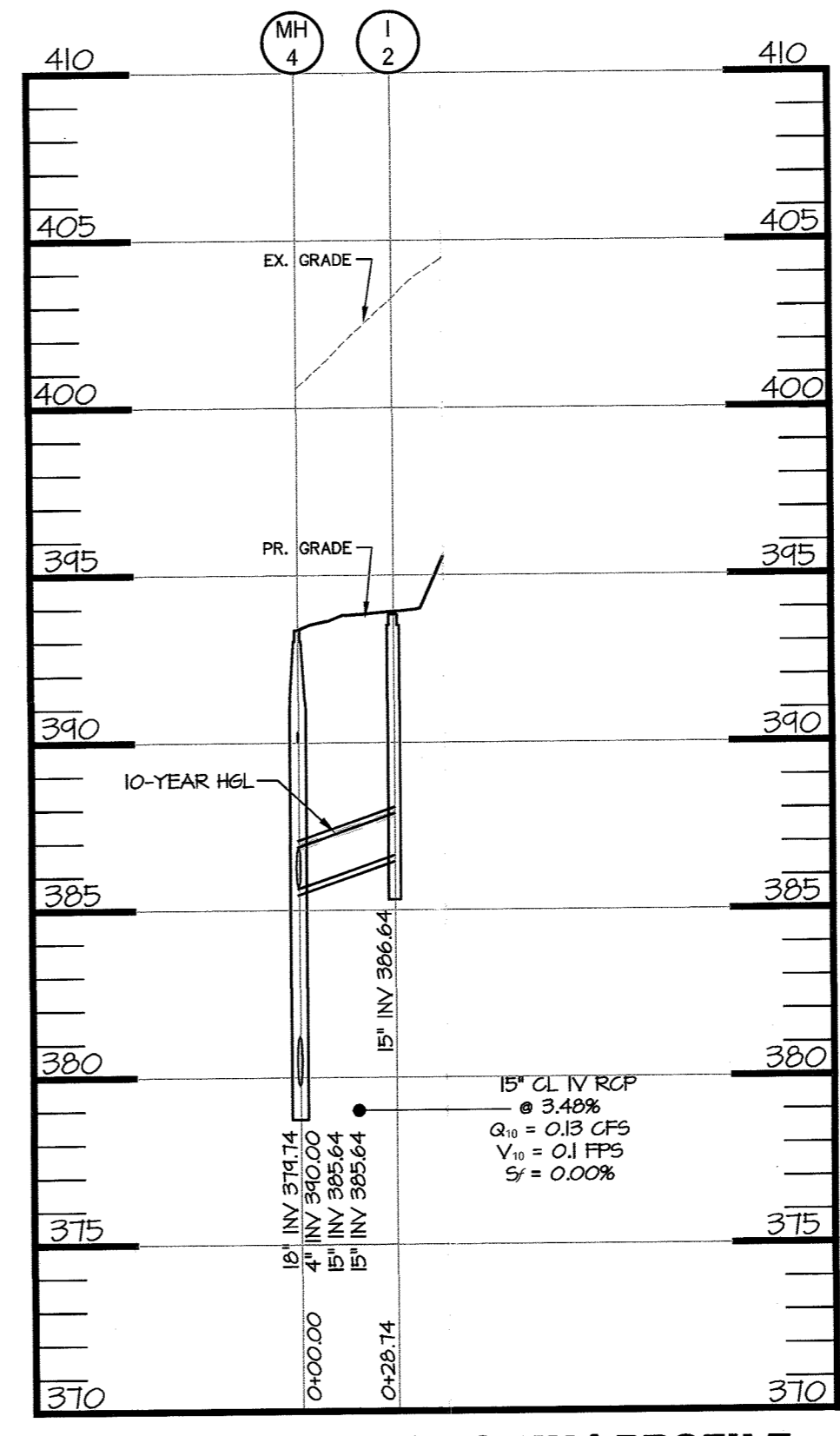
STORM DRAIN I-9 TO RETAINING WALL #3 PROFILE
SCALE: H: 1"=50'
V: 1"=5'



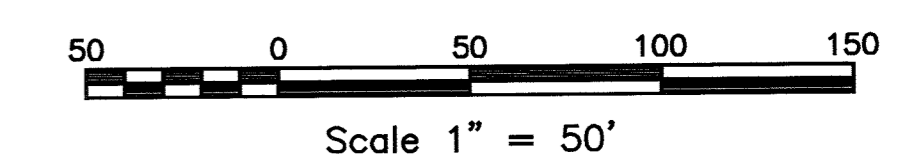
STORM DRAIN I-8 TO RETAINING WALL #4 PROFILE
SCALE: H: 1"=50'
V: 1"=5'



STORM DRAIN I-6 TO ES-1 PROFILE
SCALE: H: 1"=50'
V: 1"=5'



STORM DRAIN I-2 TO MH4 PROFILE
SCALE: H: 1"=50'
V: 1"=5'



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 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 5-10-19
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
 [Signature] 5-21-19
 CHIEF, LAND DEVELOPMENT DIVISION DATE

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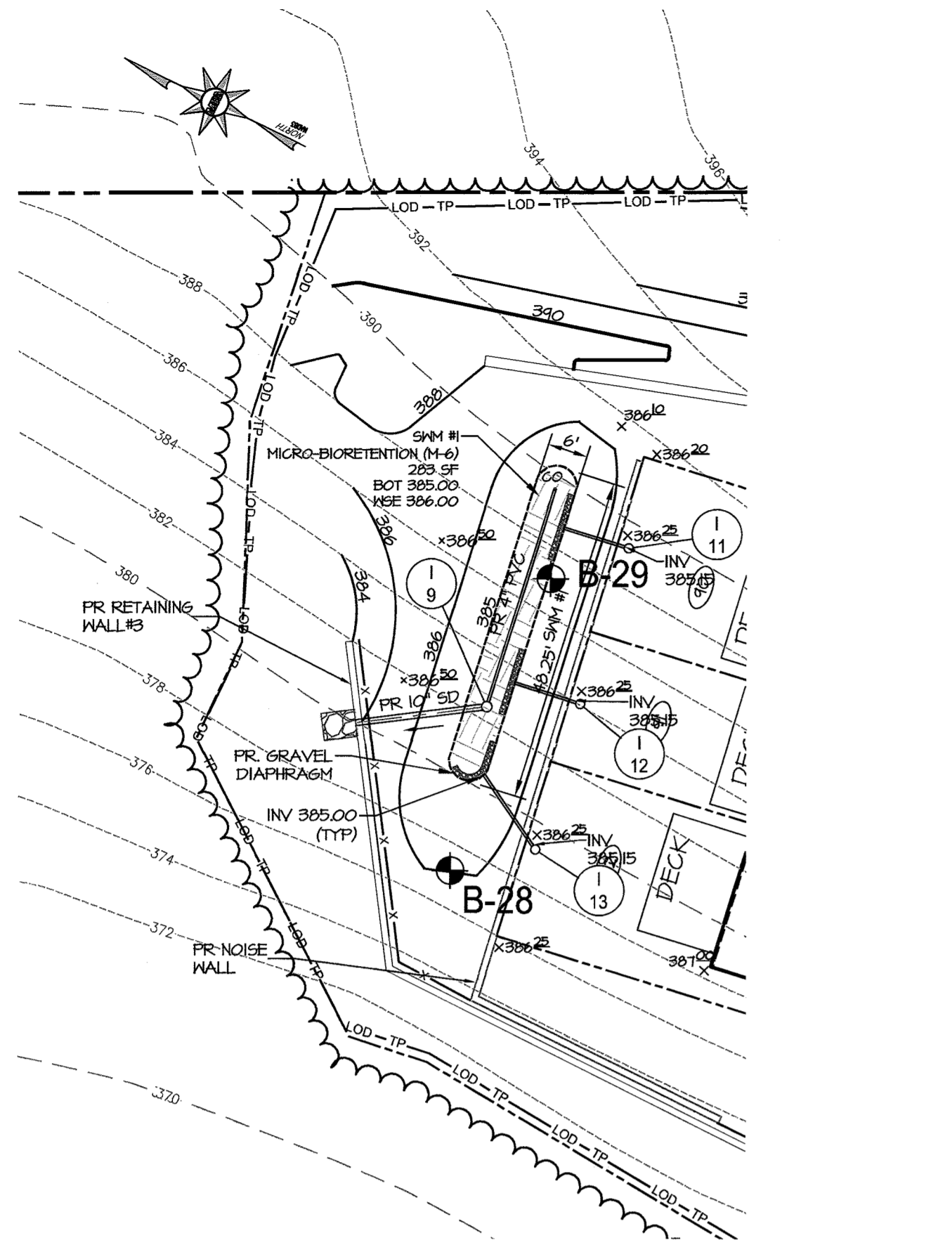
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TROTTER'S KNOLL - SECTION II
 DEEP RUN PROPERTY
 STORM DRAIN PROFILES

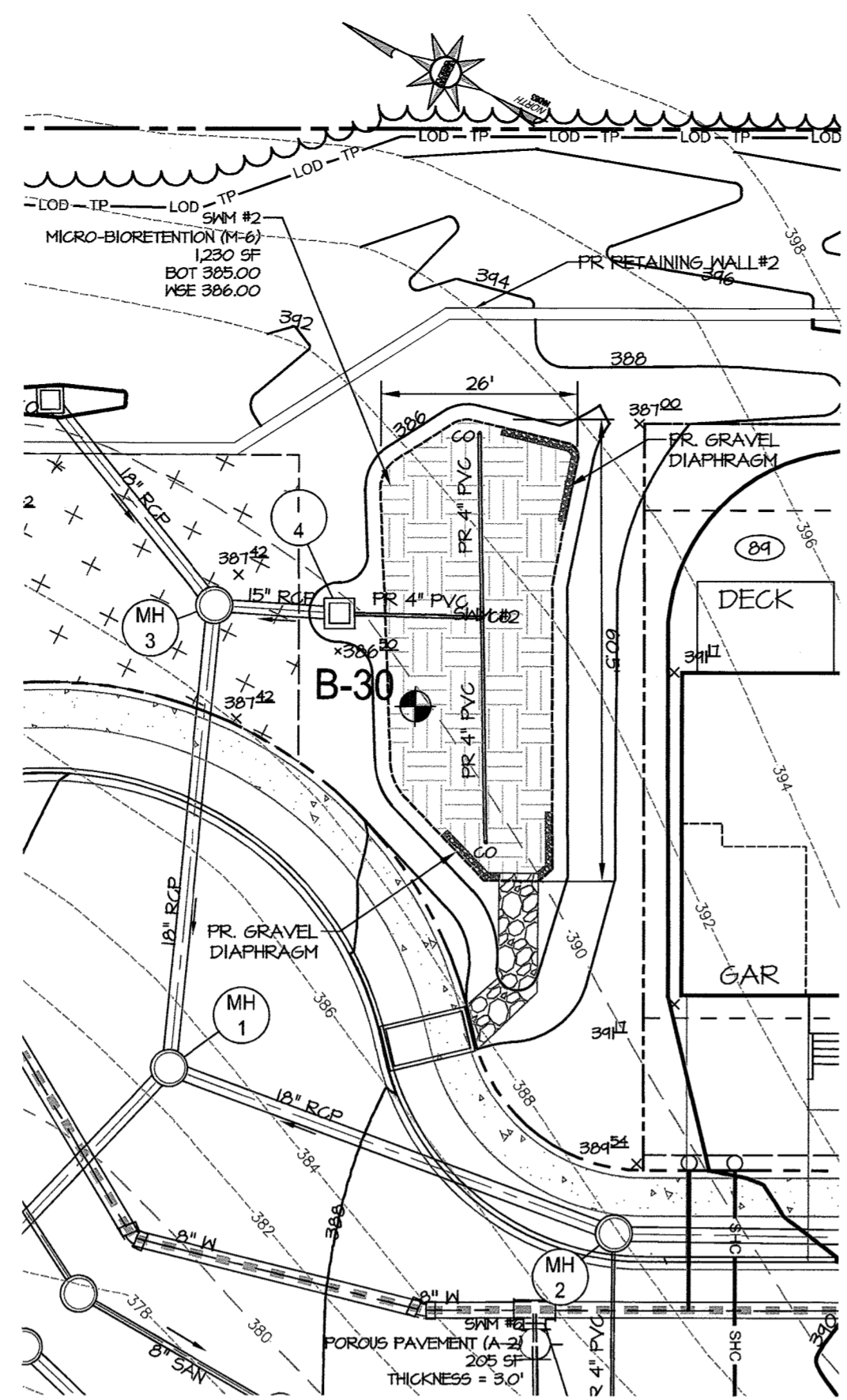
TAX MAP 37 GRIDS 2 PARCEL 753 ZONED: R-SA-8
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 HOWARD COUNTY, MD 21043

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		SHEET: 12 OF 29

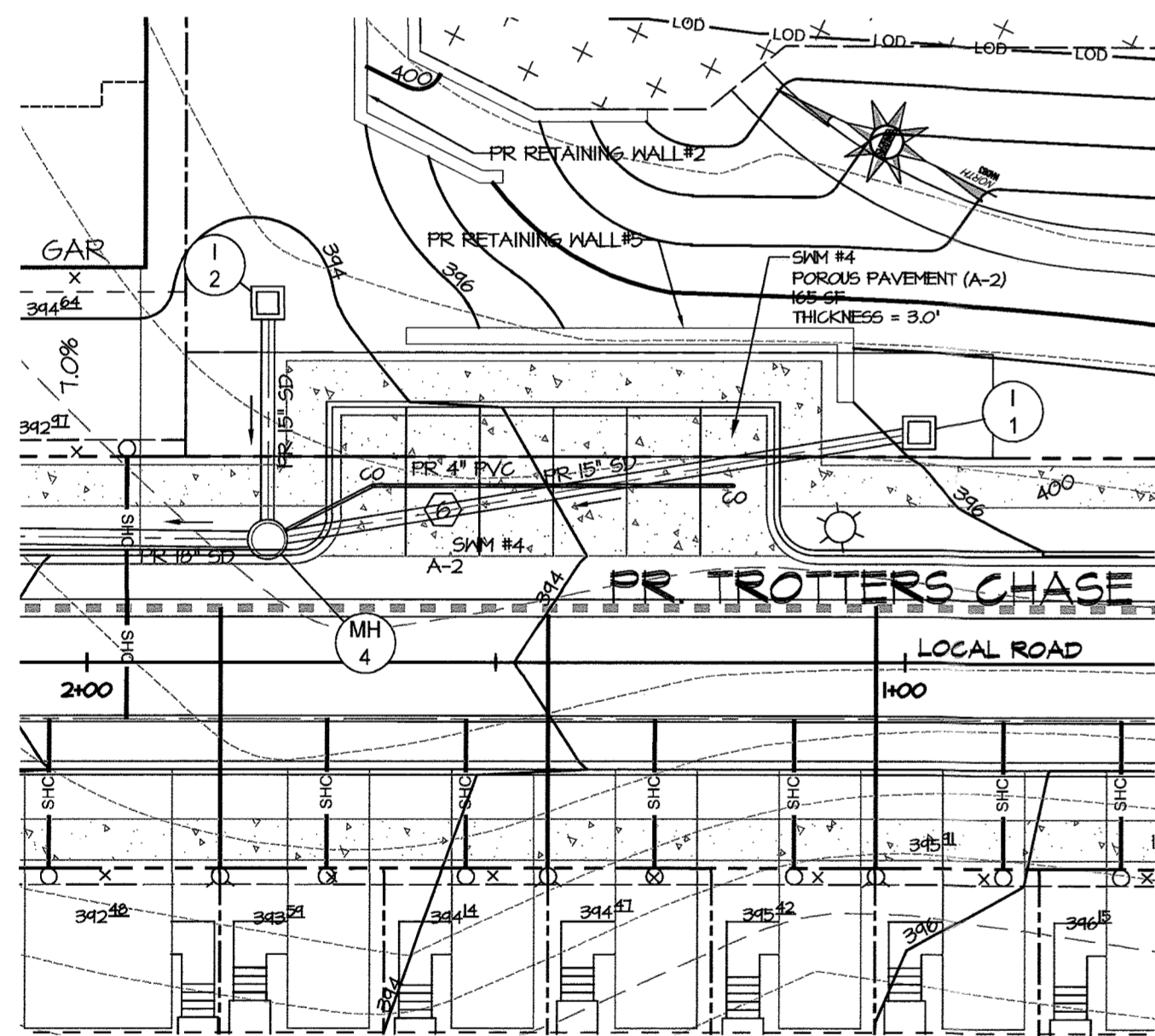
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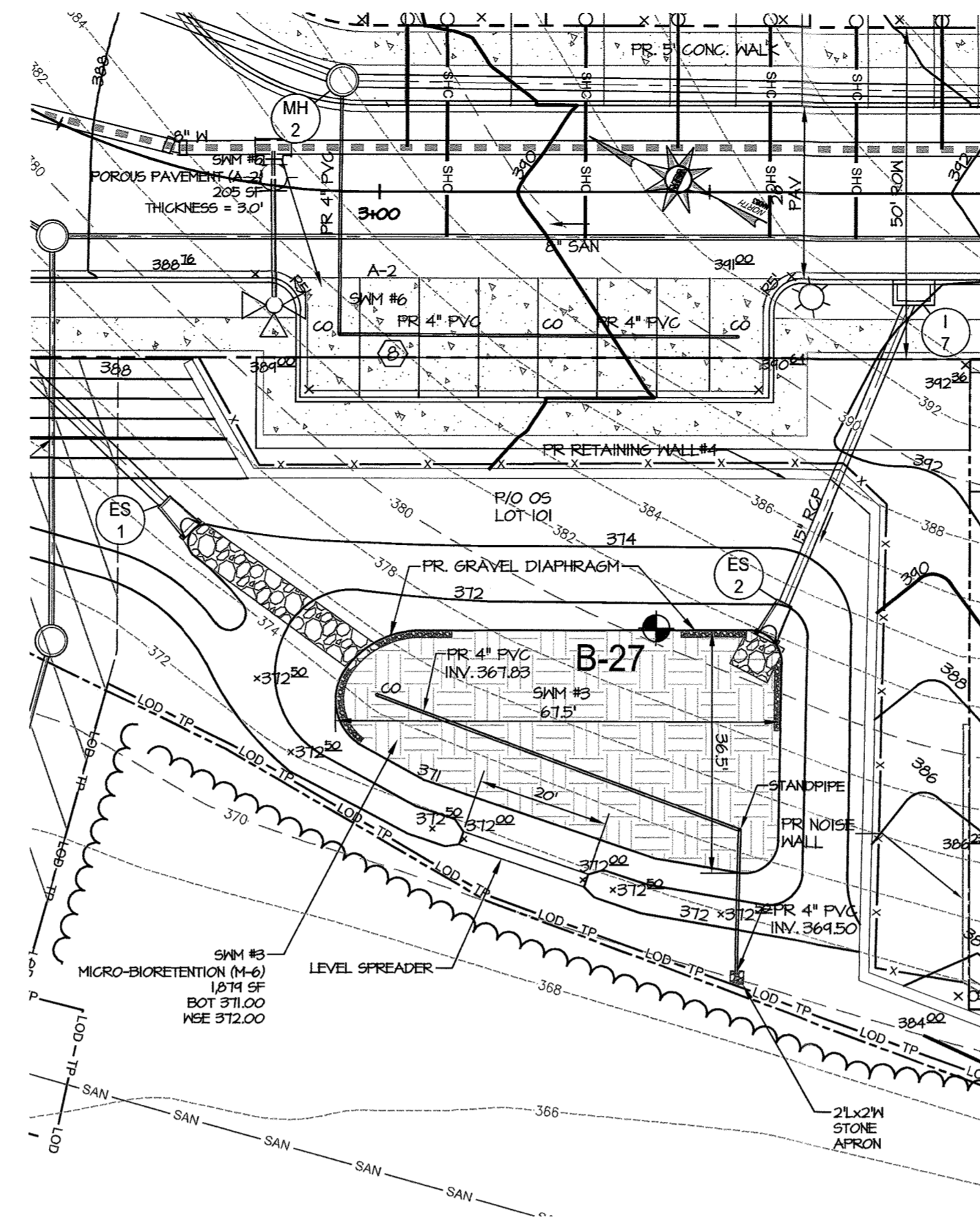
SWM #1
SCALE: 1"=20'



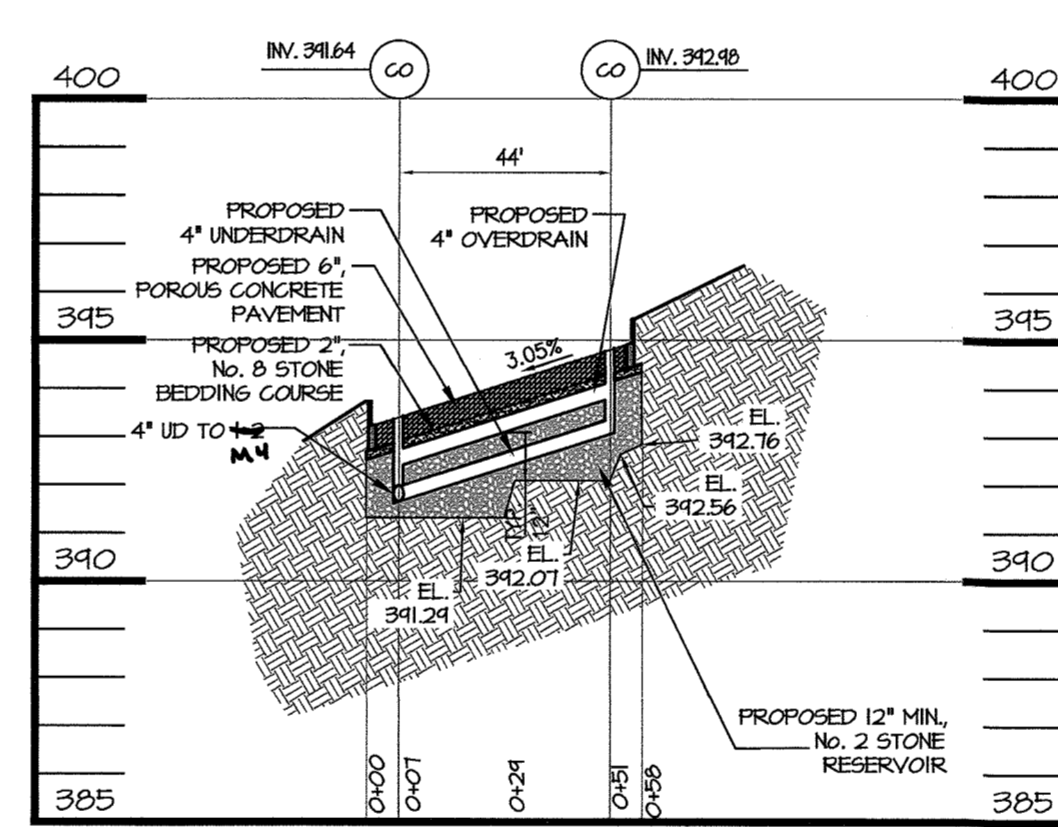
SWM #2
SCALE: 1"=20'



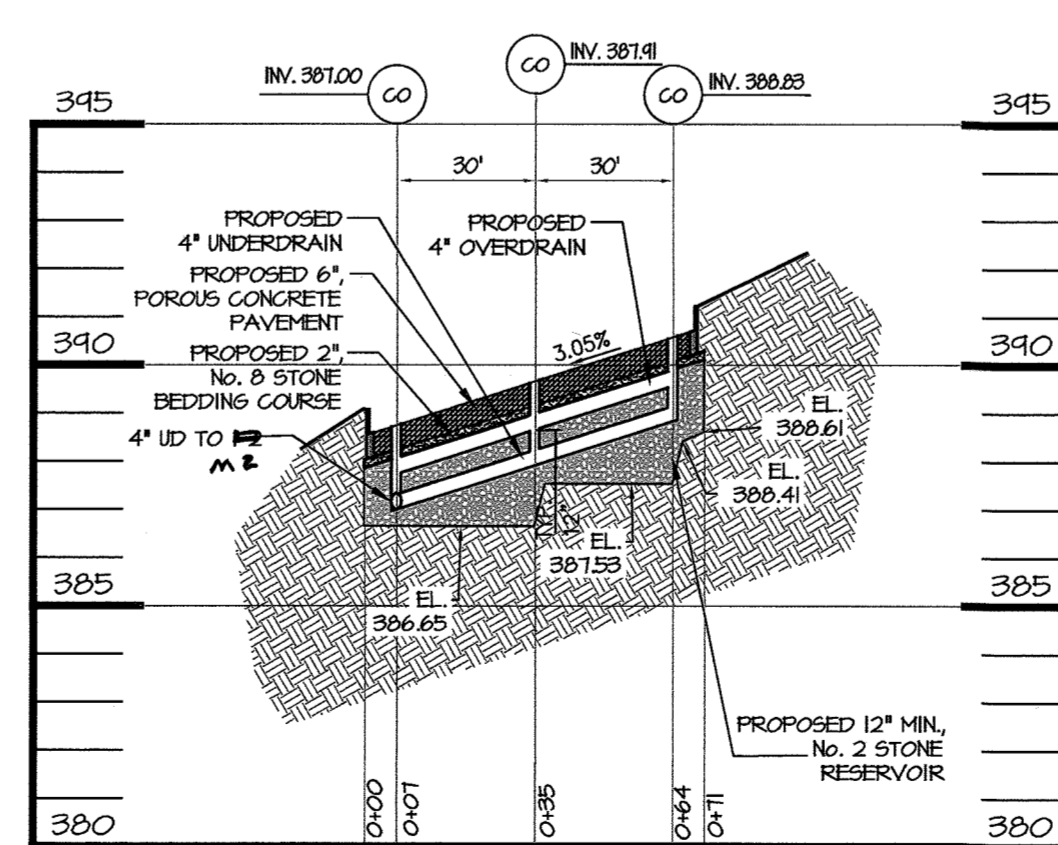
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SCALE: 1"=20'



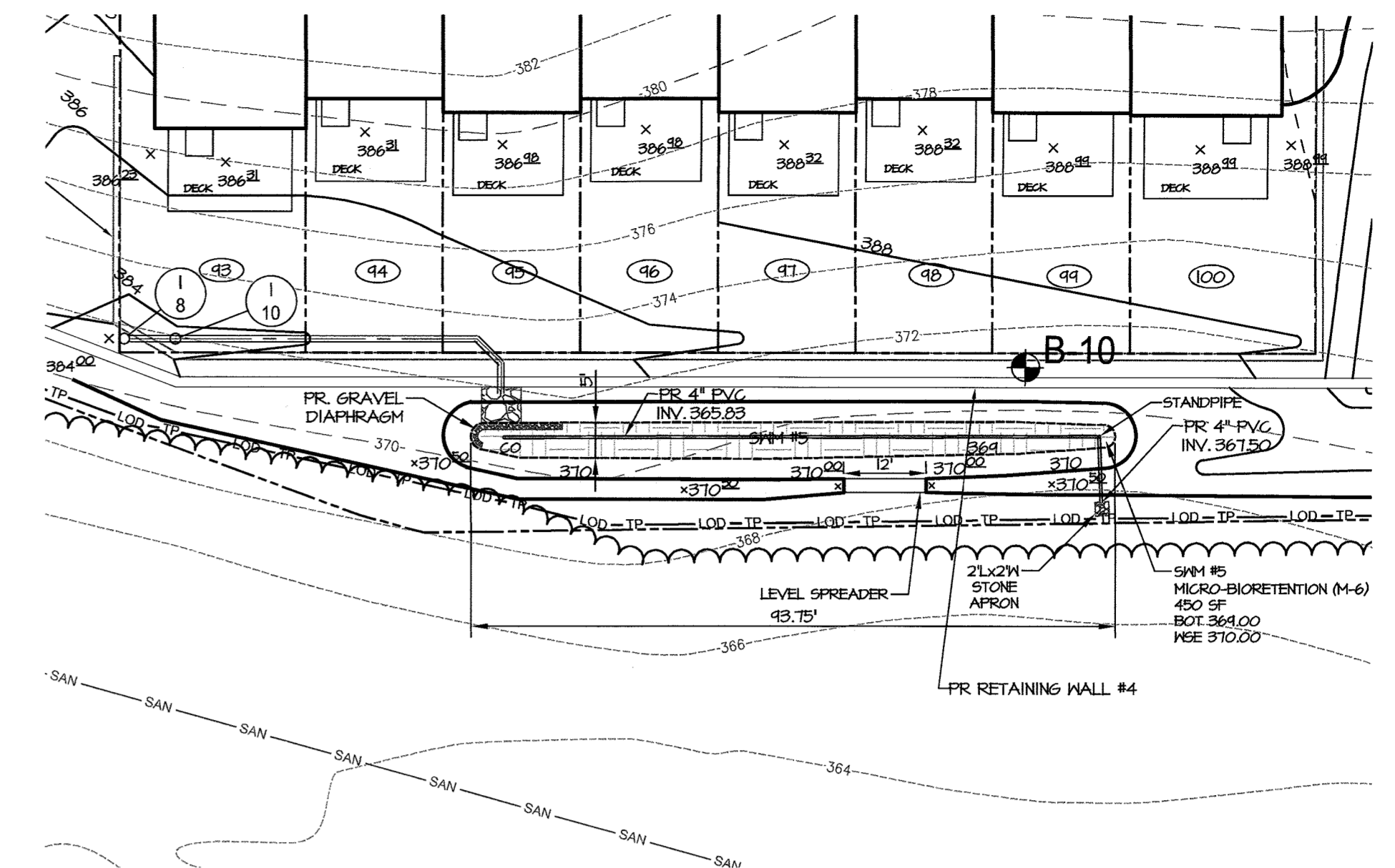
SWM #3 & #6
SCALE: 1"=20'



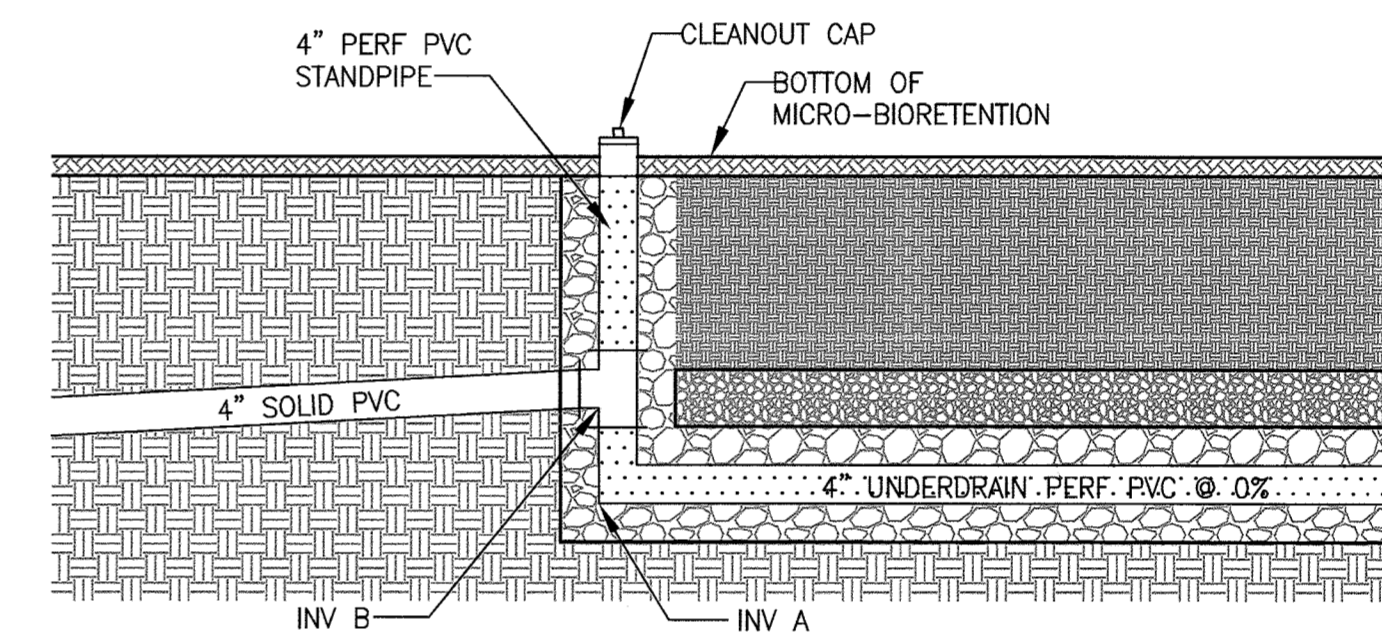
POROUS PAVING PROFILE (SWM#4)



POROUS PAVING PROFILE (SWM#6)



SWM #5
SCALE: 1"=20'



STANDPIPE DETAIL
N.T.S.

STANDPIPE SCHEDULE

FACILITY NUMBER	INV 'A'	INV 'B'
SWM #3	367.83	370.00
SWM #5	365.83	368.00

NOTE:

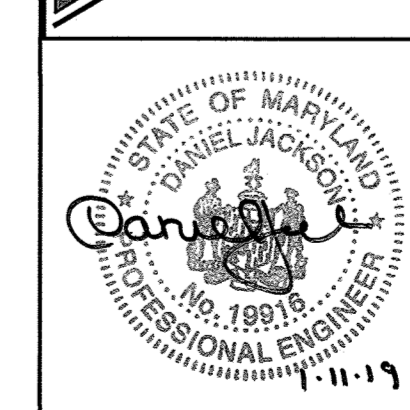
HOA SHALL MAINTAIN MICRO-RETENTION FACILITIES INCLUDE INLET, UNDERDRAINS, LANDSCAPING, MULCH, MOWING, POROUS PAVING, LITERS AND SEDIMENT REMOVAL, ETC. COUNTY SHALL ONLY MAINTAIN THE STORM DRAIN OUTFALL.



Scale 1" = 20'



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TROTTER'S KNOLL - SECTION II
DEEP RUN PROPERTY

STORMWATER MANAGEMENT PLAN

TAX MAP 37 GRIDS 2 PARCEL 753 ZONED: R-SA-8
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Howard 5/8/2019
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APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Ed Clark 5.10.19
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Kate 5.21.19
CHIEF, LAND DEVELOPMENT DIVISION DATE

CONSTRUCTION SPECIFICATIONS FOR MICRO-BIORETENTION AND BIOSWALE FACILITIES

1. MATERIAL SPECIFICATIONS

THE ALLOWABLE MATERIALS TO BE USED IN MICRO-BIORETENTION AND BIOSWALE AREAS ARE DETAILED IN TABLE B.4.1. (SEE THIS SHEET)

2. FILTER MEDIA OR PLANTING SOIL

THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE MICRO-BIORETENTION AND BIOSWALE PRACTICES THAT MAY BE HARMFUL TO PLANT GROWTH OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMUEDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.05.

THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:

- SOIL CONTENT - LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURAL CLASSIFICATION)
- ORGANIC CONTENT - MINIMUM 10% BY DRY WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (60%-65%) AND COMPOST (35%-40%) OR SANDY LOAM (30%), COARSE SAND (30%), AND COMPOST (40%).
- CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%.
- pH RANGE - SHOULD BE BETWEEN 5.5-7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED INTO THE SOIL TO INCREASE OR DECREASE pH.

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

REPLACEMENT OF FILTER MEDIA IS REQUIRED IF WATER PONDS FOR MORE THAN 24 HOURS.

3. COMPACTION

IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF MICRO-BIORETENTION AND BIOSWALE PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING A LOADER, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TIRE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.

COMPACTION CAN BE ALLEVATED AT THE BASE OF THE MICRO-BIORETENTION AND BIOSWALE FACILITIES BY USING A PRIMARY TILLING OPERATION SUCH AS A CHISEL PLOW, RIFFER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO REFRACATURE THE SOIL PROFILE THROUGH THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.

WHEN BACKFILLING THE MICRO-BIORETENTION AND BIOSWALE FACILITIES, PLACE SOIL IN LIFTS OF 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE MICRO-BIORETENTION OR BIOSWALE BASINS. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS. GRADE MICRO-BIORETENTION AND BIOSWALE MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.

4. PLANT MATERIAL

RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION AND BIOSWALE AREAS CAN BE FOUND ON THE LANDSCAPE PLANS FOUND HEREIN.

5. PLANT INSTALLATION

COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDING AREAS TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED OR CHIPPED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE MICRO-BIORETENTION AND BIOSWALE AREAS DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDDED MULCH MUST BE WELL AGED (6 TO 12 MONTHS) FOR ACCEPTANCE.

ROOT STOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8th OF THE BALL IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION.

TREES SHALL BE BRACED USING 2" BY 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL.

GRASSES AND LEGUME SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLOTS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS.

THE TOPSOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE MICRO-BIORETENTION AND BIOSWALE STRUCTURES IS TO IMPROVE WATER QUALITY, ADDING FERTILIZERS DEFLECTS, OR AT A MINIMUM, IMPEDES THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.

6. UNDERDRAINS

UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:

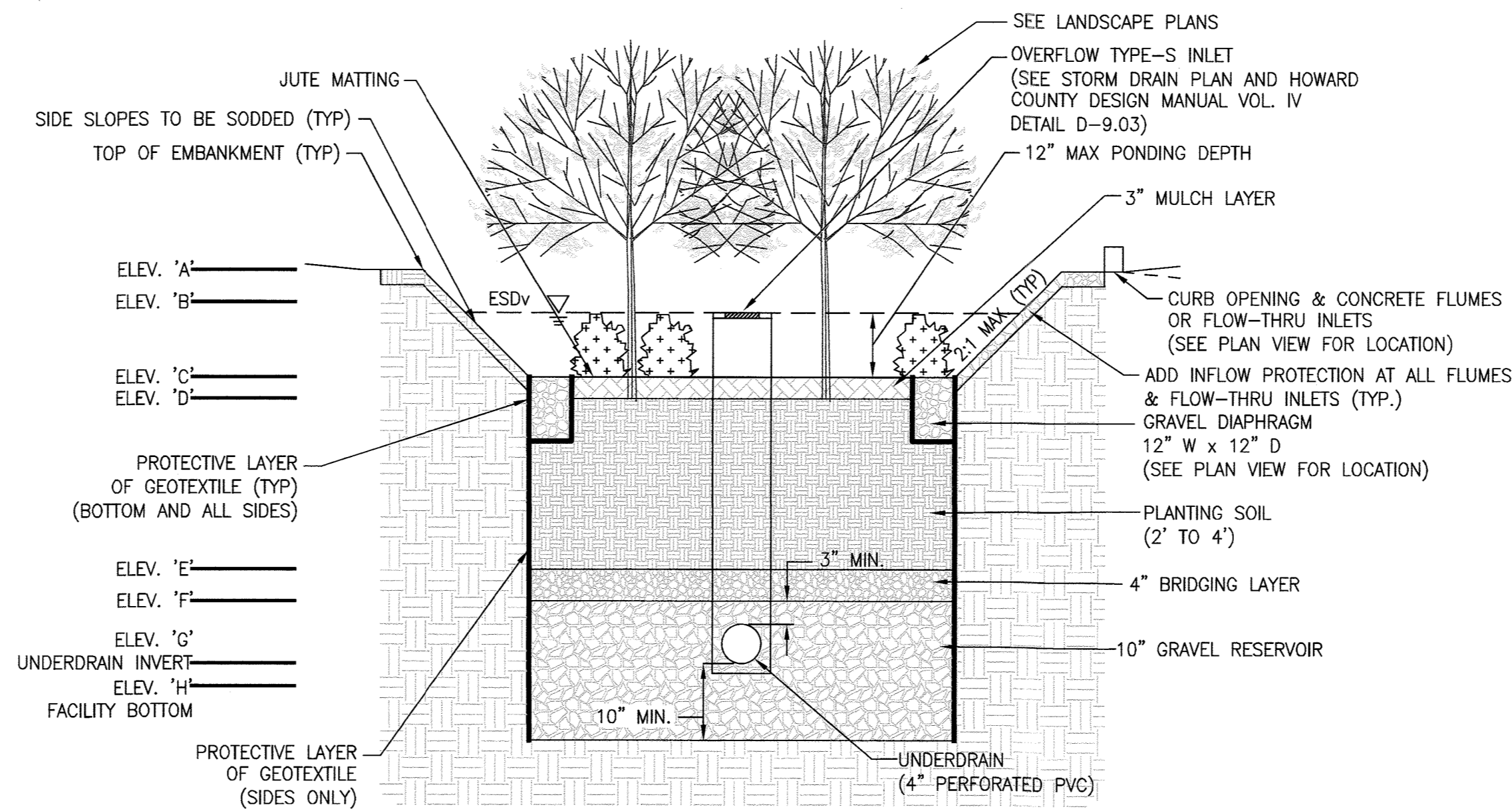
- PIPE - SHOULD BE 4"-6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F 758, TYPE PS 28, OR AASHTO M-78) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC OR HDPE).
- PERFORATIONS - IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW.
- PIPE SHALL BE WRAPPED WITH A 1/4" (NO. 4 OR 4X4) GALVANIZED HARDWARE CLOTH.
- GRAVEL - THE GRAVEL LAYER (NO. 57 STONE PREFERRED) SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.
- A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,000 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE FILTER.
- A 4" LAYER OF BRIDGING LAYER STONE (1/8" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".

7. MISCELLANEOUS

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

TABLE B.4.1 MATERIAL SPECIFICATIONS FOR MICRO-BIORETENTION AND BIOSWALE FACILITIES

MATERIAL	SPECIFICATION	SIZE	NOTES
PLANTINGS	SEE APPENDIX A, TABLE A.4	N/A	PLANTINGS ARE SITE-SPECIFIC
PLANTING SOIL [2' TO 4' DEEP]	LOAMY SAND (60-65%) & COMPOST (35-40%) OR SANDY LOAM (30%), COARSE SAND (30%) & COMPOST (40%)	N/A	USDA SOILS TYPES LOAMY SAND OR SANDY LOAM; CLAY CONTENT < 5%
ORGANIC CONTENT	MIN. 10% BY DRY WEIGHT (ASTM D 2974)		
MULCH	SHREDDED HARDWOOD	N/A	AGED 6 MONTHS, MINIMUM; NO PINE OR WOOD CHIPS
GRAVEL DIAPHRAGM	ASTM-D-448 PEA GRAVEL	NO. 8 OR NO. 9 (1/8" TO 3/8")	
BRIDGING LAYER	ASTM-D-448	NO. 8 OR NO. 9 (1/8" TO 3/8")	
INFLOW PROTECTION	ORNAMENTAL STONE; WASHED COBBLES	STONE: 3" TO 5"	DELAWARE VALLEY RIVER JACKS
GEOTEXTILE		N/A	PE TYPE 1 NONWOVEN
GRAVEL (UNDERDRAINS)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (3/8" TO 3/4")	
UNDERDRAIN PIPING, OBSERVATION WELLS, AND CLEAN OUTS	F 758, TYPE PS 28 OR AASHTO M-278	4" TO 6" RIGID SCHEDULE 40 PVC OR SDR35	SLOTTED OR PERFORATED PIPE; 3/8" PERF. @ 6" ON CENTER, 4 HOLES PER ROW; MINIMUM OF 3" OF GRAVEL ABOVE AND BENEATH PIPES.
POURED IN PLACE CONCRETE (IF REQUIRED)	MSHA MIX NO. 3; F'c = 3500 PSI @ 28 DAYS, NORMAL WEIGHT, AIR ENTRAINED; REINFORCING TO MEET ASTM-615-60	N/A	ON SITE TESTING OF POURED-IN-PLACE CONCRETE REQUIRED: 28 DAY STRENGTH AND SLUMP TEST; ALL CONCRETE DESIGN (CAST-IN-PLACE OR PRE-CAST) NOT USING PREVIOUSLY APPROVED STATE OR LOCAL STANDARDS REQUIRES DESIGN DRAWINGS SEALED AND APPROVED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF MARYLAND. - DESIGN TO INCLUDE MEETING ACI CODE 350.9/89; VERTICAL; LOADING [H-10 OR H-20]; ALLOWABLE HORIZONTAL LOADING (BASE AND SOIL PRESSURES); AND ANALYSIS OF POTENTIAL CRACKING.
JUTE MATTING (OR EQUIVALENT)	6-9 MONTHS BEFORE BIODEGRADATION	4' WIDE ROLLS	MANUFACTURER: GRANITE ENVIRONMENTAL



MICRO-BIORETENTION

MDE CLASSIFICATION M-6

(TYP. SECTION)

N.T.S.

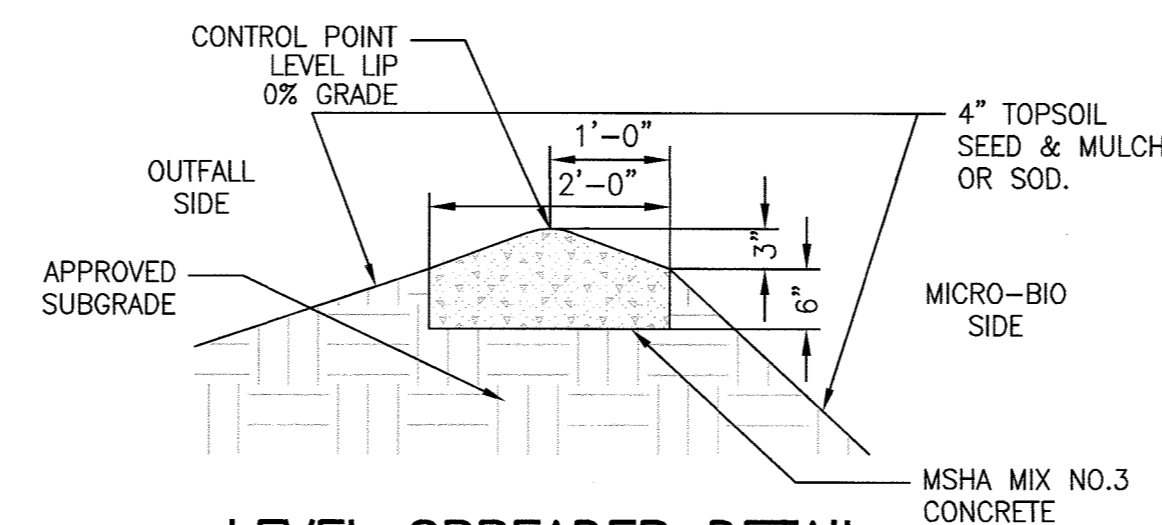
MAINTENANCE CRITERIA FOR MICRO-BIORETENTION AND BIOSWALE FACILITIES

THE FOLLOWING ITEMS SHOULD BE ADDRESSED TO ENSURE PROPER MAINTENANCE AND LONG-TERM PERFORMANCE OF MICRO-BIORETENTION AND BIOSWALE PRACTICES:

1. THE PROPOSED SWM FACILITIES ARE PRIVATELY OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION. PRIVATELY OWNED PRACTICES SHALL HAVE A MAINTENANCE PLAN AND SHALL BE PROTECTED BY EASEMENT, DEED RESTRICTION, ORDINANCE, OR OTHER LEGAL MEASURES PREVENTING ITS NEGLECT, ADVERSE ALTERATION, AND REMOVAL.
2. THE TOP FEW INCHES OF FILTER MEDIA SHOULD BE REMOVED AND REPLACED WHEN WATER PONDS FOR MORE THAN TWENTY-FOUR (24) HOURS. SILTS AND SEDIMENT SHOULD BE REMOVED FROM THE SURFACE OF THE FILTER BED WHEN ACCUMULATION EXCEEDS ONE (1) INCH.
3. WHERE PRACTICES ARE USED TO TREAT AREAS WITH HIGHER CONCENTRATIONS OF HEAVY METALS (E.G., PARKING LOTS, ROADS, ETC.), MULCH SHOULD BE REPLACED ANNUALLY IN THE SPRING. OTHERWISE, THE TOP TWO (2) TO THREE (3) INCHES SHOULD BE REPLACED AS NECESSARY. MULCH SHALL BE INSPECTED EACH SPRING. REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER ONCE EVERY 2 TO 3 YEARS.
4. SCHEDULE OF PLANT INSPECTION WILL BE TWICE A YEAR IN SPRING AND FALL. OCCASIONAL PRUNING AND REPLACEMENT OF DEAD VEGETATION IS NECESSARY. IF SPECIFIC PLANTS ARE NOT SURVIVING, MORE APPROPRIATE SPECIES SHOULD BE USED. WATERING MAY BE REQUIRED DURING PROLONGED DRY PERIODS.

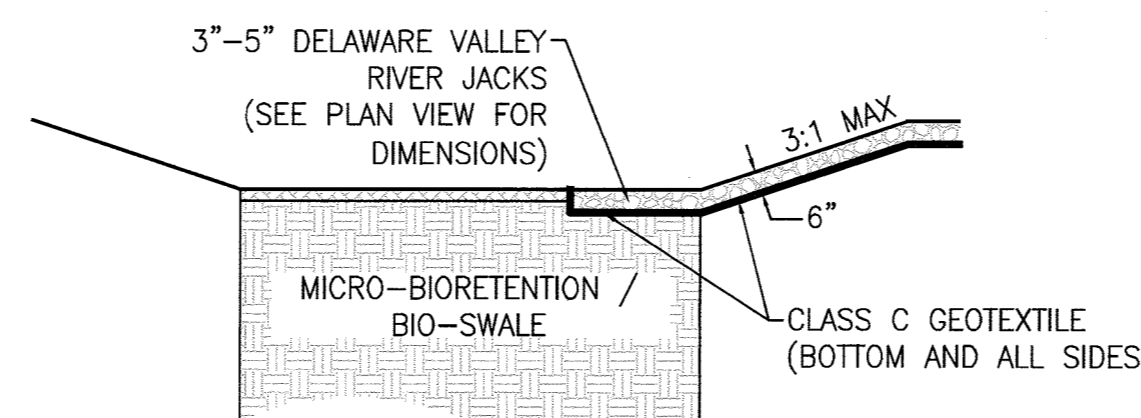
MICRO-BIORETENTION CHART

FACILITY NUMBER	TOP OF EMBANKMENT ELEV 'A'	ESDv PONDING ELEV 'B'	FACILITY SURFACE ELEV 'C'	PLANTING MEDIA TOP ELEV 'D'	PLANTING MEDIA BOTTOM ELEV 'E'	BRIDGING LAYER BOTTOM ELEV 'F'	UNDER DRAIN INVERT ELEV 'G'	STONE BOTTOM ELEV 'H'	FILTER BED AREA PROVIDED (TOP SF)
SWM #1	386.50	386.00	385.00	384.75	382.75	382.42	381.83	380.75	283
SWM #2	386.50	386.00	385.00	384.75	382.75	382.42	381.83	380.75	1230
SWM #3	372.50	372.00	371.00	370.75	368.75	368.42	367.83	366.75	1879
SWM #5	370.50	370.00	369.00	368.75	366.75	366.42	365.83	364.75	450



LEVEL SPREADER DETAIL

N.T.S.

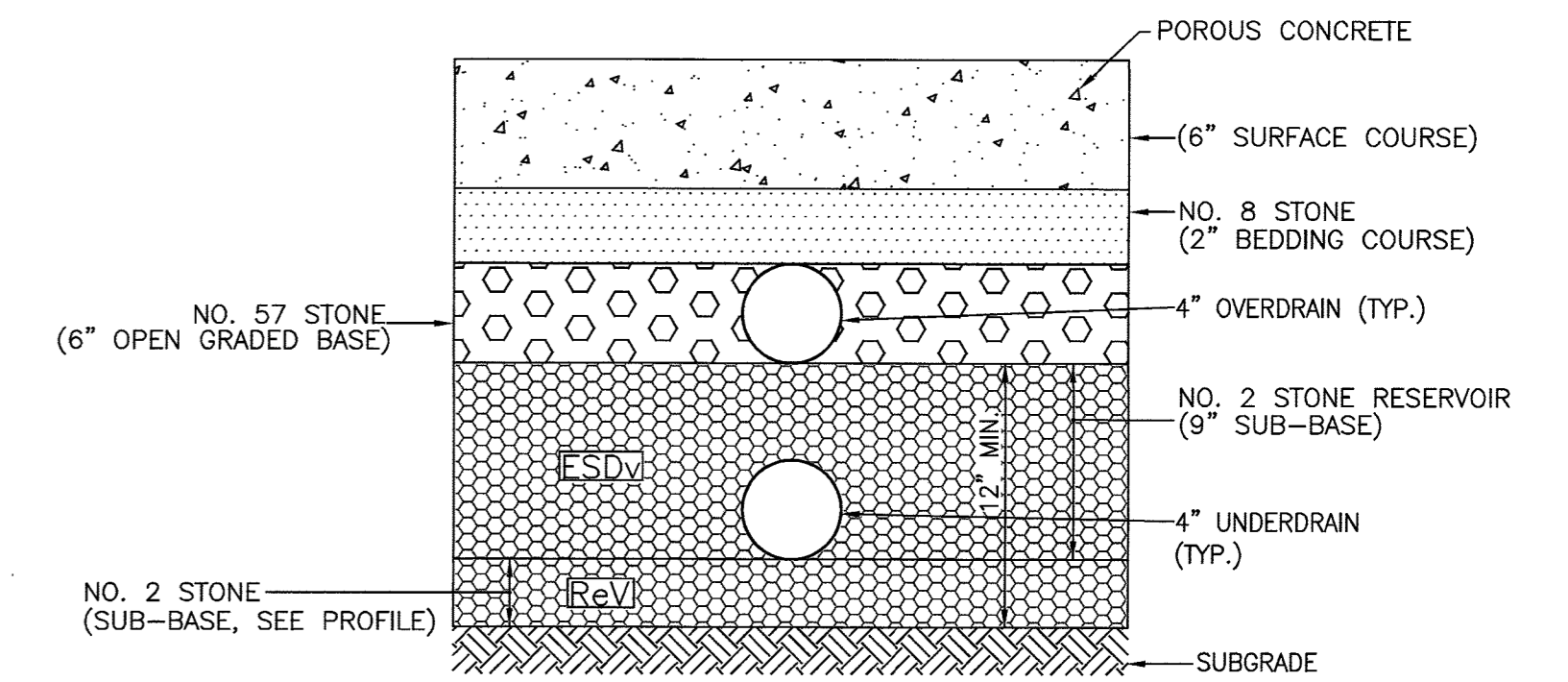


INFLOW PROTECTION

N.T.S.

POROUS-PAVEMENT CHART

FACILITY NUMBER	SURFACE COURSE (PERVIOUS CONCRETE)	BEDDING COURSE (NO. 8 STONE)	OPEN GRADED BASE (NO. 57 STONE)	ESDv SUB-BASE (NO. 2 STONE)	UNDERDRAIN SUB-BASE (NO. 2 STONE)	TOTAL SUB-BASE (NO. 2 STONE)
SWM #4	6"	2"	6"	6"	6"	12"
SWM #6	6"	2"	6"	6"	6"	12"



POROUS CONCRETE PAVEMENT SYSTEM NOTES:

CONTRACTOR TO SUPPLY SHOP DRAWINGS TO THE ENGINEER THAT MEET THE FOLLOWING REQUIREMENTS FOR REVIEW:

1. POROSITY (n) = 40%
2. INSTALL 4" UNDERDRAIN & OVERDRAIN - SCH-40 PVC, 3/8" PERFORATIONS @ 6" O.C., 4 HOLES PER ROW
3. PERMEABILITY (k) >= 8 IN/HR
4. DEPTH OF TOP LAYER WILL BE DETERMINED BY THE TYPE OF SYSTEM USED
5. SYSTEM SHOULD BE DESIGNED FOR PARKED PASSENGER VEHICLES
6. IF PERMEABLE PAVEMENT IS CHOSEN, CONTRACTOR TO PROVIDE EDGE TREATMENT DETAILS

PERMEABLE PAVEMENT SECTION

MDE CLASSIFICATION A 2

NOT TO SCALE

INSPECTION REQUIREMENTS FOR MICRO-BIORETENTION AND BIOSWALE FACILITIES

REGULAR INSPECTIONS SHALL BE MADE DURING THE FOLLOWING STAGES OF CONSTRUCTION:

1. DURING EXCAVATION TO SUBGRADE AND PLACEMENT AND BACKFILL OF UNDERDRAIN SYSTEMS.
2. DURING PLACEMENT OF FILTER MEDIA.
3. DURING CONSTRUCTION OF APPURTENANT CONVEYANCE.
4. UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

James 5/6/2019
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Al 5-10-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION NY DATE

Karl 5-21-19
CHIEF, LAND DEVELOPMENT DIVISION DATE



Scale 1" = 20'

OWNER / APPLICANT / DEVELOPER:

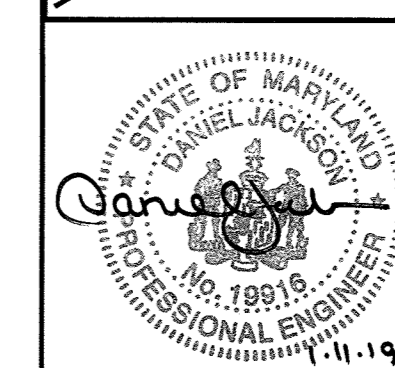
DEEP RUN PROPERTY MANAGEMENT, LLC.
ADDRESS: 5240 WEBB COURT
MOOREHEAD CITY, NORTH CAROLINA 28557
CONTACT: GLENN CURTIS
PHONE: (252) 726-6633
EMAIL: GOURTIS1@EC.RR.COM



MORRIS & RITCHIE ASSOCIATES, INC.

ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS
14280 PARK CENTER DRIVE
LAUREL, MD 20707
(410) 792-9792 / (301) 776-1690
FAX: (410) 792-7395

MRAGTA.COM



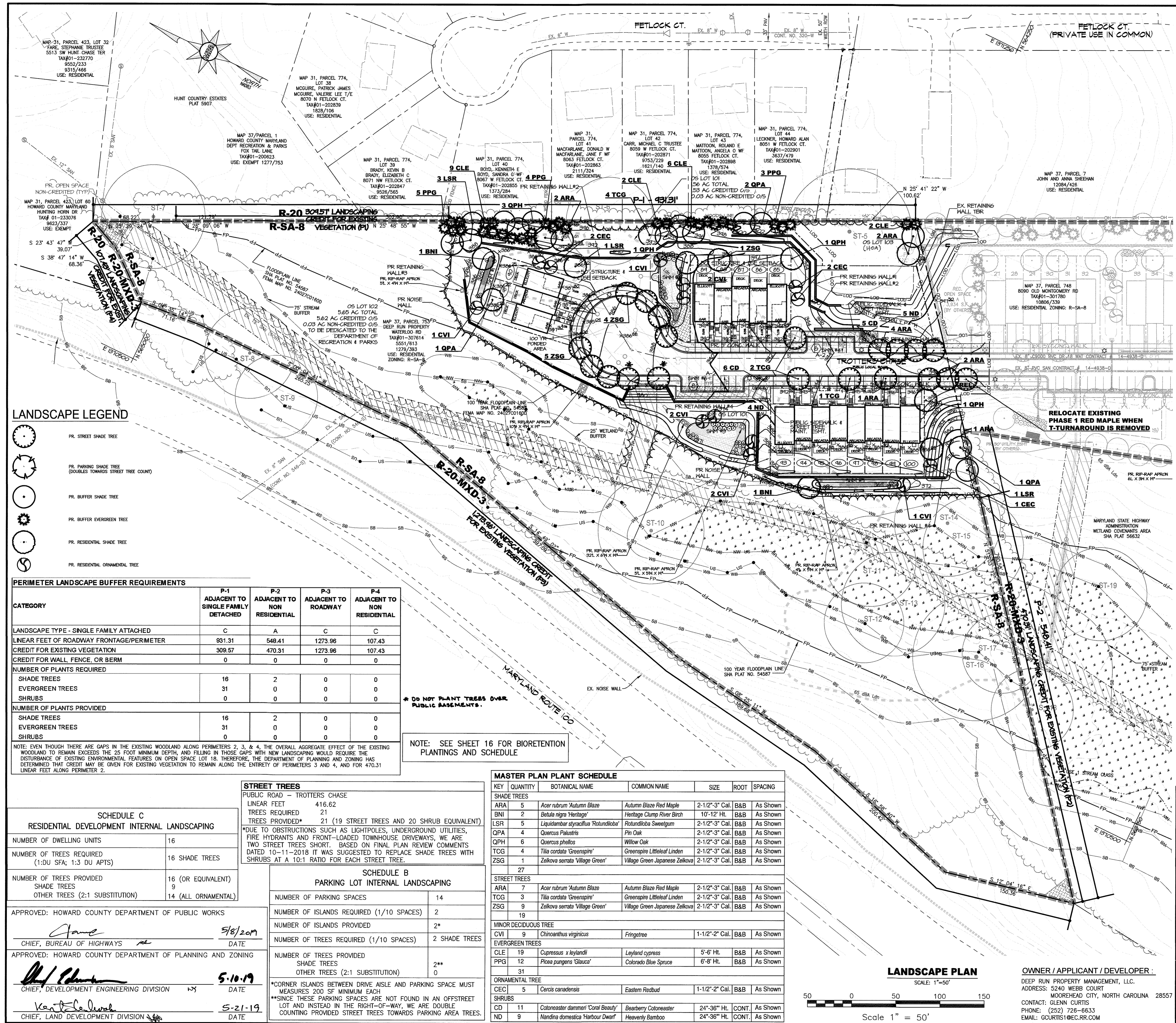
TROTTER'S KNOLL - SECTION II

DEEP RUN PROPERTY
STORMWATER MANAGEMENT NOTES & DETAILS

TAX MAP 37 GRIDS 2 PARCEL 753 ZONED: R-SA-8
1ST ELECTION DISTRICT
HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:	15368 x 06
		SCALE:	1" = 20'
		DATE:	6-6-18
		DRAWN BY:	JG
		DESIGN BY:	JG
		REVIEW BY:	TCN
		SHEET:	14 OF 29

MD PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19918, EXPIRATION DATE: 01/14/2021.



LEGEND

	EX. PROPERTY LINE
	EX. ADJACENT PROPERTY LINE
	EX. RIGHT OF WAY
	EX. EASEMENT
	EX. ZONING LINE
	EX. BUILDING
	EX. CONCRETE
	EX. PAVEMENT
	EX. ROAD CENTERLINE
	EX. FENCE
	EX. OVERHEAD LINE
	EX. WATER LINE
	EX. SEWER LINE
	EX. STREAM
	EX. STREAM BUFFER
	EX. TREE LINE
	EX. GUARD RAIL
	EX. ELECTRIC CONDUIT
	EX. LIGHT POLES
	EX. GAS LINE
	EX. STORM DRAIN
	EX. CONDUIT
	EX. FIBER OPTIC
	EX. TV LINE
	EX. ELECTRIC MANHOLE
	EX. TELEPHONE MANHOLE
	EX. BORING LOCATION
	EX. NON TIDAL WETLANDS
	EX. TIDAL WETLANDS
	EX. 25' WETLAND BUFFER
	EX. FLOODPLAIN
	EX. WATERS OF THE US
	EX. STREAM BUFFER
	EX. SPECIMEN TREE
	EX. 2' CONTOUR
	EX. 10' CONTOUR
	EX. 50' CONTOUR
	EX. 100' CONTOUR
	EX. 200' CONTOUR
	EX. 500' CONTOUR
	EX. 1000' CONTOUR
	EX. 2000' CONTOUR
	EX. 5000' CONTOUR
	EX. 10000' CONTOUR
	PR. LIMIT OF DISTURBANCE
	PR. TREE PROTECTION FENCE
	PR. RIGHT OF WAY
	PR. LOT LINE/PARCEL LINE
	PR. EASEMENT
	PR. BUILDING
	PR. CURB & GUTTER
	PR. RETAINING WALL
	PR. ROAD CENTER LINE
	PR. CONC SIDEWALK
	PR. REC OPEN AREA
	PR. TREE LINE
	PR. HANDICAP PARKING
	PR. LOT NUMBER
	PR. UNIT ADDRESS
	PR. PARKING SPACE COUNT
	PR. CURB RADIUS (LED-100 COLONIAL)
	PR. CURB TRANSITION (MODIFIED CURB TO STANDARD)
	PR. PRIVATE RIGHT OF WAY
	PR. SECTION LINE
	PR. SANITARY LINE
	PR. STORM DRAIN
	PR. WATER LINE
	PR. FIRE HYDRANT
	PR. WATER VALVE
	PR. SINGLE HOUSE CONNECTION
	PR. DOUBLE HOUSE CONNECTION
	PR. FDC
	PR. MICRO-BIORETENTION FACILITY (M-6)
	PR. PUBLIC STREET TREE MAINTENANCE EASEMENT
	UTILITY EASEMENT
	PR. PUBLIC SIDEWALK, UTILITY & PARKING EASEMENT
	PR. OPEN SPACE NON-CREDITED
	PUBLIC SIDEWALK EASEMENT

LANDSCAPE LEGEND

	PR. STREET SHADE TREE
	PR. PARKING SHADE TREE (DOUBLES TOWARDS STREET TREE COUNT)
	PR. BUFFER SHADE TREE
	PR. BUFFER EVERGREEN TREE
	PR. RESIDENTIAL SHADE TREE
	PR. RESIDENTIAL ORNAMENTAL TREE

PERIMETER LANDSCAPE BUFFER REQUIREMENTS

CATEGORY	P-1 ADJACENT TO SINGLE FAMILY DETACHED	P-2 ADJACENT TO NON RESIDENTIAL	P-3 ADJACENT TO ROADWAY	P-4 ADJACENT TO NON RESIDENTIAL
LANDSCAPE TYPE - SINGLE FAMILY ATTACHED	C	A	C	C
LINEAR FEET OF ROADWAY FRONTAGE/PERMETER	931.31	548.41	1273.96	107.43
CREDIT FOR EXISTING VEGETATION	308.57	470.31	1273.96	107.43
CREDIT FOR WALL, FENCE, OR BERM	0	0	0	0
NUMBER OF PLANTS REQUIRED				
SHADE TREES	16	2	0	0
EVERGREEN TREES	31	0	0	0
SHRUBS	0	0	0	0
NUMBER OF PLANTS PROVIDED				
SHADE TREES	16	2	0	0
EVERGREEN TREES	31	0	0	0
SHRUBS	0	0	0	0

NOTE: EVEN THOUGH THERE ARE GAPS IN THE EXISTING WOODLAND ALONG PERIMETERS 2, 3, & 4, THE OVERALL AGGREGATE EFFECT OF THE EXISTING WOODLAND TO REMAIN EXCEEDS THE 25 FOOT MINIMUM DEPTH, AND FILLING IN THOSE GAPS WITH NEW LANDSCAPING WOULD REQUIRE THE DISTURBANCE OF EXISTING ENVIRONMENTAL FEATURES ON OPEN SPACE LOT 18. THEREFORE, THE DEPARTMENT OF PLANNING AND ZONING HAS DETERMINED THAT CREDIT MAY BE GIVEN FOR EXISTING VEGETATION TO REMAIN ALONG THE ENTIRETY OF PERIMETERS 3 AND 4, AND FOR 470.31 LINEAR FEET ALONG PERIMETER 2.

* DO NOT PLANT TREES OVER PUBLIC BASEMENTS.

NOTE: SEE SHEET 16 FOR BIORETENTION PLANTINGS AND SCHEDULE

SCHEDULE C RESIDENTIAL DEVELOPMENT INTERNAL LANDSCAPING

NUMBER OF DWELLING UNITS	16
NUMBER OF TREES REQUIRED (1:DU SFA; 1:3 DU APTS)	16 SHADE TREES
NUMBER OF TREES PROVIDED	16 (OR EQUIVALENT)
SHADE TREES	9
OTHER TREES (2:1 SUBSTITUTION)	14 (ALL ORNAMENTAL)

STREET TREES

PUBLIC ROAD - TROTTERS CHASE	LINEAR FEET	416.62
TREES REQUIRED	21	
TREES PROVIDED*	21 (19 STREET TREES AND 20 SHRUB EQUIVALENT)	

*DUE TO OBSTRUCTIONS SUCH AS LIGHTPOLES, UNDERGROUND UTILITIES, FIRE HYDRANTS AND FRONT-LOADED TOWNHOUSE DRIVEWAYS, WE ARE TWO STREET TREES SHORT. BASED ON FINAL PLAN REVIEW COMMENTS DATED 10-11-2018 IT WAS SUGGESTED TO REPLACE SHADE TREES WITH SHRUBS AT A 10:1 RATIO FOR EACH STREET TREE.

SCHEDULE B PARKING LOT INTERNAL LANDSCAPING

NUMBER OF PARKING SPACES	14
NUMBER OF ISLANDS REQUIRED (1/10 SPACES)	2
NUMBER OF ISLANDS PROVIDED	2*
NUMBER OF TREES REQUIRED (1/10 SPACES)	2 SHADE TREES
NUMBER OF TREES PROVIDED	2**
SHADE TREES	0
OTHER TREES (2:1 SUBSTITUTION)	0

*CORNER ISLANDS BETWEEN DRIVE AISLE AND PARKING SPACE MUST MEASURE 200 SF MINIMUM EACH
**SINCE THESE PARKING SPACES ARE NOT FOUND IN AN OFFSTREET LOT AND INSTEAD IN THE RIGHT-OF-WAY, WE ARE DOUBLE COUNTING PROVIDED STREET TREES TOWARDS PARKING AREA TREES.

MASTER PLAN PLANT SCHEDULE

KEY	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING
SHADE TREES						
ARA	5	<i>Acer rubrum 'Autumn Blaze'</i>	Autumn Blaze Red Maple	2-1/2"-3" Cal.	B&B	As Shown
BNI	2	<i>Betula nigra 'Heritage'</i>	Heritage Clump River Birch	10'-12" Ht.	B&B	As Shown
LSR	5	<i>Liquidambar styraciflua 'Rotundiloba'</i>	Rotundiloba Sweetgum	2-1/2"-3" Cal.	B&B	As Shown
QPA	4	<i>Quercus Palustris</i>	Pine Oak	2-1/2"-3" Cal.	B&B	As Shown
QPH	6	<i>Quercus phellos</i>	Willow Oak	2-1/2"-3" Cal.	B&B	As Shown
TCG	4	<i>Tilia cordata 'Greenspire'</i>	Greenspire Littleleaf Linden	2-1/2"-3" Cal.	B&B	As Shown
ZSG	1	<i>Zelkova serrata 'Village Green'</i>	Village Green Japanese Zelkova	2-1/2"-3" Cal.	B&B	As Shown
STREET TREES						
ARA	7	<i>Acer rubrum 'Autumn Blaze'</i>	Autumn Blaze Red Maple	2-1/2"-3" Cal.	B&B	As Shown
TCG	3	<i>Tilia cordata 'Greenspire'</i>	Greenspire Littleleaf Linden	2-1/2"-3" Cal.	B&B	As Shown
ZSG	9	<i>Zelkova serrata 'Village Green'</i>	Village Green Japanese Zelkova	2-1/2"-3" Cal.	B&B	As Shown
MINOR DECIDUOUS TREE						
CVI	9	<i>Chinoanthus virginicus</i>	Fringetree	1-1/2"-2" Cal.	B&B	As Shown
EVERGREEN TREES						
CLE	19	<i>Cupressus x leylandii</i>	Leyland cypress	5'-6" Ht.	B&B	As Shown
PGP	12	<i>Picea pungens 'Glaucia'</i>	Colorado Blue Spruce	6'-8" Ht.	B&B	As Shown
ORNAMENTAL TREE						
CEC	5	<i>Cercis canadensis</i>	Eastern Redbud	1-1/2"-2" Cal.	B&B	As Shown
SHRUBS						
CD	11	<i>Cotoneaster dammeri 'Coral Beauty'</i>	Beesbarry Cotoneaster	24"-36" Ht.	CONT.	As Shown
ND	9	<i>Nandina domestica 'Harbour Dwarf'</i>	Heavenly Bamboo	24"-36" Ht.	CONT.	As Shown

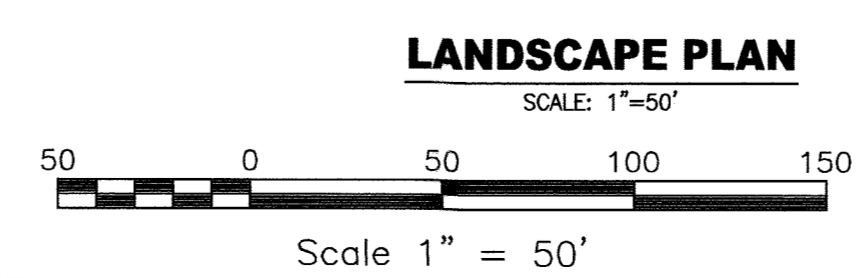
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

James 5/8/2019
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Keith 5-10-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Keith 5-21-19
CHIEF, LAND DEVELOPMENT DIVISION DATE



OWNER / APPLICANT / DEVELOPER :

DEEP RUN PROPERTY MANAGEMENT, LLC.
ADDRESS: 5240 WEBB COURT
MOOREHEAD CITY, NORTH CAROLINA 28557

CONTACT: GLENN CURTIS
PHONE: (252) 726-6633
EMAIL: GCURTIS1@EC.PR.COM

MORRIS & RITCHIE ASSOCIATES, INC.

ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS

14280 PARK CENTER DRIVE
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MRAGTA.COM

TROTTER'S KNOLL - SECTION II

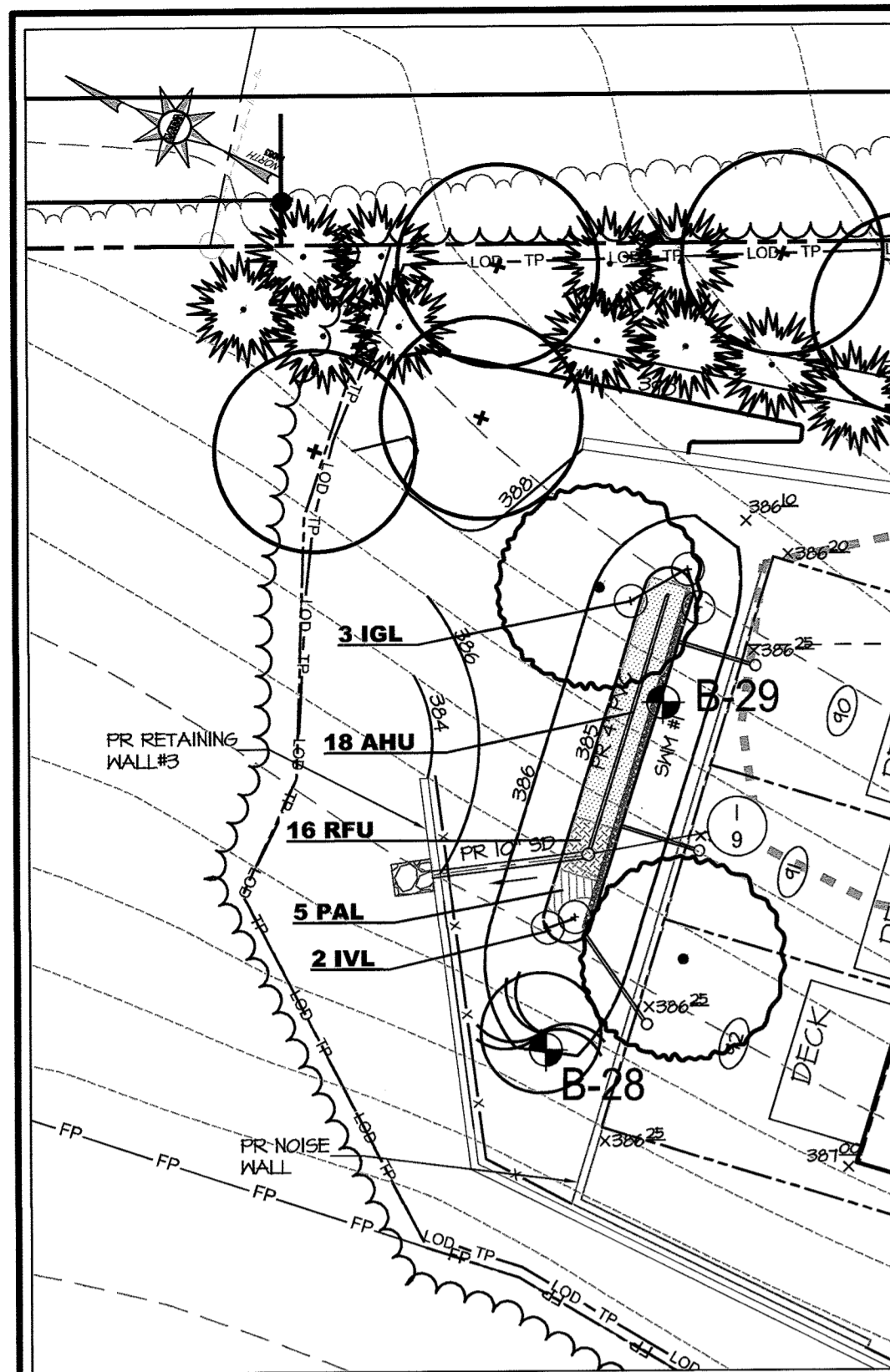
DEEP RUN PROPERTY

LANDSCAPE PLAN

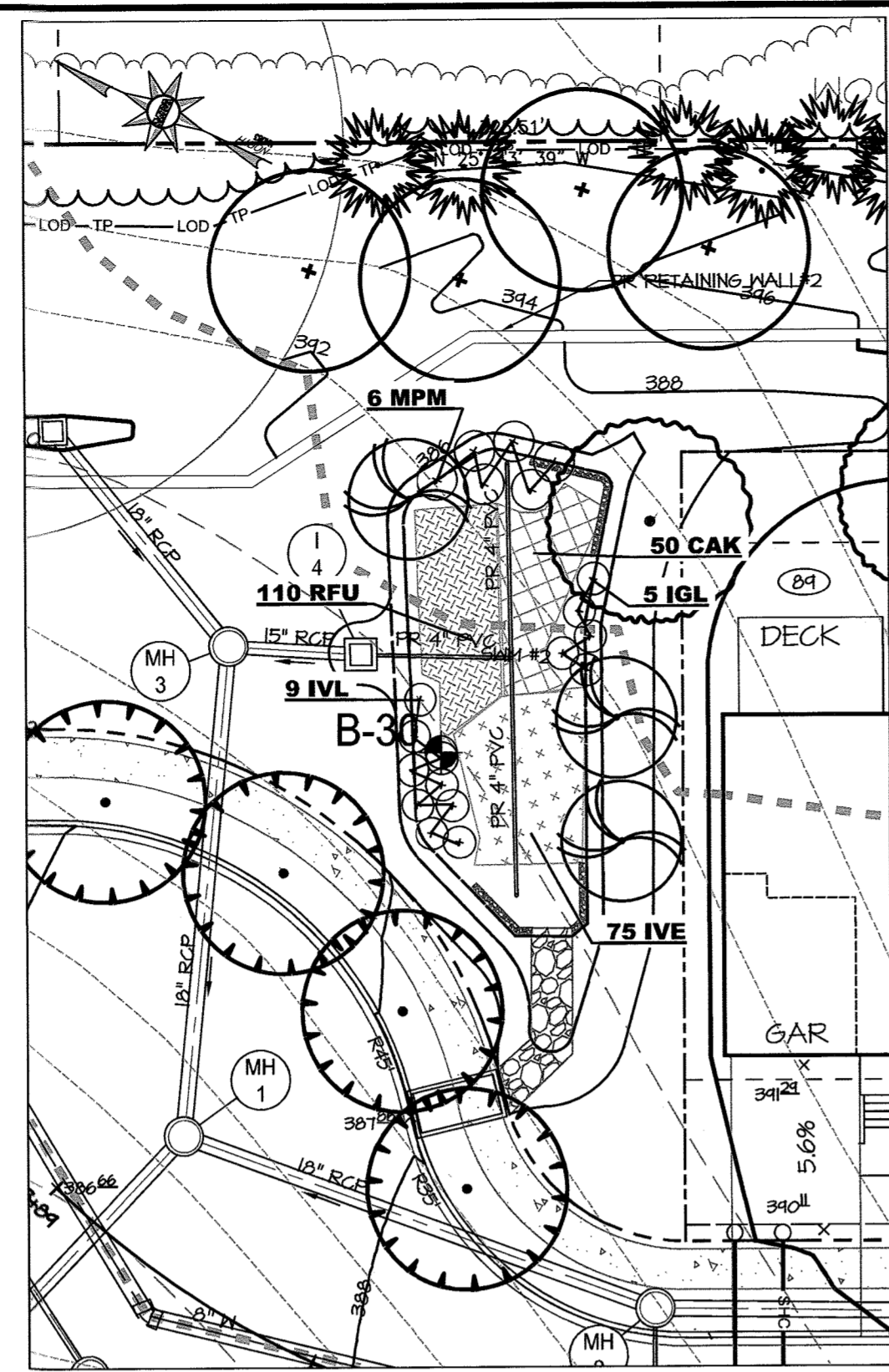
TAX MAP 37 GRIDS 2 PARCEL 753 ZONED: R-SA-8
1ST ELECTION DISTRICT
HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:	SCALE:
		15368 x 06	1" = 50'
		DATE:	6-6-18
		DRAWN BY:	CRM
		DESIGN BY:	CRM
		REVIEW BY:	CMG
		SHEET:	15 OF 29

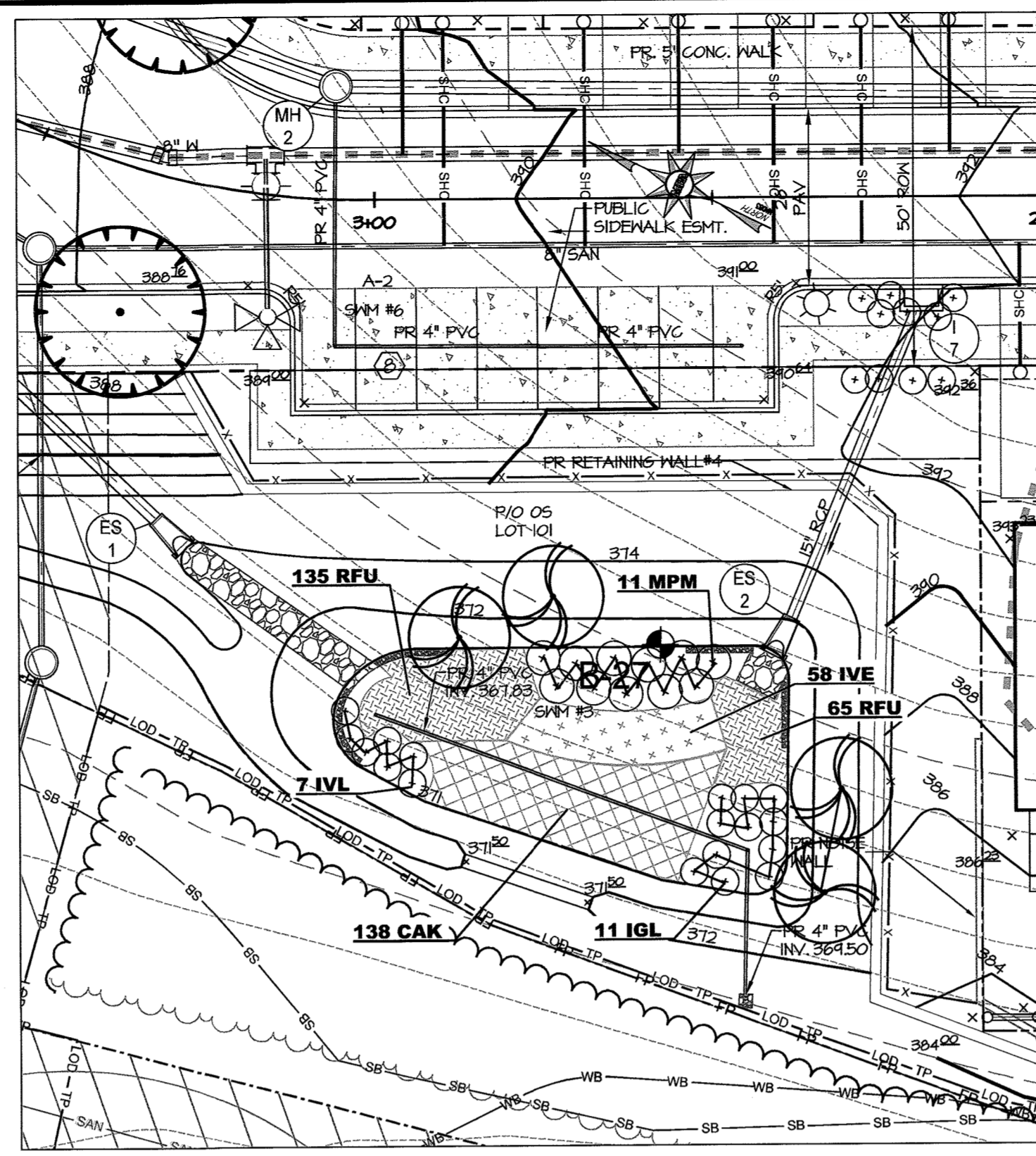
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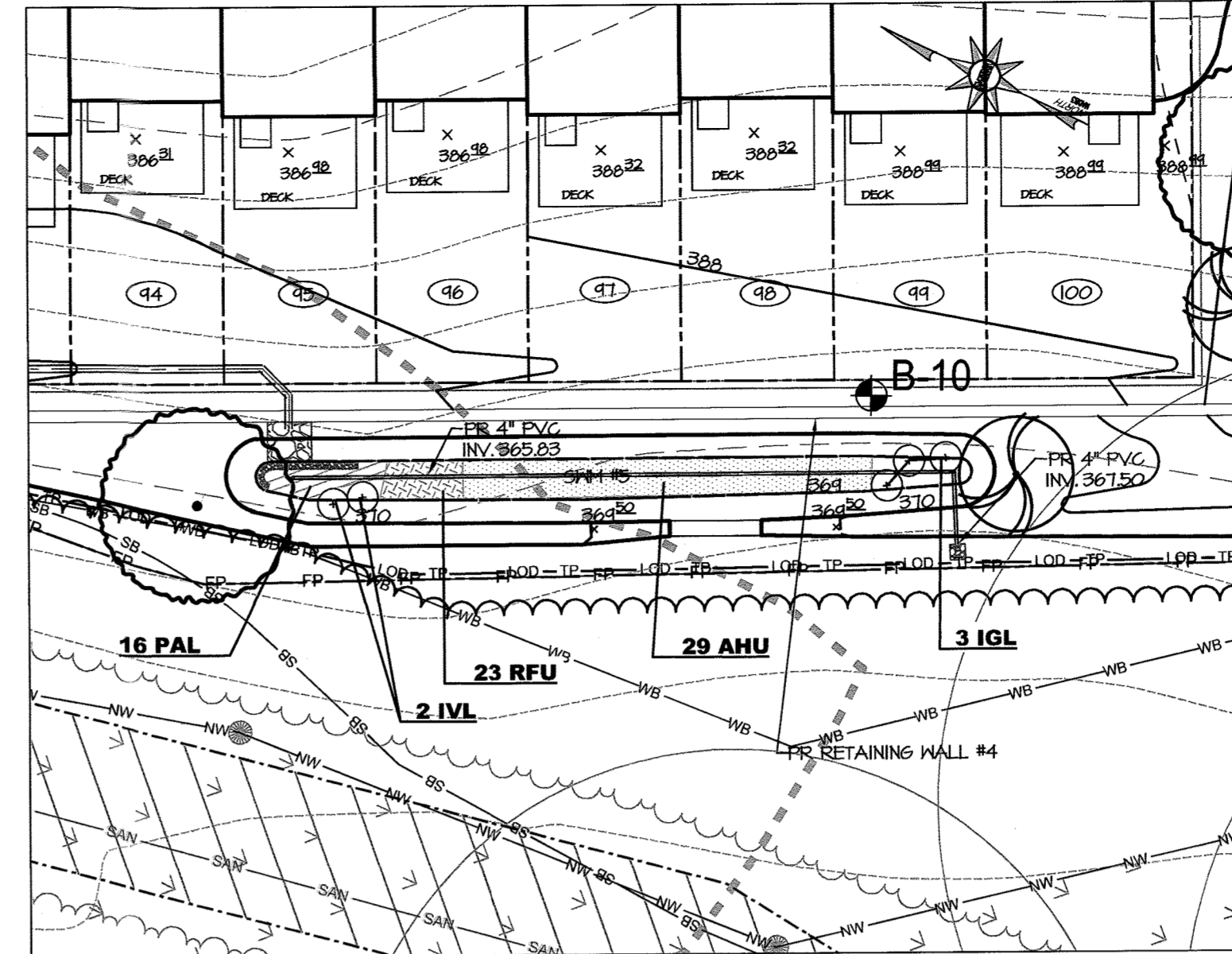
SWM #1
SCALE: 1"=20'



SWM #2
SCALE: 1"=20'



SWM #3 & #6
SCALE: 1"=20'



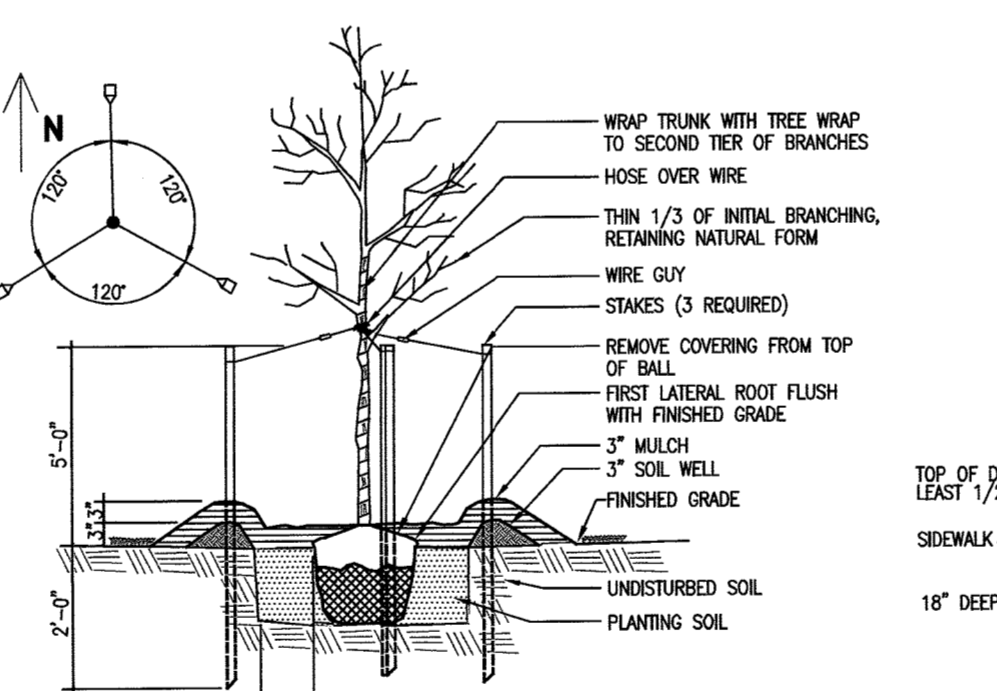
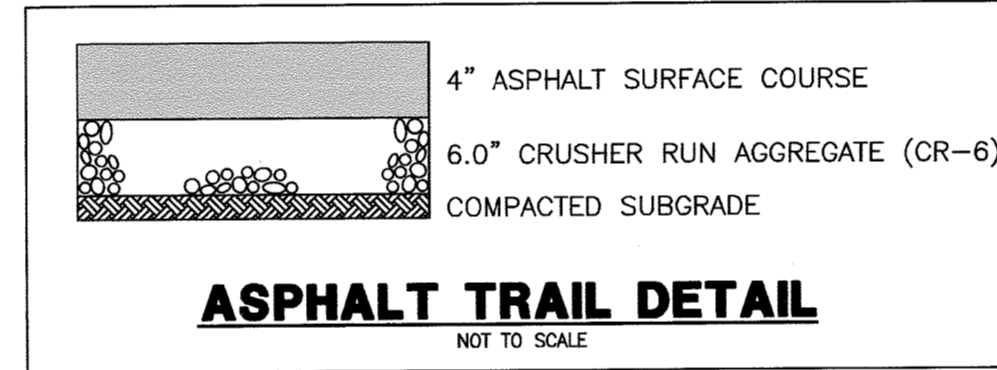
SWM #5
SCALE: 1"=20'

NOTE: LANDSCAPING FOR LOTS 65-100 ARE PROVIDED IN ACCORDANCE WITH A CERTIFIED LANDSCAPE PLAN (CONTRACTS WERE MADE INCLUDED WITH THE SALES CONTRACTS) IN ACCORDANCE WITH SECTION 16.12.4 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING SHALL BE POSTED AS PART OF THE DEVELOPER'S OBLIGATION IN THE AMOUNT OF \$4,800.00 SHADE TREES @ \$500.00 EACH, AND 16 DECORATIVE EVERGREEN TREES @ \$50.00 EACH.

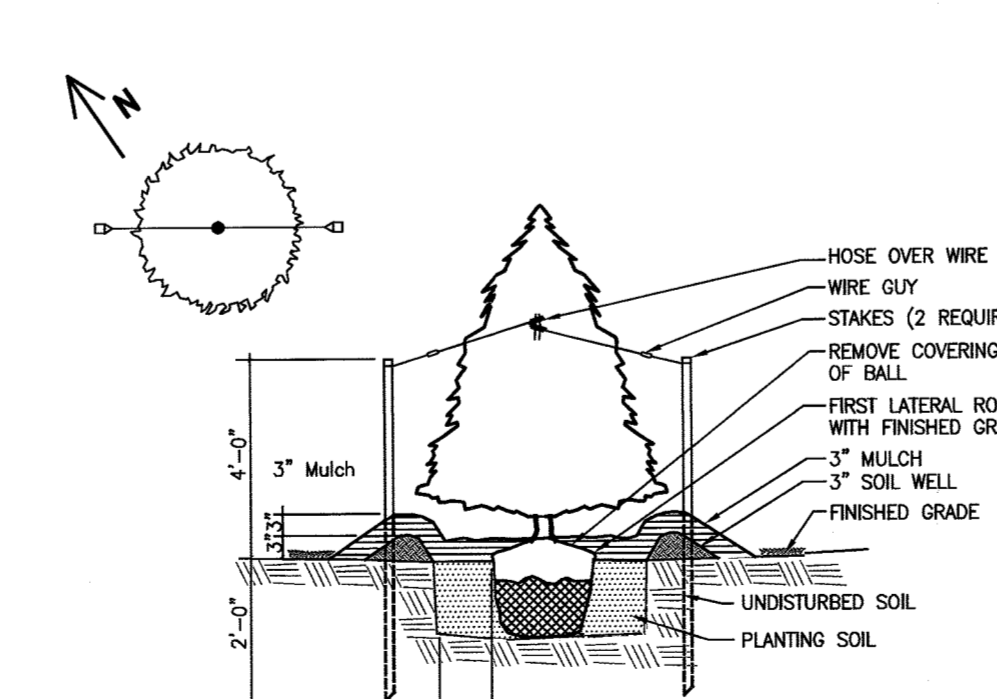
KEY	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING
SHRUBS						
IGL	22	<i>Ilex glabra 'Shamrock'</i>	Inkberry	3 Gal.	CONT.	4' O.C.
IVL	20	<i>Itea virginica 'Little Henry'</i>	Virginia Sweetpire	3 Gal.	CONT.	4' O.C.
MPM	17	<i>Myrica pensylvanica 'Myrtman'</i>	Myrtman Northern Bayberry	3 Gal.	CONT.	5' O.C.
	59					
PERENNIAL & GRASSES						
AHU	47	<i>Amsonia hubrichtii</i>	Threadleaf Amsonia	1 Gal.	CONT.	36" O.C.
CAK	188	<i>Calamagrostis x acutiflora 'Karl Foerster'</i>	Feather Reed Grass	3 Gal.	CONT.	24" O.C.
IVE	133	<i>Iris versicolor</i>	Blue Flag Iris	1 Gal.	CONT.	24" O.C.
PAL	21	<i>Pennisetum alopecuroides 'Little Bunny'</i>	Little Bunny Fountain Grass	1 Gal.	CONT.	24" O.C.
RFU	349	<i>Rudbeckia fulgida</i>	Orange Coneflower	1 Gal.	CONT.	12" O.C.
	738					

LANDSCAPE NOTES

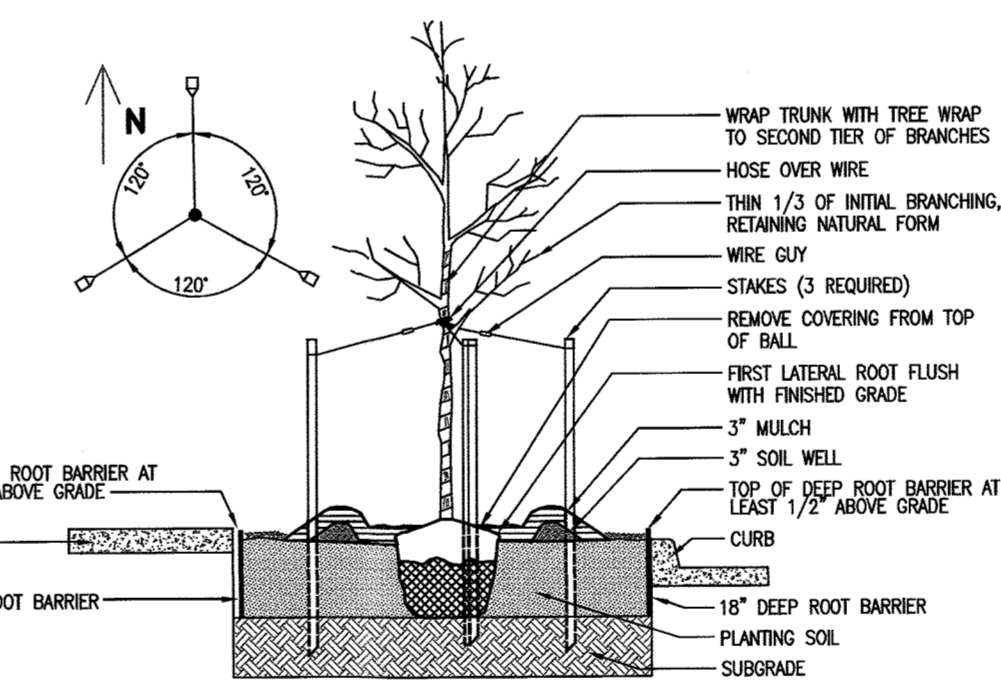
- ALL PLANT MATERIAL SHALL BE NURSERY GROWN AND SHALL COMPLY WITH THE 'AMERICAN STANDARD FOR NURSERY STOCK' (ANSI Z60.1), LATEST EDITION, AND ALL ADDENDA PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERMEN.
- TREES AND SHRUBS SHALL BE TYPICAL OF THEIR SPECIES AND VARIETY, HAVE NORMAL GROWTH HABIT, WELL DEVELOPED, DENSELY FOLIATED BRANCHES, AND VIGOROUS, FIBROUS ROOT SYSTEMS.
- TREES AND SHRUBS SHALL BE FRESHLY DUG AND NURSERY GROWN. THEY SHALL HAVE BEEN GROWN UNDER CLIMATIC CONDITIONS SIMILAR TO THOSE IN THE LOCALITY OF THE PROJECT OR PROPERLY ACCLIMATED TO CONDITIONS OF THE LOCALITY OF THE PROJECT.
- TREES AND SHRUBS SHALL BE FREE FROM DEFECTS AND INJURIES AND CERTIFIED BY APPROPRIATE FEDERAL AND STATE AUTHORITIES TO BE FREE OF DISEASES AND INSECT INFESTATIONS.
- THE LANDSCAPE CONTRACTOR SHALL WARRANT ALL PLANT MATERIAL FOR A PERIOD OF ONE (1) FULL YEAR AFTER THE DATE OF SUBSTANTIAL COMPLETION AGAINST DEFECTS, UNSATISFACTORY GROWTH, DISEASE OR DEATH, UNSATISFACTORY, UNHEALTHY, DYING OR DEAD PLANT MATERIAL (IN THE OPINION OF THE LANDSCAPE ARCHITECT) SHALL BE REPLACED WITH THE SAME SIZE AND SPECIES.
- IT SHALL BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR TO ADEQUATELY AND PROPERLY MAINTAIN THE LANDSCAPED AREAS, WHICH SHALL INCLUDE WATERING, CLEANING OF WEEDS AND DEBRIS, PRUNING AND TRIMMING, REPLACEMENT OF DEAD OR DISEASED PLANTINGS, AND FERTILIZING TO MAINTAIN HEALTHY GROWTH FOR THE WARRANTY PERIOD.
- THE LANDSCAPE CONTRACTOR SHALL STAKEOUT PLANT LOCATIONS IN THE FIELD. THE LANDSCAPE ARCHITECT OR HIS REPRESENTATIVE SHALL OBSERVE THESE LOCATIONS PRIOR TO COMMENCING PLANT PIT EXCAVATION. THE LANDSCAPE CONTRACTOR SHALL MAKE ANY ADJUSTMENTS AS REQUESTED BY THE LANDSCAPE ARCHITECT.
- ALL PLANT SAUCERS AND PLANT BEDS SHALL BE MULCHED WITH DOUBLE SHREDDED HARDWOOD MULCH, A MINIMUM OF 3" IN DEPTH.
- NO SUBSTITUTIONS OF PLANT MATERIAL SHALL BE PERMITTED WITHOUT WRITTEN AUTHORIZATION OF THE LANDSCAPE ARCHITECT OR HIS REPRESENTATIVE. THIS SHALL APPLY TO SUBSTITUTIONS OF SPECIES, LOCATION, SIZE, AND QUANTITY.
- THE LANDSCAPE CONTRACTOR SHALL INSTALL SHREDDED HARDWOOD BARK MULCH TO A DEPTH OF 3" UNDER AND SURROUNDING ALL NEW LANDSCAPED MASS PLANTING AREAS TO PROVIDE A UNIFORM AND CONTINUOUS SURFACE AND APPEARANCE BETWEEN AND AROUND ALL PLANT MATERIAL, BUILDING LINES AND PAVED AREAS. IN GENERAL, THIS PERTAINS TO ALL PLANT MATERIAL THAT IS PLANTED CLOSER THAN SIX (6) FEET CENTER TO CENTER. IT IS THE INTENT OF THIS CONTRACT TO INSTALL LANDSCAPE MAT UNDER THE ENTIRE AREA OF SHREDDED BARK MULCH.
- TREES SHALL BE LOCATED A MINIMUM OF 3' FROM SEWER/WATER CONNECTIONS. CONTRACTOR SHALL BE LIABLE FOR DAMAGE TO ANY AND ALL PUBLIC AND PRIVATE UTILITIES, WATER AND SEWER LINES.
- ALL CONTAINER GROWN MATERIAL SHALL BE HEALTHY, VIGOROUS, WELL-ROOTED PLANTS AND ESTABLISHED IN THE CONTAINER IN WHICH THEY ARE SOLD. THE PLANTS SHALL HAVE TOPS WHICH ARE GOOD QUALITY AND ARE IN A HEALTHY GROWING CONDITION.
- CONTRACTOR SHALL SLIGHTLY ADJUST PLANT LOCATIONS IN THE FIELD AS NECESSARY TO BE CLEAR OF DRAINAGE SWALES AND UTILITIES. FINISHED PLANTING BEDS SHALL BE GRADED SO AS NOT TO IMPEDE DRAINAGE AWAY FROM BUILDINGS.
- TREE STAKING AND GUYING SHALL BE DONE PER DETAILS. CONTRACTOR SHALL ENSURE THAT TREES REMAIN PLUMB AND UPRIGHT FOR THE DURATION OF THE GUARANTEE PERIOD.
- ALL TREE PITS, SHRUB BEDS, AND PREPARED PLANTING BEDS ARE TO BE COMPLETELY EXCAVATED IN ACCORDANCE WITH THE PLANTING DETAILS.
- CROWN OF ROOT BALL SHALL BE HIGHER (AFTER SETTING) THAN ADJACENT SOIL.
- SHADE TREES: HEIGHT SHALL BE MEASURED FROM THE CROWN OF THE ROOT BALL TO THE TOP OF MATURE GROWTH. SPREAD SHALL BE MEASURED TO THE END OF BRANCHING EQUALLY AROUND THE CROWN FROM THE CENTER OF THE TRUNK. MEASUREMENTS ARE NOT TO INCLUDE ANY TERMINAL GROWTH. SINGLE TRUNK TREES SHALL BE FREE OF 'Y' CROTCHES THAT COULD BE POINTS OF WEAK LIMB STRUCTURE OR DISEASE INFESTATION.
- CONTRACTOR MUST CONTACT THE OWNER AT LEAST TEN WORKING DAYS IN ADVANCE TO SCHEDULE ACCEPTANCE INSPECTION(S). CONTRACTOR MUST REPLACE ALL DEAD OR UNACCEPTABLE PLANTS DURING THE FOLLOWING RECOMMENDED PLANTING SEASON.
- TREES SHALL BE PLANTED DURING ACCEPTABLE PLANTING SEASONS: BETWEEN MARCH 15 AND MAY 15 AND BETWEEN AUGUST 15 AND NOVEMBER 15 OR AS APPROVED BY OWNERS REPRESENTATIVE.
- ALL TREE STAKING AND GUYING SHALL BE REMOVED BY THE CONTRACTOR AFTER THE TREES ARE ESTABLISHED.
- SEEDED AREAS THAT WASH OUT MUST BE FILLED AND GRADED AS NECESSARY AND THEN RESEEDED. SOME TYPE OF ANCHORING METHOD SHOULD THEN BE USED TO HOLD SEED AND MULCH IN PLACE. THIS IS ESPECIALLY IMPORTANT AROUND WATER COURSES, IN SWALES AND AREAS OF CONCENTRATED FLOWS, AND ON SLOPES.
- THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.
- THE OWNER, TENANT AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING, INCLUDING BOTH PLANT MATERIALS AND BERMS, FENCES AND WALLS. ALL PLANT MATERIAL 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.
- AT THE TIME OF INSTALLATION, ALL SHRUBS AND OTHER PLANTINGS HEREWIT LISTED AND APPROVED FOR THIS SITE, SHALL BE OF THE PROPER HEIGHT REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATION OF REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THIS APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN THE RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO APPLICABLE PLANS AND CERTIFICATES.
- EVEN THOUGH THERE ARE GAPS IN THE EXISTING WOOLAND ALONG PERIMETERS 2, 3, & 4, THE OVERALL AGGREGATE EFFECT OF THE EXISTING WOOLAND TO REMAIN EXCEEDS THE 25 FOOT MINIMUM DEPTH, AND FILING IN THOSE GAPS WITH NEW LANDSCAPING WOULD REQUIRE THE DISTURBANCE OF EXISTING ENVIRONMENTAL FEATURES ON OPEN SPACE LOT 18. THEREFORE, THE DEPARTMENT OF PLANNING AND ZONING HAS DETERMINED THAT CREDIT MAY BE GIVEN FOR EXISTING VEGETATION TO REMAIN ALONG THE ENTIRETY OF PERIMETERS 3 AND 4, AND FOR 470.31 LINEAR FEET ALONG PERIMETER 2.



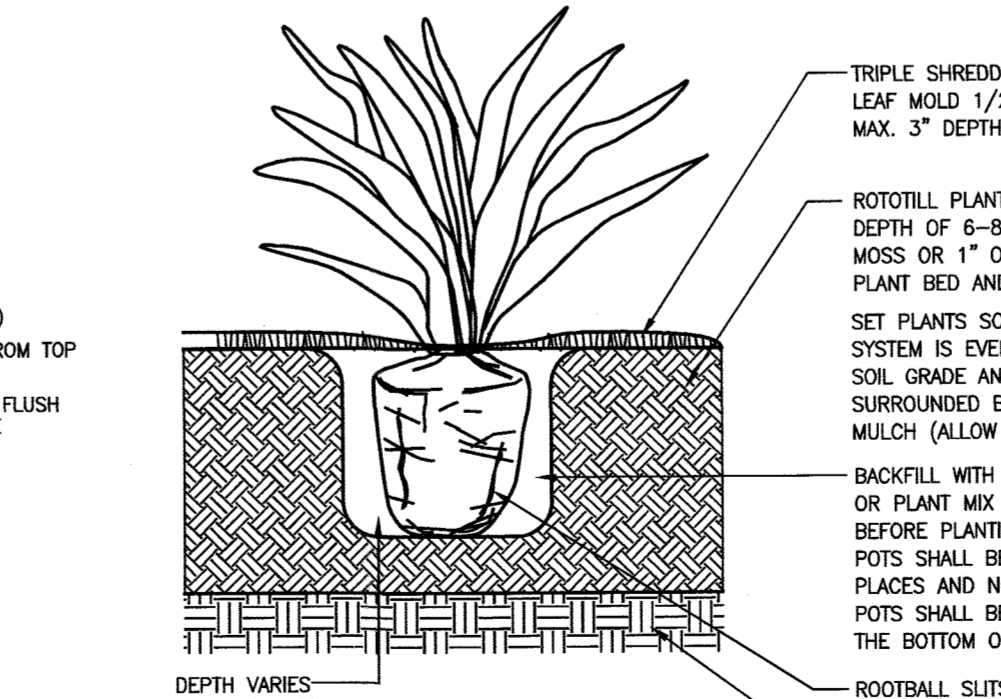
DECIDUOUS TREE DETAIL
NOT TO SCALE



EVERGREEN TREE DETAIL
NOT TO SCALE



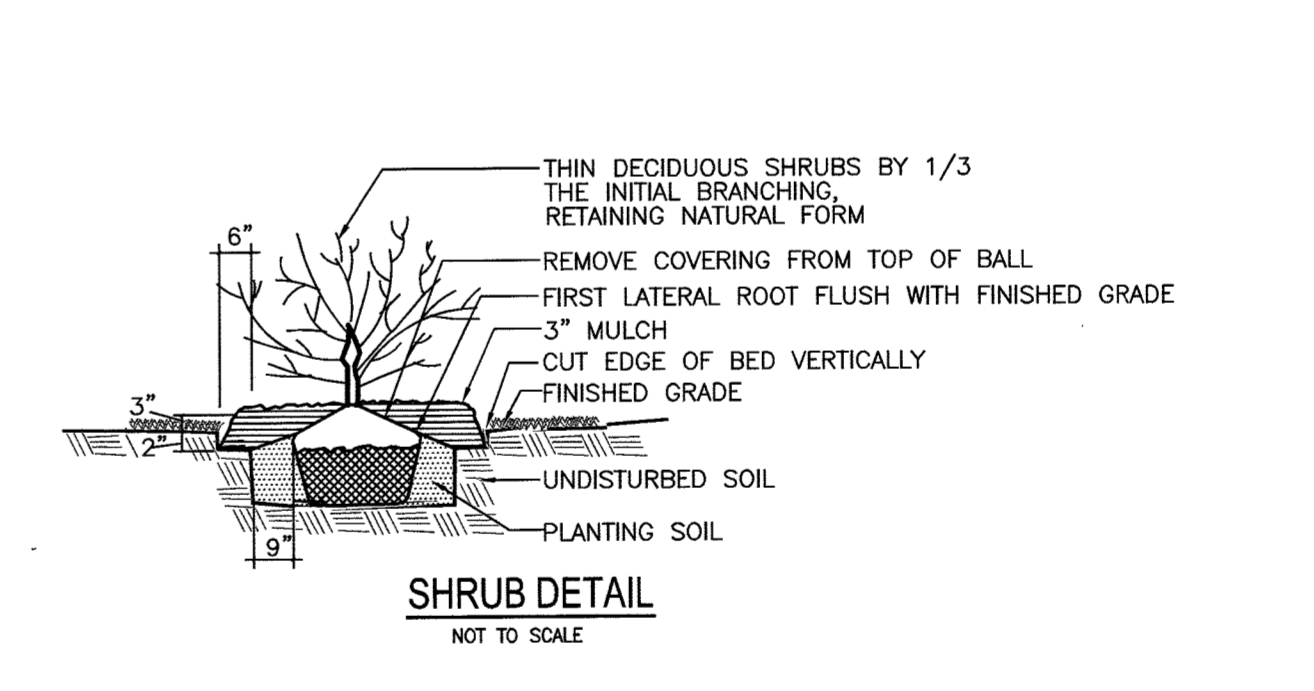
STREET TREE DETAIL
NOT TO SCALE



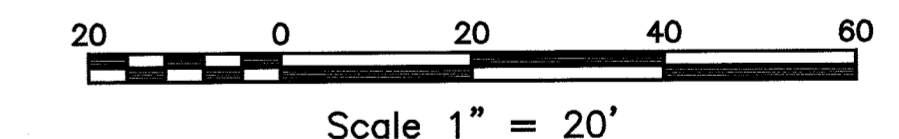
PERENNIAL/GROUNDCOVER DETAIL
NOT TO SCALE

SPECIMEN TREE SP-5 CONSTRUCTION NOTE

- INSTALL RETAINING WALLS WITHIN 100 FEET OF THE BEECH WITHIN ONE MONTH OF THE CUT EXCAVATION AND NOT BETWEEN JUNE 15 TO SEPTEMBER 15.
- REMOVE VEGETATION WITHIN 50' OF THE BEECH AND STABILIZE WITH TALL FESCUE BLEND APPROVED BY U OF MARYLAND (NOT K31).
- CONTACT THE DEPT. OF REC. & PARKS AT 410 313-1695 WITH THE SCHEDULE FOR ALL CONSTRUCTION WITHIN 100' OF THE BEECH AT LEAST 2 WEEKS BEFORE WORK TO BEGIN.
- HAVE HOA MAINTAIN OPEN SPACE LOT 19 THROUGH LICENSE AGREEMENT.



SHRUB DETAIL
NOT TO SCALE



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

DEVELOPER'S / OWNER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.12.4 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 YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.
 NAME: Glenn Curtis DATE: 8-29-2018
 SIGNATURE: Glenn Curtis

OWNER / APPLICANT / DEVELOPER :
 DEEP RUN PROPERTY MANAGEMENT, LLC.
 ADDRESS: 5240 WEBB COURT
 MOOREHEAD CITY, NORTH CAROLINA 28557
 CONTACT: GLENN CURTIS
 PHONE: (252) 726-8633
 EMAIL: GCURTIS@EC.RR.COM

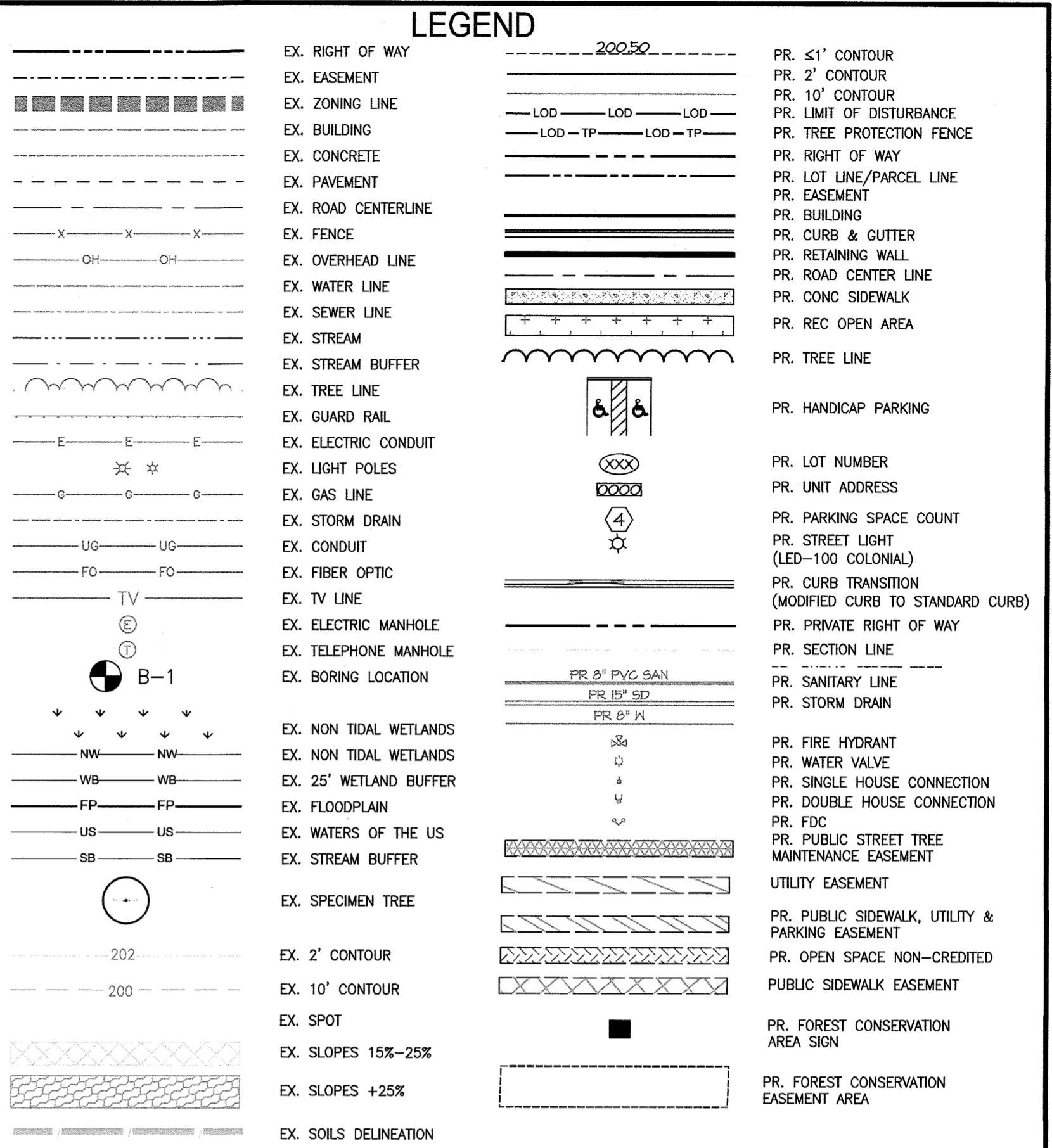
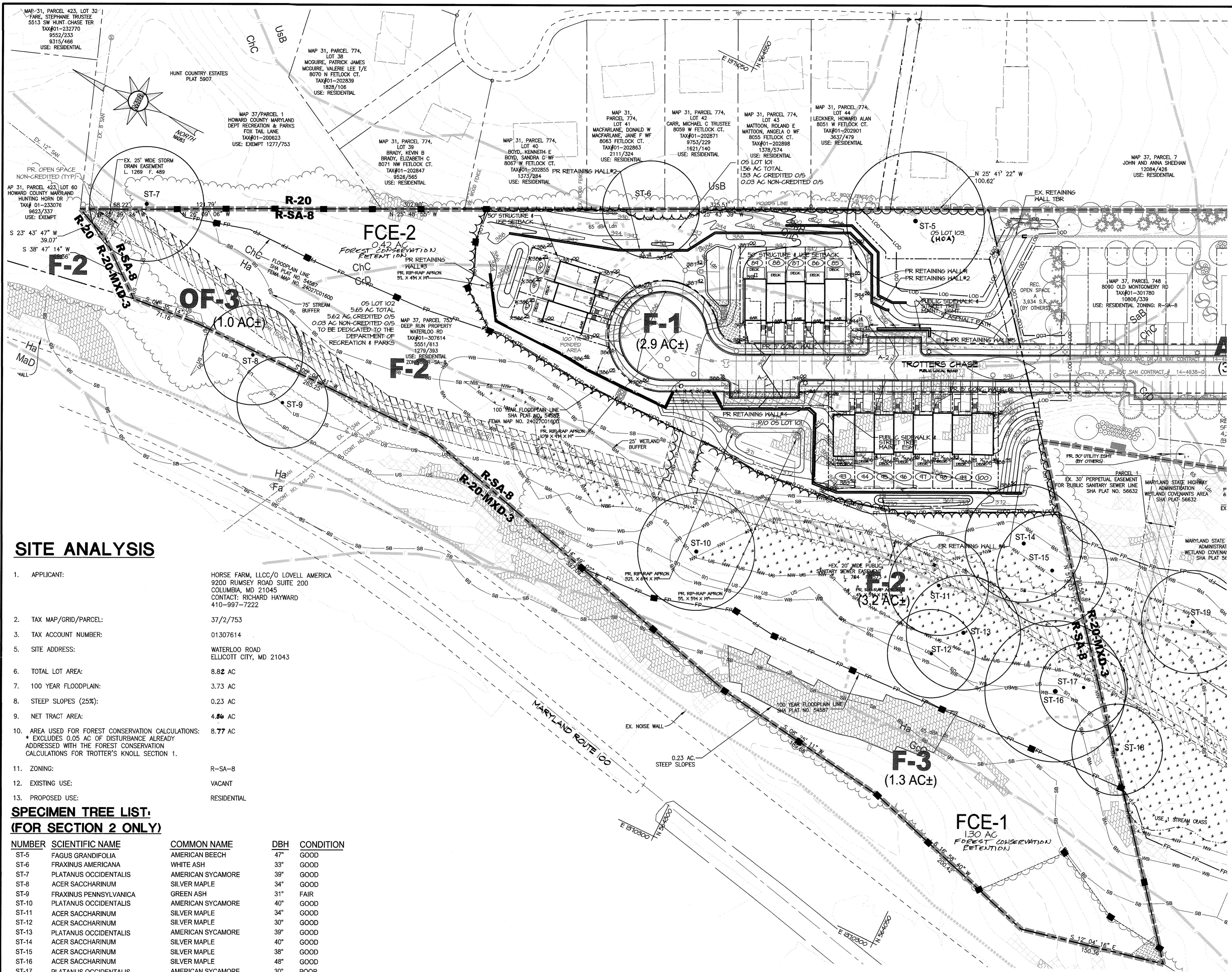
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TROTTER'S KNOLL - SECTION II
 DEEP RUN PROPERTY

LANDSCAPE DETAILS AND SWM LANDSCAPE PLAN

TAX MAP 37 GRIDS 2 PARCEL 753 ZONED: R-SA-8
 1ST ELECTION DISTRICT
 HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:
		15368 x 06
		SCALE: 1" = 20'
		DATE: 6-6-18
		DRAWN BY: MAM
		DESIGN BY: MAM
		REVIEW BY: MM
		SHEET: 16 OF 29



SITE ANALYSIS

- APPLICANT: HORSE FARM, LLC/O LOVELL AMERICA
9200 RUMSEY ROAD SUITE 200
COLUMBIA, MD 21043
CONTACT: RICHARD HAYWARD
410-997-7222
- TAX MAP/GRID/PARCEL: 37/2/753
- TAX ACCOUNT NUMBER: 01307614
- SITE ADDRESS: WATERLOO ROAD
ELLCOTT CITY, MD 21043
- TOTAL LOT AREA: 8.82 AC
- 100 YEAR FLOODPLAIN: 3.73 AC
- STEEP SLOPES (25%): 0.23 AC
- NET TRACT AREA: 4.86 AC
- AREA USED FOR FOREST CONSERVATION CALCULATIONS: 8.77 AC
* EXCLUDES 0.05 AC OF DISTURBANCE ALREADY ADDRESSED WITH THE FOREST CONSERVATION CALCULATIONS FOR TROTTER'S KNOLL SECTION 1.
- ZONING: R-SA-8
- EXISTING USE: VACANT
- PROPOSED USE: RESIDENTIAL

**SPECIMEN TREE LIST:
(FOR SECTION 2 ONLY)**

NUMBER	SCIENTIFIC NAME	COMMON NAME	DBH	CONDITION
ST-5	FAGUS GRANDIFOLIA	AMERICAN BEECH	47"	GOOD
ST-6	FRAXINUS AMERICANA	WHITE ASH	33"	GOOD
ST-7	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	39"	GOOD
ST-8	ACER SACCHARINUM	SILVER MAPLE	34"	GOOD
ST-9	FRAXINUS PENNSYLVANICA	GREEN ASH	31"	FAIR
ST-10	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	40"	GOOD
ST-11	ACER SACCHARINUM	SILVER MAPLE	34"	GOOD
ST-12	ACER SACCHARINUM	SILVER MAPLE	30"	GOOD
ST-13	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	39"	GOOD
ST-14	ACER SACCHARINUM	SILVER MAPLE	40"	GOOD
ST-15	ACER SACCHARINUM	SILVER MAPLE	38"	GOOD
ST-16	ACER SACCHARINUM	SILVER MAPLE	48"	GOOD
ST-17	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	30"	POOR
ST-18	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	31"	GOOD
ST-19	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	35"	POOR

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
James 5/8/2019
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Glenn Curtis 5-10-19
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Ken Deane 5-21-19
 CHIEF, LAND DEVELOPMENT DIVISION DATE

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

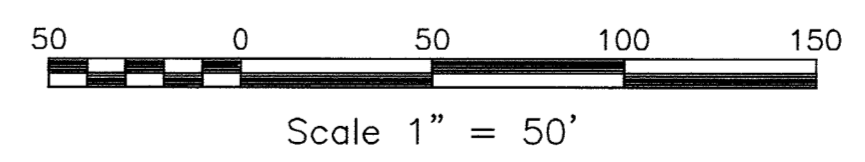
Name: Glen Curtis DATE: 8-29-2018

Signature: *Glen Curtis*

SOILS CHART

SOILS LEGEND				
SYMBOL	NAME/DESCRIPTION	SOIL TYPE	HYDRIC SOIL	'K' FACTOR
ChC	CHILLUM-RUSSET LOAMS, 5-10% SLOPES	C	NO	0.43
Cd	CROOM AND EYEBORO SOILS, 10-15% SLOPES	C	NO	0.37
FoaA	FALLSINGTON SANDY LOAM, 0-2% SLOPES	D	NO	0.32
Ha	HATBORO-CORDORUS SILT LOAMS, 0-3% SLOPES	D	YES	0.37
GcC	GLADSTONE-LEGORE COMPLEX, 8-15 % SLOPES	A	NO	0.28
SaB	SASSAFRAS LOAM, 2-5% SLOPES	B	NO	0.32
UsB	URBAN LAND-FALLSINGTON COMPLEX, 0-2% SLOPES	D	NO	0.37

- SOURCE: THE UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE'S WEB SOIL SURVEY, CONSULTED OCTOBER 4, 2017. AVAILABLE ONLINE AT <HTTP://WEB.SURVEY.NRCS.USDA.GOV/APPS>. 'K' FACTORS SHOWN ARE FOR WHOLE SOIL.
- HYDRIC SOILS INFORMATION ADAPTED FROM THE NATIONAL HYDRIC SOILS LIST FOR MARYLAND, AT <HTTP://SOILS.USDA.GOV/USHYDRIC/LISTS/STATE.HTML>. CONSULTED ON JUNE 23, 2015.



OWNER / APPLICANT / DEVELOPER :
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 PHONE: (252) 726-6833
 EMAIL: GCURTIS1@EC.RR.COM

**FOREST CONSERVATION WORKSHEET
VERSION 1.0
(Enter in Yellow Cells)**

NET TRACT AREA:

A. Total tract area.....	8.82
B. Area within 100 year floodplain.....	3.73
C. Area to remain in agricultural production.....	0.00
D. Net tract area.....	5.09

LAND USE CATEGORY: (from table 3.2.1, page 40, Manual)

Input the number "1" under the appropriate land use zoning, and limit to only one entry.

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

E. Afforestation Threshold..... 15% x D = 0.80
 F. Conservation Threshold..... 20% x D = 1.00

EXISTING FOREST COVER:

G. Existing forest cover (excluding floodplain).....	4.60
H. Area of forest above afforestation threshold.....	3.80
I. Area of forest above conservation threshold.....	3.60

BREAK EVEN POINT (BEP):

J. Forest retention above threshold with no mitigation (BEP).....	1.70
K. Clearing permitted without mitigation.....	2.90

PROPOSED FOREST CLEARING:

L. Total area of forest to be cleared.....	2.88
M. Total area of forest to be retained.....	1.70

PLANTING REQUIREMENTS:

N. Reforestation for clearing above conservation threshold.....	0.70
P. Reforestation for clearing below conservation threshold.....	0.00
Q. Credit for retention above conservation threshold.....	0.73
R. Total reforestation required.....	0.00
S. Total afforestation required.....	0.00
T. Total reforestation and afforestation required.....	0.00

NOTE: FOREST CONSERVATION EASEMENT AREAS ARE TO BE AT LEAST 35' FOOT WIDTH MINIMUM. FOREST CONSERVATION EASEMENT AREAS COUNTED ON THIS PLAN THAT MEASURE LESS THAN 35' IN WIDTH ARE LOCATED BOTH ADJACENT TO EXISTING WOODLAND LOCATED IN OPEN SPACE (LOT 102) THAT IS BEING DEDICATED TO HOWARD COUNTY AND MAINTAINED BY THE HOWARD COUNTY DEPARTMENT OF RECREATION AND PARKS. ALL FOREST CONSERVATION EASEMENT AREAS SHOWN ON THIS PLAN THAT MEASURE LESS THAN 35' IN WIDTH ARE ALSO ADJACENT TO LAND THAT IS LOCATED WITHIN A FLOODPLAIN. THEREFORE, DPZ DETERMINED THAT PROPOSED FOREST CONSERVATION EASEMENT AREAS THAT ARE LESS THAN 35' IN WIDTH AS SHOWN ON THIS PLAN ARE ADEQUATELY PROTECTED AND MAY BE INCORPORATED INTO THE CREDITED FOREST CONSERVATION EASEMENT AREA.

MORRIS & RITCHIE ASSOCIATES, INC.
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**TROTTER'S KNOLL - SECTION II
DEEP RUN PROPERTY**

FOREST CONSERVATION PLAN

TAX MAP 37 GRIDS 2 PARCEL 753 ZONED: R-SA-8
 1ST ELECTION DISTRICT
 HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:
		15368 x 06
		SCALE: 1" = 50'
		DATE: 6-6-18
		DRAWN BY: MAM
		DESIGN BY: MAM
		REVIEW BY: MM
		SHEET: 17 OF 29

F-18-107

FOREST STAND SUMMARY/NARRATIVE:

THE SUBJECT PROPERTY ENCOMPASSES 19.6± ACRES AND IS LOCATED BETWEEN OLD MONTGOMERY ROAD AND MD ROUTE 100 IN HOWARD COUNTY, MARYLAND. THE SUBJECT PROPERTY IS BOUNDED BY RESIDENTIAL DEVELOPMENTS TO THE NORTH, SOUTH, AND EAST, AND BY UNDEVELOPED MARYLAND STATE HIGHWAY LANDS TO THE WEST THAT ARE RESTRICTED BY METAD COVENANTS. THE SUBJECT PROPERTY CONSISTS OF TWO PARCELS OF LAND, TOTALING 19.6± ACRES. THE HORSE FARM PARCEL, THE PARCEL TO THE SOUTH, WAS RECENTLY USED AS AN AGRICULTURAL FIELD. THE CURTIS PARCEL, THE PARCEL TO THE NORTH, CONTAINS UNDEVELOPED FOREST AND AN EXISTING SEWER RIGHT-OF-WAY.

THE SUBJECT PROPERTY DRAINS TOWARD THE WEST VIA A WETLAND AREA THAT FORMS AN INTERMITTENT STREAM NEAR THE EASTERN BOUNDARY OF THE HORSE FARM PROPERTY BEFORE CONTRIBUTING TO DEEP RUN. DEEP RUN EXTENDS THROUGH THE WESTERN PORTION OF THE CURTIS PROPERTY IN A SOUTHWEST DIRECTION.

A NUMBER OF LARGE INDIVIDUAL TREES GROW EITHER ON-SITE, OR IN CLOSE PROXIMITY TO THE SUBJECT PROPERTY. THESE TREES ARE GENERALLY LOCATED ALONG OLD PARCEL BOUNDARIES AND WITHIN THE FLOODPLAIN OF DEEP RUN. NINETEEN OF THESE TREES HAVE ATTAINED SPECIMEN TREE SIZE AND THEIR SPECIES, SIZE, AND CONDITION ARE LISTED ON THE COVER SHEET. THEIR LOCATIONS ARE SHOWN ON THIS PLAN.

GTA OBSERVED THAT THE LAND COVER OF THE SUBJECT PROPERTY IS COMPOSED OF THREE FOREST STANDS THAT TOTAL 7.4± ACRES, WHICH ARE PRIMARILY LOCATED WITHIN THE CURTIS PROPERTY. EFFECTIVELY, THERE IS NO FOREST (<0.02 ACRES) ON THE HORSE FARM PARCEL. THE REMAINING LAND COVER CONSISTS OF THREE HEDGEROWS, THREE OPEN FIELDS/MEADOW, A TREE GROUP, A SCRUB-SHRUB WETLAND AREA, AN ABANDONED FIELD, AND A LAWN AREA. A SUMMARY DESCRIPTION OF EACH OF THESE AREAS FOLLOWS:

F-1
FOREST STAND F-1 ENCOMPASSES 2.9 AC±, THE MAJORITY OF WHICH IS LOCATED OUTSIDE THE FLOODPLAIN AREA ALONG DEEP RUN WITHIN THE CURTIS PROPERTY. THIS AREA IS DOMINATED IN THE OVERSTORY BY GREEN ASH, BLACK CHERRY, AMERICAN BEECH, TULPTREE AND RED MAPLE WITH MULTIFLORA ROSE AND WINEBERRY AS DOMINANT UNDERSTORY AND HERBACEOUS SPECIES. TREES WITHIN THIS FOREST STAND RANGE FROM 4" TO 20" DIAMETER AT BREST HEIGHT (DBH) WITH THE EXCEPTION OF TWO SPECIMEN TREES, LOCATED ALONG THE EASTERN PROPERTY LINE.

THIS UPLAND FOREST ACTS AS A WOODED CORRIDOR ALONG DEEP RUN. HOWEVER, DUE TO ITS LOCATION OUTSIDE OF THE FLOODPLAIN, STREAM BUFFER, AND OTHER SENSITIVE ENVIRONMENTS, THE MAJORITY OF THIS FOREST IS NOT PRIORITY FOR RETENTION, WITH THE EXCEPTION OF THE SPECIMEN TREES AND STEEP SLOPES.

F-2
FOREST STAND F-2 ENCOMPASSES 3.2 AC±, THE MAJORITY OF WHICH IS CONTAINED WITHIN THE STREAM AND WETLAND BUFFERS AND FLOODPLAIN OF DEEP RUN ON THE CURTIS PROPERTY. DOMINANT TREE SPECIES INCLUDE GREEN ASH, RED MAPLE, AMERICAN SYCAMORE, AND SILPERY ELM. BOXELDER AND WITCHHAZEL ARE FOUND WITHIN THE UNDERSTORY. THE HERBACEOUS LAYER IS REPRESENTED BY POISON IVY, MULTIFLORA ROSE, AND GRAPE SPECIES. TREES WITHIN THIS FOREST STAND RANGE FROM 4" TO 48" DBH.

THIS FOREST STAND ACTS AS A RIPARIAN BUFFER ALONG DEEP RUN. DUE TO ITS PRESENCE WITHIN STREAM BUFFERS AND FLOODPLAIN, AND DUE TO THE PRESENCE OF A NUMBER OF SPECIMEN TREES, THE MAJORITY OF THIS FOREST STAND IS PRIORITY FOR RETENTION.

F-3
FOREST STAND F-3 ENCOMPASSES 1.3 AC±, MOST OF WHICH ARE CONTAINED OUTSIDE THE FLOODPLAIN AND STREAM BUFFERS ALONG DEEP RUN WITHIN THE CURTIS PROPERTY. THIS STAND IS DOMINATED BY GREEN ASH, BLACK CHERRY, PERSIMMON AND PIN CHERRY WITH MULTIFLORA ROSE AND WINEBERRY AS DOMINANT UNDERSTORY AND HERBACEOUS SPECIES. TREES WITHIN THIS FOREST STAND RANGE FROM 4" TO 18" DBH.

THIS FOREST STAND ACTS AS A RIPARIAN BUFFER ALONG DEEP RUN. THE PORTIONS OF THIS FOREST STAND LOCATED WITHIN THE STREAM BUFFER AND FLOODPLAIN ARE PRIORITY FOR RETENTION.

H-1 (HORSE PROPERTY - NOT SHOWN ON THIS PLAN)
HEDGEROW AREA H-1 ENCOMPASSES 0.6 AC±, AND ACTS AS A PROPERTY LINE BUFFER ALONG THE SUBJECT PROPERTY'S EASTERN AND SOUTHERN BOUNDARIES. DOMINANT SPECIES INCLUDE BLACK, SOUTHERN RED, AND WHITE OAKS, WHITE PINE, AND BLACK CHERRY. TREES WITHIN THIS HEDGEROW RANGE FROM 33" TO 39" DBH, WHICH INCLUDES FOUR SPECIMEN TREES OF PIN, SOUTHERN RED, AND BLACK OAKS THAT RANGE FROM FAIR TO GOOD CONDITION.

THE PORTIONS OF THE HEDGEROW THAT INCLUDE SPECIMEN TREES ARE PRIORITY FOR RETENTION. THE HEDGEROW, GIVEN ITS SIZE AND THAT IT CONTAINS A NUMBER OF SPECIMEN TREES, COULD BE SUPPLEMENTED WITH PLANTINGS TO ESTABLISH A FOREST STAND ALONG THE EASTERN PROPERTY BOUNDARY.

H-2 (HORSE PROPERTY - NOT SHOWN ON THIS PLAN)
HEDGEROW AREA H-2 ENCOMPASSES 0.2 AC±, AND ACTS TO SEPARATE TWO OPEN FIELDS, OF-1 AND OF-2, ON THE HORSE FARM PORTION OF THE SUBJECT PROPERTY. DOMINANT TREE AND SHRUB SPECIES INCLUDE BLACK CHERRY, EASTERN REDCEDAR, AND MULTIFLORA ROSE. TREES WITHIN THIS HEDGEROW ARE YOUNG IN MATURITY AND RANGE FROM 2" TO 9" DBH.

THIS HEDGEROW DOES NOT CONTAIN ENVIRONMENTALLY SENSITIVE AREAS THAT WOULD BE PRIORITY FOR AFFORESTATION; NOR DOES IT CONTAIN SPECIMEN TREES. THEREFORE, THE HEDGEROW HAS LOW PRIORITY FOR RETENTION. THE HEDGEROW, GIVEN ITS SIZE, MATURITY, AND PROXIMITY TO ANY OTHER WOODED AREAS, OFFERS LITTLE INCENTIVE FOR ESTABLISHMENT OF A FOREST STAND.

H-3 (HORSE PROPERTY - NOT SHOWN ON THIS PLAN)
HEDGEROW AREA H-3 ENCOMPASSES 0.3 AC±, AND ACTS TO SEPARATE OPEN FIELD OF-2 FROM WETLAND AREA W-1 ON THE HORSE FARM PORTION OF THE SUBJECT PROPERTY. DOMINANT TREE SPECIES INCLUDE GREEN ASH, BLACK WALNUT AND PERSIMMON. MULTIFLORA ROSE AND BLACKBERRY SPECIES ARE DOMINANT UNDERSTORY AND HERBACEOUS SPECIES. TREES WITHIN THIS HEDGEROW ARE YOUNG IN MATURITY AND RANGE FROM 4" TO 8" DBH.

PORTIONS OF THIS HEDGEROW CONTAIN AREAS WITHIN THE WETLANDS AND WETLAND BUFFERS. THE AREAS WITHIN THE WETLAND BUFFER WOULD BE PRIORITY FOR RETENTION. HOWEVER, GIVEN THE HEDGEROW'S SIZE, MATURITY, AND LACK OF PROXIMITY TO OTHER WOODED AREAS, THERE IS LITTLE INCENTIVE FOR ESTABLISHMENT OF A FOREST STAND.

T-1 (HORSE PROPERTY - NOT SHOWN ON THIS PLAN)
TREE GROUP T-1 ENCOMPASSES 0.1 AC±, AND GROWS AROUND A FORMER HORSE WATERING DEPRESSION THAT IS ISOLATED WITHIN OPEN FIELD OF-1. DOMINANT TREE SPECIES INCLUDE BLACK WILLOW, BLACK CHERRY, AND MULTIFLORA ROSE. TREES WITHIN THIS TREE GROUP ARE YOUNG IN MATURITY AND RANGE FROM 4" TO 12" DBH. THIS TREE GROUP DOES NOT CONTAIN ENVIRONMENTALLY SENSITIVE AREAS. THEREFORE, THE TREE GROUP HAS LOW PRIORITY FOR RETENTION. THE TREE GROUP, GIVEN ITS SIZE, MATURITY, AND ISOLATION FROM OTHER WOODED AREAS, OFFERS LITTLE INCENTIVE FOR ESTABLISHMENT OF A FOREST STAND.

W-1 (HORSE PROPERTY - NOT SHOWN ON THIS PLAN)
WETLAND AREA W-1 ENCOMPASSES 0.1 AC±, AND ACTS TO COLLECT RUNOFF FROM THE ADJACENT UPLAND AREAS BEFORE CONTRIBUTING TO DEEP RUN. IT IS LOCATED BETWEEN ABANDONED FIELD AF-1 AND HEDGEROW H-3 ON THE HORSE FARM PROPERTY. THE DOMINANT TREE SPECIES IS BLACK WILLOW. THE MAJORITY OF THE WETLAND IS COMPOSED OF SHRUB AND HERBACEOUS VEGETATION THAT IS DOMINATED BY SILKY DOGWOOD AND SENSITIVE FERN. TREES WITHIN THIS WETLAND RANGE FROM 10" TO 20" DBH.

THIS WETLAND AREA IS PRIORITY FOR RETENTION. SUPPLEMENTAL PLANTINGS FOR ESTABLISHMENT OF A FORESTED WETLAND COULD BE CONSIDERED.

AF-1 (HORSE PROPERTY - NOT SHOWN ON THIS PLAN)
ABANDONED FIELD AREA AF-1 ENCOMPASSES 3.0 AC±, AND IS A REVERTING PASTURE LOCATED PREDOMINANTLY WITHIN THE HORSE FARM PROPERTY. DOMINANT TREE SPECIES INCLUDE STAGHORN SUMAC, BLACK WALNUT, AND BLACK CHERRY. MULTIFLORA ROSE AND BLACKBERRY SPECIES ARE DOMINANT UNDERSTORY AND HERBACEOUS SPECIES. THE FEW TREES WITHIN THIS ABANDONED FIELD ARE YOUNG IN MATURITY AND RANGE FROM 3" TO 6" DBH.

PORTIONS OF THIS ABANDONED FIELD CONTAIN AREAS WITHIN THE ADJACENT WETLAND BUFFERS FROM WETLAND AREA W-1. THE AREAS WITHIN THE WETLAND BUFFER WOULD BE PRIORITY FOR AFFORESTATION. ALSO, THE NORTHERN PORTION OF THE ABANDONED FIELD IS ADJACENT TO FOREST STAND F-1 WHERE SUPPLEMENTAL PLANTINGS COULD ESTABLISH FOREST WITHIN AREAS OF THE ABANDONED FIELD.

OF-1 (HORSE PROPERTY - NOT SHOWN ON THIS PLAN)
OPEN FIELD AREA OF-1 ENCOMPASSES 6.1 AC±, AND WAS USED AS A HAYFIELD AT THE TIME OF GTA'S 2007 SITE VISITS. THE FIELD HAS SINCE GONE FALLOW. THE OPEN FIELD IS LOCATED WITHIN THE HORSE FARM PROPERTY.

OF-1 DOES NOT CONTAIN ENVIRONMENTALLY SENSITIVE AREAS THAT WOULD BE CONSIDERED PRIORITY FOR AFFORESTATION.

OF-2 (HORSE PROPERTY - NOT SHOWN ON THIS PLAN)
OPEN FIELD AREA OF-2 ENCOMPASSES 1.7 AC±, AND WAS USED AS A HAYFIELD AT THE TIME OF GTA'S 2007 SITE VISITS. THE FIELD HAS SINCE GONE FALLOW. THE OPEN FIELD IS LOCATED WITHIN THE HORSE FARM PROPERTY.

PORTIONS OF OF-2 CONTAIN AREAS WITHIN THE ADJACENT WETLAND BUFFERS FROM WETLAND AREA W-1. THE AREAS WITHIN THE WETLAND BUFFER WOULD BE PRIORITY FOR AFFORESTATION.

OF-3
OPEN FIELD AREA OF-3 ENCOMPASSES 1.0 AC±, AND CONTAINS A RIGHT-OF-WAY EASEMENT FOR A PUBLIC SEWER LINE THROUGH THE CURTIS PROPERTY PORTION OF THE SUBJECT PROPERTY. THE OPEN FIELD IS IN A MEADOW CONDITION AND IS MAINTAINED TO BE KEPT FREE OF TREES AND BRUSH BY THE UTILITY COMPANY.

THIS OPEN FIELD IS GENERALLY LOCATED WITHIN THE STREAM BUFFERS AND FLOODPLAIN OF DEEP RUN. HOWEVER, GIVEN THE OPEN FIELD'S USE AS A UTILITY RIGHT-OF-WAY, THE FIELD SHOULD NOT BE AFFORESTED WITH SUPPLEMENTAL PLANTINGS.

L-1
LAWN AREA L-1 ENCOMPASSES 0.1 AC±, AND PROVIDES ACCESS TO THE CURTIS PROPERTY PORTION OF THE SUBJECT PROPERTY FROM FETLOCK COURT. THE AREA CONTAINS LAWN AND LANDSCAPING THAT ARE MAINTAINED BY THE ADJACENT LANDOWNERS.

THIS LAWN AREA CONTAINS A PORTION OF THE CRITICAL ROOT ZONE OF A SPECIMEN TREE, WHICH WOULD BE PRIORITY FOR RETENTION. GIVEN THE LAWN AREA'S USE AS AN ACCESS TO FETLOCK COURT, AFFORESTATION SHOULD NOT BE CONSIDERED.

GENERAL NOTES

- THERE IS A 100 YEAR FLOODPLAIN ON SITE PER SHA PLAT NO. 54587 AND FEMA FLOOD INSURANCE RATE MAP (FIRM) 24027C0160D.
- THE SITE IS NOT LOCATED WITHIN THE CHESAPEAKE BAY CRITICAL AREA.
- THERE ARE 0.23 ACRES OF STEEP SLOPES ON SITE THAT MEET THE HOWARD COUNTY STEEP SLOPE DEFINITION.
- THERE IS A 75' STREAM BUFFER ON SITE.
- THE BOUNDARY SHOWN HEREON IS BASED ON SHA PLAT NO. 56632.
- TOPOGRAPHIC INFORMATION SHOWN HERE FOR THE HORSE FARM PROPERTY IS BASED ON A FIELD RUN SURVEY PERFORMED BY MORRIS & RITCHE ASSOC., INC. IN DECEMBER 2007.
- THE COORDINATES SHOWN HEREON ARE BASED ON THE PROJECTION OF THE MARYLAND N.A.D. 83 COORDINATE SYSTEM BY THE HOWARD COUNTY OFFICE OF PLANNING AND ZONING. THE BASIS OF CONTROL FOR THE SITE ARE HOWARD COUNTY STATIONS 37B4 AND 37R2.
- EXISTING UTILITIES, ROADS, DRIVEWAYS, AND STRUCTURES SHOWN ARE FROM THE BEST AVAILABLE RECORDS AND SHALL BE VERIFIED BY THE CONTRACTOR TO HIS SATISFACTION PRIOR TO CONSTRUCTION.
- ACCORDING TO LORI A. BYRNE, ENVIRONMENTAL REVIEW SPECIALIST, THE WILDLIFE AND HERITAGE SERVICE HAS DETERMINED THAT THERE ARE NO STATE OR FEDERAL RECORDS FOR RARE, THREATENED OR ENDANGERED SPECIES WITHIN THE BOUNDARIES OF THE PROJECT SITE AS DELINEATED. AS A RESULT, WE HAVE NO SPECIFIC COMMENTS OR REQUIREMENTS PERTAINING TO PROTECTION MEASURES AT THIS TIME.
- ACCORDING TO MARY J. RATNASWAMY, PH.D., PROGRAM SUPERVISOR, THREATENED AND ENDANGERED SPECIES, U.S. FISH AND WILDLIFE SERVICE: "EXCEPT FOR OCCASIONAL TRANSIENT INDIVIDUALS, NO FEDERALLY PROPOSED OR LISTED ENDANGERED OR THREATENED SPECIES ARE KNOWN TO EXIST WITHIN THE PROJECT IMPACT AREA. THEREFORE, NO BIOLOGICAL ASSESSMENT OR FURTHER SECTION 7 CONSULTATION WITH THE U.S. FISH AND WILDLIFE SERVICE IS REQUIRED."
- ACCORDING TO MARY A. COLLIGAN, ASSISTANT REGIONAL ADMINISTRATOR FOR PROTECTED RESOURCES WITH THE NATIONAL MARINE FISHERIES SERVICE (NMFS), "NO THREATENED OR ENDANGERED SPECIES UNDER THE JURISDICTION OF NMFS ARE KNOWN TO EXIST IN THE PROJECT AREA."
- ACCORDING TO MERLIN ONLINE, MARYLAND'S ENVIRONMENTAL RESOURCE AND LAND INFORMATION NETWORK, NO AREAS OF THE SITE OR ADJACENT PARCELS ARE LISTED ON THE MARYLAND INVENTORY OF HISTORIC PROPERTIES OR NATIONAL REGISTER OF HISTORIC PLACES, OR CONTAIN MARYLAND HISTORIC TRUST EASEMENTS.
- STREAMS AND WETLANDS ON THE SUBJECT PROPERTY WERE DELINEATED BY GTA ON DECEMBER 17, 2007. THE WETLAND DELINEATION WAS GPS LOCATED USING A TRIMBLE PRO-XR BACKPACK UNIT ON DECEMBER 20, 2007. ADDITIONAL DATA WAS COLLECTED FOR THE WETLAND REPORT IN JANUARY 2008. THE WETLAND LIMITS WERE RECONFIRMED IN THE FIELD BY GTA IN 2011, AND THE WETLAND REPORT AND PLAN WERE UPDATED. THE WETLAND DELINEATION WAS REVIEWED IN THE FIELD BY THE UNITED STATES ARMY CORPS OF ENGINEERS (CORPS) ON AUGUST 24, 2011. THE CORPS ISSUED A JURISDICTIONAL DETERMINATION ON SEPTEMBER 15, 2011, STATING THAT GTA'S WETLAND DELINEATION PLAN, DATED MAY 20, 2011, "IDENTIFIES ALL POTENTIAL JURISDICTIONAL WATERS AND WETLANDS WITHIN THE REVIEW AREA." OFF-SITE STREAMS ARE FROM HOWARD COUNTY GIS INFORMATION OR ARE APPROXIMATED ON THE PLAN.
- THE SUBJECT PROPERTY IS LOCATED IN THE PATAPSCO RIVER AREA WATERSHED, BASIN NUMBER 02-12-09. THE SUBJECT PROPERTY DRAINS TO DEEP RUN. THE CODE OF MARYLAND REGULATIONS (COMAR) STREAM USE CLASSIFICATION INDEX LISTS TRIBUTARIES TO DEEP RUN AS USE I (WATER CONTACT RECREATION, AND PROTECTION OF AQUATIC LIFE).
- THE ORIGINAL FOREST STAND DELINEATION FIELD WORK WAS PERFORMED BY GTA ON OCTOBER 8, 2007 FOR THE HORSE FARM PROPERTY, AND ON DECEMBER 17, 2007 FOR THE CURTIS PROPERTY. ON FEBRUARY 24, 2014 THE INFORMATION IN THE FOREST STAND DELINEATION WAS RECONFIRMED IN THE FIELD BY GTA.
- NINETEEN SPECIMEN TREES WERE IDENTIFIED ON THE SUBJECT PROPERTY. SPECIMEN TREES WERE LOCATED BY GTA ON FEBRUARY 24, 2014 USING A TRIMBLE PRO-XR BACKPACK UNIT AND WERE MARKED IN THE FIELD BY BLUE FLAGGING TIED AROUND THEIR TRUNKS. SPECIMEN TREES ARE SHOWN ON THIS PLAN AT THE SIZE OF THEIR CRITICAL ROOT ZONE. OF THE 19 SPECIMEN TREES, NINE (9) ARE LOCATED WITHIN THE TROTTER'S KNOLL SECTION 2 (CURTIS) PROPERTY AND SIX (6) ARE JUST OFF THE TROTTER'S KNOLL SECTION 2 PROPERTY WITH A CRITICAL ROOT ZONE THAT EXTENDS ON-SITE.
- SOILS ARE MAPPED AND LABELED IN ACCORDANCE WITH THE UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE'S WEB SOIL SURVEY, AVAILABLE ON-LINE AT [HTTP://WEBSOILSURVEY.NRC.S.USDA.GOV/APP/](http://websoilsurvey.nrcs.usda.gov/app/).

FOREST CONSERVATION OBLIGATION:

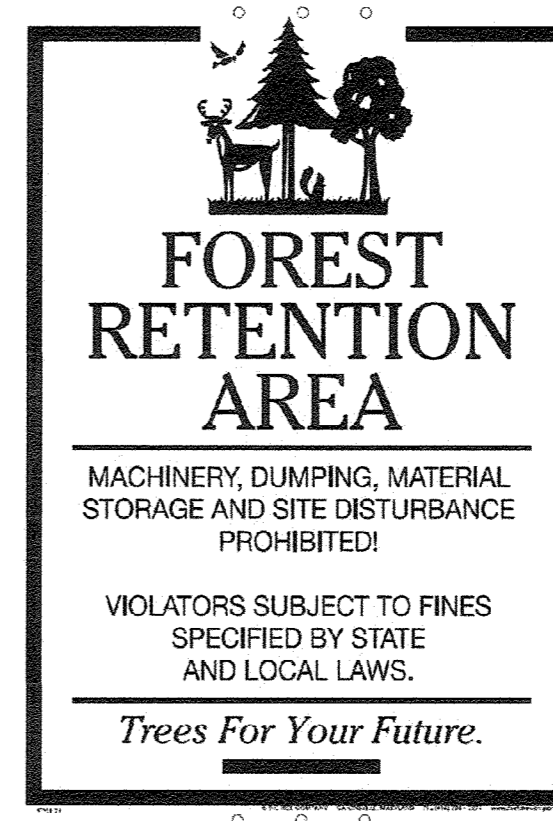
- THIS PLAN COMPLIES WITH THE REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE FOR FOREST CONSERVATION BY A COMBINATION OF ON-SITE AFFORESTATION AND AN OFF-SITE FOREST MITIGATION BANK FOR SECTION 1 AND ON-SITE RETENTION FOR SECTION 2. THE ON-SITE AFFORESTATION FOR SECTION 1 SHALL TOTAL 0.56 AC. A SURETY IN THE AMOUNT OF \$12,197.00 FOR THE ON-SITE AFFORESTATION WAS POSTED WITH THE DEVELOPER'S AGREEMENT. THE REMAINING 1.14 AC. FOR PHASE 1 WAS ADDRESSED WITH 2.28 AC. OF OFF-SITE FOREST RETENTION AREA LOCATED WITHIN THE FOREST MITIGATION BANK KNOWN AS AFS FARM, SDP-16-029, LOCATED AT 15985 OLD FREDERICK ROAD, WOODBINE, MD 21797. SECTION 2 FOREST CONSERVATION IS BEING SATISFIED BY ON-SITE RETENTION OF 1.72 ACRES, AS TABULATED ON PREVIOUS SHEET 17 AND IN EXCESS OF THE REQUIREMENTS.

SPECIMEN TREE NOTES:

- THERE ARE NINETEEN (19) TOTAL SPECIMEN TREES LISTED ON THE TROTTER'S KNOLL FOREST STAND DELINEATION, EIGHT (8) OF WHICH ARE ON THE TROTTER'S KNOLL SECTION 2 (CURTIS) PROPERTY, FOUR (4) OF WHICH ARE JUST OFF THE TROTTER'S KNOLL SECTION 2 PROPERTY WITH A CRITICAL ROOT ZONE THAT EXTENDS ON-SITE.
- ONE (1) EXISTING SPECIMEN TREES ON-SITE IS PROPOSED TO BE REMOVED (SPECIMEN TREE #5). THE PROPOSED DISTURBANCES ON-SITE WILL NOT REQUIRE THE REMOVAL OF ANY OF THE OFF SITE SPECIMEN TREES. AN ALTERNATIVE COMPLIANCE APPLICATION, WP-17-040, HAS BEEN SUBMITTED FOR APPROVAL TO ALLOW THE REMOVAL OF SPECIMEN TREE #5.

SPECIMEN TREE RETENTION PROCEDURES

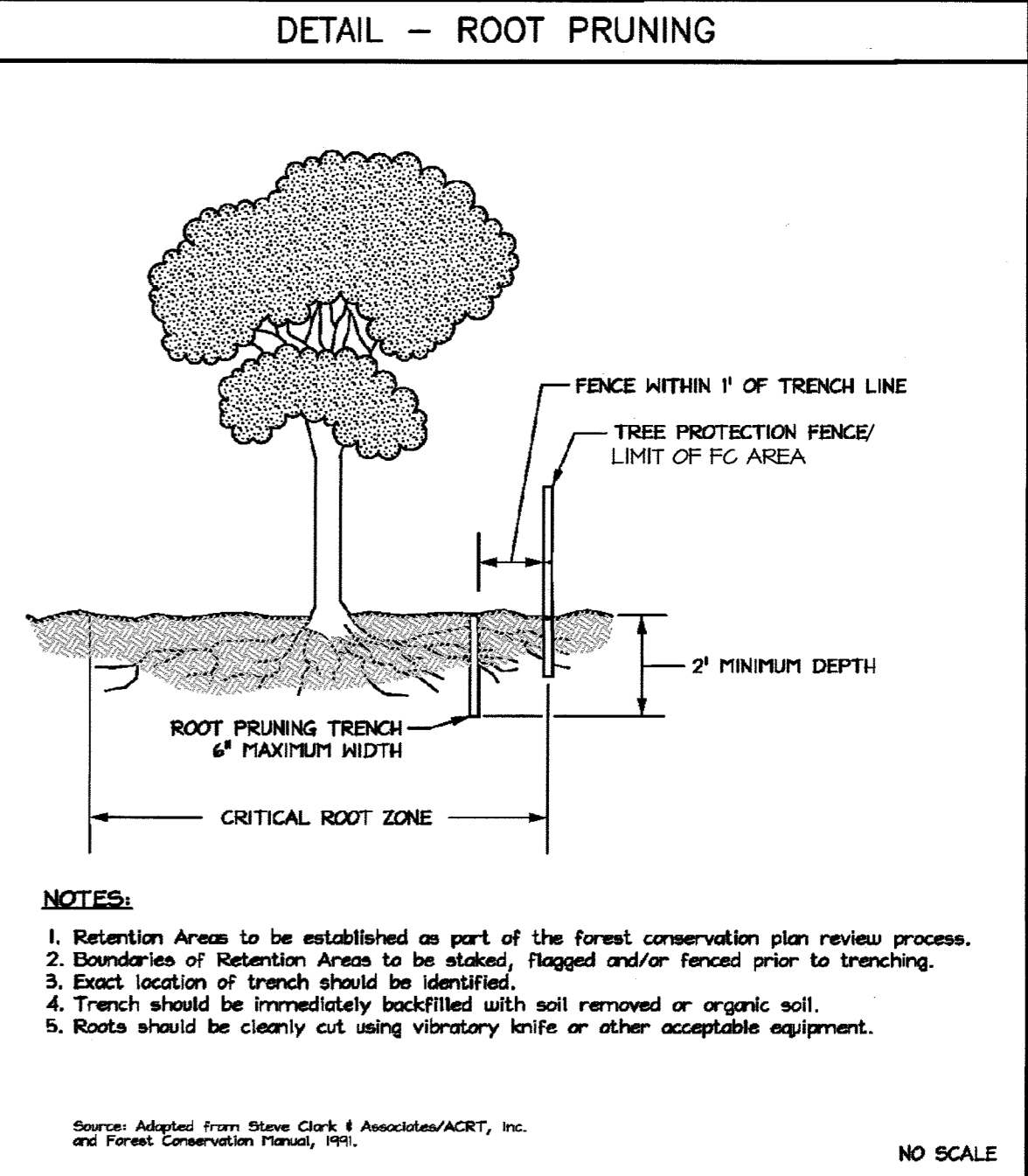
- THESE NOTES PERTAIN TO SPECIMEN TREE ST-6 WHOSE CRITICAL ROOTS ZONE IS IMPACTED BY THE PROPOSED DISTURBANCE.
- AFTER LIMIT OF DISTURBANCE (LOD) IS STAKED IN THE FIELD USE A VIBRATORY KNIFE TO SEVER THE ROOTS ALONG THE LOD WITHIN THE CRITICAL ROOT ZONE (CRZ).
- CONTRACT WITH A CERTIFIED ARBORIST TO PERFORM TREE PRUNING AND FERTILIZATION PRIOR TO AND DURING CONSTRUCTION.



NOTE:
1. ALL FOREST CONSERVATION AREAS WILL BE MARKED WITH "FOREST RETENTION AREA" SIGNS PLACED EVERY 100' MAX.

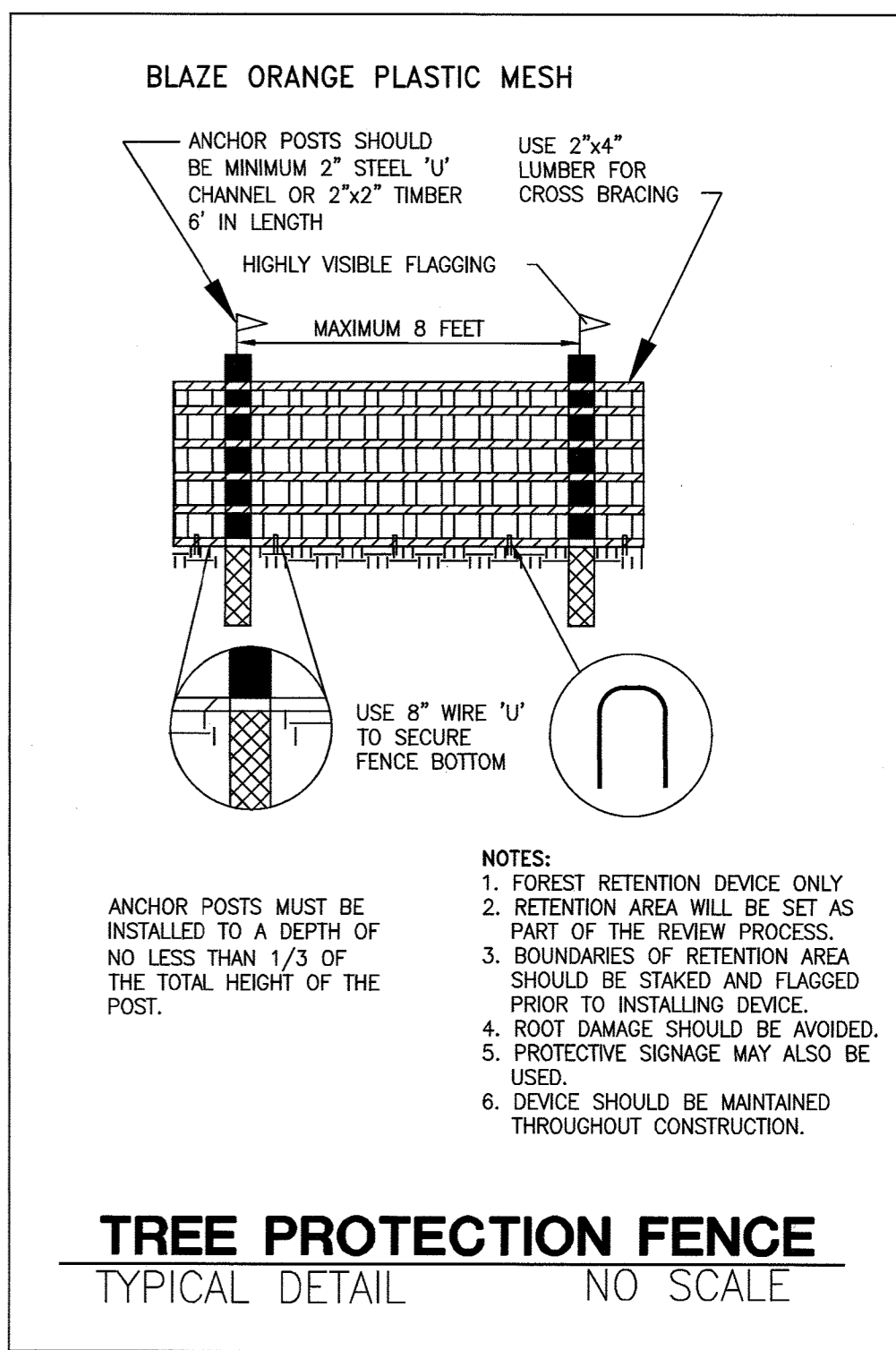
FOREST CONSERVATION AREA SIGNS

NOT TO SCALE



ROOT PRUNING

NOT TO SCALE



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
James 5/8/2019
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Glenn Curtis 5-10-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION NY DATE

Keith Johnson 5-21-19
CHIEF, LAND DEVELOPMENT DIVISION DATE

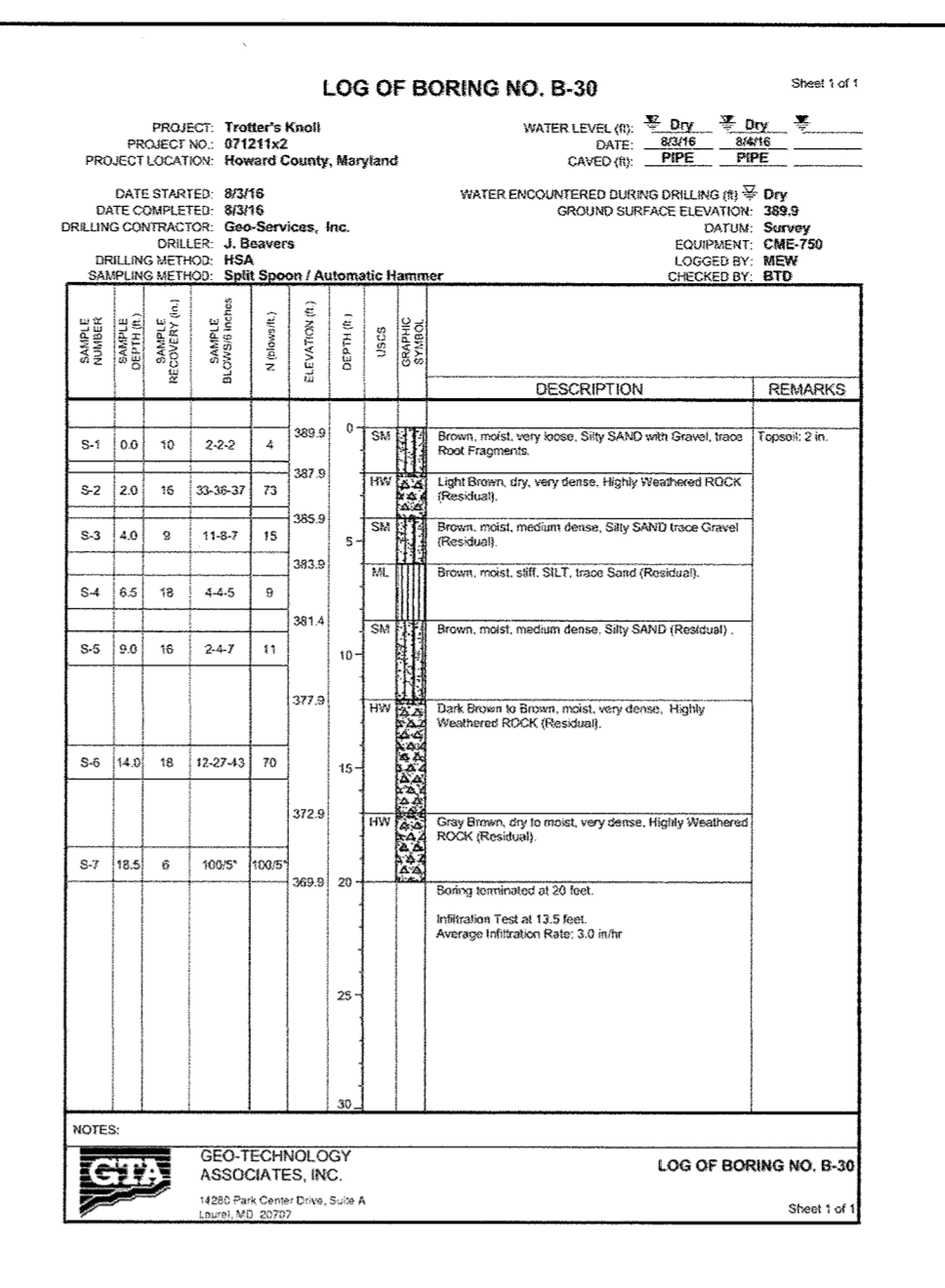
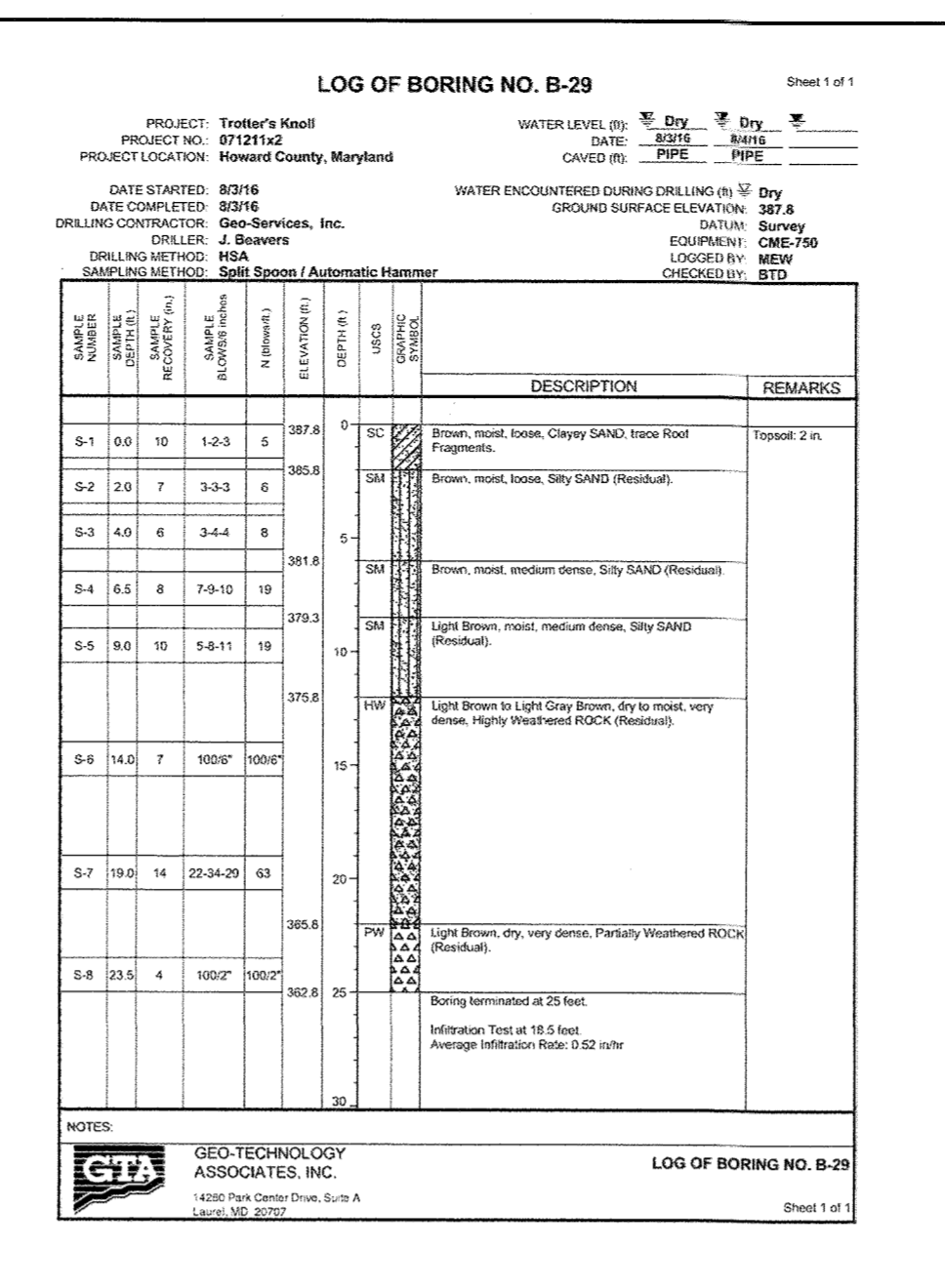
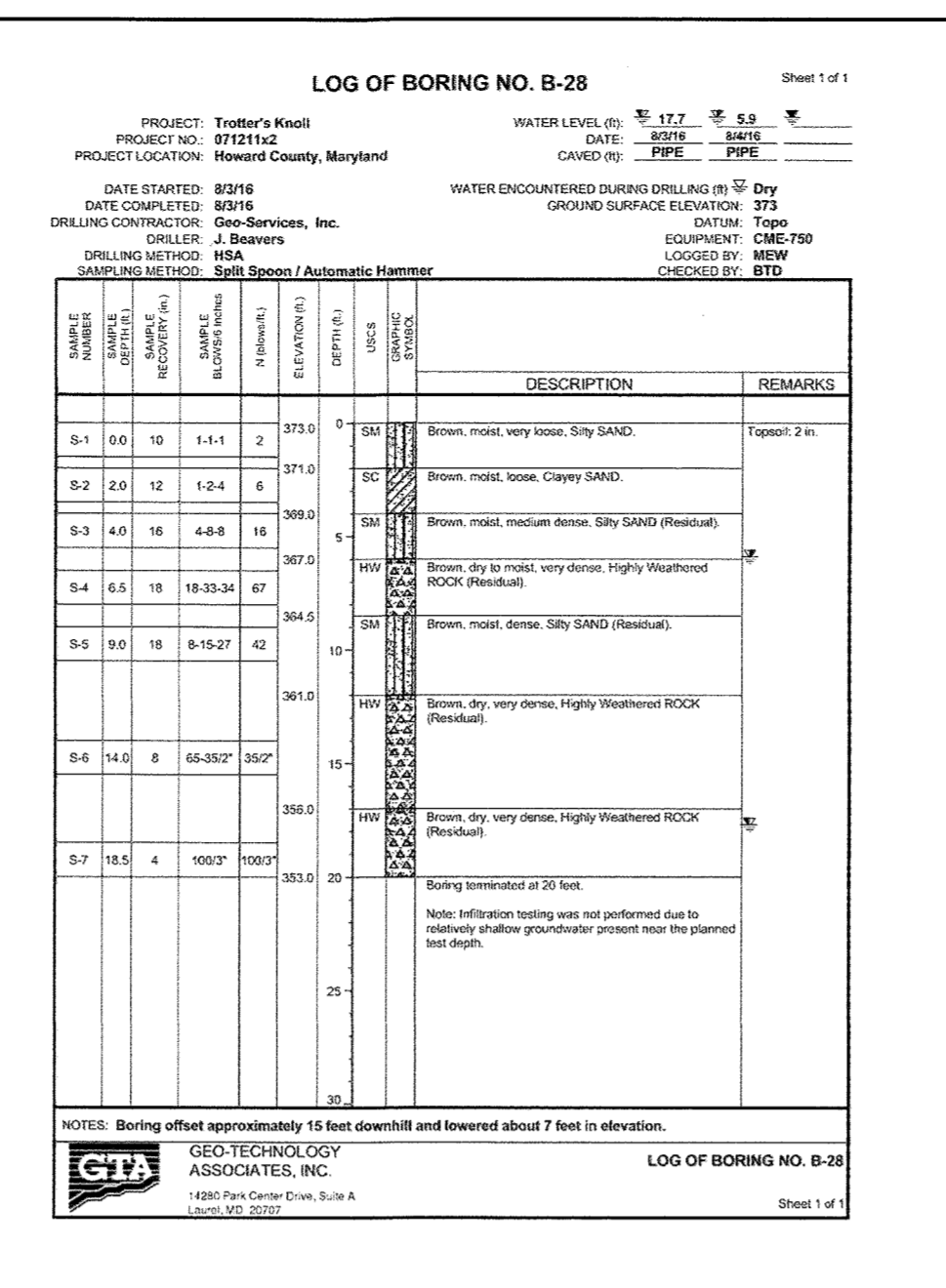
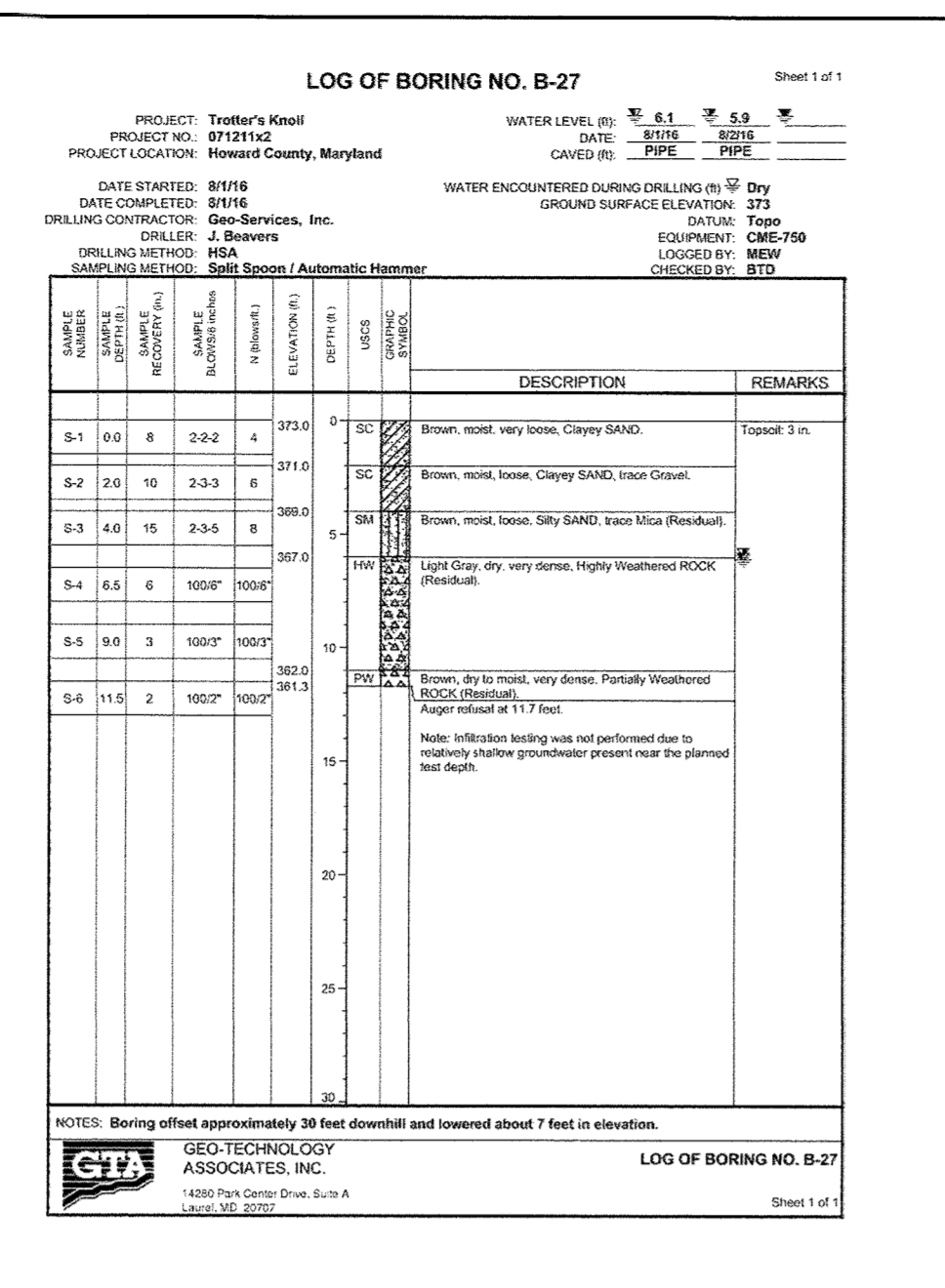
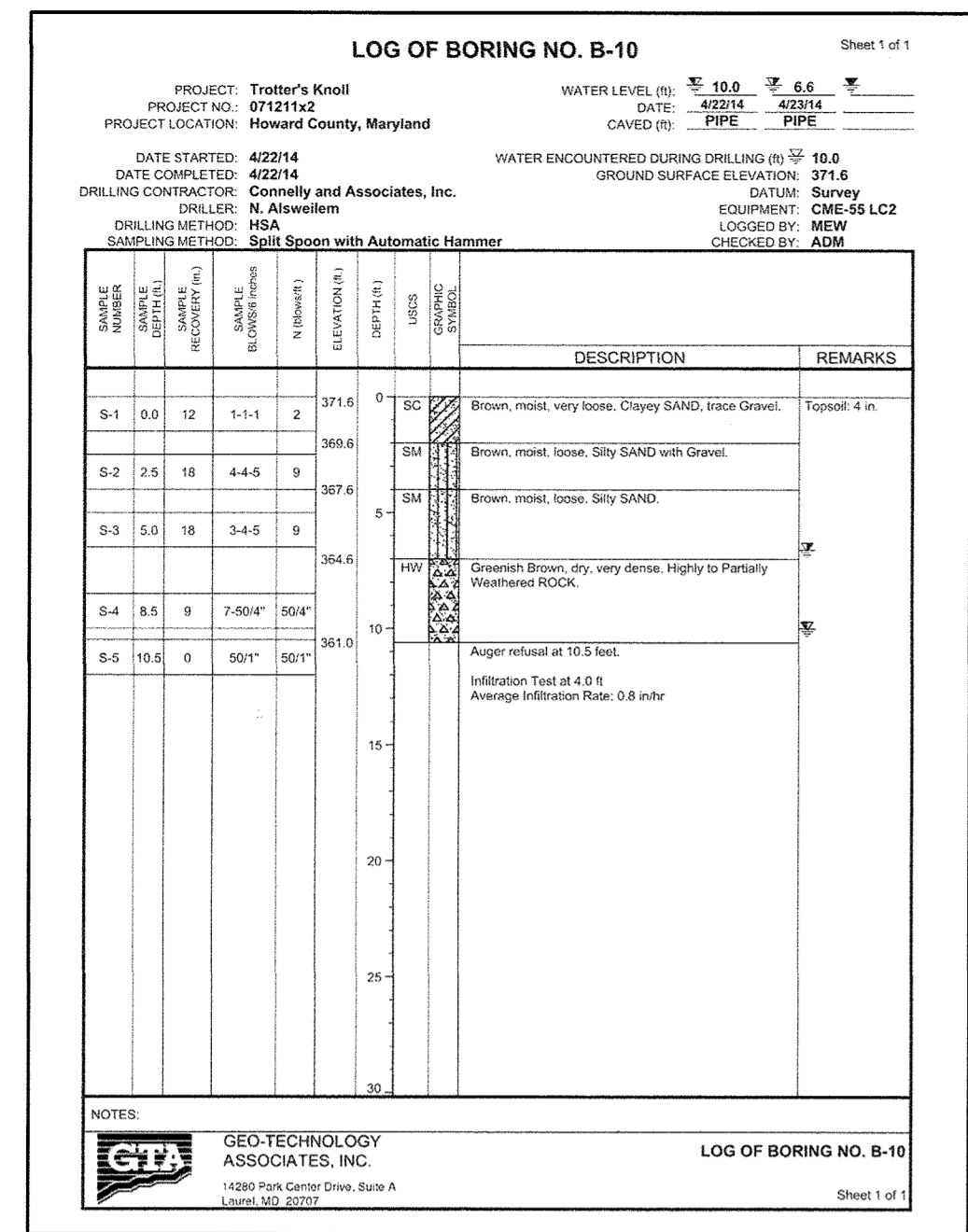
DEVELOPER'S / OWNER'S CERTIFICATE
I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE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

NAME *Glenn Curtis* DATE *8-29-2018*
SIGNATURE *Glenn Curtis*

OWNER / APPLICANT / DEVELOPER :
DEEP RUN PROPERTY MANAGEMENT, LLC.
ADDRESS: 5240 WEBB COURT
MOOREHEAD CITY, NORTH CAROLINA 28557
CONTACT: GLENN CURTIS
PHONE: (252) 726-6833
EMAIL: GCURTIS1@EC.RR.COM

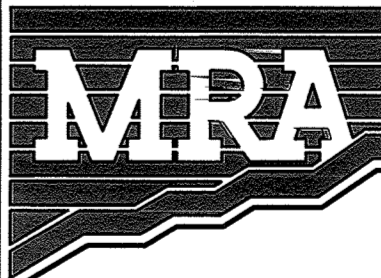
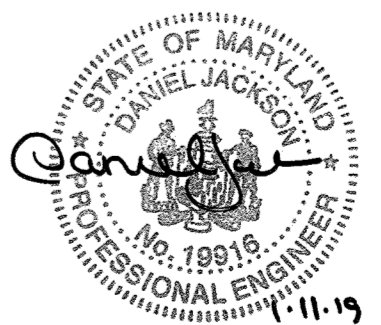
		MORRIS & RITCHE ASSOCIATES, INC. ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS 14280 PARK CENTER DRIVE LAUREL, MD 20707 (410) 792-9792 / (301) 776-1690 FAX: (410) 792-7395 MRAGTA.COM	
TROTTER'S KNOLL - SECTION II DEEP RUN PROPERTY FOREST CONSERVATION DETAILS			
TAX MAP 37 GRIDS 2 PARCEL 753 ZONED: R-SA-8 1ST ELECTION DISTRICT HOWARD COUNTY, MD 21043			
DATE	REVISIONS	JOB NO.:	15368 x 06
		SCALE:	NTS
		DATE:	6-6-18
		DRAWN BY:	MAM
		DESIGN BY:	MAM
		REVIEW BY:	MAM
		SHEET:	18 OF 29

Michael A. Mitchell 1-11-19



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 _____ 5/8/2019
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 _____ 5.10.19
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 _____ 5.21.19
 CHIEF, LAND DEVELOPMENT DIVISION

OWNER / APPLICANT / DEVELOPER :
 DEEP RUN PROPERTY MANAGEMENT, LLC.
 ADDRESS: 5240 WEBB COURT
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 FAX: (410) 792-7395
 MRAGTA.COM

TROTTER'S KNOLL - SECTION II
 DEEP RUN PROPERTY
 SWM BORINGS PLAN

TAX MAP 37 GRIDS 2 PARCEL 753 ZONED: R-SA-8
 1ST ELECTION DISTRICT
 HOWARD COUNTY, MD 21043

JOB NO.: 15368 x 06
 SCALE: 1" = 50'
 DATE: 6-6-18
 DRAWN BY: JGG
 DESIGN BY: JGG
 REVIEW BY: DJ
 SHEET: 19 OF 29

DATE REVISIONS

SEGMENTAL RETAINING WALL SPECIFICATIONS

PART 1 - GENERAL

1.1 WORK INCLUDES

FURNISHING AND INSTALLING SEGMENTAL RETAINING WALL UNITS, GEGRID REINFORCEMENT, WALL FILL, AND BACKFILL TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS AND AS SPECIFIED HEREIN. THE CONTRACT ALSO INCLUDES THE FURNISHING AND INSTALLING OF ALL APPURTENANT MATERIALS, EQUIPMENT, AND LABOR REQUIRED FOR CONSTRUCTION OF THE GEGRID REINFORCED, SEGMENTAL RETAINING WALLS. ALL EXISTING AND PROPOSED CONSTRUCTION AND SITE GRADING INFORMATION WAS REFERENCED FROM ELECTRONIC SITE PLANS PREPARED AND PROVIDED BY MORRIS & RITCHIE ASSOCIATES, INC. (MRA), THE PROJECT CIVIL ENGINEER, IN MAY AND AUGUST OF 2018.

1.2 REFERENCE STANDARDS

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

1.3 DELIVERY, STORAGE AND HANDLING

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

1.4 SUBMITTALS/CERTIFICATION

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

PART 2 - PRODUCTS

2.1 DEFINITIONS

- GEGRID IS A HIGH DENSITY POLYETHYLENE, POLYESTER, OR POLYPROPYLENE GRID, SPECIFICALLY FABRICATED FOR USE AS A SOIL REINFORCEMENT.
- CONCRETE RETAINING WALL UNITS ARE AS DETAILED ON THE DRAWINGS AND AS SPECIFIED HEREIN.
- GEOSYNTHETIC DRAINAGE COMPOSITES ARE POLYETHYLENE NET STRUCTURE WITH NON-WOVEN GEOTEXTILES BONDED TO BOTH SIDES.
- REINFORCED BACKFILL IS THE SOIL WHICH IS USED AS FILL FOR THE REINFORCED SOIL MASS.
- FOUNDATION SOIL IS THE IN-SITU SOIL OR CONTROLLED COMPACTED FILL PLACED BELOW THE BOTTOM OF THE RETAINING WALL AND GEGRID ZONE.
- IMPERMEABLE LINER IS A GEOSYNTHETIC MATERIAL INTENDED TO REDUCE THE POTENTIAL FOR INFILTRATION OF WATER FROM A SWM FACILITY INTO THE RETAINING WALL BACKFILL.

2.2 MATERIALS

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

A. CONCRETE UNITS

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

B. LEVELING PAD

MATERIAL FOR LEVELING PAD/FOOTING SHOULD CONSIST OF COMPACTED FREE-DRAINING COARSE AGGREGATES MEETING THE REQUIREMENTS OF AASHTO NO. 57 STONE PER MARYLAND STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS. A MINIMUM OF 6 INCHES DEEP AND 30 INCHES WIDE COMPACTED LEVELING PAD IS REQUIRED WHERE STANDARD II OR STANDARD III WALL UNITS ARE USED. A MINIMUM OF 6 INCHES DEEP AND 24 INCHES WIDE COMPACTED LEVELING PAD IS REQUIRED WHERE COMPAC III WALL UNITS ARE USED.

C. FIBERGLASS CONNECTING PINS

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

D. GEGRID

GEORGRIDS SHOULD BE MIRAGRID Q2XT OR EQUIVALENT AS APPROVED BY THE GEOTECHNICAL ENGINEER FOR RETAINING WALL NO. 1. GEORGRIDS SHOULD BE MIRAGRID Q3XT OR EQUIVALENT AS APPROVED BY THE GEOTECHNICAL ENGINEER FOR RETAINING WALL NO. 2. GEORGRIDS SHOULD BE MIRAGRID Q5XT OR EQUIVALENT AS APPROVED BY THE GEOTECHNICAL ENGINEER FOR RETAINING WALL NOS. 3 AND 4. THE GEORGRIDS SHOULD HAVE AN ALLOWABLE STRENGTH OF 1,096, 1,918, AND 2,576 POUNDS PER FOOT, RESPECTIVELY. THE ALLOWABLE STRENGTH IS DEFINED AS THE ULTIMATE STRENGTH DIVIDED BY REDUCTION FACTORS FOR CREEP, DURABILITY, AND INSTALLATION DAMAGE.

E. REINFORCED BACKFILL

REINFORCED BACKFILL SOILS SHOULD BE NON-PLASTIC, CONTROLLED FILL MEETING THE REQUIREMENTS OF AASHTO A-2-4, OR MORE GRANULAR. HOWEVER, THE USE OF POORLY-GRADED SANDS SHOULD BE AVOIDED IN THE REINFORCED ZONE. BASED ON THE AVAILABLE SURFACE INFORMATION, SUITABLE MATERIALS MAY BE AVAILABLE FROM ON-SITE EXCAVATIONS. HOWEVER, SEGREGATION AND STOCKPILING OF SUITABLE MATERIALS WILL BE REQUIRED, IF ADEQUATE QUANTITIES OF THIS MATERIAL ARE NOT AVAILABLE ON-SITE, IMPORTED BACKFILL SHOULD MEET THE ABOVE REQUIREMENTS AND SHOULD BE APPROVED BY THE GEOTECHNICAL ENGINEER. NOTE THAT REINFORCED BACKFILL FOR RETAINING WALL NO. 2 SHOULD CONSIST OF #57 STONE WITHIN THE LIMITS SHOWN ON SHEETS RW-3 AND RW-4.

F. CONTROLLED FILL

CONTROLLED FILL SOILS TO BE PLACED OUTSIDE THE REINFORCED BACKFILL AREA AND WHERE SPECIFIED SHOULD CONSIST OF ON-SITE OR BORROW SOILS MEETING THE REQUIREMENTS OF AASHTO A-4 OR MORE GRANULAR. ALL FILL MATERIALS PROPOSED TO BE PLACED BEHIND THE REINFORCED BACKFILL SHOULD BE PLACED AS CONTROLLED FILL COMPACTED TO 95 PERCENT OF MAXIMUM DRY DENSITY IN ACCORDANCE WITH THE STANDARD PROCTOR, ASTM D-698.

G. LOW-PERMEABILITY SOIL

LOW-PERMEABILITY SOILS TO BE PLACED AT THE TOP OF THE WALL WHERE SPECIFIED SHOULD CONSIST OF SANDY, SILTY OR CLAYEY SOILS MEETING THE REQUIREMENTS OF ML, CL, SM, OR SC WITH A MINIMUM OF 25% PASSING THE #200 SIEVE.

H. DRAINAGE PIPE

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

I. FILTER FABRIC

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

J. DRAINAGE COMPOSITE

THE DRAINAGE COMPOSITE SHOULD BE DC4200 GEOTEXTILE MANUFACTURED BY TENAX CORPORATION, INC. OR APPROVED EQUIVALENT.

K. IMPERMEABLE LINER

THE IMPERMEABLE LINER SHOULD BE BENTOMAT DN, MANUFACTURED BY CETCO, OR APPROVED EQUIVALENT.

PART 3 - EXECUTION

A. EXCAVATION

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

B. FOUNDATION SUBGRADE PREPARATION

- FOUNDATION SOIL SHOULD BE EXCAVATED AS REQUIRED FOR INSTALLATION OF LEVELING PAD, GEGRID AND OTHER ELEMENTS AND AS SHOWN ON THE CONSTRUCTION DRAWINGS.
- FOUNDATION SOIL SHOULD BE EXAMINED BY THE ENGINEER TO ENSURE THAT THE ACTUAL FOUNDATION SOIL STRENGTH MEETS OR EXCEEDS ASSAID DESIGN STRENGTH. SOILS NOT MEETING REQUIRED STRENGTH SHOULD BE REMOVED AND REPLACED WITH CONTROLLED, COMPACTED MATERIAL.
- OVER-EXCAVATED AREAS SHOULD BE FILLED WITH SELECT AND APPROVED MATERIAL AND COMPACTED TO 95 PERCENT OF MAXIMUM DRY DENSITY IN ACCORDANCE WITH THE STANDARD PROCTOR, ASTM D-698.
- ALLOWABLE BEARING PRESSURE FOR NATURAL AND CONTROLLED, COMPACTED FILL SOILS SHOULD BE AS SPECIFIED IN PART 5.
- THE EXPOSED FOUNDATION SUBGRADE SHOULD BE PROOFROLLED WITH A LOADED DUMP TRUCK. ANY SOFT OR UNSTABLE AREAS IDENTIFIED DURING PROOFROLLING SHOULD BE OVEREXCAVATED AND BACKFILLED WITH CONTROLLED FILL AS AN ALTERNATIVE TO CONTROLLED FILL WITHIN AREAS WHICH REQUIRE OVEREXCAVATION, THE EMBEDMENT DEPTH OF THE WALL MAY BE INCREASED SUCH THAT THE WALL FOUNDATION IS BEARING ON A STABLE SUBGRADE.
- ANY FILLS REQUIRED TO ESTABLISH SLOPING SURFACES IN FRONT OF THE WALLS SHOULD CONSIST OF CONTROLLED FILL AND SHOULD BE PLACED, COMPACTED, AND FIELD TESTED IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED HEREIN.

C. LEVELING PAD

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

D. UNIT INSTALLATION

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

E. GEGRID INSTALLATION

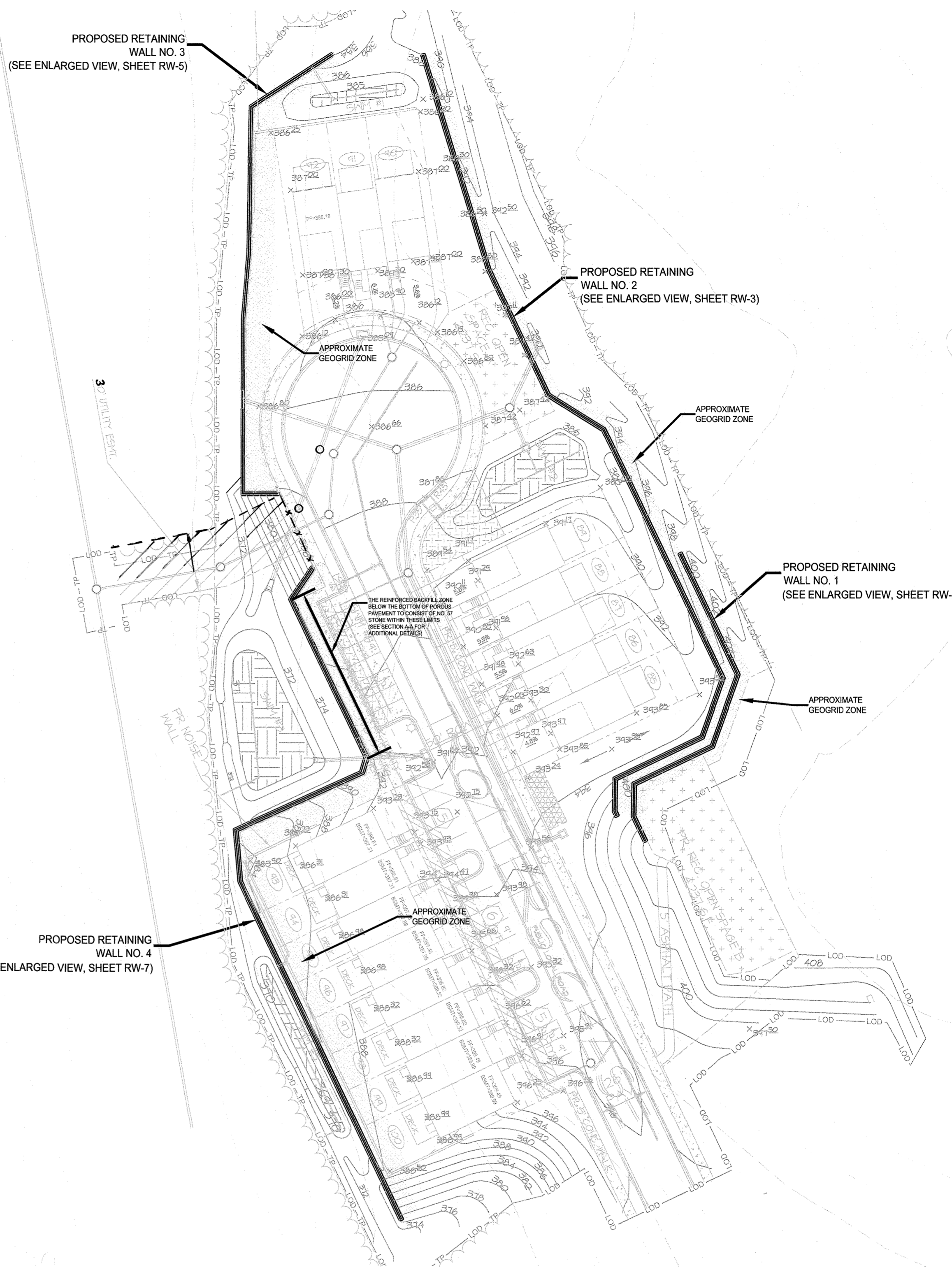
- ALL UTILITIES IN THE VICINITY OF THE RETAINING WALL OR GEGRID REINFORCEMENT MUST BE INSTALLED AND PROPERLY BACKFILLED PRIOR TO PLACING THE GEGRID SOIL REINFORCEMENT OR DURING CONSTRUCTION OF THE WALL. THE INSTALLATION OF UTILITIES DURING WALL CONSTRUCTION SHOULD BE CAREFULLY COORDINATED BETWEEN THE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

F. FILL PLACEMENT

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

G. DRAINAGE

- DRAINAGE FILL SHOULD BE PLACED BEHIND THE WALL TO THE LIMITS SHOWN. THE DRAINAGE FILL SHOULD BE A MINIMUM OF 12-INCHES THICK. THE DRAINAGE FILL SHOULD BE ASTM #57 STONE. THE DRAINAGE FILL SHOULD BE WRAPPED IN FILTER FABRIC (WRAP 140N OR EQUAL) AS SHOWN ON THE DRAWINGS.
- POSITIVE DRAINAGE SHOULD BE MAINTAINED DURING AND AFTER CONSTRUCTION. SOILS WITHIN THE REINFORCED ZONE THAT BECOME WET DURING CONSTRUCTION SHOULD BE DRIED TO OPTIMUM MOISTURE OR REMOVED.
- INSTALL THE PERFORATED DRAINAGE PIPES AND LATERAL DRAINAGE PIPES INCREMENTALLY ALONG WITH THE INSTALLATION OF CONCRETE UNITS AND PLACEMENT OF FILL.



RETAINING WALL LOCATION PLAN

SCALE: 1" = 40'

THE LOCATION PLAN WAS ADAPTED FROM THE ELECTRONIC EXISTING PLANS AND PROPOSED SITE DEVELOPMENT PLANS, PREPARED AND PROVIDED BY MRA IN MAY AND AUGUST OF 2018.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

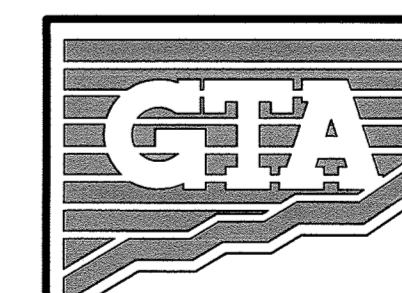
James 5/8/2019
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Phil Clark 5-10-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Keith Deane 5-21-19
CHIEF, LAND DEVELOPMENT DIVISION DATE

RW-1

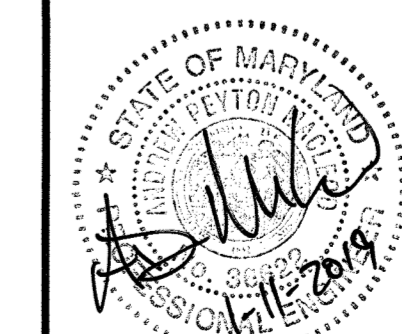


GEO-TECHNOLOGY ASSOCIATES, INC.

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

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TROTTER'S KNOLL - SECTION II
PROPOSED RETAINING WALL NOS. 1-4

PLAN AND GENERAL NOTES

HOWARD COUNTY, MARYLAND

DATE	REVISIONS	JOB NO.:
8/31/18	RW NOS. 3 & 4 LAYOUTS REVISED	071211X4
		SCALE: AS SHOWN
		DATE: 6/5/18
		DRAWN BY: MEW
		DESIGN BY: MEW
		REVIEW BY: APM
		SHEET: 20 OF 29

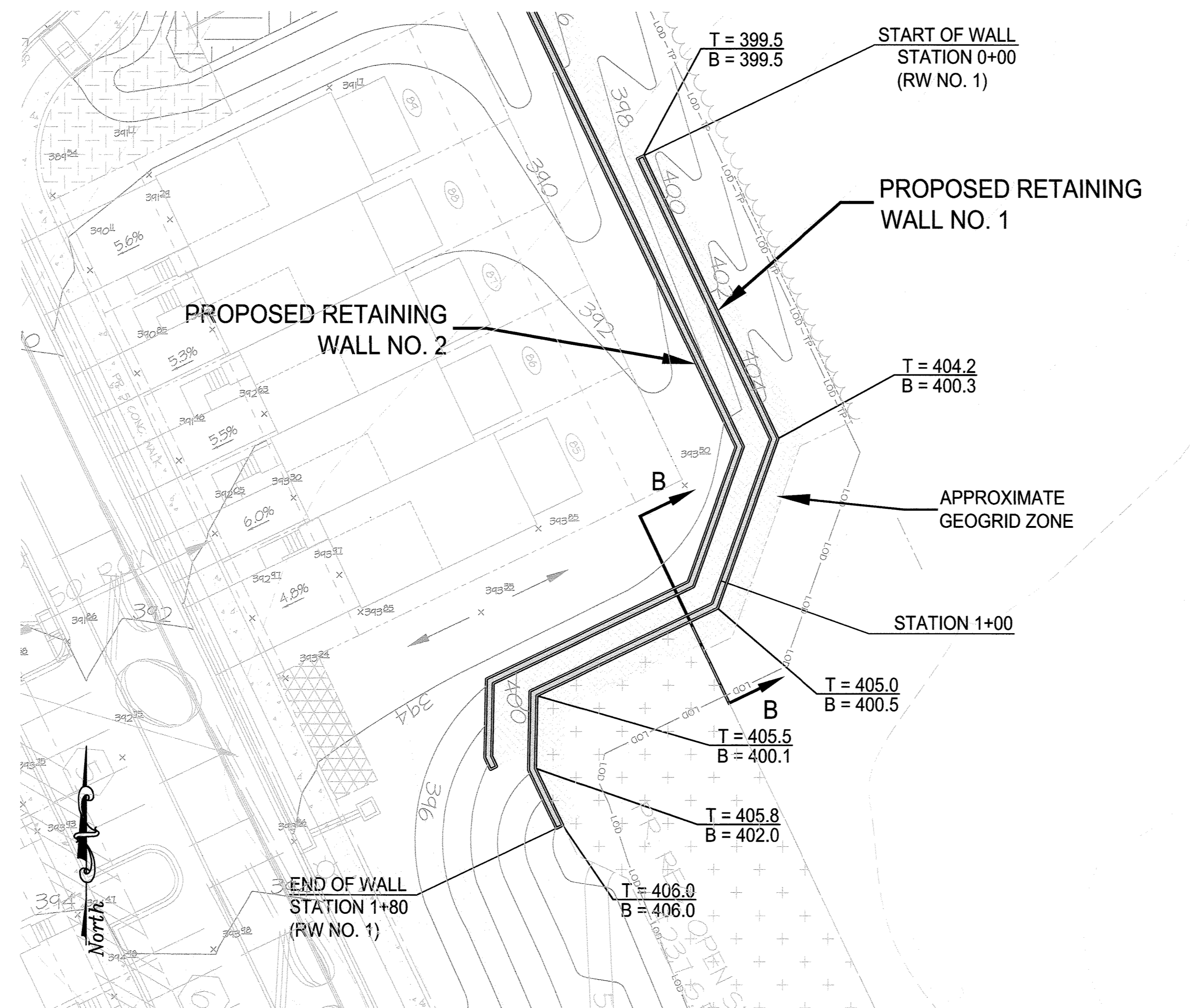
MD PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 38822. EXPIRATION DATE: 1/31/2020.

PART 4 - CONSTRUCTION OBSERVATION AND TESTING

- RETAINING WALLS SHOULD ONLY BE CONSTRUCTED UNDER THE OBSERVATION OF A REGISTERED PROFESSIONAL ENGINEER AND A CERTIFIED (INSET, WACEL, OR EQUIVALENT) SOILS TECHNICIAN.
- THE REQUIRED BEARING PRESSURE BENEATH THE FOOTING OF THE WALL SHOULD BE VERIFIED IN THE FIELD BY A CERTIFIED SOILS TECHNICIAN. TESTING DOCUMENTATION MUST BE PROVIDED TO THE GEOTECHNICAL ENGINEER PRIOR TO THE START OF WALL CONSTRUCTION. THE REQUIRED TEST PROCEDURE SHALL BE THE DYNAMIC CONE PENETROMETER (DCP) TEST ASTM STP-399.
- THE SUITABILITY OF FILL MATERIAL SHOULD BE CONFIRMED BY THE ON-SITE SOILS TECHNICIAN.

PART 5 - DESIGN CRITERIA

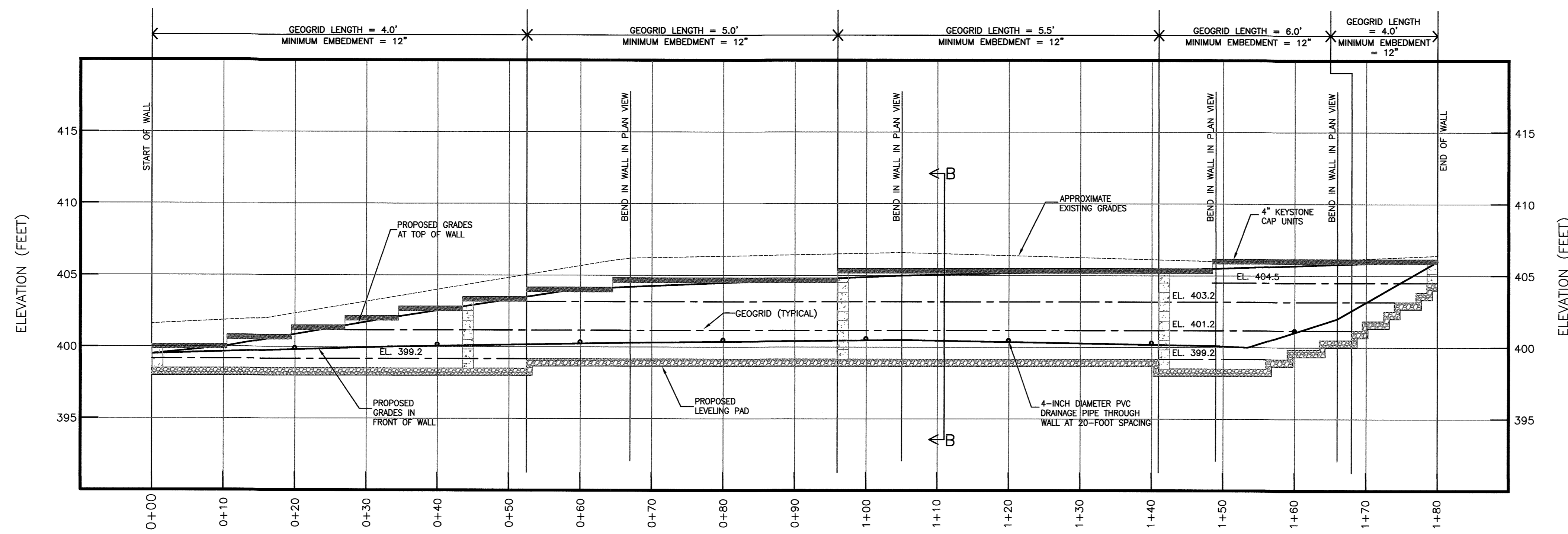
- REQUIRED MINIMUM ALLOWABLE FOUNDATION BEARING PRESSURE IS 2,500 PCF.
- DESIGN INTERNAL FRICTION ANGLE FOR REINFORCED SOIL AND CONTROLLED FILL SOIL = 30 DEGREES.
- DESIGN MOIST UNIT WEIGHT FOR REINFORCED SOIL AND CONTROLLED FILL SOIL = 120 PCF.
- FOUNDATION SOIL INTERNAL FRICTION ANGLE = 28 DEGREES AND COHESION = 0 PSF.
- FOUNDATION SOIL DESIGN MOIST UNIT WEIGHT = 120 PCF.
- RETAINING WALLS ARE NOT DESIGNED TO RESIST HYDROSTATIC PRESSURE.



RETAINING WALL NO. 1 - PLAN VIEW

SCALE: 1" = 20'

THE LOCATION PLAN WAS ADAPTED FROM THE ELECTRONIC EXISTING PLANS AND PROPOSED SITE DEVELOPMENT PLANS, PREPARED AND PROVIDED BY MRA IN MAY AND AUGUST OF 2018.



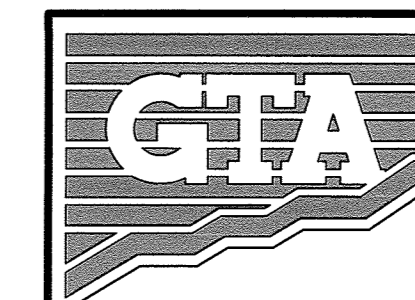
RETAINING WALL NO. 1 PROFILE (STA. 0+00 - STA. 1+80)

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

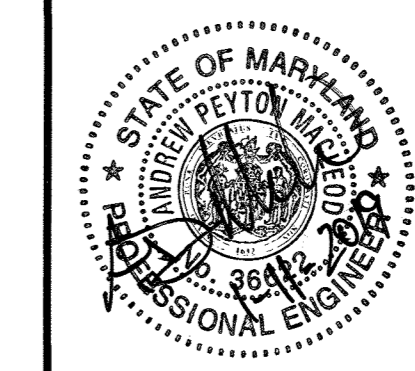
NOTES:

- RETAINING WALL NO.1 TO BE CONSTRUCTED WITH KEYSTONE COMPAC UNITS AND MIRAGRID 02XT GEOGRIDS OR APPROVED EQUIVALENTS.
- RETAINING WALL NO. 2 TO BE CONSTRUCTED WITH KEYSTONE COMPAC UNITS AND MIRAGRID 03XT GEOGRIDS OR APPROVED EQUIVALENTS.
- REFER TO SHEET RW-3 FOR SECTION B-B.

RW-2



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TROTTER'S KNOLL - SECTION II
 PROPOSED RETAINING WALL NO. 1
 PLAN & PROFILE
 HOWARD COUNTY, MARYLAND

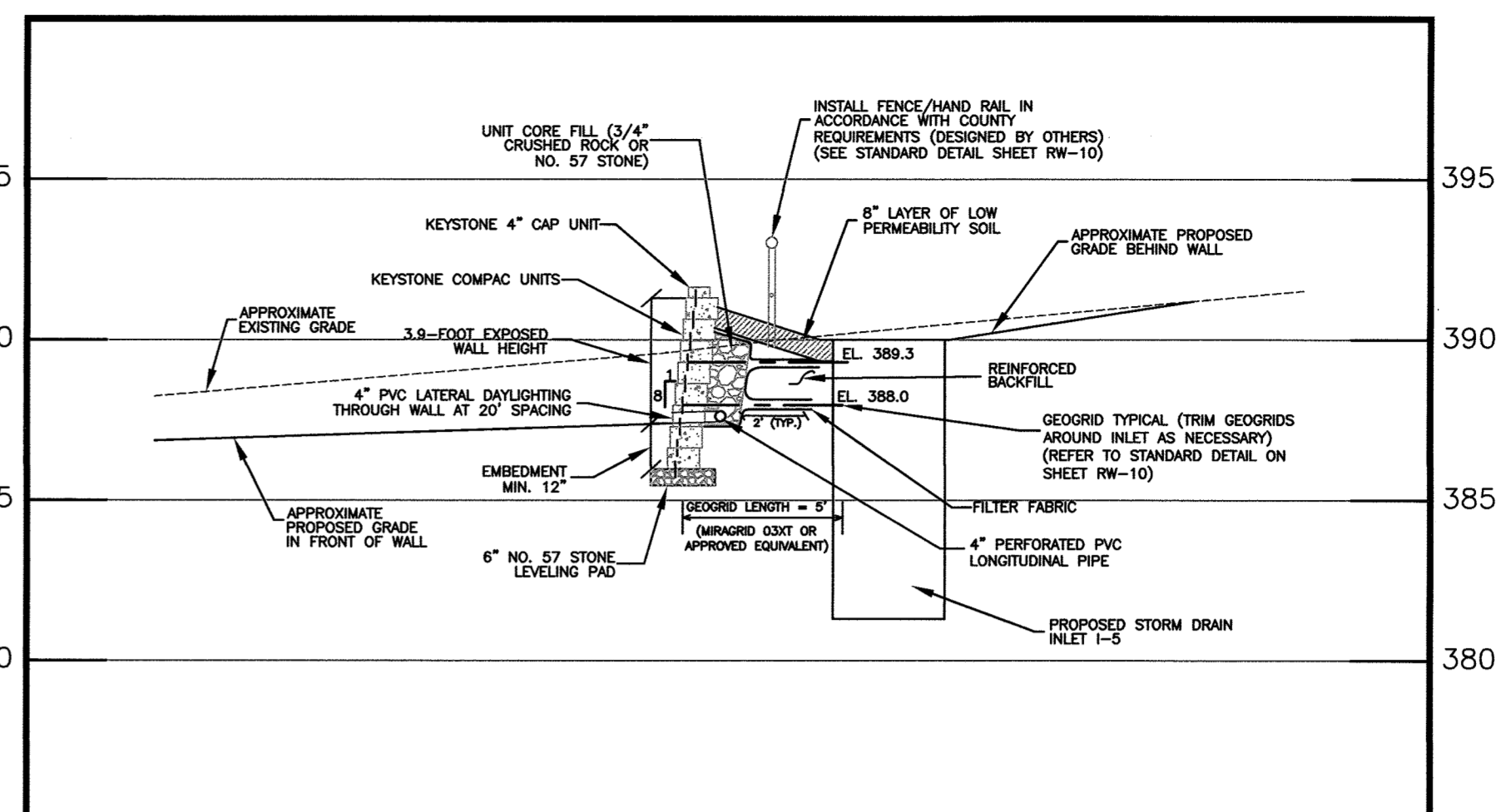
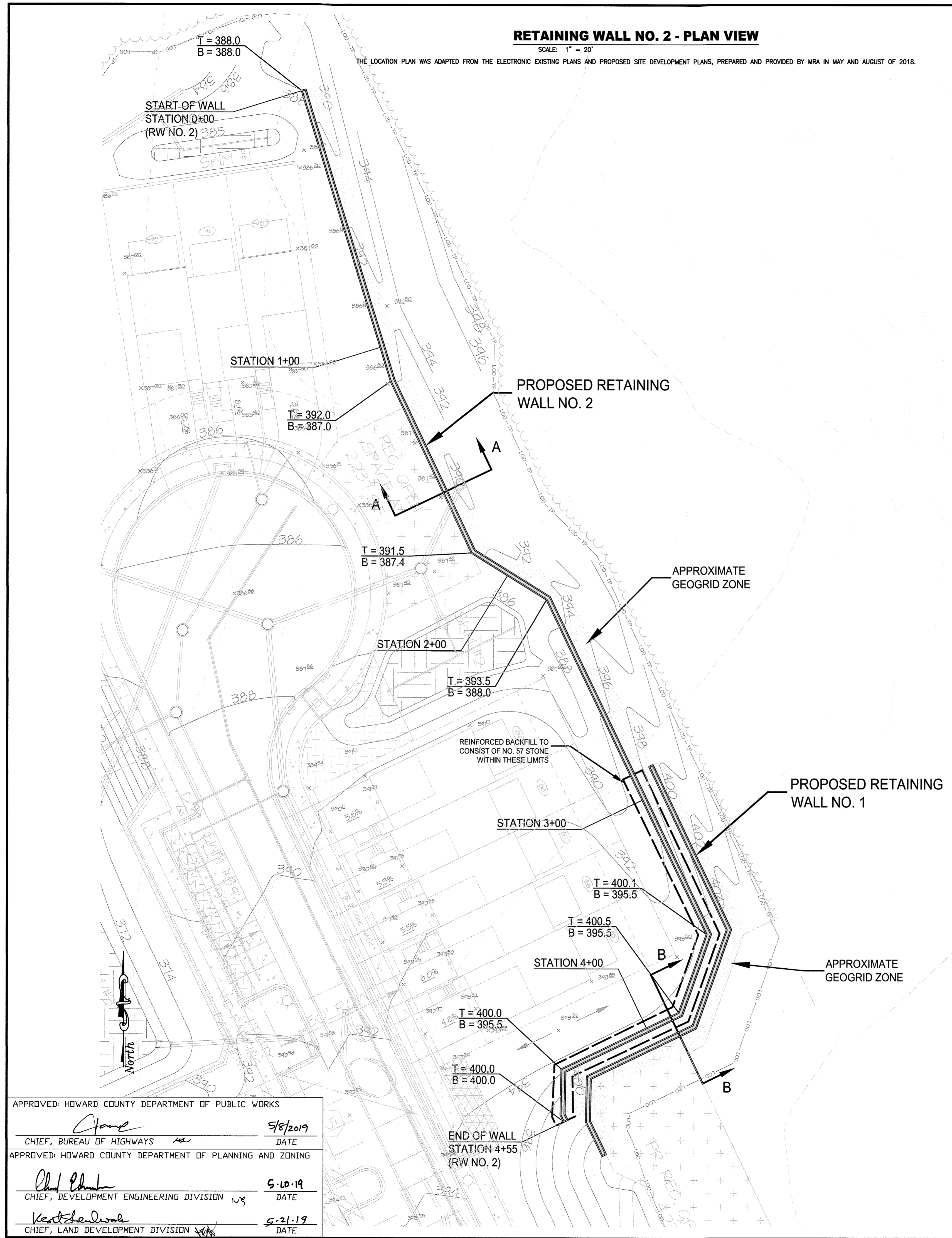
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[Signature] 5/8/2019
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 5-10-19
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
[Signature] 5-21-19
 CHIEF, LAND DEVELOPMENT DIVISION

DATE	REVISIONS	JOB NO.: 071211x4
8/31/18	RW NOS. 3 & 4 LAYOUTS REVISED	SCALE: AS SHOWN
		DATE: 6/5/18
		DRAWN BY: MEW
		DESIGN BY: MEW
		REVIEW BY: APM
		SHEET: 21 OF 29

RETAINING WALL NO. 2 - PLAN VIEW

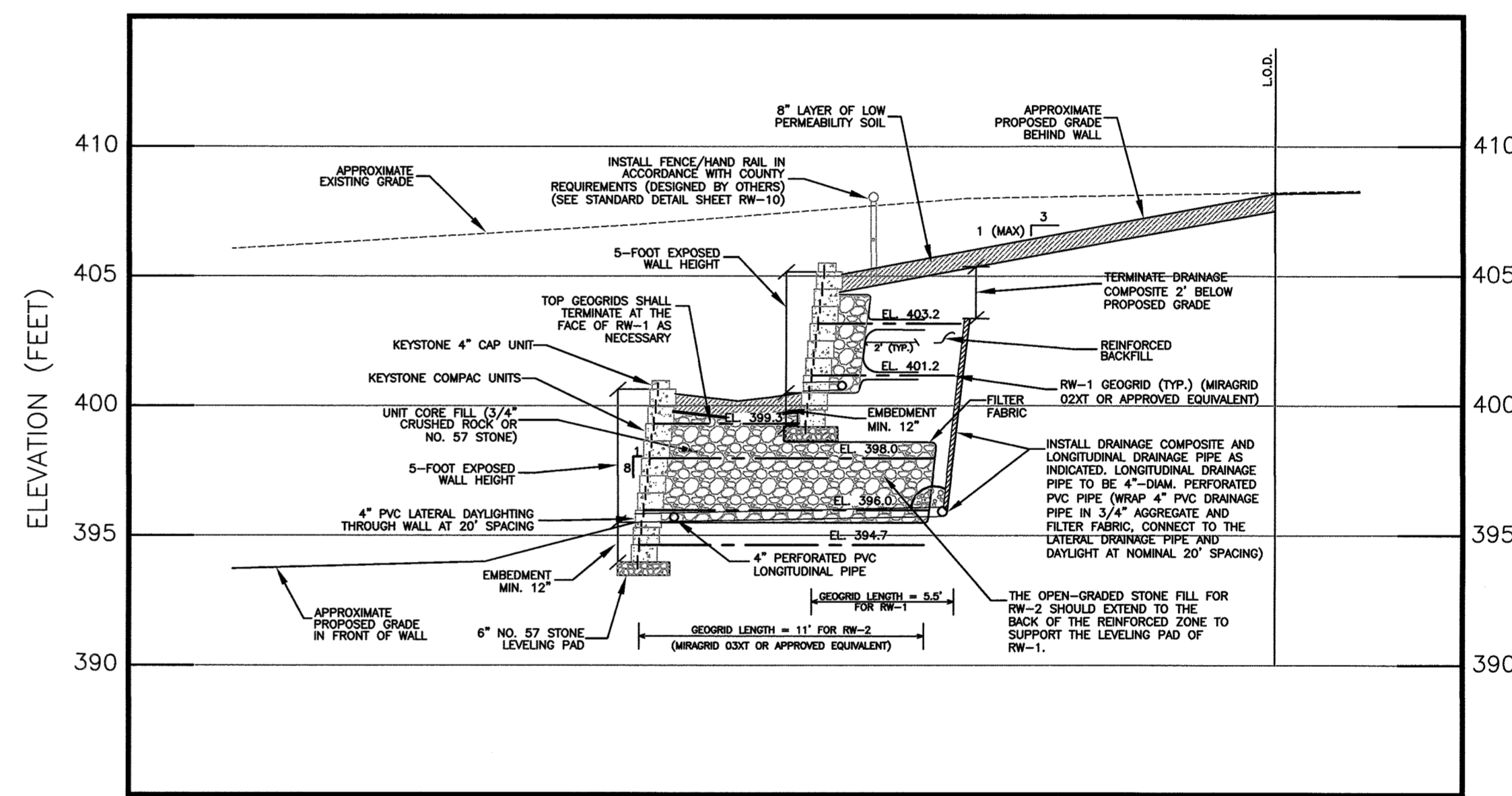
SCALE: 1" = 20'

THE LOCATION PLAN WAS ADAPTED FROM THE ELECTRONIC EXISTING PLANS AND PROPOSED SITE DEVELOPMENT PLANS, PREPARED AND PROVIDED BY MRA IN MAY AND AUGUST OF 2018.



RETAINING WALL NO. 2 - SECTION A-A (APPROXIMATE STATION 1+60)

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



RETAINING WALL NOS. 1 & 2 - SECTION B-B (APPROXIMATE STATIONS 1+11 & 3+90)

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

- NOTES:
- RETAINING WALL NO. 1 TO BE CONSTRUCTED WITH KEYSTONE COMPAC UNITS AND MIRAGRID 02XT GEORIDS OR APPROVED EQUIVALENTS.
 - RETAINING WALL NO. 2 TO BE CONSTRUCTED WITH KEYSTONE COMPAC UNITS AND MIRAGRID 03XT GEORIDS OR APPROVED EQUIVALENTS.
 - REFER TO SHEET RW-4 FOR RETAINING WALL NO. 2 PROFILE.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

James 5/8/2019
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chad 5-10-19
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Kent 5-21-19
 CHIEF, LAND DEVELOPMENT DIVISION DATE

RW-3

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

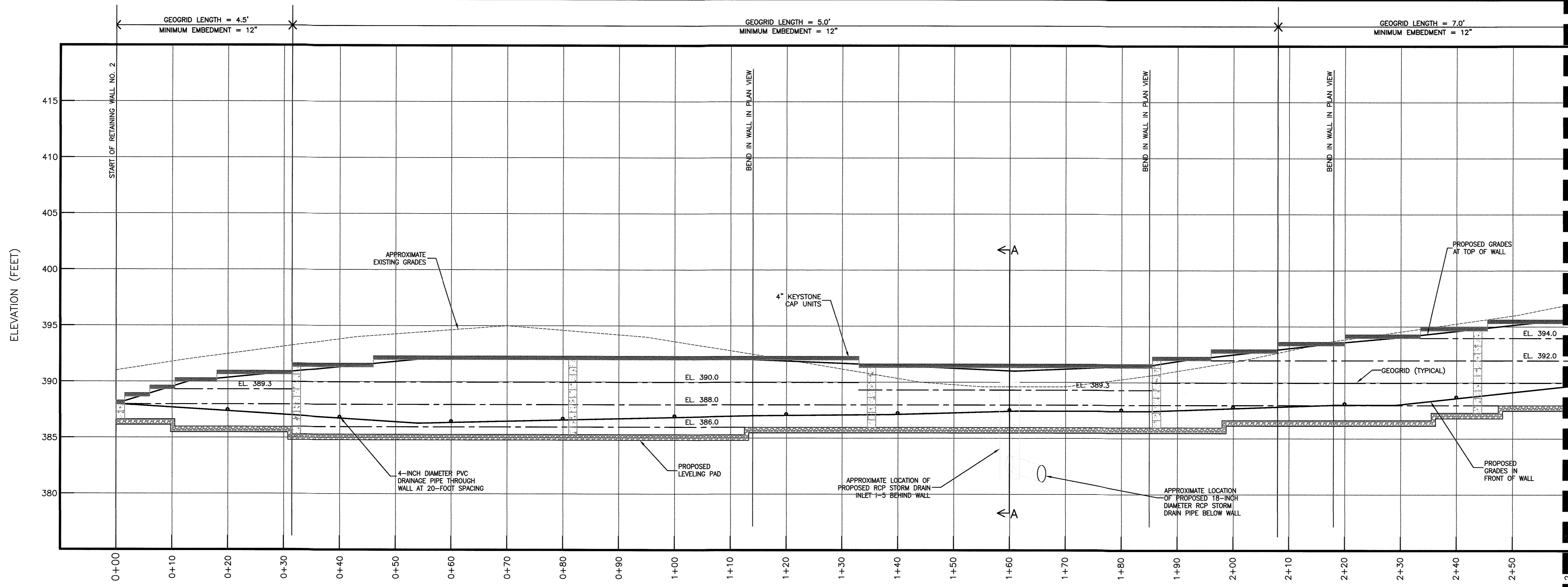
STATE OF MARYLAND PROFESSIONAL ENGINEER

TROTTER'S KNOLL - SECTION II
 PROPOSED RETAINING WALL NO. 2

PLAN & SECTIONS
 HOWARD COUNTY, MARYLAND

DATE	REVISIONS	JOB NO.:
8/31/18	RW NOS. 3 & 4 LAYOUTS REVISED	071211X4
		SCALE: AS SHOWN
		DATE: 6/5/18
		DRAWN BY: MEW
		DESIGN BY: MEW
		REVIEW BY: APM
		SHEET: 22 OF 29

MD PROFESSIONAL CERTIFICATION:
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. LICENSE NO. 36822, EXPIRATION DATE: 1/31/2020.

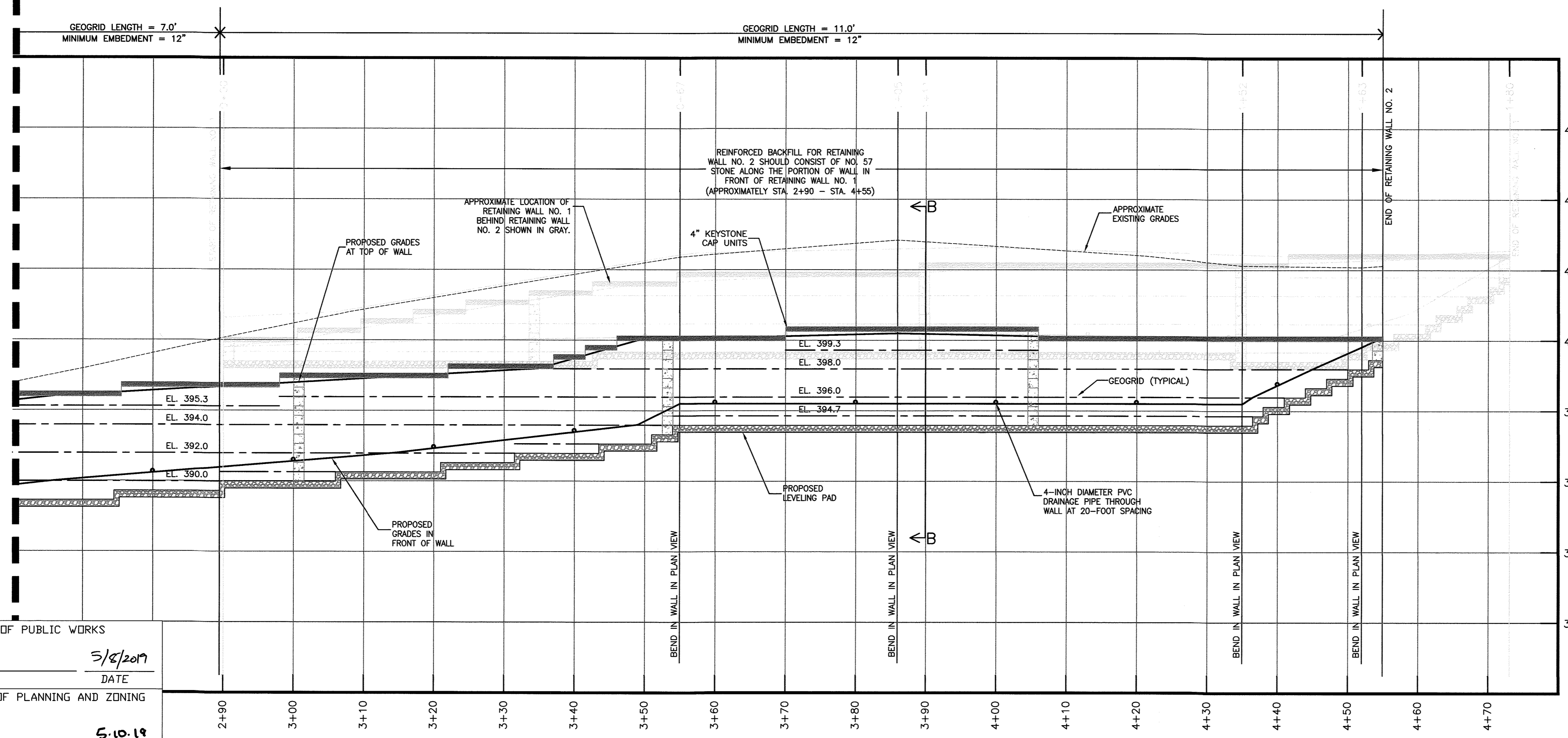


RETAINING WALL NO. 2 PROFILE (STA. 0+00 - STA. 2+60)

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

MATCHLINE A

MATCHLINE A



RETAINING WALL NO. 2 PROFILE (STA. 2+60 - STA. 4+55)

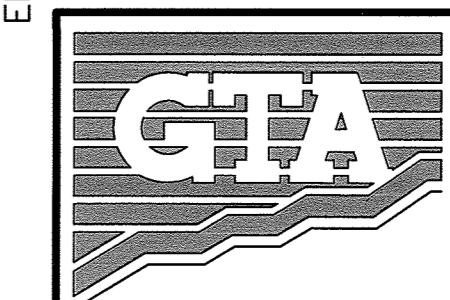
HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 5'

- NOTES:**
- RETAINING WALL NO.1 TO BE CONSTRUCTED WITH KEYSTONE COMPAC UNITS AND MIRAGRID 02XT GEOGRIDS OR APPROVED EQUIVALENTS.
 - RETAINING WALL NO. 2 TO BE CONSTRUCTED WITH KEYSTONE COMPAC UNITS AND MIRAGRID 03XT GEOGRIDS OR APPROVED EQUIVALENTS.

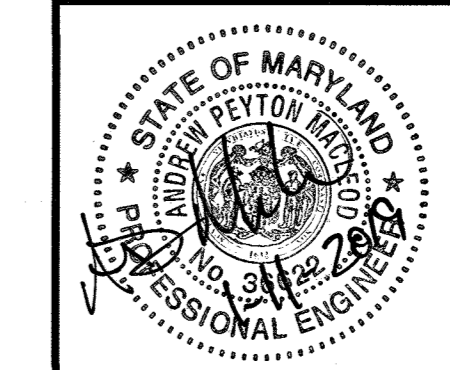
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Steve 5/8/2019
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Keith 5-10-19
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Keith 5-21-19
CHIEF, LAND DEVELOPMENT DIVISION DATE



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

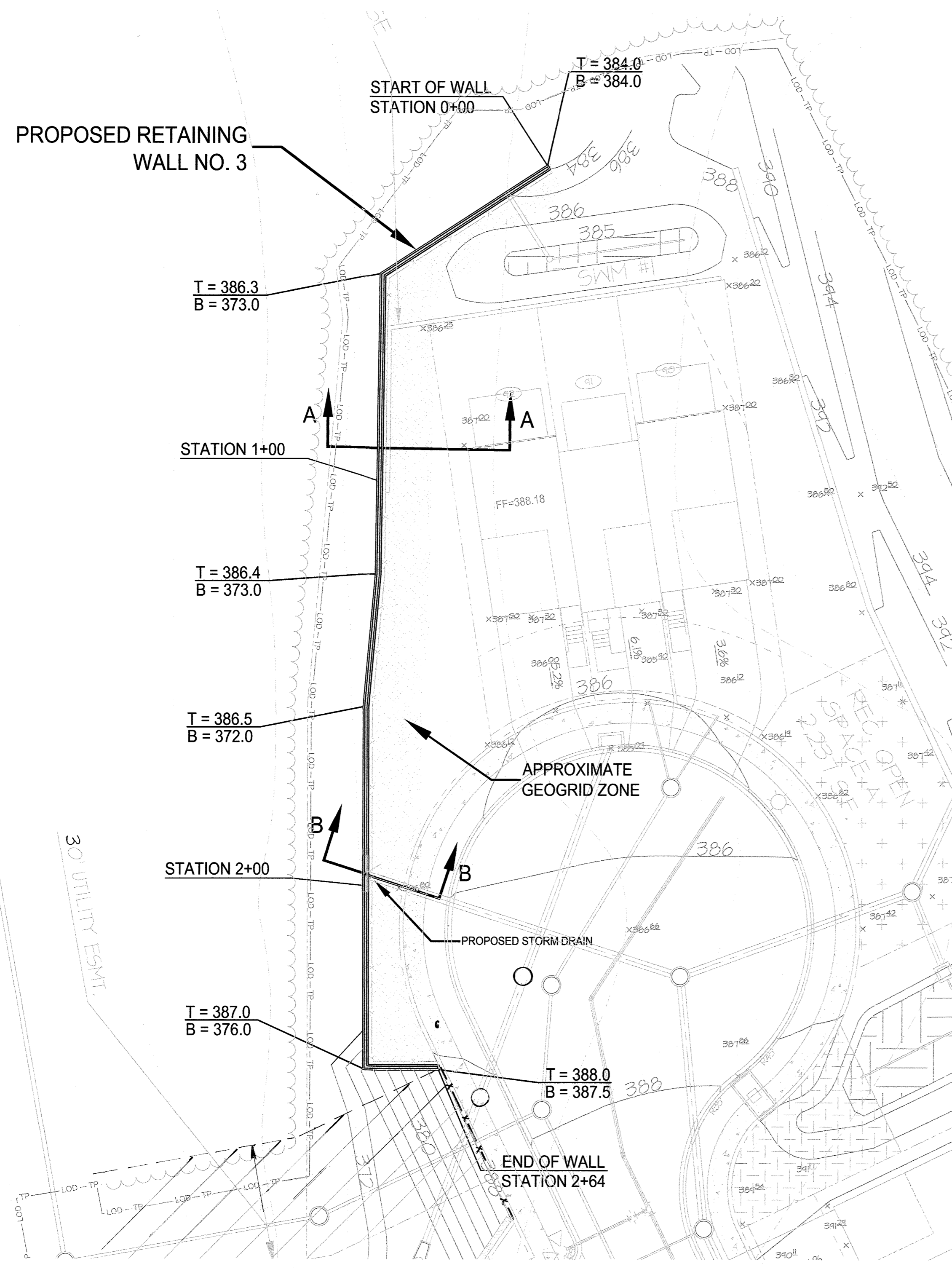


TROTTER'S KNOLL - SECTION II
PROPOSED RETAINING WALL NO. 2
PROFILE
HOWARD COUNTY, MARYLAND

MD PROFESSIONAL CERTIFICATION:
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. 36622, EXPIRATION DATE: 1/31/2020.

DATE	REVISIONS	JOB NO.: 071211X4
8/31/18	RW NOS. 3 & 4 LAYOUTS REVISED	SCALE: AS SHOWN
		DATE: 6/5/18
		DRAWN BY: MEW
		DESIGN BY: MEW
		REVIEW BY: APM
		SHEET: 23 OF 29

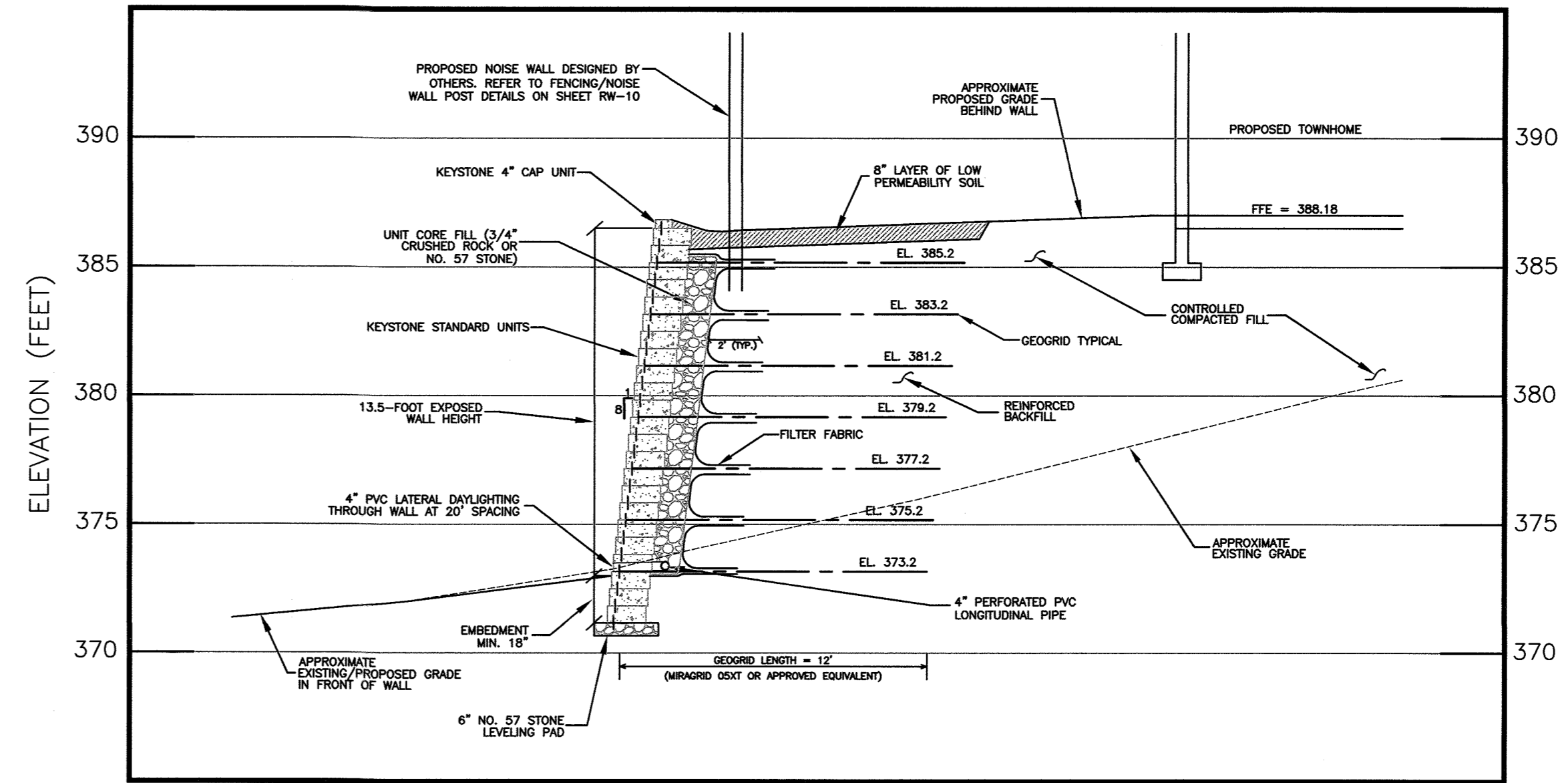
RW-4



RETAINING WALL NO. 3 - PLAN VIEW

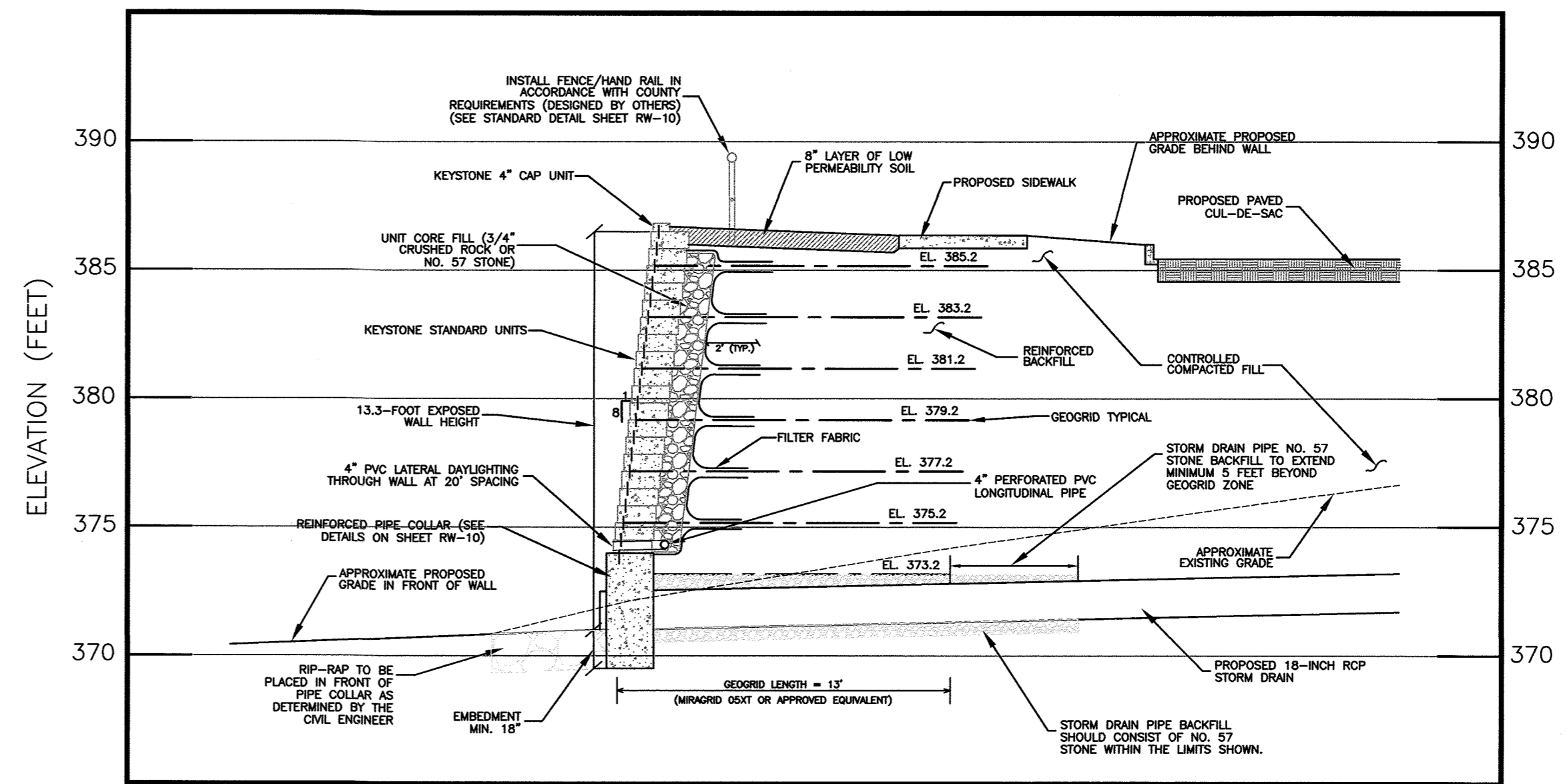
SCALE: 1" = 20'

THE LOCATION PLAN WAS ADAPTED FROM THE ELECTRONIC EXISTING PLANS AND PROPOSED SITE DEVELOPMENT PLANS, PREPARED AND PROVIDED BY MRA IN MAY AND AUGUST OF 2018.



RETAINING WALL NO. 3 - SECTION A-A (APPROXIMATE STATION 0+92)

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

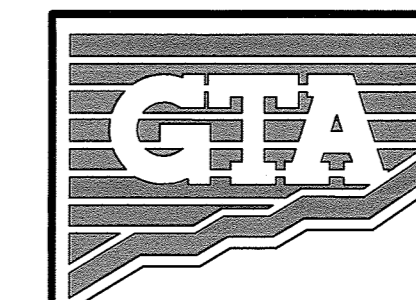


RETAINING WALL NO. 3 - SECTION B-B (APPROXIMATE STATION 1+97)

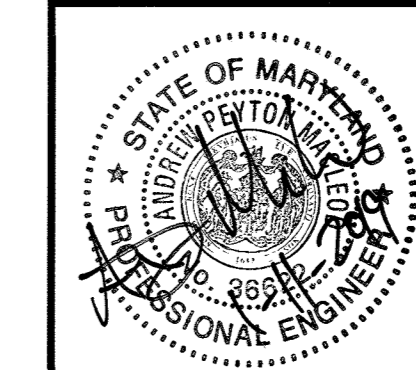
HORIZONTAL SCALE: 1" = 5'
VERTICAL SCALE: 1" = 5'

NOTE: RETAINING WALL NO. 3 TO BE CONSTRUCTED WITH KEYSTONE STANDARD UNITS AND MIRAGRID 05XT GEOGRIDS OR APPROVED EQUIVALENTS. REFER TO SHEET RW-6 FOR RETAINING WALL NO. 3 PROFILE.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS	
<i>James</i> CHIEF, BUREAU OF HIGHWAYS	5/6/2019 DATE
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING	
<i>Al Clark</i> CHIEF, DEVELOPMENT ENGINEERING DIVISION	5-10-19 DATE
<i>Veronica</i> CHIEF, LAND DEVELOPMENT DIVISION	5-21-19 DATE



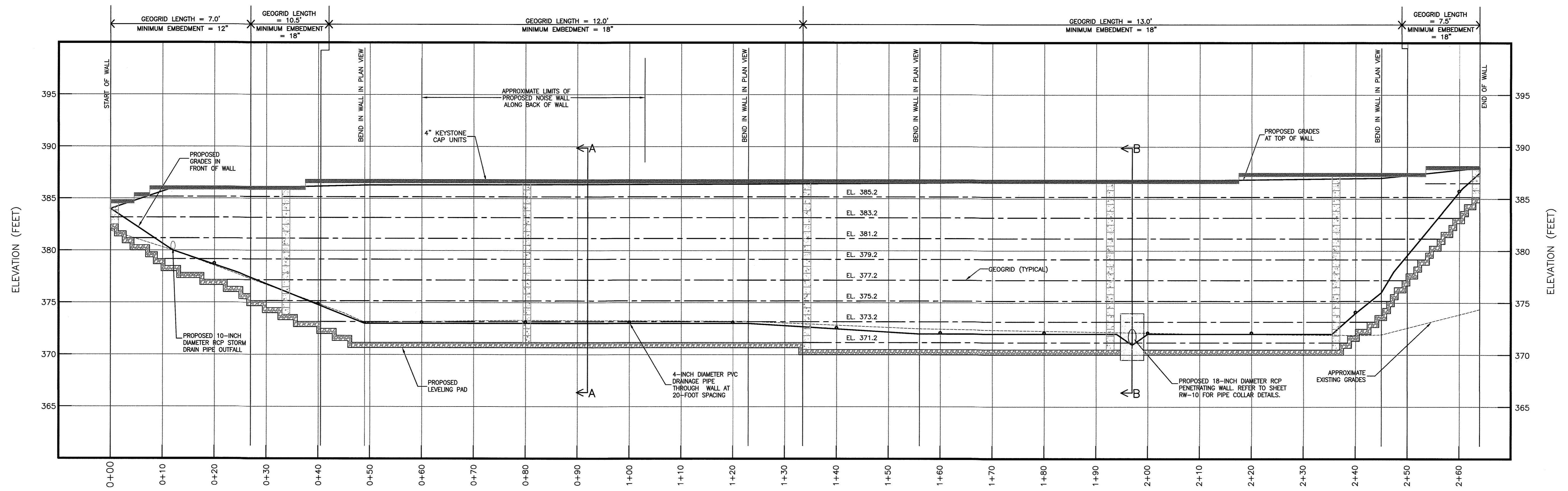
GEO-TECHNOLOGY ASSOCIATES, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
14280 PARK CENTER DRIVE, SUITE A
LAUREL, MARYLAND 20707
(410) 792-9446 or (301) 470-4470
FAX: (410) 792-7395
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TROTTER'S KNOLL - SECTION II PROPOSED RETAINING WALL NO. 3		
PLAN & SECTIONS		
HOWARD COUNTY, MARYLAND		
DATE	REVISIONS	JOB NO.: 071211x4
8/31/18	RW NOS. 3 & 4 LAYOUTS REVISED	SCALE: AS SHOWN
		DATE: 6/5/18
		DRAWN BY: MEW
		DESIGN BY: MEW
		REVIEW BY: APM
		SHEET: 24 OF 29

RW-5

MD PROFESSIONAL CERTIFICATION:
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 36622, EXPIRATION DATE: 1/31/2020.


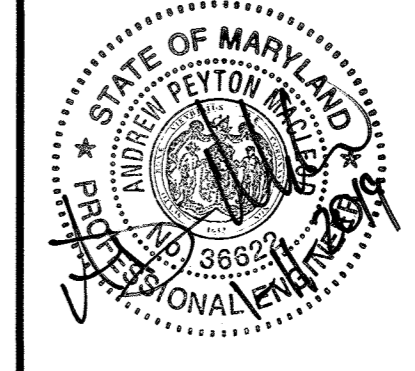


RETAINING WALL NO. 3 PROFILE (STA. 0+00 - STA. 2+64)

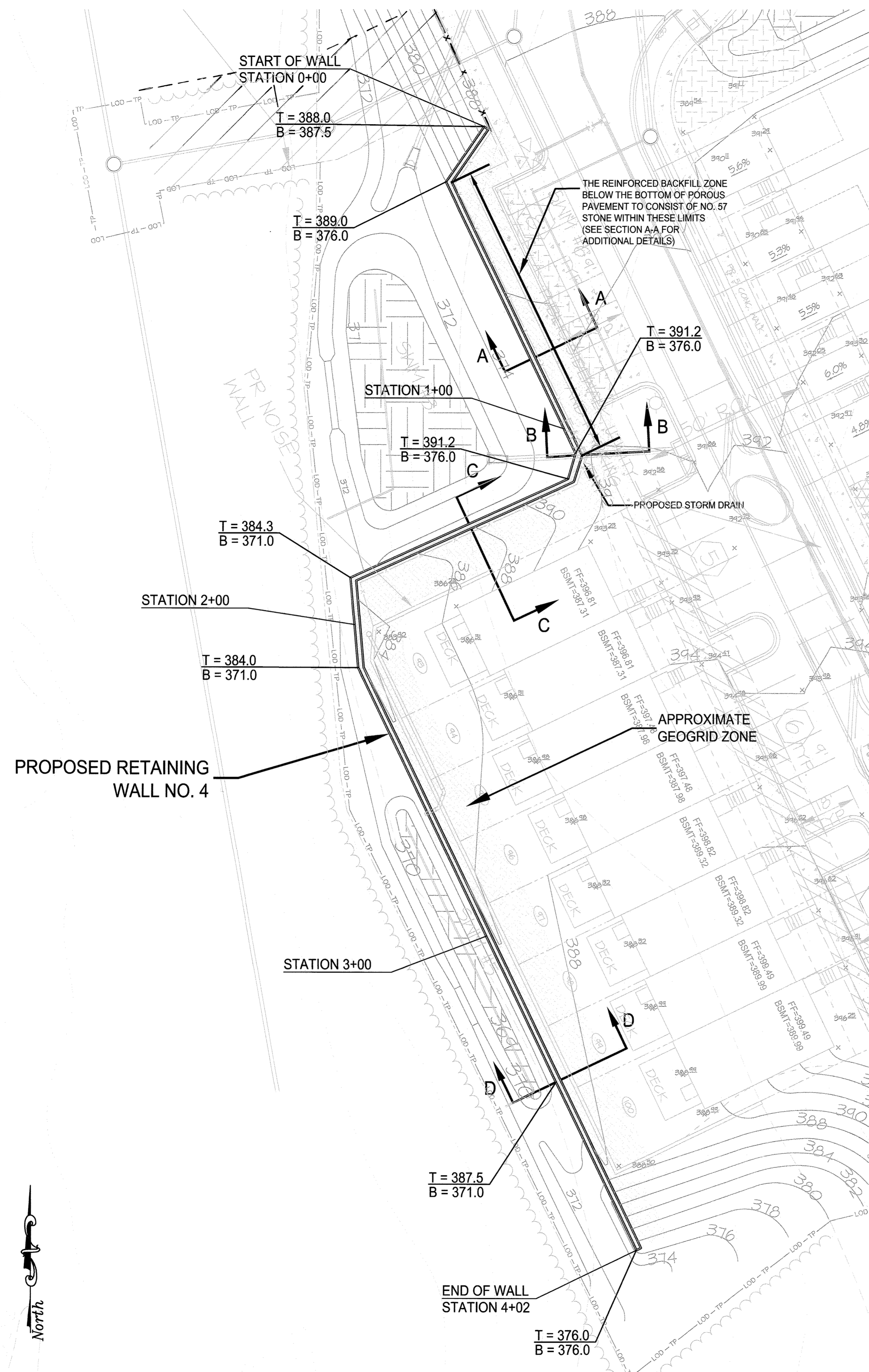
HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 5'

NOTE: RETAINING WALL NO. 3 TO BE CONSTRUCTED WITH KEYSTONE STANDARD UNITS AND MIRAGRID 05XT GEOGRIDS OR APPROVED EQUIVALENTS.

RW-6

	GEO-TECHNOLOGY ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS 14280 PARK CENTER DRIVE, SUITE A LAUREL, MARYLAND 20707 (410) 792-9446 or (301) 470-4470 FAX: (410) 792-7395 WWW.GTAENG.COM		
	TROTTER'S KNOLL - SECTION II PROPOSED RETAINING WALL NO. 3 PROFILE HOWARD COUNTY, MARYLAND		
	DATE 8/31/18	REVISIONS RW NOS. 3 & 4 LAYOUTS REVISED	JOB NO.: 071211x4 SCALE: AS SHOWN DATE: 6/5/18 DRAWN BY: MEW DESIGN BY: MEW REVIEW BY: APM SHEET: 25 OF 29
	MD PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 38622, EXPIRATION DATE: 1/31/2020.		
	DATE: 5/8/2019 CHIEF, BUREAU OF HIGHWAYS		
	DATE: 5-10-19 CHIEF, DEVELOPMENT ENGINEERING DIVISION		

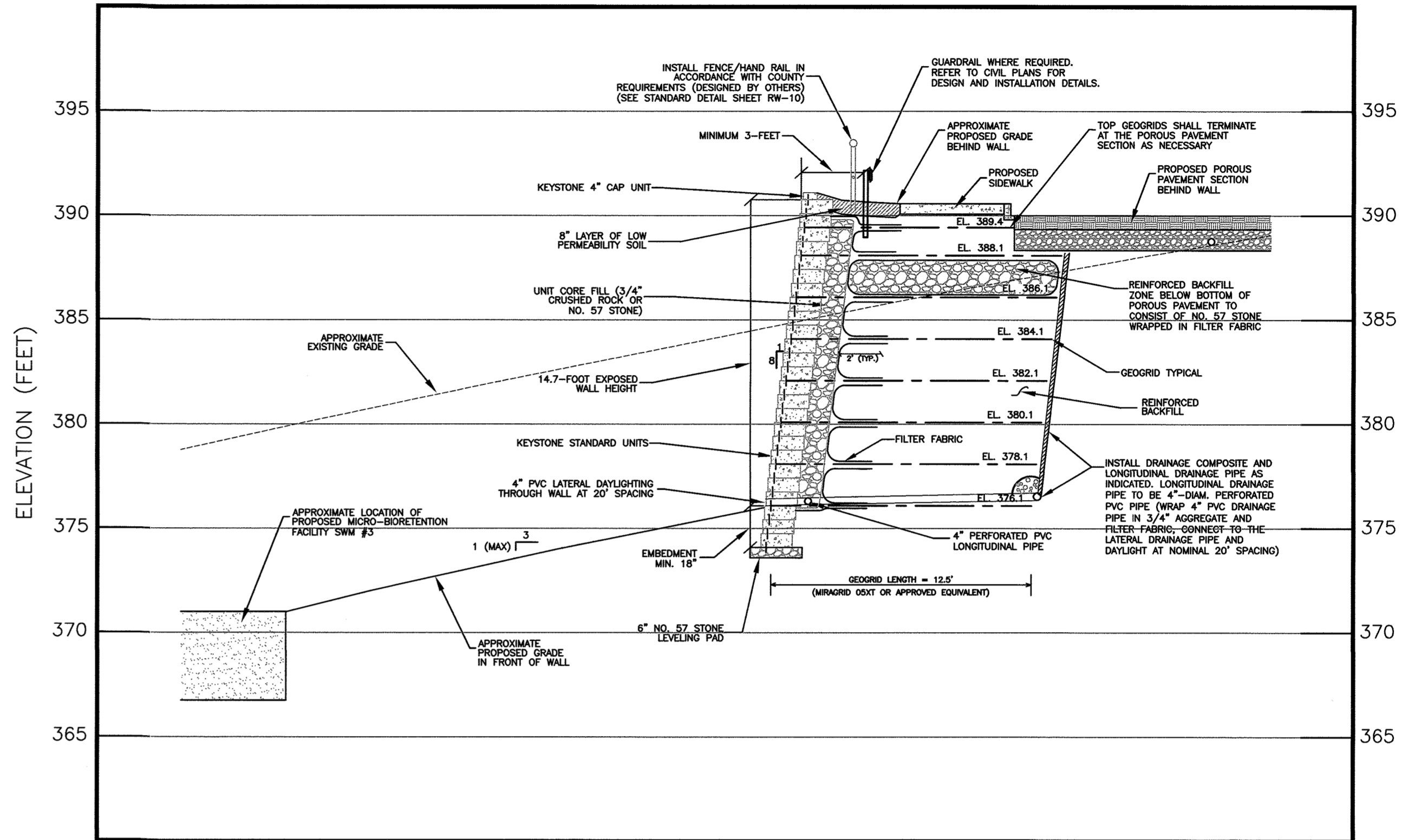
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 DATE: 5-21-19
 CHIEF, LAND DEVELOPMENT DIVISION



RETAINING WALL NO. 4 - PLAN VIEW

SCALE: 1" = 20'

THE LOCATION PLAN WAS ADAPTED FROM THE ELECTRONIC EXISTING PLANS AND PROPOSED SITE DEVELOPMENT PLANS, PREPARED AND PROVIDED BY MRA IN MAY AND AUGUST OF 2018.



RETAINING WALL NO. 4 - SECTION A-A (APPROXIMATE STATION 0+77.5)

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

NOTE: RETAINING WALL NO. 4 TO BE CONSTRUCTED WITH KEYSTONE STANDARD UNITS AND MIRAGRID 05XT GEOGRIDS OR APPROVED EQUIVALENTS. ADDITIONAL SECTION FOR RETAINING WALL NO. 4 SHOWN ON SHEET RW-8. RETAINING WALL NO. 4 PROFILE SHOWN ON SHEET RW-9.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[Signature] 5/8/2019
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 5.10.19
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 5.21.19
 CHIEF, LAND DEVELOPMENT DIVISION DATE

RW-7

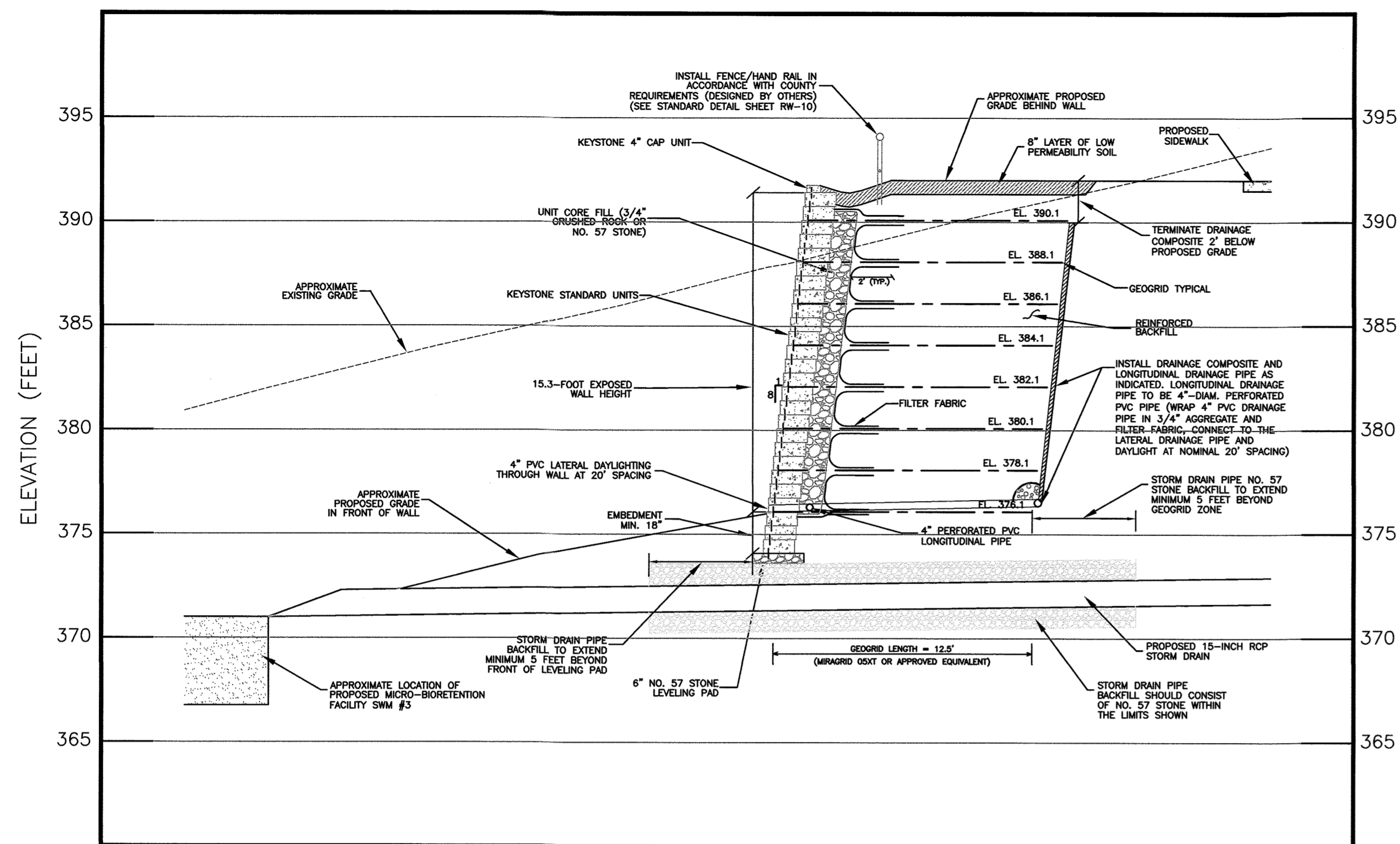


GEO-TECHNOLOGY ASSOCIATES, INC.
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 14280 PARK CENTER DRIVE, SUITE A
 LAUREL, MARYLAND 20707
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 FAX: (410) 792-7395
 WWW.GTAENG.COM

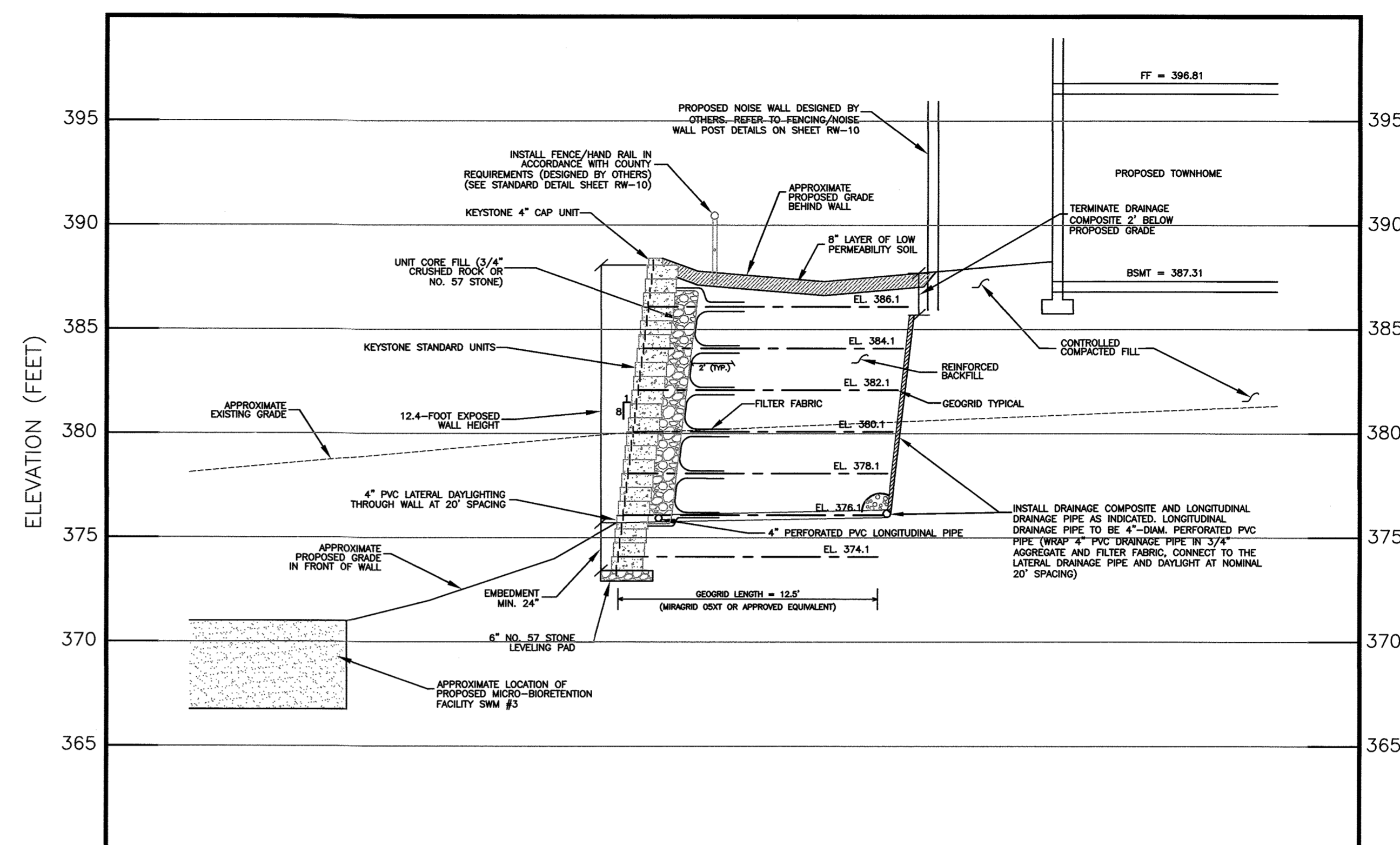


TROTTER'S KNOLL - SECTION II
 PROPOSED RETAINING WALL NO. 4
 PLAN & SECTION
 HOWARD COUNTY, MARYLAND

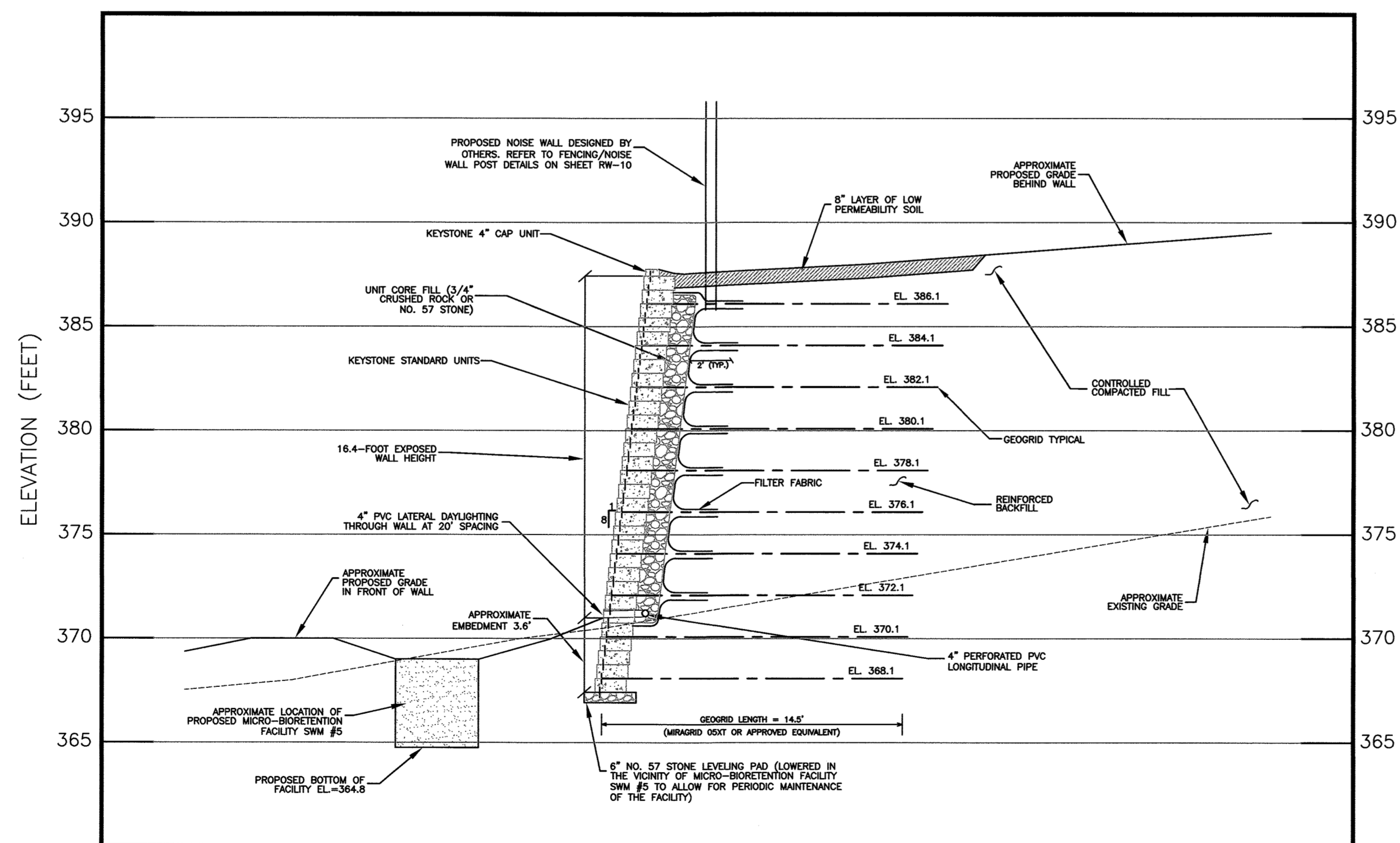
DATE	REVISIONS	JOB NO.: 071211x4
8/31/18	RW NOS. 3 & 4 LAYOUTS REVISED	SCALE: AS SHOWN
		DATE: 6/5/18
		DRAWN BY: MEW
		DESIGN BY: MEW
		REVIEW BY: APM
		SHEET: 26 OF 29



RETAINING WALL NO. 4 - SECTION B-B (APPROXIMATE STATION 1+08.5)
 HORIZONTAL SCALE: 1" = 5'
 VERTICAL SCALE: 1" = 5'



RETAINING WALL NO. 4 - SECTION C-C (APPROXIMATE STATION 1+47.5)
 HORIZONTAL SCALE: 1" = 5'
 VERTICAL SCALE: 1" = 5'



RETAINING WALL NO. 4 - SECTION D-D (APPROXIMATE STATION 3+47.5)
 HORIZONTAL SCALE: 1" = 5'
 VERTICAL SCALE: 1" = 5'

NOTE: RETAINING WALL NO. 4 TO BE CONSTRUCTED WITH KEystone STANDARD UNITS AND MIRAGRID 05XT GEOGRIDS OR APPROVED EQUIVALENTS.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[Signature] 5/8/2019
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 5.10.19
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 5.21.19
 CHIEF, LAND DEVELOPMENT DIVISION DATE

RW-8

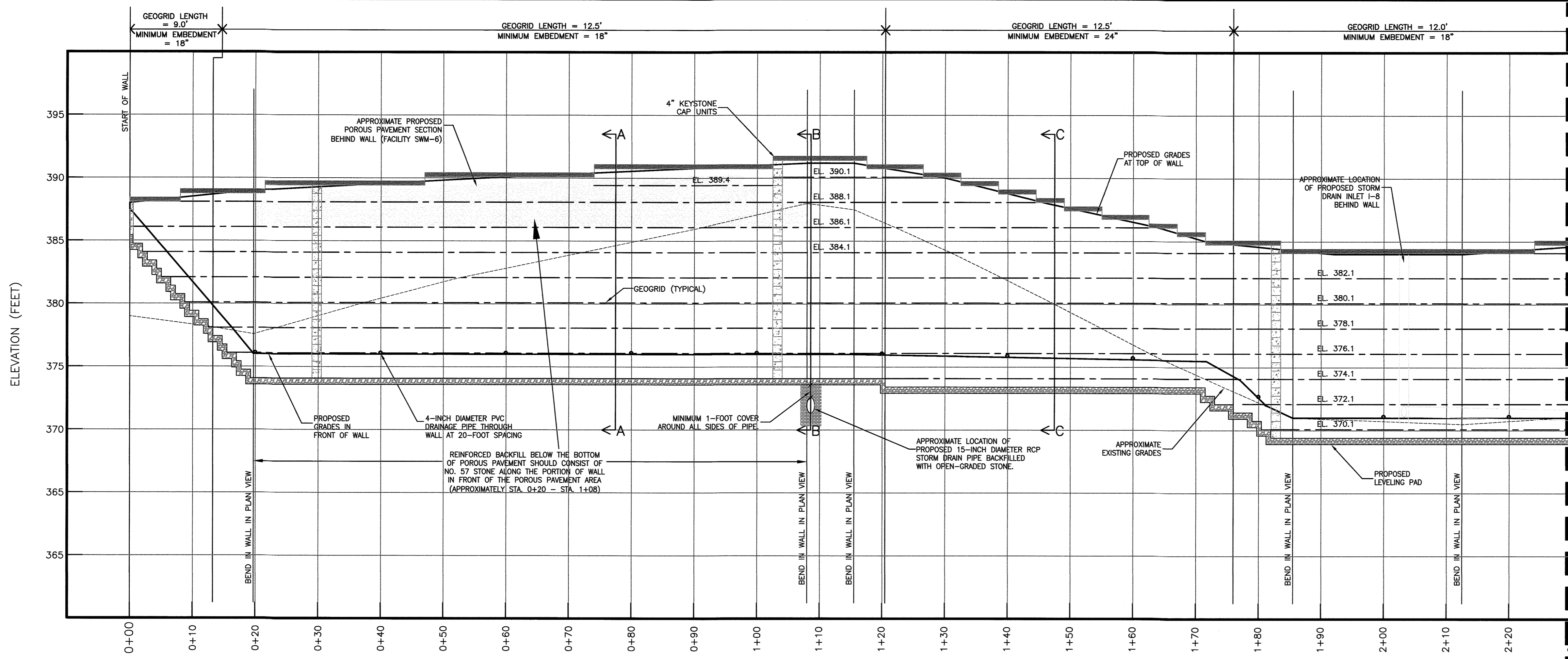
GEO-TECHNOLOGY ASSOCIATES, INC.
 GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
 14280 PARK CENTER DRIVE, SUITE A
 LAUREL, MARYLAND 20707
 (410) 792-9448 or (301) 470-4470
 FAX: (410) 792-7395
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TROTTER'S KNOLL - SECTION II
 PROPOSED RETAINING WALL NO. 4

SECTIONS (CONT.)
 HOWARD COUNTY, MARYLAND

DATE	REVISIONS	JOB NO.: 071211X4
8/31/18	RW NOS. 3 & 4 LAYOUTS REVISED	SCALE: AS SHOWN
		DATE: 6/5/18
		DRAWN BY: MEW
		DESIGN BY: MEW
		REVIEW BY: APM
		SHEET: 27 OF 29

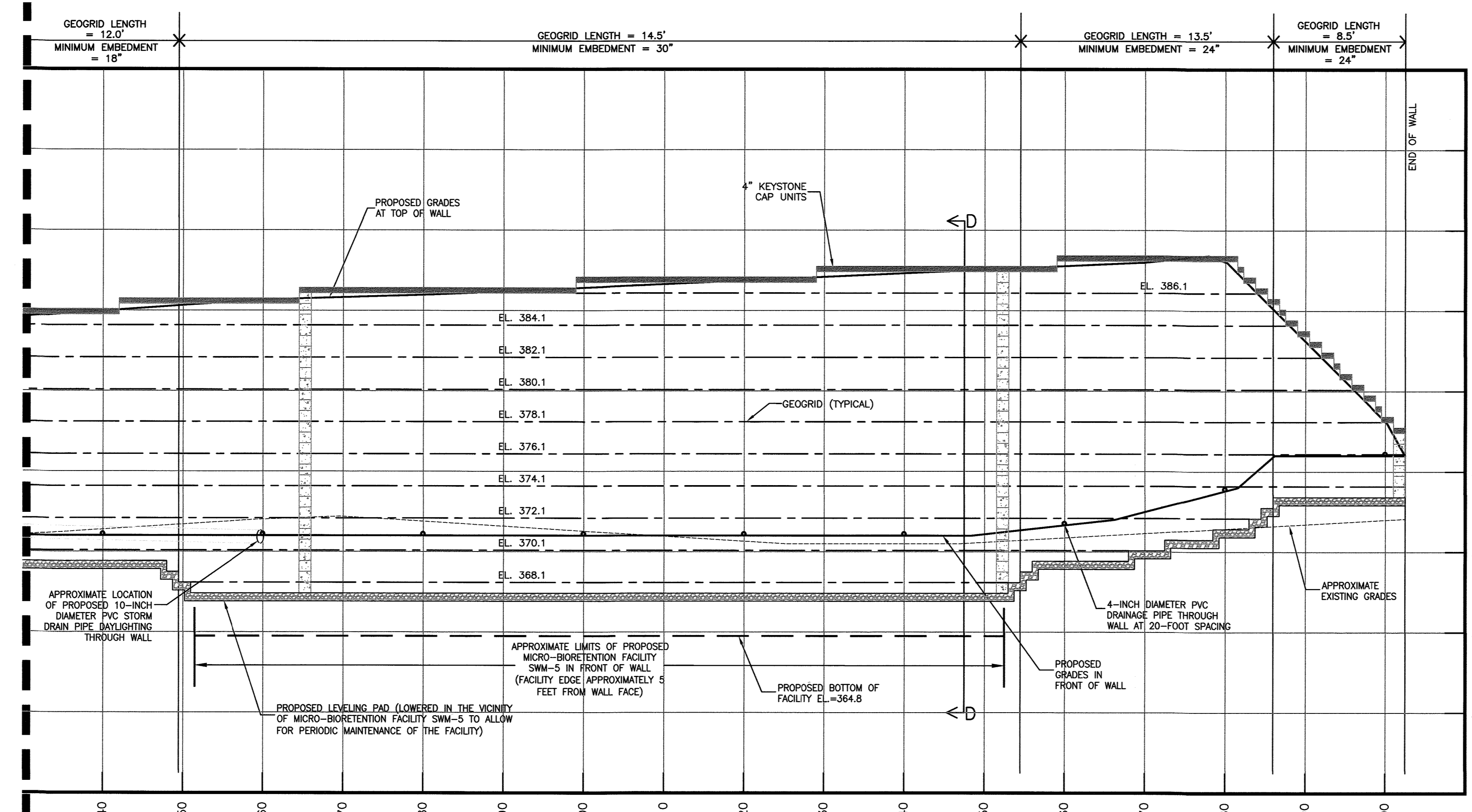
MD PROFESSIONAL CERTIFICATION:
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 36622, EXPIRATION DATE: 1/31/2020.



RETAINING WALL NO. 4 PROFILE (STA. 0+00 - STA. 2+30)

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

MATCHLINE B



RETAINING WALL NO. 4 PROFILE (STA. 2+30 - STA. 4+02)

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

MATCHLINE B

NOTE: RETAINING WALL NO. 4 TO BE CONSTRUCTED WITH KEYSTONE STANDARD UNITS AND MIRAGRID 05XT GEOGRIDS OR APPROVED EQUIVALENTS.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[Signature] 5/6/2019
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[Signature] 5-10-19
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

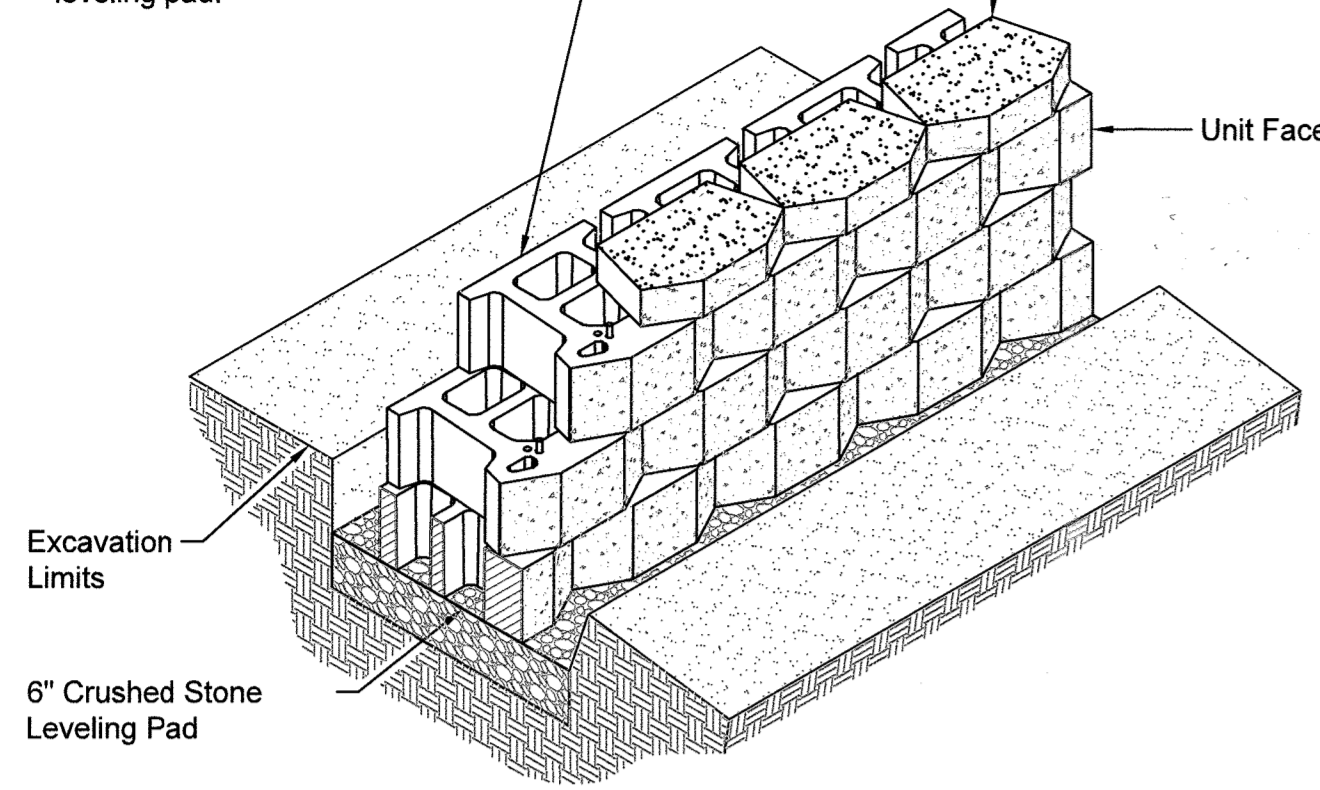
[Signature] 5-21-19
 CHIEF, LAND DEVELOPMENT DIVISION DATE

RW-9																										
GEO-TECHNOLOGY ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS 14280 PARK CENTER DRIVE, SUITE: A LAUREL, MARYLAND 20707 (410) 792-9446 or (301) 470-4470 FAX: (410) 792-7395 WWW.GTAENG.COM																										
TROTTER'S KNOLL - SECTION II PROPOSED RETAINING WALL NO. 4 PROFILE HOWARD COUNTY, MARYLAND																										
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DATE	REVISIONS	JOB NO.:																								
8/31/18	RW NOS. 3 & 4 LAYOUTS REVISED	071211X4																								
		SCALE: AS SHOWN																								
		DATE: 6/5/18																								
		DRAWN BY: MEW																								
		DESIGN BY: MEW																								
		REVIEW BY: APM																								
		SHEET: 28 OF 29																								

Base Leveling Pad Notes:

1. The leveling pad is to be No. 57 crushed stone.
2. The base foundation is to be approved by the site geotechnical engineer prior to placement of the leveling pad.

Standard II Unit		Cap Unit	
Width:	18"	Width:	18"
Depth:	18"	Depth:	10 1/2"
Height:	8"	Height:	4"
Weight:	106 lbs	Weight:	45 lbs

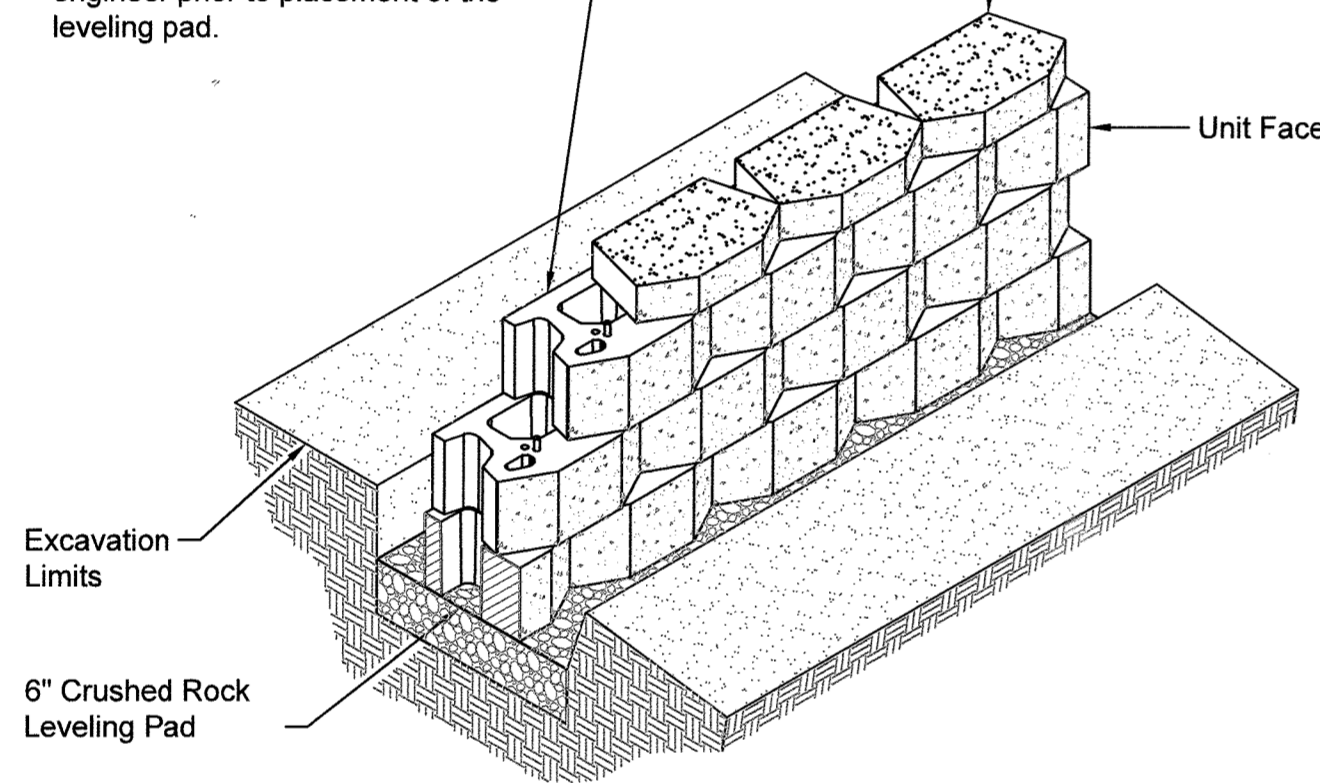


Standard II Unit/Base Pad Isometric Section View

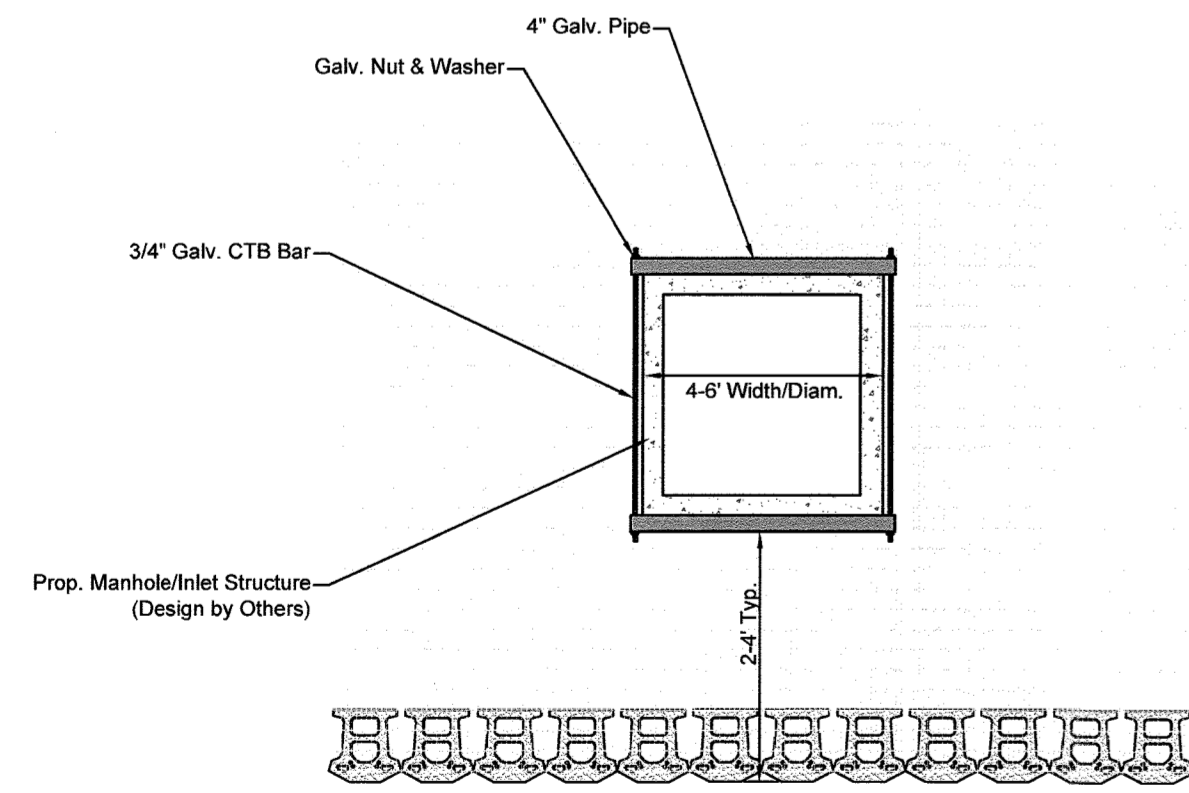
Base Leveling Pad Notes:

1. The leveling pad is to be constructed of crushed stone.
2. The base foundation is to be approved by the site geotechnical engineer prior to placement of the leveling pad.

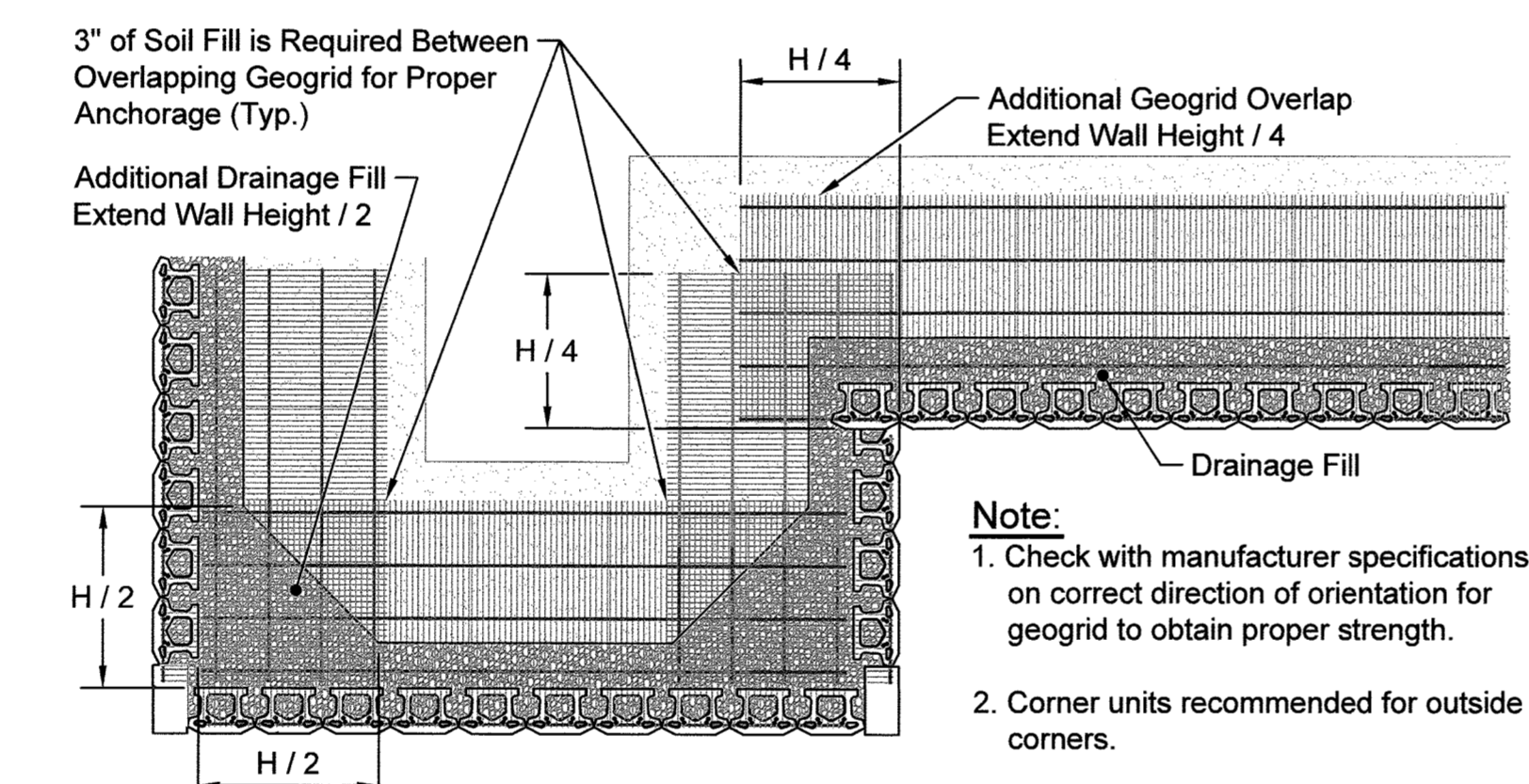
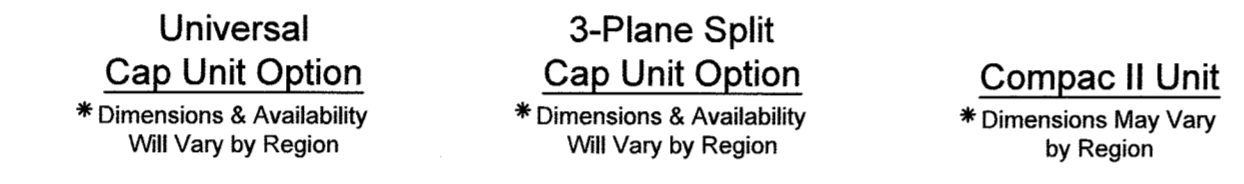
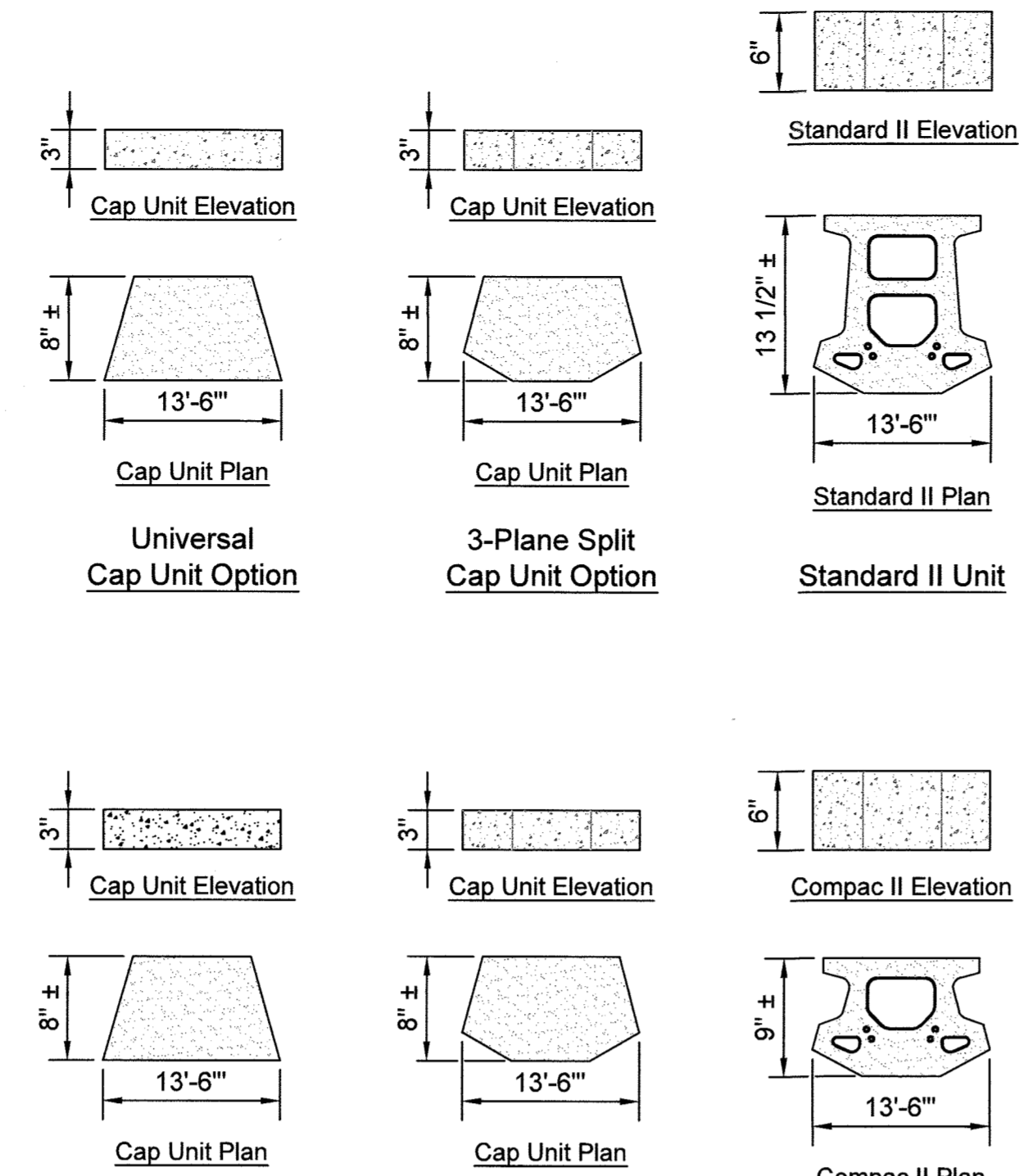
Compac II Unit		Cap Unit	
Width:	18"	Width:	18"
Depth:	12"	Depth:	10 1/2"
Height:	8"	Height:	4"
Weight:	82 lbs	Weight:	45 lbs



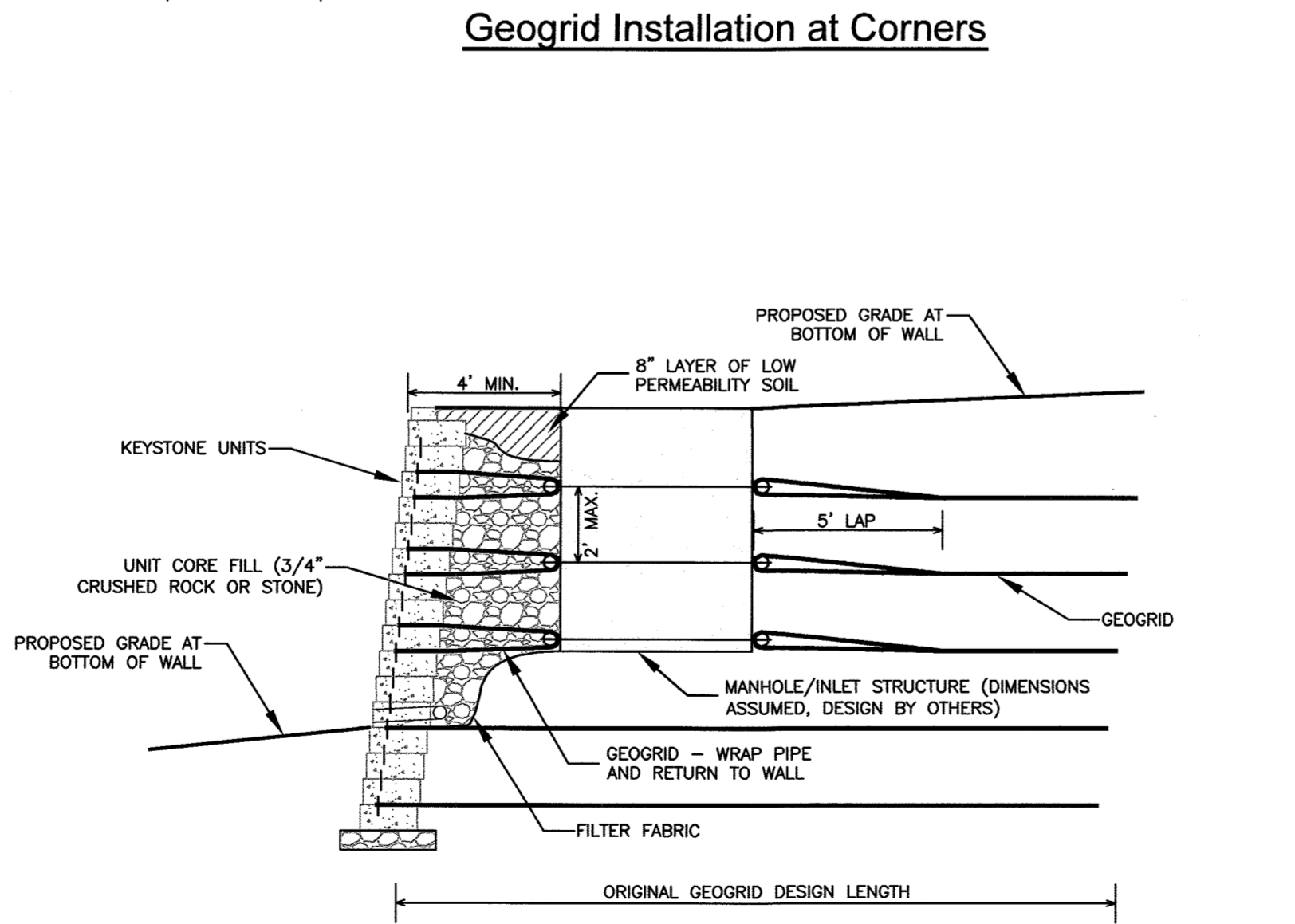
Compac II Unit/Base Pad Isometric Section View



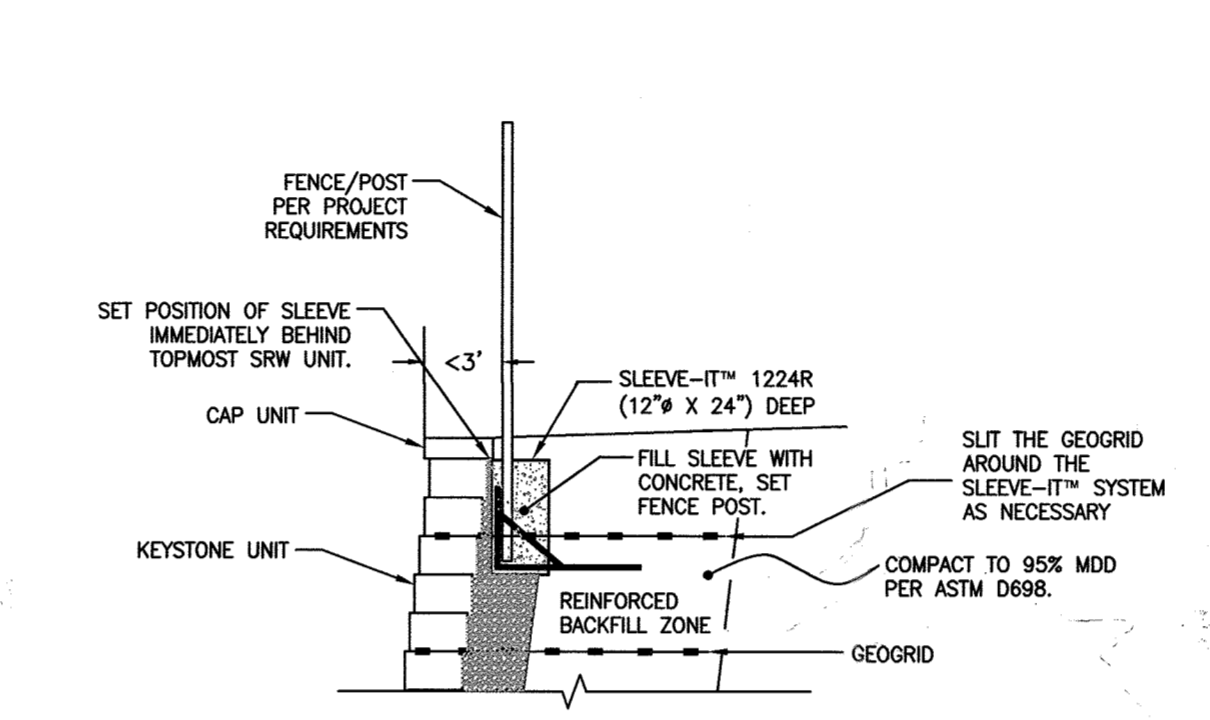
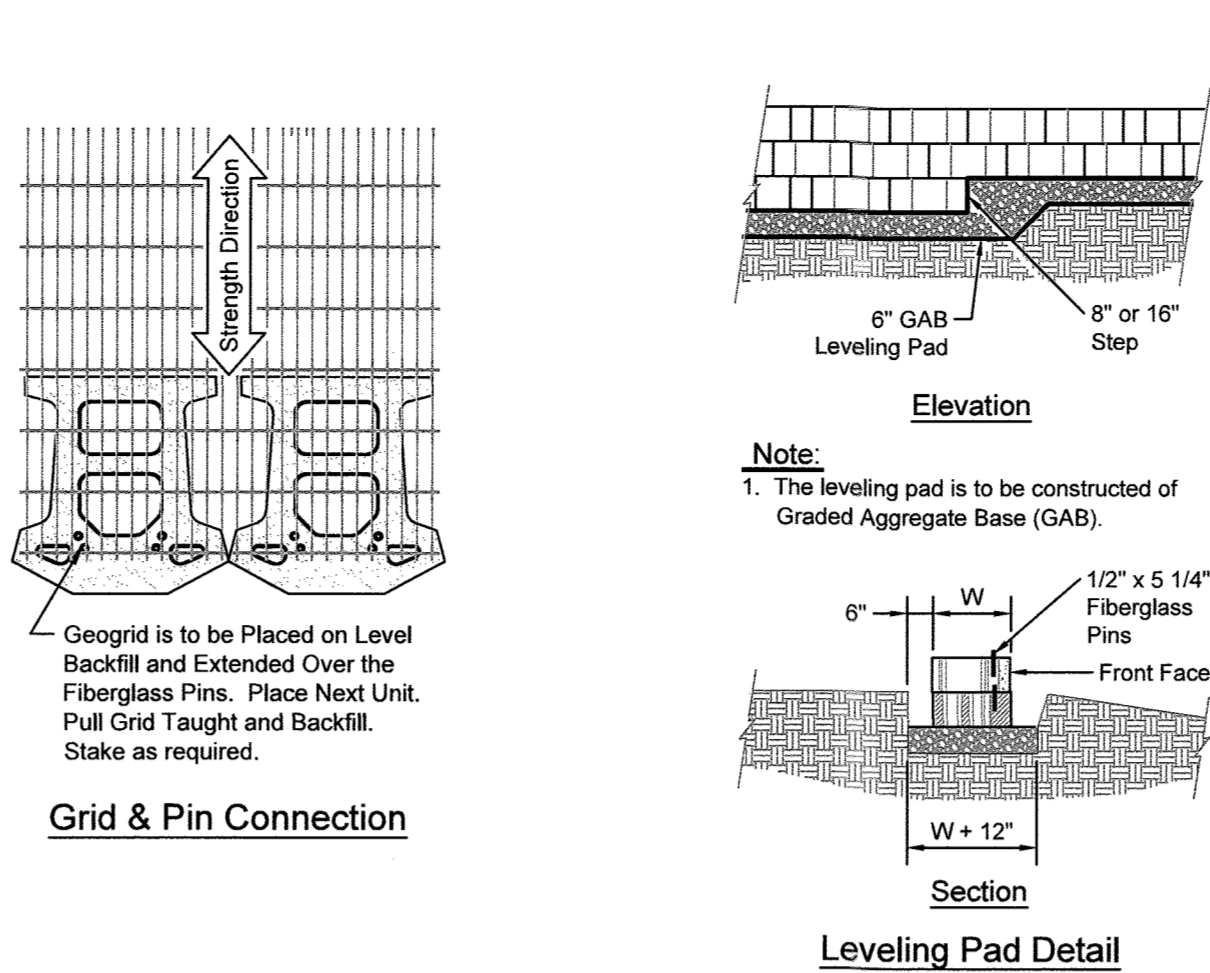
GEOGRID DETAIL FOR MANHOLE/INLET WITHIN GEOGRID ZONE
PLAN VIEW, NTS



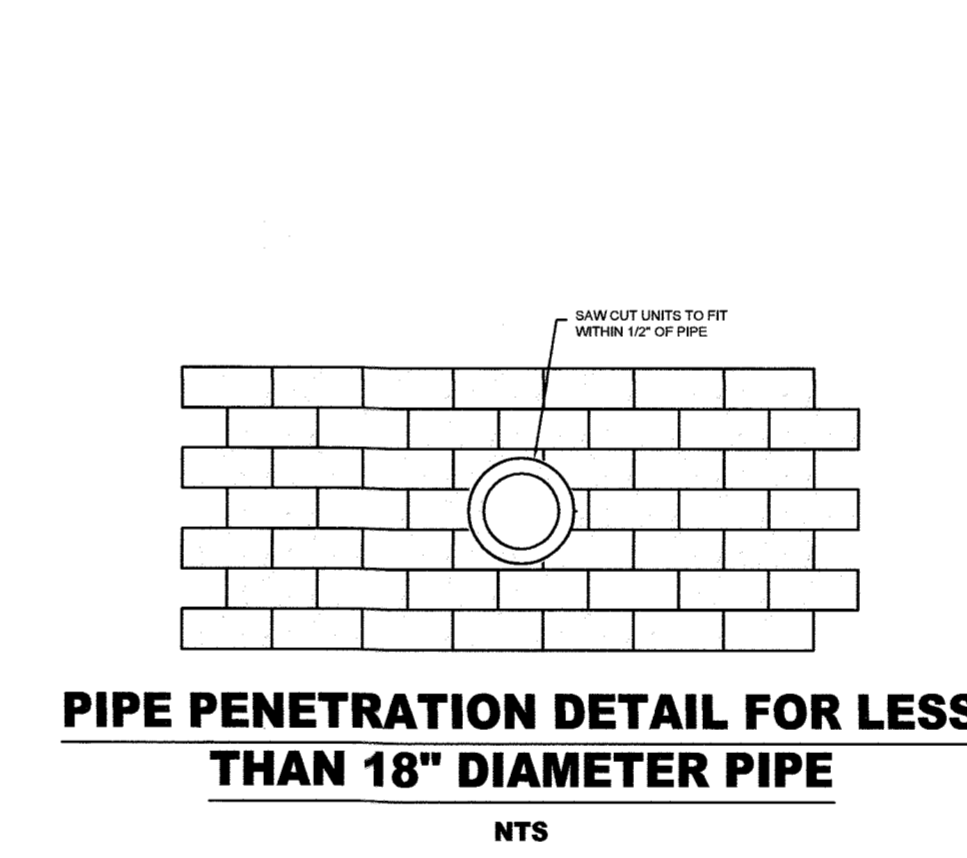
Geogrid Installation at Corners



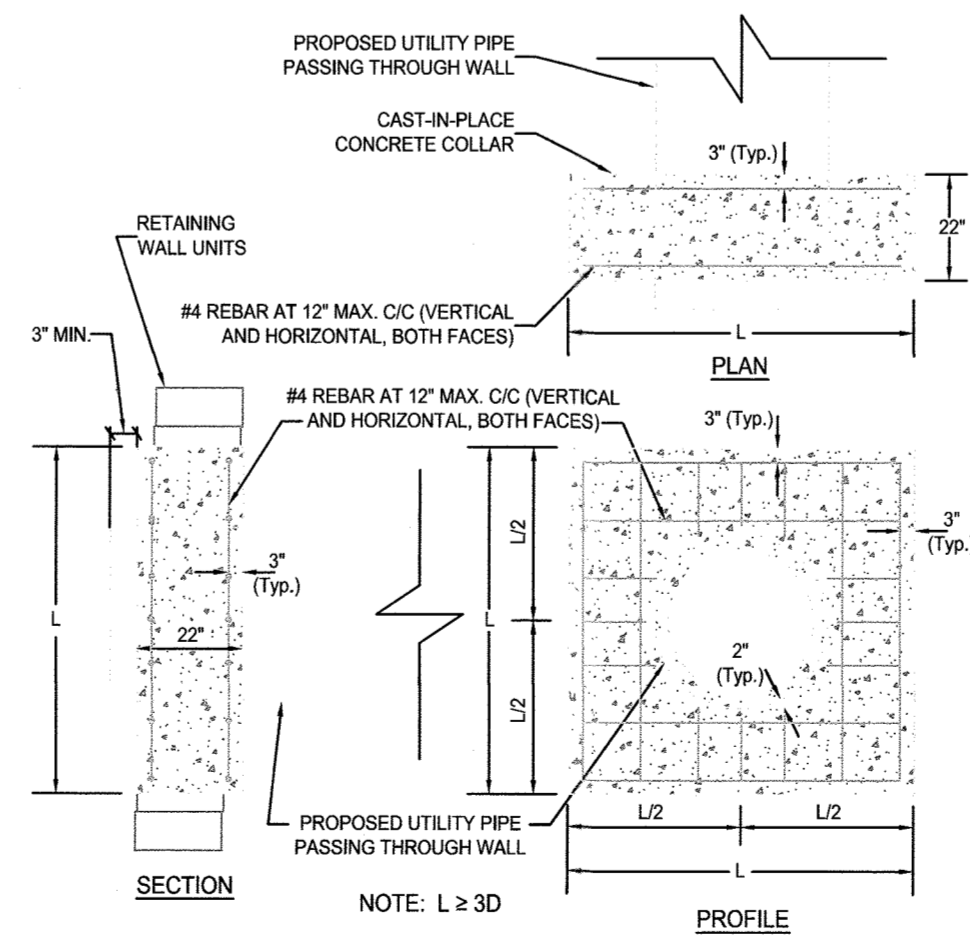
GEOGRID DETAIL FOR MANHOLE/INLET WITHIN GEOGRID ZONE
SECTION VIEW, NTS



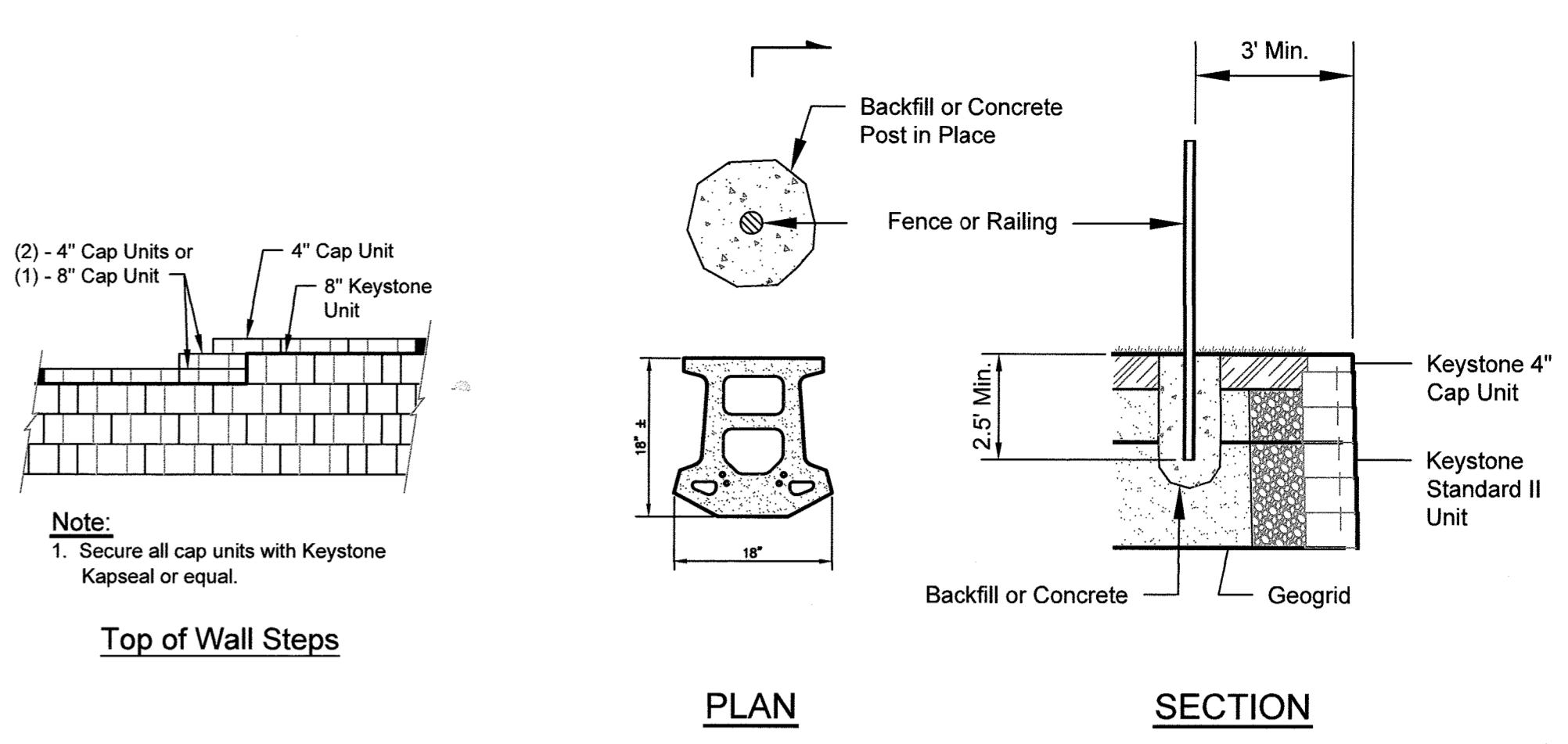
DETAIL OF FENCE/NOISE WALL POST INSTALLATION USING SLEEVE-IT™ 1224R
N.T.S.



PIPE PENETRATION DETAIL FOR LESS THAN 18" DIAMETER PIPE
NTS

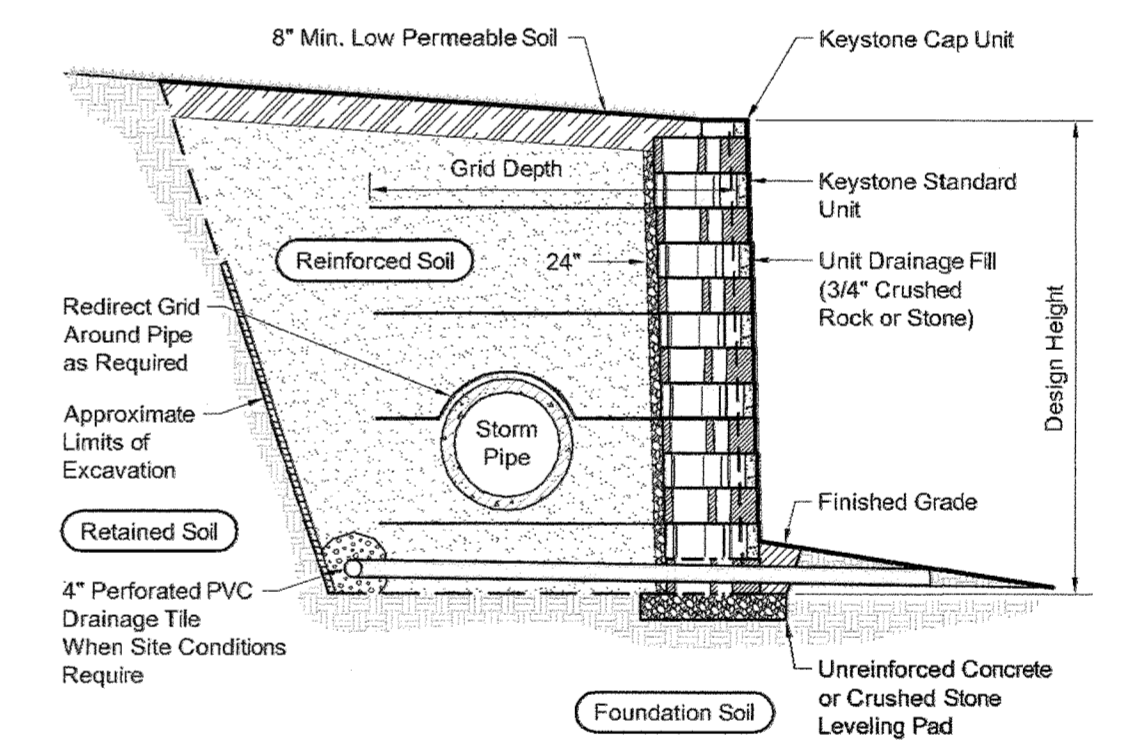


PIPE PENETRATION DETAIL FOR PIPE DIAMETER 18" OR GREATER
NTS



TYPICAL DETAIL FOR FENCE/NOISE WALL POST

TYPICAL GUARD RAIL DETAIL



Wall Section with Pipe in Reinforced Zone
Standard Unit - Near Vertical Setback

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 [Signature] 5/8/2019
 CHIEF, BUREAU OF HIGHWAYS DATE
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 5-10-19
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
 [Signature] 5-21-19
 CHIEF, LAND DEVELOPMENT DIVISION DATE

	GEO-TECHNOLOGY ASSOCIATES, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS 14280 PARK CENTER DRIVE, SUITE: A LAUREL, MARYLAND 20707 (410) 792-9446 or (301) 470-4470 FAX: (410) 792-7395 WWW.GTAENG.COM	
	TROTTER'S KNOLL - SECTION II PROPOSED RETAINING WALL NOS. 1-4 TYPICAL DETAILS HOWARD COUNTY, MARYLAND	
MD PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 36622, EXPIRATION DATE: 1/31/2020.	DATE: 8/31/18 REVISIONS: RW NOS. 3 & 4 LAYOUTS REVISED	JOB NO.: 071211X4 SCALE: AS SHOWN DATE: 6/5/18 DRAWN BY: MEW DESIGN BY: MEW REVIEW BY: APM SHEET: 29 OF 29