

**GENERAL NOTES**

- THE PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
- 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 AND SEWER SERVICE TO THESE LOTS WILL BE GRANTED UNDER THE PROVISIONS OF SECTION 18.122.B OF THE HOWARD COUNTY CODE.
- PUBLIC WATER AND SEWERAGE ALLOCATION WILL BE GRANTED AT TIME OF ISSUANCE OF BUILDING PERMIT IF CAPACITY IS AVAILABLE AT THAT TIME.
- WATER IS PUBLIC. CONTRACT NUMBER #320-W.
- SEWER IS PUBLIC. CONTRACT NUMBER #546-S, PATAPSCO WASTE WATER TREATMENT PLANT.
- PROJECT SHALL BE DEVELOPED AS ONE PHASE.
- PRIOR DPZ CASES: EOP-15-020, WP-15-042, WP-15-085, WP-16-061, SP-16-002, 14-4938-D.
- BOUNDARY INFORMATION SHOWN HEREON IS BASED ON S.A. PLAT NO. 56832.
- 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 ANALYSIS", IN MARCH 2015.
- A NOISE STUDY WAS PREPARED BY PHOENIX NOISE AND VIBRATION, LLC, ENTITLED "TROTTER'S KNOLL PHASE 1 NOISE ANALYSIS", IN MARCH 2015.
- THE OFFSITE FLOODPLAIN SHOWN IS PER S.A. 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 12, 2019.
- THE GEOTECHNICAL REPORT FOR THIS PROJECT WAS PREPARED BY GEO-TECHNOLOGY ASSOCIATES, INC., DATED JUNE 17, 2015.
- EXISTING UTILITIES ARE BASED ON WATER CONTRACT #320-W AND SEWER CONTRACT #546-S.
- THE SUBJECT PROPERTY IS ZONED R-SA-8 PER THE 10/6/2013 COMPREHENSIVE ZONING PLAN.
- NO GRADING, REMOVAL OF TREES, PAINTING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS, STREAMS, OR THEIR REQUIRED BUFFERS, FLOODPLAIN AND FOREST CONSERVATION EASEMENT AREAS WITHOUT AN APPROVED WAIVER.
- ON 10/16/2014 A WAIVER PETITION, WP-15-042, TO SECTION 16.118(c)(1) 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 PROPOSED ENVIRONMENTAL CONCEPT PLAN UPLOADED TO PROJECTWORK, IN ORDER TO FURTHER PROTECT DISTURBANCE TO THE CRITICAL ROOT ZONE FOR SPECIMEN TREE #5, DPZ RECOMMENDS THE APPLICANT MOVE UNITS 95 & 96 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 FOLIAGE. ALL PRUNING MUST BE PERFORMED BY A MARYLAND LICENSED TREE EXPERT. TREE PROTECTION FENCING MUST BE INSTALLED AROUND THE TREE PERIMETER TO PREVENT ROOT AND BRANCH DAMAGE DURING CONSTRUCTION AND ALTERNATIVE DESIGNS OF THE SITE LAYOUT MUST BE CONDUCTED BY THE CONSULTANT IN ORDER TO MINIMIZE ROOT DAMAGE; (3) EFFORTS SHOULD BE MADE TO SAVE AND PROTECT SPECIMEN TREE #4 DURING CONSTRUCTION. 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" CALIBER TREE. THE MITIGATED TREE SHALL BE OF SIMILAR SPECIES AS THE REMOVED TREE, BE SHOWN AS PART OF THE LANDSCAPE PLAN, AND SHALL BE BONDED WITH THE LANDSCAPE OBLIGATION.
- THE FOREST CONSERVATION EASEMENT HAS BEEN ESTABLISHED TO FULFILL THE SAVINGS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE AND FOREST CONSERVATION ACT. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT, HOWEVER FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.
- THIS PLAN COMPLES 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. THE ON-SITE AFFORESTATION SHALL TOTAL 0.56 AC. A SURETY IN THE AMOUNT OF \$12,197.00 FOR THE ON-SITE AFFORESTATION SHALL BE POSTED WITH THE DEVELOPER'S AGREEMENT. THE REMAINING 1.14 AC. IS ADDRESSED WITH 22 AC. OF OFF-SITE FOREST RETENTION AREA LOCATED WITHIN THE FOREST MITIGATION BANK KNOWN AS ARTS FARM, SDP-16-029, LOCATED AT 15685 OLD FREDERICK ROAD, WOODBINE, MD 21797.
- RESERVATION OF PUBLIC UTILITY AND FOREST CONSERVATION EASEMENTS.
- THE DEVELOPER SHALL CONVEY TO HISSELF, HIS SUCCESSORS AND ASSIGNS, ALL EASEMENTS SHOWN ON THIS PLAN FOR WATER, SEWER, STORM DRAINAGE, OTHER PUBLIC UTILITIES AND FOREST CONSERVATION (DESIGNATED AS "FOREST CONSERVATION AREA") LOCATED IN, ON, OVER AND THROUGH LOTS/PARCELS. ANY CONVEYANCES OF THE FORESAID LOTS/PARCELS SHALL BE SUBJECT TO THE EASEMENTS HEREIN RESERVED, WHETHER OR NOT EXPRESSLY STATED IN THE DEED(S) CONVEYING SAID LOTS/PARCELS. DEVELOPER SHALL EXECUTE AND DELIVER DEEDS FOR THE EASEMENTS HEREIN RESERVED TO HOWARD COUNTY, UPON COMPLETION OF THE PUBLIC UTILITIES AND THEIR ACCEPTANCE BY HOWARD COUNTY, AND IN THE CASE OF THE FOREST CONSERVATION EASEMENT(S), UPON COMPLETION OF THE DEVELOPER'S OBLIGATIONS UNDER THE FOREST CONSERVATION INSTALLATION AND MAINTENANCE AGREEMENT EXECUTED BY THE DEVELOPER AND THE COUNTY, AND THE RELEASE OF DEVELOPER'S SURETY POSTED WITH SAID AGREEMENT. THE COUNTY SHALL ACCEPT THE EASEMENTS AND RECORD THE DEED(S) OF EASEMENT IN THE LAND RECORDS OF HOWARD COUNTY.
- ON 12/16/15 A WAIVER PETITION, WP-16-061, TO SECTION 16.134(c)(1) & SECTION 16.134(c) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS WAS APPROVED TO ALLOW PARTIAL RELIEF FROM SIDEWALK FRONTAGE IMPROVEMENT. APPROVAL IS SUBJECT TO THE FOLLOWING CONDITIONS: (1) AS SHOWN ON THE WAIVER PETITION EXHIBIT, THE DEVELOPER SHALL CONSTRUCT A PORTION OF THE SIDEWALK ALONG THE PROPERTY FRONTAGE AS NECESSARY TO PROVIDE CONNECTION TO THE EXISTING SIDEWALK AT THE INTERSECTION OF OLD MONTGOMERY ROAD AND BRIGHTFIELD ROAD. (2) THE DEVELOPER SHALL PAY A FEE-IN-LIEU OF SIDEWALK, ROAD FRONTAGE AND STREET LIGHTS IMPROVEMENTS FOR THE UNIMPROVED PORTION OF THE PROPERTY FRONTAGE IN COMPLIANCE WITH THE ATTACHMENT ENGINEERING DIVISION COMMENTS DATED DECEMBER 7, 2015. A COST ESTIMATE FOR THE ADDITIONAL IMPROVEMENTS SHALL BE FORWARDED TO THE DEPARTMENT OF PLANNING AND ZONING, DEVELOPMENT ENGINEERING DIVISION. THE FEE-IN-LIEU MUST BE PAID PRIOR TO THE SUBDIVISION PLAN REVISION. (3) APPROVAL OF THIS WAIVER PETITION IS SUBJECT TO THE REVIEW AND APPROVAL SP-16-002 AND ALL SUBSEQUENT DEVELOPMENT PLANS.
- 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 OTHER FEATURES.
- ON NOVEMBER 3, 2015 THE HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING PLANNING DIRECTOR APPROVED THE REQUEST FOR AN INCREASED BUILDING LENGTH PER SECTION 111.0.1.E(1) 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 JUNE 2, 2015. A SECOND COMMUNITY MEETING WAS HELD JANUARY 12, 2016.
- OPEN SPACE LOTS 79, 81, 82, AND 84 WILL BE DEDICATED TO THE HOME OWNERS ASSOCIATION. OPEN SPACE LOTS 80 & 83 WILL BE DEDICATED TO HOWARD COUNTY RECREATION AND PARKS.
- LAND DEDICATED TO HOWARD COUNTY, MARYLAND, FOR THE PURPOSE OF A PUBLIC ROAD: 2.18 ACRES.
- DRIVEWAYS SHALL BE PROVIDED PRIOR TO ISSUANCE OF A USE AND OCCUPANCY PERMIT FOR ANY NEW DWELLINGS TO INSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:
  - WIDTH - 12' (16' SERVING MORE THAN ONE RESIDENCE)
  - SURFACE - 6" OF COMPACTED CRUSHER RUN BASE WITH TAR AND CHIP COATING (1-1/2" MIN)
  - GEOMETRY - MAX. 15% GRADE, MAX. 10% GRADE GRADIENT AND MIN. 45' TURNING RADIUS
  - STRUCTURE (CULVERTS/BRIDGES) - CAPABLE OF SUPPORTING 25 GROSS TONS (H25 LOADING)
  - DRAINAGE ELEMENTS - SAFELY PASSING 100-YEAR FLOOD WITH NO MORE THAN 1 FOOT DEPTH OVER DRIVEWAY SURFACE
  - MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE
- LANDSCAPING FOR LOTS 1-83 ARE PROVIDED IN ACCORDANCE WITH A CERTIFIED LANDSCAPE PLAN (SHEETS 29 AND 30 INCLUDED WITH THE ROAD CONSTRUCTION PLAN SET) IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING SHALL BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$63,150 (146 SHADE TREES @ \$300.00 EA. AND 129 ORNAMENTAL/EVERGREEN TREES @ \$150.00 EA.).
- THE 65DBA NOISE CONTOUR LINE DRAWN ON THIS SUBDIVISION PLAN IS ADVISORY AS REQUIRED BY THE HOWARD COUNTY DESIGN MANUAL, CHAPTER 5, REVISED FEBRUARY, 1992 AND CANNOT BE CONSIDERED TO EXACTLY LOCATE THE 65DBA NOISE EXPOSURE. THE 65DBA NOISE LINE ESTABLISHED BY HOWARD COUNTY TO ALERT DEVELOPERS, BUILDERS AND FUTURE RESIDENTS THAT ARE BEYOND THIS THRESHOLD MAY EXCEED GENERALLY ACCEPTED NOISE LEVELS ESTABLISHED BY THE U.S. DEPT. OF HOUSING AND URBAN DEVELOPMENT.
- THERE ARE NO EXISTING STRUCTURES OR DWELLINGS ON THIS SITE.
- 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 1-800-256-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- ALL STORMWATER MANAGEMENT DEVICES AND ASSOCIATING PIPES WILL BE OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION. STORMWATER MANAGEMENT IS ACHIEVED BY USING ESD WITH BMP'S.

# TROTTER'S KNOLL - SECTION I

## HORSE FARM PROPERTY

### FINAL ROAD CONSTRUCTION PLAN

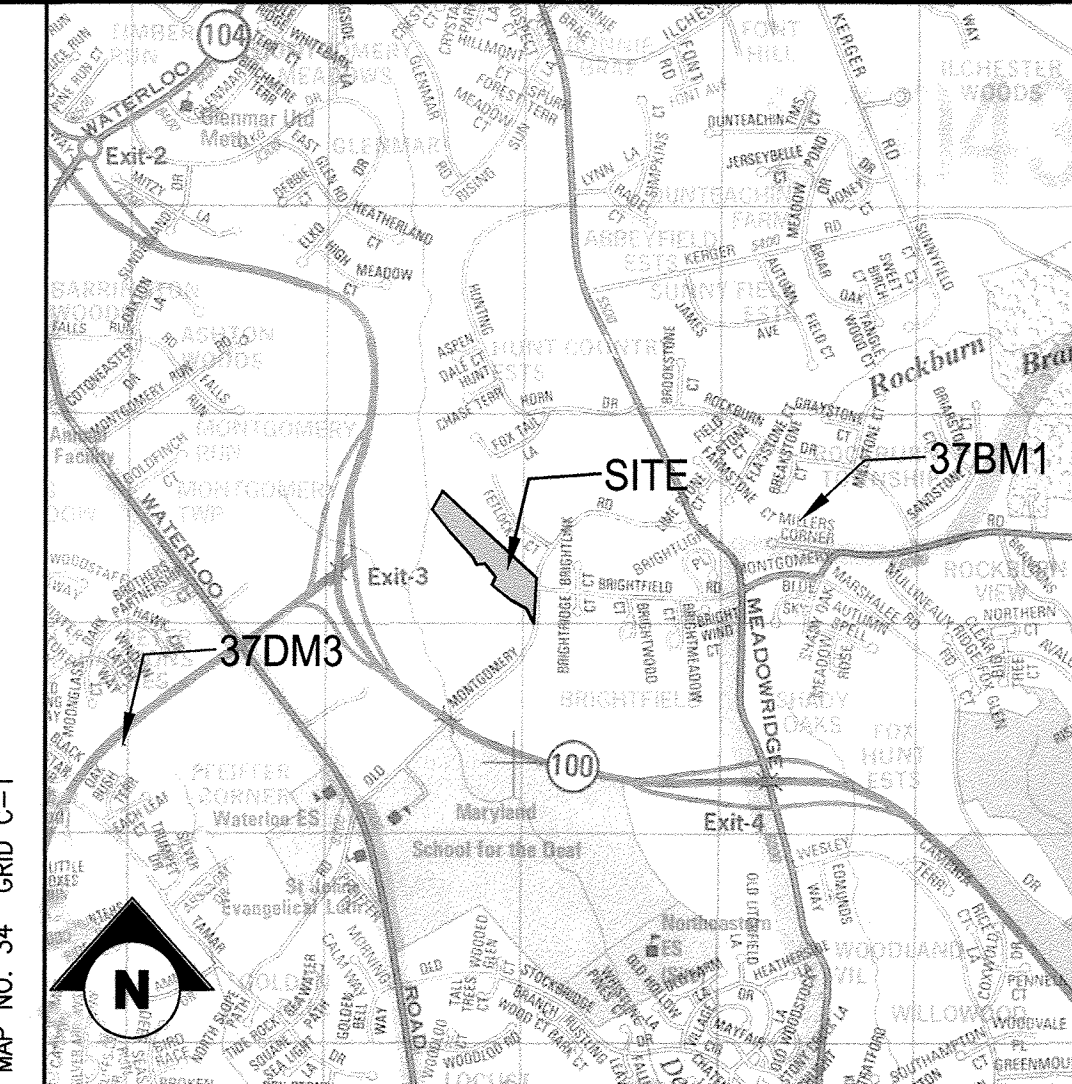
#### LOTS 1-78, OPEN SPACE 79-84 SUBDIVISION OF PARCEL 748

#### HOWARD COUNTY, MARYLAND

**BENCH MARKS**

37BM1  
N 563,400.0583 E 1,374,319.8700  
MAD 83 (Adj 07)  
NAVD 88

37DM3  
N 561,077.4764 E 1,367,289.7870  
MAD 83 (Adj 07)  
NAVD 88



VICINITY MAP  
SCALE: 1" = 2,000'

**SHEET INDEX**

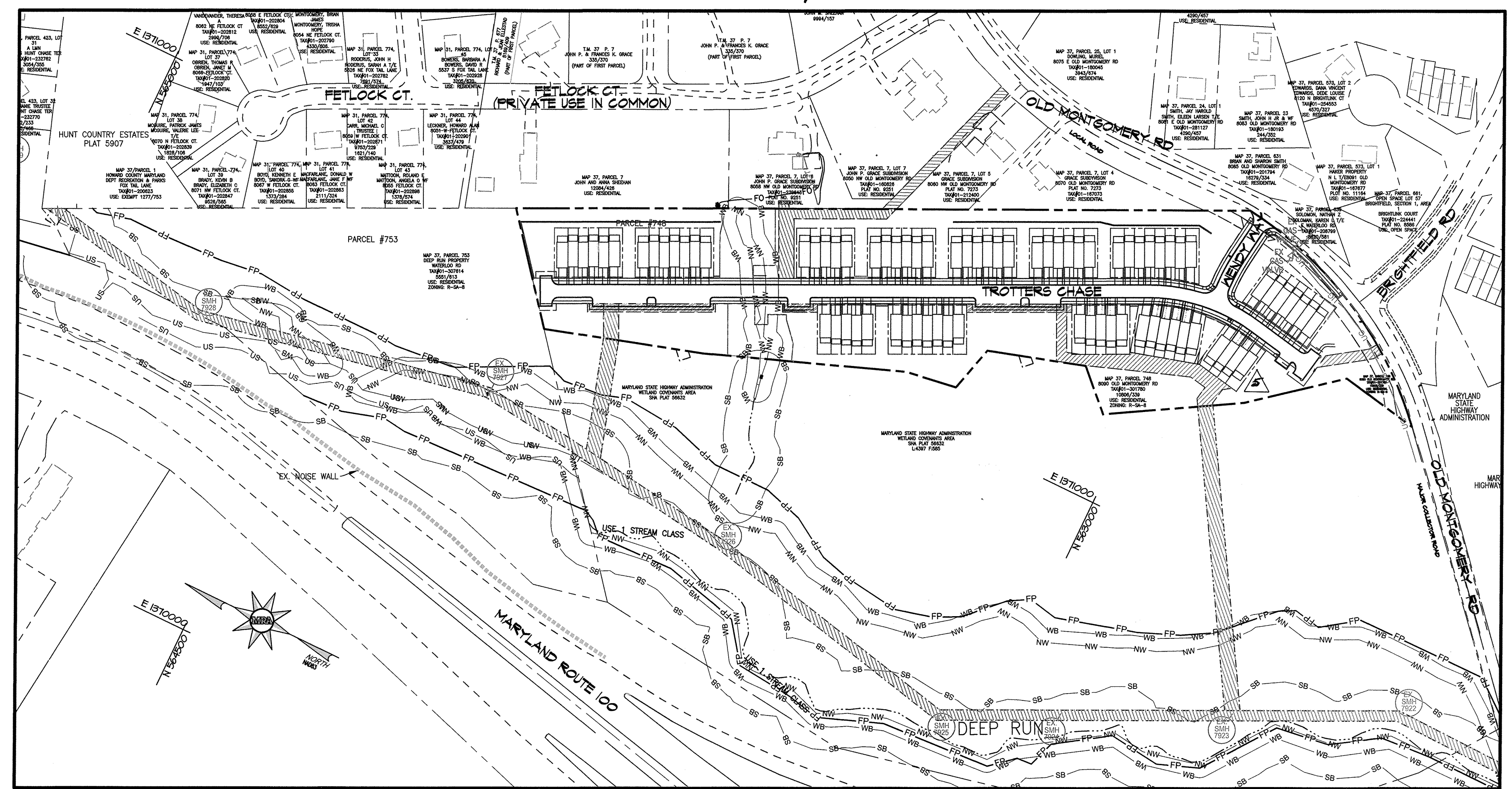
1	COVER SHEET
2-3	LAYOUT PLANS
4-7	ROAD PLANS, PROFILES, AND CROSS SECTIONS
8-10	SOILS MAP AND GRADING PLANS
11-12	EROSION AND SEDIMENT CONTROL PLANS - PHASE I
13-14	EROSION AND SEDIMENT CONTROL PLANS - PHASE II
15-17	EROSION AND SEDIMENT CONTROL NOTES AND DETAILS
18	STORM DRAIN PLAN
19	STORM DRAIN DRAINAGE AREA MAP
20-22	STORM DRAIN PROFILES
23-26	STORMWATER MANAGEMENT NOTES AND DETAILS
27-28	STORMWATER MANAGEMENT LANDSCAPE DETAILS
29-30	LANDSCAPE PLANS
31	RECREATION AMENITY DETAILS
32-33	FOREST CONSERVATION PLANS
34	TRAFFIC CONTROL PLAN
35-37	BORING LOGS
38-44	RETAINING WALL PLANS

**ADDRESS CHART**

LOT/PARCEL #	STREET ADDRESS
748	8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MD

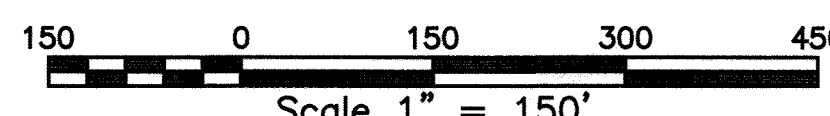
**LEGEND**

PR. LOT LINE	---	EX. ELECTRIC CONDUIT
PR. BUILDING FOOTPRINT	---	EX. LIGHT POLES
PR. BUILDING SETBACK	---	EX. GAS LINE
PR. CURB AND GUTTER	---	EX. STORM DRAIN
PR. SIDEWALK	---	EX. CONDUIT
PR. RETAINING WALL	---	EX. FIBER OPTIC
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. PUBLIC UTILITY EASEMENT
EX. WATER LINE	---	
EX. SEWER LINE	---	
EX. STREAM	---	
EX. TREE LINE	---	
EX. GUARD RAIL	---	



**LOCATION PLAN**

SCALE: 1" = 150'



**SITE ANALYSIS DATA**

1. ZONING:	R-SA-8	
2. GROSS AREA:	0.00 AC.	
3. ONE-HUNDRED YEAR FLOODPLAIN:	0.00 AC.	
4. STEEP SLOPES (ONLY 25%+):	11.54 AC.	
5. NET AREA:	11.54 AC.	
6. TOTAL AREA OF PROPOSED LOTS:	1.94 AC.	
7. AREA OF PROPOSED ROADS:	2.00 AC.	
8. AREA OF PROPOSED OPEN SPACE:	5.40 AC.	
9. RIGHT-OF-WAY DEDICATION:	0.13 AC.	
10. WETLAND AREA:	0.19 AC.	
11. PROPOSED USE:	RESIDENTIAL (SINGLE FAMILY ATTACHED) (8 DWELLING UNITS/NET ACRE)	
12. NO. OF UNITS ALLOWED:	92	
13. NO. OF UNITS PROPOSED:	84	
14. NO. OF LOTS PROPOSED:	84	
15. RESIDENTIAL LOTS: 78		
16. OPEN SPACE LOTS: 6		
17. PROPOSED WATER AND SEWER SHALL BE PUBLIC.		
18. PROPOSED LIMITS OF DISTURBANCE:	12 AC	
A. GENERAL BULK REGULATIONS:		
1. MAXIMUM DENSITY:	REQUIRED: 8 DWELLING UNITS/NET ACRE	PROVIDED: 6.8 DWELLING UNITS/NET ACRE
2. MAXIMUM HEIGHT:	40'	40'
3. MAXIMUM LOT COVERAGE FOR STRUCTURES:	40%	47%
4. MAXIMUM UNITS PER STRUCTURE:	8	8
5. MAXIMUM BUILDING LENGTH:	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:		
2.1.1. FRONT OR SIDE:	20'	20'
2.1.2. REAR TO PUBLIC STREET:	40'	40'
2.2. USES:	20'	20'
3. FROM VICINAL PROPERTIES:		
3.1. FROM AN RC, RR, R-20, R-12, R-E, OR R-S-C DISTRICT OR A SINGLE-FAMILY LAND USE AREA OF A NT, PCC, OR MDO 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. 92'
3.2.2. SIDE TO SIDE:	15'	MIN. 15'

**STORMWATER MANAGEMENT PRACTICE CHART**

LABEL	TYPE	LABEL	TYPE
SWM#1	M-6: Micro-Bioretenation	SWM#17	M-6: Micro-Bioretenation
SWM#2	M-6: Micro-Bioretenation	SWM#18	M-6: Micro-Bioretenation
SWM#3	M-6: Micro-Bioretenation	SWM#19	M-6: Micro-Bioretenation
SWM#4	M-6: Micro-Bioretenation	SWM#20	M-6: Micro-Bioretenation
SWM#5	M-6: Micro-Bioretenation	SWM#21	M-8: Bio-Swale
SWM#6	A-2: Porous-Pavement	SWM#22	M-8: Micro-Bioretenation
SWM#7	M-6: Micro-Bioretenation	SWM#23	M-6: Micro-Bioretenation
SWM#8	M-6: Micro-Bioretenation	SWM#24	M-6: Micro-Bioretenation
SWM#9	M-6: Micro-Bioretenation	SWM#25	M-6: Micro-Bioretenation
SWM#10	M-8: Bio-Swale	SWM#26	M-6: Micro-Bioretenation
SWM#11	A-2: Porous-Pavement	SWM#27	M-6: Micro-Bioretenation
SWM#12	M-6: Micro-Bioretenation	SWM#28	M-6: Micro-Bioretenation
SWM#13	M-8: Bio-Swale	SWM#29	M-6: Micro-Bioretenation
SWM#14	M-8: Bio-Swale	SWM#30	M-6: Micro-Bioretenation
SWM#15	M-6: Micro-Bioretenation	SWM#31	M-6: Micro-Bioretenation
SWM#16	M-6: Micro-Bioretenation		

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*[Signature]* DATE: 1/30/18  
CHIEF, BUREAU OF HIGHWAYS

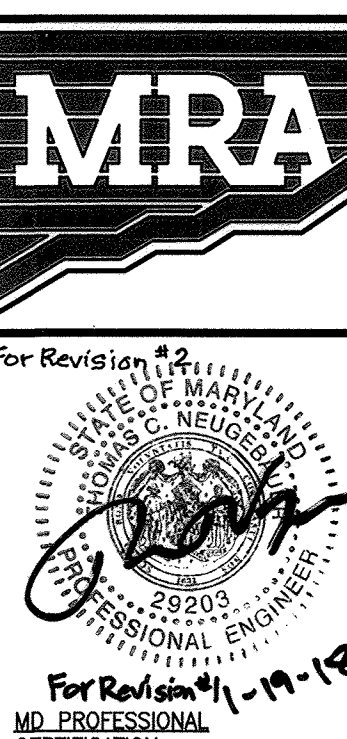
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*[Signature]* DATE: 1/30/18  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

*[Signature]* DATE: 2/16/18  
CHIEF, LAND DEVELOPMENT DIVISION

PETITIONER'S ATTORNEY:  
OFFIT KURMAN PA  
8171 MAPLE LAWN BLVD.  
SUITE 200  
MAPLE LAWN, MD 20759

CONTACT: WILLIAM E. ERSKINE  
410-738-1563  
WERSKINE@OFFITKURMAN.COM

OWNER / APPLICANT / DEVELOPER:  
HORSE FARM, LLC.  
ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
COLUMBIA, MD 21045  
CONTACT: RICHARD HAYWARD  
PHONE: 410-997-7222

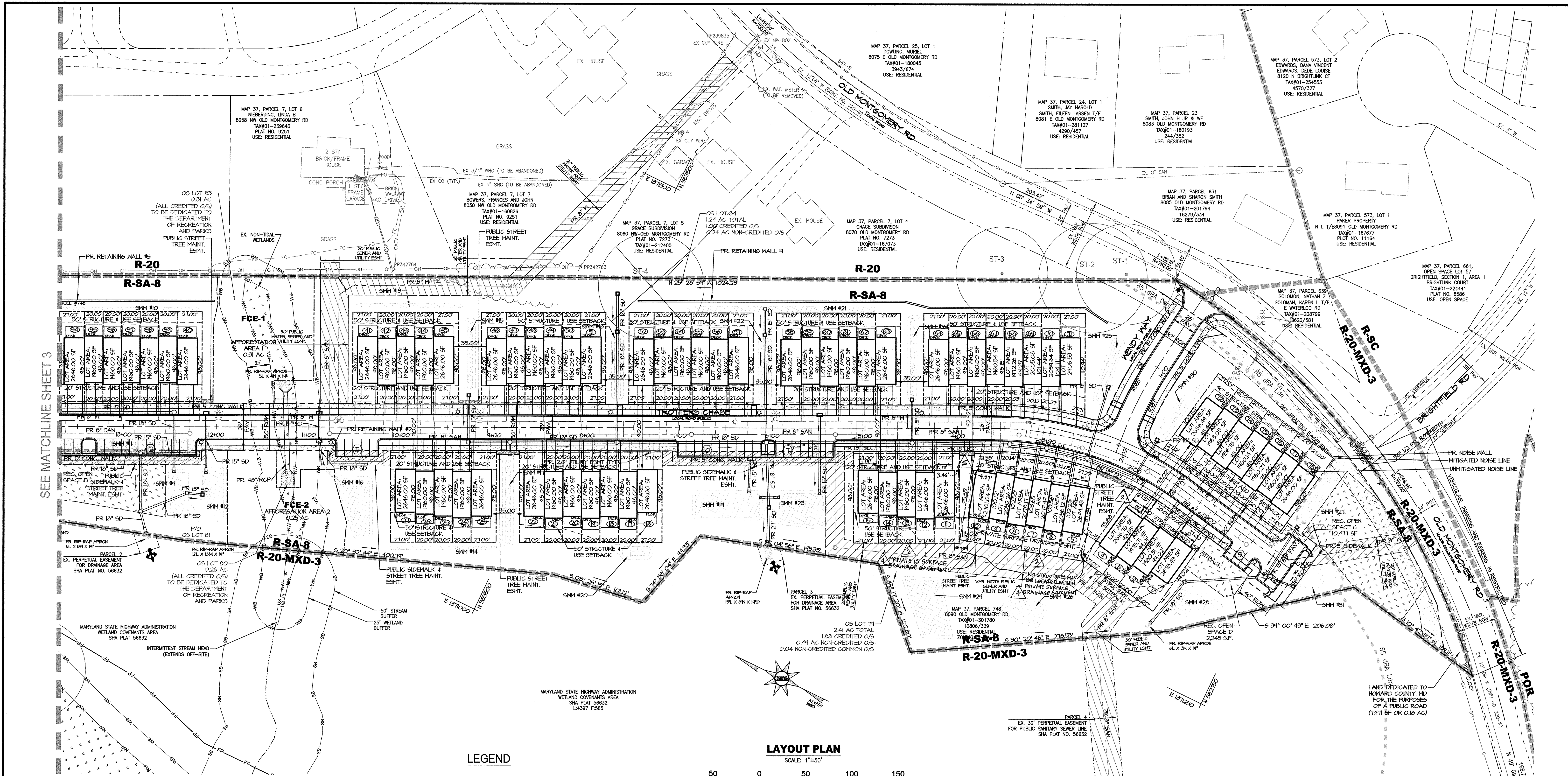


**MORRIS & RITCHE ASSOCIATES, INC.**  
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS  
14280 PARK CENTER DRIVE  
LAUREL, MD 20707  
(410) 792-9792 / (301) 776-1690  
FAX: (410) 792-7395  
MRAGTA.COM

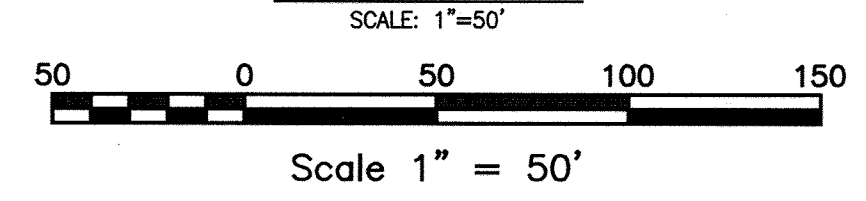
**TROTTER'S KNOLL - SECTION I**  
**HORSE FARM PROPERTY**  
8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
**COVER SHEET**

DATE	5-23-18	REVISIONS	1. REVISED OFFSITE FOREST RETENTION TO 2.28 AC.	SCALE:	1" = 50'
	10-18-18	2. REVISED DRIVEWAYS		DATE:	9/13/2017
	01/11/19	3. REVISED DRIVEWAYS		DRAWN BY:	ATS
				DESIGN BY:	ATS
				REVIEW BY:	TCN
				SHEET:	1 OF 44





**LAYOUT PLAN**



**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. 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
- EX. STREAM BUFFER
- EX. SPECIMEN TREE
- PR. LOT LINE
- PR. BUILDING FOOTPRINT
- PR. BUILDING SETBACK
- PR. CURB AND GUTTER
- PR. SIDEWALK
- PR. RETAINING WALL
- PR. LINE OF SIGHT
- PR. RECREATIONAL OPEN SPACE
- PR. POROUS PAVEMENT
- PR. PUBLIC ROAD PAVEMENT
- PR. PUBLIC ROAD MILL & OVERLAY
- PR. STREET LIGHT (LED-100 COLONIAL)
- PR. STREET LIGHT (LED-150 COLONIAL)
- UTILITY EASEMENT
- TEMPORARY ROADWAY EASEMENT
- GRADING EASEMENT
- PR. PUBLIC STREET TREE & SIDEWALK MAINTENANCE EASEMENT
- PR. PUBLIC STREET TREE EASEMENT
- PR. STORMWATER MANAGEMENT FACILITY
- PR. BIOSWALE
- PR. 8" SEWER LINE
- PR. 8" WATER LINE
- PR. WATER HOUSE CONNECTION
- PR. SEWER HOUSE CONNECTION
- PR. STORM DRAIN MANHOLE
- PR. STORM DRAIN
- PR. STORM DRAIN INLET

**OPEN SPACE CHART**

LOT	AREA	CREDITED OPEN SPACE	NON-CREDITED OPEN SPACE	NON-CREDITED COMMON OPEN SPACE
79	2.41 AC	1.88 AC	0.49 AC	0.04 AC
80	0.26 AC	0.26 AC	0	0
81	0.64 AC	0.59 AC	0.02 AC	0.03 AC
82	0.86 AC	0.49 AC	0.07 AC	0
83	0.31 AC	0.31 AC	0	0
84	1.24 AC	1.00 AC	0.24 AC	0

**STREET LIGHT LOCATION CHART (PRIVATELY OWNED AND MAINTAINED)**

STREET NAME	STATION	OFFSET	FIXTURE/POLE TYPE
WENDY WAY	0+18.43	27.00 RT	LED-150 COLONIAL STREET LIGHT
WENDY WAY	1+9.50	16.00 RT	LED-100 COLONIAL STREET LIGHT
TROTTERS CHASE	0+35.13	16.00 LT	LED-100 COLONIAL STREET LIGHT
TROTTERS CHASE	2+01.31	19.05 RT	LED-100 COLONIAL STREET LIGHT
TROTTERS CHASE	4+38.94	16.00 RT	LED-100 COLONIAL STREET LIGHT
TROTTERS CHASE	6+14.19	16.00 RT	LED-100 COLONIAL STREET LIGHT
TROTTERS CHASE	7+55.24	16.00 RT	LED-100 COLONIAL STREET LIGHT
TROTTERS CHASE	9+39.18	16.00 RT	LED-100 COLONIAL STREET LIGHT
TROTTERS CHASE	10+76.44	16.00 LT	LED-100 COLONIAL STREET LIGHT
TROTTERS CHASE	12+16.17	16.00 LT	LED-100 COLONIAL STREET LIGHT
TROTTERS CHASE	13+89.42	16.00 RT	LED-100 COLONIAL STREET LIGHT
TROTTERS CHASE	15+23.17	16.00 LT	LED-100 COLONIAL STREET LIGHT

**NOTES:**  
THE STREET LIGHT LOCATIONS SHOWN ON SHEETS 02 & 03 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

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Melanie* 1/23/2018  
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Edman* 1/30/18  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Miss Monica* 2/10/18  
CHIEF, LAND DEVELOPMENT DIVISION DATE

**MORRIS & RITCHIE ASSOCIATES, INC.**  
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS  
14280 PARK CENTER DRIVE  
LAUREL, MD 20707  
(410) 792-8792 / (301) 776-1690  
FAX: (410) 792-7395  
MRA.GTA.COM

**TROTTER'S KNOLL - SECTION I**  
HORSE FARM PROPERTY  
8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
LAYOUT PLAN

TAX MAP 37 CRIDS 2 PARCEL 748 ZONED: R-SA-8  
1ST ELECTION DISTRICT  
HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:
10-18-13	2 REVISED DRIVEWAYS	15368 x 02
1-2-14	4 ADDED PRIVATE EASEMENT	SCALE: 1" = 50'
01/11/19	5 REVISED DRIVEWAYS	DATE: 9/13/2017

MD PROFESSIONAL CERTIFICATION: 12-12-17

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. 29203, EXPIRATION DATE: 06/16/2019.

**OWNER / APPLICANT / DEVELOPER:**  
HORSE FARM, LLC.  
ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
COLUMBIA, MD 21045  
CONTACT: RICHARD HAYWARD  
PHONE: 410-997-7222

DESIGN BY: ATS  
REVIEW BY: TCN  
SHEET: 2 OF 44

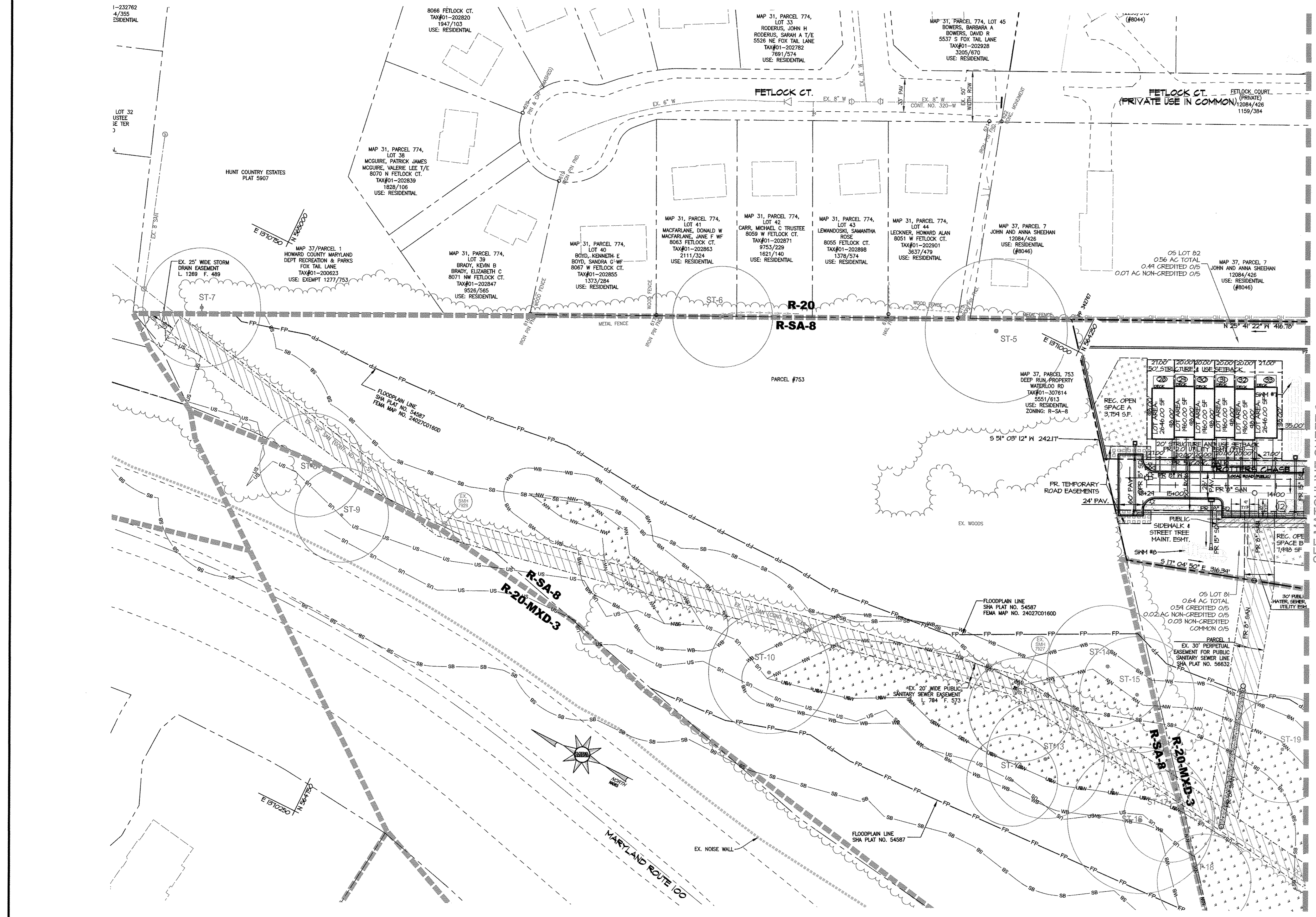


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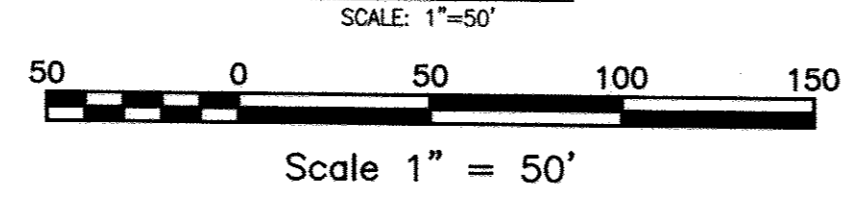
- EX. PROPERTY LINE
- EX. ADJACENT PROPERTY LINE
- EX. RIGHT OF WAY
- EX. EASEMENT
- EX. ZONING LINE
- EX. BUILDING
- EX. CONCRETE
- EX. PAVEMENT
- EX. ROAD CENTERLINE
- EX. FENCE
- EX. OVERHEAD LINE
- EX. WATER LINE
- EX. SEWER LINE
- EX. STREAM
  
- EX. TREE LINE
- EX. GUARD RAIL
- EX. ELECTRIC CONDUIT
- 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
- EX. STREAM BUFFER
- EX. SPECIMEN TREE
  
- PR. LOT LINE
- PR. BUILDING FOOTPRINT
- PR. BUILDING SETBACK
- PR. CURB AND GUTTER
- PR. SIDEWALK
- PR. RETAINING WALL
- PR. LINE OF SIGHT
  
- PR. RECREATIONAL OPEN SPACE
- PR. POROUS PAVEMENT
- PR. PUBLIC ROAD PAVEMENT
- PR. PUBLIC ROAD MILL & OVERLAY
- PR. STREET LIGHT (LED-100 COLONIAL)
- PR. STREET LIGHT (LED-150 COLONIAL)
- UTILITY EASEMENT
- TEMPORARY ROADWAY EASEMENT
- GRADING EASEMENT
- PR. PUBLIC STREET TREE & SIDEWALK MAINTENANCE EASEMENT
- PR. PUBLIC STREET TREE EASEMENT
  
- PR. STORMWATER MANAGEMENT FACILITY
- PR. BIOSWALE
  
- PR. 8" SEWER LINE
- PR. 8" WATER LINE
- PR. WATER HOUSE CONNECTION
- PR. SEWER HOUSE CONNECTION

SEE MATCHLINE SHEET 2

OPEN SPACE CHART				
LOT	AREA	CREDITED OPEN SPACE	NON-CREDITED OPEN SPACE	NON-CREDITED COMMON OPEN SPACE
79	2.41 AC	1.88 AC	0.49 AC	0.04 AC
80	0.26 AC	0.26 AC	0	0
81	0.64 AC	0.59 AC	0.02 AC	0.03 AC
82	0.86 AC	0.49 AC	0.07 AC	0
83	0.31 AC	0.31 AC	0	0
84	1.24 AC	1.00 AC	0.24 AC	0



**LAYOUT PLAN**



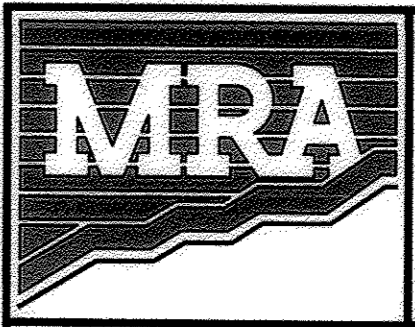
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Michael* 1/23/2018  
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Chad Edmonson* 1-30-18  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

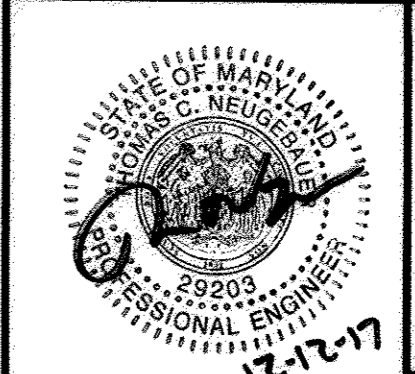
*Dee Manna-Sanna* 2/6/18  
 CHIEF, LAND DEVELOPMENT DIVISION DATE

**OWNER / APPLICANT / DEVELOPER:**

HORSE FARM, LLC.  
 ADDRESS: 9200 RUNSEY ROAD, SUITE 200  
 COLUMBIA, MD 21045  
 CONTACT: RICHARD HAYWARD  
 PHONE: 410-997-7222



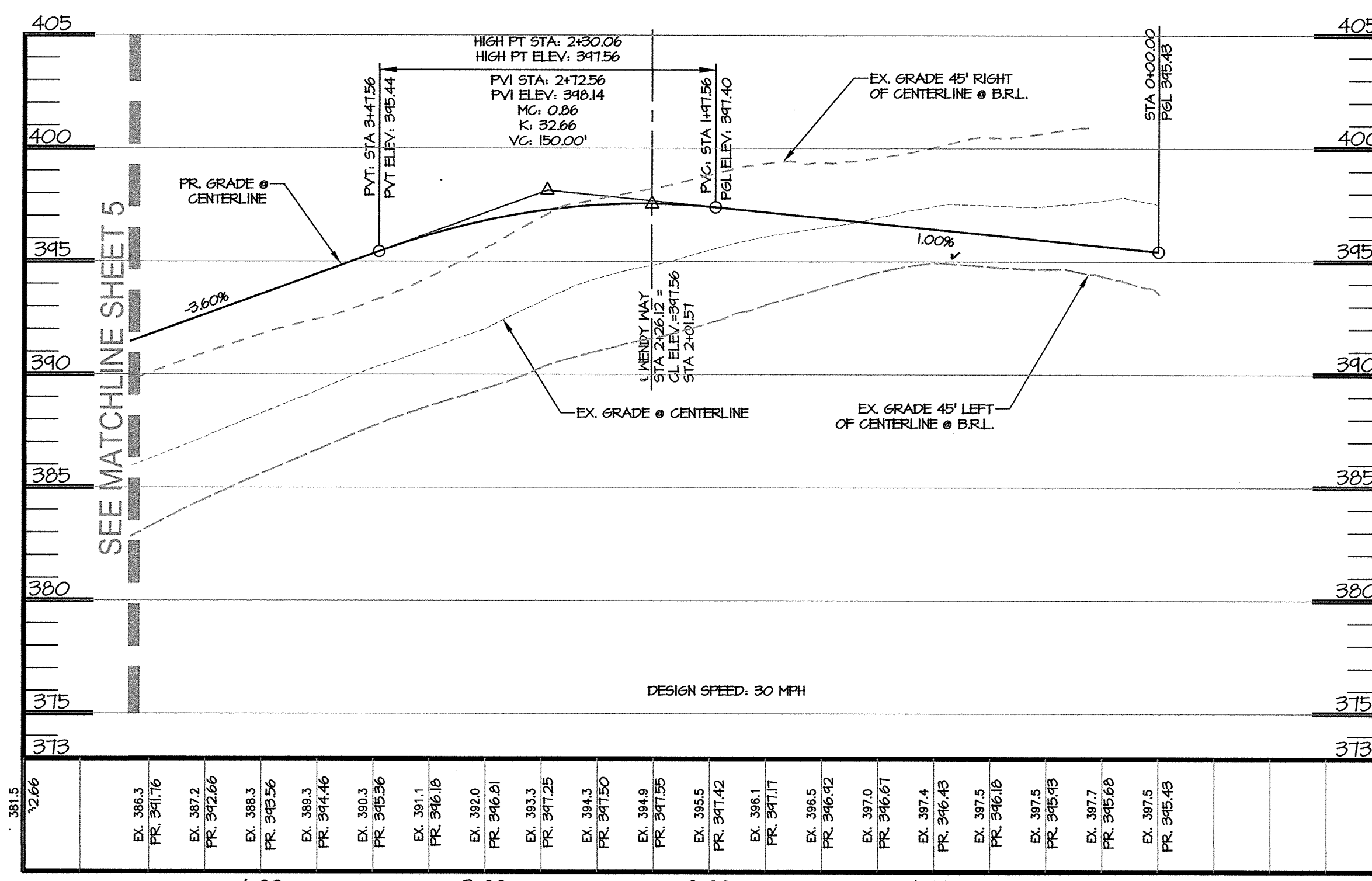
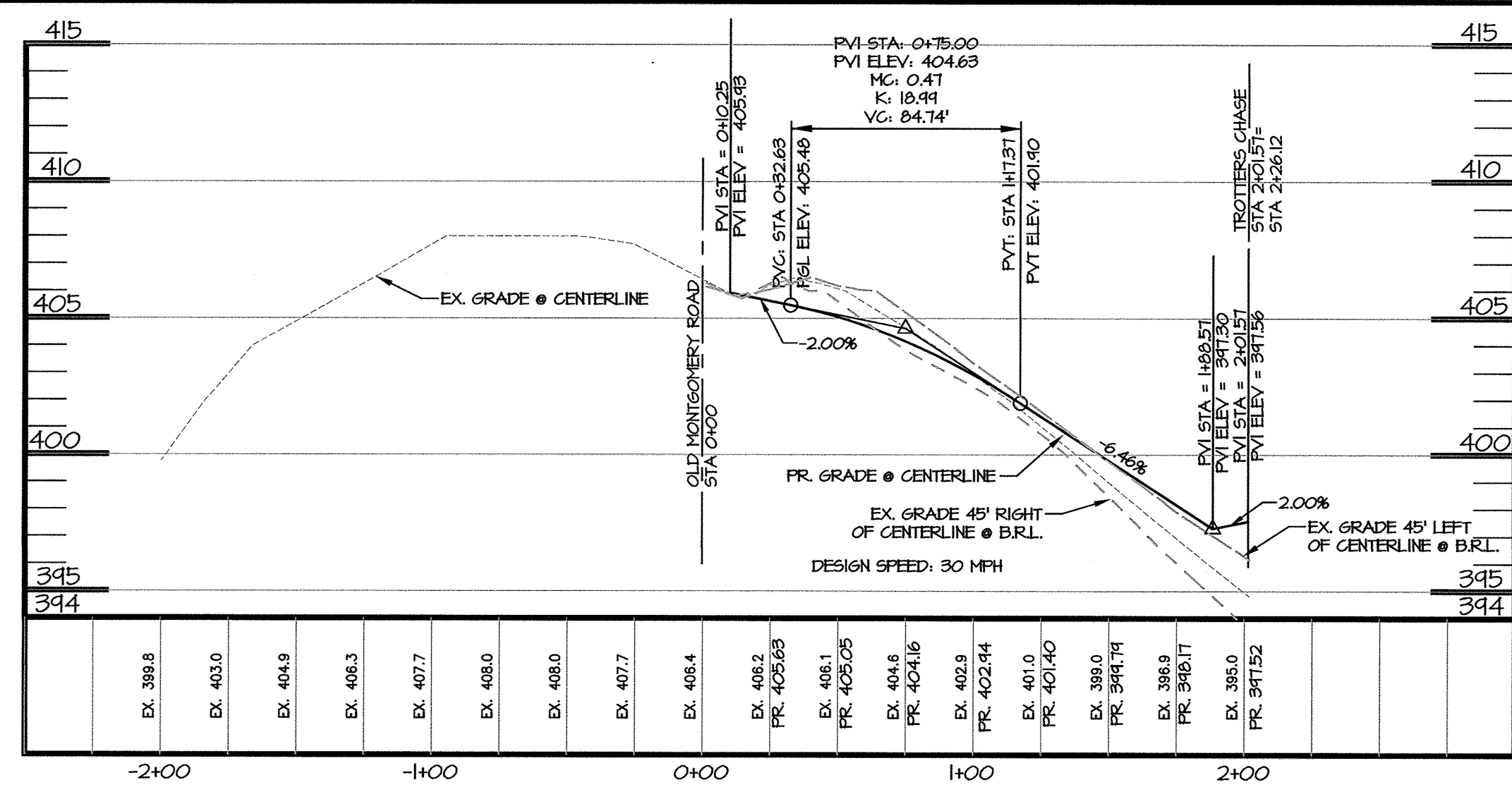
**MORRIS & RITCHE ASSOCIATES, INC.**  
 ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS  
 14280 PARK CENTER DRIVE  
 LAUREL, MD 20707  
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 MRAGTA.COM



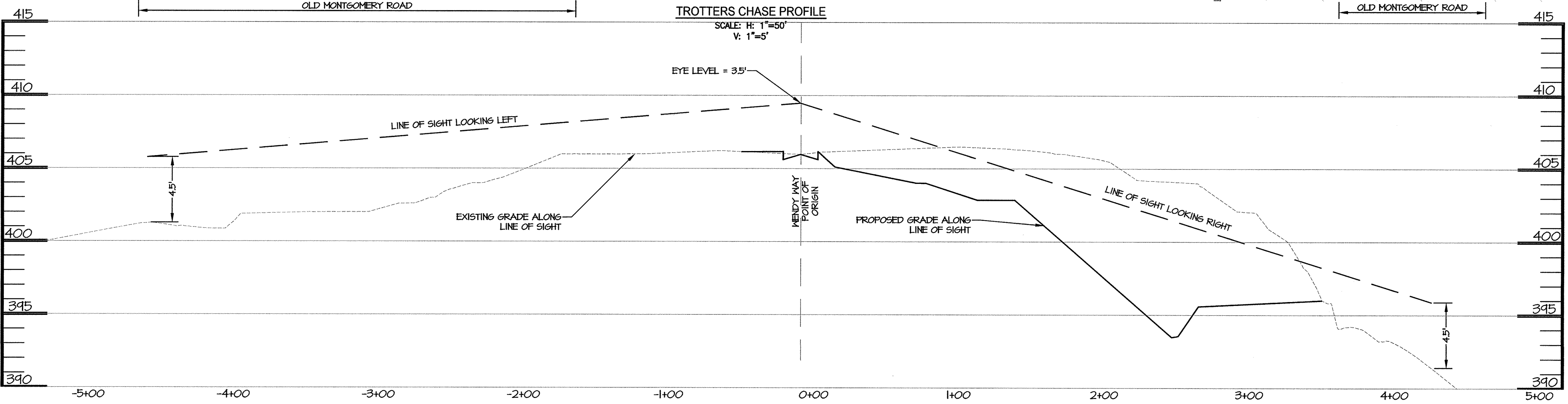
**TROTTER'S KNOLL - SECTION I**  
**HORSE FARM PROPERTY**  
 8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
**LAYOUT PLAN**  
 TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-8  
 1ST ELECTION DISTRICT  
 HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:	15368 x 02
		SCALE:	1" = 50'
		DATE:	9/13/2017
		DRAWN BY:	ATS
		DESIGN BY:	ATS
		REVIEW BY:	TCN
		SHEET:	3 OF 44





- LEGEND**
- EX. PROPERTY LINE
  - EX. ADJACENT PROPERTY LINE
  - EX. RIGHT OF WAY
  - EX. EASEMENT
  - EX. ZONING LINE
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  - PR. SIDEWALK
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  - PR. 0.5' CONTOUR
  - PR. 1' CONTOUR
  - PR. 2' CONTOUR
  - PR. 10' CONTOUR
  - EX. 2' CONTOUR
  - EX. 10' CONTOUR



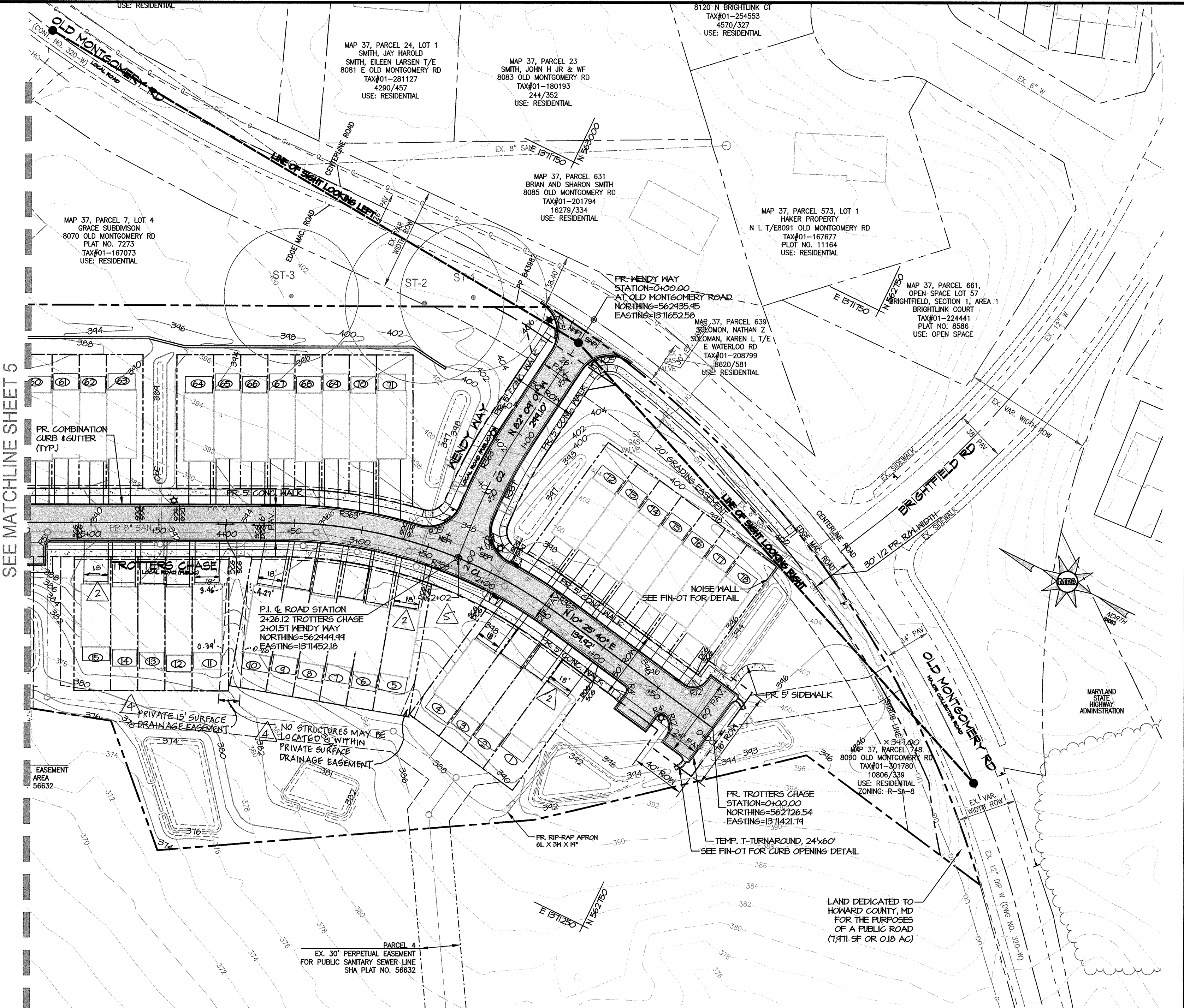
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Melenis* 1/23/2018  
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Phil Edelson* 1-30-18  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION WY DATE

*Spil Martin-Sama* 2/6/18  
 CHIEF, LAND DEVELOPMENT DIVISION WY DATE

**ROAD DETAIL CHART**

NAME	PAVING SECTION	CLASSIFICATION	DESIGN SPEED	STATIONS
ROAD 'A'	P-3	LOCAL ROAD	25 MPH	0+00 - 2+01.57
ROAD 'B'	P-3	LOCAL ROAD	25 MPH	0+00 - 15+55.04



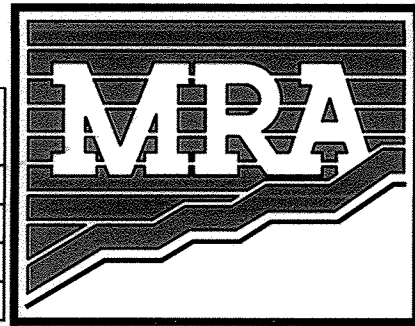
**HORIZONTAL CURVE TABLE**

CURVE #	RADIUS	ARC LENGTH	CHORD DIRECTION	CHORD LENGTH	TANGENT	DELTA
C1	350.00	220.63	N 07° 31' 51" W	216.99	114.12	036° 07' 02"
C2	350.00	10.45	N 81° 55' 00" W	10.33	35.34	011° 31' 56"

**INTERSECTION SIGHT DISTANCE ANALYSIS\***  
 (OPERATING SPEED = 45 MPH NB, 41 MPH SB)

REQUIRED	ISDL	ISDR	SSD
LEFT TURN	452'	446'	310'
RIGHT TURN	392'	N/A	310'
PROVIDED	452'	446'	446'

\* PER HOWARD COUNTY DESIGN MANUAL VOLUME III - 2.5.B.9 AND ASHTO CHAPTER 9  
 NOTE: EXISTING GRADE OF OLD MONTGOMERY ROAD AT THE PROPOSED INTERSECTION IS 1% - ADJUSTMENT FACTORS FOR APPROACH GRADES ALONG OLD MONTGOMERY ROAD WERE APPLIED (+8.0% = 0.9 and -2.2% = 1.0) TO DETERMINE THE REQUIRED INTERSECTION SIGHT DISTANCES.



FOR REVISION #2

MD PROFESSIONAL CERTIFICATION  
 12-12-17

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. 29203, EXPIRATION DATE: 06/16/2019.

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 MRAGTA.COM

**TROTTER'S KNOLL - SECTION I**  
**HORSE FARM PROPERTY**  
 8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
 ROAD PLAN AND PROFILE

TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-8  
 1ST ELECTION DISTRICT  
 HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:
10-18-18	REVISED DRIVEWAYS 2	15368 x 02
1-2-19	ADDED PRIVATE EASEMENT	SCALE: 1" = 50'
01/11/19	REVISED DRIVEWAYS	DATE: 9/13/2017
		DRAWN BY: ATS
		DESIGN BY: ATS
		REVIEW BY: TON
		SHEET: 4 OF 44

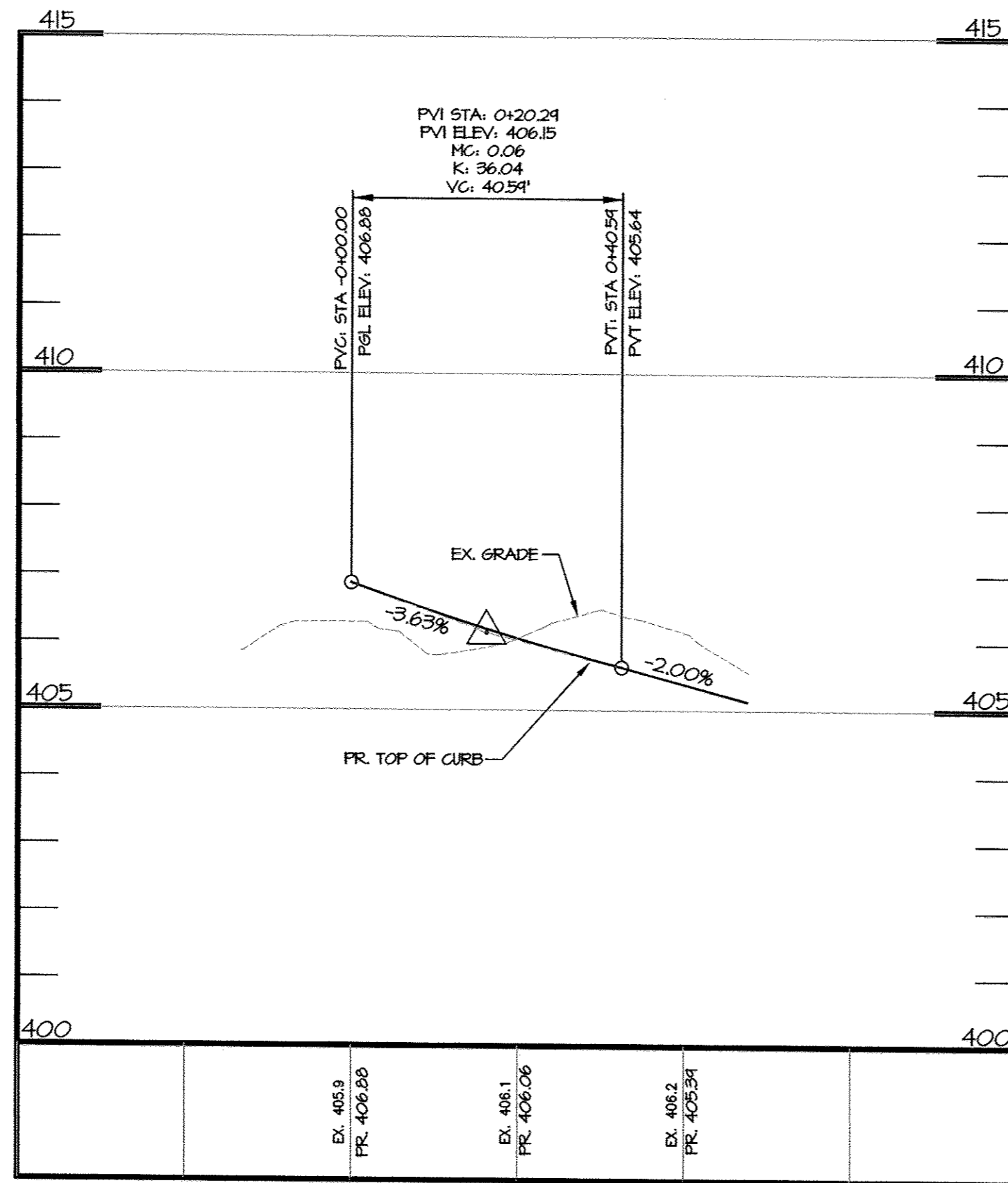
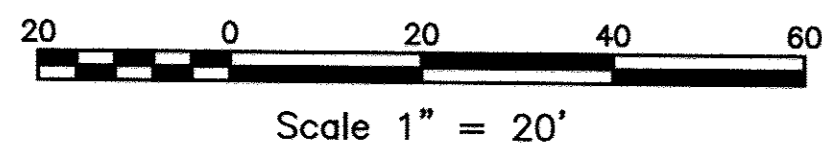




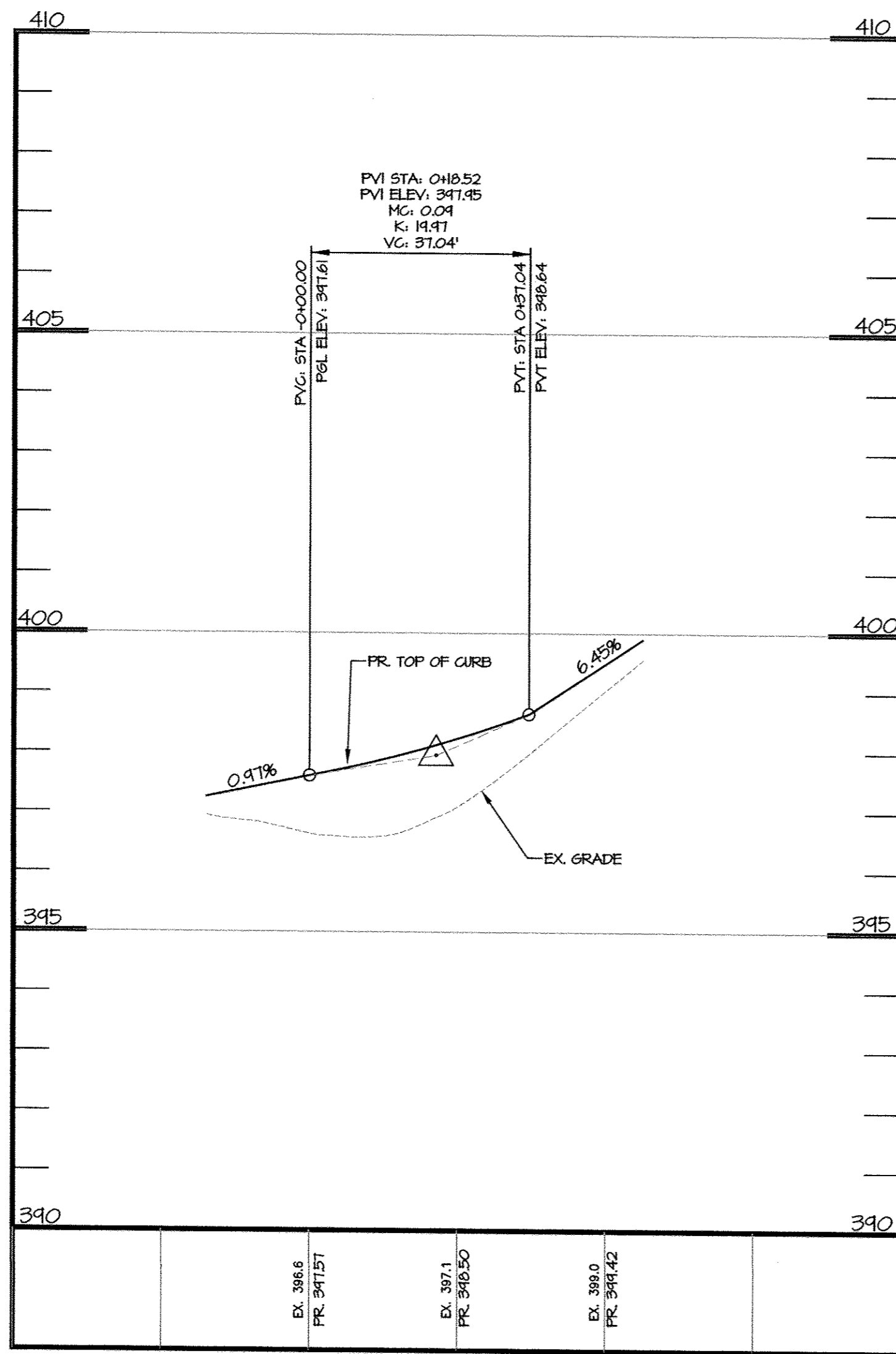


**LEGEND**

- EX. PROPERTY LINE
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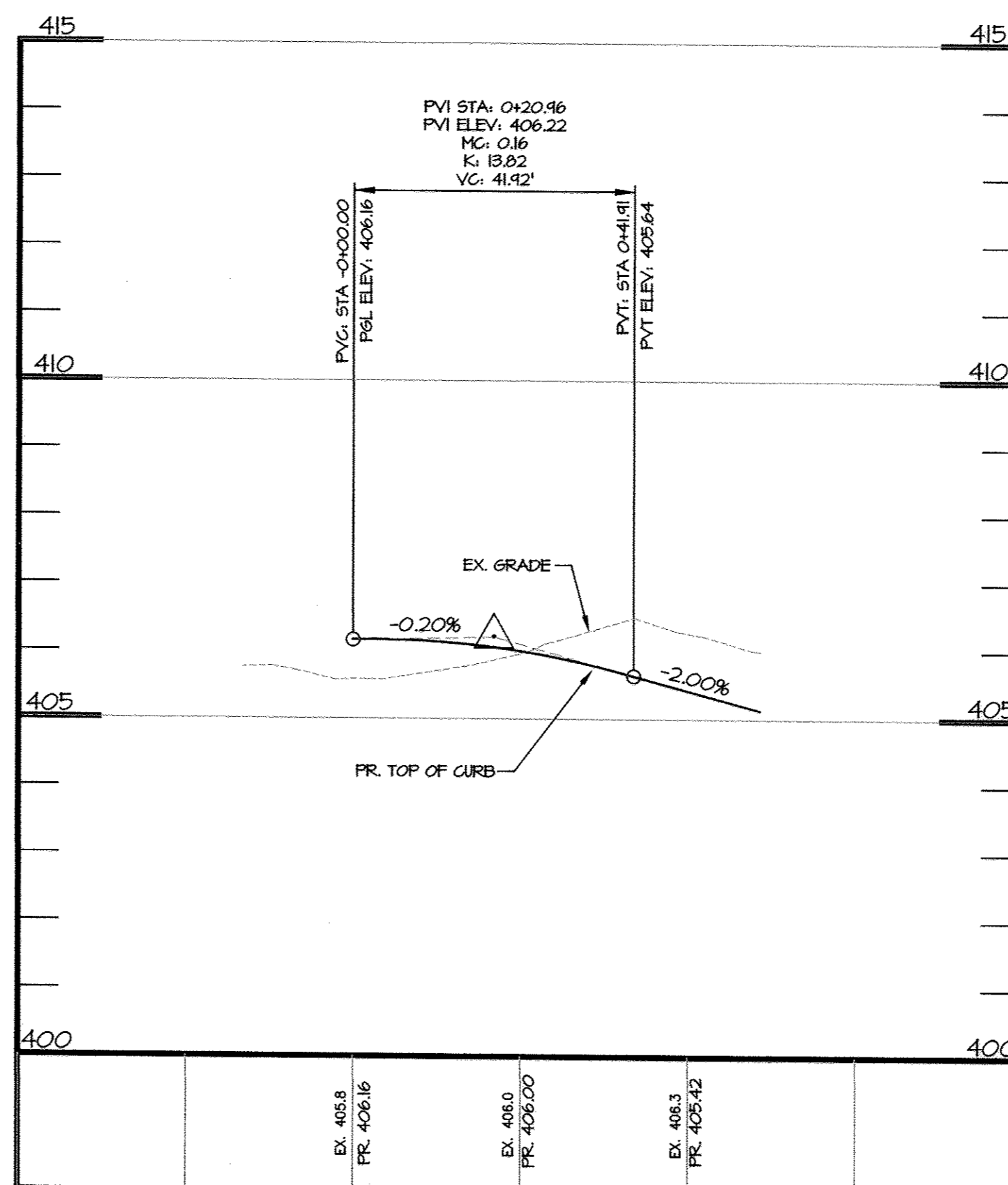


**WENDY WAY NORTH WEST FILLET CURB PROFILE**  
SCALE: H: 1"=20'  
V: 1"=2'

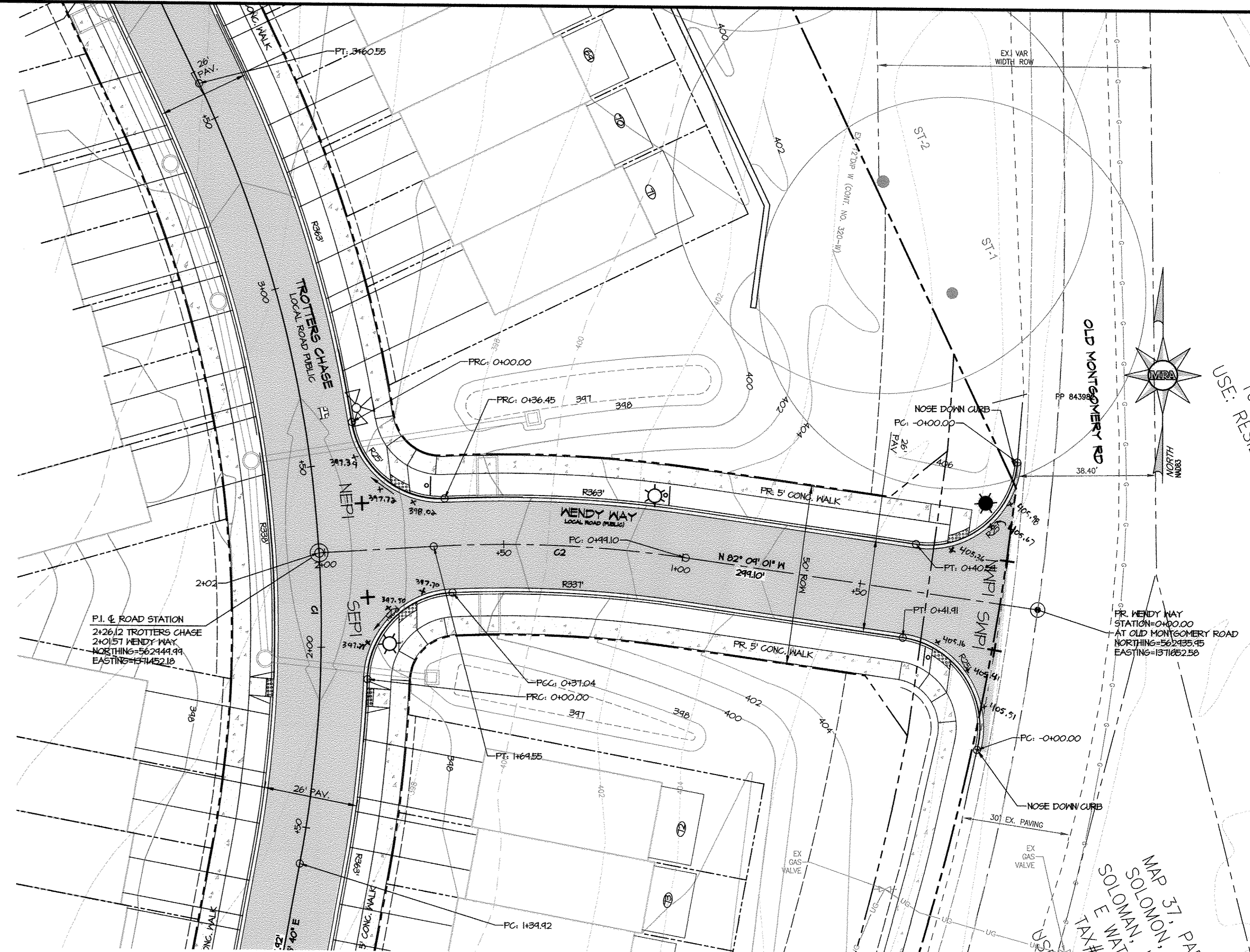


**TROTTERS CHASE NORTH EAST FILLET CURB PROFILE**  
SCALE: H: 1"=20'  
V: 1"=2'

**TROTTERS CHASE SOUTH EAST FILLET CURB PROFILE**  
SCALE: H: 1"=20'  
V: 1"=2'



**WENDY WAY SOUTH WEST FILLET CURB PROFILE**  
SCALE: H: 1"=20'  
V: 1"=2'



**ROAD PLAN**  
SCALE: 1"=20'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Howard County Seal*  
CHIEF, BUREAU OF HIGHWAYS  
DATE: 1/23/2018

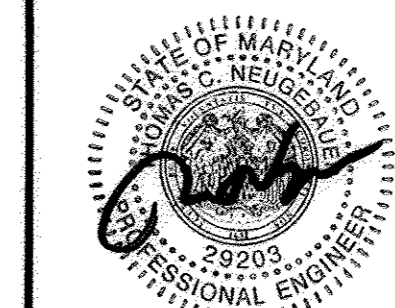
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Howard County Seal*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE: 1-30-18

*John M. P. [Signature]*  
CHIEF, LAND DEVELOPMENT DIVISION  
DATE: 2/1/19

OWNER / APPLICANT / DEVELOPER:  
HORSE FARM, LLC  
ADDRESS: 9200 RUNSEY ROAD, SUITE 200  
COLUMBIA, MD 21045  
CONTACT: RICHARD HAYWARD  
PHONE: 410-997-7222



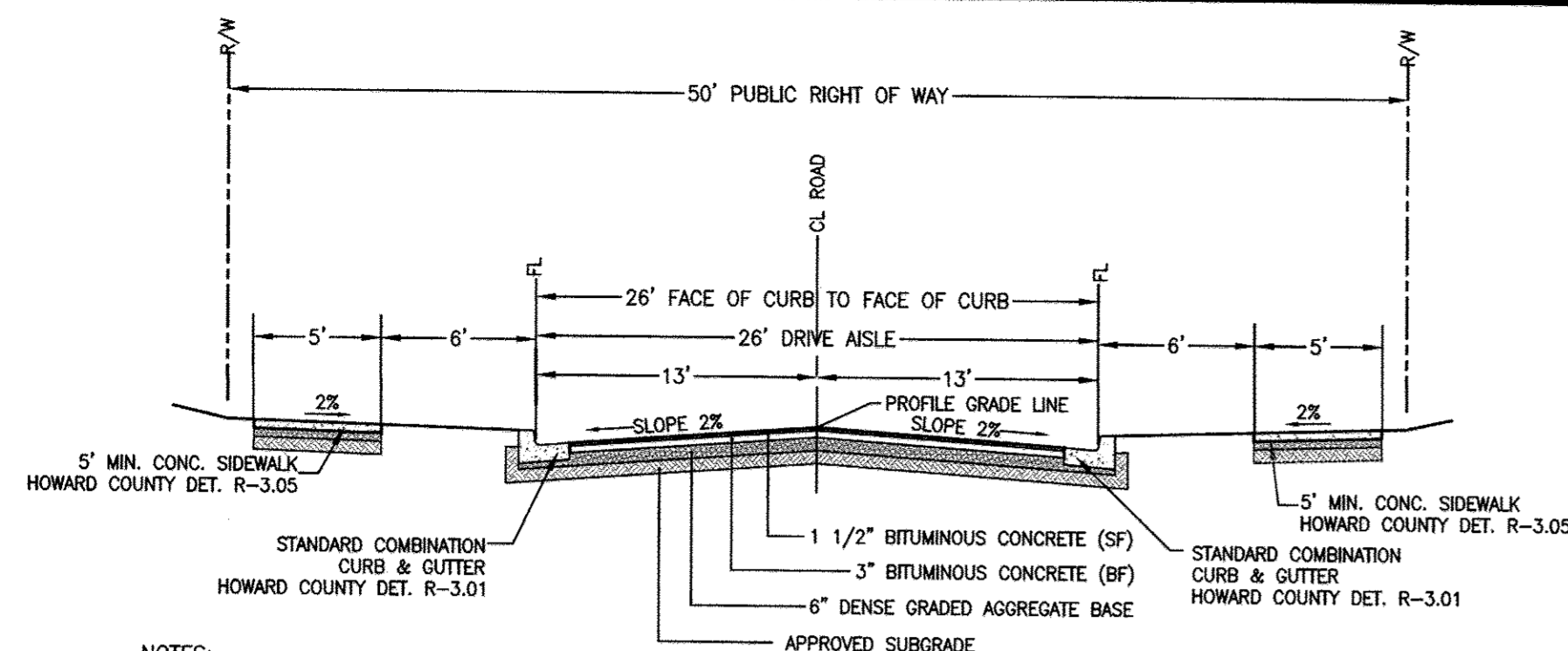
**MORRIS & RITCHIE ASSOCIATES, INC.**  
ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS  
14280 PARK CENTER DRIVE  
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MRAGTA.COM



**TROTTER'S KNOLL - SECTION I**  
**HORSE FARM PROPERTY**  
8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
**ROAD PLAN AND PROFILES**  
TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-B  
1ST ELECTION DISTRICT  
HOWARD COUNTY, MD 21043

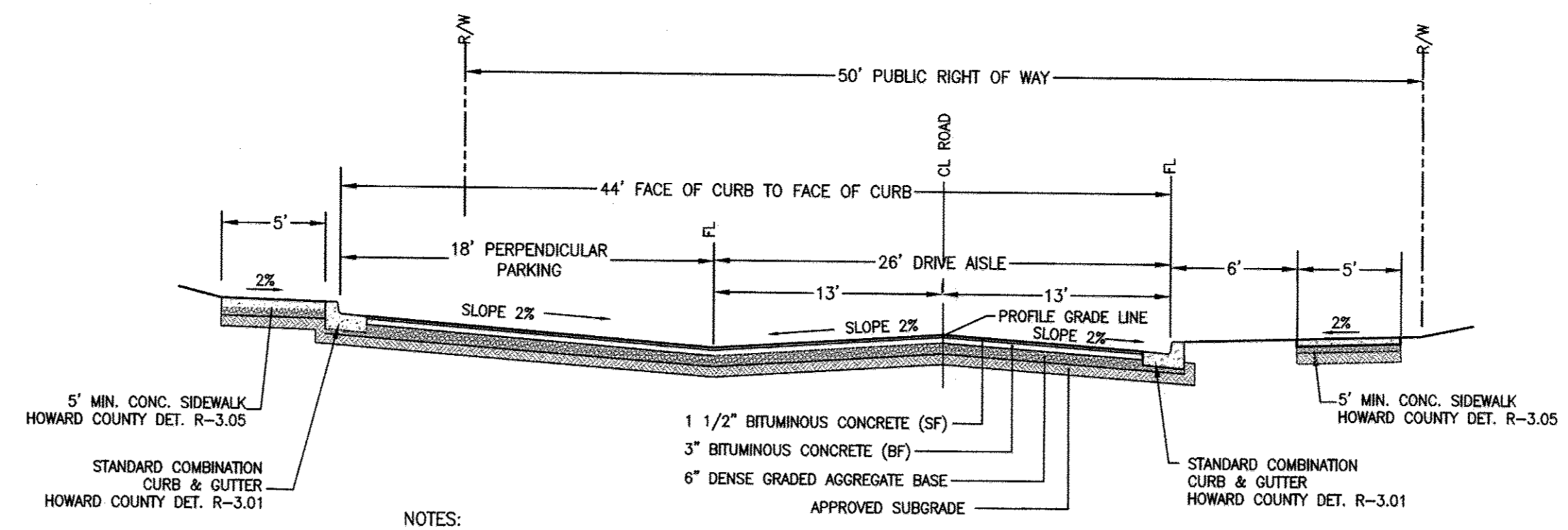
DATE	REVISIONS	JOB NO.:	15368 x 02
		SCALE:	1" = 50'
		DATE:	9/13/2017
		DRAWN BY:	ATS
		DESIGN BY:	ATS
		REVIEW BY:	TCN
		SHEET:	6 OF 44





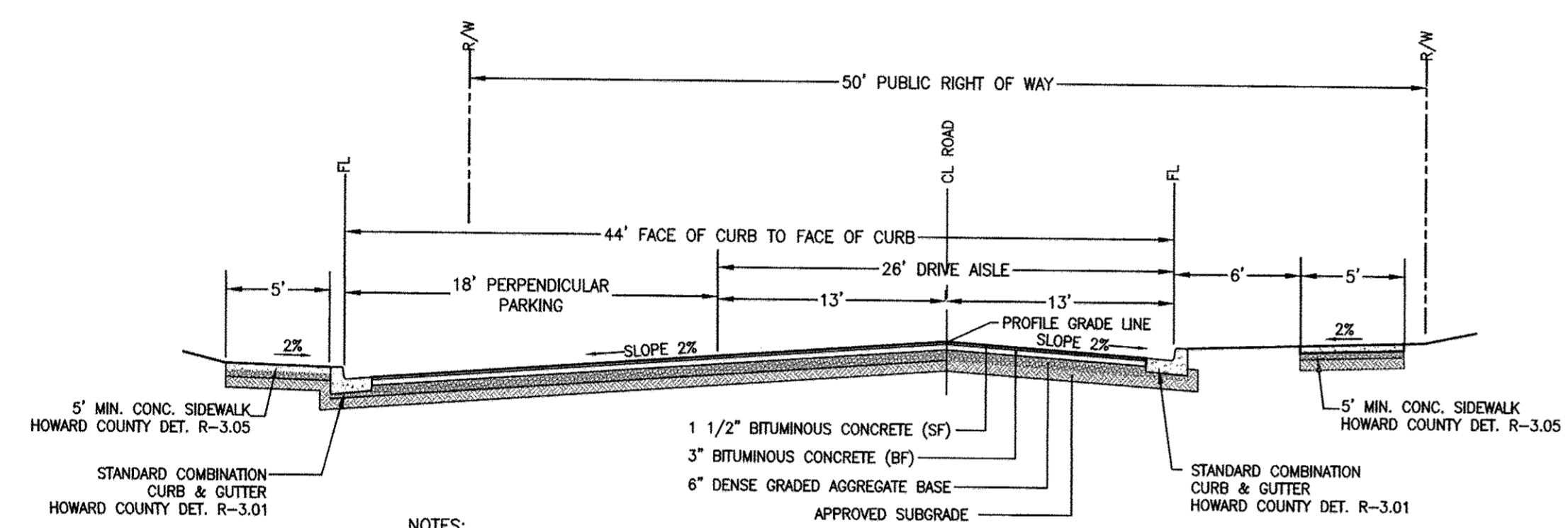
NOTES:  
1. PER HOWARD COUNTY DETAIL R-3.06, DEPRESSED CURB TO BE USED AT ALL DRIVEWAY LOCATIONS, SEE PLAN VIEWS.

**TYPICAL SECTION PROPOSED TROTTERS CHASE**  
 STA. 0+00 TO STA. 0+35  
 STA. 0+70 TO STA. 5+32  
 STA. 7+02 TO STA. 10+21  
 STA. 10+74 TO STA. 12+22  
 STA. 14+53 TO STA. 15+57  
 WENDY WAY STA. 0+00 TO STA. 2+01  
 NOT TO SCALE



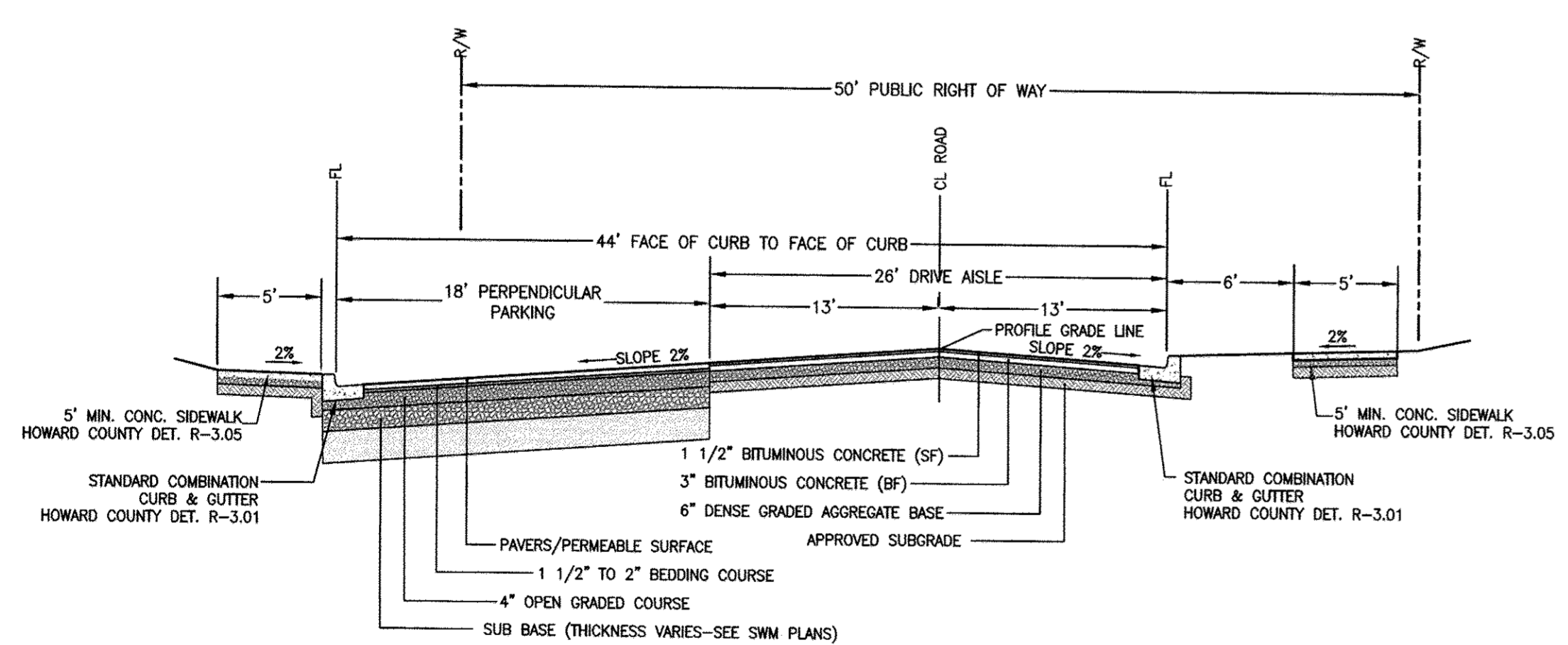
NOTES:  
1. PER HOWARD COUNTY DETAIL R-3.06, DEPRESSED CURB TO BE USED AT ALL DRIVEWAY LOCATIONS, SEE PLAN VIEWS.

**TYPICAL SECTION PROPOSED TROTTERS CHASE**  
 STA. 0+35 TO 0+70  
 STA. 10+21 TO 10+74  
 NOT TO SCALE

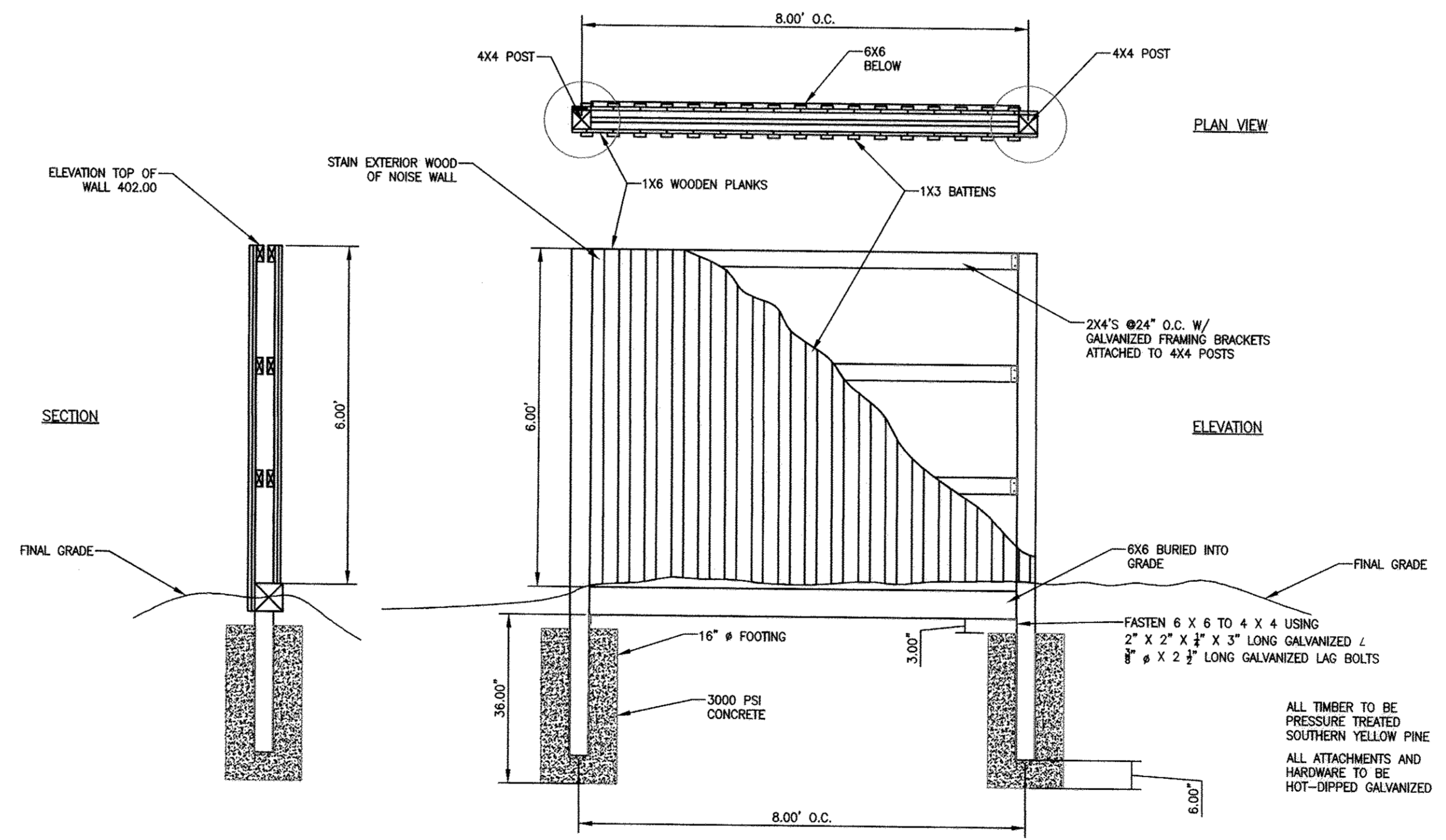


NOTES:  
1. PER HOWARD COUNTY DETAIL R-3.06, DEPRESSED CURB TO BE USED AT ALL DRIVEWAY LOCATIONS, SEE PLAN VIEWS.

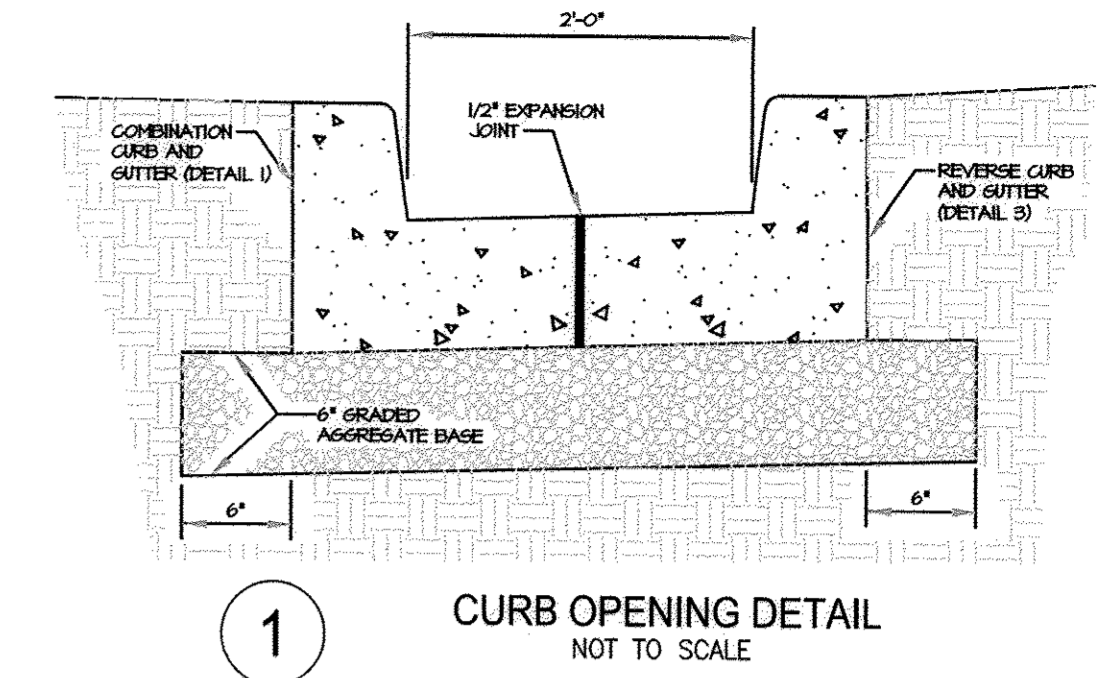
**TYPICAL SECTION PROPOSED TROTTERS CHASE**  
 STA. 5+32 TO 7+02  
 STA. 13+92 TO 14+53  
 NOT TO SCALE



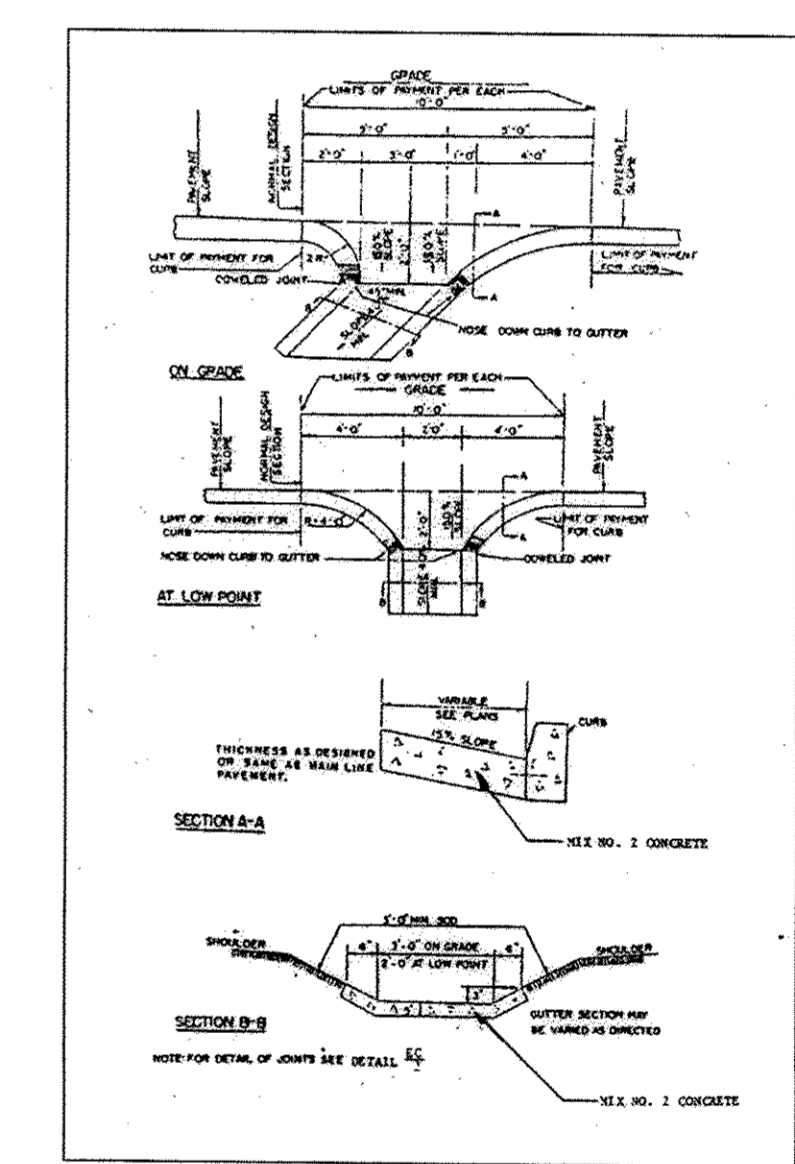
**TYPICAL SECTION PROPOSED TROTTERS CHASE**  
 STA. 12+22 TO 13+92  
 NOT TO SCALE



**NOISE BARRIER - DOUBLE SIDED WOOD FENCE**  
 NOT TO SCALE



**NOTES**  
 1. USE STANDARD R3.06 FOR ALL MODIFIED CURB TRANSITIONS TO INLETS.  
 2. CURB IN FRONT OF UNITS TO BE MODIFIED CURB.



**CURB OPENING DETAIL**

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*[Signature]* 1/23/18  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*[Signature]* 1-30-18  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE

*[Signature]* 2/1/18  
 CHIEF, LAND DEVELOPMENT DIVISION  
 DATE

OWNER / APPLICANT / DEVELOPER:  
 HORSE FARM, LLC.  
 ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
 COLUMBIA, MD 21045  
 CONTACT: RICHARD HAYWARD  
 PHONE: 410-997-7222

**MRA**

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**TROTTER'S KNOLL - SECTION I**  
**HORSE FARM PROPERTY**  
 8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
 ROAD CROSS SECTIONS

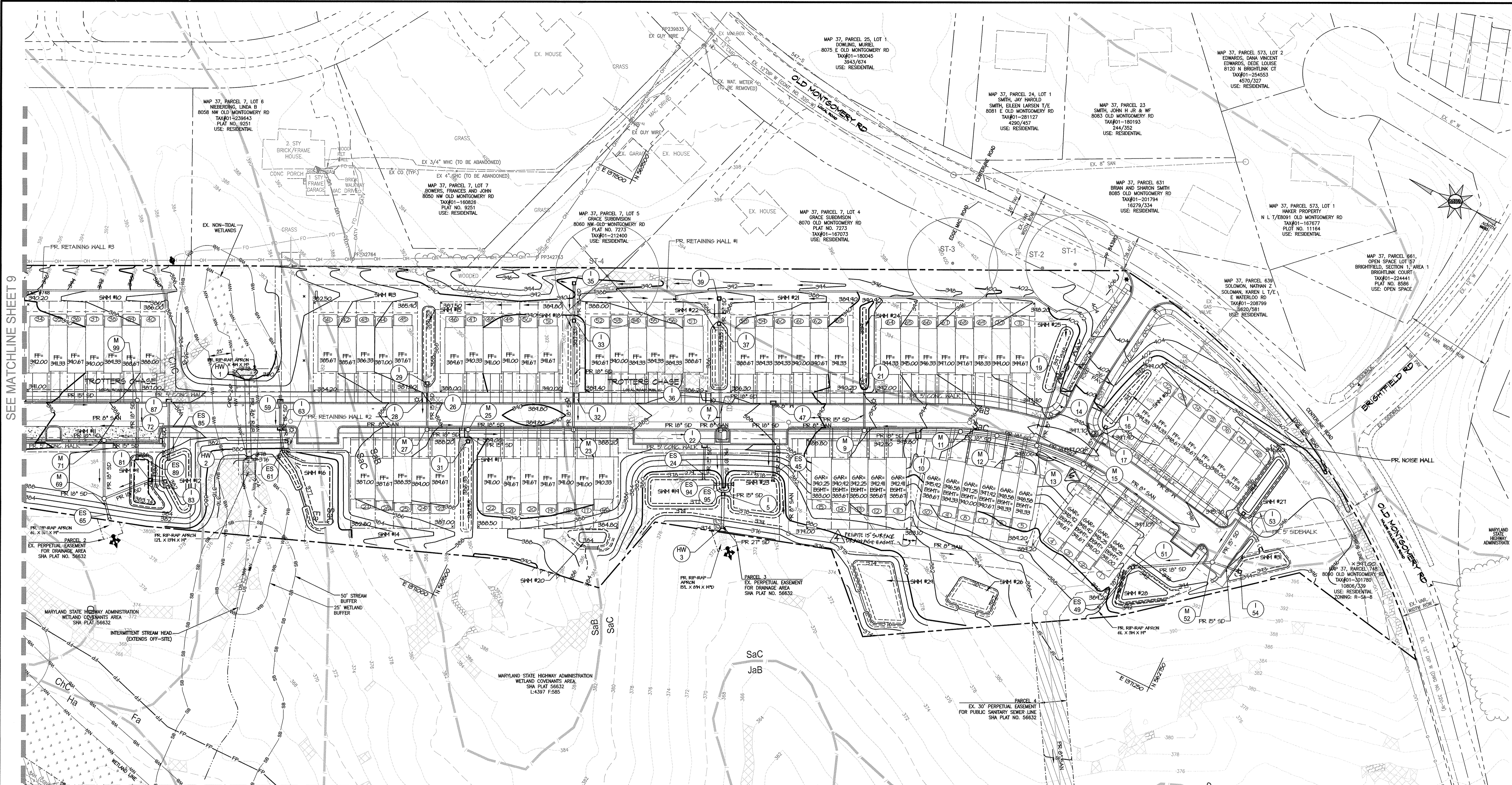
TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-8  
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		DRAWN BY: ATs
		DESIGN BY: ATs
		REVIEW BY: TCN
		SHEET: 7 OF 44

MD PROFESSIONAL CERTIFICATION: 17-12-17

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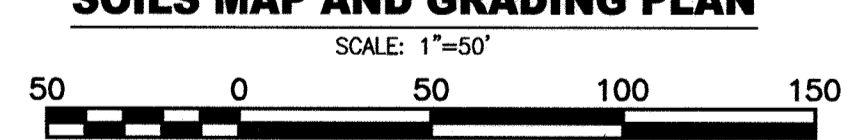
SEE MATCHLINE SHEET 9

SEE MATCHLINE SHEET 10

**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. 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

**SOILS MAP AND GRADING PLAN**



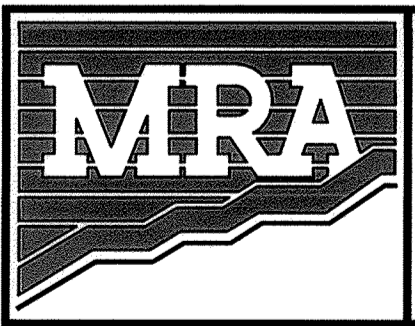
SYMBOL	NAME/DESCRIPTION	SOIL TYPE	'K' VALUE
ChC	CHILLUM-RUSSET LOAMS, 5-10% SLOPES	B	0.10-0.37
CrD	CROOM AND EVESBORO SOILS, 10-15% SLOPES	C	0.15-0.37
Fa	FALLSINGTON SANDY LOAM, 0-2% SLOPES	D	0.02-0.24
Ha	HATBORO-CORDORUS SILT LOAMS, 0-3% LOAMS	D	0.20-0.37
JaB	JACKLAND SILT LOAM, 3-8%	D	0.15-0.55
LaC	LEGORE SILT LOAM, 8-15% SLOPES	B	0.02-0.43
SaB	SAFFRAS LOAM, 2-5% SLOPES	B	0.17-0.37
SaC	SAFFRAS LOAM, 5-10% SLOPES	B	0.17-0.32
UaB	URBAN LAND-FALLSINGTON COMPLEX, 0-2% SLOPES	D	0.17-0.37

HOWARD COUNTY SOIL CONSERVATION DISTRICT MAP NUMBER 14-036

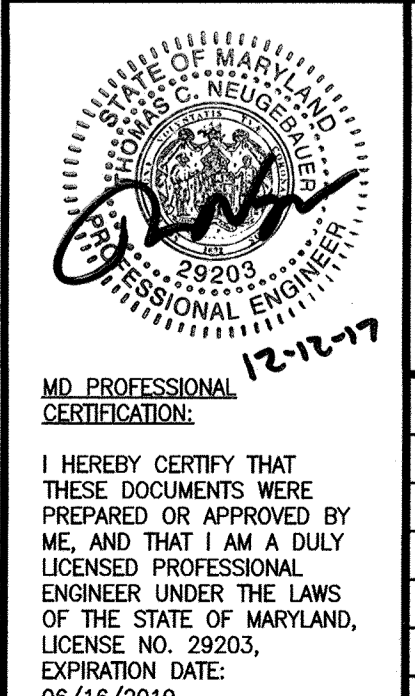
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Howard County Seal*  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE: 1/23/18

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 1/30/18

CHIEF, LAND DEVELOPMENT DIVISION  
 DATE: 2/6/18



**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 I**  
**HORSE FARM PROPERTY**  
 8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
**SOILS MAP AND GRADING PLAN**

TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-B  
 1ST ELECTION DISTRICT  
 HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:	SCALE:
1-2-19	4 ADDED PRIVATE EASEMENT	15368 x 02	1" = 50'
01/11/19	5 Revised DRIVEWAYS		DATE: 9/13/2017
			DRAWN BY: AT5
			DESIGN BY: AT5
			REVIEW BY: TON
			SHEET: 8 OF 44

MD PROFESSIONAL CERTIFICATION: 12-11-17

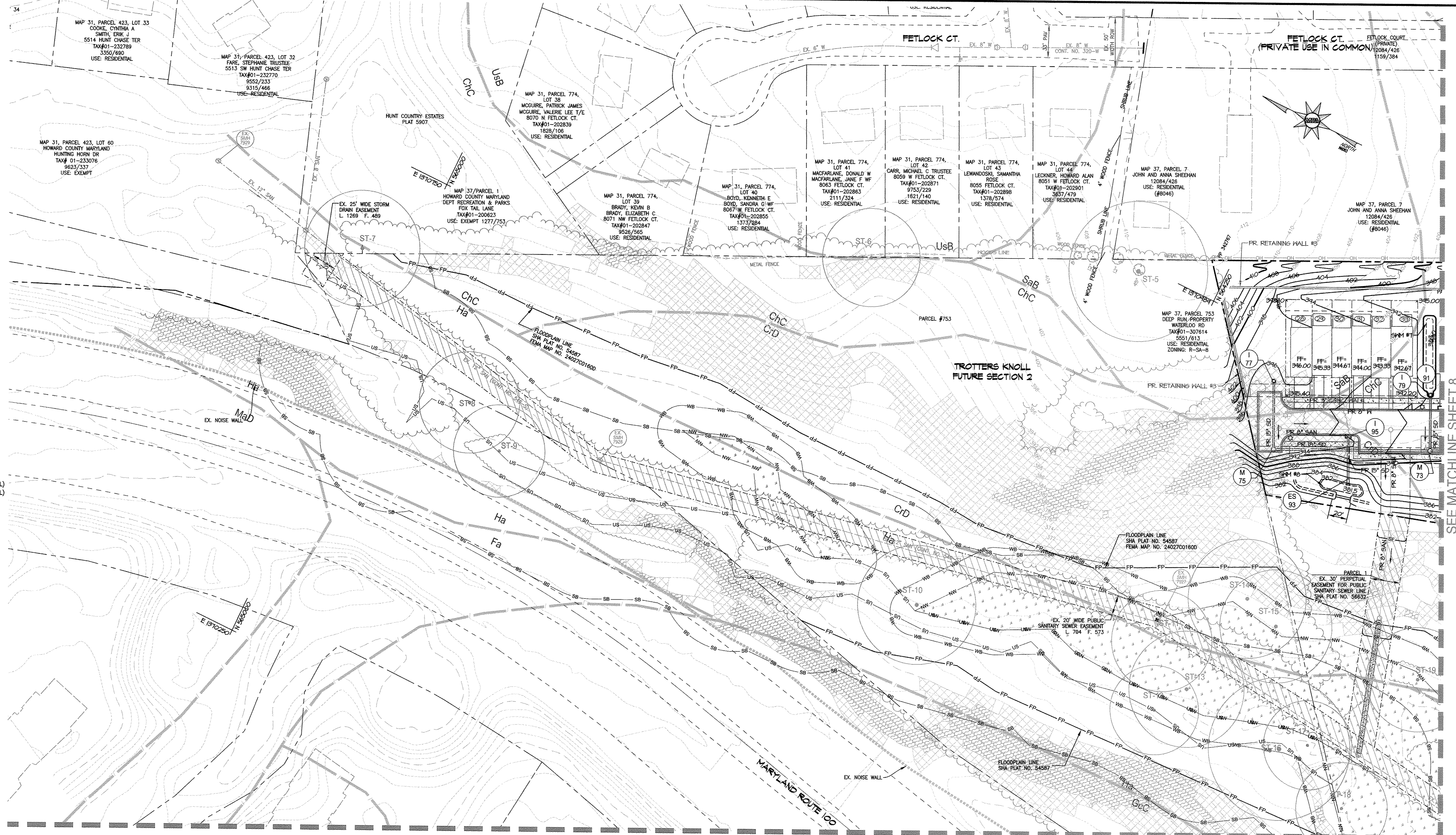
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 29203, EXPIRATION DATE: 06/16/2019.

**OWNER / APPLICANT / DEVELOPER:**  
 HORSE FARM, LLC  
 ADDRESS: 9200 RUNSEY ROAD, SUITE 200  
 COLUMBIA, MD 21045  
 CONTACT: RICHARD HAYWARD  
 PHONE: 410-997-7222



**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. 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
- EX. STREAM BUFFER
- EX. SPECIMEN TREE
- EX. 15-25% SLOPES
- EX. 25%+ SLOPES
- EX. SOILS
- PR. LOT LINE
- PR. BUILDING FOOTPRINT
- PR. BUILDING SETBACK
- PR. CURB AND GUTTER
- PR. SIDEWALK
- PR. RETAINING WALL
- PR. POROUS PAVEMENT
- PR. PUBLIC ROAD PAVEMENT
- PR. PUBLIC ROAD MILL & OVERLAY
- PR. STREET LIGHT (LED-100 COLONIAL)
- PR. STREET LIGHT (LED-150 COLONIAL)
- PR. 0.5' CONTOUR
- PR. 1' CONTOUR
- PR. 2' CONTOUR
- PR. 10' CONTOUR



**SOILS MAP AND GRADING PLAN**  
 SCALE: 1"=50'  
 Scale 1" = 50'

SEE MATCHLINE SHEET 10

SEE MATCHLINE SHEET 8

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*[Signature]* 1/23/2018  
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*[Signature]* 1-30-18  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 2/6/18  
 CHIEF, LAND DEVELOPMENT DIVISION DATE

OWNER / APPLICANT / DEVELOPER:  
 HORSE FARM, LLC.  
 ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
 COLUMBIA, MD 21045  
 CONTACT: RICHARD HAYWARD  
 PHONE: 410-997-7222

MD PROFESSIONAL ENGINEER  
 12-12-17

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. 29203, EXPIRATION DATE: 06/16/2019.

**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

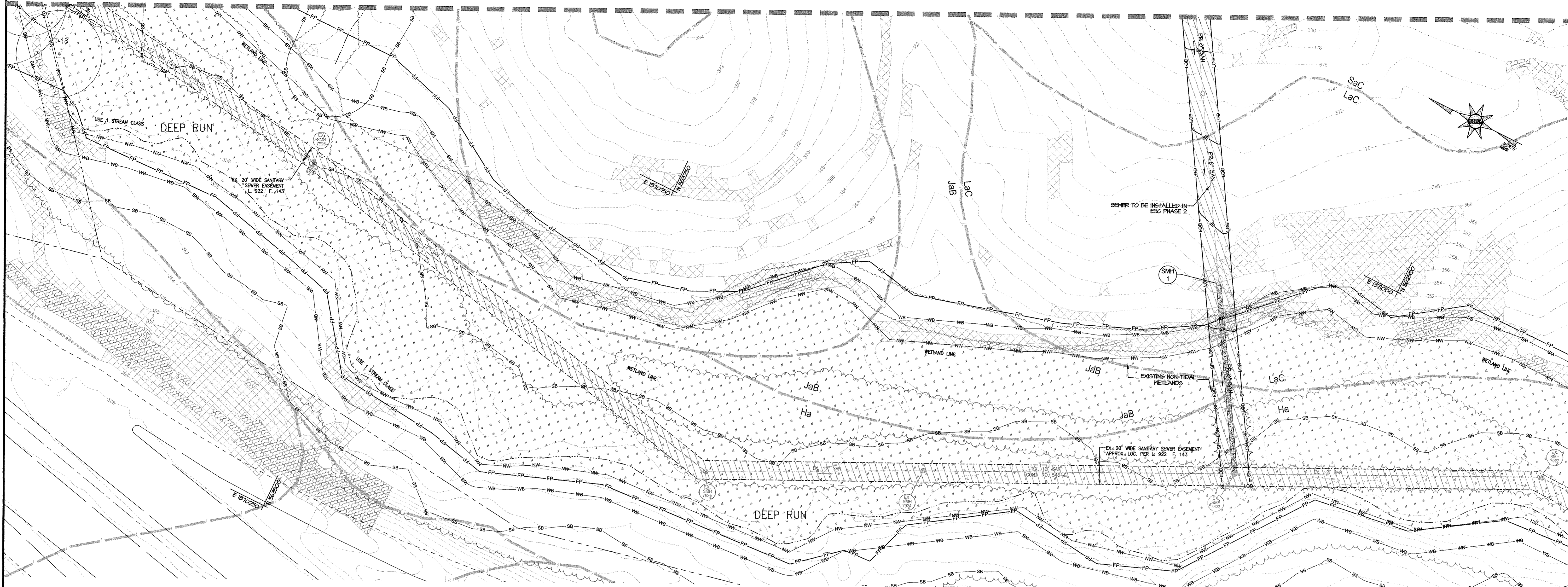
**TROTTER'S KNOLL - SECTION I**  
**HORSE FARM PROPERTY**  
 8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
**SOILS MAP AND GRADING PLAN**

TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-8  
 1ST ELECTION DISTRICT  
 HOWARD COUNTY, MD 21043

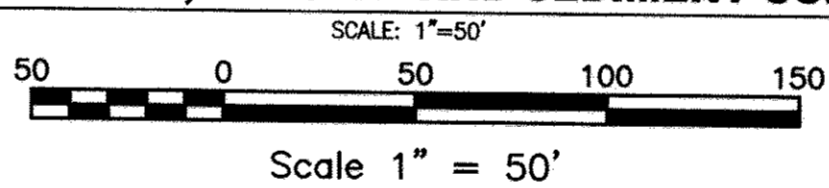
DATE	REVISIONS	JOB NO.:
		15368 x 02
		SCALE: 1" = 50'
		DATE: 9/13/2017
		DRAWN BY: ATS
		DESIGN BY: ATS
		REVIEW BY: TGN
		SHEET: 9 OF 44



SEE MATCHLINE SHEETS 8 THROUGH 9 FOR GRADING PLAN -- SHEETS 11 THROUGH 14 FOR ESC



SOILS MAP, GRADING, EROSION AND SEDIMENT CONTROL PLAN



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."

*[Signature]* 12-12-17  
 SIGNATURE OF ENGINEER [PRINT NAME BELOW SIGNATURE] DATE  
**THOMAS C. PENNINGTON, P.E.**  
 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."

Horse Farm, LLC  
 By: *[Signature]* 1/3/18  
 SIGNATURE OF DEVELOPER [PRINT NAME BELOW SIGNATURE] DATE  
**Richard E Hayward**

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
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- PR. POROUS PAVEMENT
- PR. PUBLIC ROAD PAVEMENT
- PR. PUBLIC ROAD MILL & OVERLAY
- PR. STREET LIGHT (LED-100 COLONIAL)
- PR. STREET LIGHT (LED-150 COLONIAL)
- PR. 0.5' CONTOUR
- PR. 1' CONTOUR
- PR. 2' CONTOUR
- PR. 10' CONTOUR

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

*[Signature]* 1/10/18  
 HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*[Signature]* 1/23/2018  
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*[Signature]* 1-30-18  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION NY DATE  
*[Signature]* 2/16/18  
 CHIEF, LAND DEVELOPMENT DIVISION DATE

OWNER / APPLICANT / DEVELOPER:  
 HORSE FARM, LLC  
 ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
 COLUMBIA, MD 21045  
 CONTACT: RICHARD HAYWARD  
 PHONE: 410-997-7222

**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 I**  
 HORSE FARM PROPERTY  
 8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
 SOILS MAP, GRADING,  
 EROSION AND SEDIMENT CONTROL PLAN  
 TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-8  
 1ST ELECTION DISTRICT  
 HOWARD COUNTY, MD. 21043

---

DATE	REVISIONS	JOB NO.: 15368 x 02
		SCALE: 1" = 50'
		DATE: 9/13/2017
		DRAWN BY: ATS
		DESIGN BY: ATS
		REVIEW BY: TON
		EXPIRATION DATE: 06/16/2019
		SHEET: 10 OF 44



ENGINEER'S CERTIFICATE

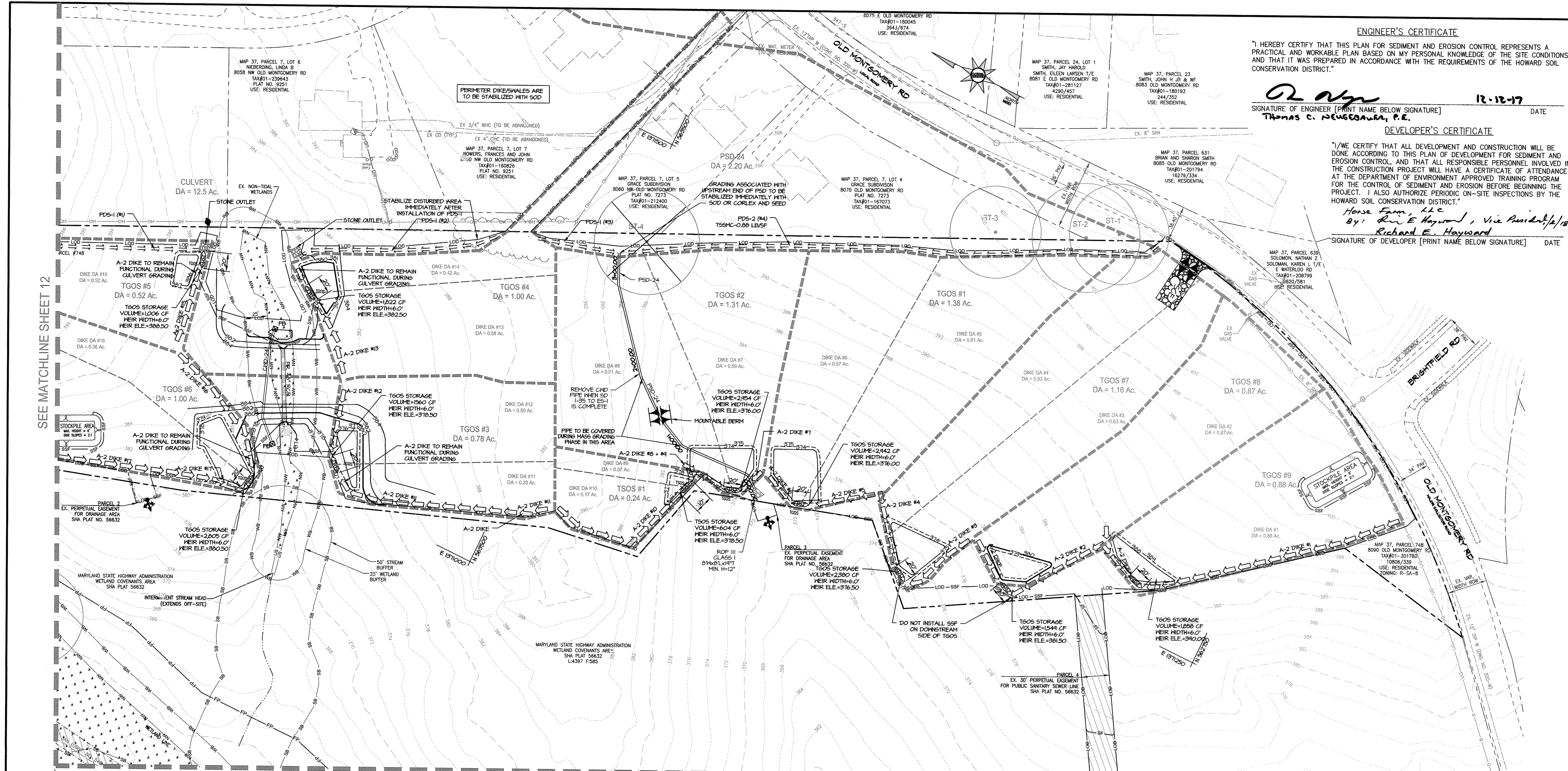
"I HEREBY CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

12-12-17  
 SIGNATURE OF ENGINEER [PRINT NAME BELOW SIGNATURE] DATE  
 Thomas C. Neugebauer, P.E.

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."

Horse Farm, LLC  
 By: *Richard E. Hayward*, Vice President  
 SIGNATURE OF DEVELOPER [PRINT NAME BELOW SIGNATURE] DATE

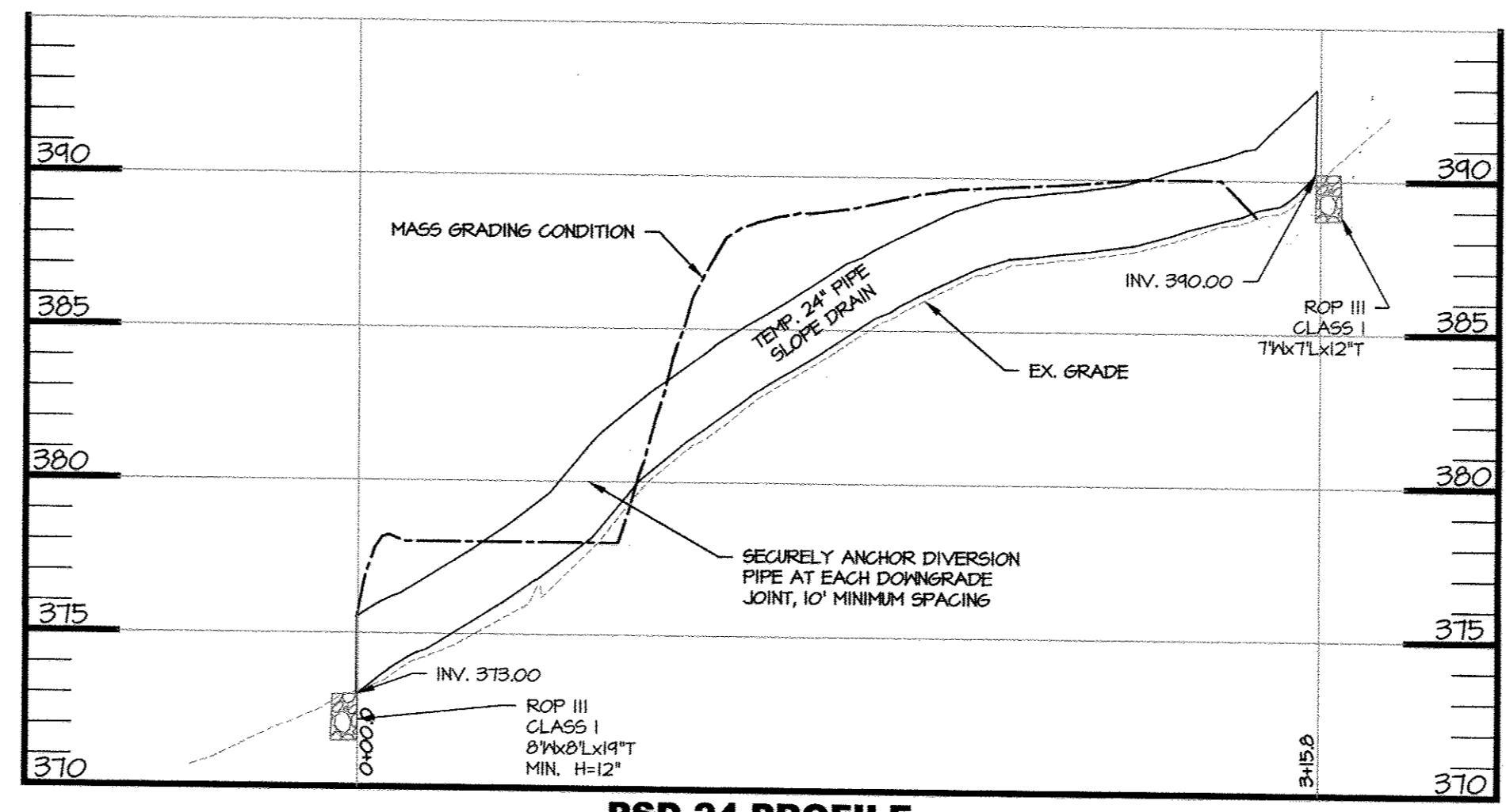


EROSION AND SEDIMENT CONTROL PLAN PHASE 1

SCALE: 1" = 50'

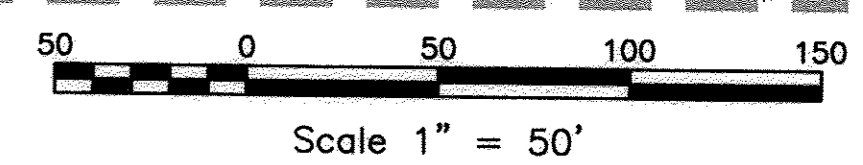
LEGEND

- PR. 1' CONTOUR
- PR. 2' CONTOUR
- PR. 10' CONTOUR
- PR. TEMPORARY STONE OUTLET STRUCTURE
- PR. TEMPORARY GABION OUTLET STRUCTURE
- PR. LIMIT OF DISTURBANCE
- PR. SILT FENCE
- PR. SUPER SILT FENCE
- PR. EARTH DIKE A
- PR. TEMPORARY SWALE
- 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. BORING LOCATION
- EX. NON TIDAL WETLANDS
- EX. 25' WETLAND BUFFER
- EX. FLOODPLAIN
- EX. WATERS OF THE US
- EX. STREAM BUFFER
- EX. SPECIMEN TREE



PSD 24 PROFILE  
 SCALE: H: 1" = 50'  
 V: 1" = 5'

SEE MATCHLINE SHEET 10



TEMPORARY OUTFALL STRUCTURE DIMENSIONS

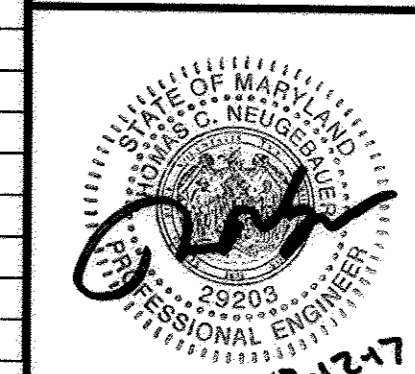
STRUCTURE NO.	WIDTH (FT)	DEPTH (FT)
TGOS #1	6	1
TGOS #2	6	1
TGOS #3	6	3
TGOS #4	6	3
TGOS #5	6	3
TGOS #6	6	3
TGOS #7	6	3
TGOS #8	6	3
TGOS #9	6	3

NOTE: WIDTH DENOTES WIDTH OF WEIR, DEPTH DENOTES DEPTH FROM TOP OF WEIR TO GRADE BEHIND THE STRUCTURE. THE INTO EARTH DIKES AS SHOWN ON DETAIL E-8, PAGE 2 OF 2.

OWNER / APPLICANT / DEVELOPER:  
 HORSE FARM, LLC  
 ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
 COLUMBIA, MD 21045  
 CONTACT: RICHARD HAYWARD  
 PHONE: 410-997-7222



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

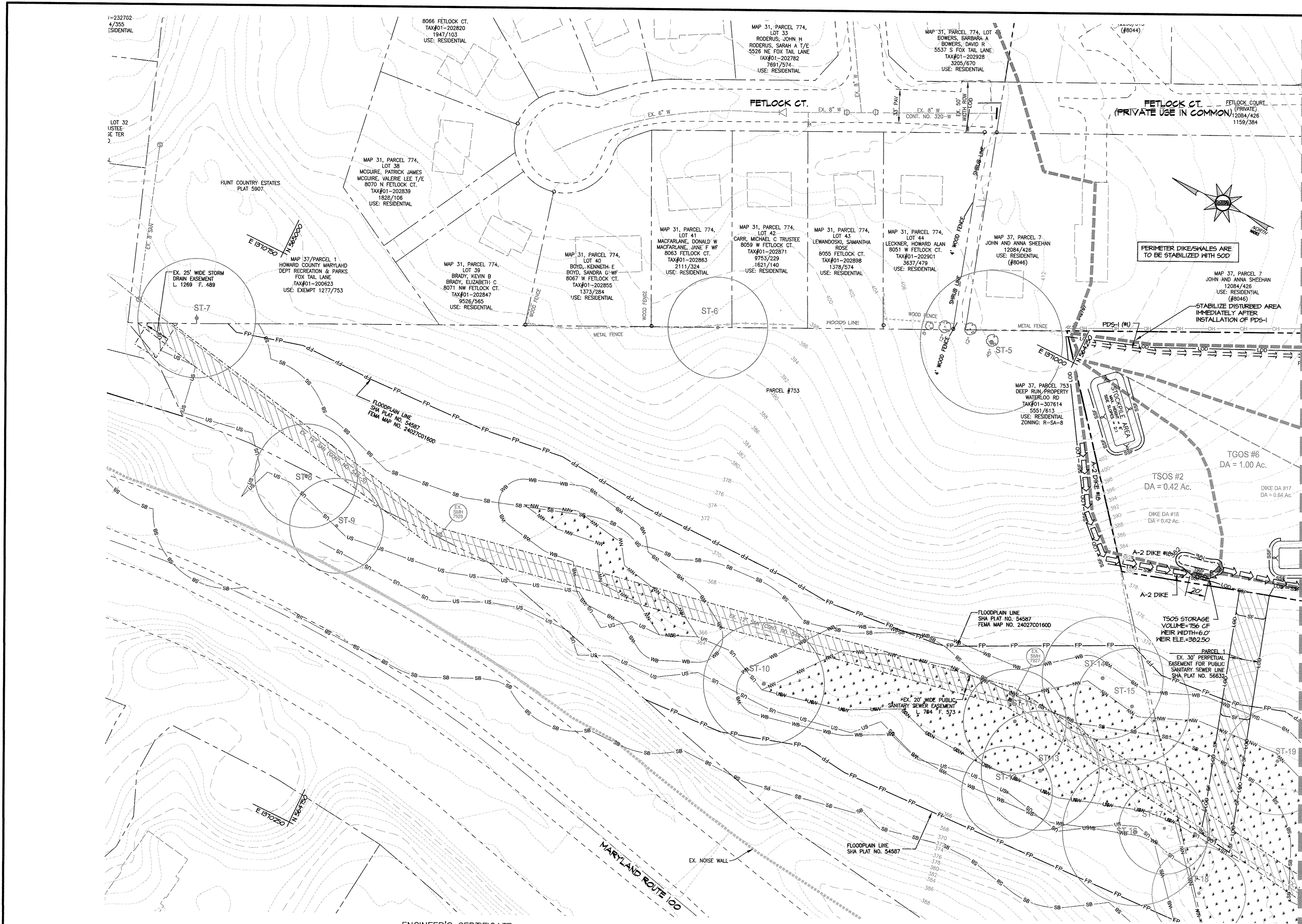


**TROTTER'S KNOLL - SECTION I**  
**HORSE FARM PROPERTY**  
 8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
**EROSION AND SEDIMENT CONTROL PLAN - PHASE I**  
 TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-8  
 1ST ELECTION DISTRICT  
 HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:
		15368 x 02
		SCALE: 1" = 50'
		DATE: 9/13/2017
		DRAWN BY: ATS
		DESIGN BY: ATS
		REVIEW BY: TCN
		SHEET: 11 OF 44

P:\PROJ\15368 TROTTER'S KNOLL\PLANS\DESIGN\15368-PLAN-11-12-ESC.PHI.dwg, 1/3/2018 4:51:30 PM, Collier  
 11. Copyright 2018 Morris & Ritchie Associates, Inc.

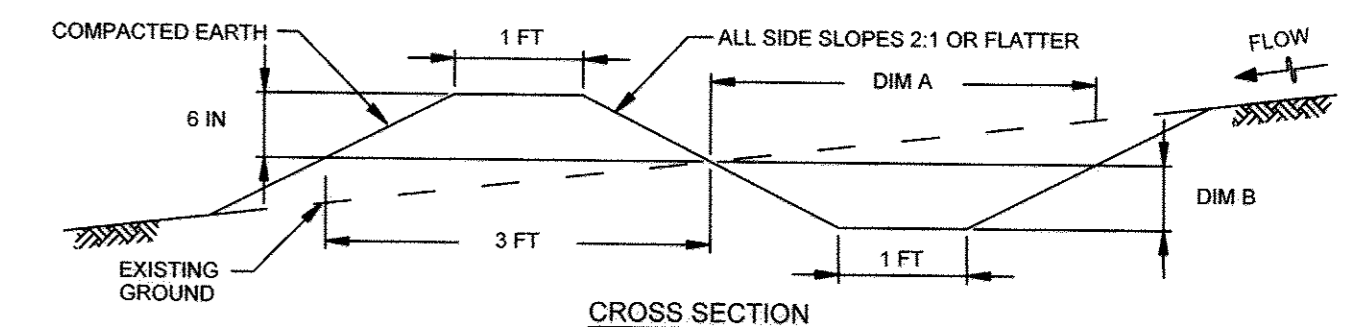




**LEGEND**

- EX. PROPERTY LINE
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- PR. 1' CONTOUR
- PR. 2' CONTOUR
- PR. 10' CONTOUR
- PR. TEMPORARY STONE OUTLET STRUCTURE
- PR. TEMPORARY GABION OUTLET STRUCTURE

PERIMETER DIKE SWALE DIMENSIONS		
PDS NO.	DIM 'A' (FT)	DIM 'B' (IN)
PDS #1	3	6
PDS #2	3	6
PDS #3	3	6
PDS #4	4.5	11



**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."

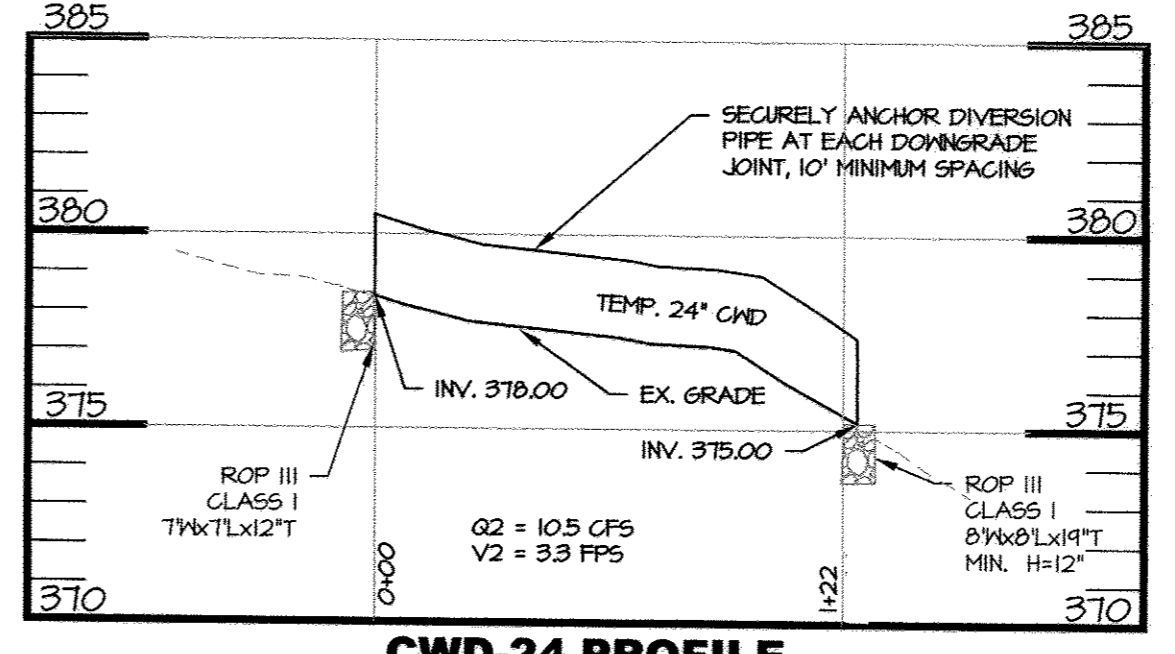
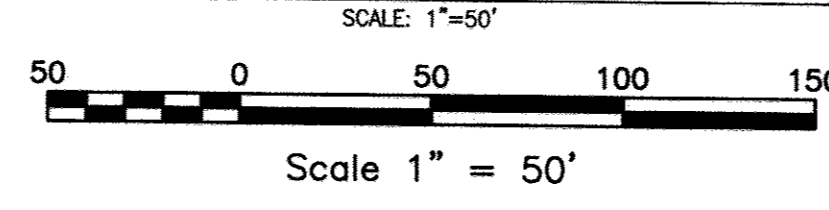
*Thomas C. McGehee, P.E.*  
 SIGNATURE OF ENGINEER [PRINT NAME BELOW SIGNATURE] DATE 12-12-17  
 THOMAS C. MCGEEHEE, P.E.

**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."

*Richard E. Hayward*  
 Horse Farm, LLC  
 By: *Richard E. Hayward*, Vice President 1/2/18  
 SIGNATURE OF DEVELOPER [PRINT NAME BELOW SIGNATURE] DATE

**EROSION AND SEDIMENT CONTROL PLAN PHASE 1**



**OWNER / APPLICANT / DEVELOPER:**

HORSE FARM, LLC  
 ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
 COLUMBIA, MD 21045  
 CONTACT: RICHARD HAYWARD  
 PHONE: 410-997-7222

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

*Howard Soil Conservation District*  
 HOWARD SOIL CONSERVATION DISTRICT DATE 1/16/18

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Melanie*  
 CHIEF, BUREAU OF HIGHWAYS DATE 1/23/2018

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Chad Edmonson*  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 1-30-18

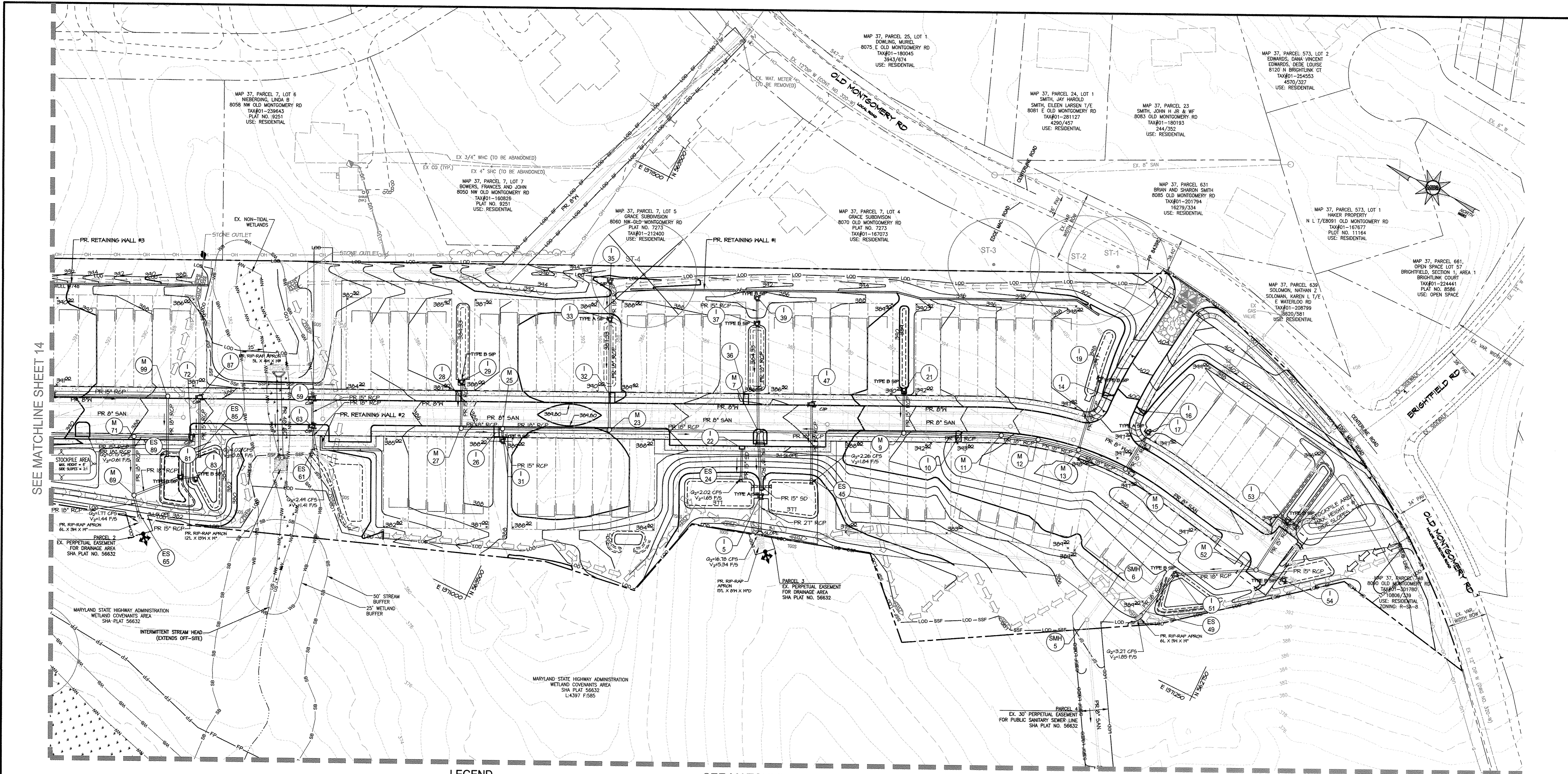
*Jim Manning*  
 CHIEF, LAND DEVELOPMENT DIVISION DATE 2/6/18

**MRA**  
 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 I**  
 HORSE FARM PROPERTY  
 8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
 EROSION AND SEDIMENT CONTROL PLAN - PHASE I  
 TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-8  
 1ST ELECTION DISTRICT  
 HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:	SCALE:
		15368 x 02	1" = 50'
			DATE: 9/13/2017
			DRAWN BY: AT5
			DESIGN BY: AT5
			REVIEW BY: TCN
			SHEET: 12 OF 44





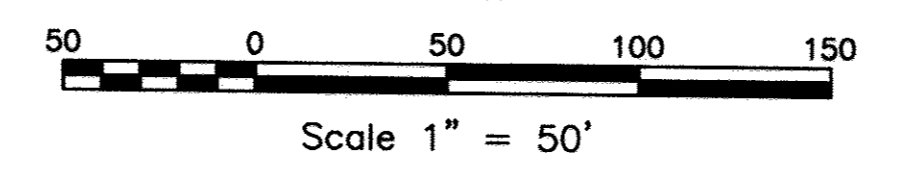
SEE MATCHLINE SHEET 14

SEE MATCHLINE SHEET 12

**LEGEND**

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>--- EX. PROPERTY LINE</li> <li>--- EX. ADJACENT PROPERTY LINE</li> <li>--- EX. RIGHT OF WAY</li> <li>--- EX. EASEMENT</li> <li>--- EX. ZONING LINE</li> <li>--- EX. BUILDING</li> <li>--- EX. CONCRETE</li> <li>--- EX. PAVEMENT</li> <li>--- EX. ROAD CENTERLINE</li> <li>--- EX. FENCE</li> <li>--- EX. OVERHEAD LINE</li> <li>--- EX. WATER LINE</li> <li>--- EX. SEWER LINE</li> <li>--- EX. STREAM</li> <li>--- EX. GUARD RAIL</li> <li>--- EX. ELECTRIC CONDUIT</li> <li>--- EX. LIGHT POLES</li> <li>--- EX. GAS LINE</li> <li>--- EX. STORM DRAIN</li> <li>--- EX. CONDUIT</li> <li>--- EX. FIBER OPTIC</li> <li>--- EX. TV LINE</li> <li>--- EX. ELECTRIC MANHOLE</li> <li>--- EX. TELEPHONE MANHOLE</li> <li>--- EX. BORING LOCATION</li> <li>--- EX. NON TIDAL WETLANDS</li> <li>--- EX. NON TIDAL WETLANDS</li> <li>--- EX. 25' WETLAND BUFFER</li> <li>--- EX. FLOODPLAIN</li> <li>--- EX. WATERS OF THE US</li> <li>--- EX. STREAM BUFFER</li> <li>--- EX. SPECIMEN TREE</li> </ul> | <ul style="list-style-type: none"> <li>--- PR. LOT LINE</li> <li>--- PR. CURB AND CUTTER</li> <li>--- PR. SIDEWALK</li> <li>--- PR. RETAINING WALL</li> <li>--- PR. 8" SEWER LINE</li> <li>--- PR. 8" WATER LINE</li> <li>--- PR. WATER HOUSE CONNECTION</li> <li>--- PR. SEWER HOUSE CONNECTION</li> <li>--- PR. LIMIT OF DISTURBANCE</li> <li>--- PR. SILT FENCE</li> <li>--- PR. SUPER SILT FENCE</li> <li>--- PR. EARTH DIKE A</li> <li>--- PR. TEMPORARY SWALE</li> <li>--- PR. 1' CONTOUR</li> <li>--- PR. 2' CONTOUR</li> <li>--- PR. 10' CONTOUR</li> <li>--- PR. TEMPORARY STONE OUTLET STRUCTURE</li> <li>--- PR. TEMPORARY GABION OUTLET STRUCTURE</li> </ul> |
|--|--|

**EROSION AND SEDIMENT CONTROL PLAN PHASE 2**



**ENGINEER'S CERTIFICATE**

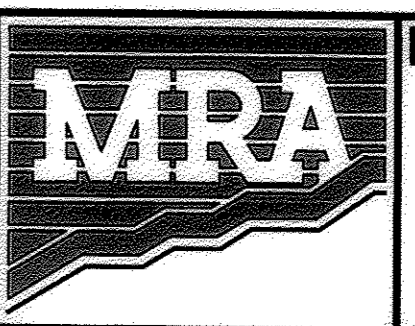
"I HEREBY CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT."

*Thomas C. Neugebauer, P.E.* 12-12-17  
 SIGNATURE OF ENGINEER [PRINT NAME BELOW SIGNATURE] DATE  
 DEVELOPER'S CERTIFICATE

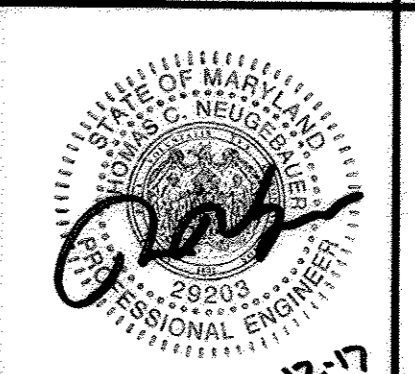
"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT THE DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM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

*Richard E. Hayward* 1/3/18  
 SIGNATURE OF DEVELOPER [PRINT NAME BELOW SIGNATURE] DATE

**OWNER / APPLICANT / DEVELOPER:**  
 HORSE FARM, LLC  
 ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
 COLUMBIA, MD 21045  
 CONTACT: RICHARD HAYWARD  
 PHONE: 410-997-7222



**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 I**  
**HORSE FARM PROPERTY**  
 8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
**EROSION AND SEDIMENT CONTROL PLAN - PHASE II**  
 TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-8  
 1ST ELECTION DISTRICT  
 HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.: 15368 x 02
		SCALE: 1" = 50'
		DATE: 9/13/2017
		DRAWN BY: ATS
		DESIGN BY: ATS
		REVIEW BY: TON
		EXPIRATION DATE: 06/16/2019
		SHEET: 13 OF 44

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

*John P. Roberts* 1/10/18  
 HOWARD SOIL CONSERVATION DISTRICT DATE

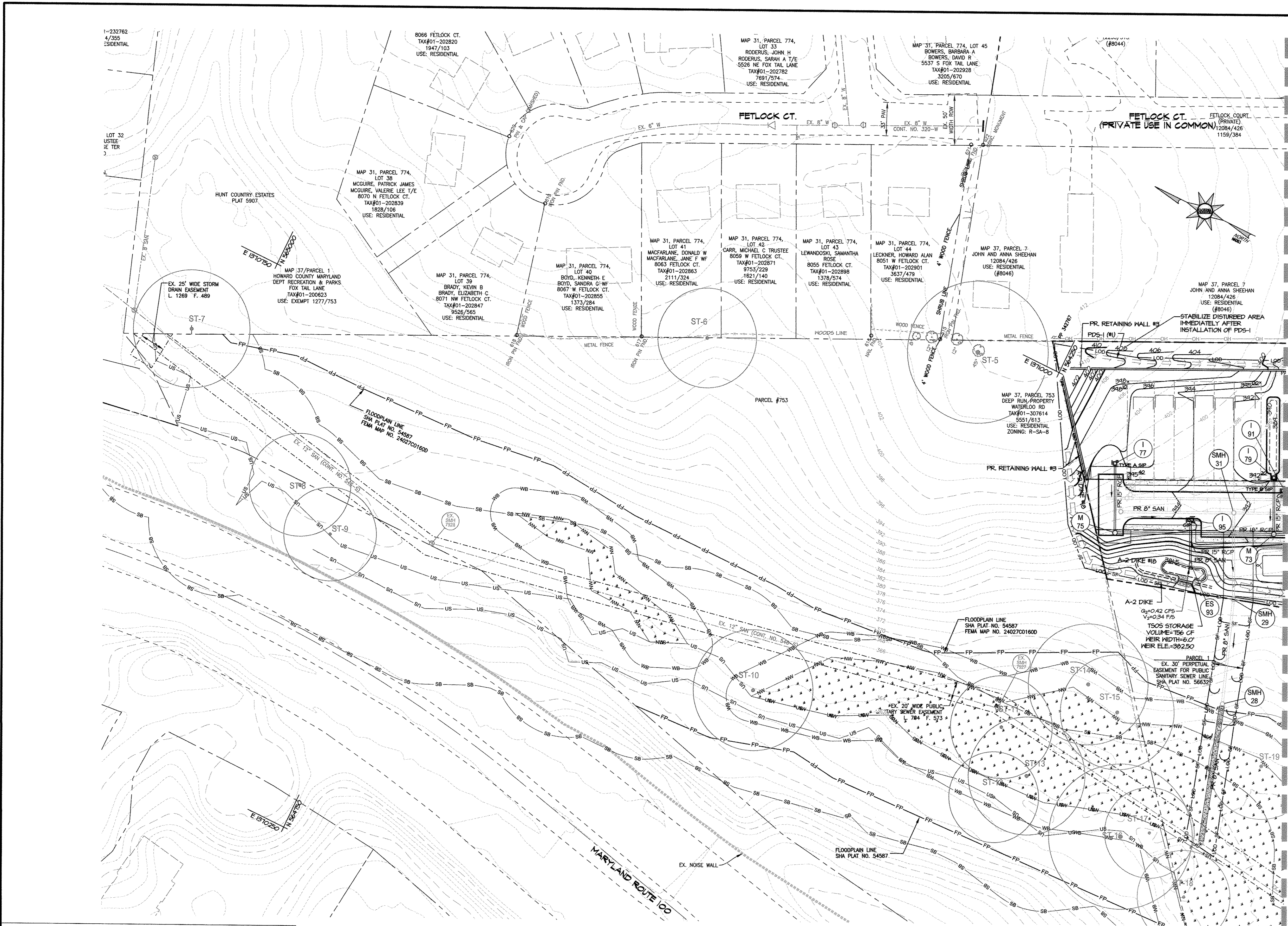
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Melvin* 1/23/2018  
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Chad Edmister* 1-30-18  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Donna Sawyer for US* 2/16/18  
 CHIEF, LAND DEVELOPMENT DIVISION DATE

P:\PROJECTS\TROTTERS KNOLL\PLANS\USDC\1\107\PLAN SETS\FINAL\ROADS AND SD\15368-FIN-13-14-ESC-PH2.dwg, 1/3/2018 4:22:19 PM, Collier, Inc. Copyright 2018 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
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- PR. WATER HOUSE CONNECTION
- PR. SEWER HOUSE CONNECTION

SEE MATCHLINE SHEET 13

**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."

*Thomas C. Neumann, P.E.* 12-12-17  
 SIGNATURE OF ENGINEER [PRINT NAME BELOW SIGNATURE] DATE  
**Thomas C. Neumann, P.E.**

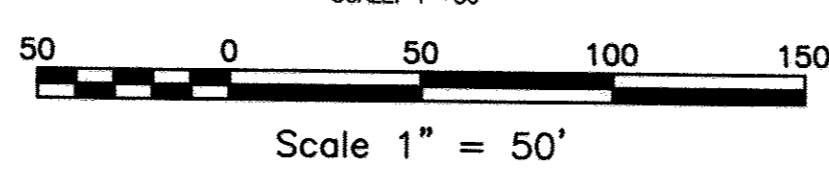
**DEVELOPER'S CERTIFICATE**

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Horse Farm, LLC  
 By: *Richard E. Hayward*, Vice President  
 SIGNATURE OF DEVELOPER [PRINT NAME BELOW SIGNATURE] DATE  
**Richard E. Hayward** 12/18

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

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



*John M. Roberts*  
 HOWARD SOIL CONSERVATION DISTRICT  
 DATE: 11/01/18

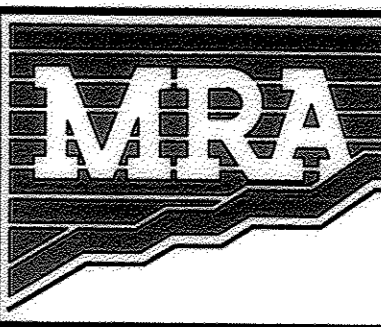
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Melanie*  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE: 1/23/2018

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Chris E. Johnson*  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION NY  
 DATE: 1-30-18

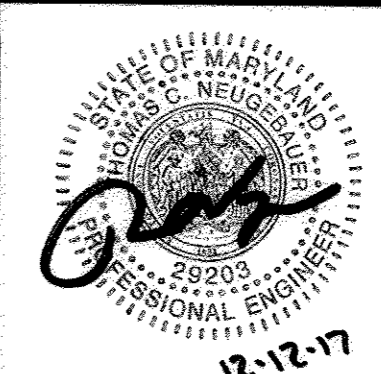
*Eric Mason-Jones for US*  
 CHIEF, LAND DEVELOPMENT DIVISION  
 DATE: 2/16/18

**OWNER / APPLICANT / DEVELOPER:**

HORSE FARM, LLC  
 ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
 COLUMBIA, MD 21045  
 CONTACT: RICHARD HAYWARD  
 PHONE: 410-997-7222



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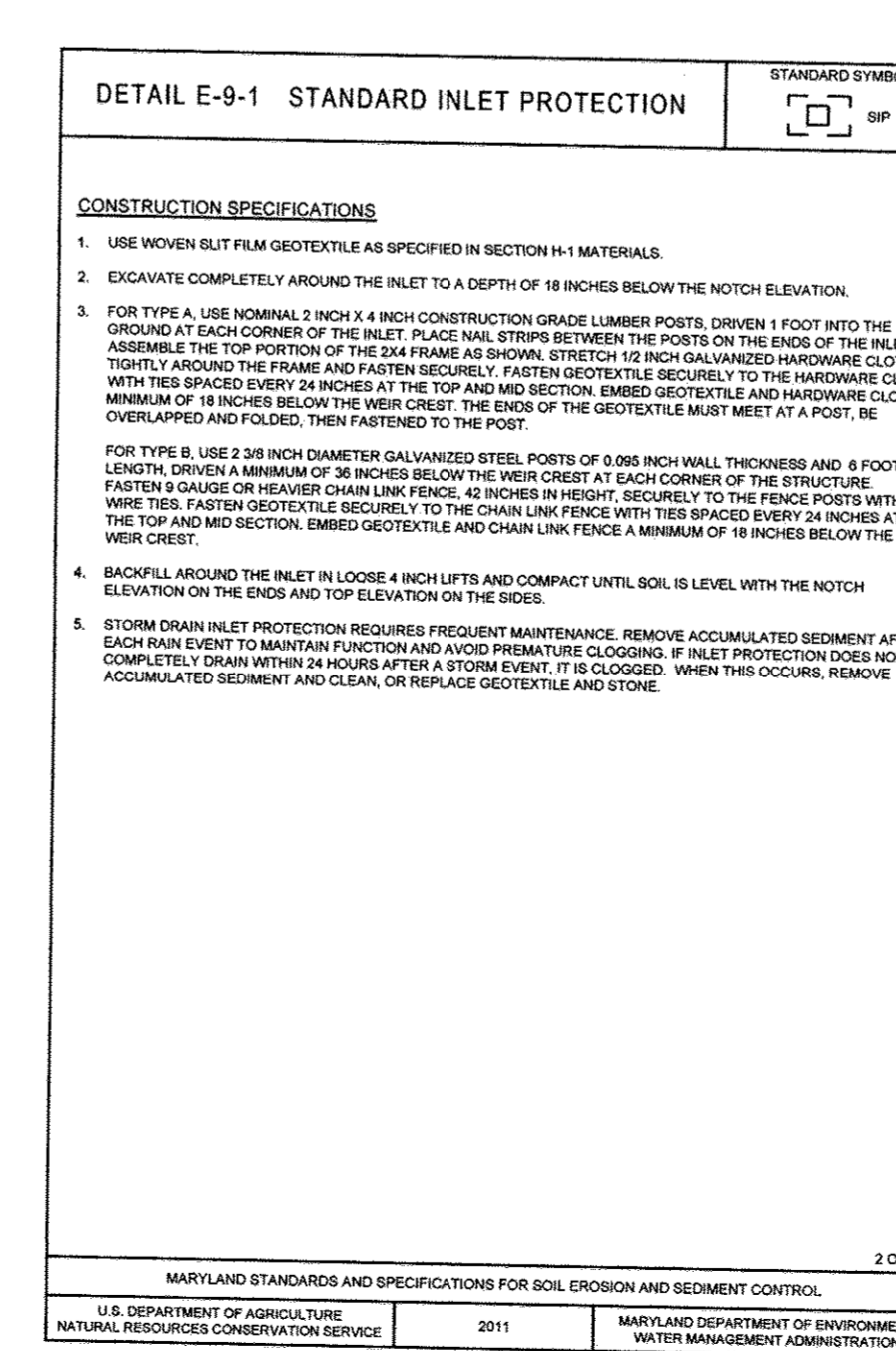
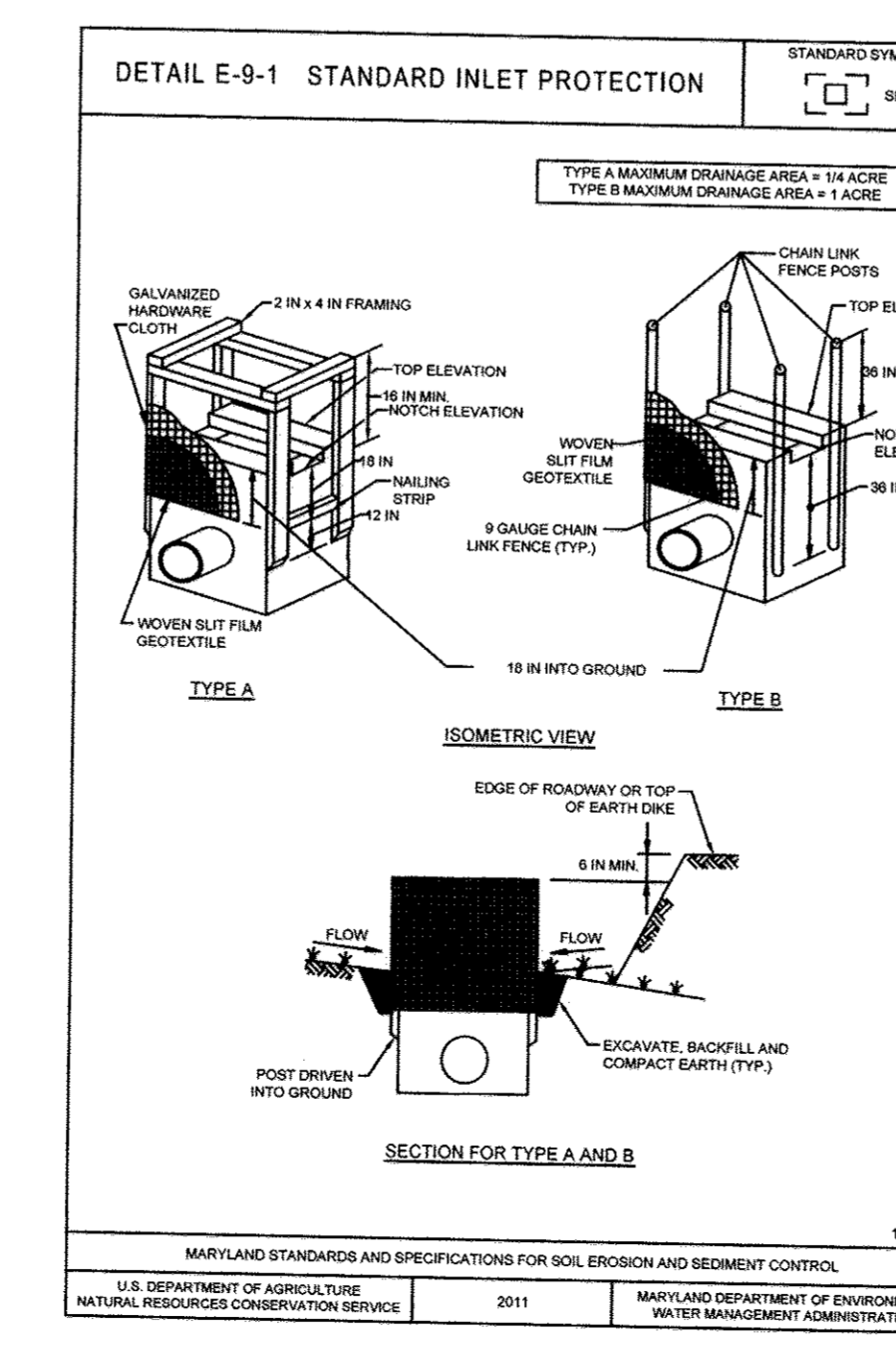
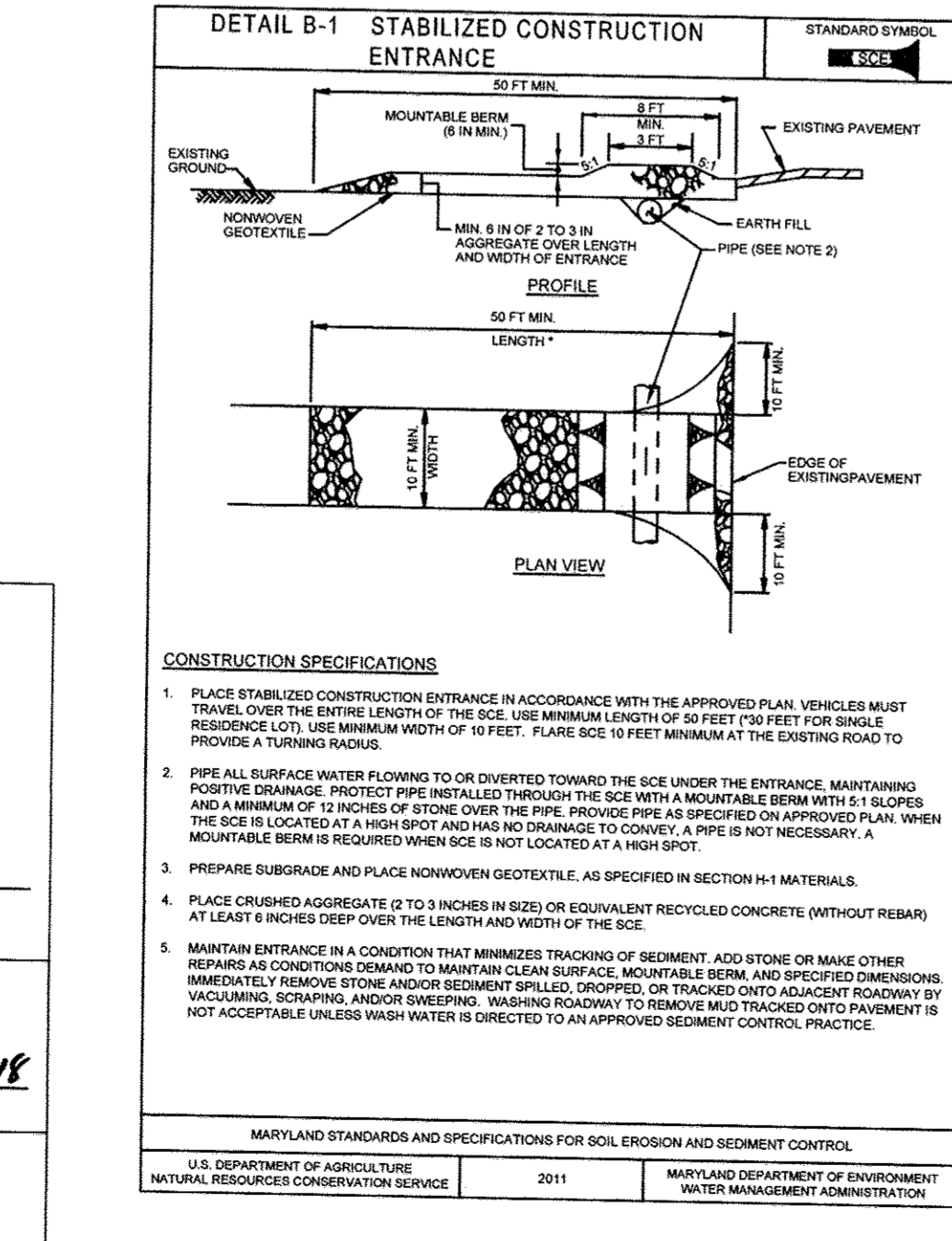
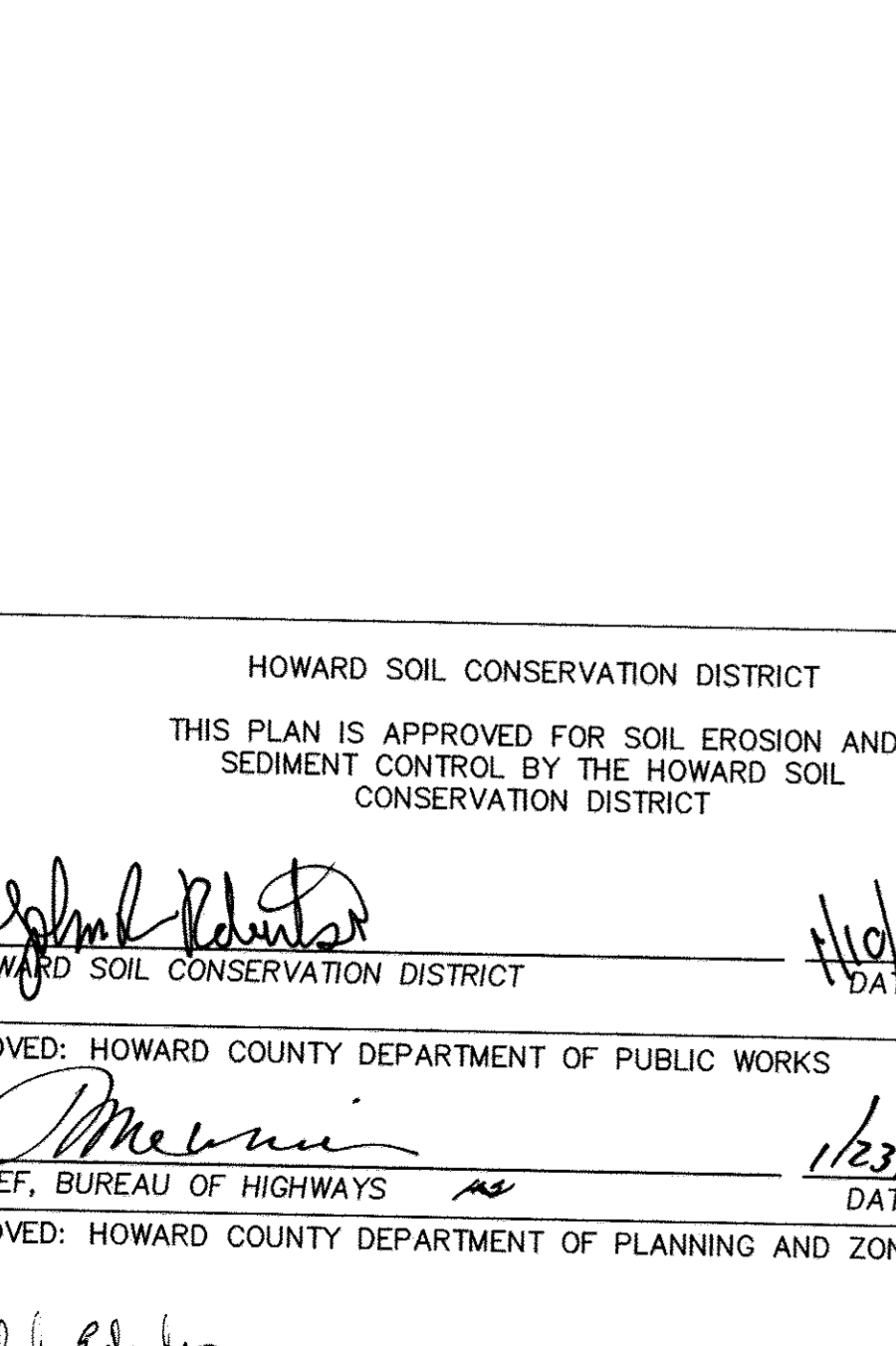
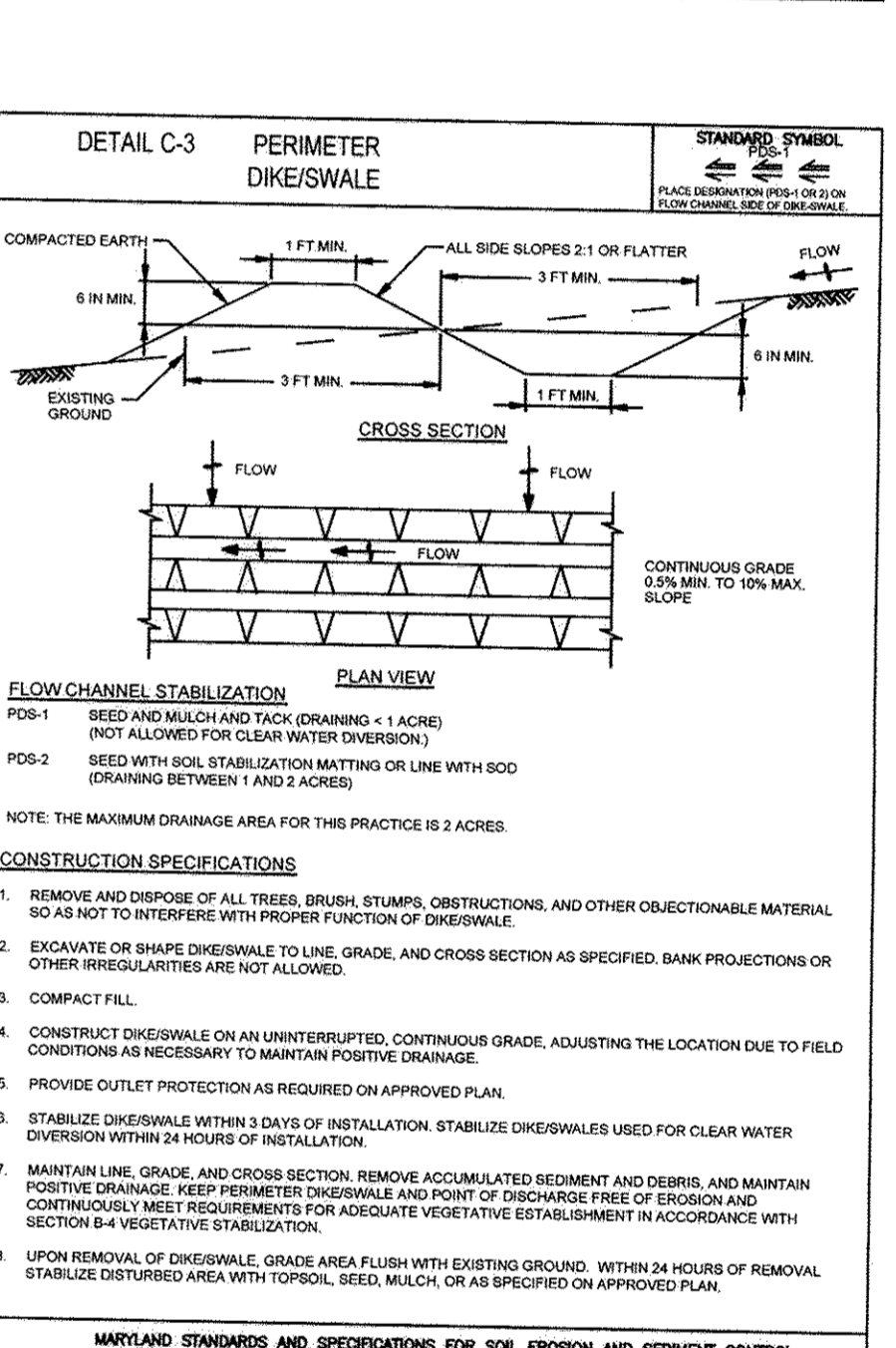
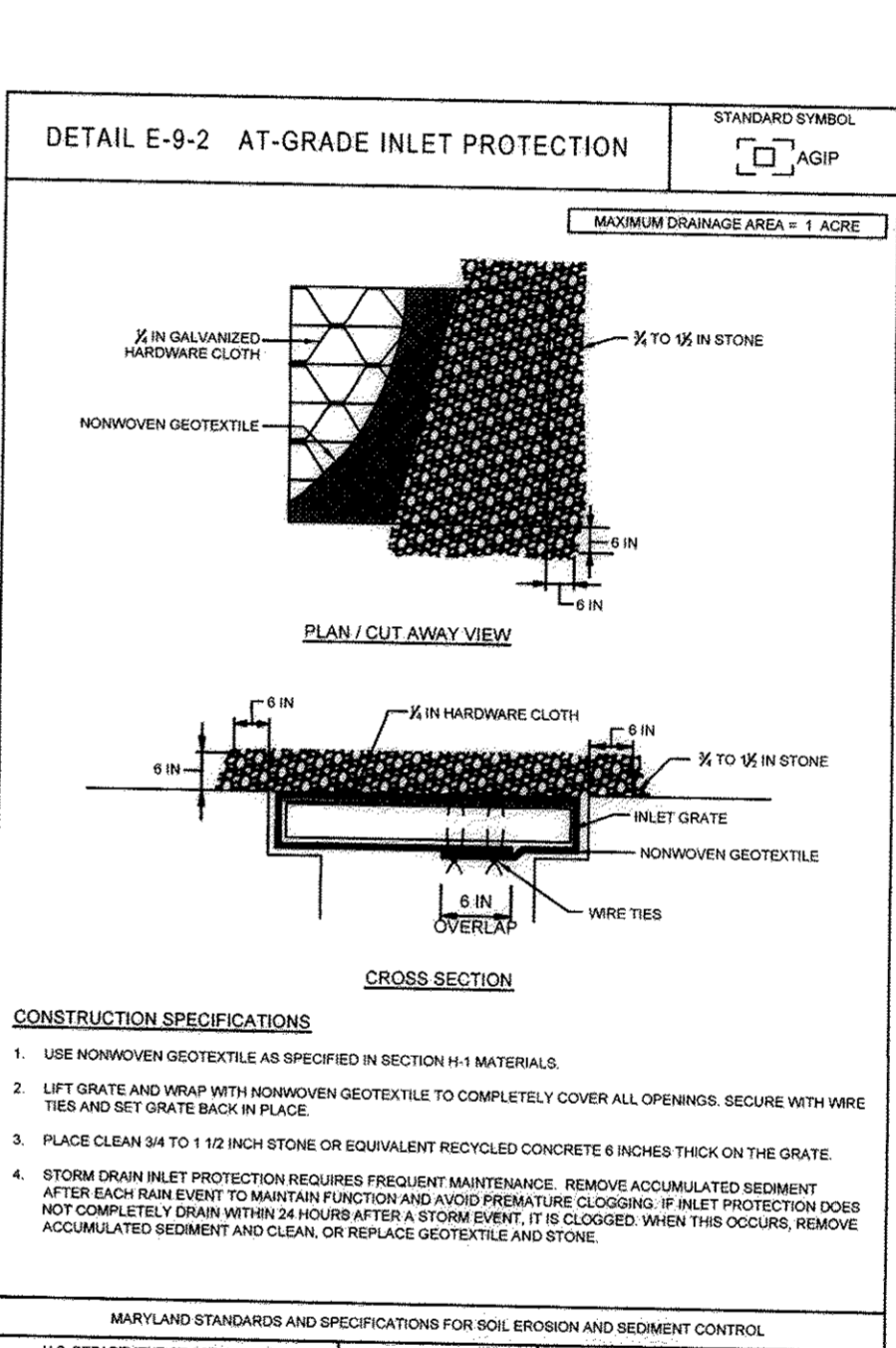
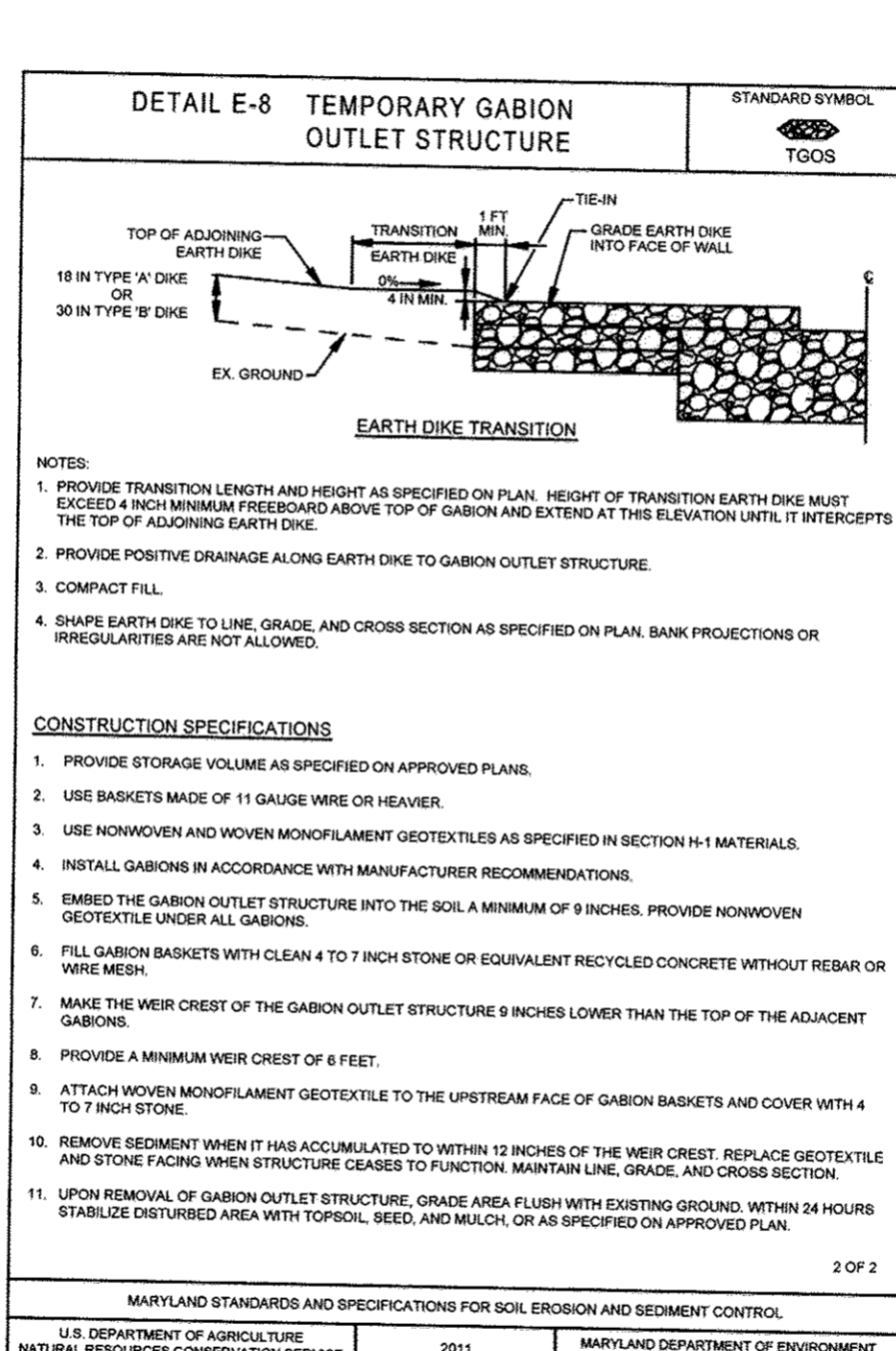
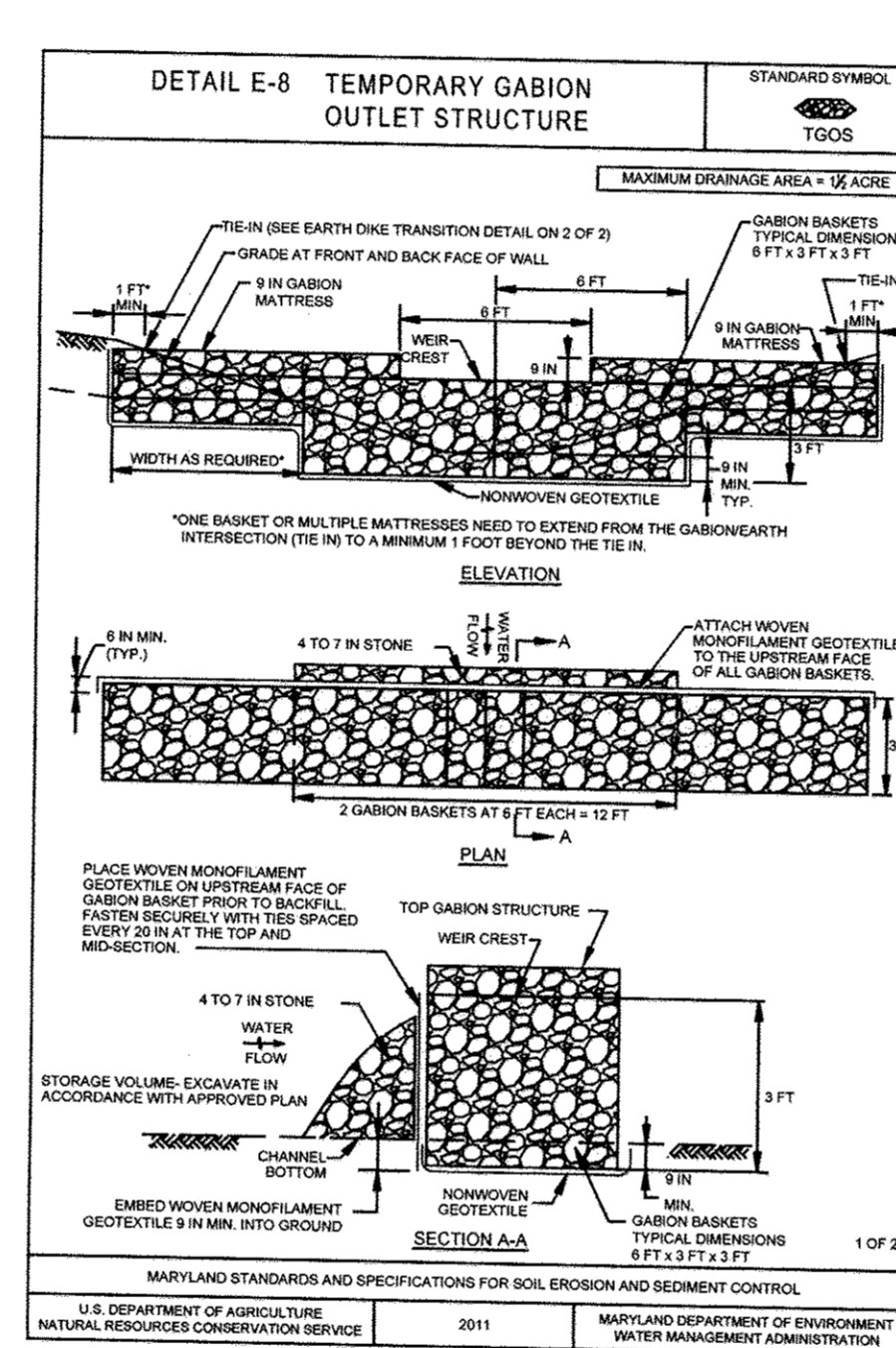
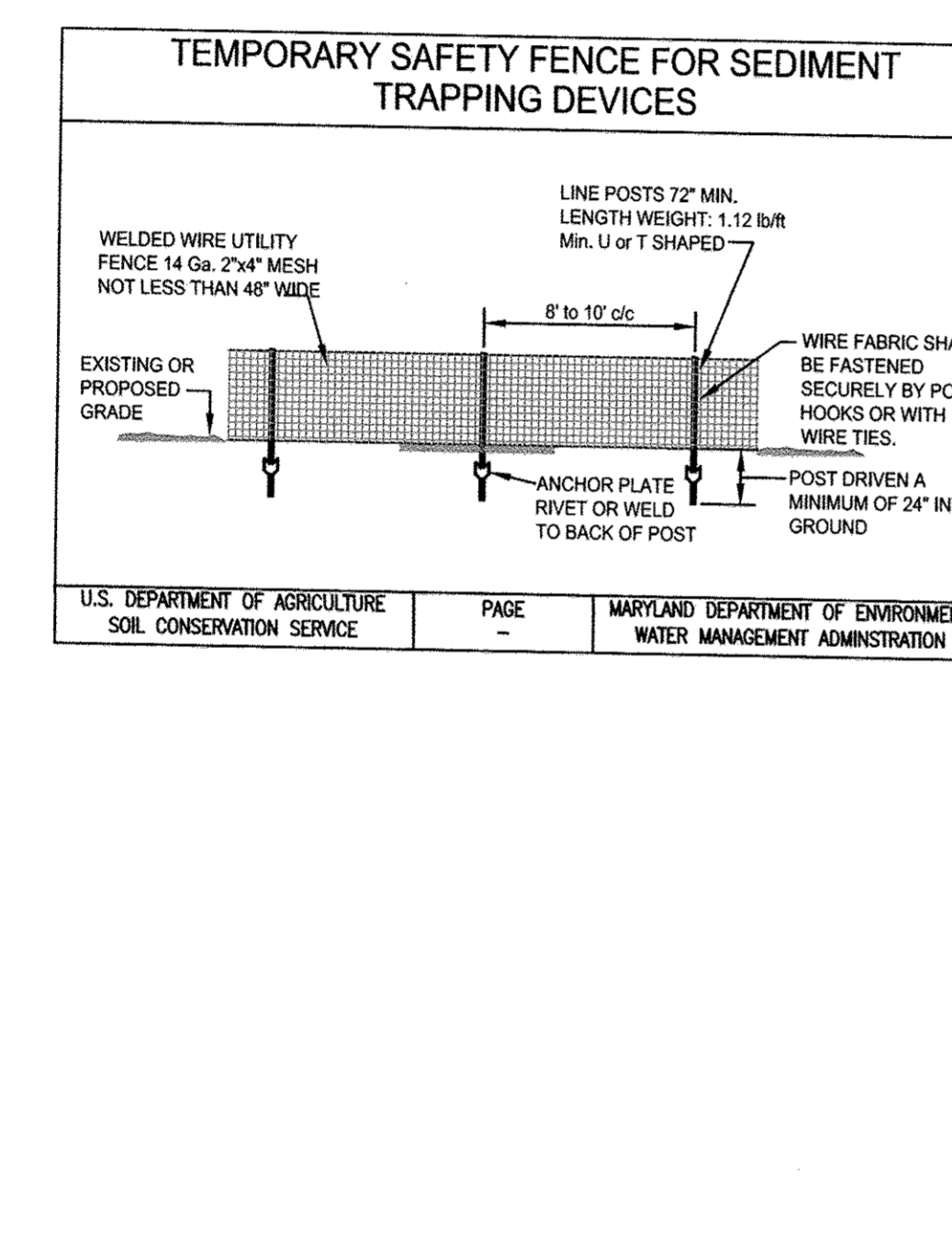
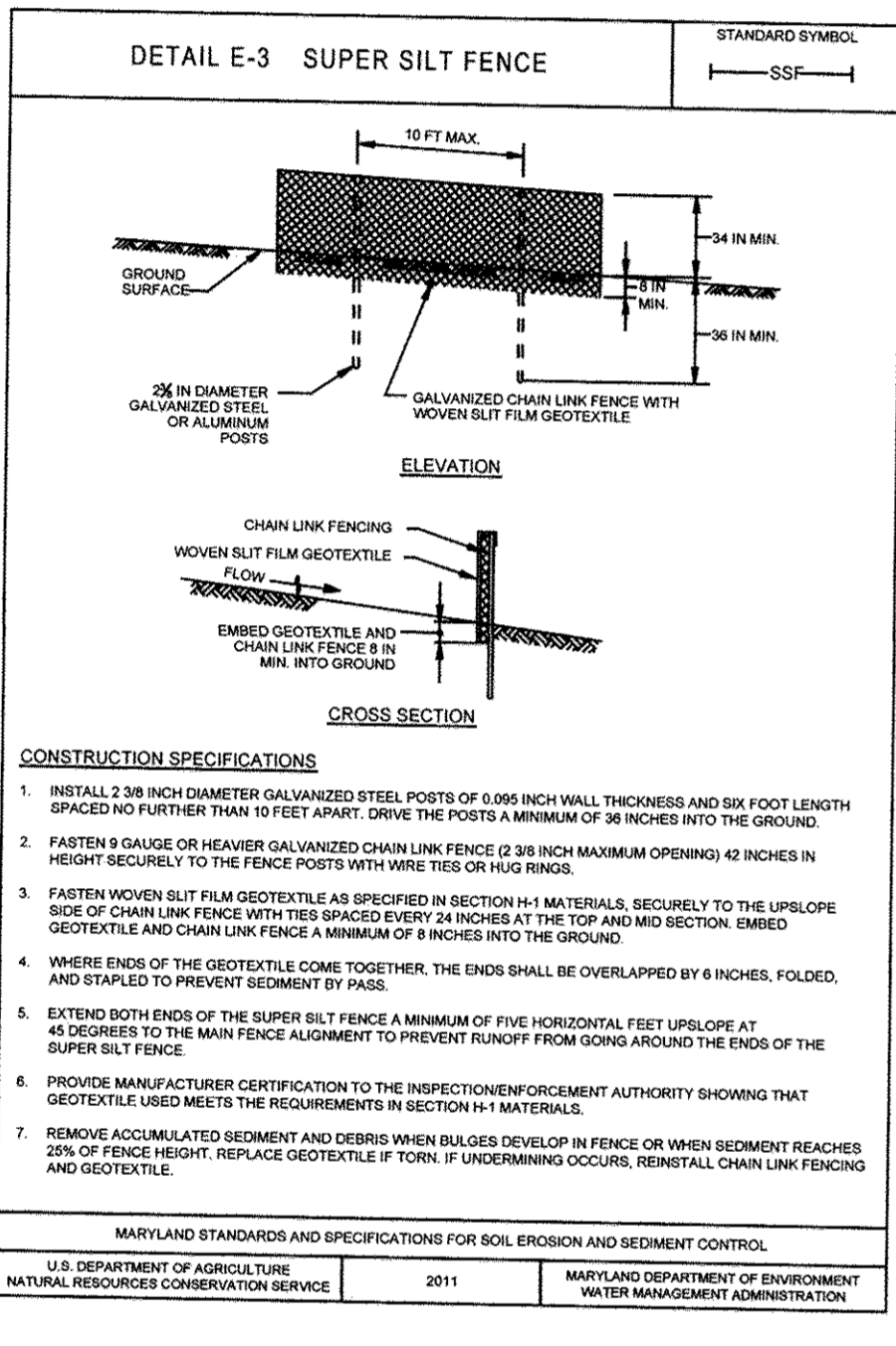
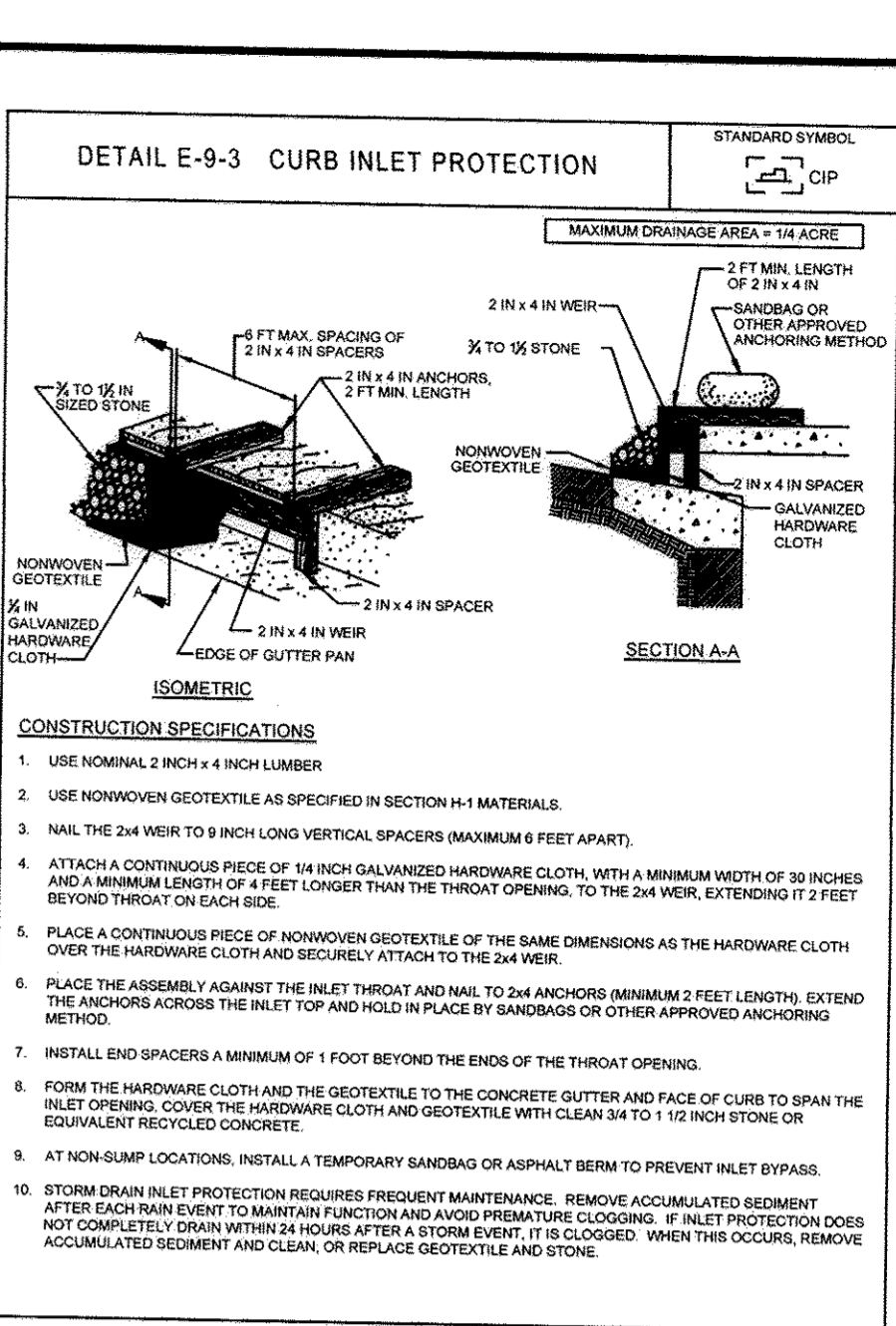
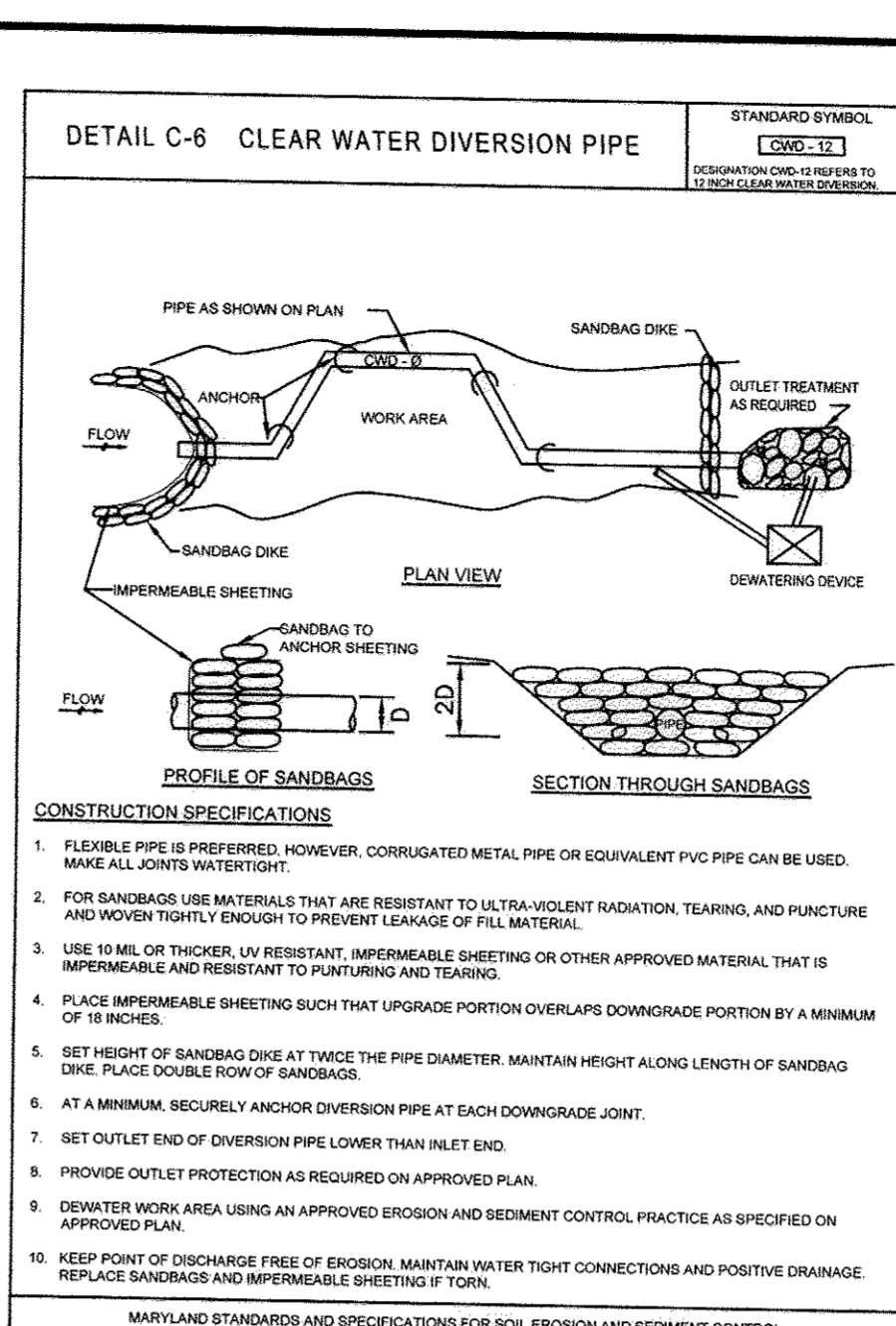
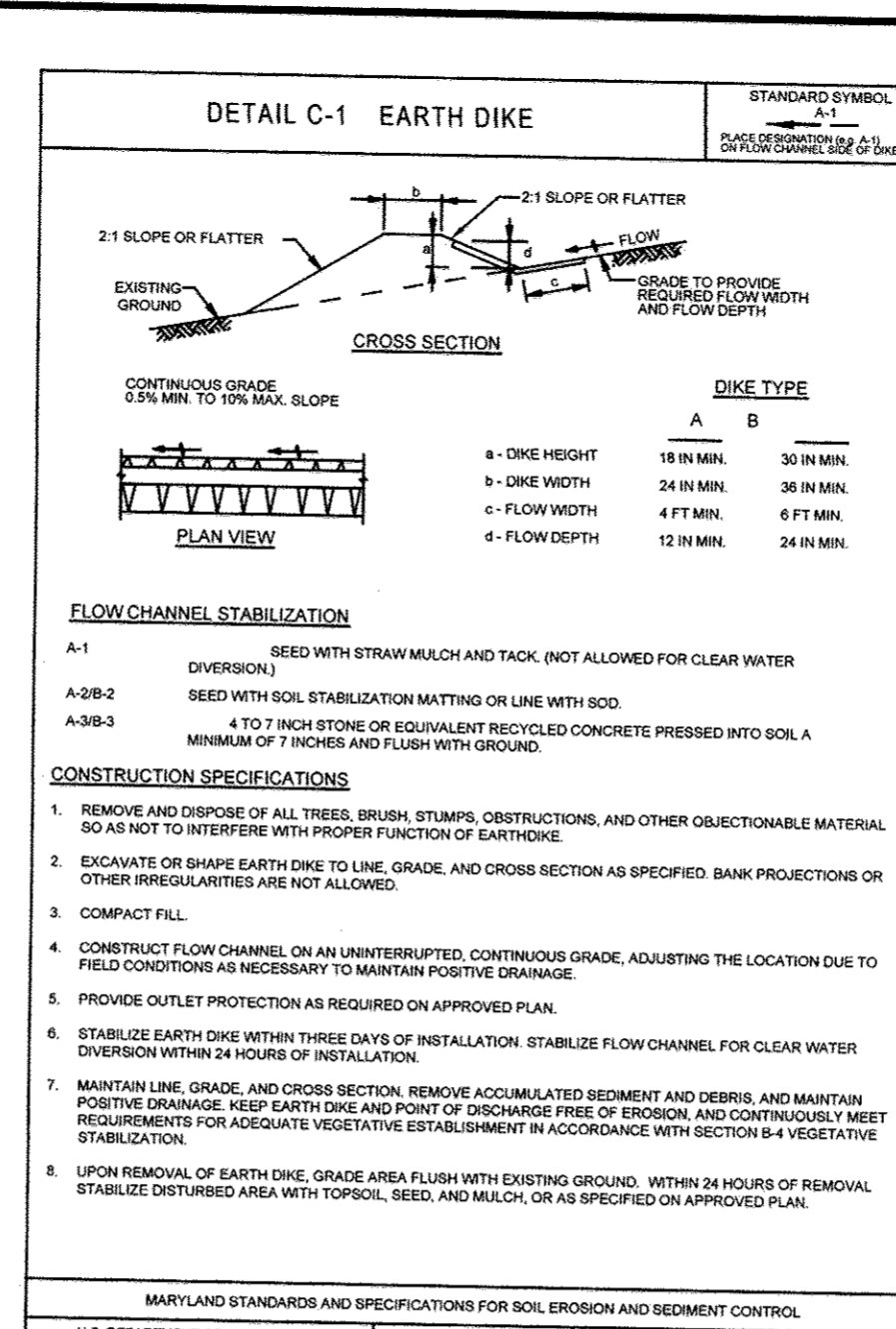
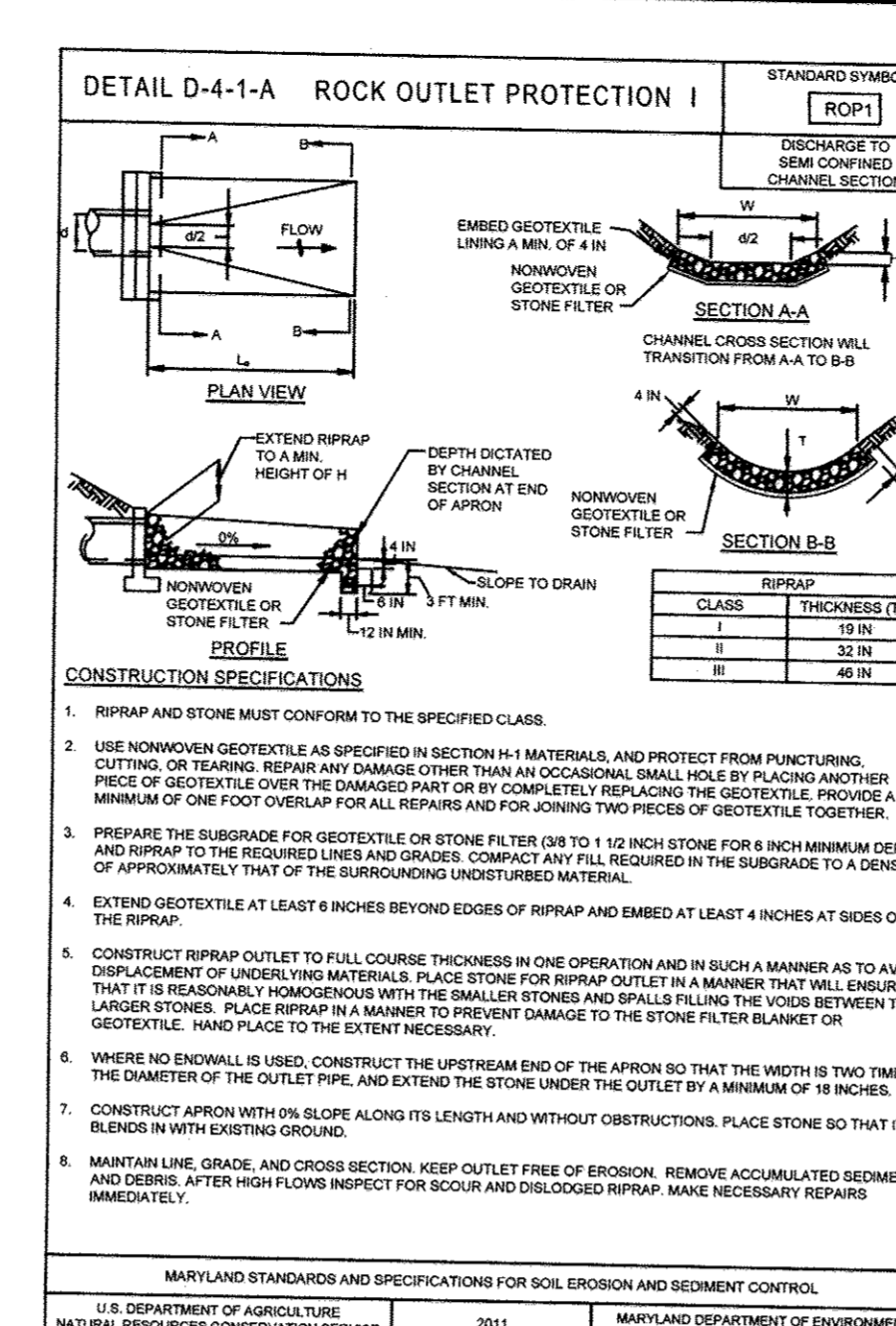
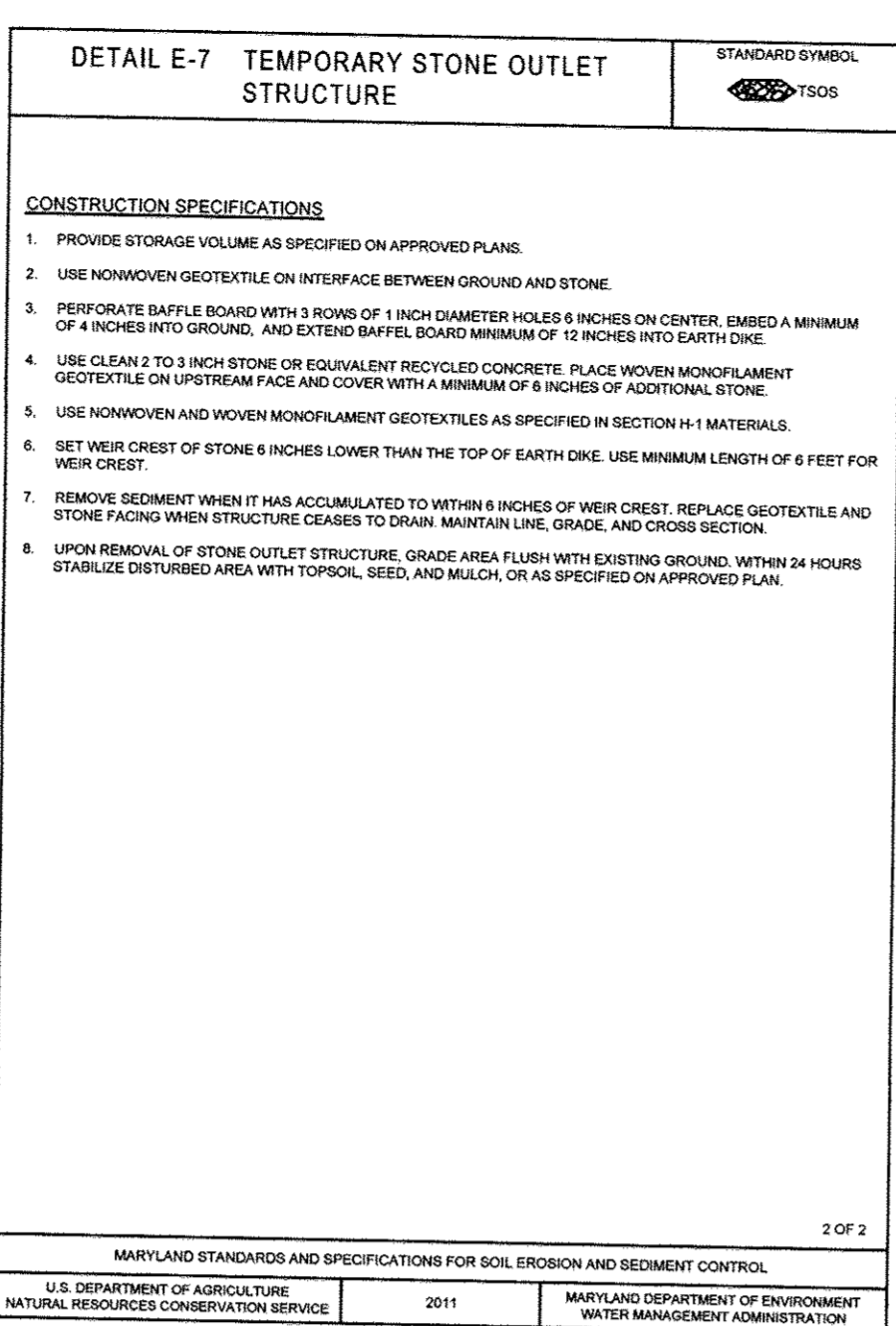
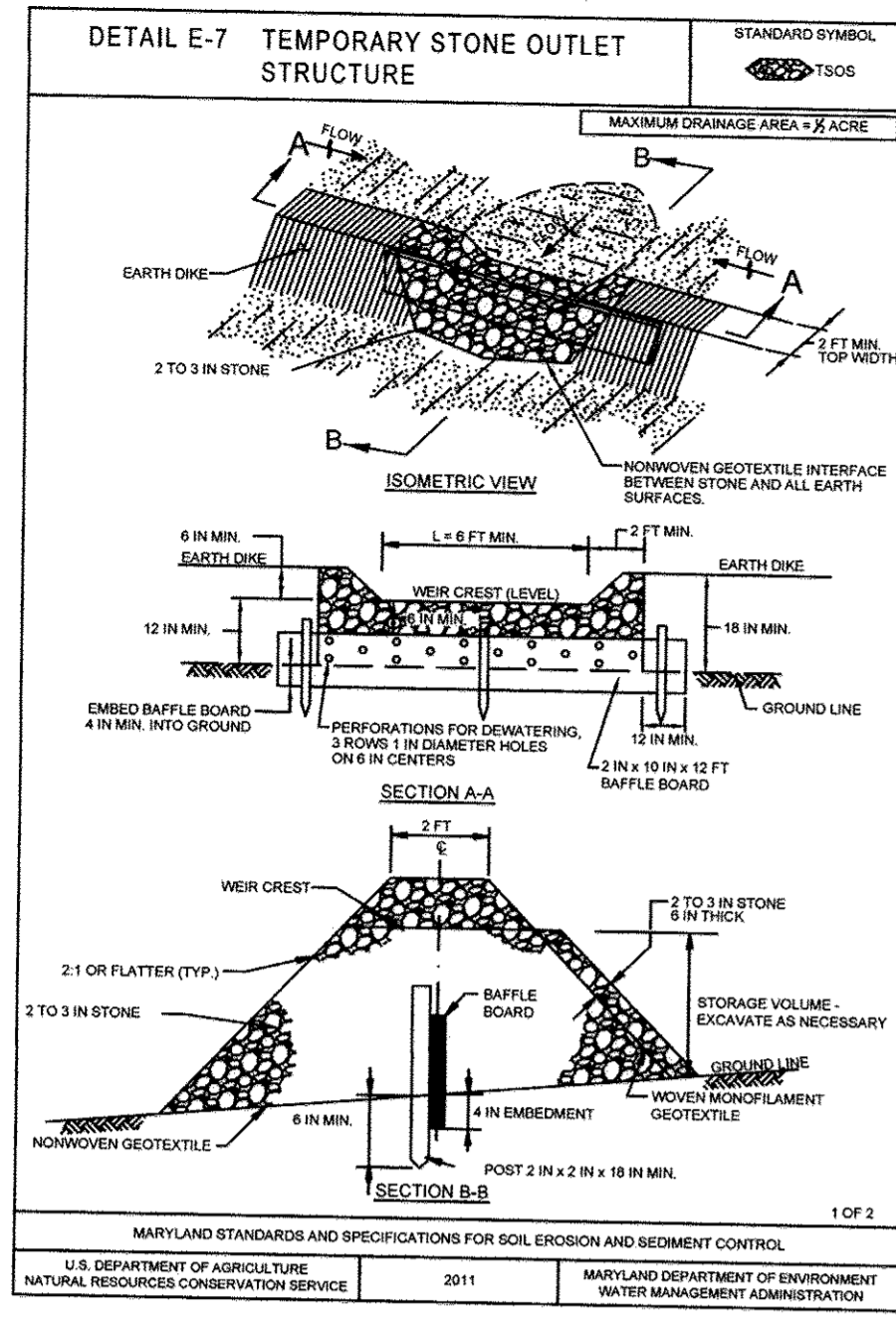


**TROTTER'S KNOLL - SECTION I**  
**HORSE FARM PROPERTY**  
 8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
 EROSION AND SEDIMENT CONTROL PLAN - PHASE II  
 TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-8  
 1ST ELECTION DISTRICT  
 HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:
		15368 x 02
		SCALE: 1" = 50'
		DATE: 9/13/2017
		DRAWN BY: ATS
		DESIGN BY: ATS
		REVIEW BY: TCN
		SHEET: 14 OF 44

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. 29203, EXPIRATION DATE: 06/16/2019.





**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."

*Thomas C. Neuberger, P.E.* 12-12-17  
 SIGNATURE OF ENGINEER [PRINT NAME BELOW SIGNATURE] DATE

**DEVELOPER'S CERTIFICATE**

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR 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."

*Horse Farm, LLC*  
 By: *Richard E. Hayward, Vice President*  
*Richard E. Hayward* 1/3/18  
 SIGNATURE OF DEVELOPER [PRINT NAME BELOW SIGNATURE] DATE

HOWARD SOIL CONSERVATION DISTRICT

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

*John M. ...* 1/10/16  
 HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

*Melvin ...* 1/23/2018  
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Phil ...* 1-30-18  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION NY DATE

*Gill ...* 2/4/18  
 CHIEF, LAND DEVELOPMENT DIVISION DATE

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

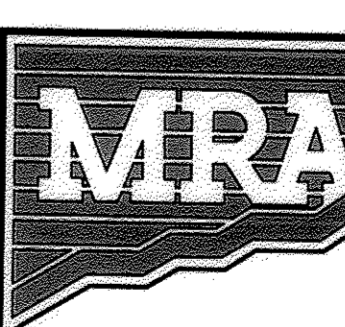
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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

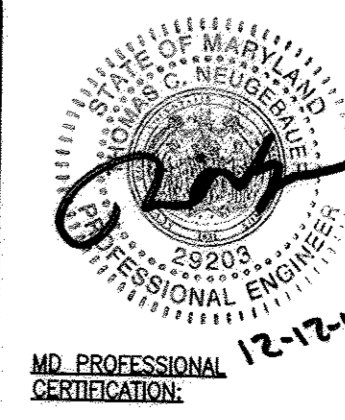
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U.S. DEPARTMENT OF AGRICULTURE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT NATURAL RESOURCES CONSERVATION SERVICE WATER MANAGEMENT ADMINISTRATION



**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 I**  
 HORSE FARM PROPERTY  
 8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
 EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-8  
 1ST ELECTION DISTRICT  
 HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:
		15368 x 02
		SCALE: NO SCALE
		DATE: 9/13/2017
		DRAWN BY: ATS
		DESIGN BY: ATS
		REVIEW BY: TON
		CHECKED BY: TON

MD PROFESSIONAL CERTIFICATION: 12-17-17

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. 29203, EXPIRATION DATE: 06/16/2019.

OWNER / APPLICANT / DEVELOPER:  
 HORSE FARM, LLC  
 ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
 COLUMBIA, MD 21045  
 CONTACT: RICHARD HAYWARD  
 PHONE: 410-997-7222



**HOWARD SOIL CONSERVATION DISTRICT (HSCD)  
STANDARD SEDIMENT CONTROL NOTES**

- A pre-construction meeting must occur with the Howard County Department of Public Works, Construction Inspection Division (CID), 410-313-1855 after the future LOD and protected areas are marked clearly in the field. A minimum of 48 hour notice to CID must be given at the following stages:
  - 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.

Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made. Other related state and federal permits shall be referenced, to ensure coordination and to avoid conflicts with this plan.
- 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.
- 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 3 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.
- 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-4-5). 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 enforced in areas with >15% of cut and/or fill. Stockpiles (Sec. B-4-8) in excess of 20 ft. must be benched with stable outlet. All concentrated flow, steep slope, and highly erodible areas shall receive soil stabilization matting (Sec. B-4-6).
- 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.
- Site Analysis:
 

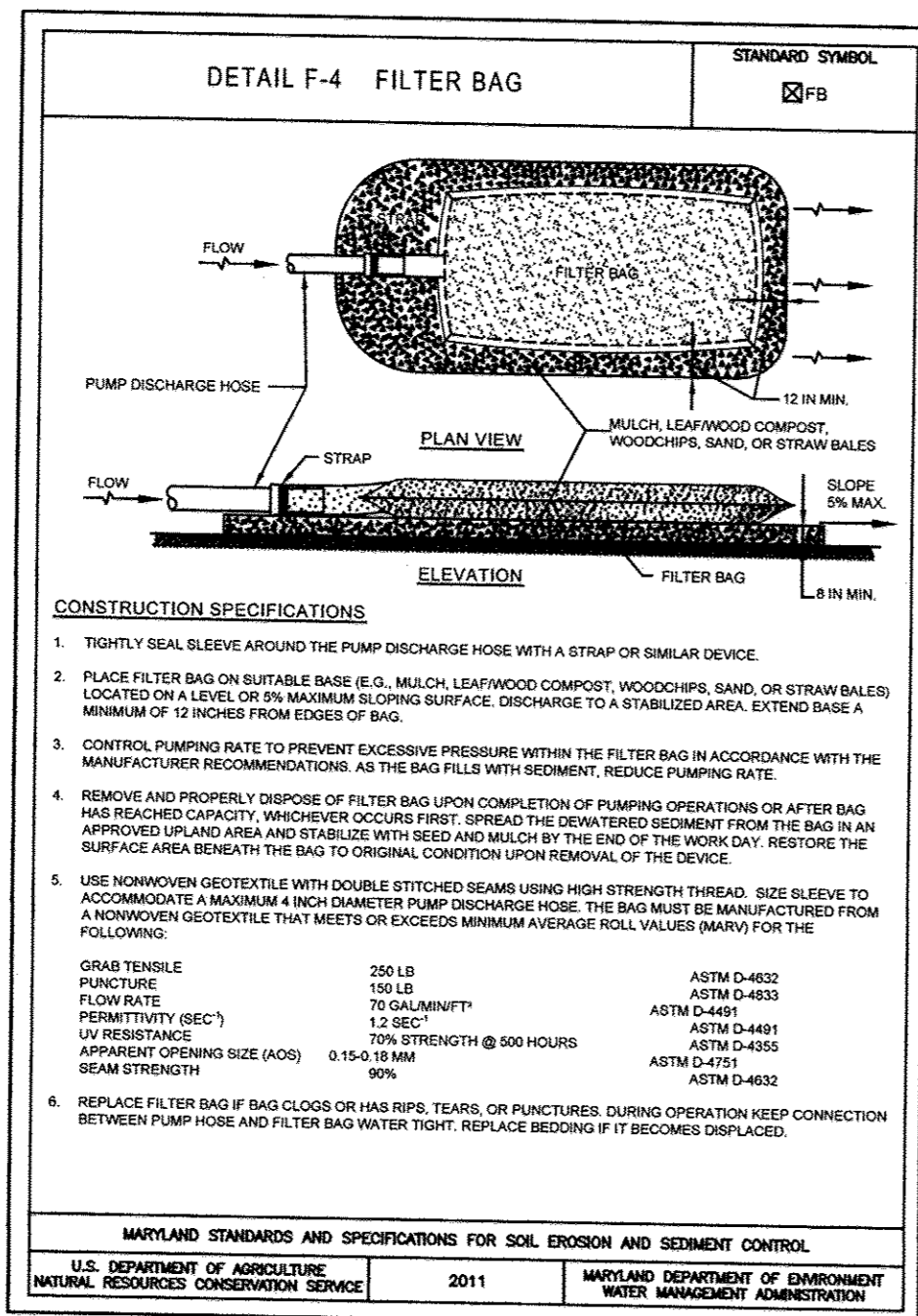
Total Area of Site:	11.6	Acres
Area Disturbed:	12.3	Acres
Area to be roofed or paved:	4.7	Acres
Area to be vegetatively stabilized:	7	Acres
Total Cut:	28,786	Cu. Yds.
Total Fill:	31,885	Cu. Yds.
Off-site waste/borrow area location:	TO BE DETERMINED	
- Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
- Additional sediment control must be provided, if deemed necessary by the CID. The site and all controls shall be inspected by the contractor weekly; and the next day after each rain event. A written report by the contractor, made available upon request, is part of every inspection and should include:
  - Inspection date
  - Inspection type (routine, pre-storm event, during rain event)
  - Name and title of inspector
  - Weather information (current conditions as well as time and amount of last recorded precipitation)
  - Brief description of project's status (e.g., percent complete) and/or current activities
  - Evidence of sediment discharges
  - Identification of plan deficiencies
  - Identification of sediment controls that require maintenance
  - Identification of missing or improperly installed sediment controls
  - Compliance status regarding the sequence of construction and stabilization requirements
  - Photographs
  - Monitoring/sampling
    - Maintenance and/or corrective action performed
  - Other inspection items as required by the General Permit for Stormwater Associated with Construction Activities (NPDES, MDE).
- 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.
- 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.
- 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 a subsequent grading unit when at least 50 percent of the disturbed area in the preceding grading unit has been stabilized and approved by the CID. Unless otherwise specified and approved by the HSCD, no more than 30 acres cumulatively may be disturbed at a given time.
- Wash water from any equipment, vehicles, wheels, pavement, and other sources must be treated in a sediment basin or other approved washout structure.
- Topsoil shall be stockpiled and preserved on-site for redistribution onto final grade.
- All Silt Fence and Super Silt Fence shall be placed on-the-contour, and be imbricated at 25' minimum intervals, with lower ends curled uphill by 2' in elevation.
- Stream channels must not be disturbed during the following restricted time periods (inclusive):
  - Use I and II March 1 - June 15
  - Use III and IIII October 1 - April 30
  - Use IV March 1 - May 31
- 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 CONTROL 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."

*Thomas C. Neugebauer, P.E.* 12-12-17  
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) DATE  
THOMAS C. NEUGEBAUER, P.E.

**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."

*Richard E. Hayward* 1/2/18  
By: *Richard E. Hayward, Vice President*  
SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) DATE

**HOWARD SOIL CONSERVATION DISTRICT**

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

*John P. Holts* 1/23/18  
HOWARD SOIL CONSERVATION DISTRICT DATE

**APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS**

*Michael Mc* 1/23/2018  
CHIEF, BUREAU OF HIGHWAYS DATE

**APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING**

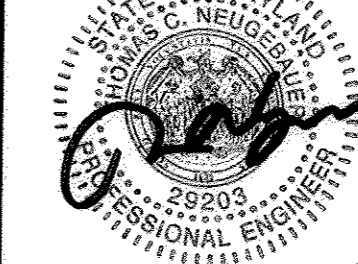
*Phil Edmondson* 1-30-18  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE  
*Jim Mann-Jones for US* 2/6/18  
CHIEF, LAND DEVELOPMENT DIVISION DATE



**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

MRA.GT.COM



**TROTTER'S KNOLL - SECTION I**

**HORSE FARM PROPERTY**  
8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-B  
1ST ELECTION DISTRICT  
HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:
		15368 x 02
		SCALE: NO SCALE
		DATE: 9/13/2017
		DRAWN BY: ATS
		DESIGN BY: ATS
		REVIEW BY: TCN
		SHEET: 16 OF 44

**OWNER / APPLICANT / DEVELOPER:**

HORSE FARM, LLC  
ADDRESS: 9200 RUNSEY ROAD, SUITE 200  
COLUMBIA, MD 21045  
CONTACT: RICHARD HAYWARD  
PHONE: 410-997-7222

MD PROFESSIONAL CERTIFICATION: 12-12-17  
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. 29203, EXPIRATION DATE: 06/16/2019.



B-1.5 STANDARDS AND SPECIFICATIONS

FOR

PERMANENT STABILIZATION

Definition

To stabilize disturbed soils with permanent vegetation.

Purpose

To use long-lived perennial grasses and legumes to establish permanent ground cover on a disturbed soil.

Conditions Where Practice Applies

Exposed soils where ground cover is needed for 6 months or more.

Criteria

- A. Seed Mixtures
1. General Use
a. Select one or more of the species or mixtures listed in Table B.1.3 for the appropriate Plant Hardiness Zone...

B.21

- rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivar/Certified Kentucky Bluegrass Seeding Rate: 2 pounds minimum per 1000 square feet...

B.22

- Notes: Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Manual #77, "Turfgrass Cultivar Recommendations for Maryland"...

B.23

Table with 4 columns: No., Species, Application Rate (lb/acre), Seeding Depth (in), Fertilizer Rate (lb/1000 sq ft), and Lime Rate (lb/1000 sq ft). Rows include T. FESC and K. BLUE.

B.24

- Sod: To provide quick cover on disturbed areas (2:1 grade or flatter).
1. General Specifications
a. Class of turfgrass and must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector...

B.25

Howard Soil Conservation District approval section with signatures and dates for Public Works, Planning and Zoning, and Engineering Division.

B-4 STANDARDS AND SPECIFICATIONS

FOR

VEGETATIVE STABILIZATION

Definition

Using vegetation as cover to protect exposed soil from erosion.

Purpose

To promote the establishment of vegetation on exposed soil.

Conditions Where Practice Applies

On all disturbed areas not stabilized by other methods. This specification is divided into incremental stabilization, soil preparation, soil amendments and topsoiling; seeding and mulching; temporary stabilization; and permanent stabilization.

Effects on Water Quality and Quantity

Stabilization practices are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, thereby reducing sediment loads and runoff to downstream areas.

Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Over time, vegetation will increase organic matter content and improve the water holding capacity of the soil and subsequent plant growth.

Vegetation will help reduce the movement of sediment, nutrients, and other chemicals carried by runoff to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present within the root zone.

Sediment control practices must remain in place during grading, seedbed preparation, seeding, mulching, and vegetative establishment.

Adequate Vegetative Establishment

Inspect seeded areas for vegetative establishment and make necessary repairs, replacements, and reseedings within the planting season.

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

B-4.2 STANDARDS AND SPECIFICATIONS

FOR

SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

Definition

The process of preparing the soils to maintain adequate vegetative stabilization.

Purpose

To provide a suitable soil medium for vegetative growth.

Conditions Where Practice Applies

Where vegetative stabilization is to be established.

Criteria

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

- B. Mulching
1. Mulch Materials (in order of preference)
a. Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably bright in color...

- 2. Topsoiling
1. Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth...

- 3. Anchoring
1. Perform mulch anchoring immediately following application of mulch to minimize loss by wind or water...

- 4. Erosion and sediment control practices must be maintained when applying topsoil.
a. Uniformly distribute topsoil to a 4 to 8 inch layer and lightly compact to a minimum thickness of 4 inches...

- 5. Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that is detrimental to proper grading

and seedbed preparation.

C. Soil Amendments (Fertilizer and Lime Specifications)

- 1. Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory...
2. Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment...

B-4.3 STANDARDS AND SPECIFICATIONS

FOR

SEEDING AND MULCHING

Definition

The application of seed and mulch to establish vegetative cover.

Purpose

To protect disturbed soils from erosion during and at the end of construction.

Conditions Where Practice Applies

To the surface of all perimeter controls, slopes, and any disturbed area not under active grading.

Criteria

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

- 2. Application
a. Dry Seeding: This includes use of conventional drop or broadcast spreaders.
i. Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries.

- b. Drill or Cultivator Seeding: Mechanized seeders that apply and cover seed with soil.
i. Cultivator seeders are required to bury the seed in such a fashion as to provide at least 1/4 inch of soil covering. Seedbed must be firm after planting.

- c. Broadcast Seeding: This includes use of conventional drop or broadcast spreaders.
i. Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or site-specific seeding summaries.

- ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with a weighted roller to provide good soil to soil contact.

- iii. 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.

- iv. 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.

- v. Mix seed and fertilizer on site and seed immediately and without interruption.

- vi. When hydroseeding do not incorporate seed into the soil.

- vii. When hydroseeding do not incorporate seed into the soil.

- viii. When hydroseeding do not incorporate seed into the soil.

- ix. When hydroseeding do not incorporate seed into the soil.

- x. When hydroseeding do not incorporate seed into the soil.

- xi. When hydroseeding do not incorporate seed into the soil.

- xii. When hydroseeding do not incorporate seed into the soil.

- xiii. When hydroseeding do not incorporate seed into the soil.

- xiv. When hydroseeding do not incorporate seed into the soil.

- xv. When hydroseeding do not incorporate seed into the soil.

- xvi. When hydroseeding do not incorporate seed into the soil.

- xvii. When hydroseeding do not incorporate seed into the soil.

- xviii. When hydroseeding do not incorporate seed into the soil.

- xix. When hydroseeding do not incorporate seed into the soil.

SEQUENCE OF CONSTRUCTION

- 1. THE LIMITS OF DISTURBANCE MUST BE FIELD MARKED PRIOR TO GRADING, INSTALLATION OF SEDIMENT CONTROL MEASURES, CONSTRUCTION, OR OTHER LAND DISTURBING ACTIVITIES.
2. CONDUCT A PRE-CONSTRUCTION MEETING. NOTIFY THE DEPARTMENT OF INSPECTIONS AND PERMITS (410-222-7780) AT LEAST 48 HOURS BEFORE COMMENCING WORK...

- PHASE 1 - INITIAL OPERATIONS (SEE SHEETS 10 THRU 12)
1. WITH THE INSPECTOR'S APPROVAL, CLEAR MINIMUM AREA NECESSARY TO INSTALL SEDIMENT CONTROLS AND THE STAGING/LAYDOWN AREAS, MECHANICAL STABILIZATION WILL BE REQUIRED ON THE STAGING/LAYDOWN AREAS AND HEAVY USE AREAS, INCLUDING TRAVEL LANES.

- 2. CLEAR FOR AND INSTALL ALL SUPER SILT FENCE, REINFORCED SILT FENCE, AND TREE PROTECTION FENCE.
3. WITH INSPECTOR'S APPROVAL, CLEAR FOR AND INSTALL CONTRACTOR STAGING AREA, STABILIZED STAGING/LAYDOWN AREA WITH WOOD CHIPS OR GRAVEL.

- 4. INSTALL CULVERT AND FILL OVER CULVERT TO PROPOSED GRADE.
5. INSTALL Dikes AND OUTLET STRUCTURES NORTH OF THE CULVERT.

- 6. UPON COMPLETION OF THE INSTALLATION OF THE SEDIMENT CONTROL DEVICES, BUT BEFORE PROCEEDING WITH OTHER EARTH DISTURBANCE OR GRADING, A PHASE 1 INSPECTION SHALL BE PROVIDED BY THE ENGINEER, AND SEDIMENT CONTROL DEVICES SHALL BE APPROVED BY THE HOWARD COUNTY INSPECTOR.

- PHASE 2 - MASS GRADING & UTILITIES (SEE SHEETS 13 THRU 14)
1. WITH THE INSPECTOR'S APPROVAL, CLEAR AND GRUB REMAINING AREAS.
2. ROUGH GRADE THE SITE WITHIN THE LIMIT OF DISTURBANCE. ALL DEBRIS TO BE REMOVED TO AN APPROVED LANDFILL OR SITE. PROVIDE TEMPORARY STABILIZATION OF ALL NON-WORK AREAS.

- 3. INSTALL UTILITIES AND STORM DRAINS ON SITE. INSTALL STORM DRAIN INLET PROTECTIONS IMMEDIATELY AS INLETS ARE INSTALLED.
4. ONCE STORMDRAIN FROM 1-35 TO ES-1 IS INSTALLED AND FUNCTIONING, DIRECT BYPASS FLOW INTO THE STORMDRAIN SYSTEM AND REMOVE THE PIPE SLOPE DRAWN (PSD-24).

- 5. GRADE TO BUILDING AND PAVING SUB-GRADE ELEVATION. STABILIZE ALL BUILDING PADS AND COMMON AREAS. MAINTAIN OR INSTALL ADDITIONAL BUILDING PERMETER CONTROLS AS NECESSARY.
6. WITH INSPECTOR'S APPROVAL, BEGIN CURB & GUTTER CONSTRUCTION AND BASE PAVING CONSTRUCTION FOR ALL ROADS.

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."

Signature of Engineer: Thomas C. Neugebauer, P.E. Date: 12-12-17

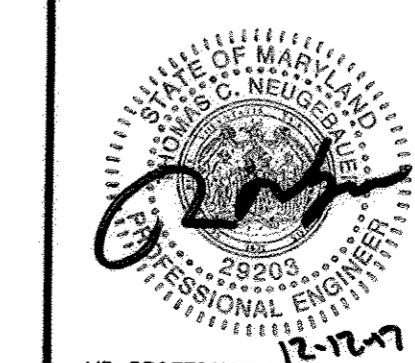
DEVELOPER'S CERTIFICATE

"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."

Signature of Developer: Richard E. Hayward, Vice President. Date: 1/2/18



MORRIS & RITCHIE ASSOCIATES, INC. ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS. 14280 PARK CENTER DRIVE, LAUREL, MD 20707



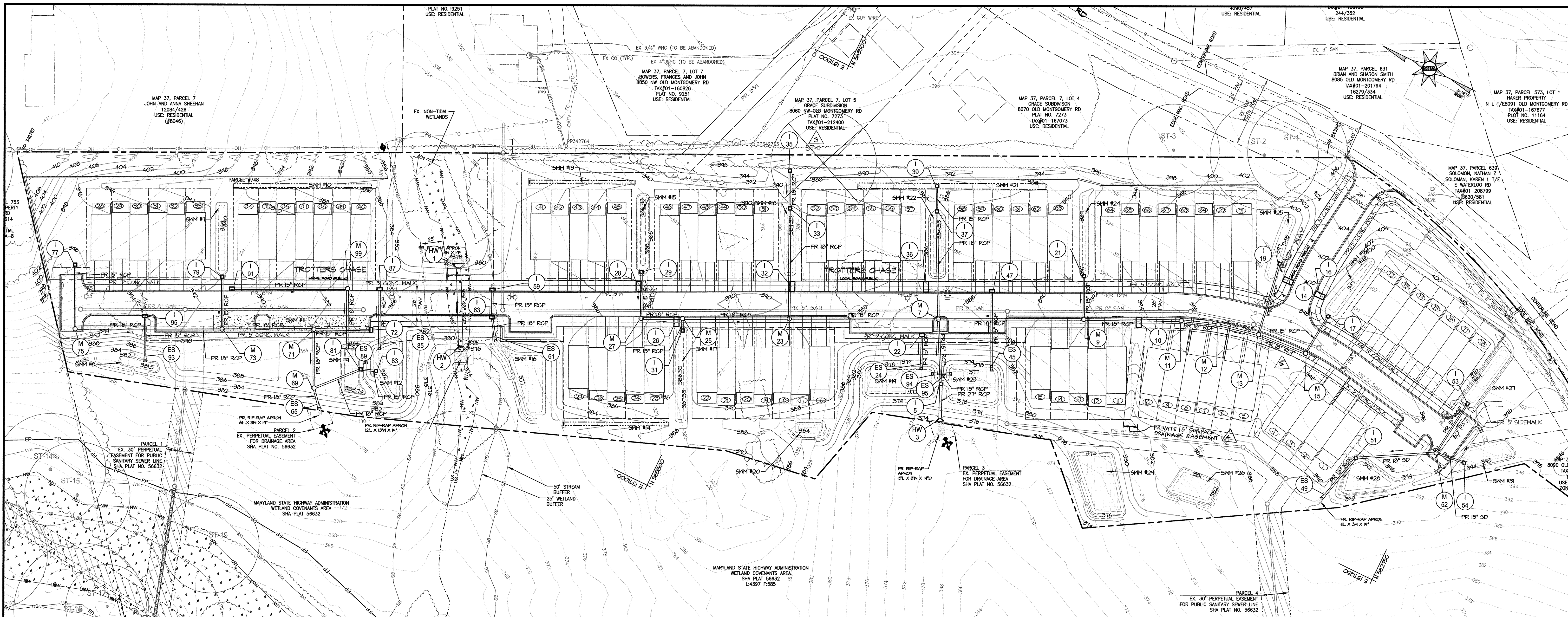
TROTTER'S KNOLL - SECTION I HORSE FARM PROPERTY. 8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND. EROSION AND SEDIMENT CONTROL NOTES AND DETAILS.

DATE, REVISIONS table with columns for date and revision details.

JOB NO.: 15368 x 02. SCALE: NO SCALE. DATE: 1/9/13/2017. DRAWN BY: ATS. DESIGN BY: ATS. REVIEW BY: TON. SHEET: 17 OF 44.

OWNER / APPLICANT / DEVELOPER: HORSE FARM, LLC. ADDRESS: 9200 RUMSEY ROAD, SUITE 200, COLUMBIA, MD 21045. CONTACT: RICHARD E. HAYWARD. PHONE: 410-997-7222.





**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. 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
- EX. STREAM BUFFER
- EX. SPECIMEN TREE
- EX. 2' CONTOUR
- EX. 10' CONTOUR
- PR. 0.5' CONTOUR
- PR. 1' CONTOUR
- PR. 2' CONTOUR
- PR. 10' CONTOUR
- PR. LOT LINE
- PR. BUILDING FOOTPRINT
- PR. BUILDING SETBACK
- PR. CURB AND GUTTER
- PR. SIDEWALK
- PR. RETAINING WALL
- PR. LINE OF SIGHT
- UTILITY EASEMENT
- TEMPORARY ROADWAY EASEMENT
- GRADING EASEMENT
- PR. PUBLIC STREET TREE & SIDEWALK MAINTENANCE EASEMENT
- PR. PUBLIC STREET TREE EASEMENT

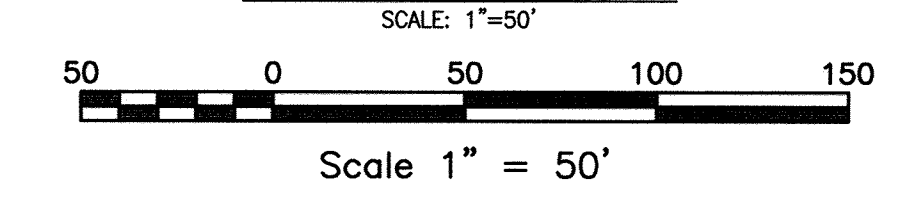
**STORM DRAIN STRUCTURE SCHEDULE**

STR NO.	NORTHING	EASTING	TYPE	DESCRIPTION	INV. IN	INV. OUT	TOP
ES 24	563,289.84	1,371,246.18	HOWARD CO STD DET D-5.51	15 INCH CONCRETE END SECTION	377.04		
ES 45	563,220.56	1,371,277.61	HOWARD CO STD DET D-5.51	15 INCH CONCRETE END SECTION	377.17		
ES 49	562,835.34	1,371,309.64	HOWARD CO STD DET D-5.51	18 INCH CONCRETE END SECTION	388.05		
ES 61	563,717.82	1,371,072.11	HOWARD CO STD DET D-5.51	15 INCH CONCRETE END SECTION	378.22		
ES 65	563,858.26	1,370,923.43	HOWARD CO STD DET D-5.51	18 INCH CONCRETE END SECTION	379.50		
ES 85	563,826.61	1,371,010.04	HOWARD CO STD DET D-5.51	15 INCH CONCRETE END SECTION	382.03		
ES 89	563,858.08	1,370,995.63	HOWARD CO STD DET D-5.51	15 INCH CONCRETE END SECTION	383.74		
ES 93	564,049.24	1,370,888.10	HOWARD CO STD DET D-5.51	15 INCH CONCRETE END SECTION	381.50		
ES 94	563,269.73	1,371,244.11	HOWARD CO STD DET D-5.51	CONCRETE END SECTION	377.00		
ES 95	563,260.92	1,371,248.39	HOWARD CO STD DET D-5.51	CONCRETE END SECTION	377.00		
HW 1	563,785.22	1,371,121.21	HOWARD CO STD DET 5-5.11	48 INCH CIRCULAR PIPE TYPE A HEADWALL	377.18	381.60	
HW 2	563,745.82	1,371,045.49	HOWARD CO STD DET 5-5.11	48 INCH CIRCULAR PIPE TYPE A HEADWALL	373.00	377.42	
HW 3	563,245.84	1,371,202.22	HOWARD CO STD DET 5-5.11	24 INCH CIRCULAR PIPE TYPE A HEADWALL	372.00	374.25	
I 5	563,261.32	1,371,236.29	HOWARD CO STD DET D-4.22	TYPE "S" INLET	372.74	372.24	378.07
I 10	563,097.47	1,371,388.36	MD SHA STANDARD NO MD-374.68	60 x 138 INCH COG/COS OPENING	392.26	393.97	
I 14	562,971.30	1,371,498.99	MD SHA STANDARD NO MD-374.68	60 x 138 INCH COG/COS OPENING	397.98	399.38	
I 16	562,934.83	1,371,499.90	MD SHA STANDARD NO MD-374.68	60 x 138 INCH COG/COS OPENING	397.98	399.38	
I 17	562,915.89	1,371,483.60	HOWARD CO STD DET D-4.22	TYPE "S" INLET	392.83	386.79	398.00
I 19	562,987.79	1,371,511.58	HOWARD CO STD DET D-4.22	TYPE "S" INLET	392.83	386.08	397.90
I 21	563,172.55	1,371,407.49	HOWARD CO STD DET D-4.22	TYPE "S" INLET	384.83	381.96	390.00
I 22	563,302.44	1,371,274.40	HOWARD CO STD DET D-4.01	TYPE A-5 INLET PRECAST	377.29	387.55	
I 26	563,548.11	1,371,172.23	MD SHA STANDARD NO MD-374.68	60 x 138 INCH COG/COS OPENING	389.41	390.31	
I 28	563,601.63	1,371,188.03	MD SHA STANDARD NO MD-374.68	60 x 138 INCH COG/COS OPENING	387.68	388.58	
I 29	563,605.23	1,371,203.42	HOWARD CO STD DET D-4.22	TYPE "S" INLET	380.16	380.06	387.33
I 31	563,537.63	1,371,166.05	HOWARD CO STD DET D-4.22	TYPE "S" INLET	382.16	382.06	387.33
I 32	563,451.32	1,371,259.70	MD SHA STANDARD NO MD-374.68	60 x 138 INCH COG/COS OPENING	388.84	390.05	
I 33	563,490.40	1,371,334.54	HOWARD CO STD DET D-4.22	TYPE "S" INLET	381.22	381.12	388.21
I 35	563,508.04	1,371,371.19	HOWARD CO STD DET D-4.22	TYPE "S" INLET	384.82	388.00	
I 36	563,321.60	1,371,322.88	MD SHA STANDARD NO MD-374.68	60 x 138 INCH COG/COS OPENING	385.92	387.89	
I 37	563,345.87	1,371,400.80	HOWARD CO STD DET D-4.22	TYPE "S" INLET	379.24	378.99	385.75
I 39	563,357.76	1,371,425.50	HOWARD CO STD DET D-4.22	TYPE "S" INLET	382.50	379.54	386.00

**STORM DRAIN STRUCTURE SCHEDULE**

STR NO.	NORTHING	EASTING	TYPE	DESCRIPTION	INV. IN	INV. OUT	TOP
I 47	563,255.14	1,371,349.49	HOWARD CO STD DET D-4.01	TYPE A-5 INLET PRECAST	380.12	388.50	
I 51	562,822.73	1,371,359.80	HOWARD CO STD DET D-4.22	TYPE "S" INLET	388.53	388.83	392.79
I 53	562,739.13	1,371,464.90	HOWARD CO STD DET D-4.22	TYPE "S" INLET	390.83	389.57	395.00
I 54	562,715.05	1,371,406.38	HOWARD CO STD DET D-4.22	TYPE "S" INLET	389.83	389.51	394.00
I 59	563,741.95	1,371,116.05	HOWARD CO STD DET D-4.01	TYPE A-5 INLET PRECAST	378.57	384.94	
I 63	563,729.20	1,371,089.07	HOWARD CO STD DET D-4.01	TYPE A-5 INLET PRECAST	378.42	378.32	384.94
I 72	563,840.97	1,371,020.02	HOWARD CO STD DET D-4.01	TYPE A-5 INLET PRECAST	384.56	385.29	386.35
I 77	564,160.13	1,370,943.63	HOWARD CO STD DET D-4.22	TYPE "S" INLET	388.72	395.50	
I 79	564,011.18	1,371,001.34	HOWARD CO STD DET D-4.22	TYPE "S" INLET	386.45	386.35	390.00
I 81	563,832.99	1,370,976.99	HOWARD CO STD DET D-4.22	TYPE "S" INLET	380.14	380.04	384.74
I 83	563,817.48	1,370,982.62	HOWARD CO STD DET D-4.22	TYPE "S" INLET	380.24	382.72	
I 87	563,851.99	1,371,063.11	HOWARD CO STD DET D-4.01	TYPE A-5 INLET PRECAST	382.62	386.67	
I 91	563,996.14	1,370,994.43	HOWARD CO STD DET D-4.01	TYPE A-5 INLET PRECAST	386.23	391.17	
I 95	564,067.87	1,370,926.91	HOWARD CO STD DET D-4.01	TYPE A-5 INLET PRECAST	385.22	393.97	
M 7	563,294.11	1,371,297.55	HOWARD CO STD DET G-5.12	PRECAST MANHOLE-STANDARD 4'-0"	375.94	377.28	375.74
M 9	563,152.42	1,371,365.71	HOWARD CO STD DET G-5.12	PRECAST MANHOLE-STANDARD 4'-0"	379.22	379.22	376.90
M 11	563,057.02	1,371,410.32	HOWARD CO STD DET G-5.12	PRECAST MANHOLE-STANDARD 4'-0"	384.36	384.26	395.62
M 13	562,975.27	1,371,433.07	HOWARD CO STD DET G-5.12	PRECAST MANHOLE-STANDARD 4'-0"	385.41	385.31	397.70
M 15	562,920.61	1,371,437.16	HOWARD CO STD DET G-5.12	PRECAST MANHOLE-STANDARD 4'-0"	386.22	385.97	397.60
M 23	563,439.36	1,371,227.68	HOWARD CO STD DET G-5.12	PRECAST MANHOLE-STANDARD 4'-0"	377.75	379.94	389.87
M 25	563,543.47	1,371,177.59	HOWARD CO STD DET G-5.12	PRECAST MANHOLE-STANDARD 4'-0"	379.01	381.93	389.52
M 27	563,583.74	1,371,158.22	HOWARD CO STD DET G-5.12	PRECAST MANHOLE-STANDARD 4'-0"	379.56	379.31	387.62
M 52	562,746.92	1,371,402.61	HOWARD CO STD DET G-5.12	PRECAST MANHOLE-STANDARD 4'-0"	389.17	389.07	395.36
M 69	563,869.82	1,370,936.90	HOWARD CO STD DET G-5.12	PRECAST MANHOLE-STANDARD 4'-0"	379.84	379.72	386.15
M 71	563,897.47	1,370,993.63	HOWARD CO STD DET G-5.12	PRECAST MANHOLE-STANDARD 4'-0"	383.30	381.19	387.88
M 73	563,986.80	1,370,950.65	HOWARD CO STD DET G-5.12	PRECAST MANHOLE-STANDARD 4'-0"	385.73	385.63	390.75
M 75	564,130.29	1,370,881.63	HOWARD CO STD DET G-5.12	PRECAST MANHOLE-STANDARD 4'-0"	388.03	387.78	395.51
M 99	563,883.57	1,371,048.67	HOWARD CO STD DET G-5.12	PRECAST MANHOLE-SHALLOW 4'-0"	384.20	384.10	387.38

**STORM DRAIN PLAN**



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*[Signature]* 1/23/2018  
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*[Signature]* 1/30/18  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION NY DATE

*[Signature]* 2/6/18  
 CHIEF, LAND DEVELOPMENT DIVISION AN DATE

**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  
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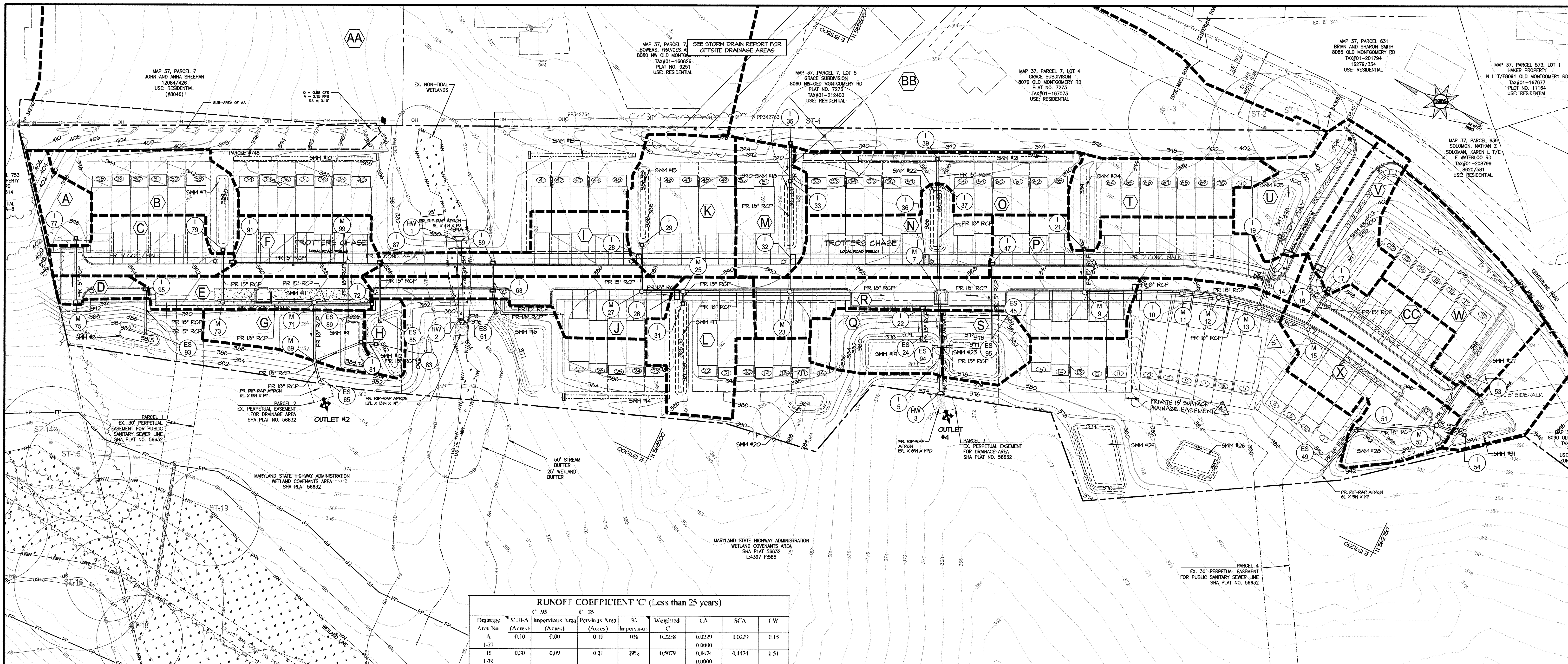
**TROTTER'S KNOLL - SECTION I**  
**HORSE FARM PROPERTY**  
 8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
**STORM DRAIN PLAN**

TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-8  
 1ST ELECTION DISTRICT  
 HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:	15368 x 02
11-26-2018	3 REVISED I-35 TOP ELEV.	SCALE:	1" = 50'
1-2-2019	4 ADDED PRIVATE EASEMENT	DATE:	9/13/2017
01/11/19	5 REVISED DRIVEWAYS	DRAWN BY:	ATS
		DESIGN BY:	ATS
		REVIEW BY:	TCN
		SHEET:	18 OF 44

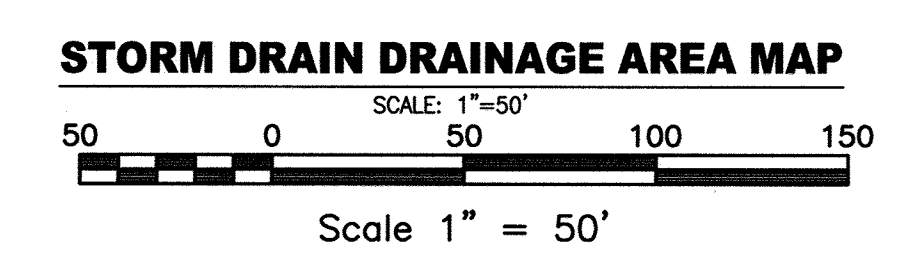
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 29203, EXPIRATION DATE: 06/16/2019.





**RUNOFF COEFFICIENT 'C' (Less than 25 years)**  
C = 35

Drainage Area No.	Sub-A (Acres)	Impervious Area (Acres)	Permeable Area (Acres)	% Impervious	Weighted C	CA	CA	CA
A	0.10	0.00	0.10	0%	0.2258	0.0229	0.0229	0.15
H	0.30	0.09	0.21	29%	0.5079	0.1424	0.1424	0.51
C	0.23	0.18	0.05	79%	0.5885	0.2645	0.2645	0.59
D	0.15	0.05	0.10	33%	0.5169	0.0815	0.0815	0.52
E	0.20	0.20	0.00	100%	0.9540	0.1177	0.1177	0.69
F	0.23	0.18	0.05	79%	0.5830	0.1869	0.1869	0.83
G	0.20	0.00	0.20	0%	0.5471	0.1070	0.1070	0.86
I	0.07	0.00	0.07	0%	0.2531	0.0185	0.0185	0.18
J	0.27	0.22	0.05	81%	0.8519	0.2322	0.2322	0.87
K	0.29	0.22	0.07	76%	0.8041	0.2223	0.2223	0.80
L	0.38	0.17	0.21	44%	0.6158	0.2427	0.2427	0.62
M	0.24	0.12	0.12	50%	0.5689	0.1696	0.1696	0.57
N	0.23	0.09	0.14	41%	0.5363	0.1108	0.1108	0.54
O	0.27	0.17	0.10	63%	0.7652	0.2051	0.2051	0.77
P	0.43	0.17	0.26	39%	0.5480	0.2400	0.2400	0.55
Q	0.51	0.36	0.15	70%	0.8093	0.3819	0.3819	0.81
R	0.21	0.00	0.21	0%	0.3770	0.0000	0.0000	0.41
S	0.43	0.38	0.05	89%	0.8693	0.3713	0.3713	0.87
T	0.15	0.00	0.15	0%	0.3559	0.0540	0.0540	0.36
U	0.31	0.10	0.21	32%	0.5254	0.1567	0.1567	0.53
V	0.27	0.09	0.18	33%	0.5325	0.1714	0.1714	0.53
W	0.21	0.07	0.14	33%	0.6307	0.1286	0.1286	0.63
X	0.48	0.09	0.39	19%	0.5963	0.4777	0.4777	0.60
Y	0.36	0.19	0.17	52%	0.6787	0.2272	0.2272	0.68
Z	12.27	1.66	10.61	14%	0.4314	5.2935	5.2933	0.43
AA	2.55	0.21	2.14	8%	0.4076	0.9485	0.9485	0.40
BB	0.46	0.21	0.25	45%	0.6193	0.2841	0.2841	0.62



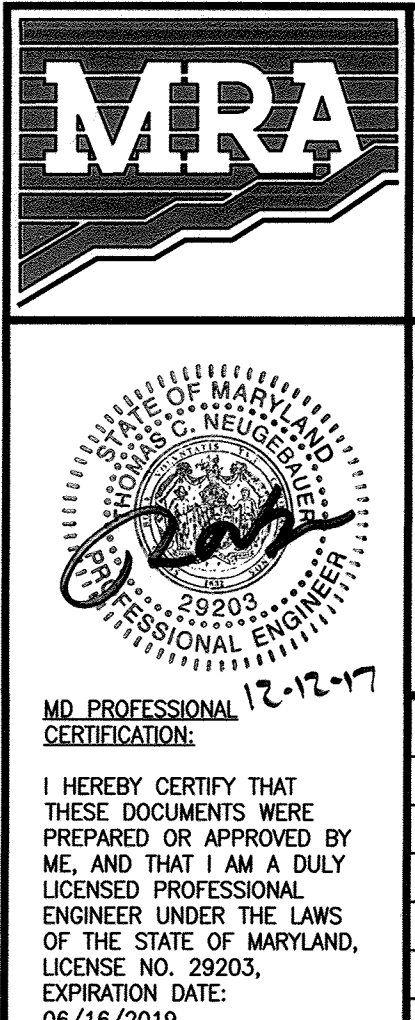
**LEGEND**

---	EX. PROPERTY LINE	---	PR. LOT LINE
---	EX. ADJACENT PROPERTY LINE	---	PR. BUILDING FOOTPRINT
---	EX. RIGHT OF WAY	---	PR. BUILDING SETBACK
---	EX. EASEMENT	---	PR. CURB AND GUTTER
---	EX. ZONING LINE	---	PR. SIDEWALK
---	EX. BUILDING	---	PR. RETAINING WALL
---	EX. CONCRETE	---	PR. LINE OF SIGHT
---	EX. PAVEMENT	---	PR. 8" WATER LINE
---	EX. ROAD CENTERLINE	---	PR. 0.5' CONTOUR
---	EX. FENCE	---	PR. 1' CONTOUR
---	EX. OVERHEAD LINE	---	PR. 2' CONTOUR
---	EX. WATER LINE	---	PR. 10' CONTOUR
---	EX. SEWER LINE	---	EX. 2' CONTOUR
---	EX. STREAM	---	EX. 10' CONTOUR
---	EX. TREE LINE	---	PR. SD DRAINAGE AREA DIVIDE
---	EX. GUARD RAIL	---	PR. SD DRAINAGE AREA LABEL
---	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		
---	EX. STREAM BUFFER		
---	EX. SPECIMEN TREE		

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Melvin* 1/23/2018  
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Chris Anderson* 1/30/18  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Dia Naiman* 2/6/18  
 CHIEF, LAND DEVELOPMENT DIVISION DATE



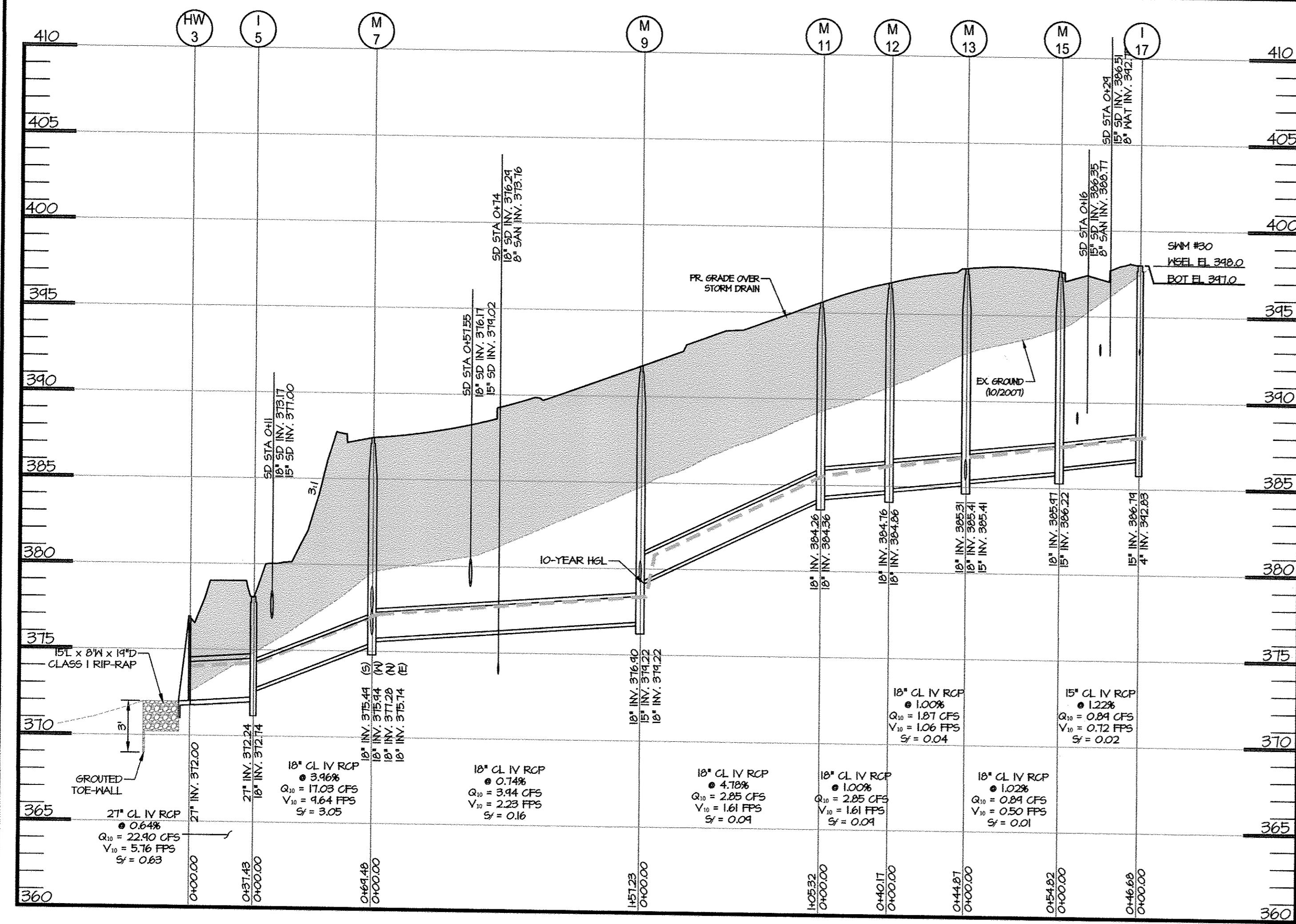
**MORRIS & RITCHIE ASSOCIATES, INC.**  
 ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS  
 14280 PARK CENTER DRIVE  
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 MRAGTA.COM

**TROTTER'S KNOLL - SECTION I**  
**HORSE FARM PROPERTY**  
 8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
 STORM DRAIN DRAINAGE AREA MAP

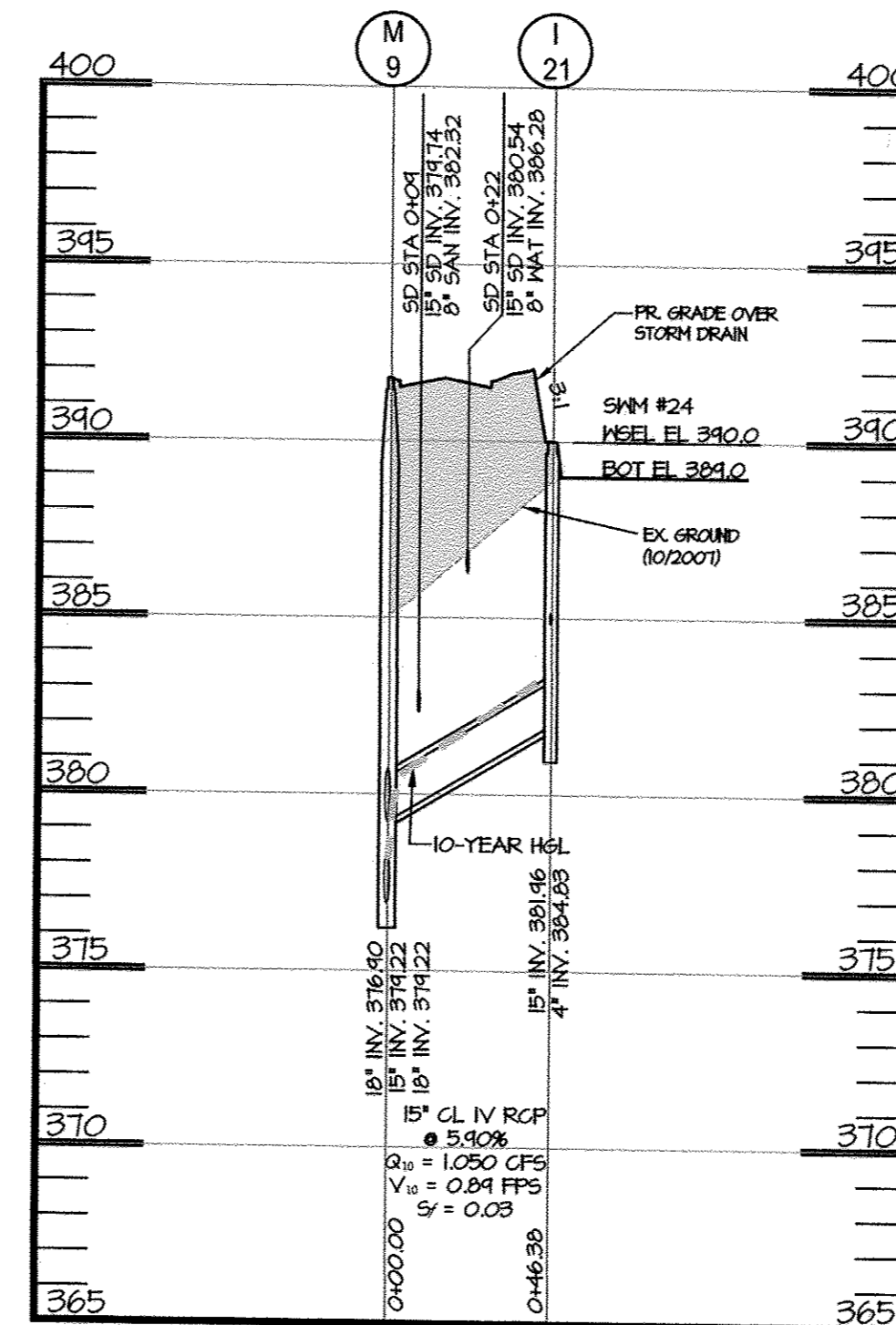
TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-8  
 1ST ELECTION DISTRICT  
 HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:	SCALE:
1-2-19	4 ADDED PRIVATE EASEMENT	15368 x 02	1" = 50'
01/11/19	5 REVISED DRIVEWAYS		9/13/2017
			DRAWN BY: ATS
			DESIGN BY: ATS
			REVIEW BY: TCN
			SHEET: 19 OF 44

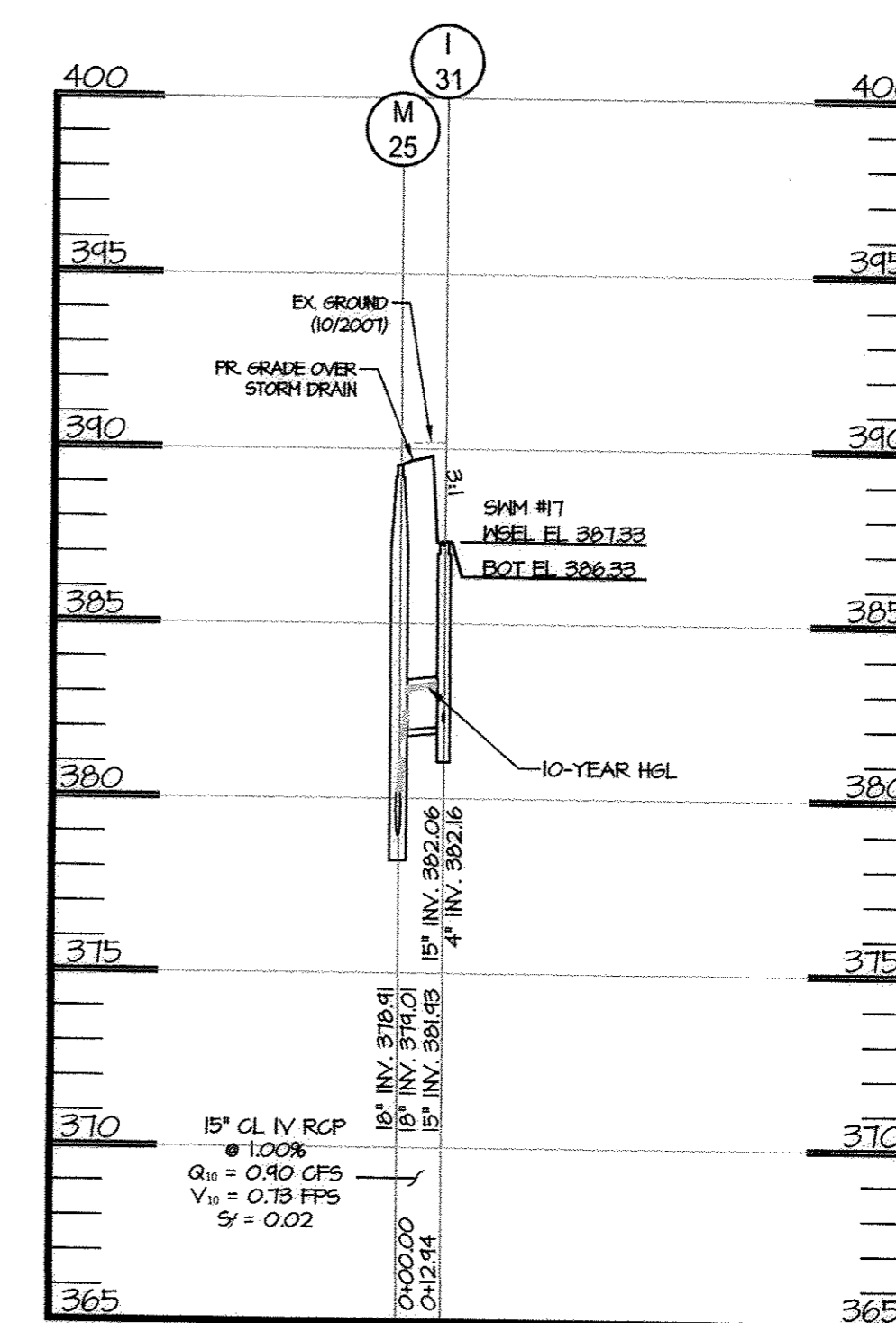




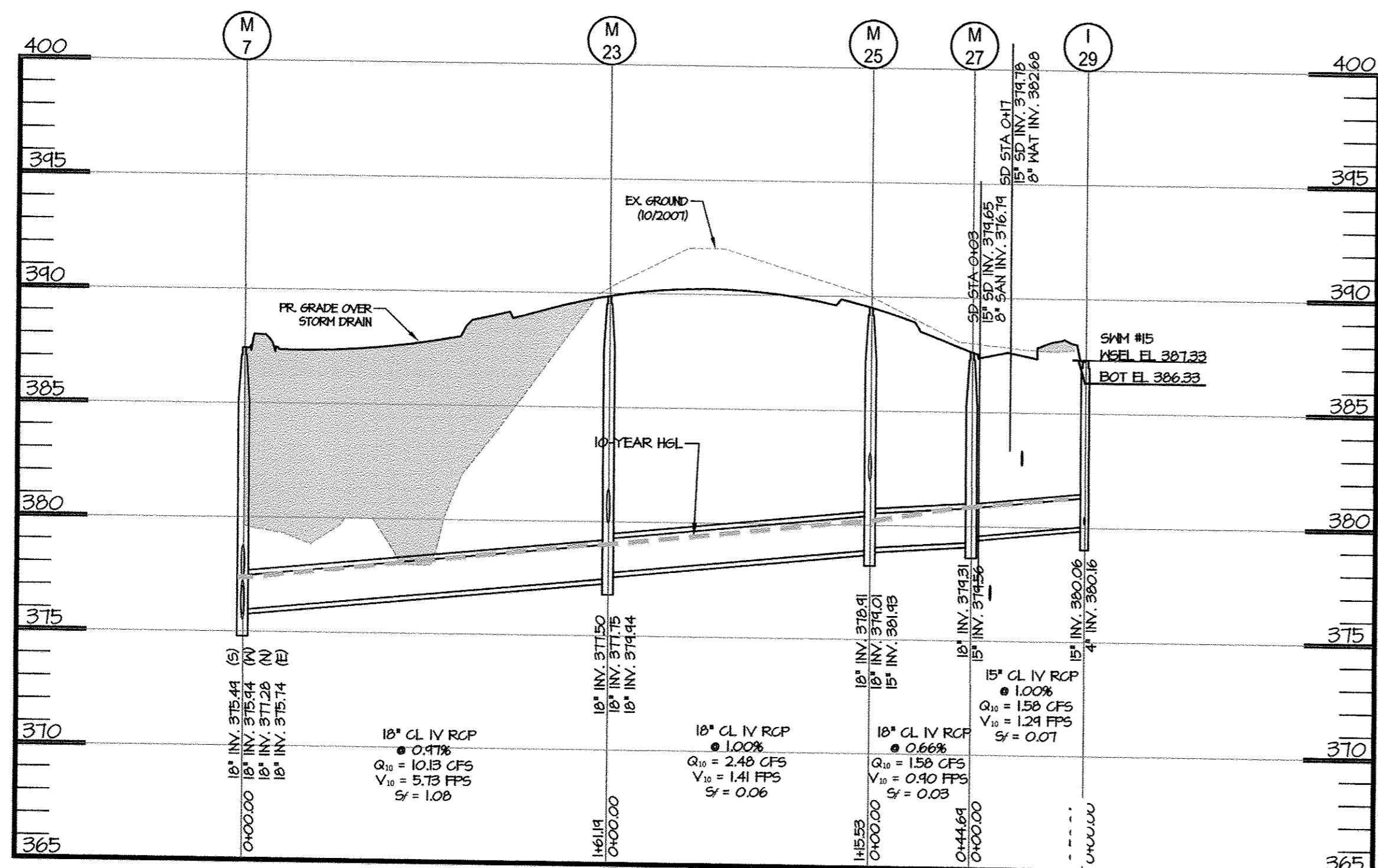
HW-3 TO I-17 PROFILE  
SCALE: H: 1"=50'  
V: 1"=5'



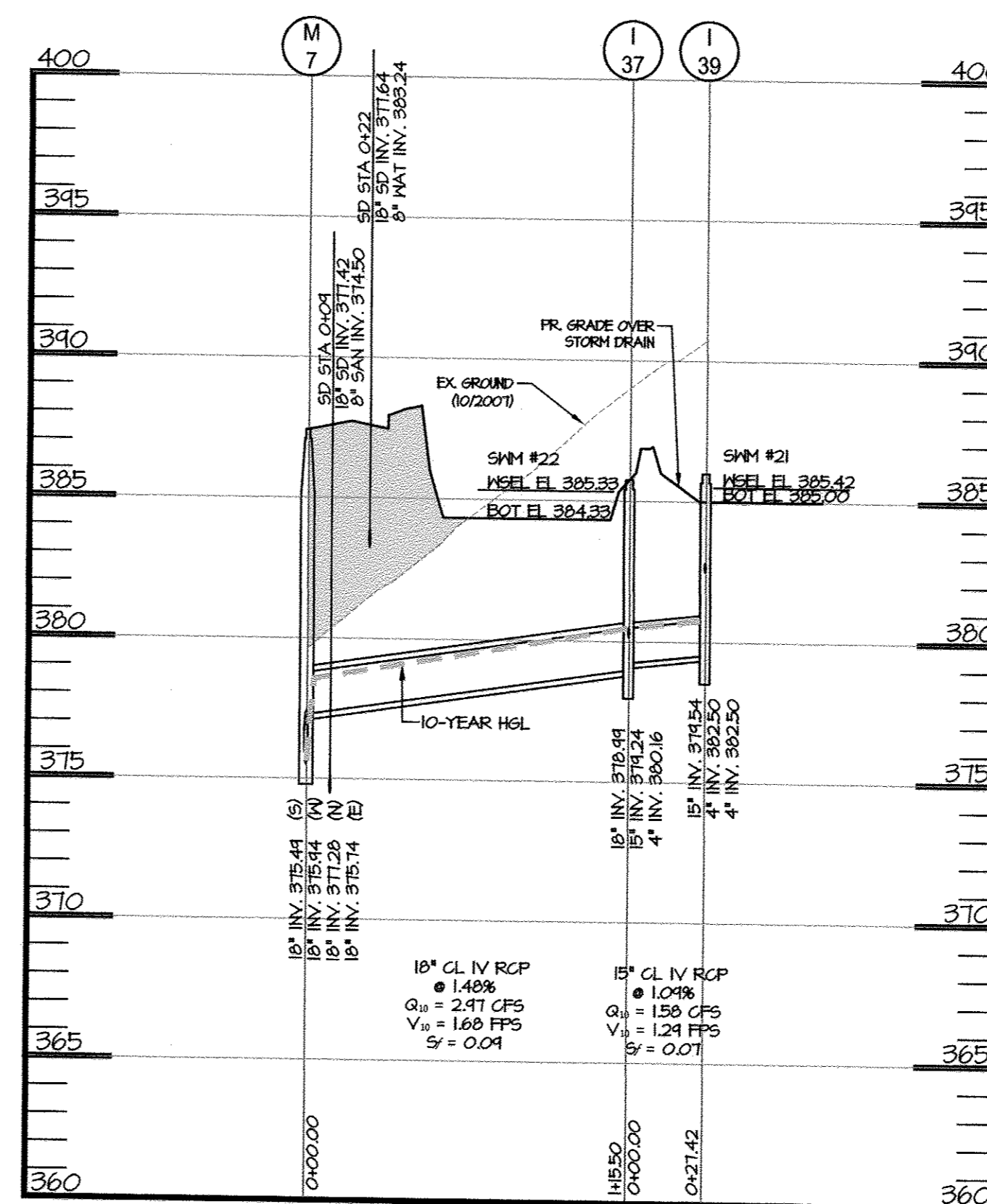
M-9 TO I-21 PROFILE  
SCALE: H: 1"=50'  
V: 1"=5'



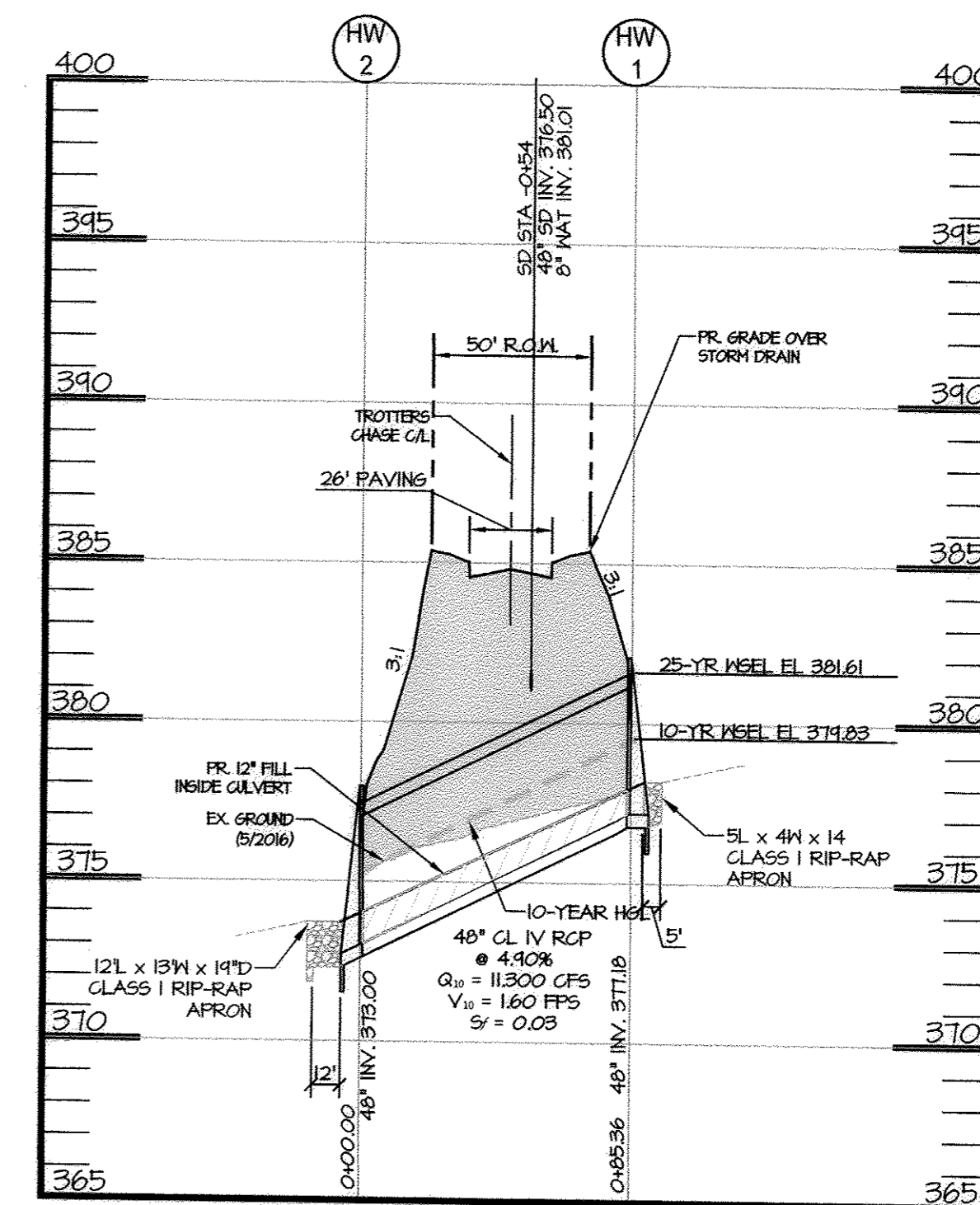
M-25 TO I-31 PROFILE  
SCALE: H: 1"=50'  
V: 1"=5'



M-7 TO I-29 PROFILE  
SCALE: H: 1"=50'  
V: 1"=5'



M-7 TO I-39 PROFILE  
SCALE: H: 1"=50'  
V: 1"=5'



HW-1 TO HW-2 PROFILE  
SCALE: H: 1"=50'  
V: 1"=5'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

*Mehmet*  
CHIEF, BUREAU OF HIGHWAYS  
DATE: 1/23/2018

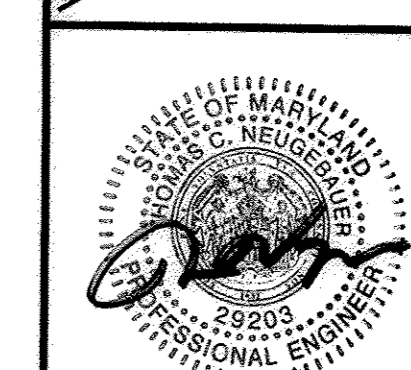
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Chad*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE: 1/31/18

*Qui*  
CHIEF, LAND DEVELOPMENT DIVISION  
DATE: 2/16/18



Scale 1" = 50'



MD PROFESSIONAL ENGINEER  
CERTIFICATION: 12-12-17

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. 29203, EXPIRATION DATE: 06/16/2019.

**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

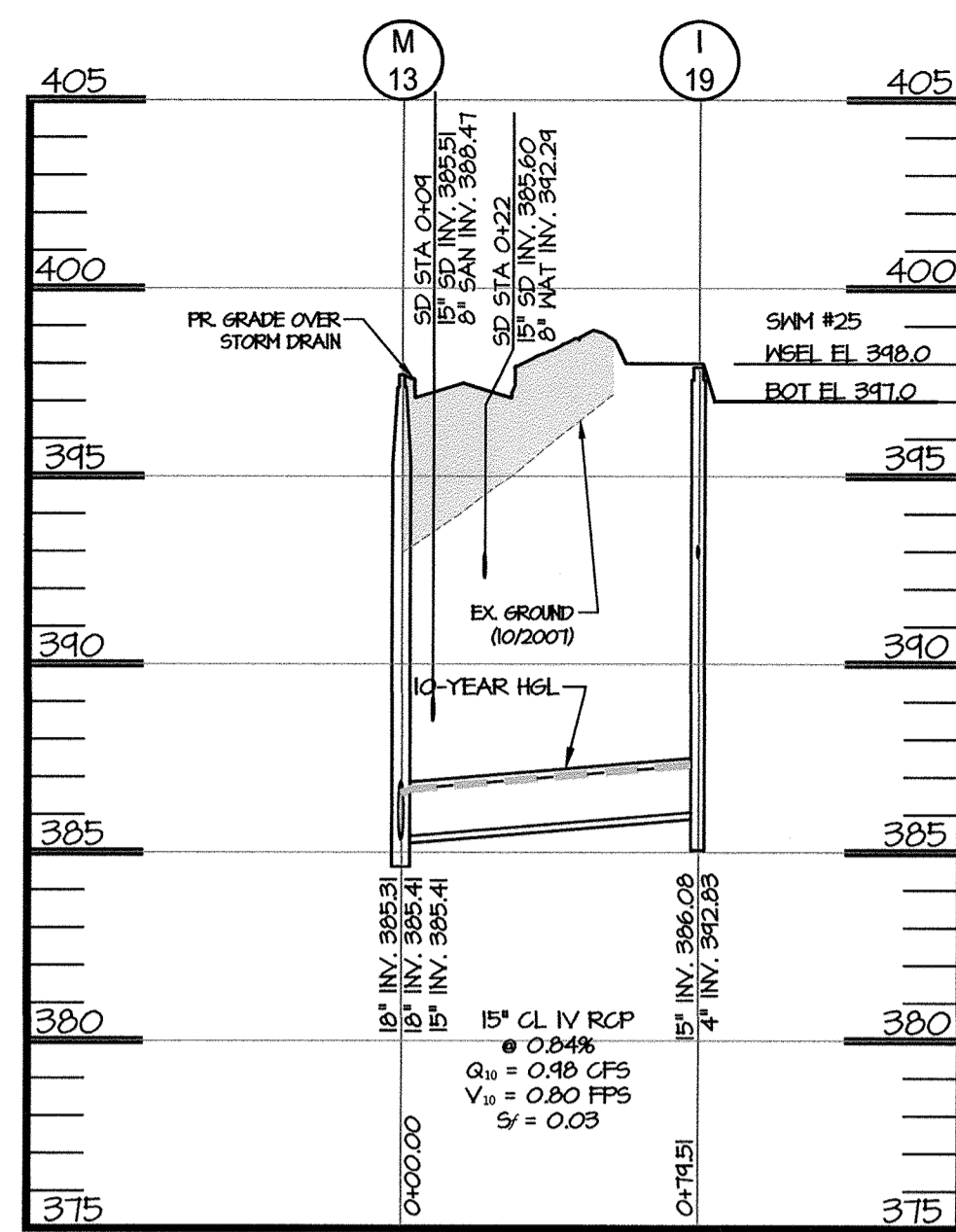
**TROTTER'S KNOLL - SECTION I**  
HORSE FARM PROPERTY  
8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
STORM DRAIN PROFILES  
TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-8  
1ST ELECTION DISTRICT  
HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:
		15368 x 02
		SCALE: 1" = 50'
		DATE: 9/13/2017
		DRAWN BY: ATS
		DESIGN BY: ATS
		REVIEW BY: TON
		SHEET: 20 OF 44

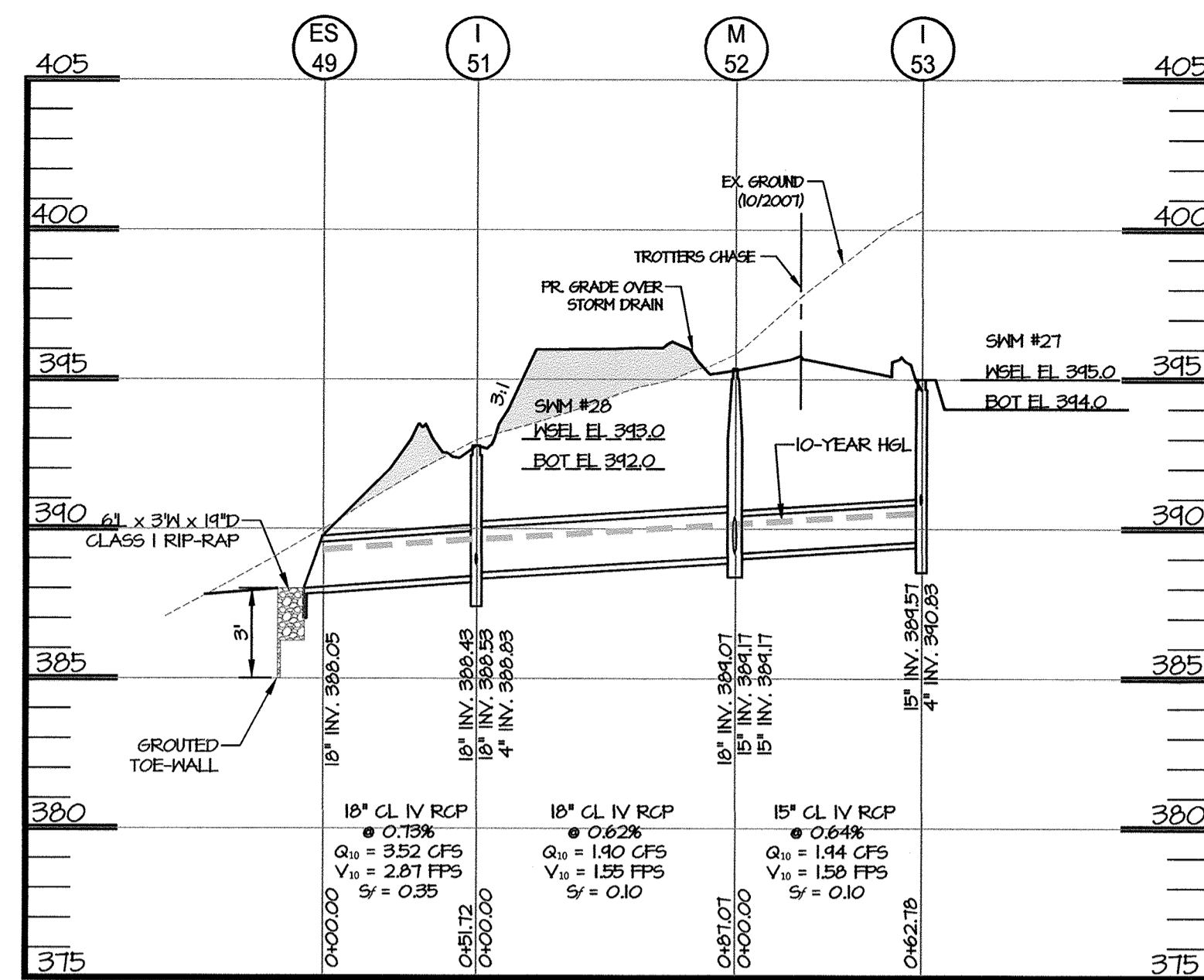
OWNER / APPLICANT / DEVELOPER:

HORSE FARM, LLC.  
ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
COLUMBIA, MD 21045  
CONTACT: RICHARD HAYWARD  
PHONE: 410-997-7222

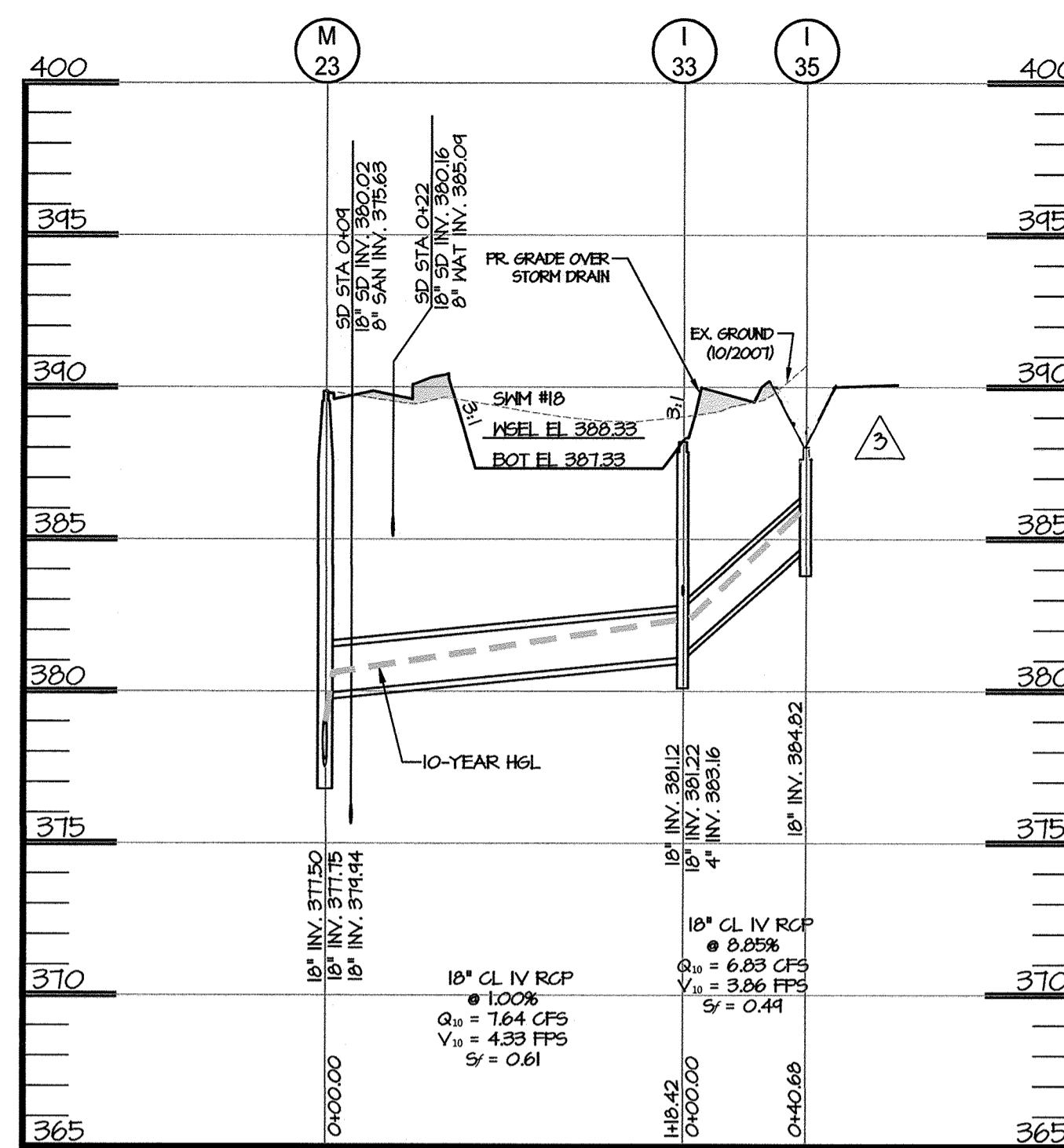




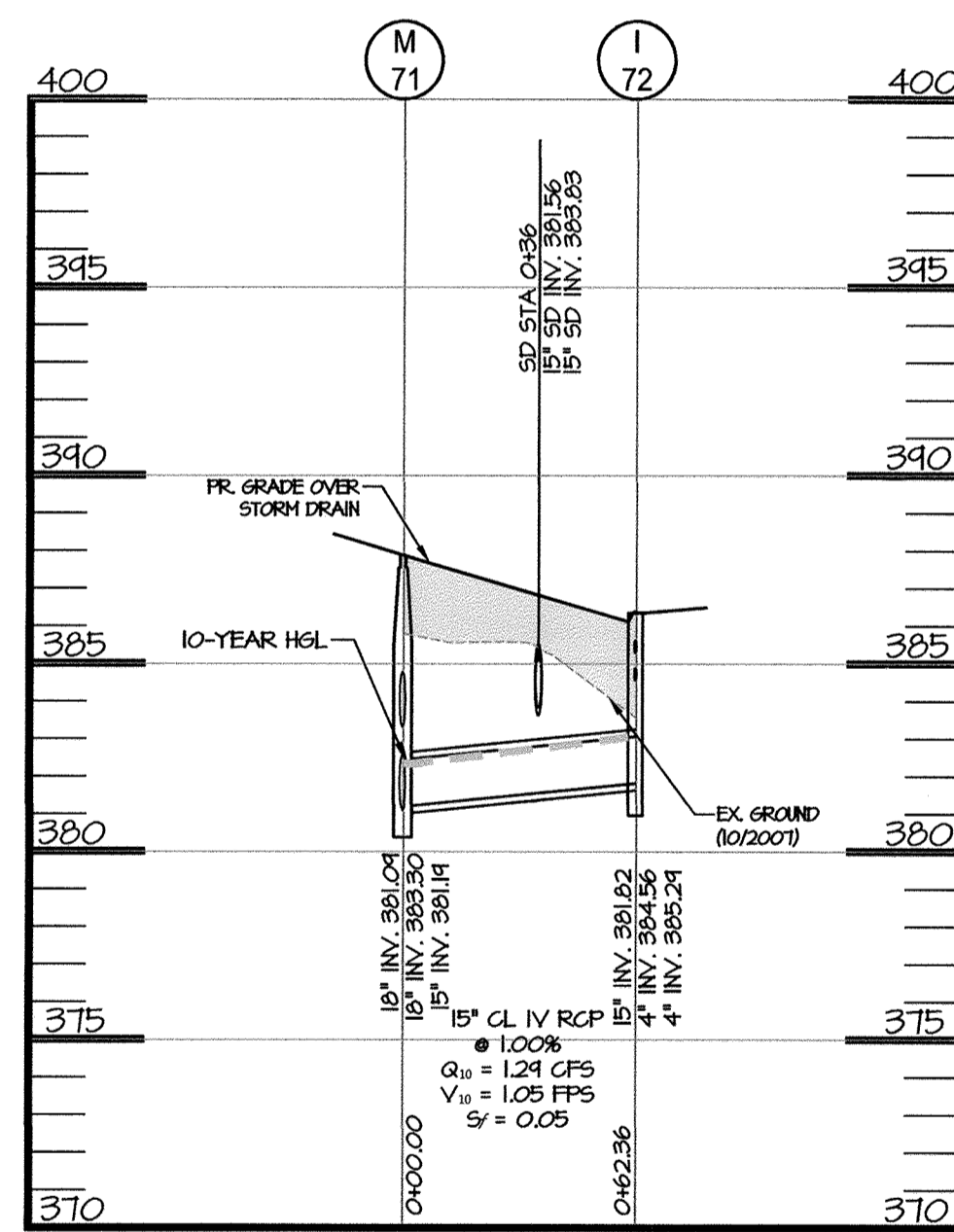
M-13 TO I-19 PROFILE  
SCALE: H: 1"=50'  
V: 1"=5'



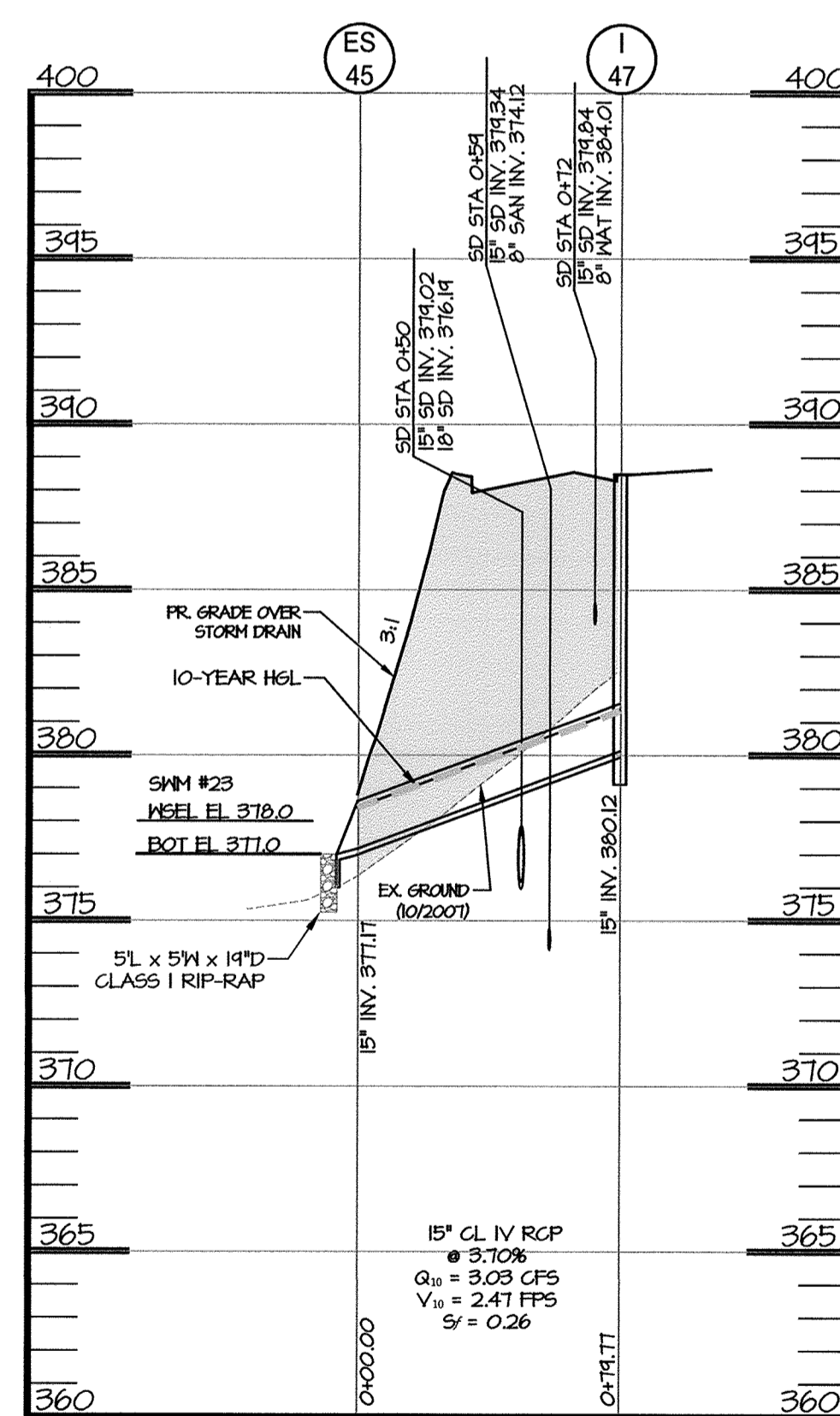
ES-49 TO I-53 PROFILE  
SCALE: H: 1"=50'  
V: 1"=5'



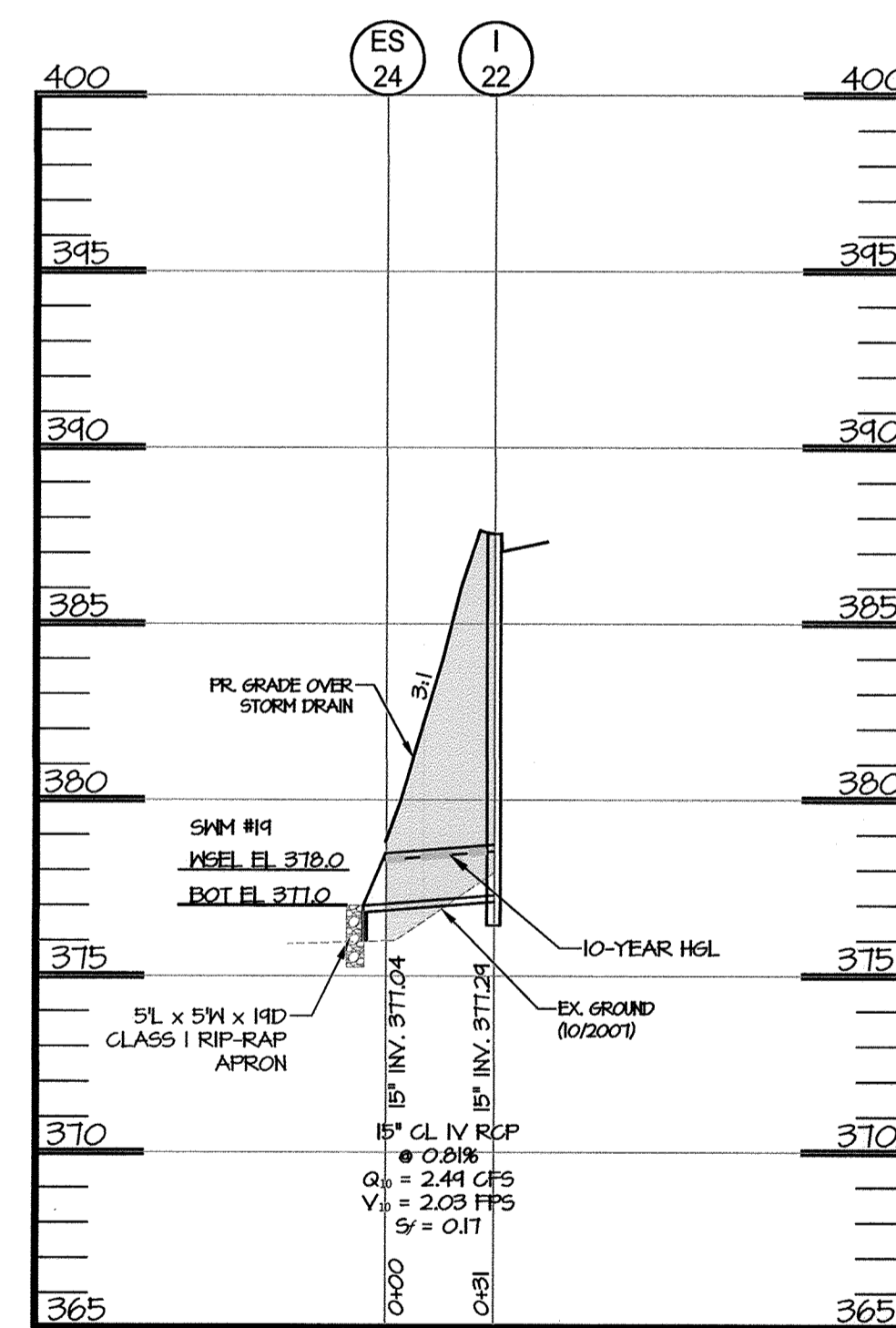
M-23 TO I-35 PROFILE  
SCALE: H: 1"=50'  
V: 1"=5'



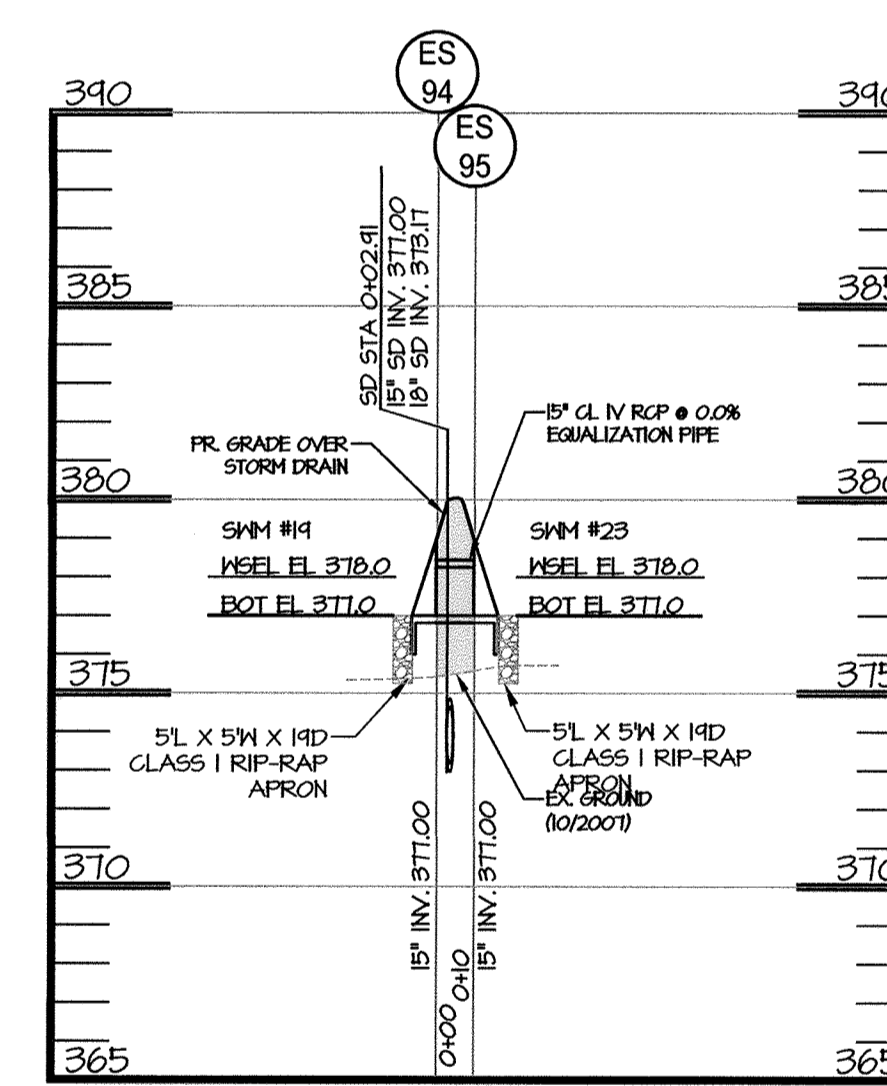
M-71 TO I-72 PROFILE  
SCALE: H: 1"=50'  
V: 1"=5'



ES-45 TO I-47 PROFILE  
SCALE: H: 1"=50'  
V: 1"=5'



ES-24 TO I-22 PROFILE  
SCALE: H: 1"=50'  
V: 1"=5'



ES-94 TO ES-95 PROFILE  
SCALE: H: 1"=50'  
V: 1"=5'

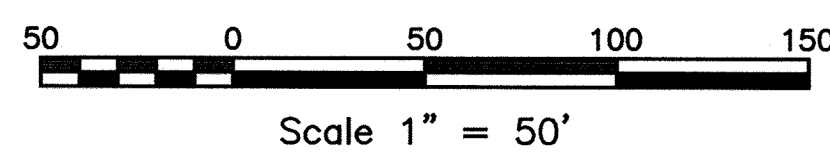
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

*Michael* 1/23/2018  
CHIEF, BUREAU OF HIGHWAYS DATE

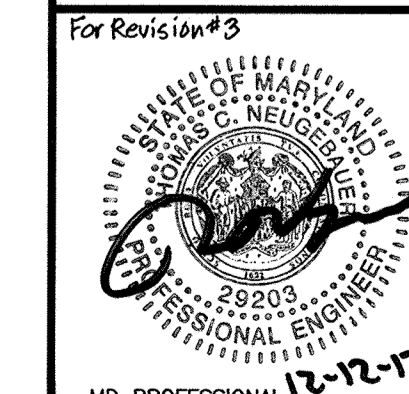
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Richard* 1/30/18  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*John* 2/1/18  
CHIEF, LAND DEVELOPMENT DIVISION DATE



**MORRIS & RITCHIE ASSOCIATES, INC.**  
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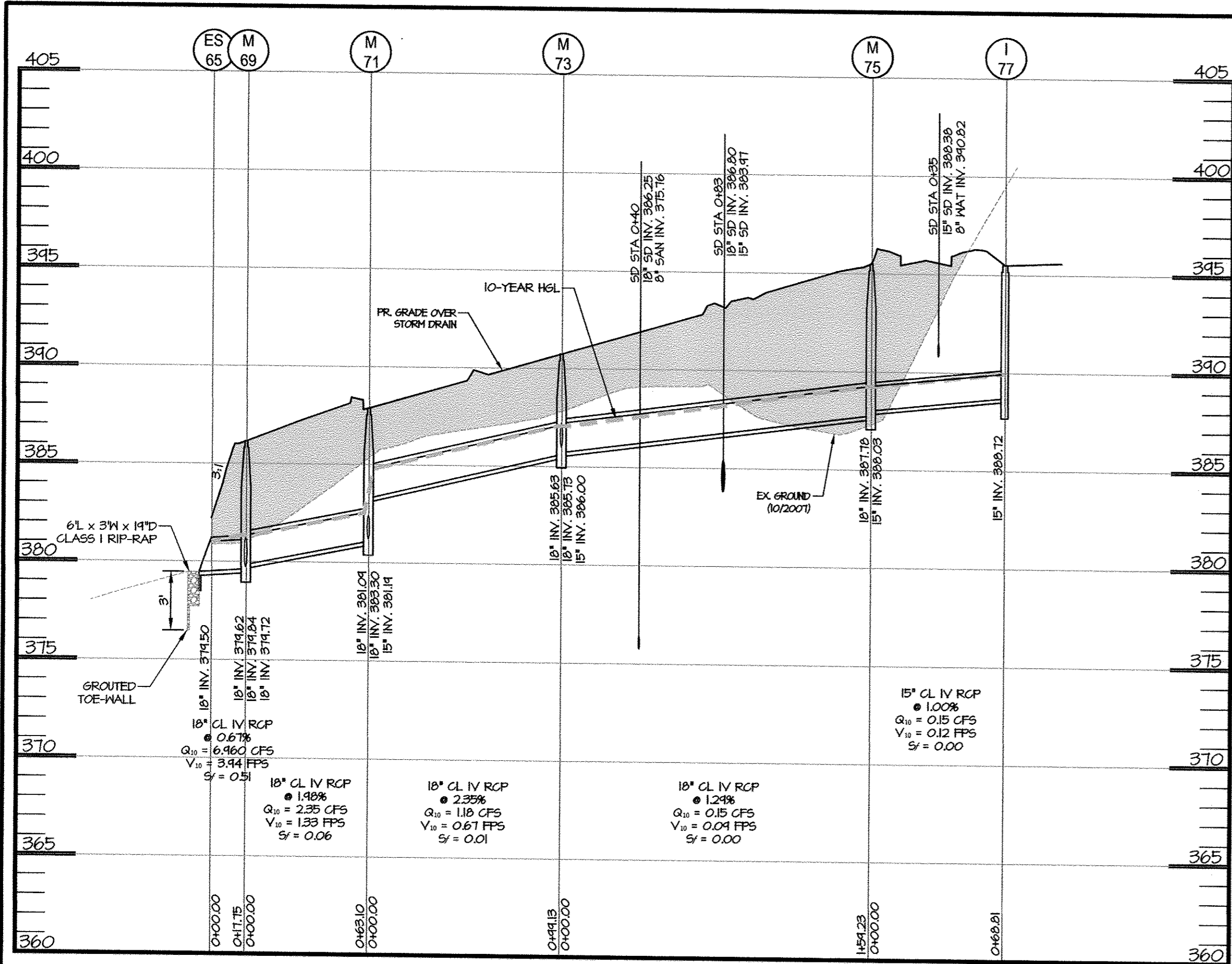


**TROTTER'S KNOLL - SECTION I**  
**HORSE FARM PROPERTY**  
8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
**STORM DRAIN PROFILES**  
TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-8  
1ST ELECTION DISTRICT  
HOWARD COUNTY, MD 21043

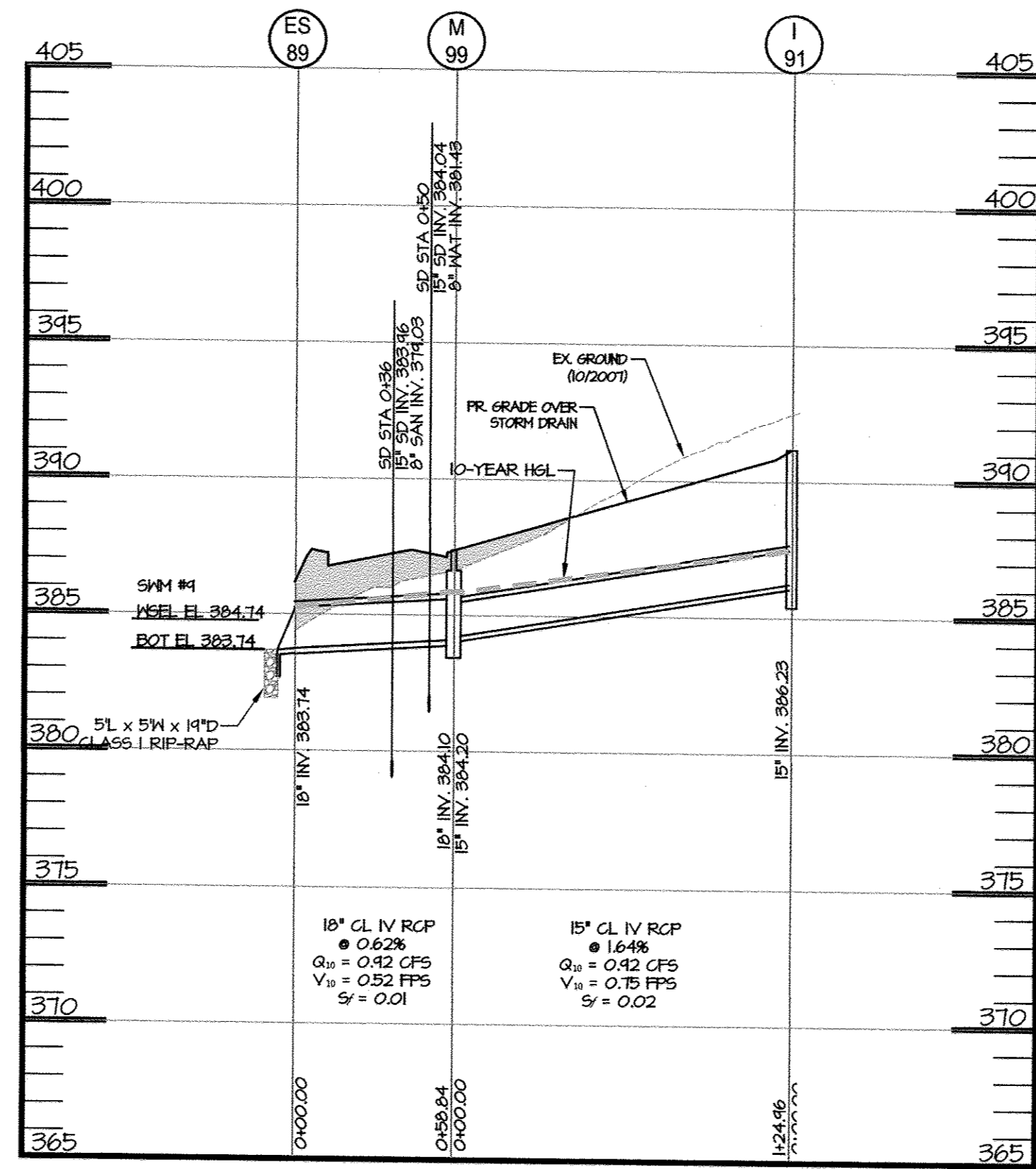
OWNER / APPLICANT / DEVELOPER:  
HORSE FARM, LLC.  
ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
COLUMBIA, MD 21045  
CONTACT: RICHARD HAYWARD  
PHONE: 410-997-7222

DATE	REVISIONS	JOB NO.:
11/26/2018	REVISED I-35 TOP ELEV.	15368 x 02
		SCALE: 1" = 50'
		DATE: 9/13/2017
		DRAWN BY: ATS
		DESIGN BY: ATS
		REVIEW BY: TON
		SHEET: 21 OF 44

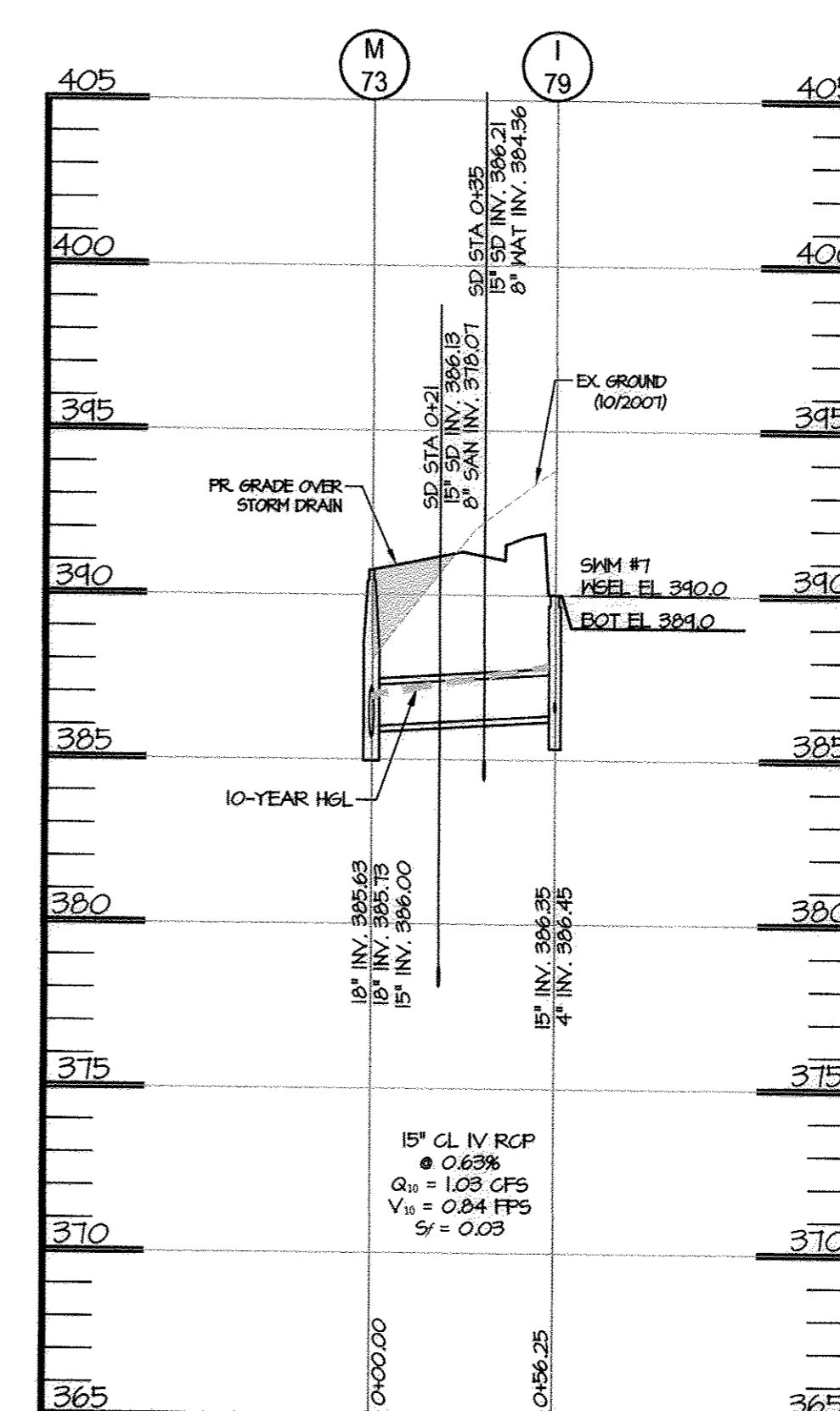




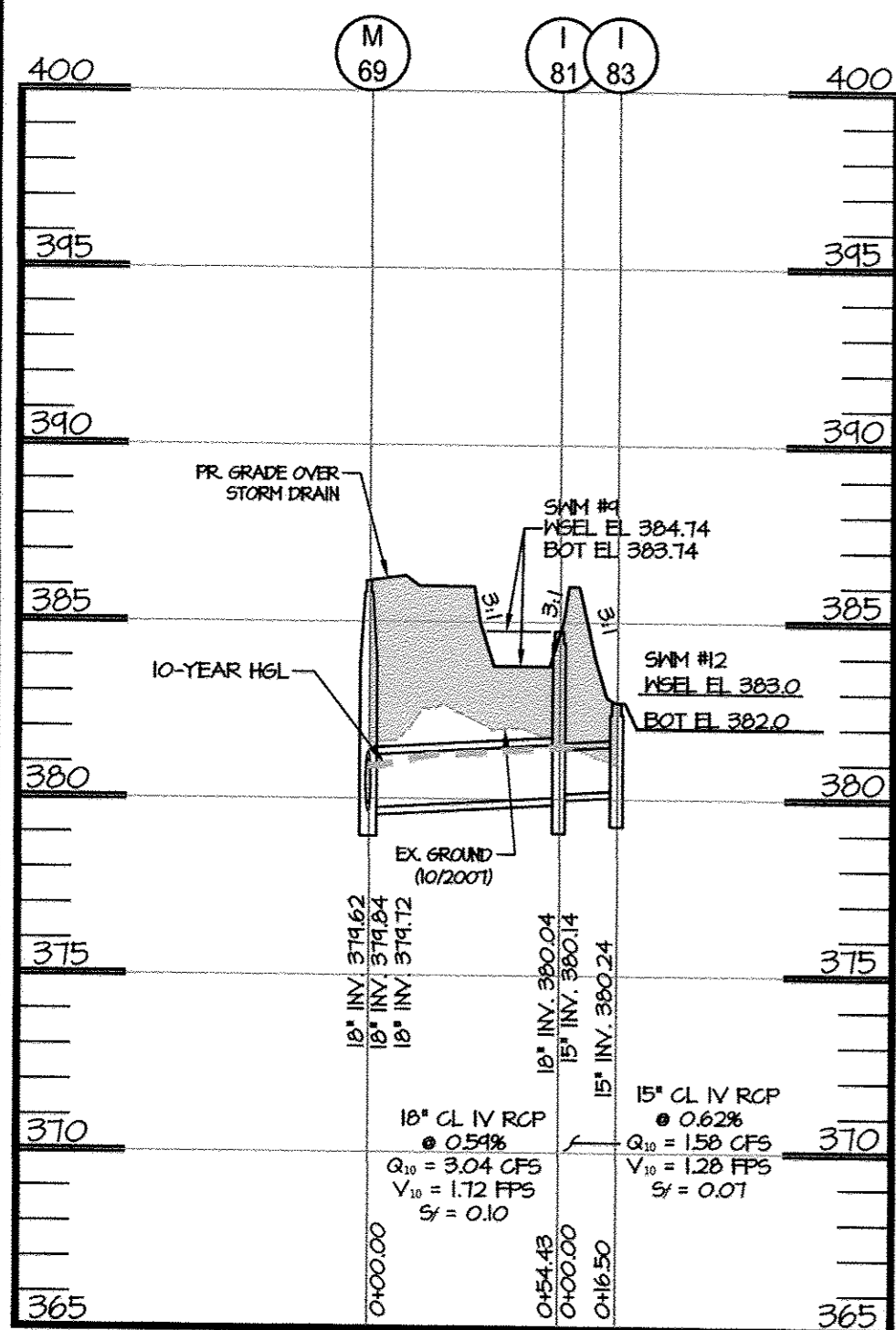
ES-65 TO I-77 PROFILE  
SCALE: H: 1"=50'  
V: 1"=5'



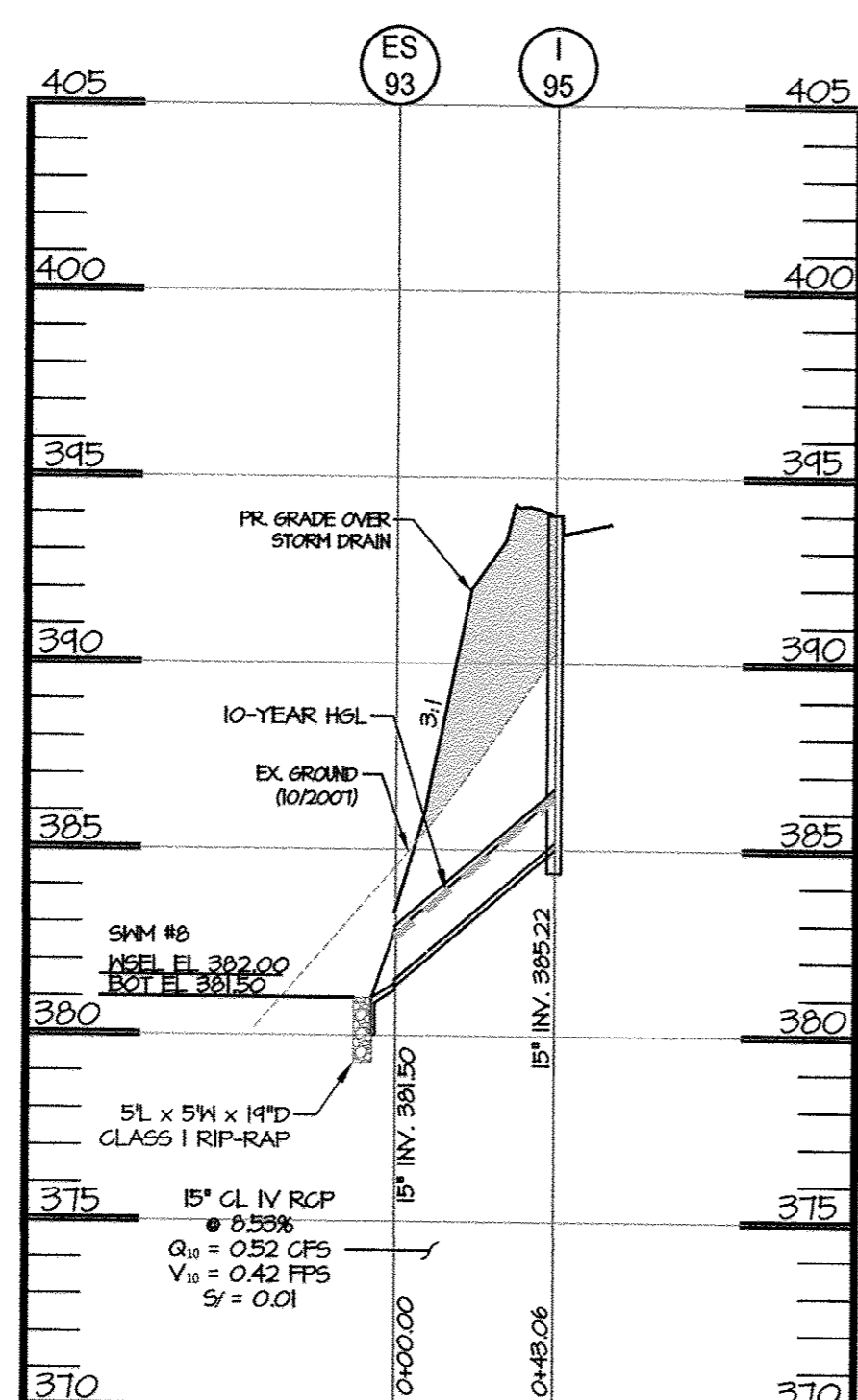
ES-89 TO I-91 PROFILE  
SCALE: H: 1"=50'  
V: 1"=5'



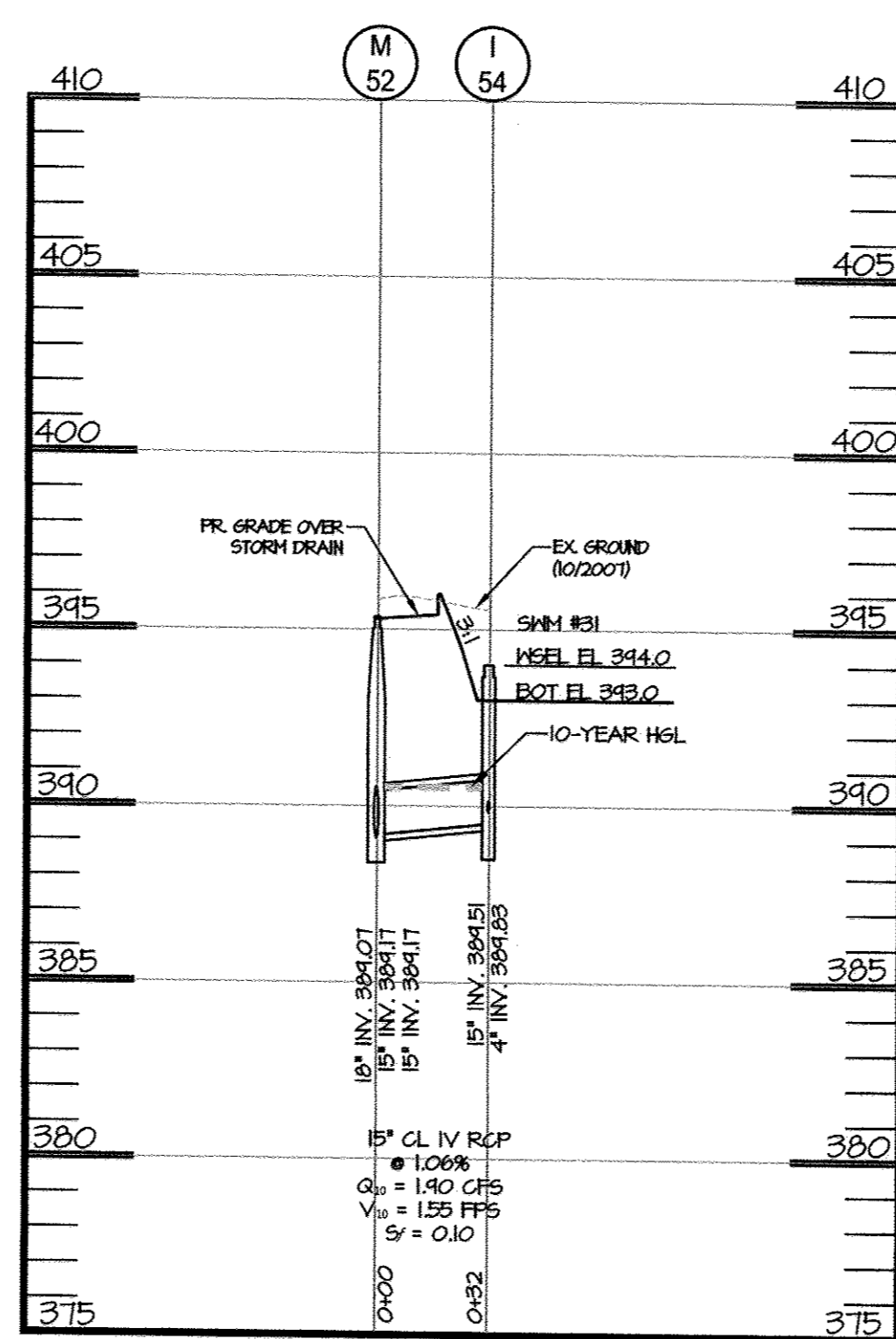
M-73 TO I-79 PROFILE  
SCALE: H: 1"=50'  
V: 1"=5'



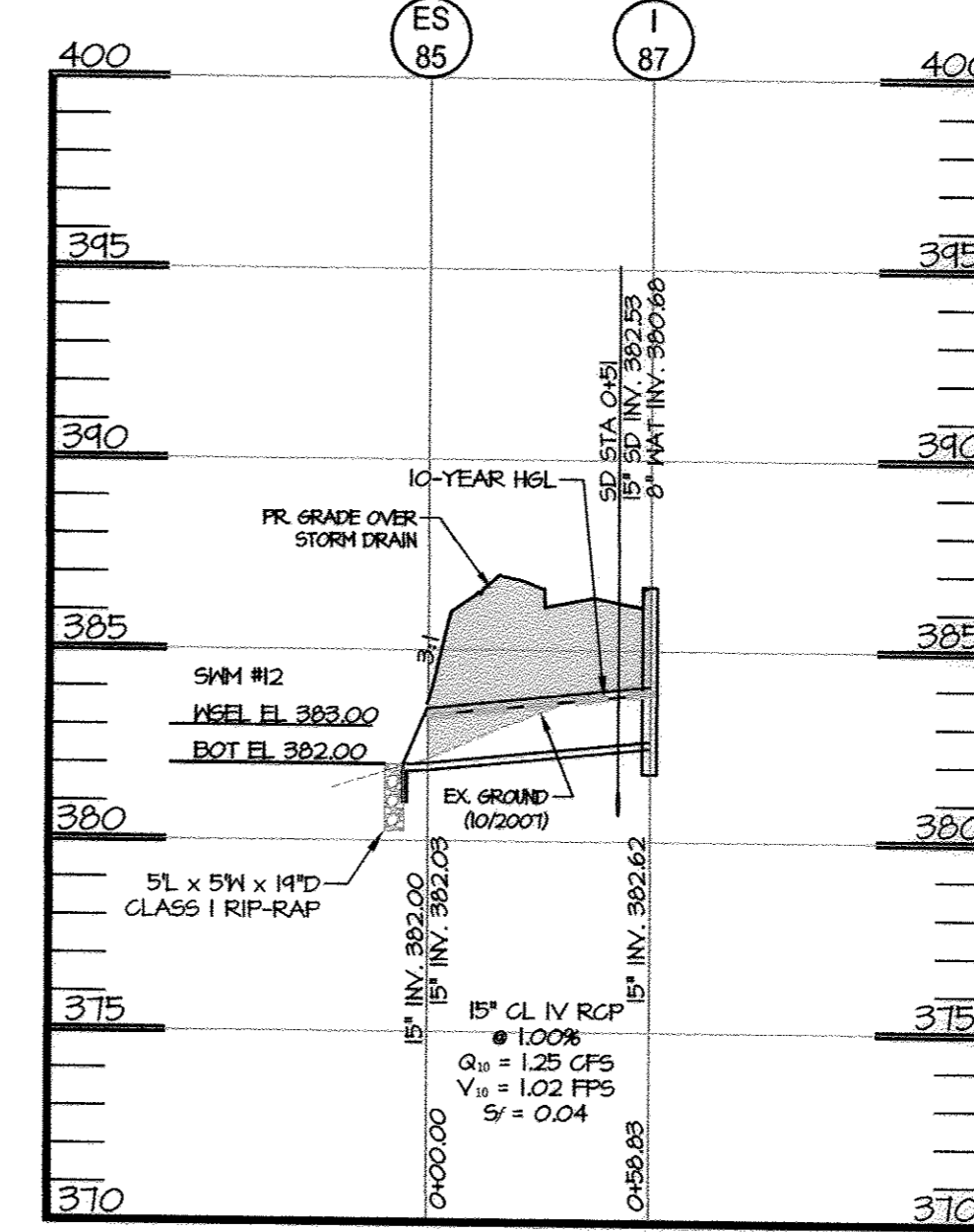
M-69 TO I-83 PROFILE  
SCALE: H: 1"=50'  
V: 1"=5'



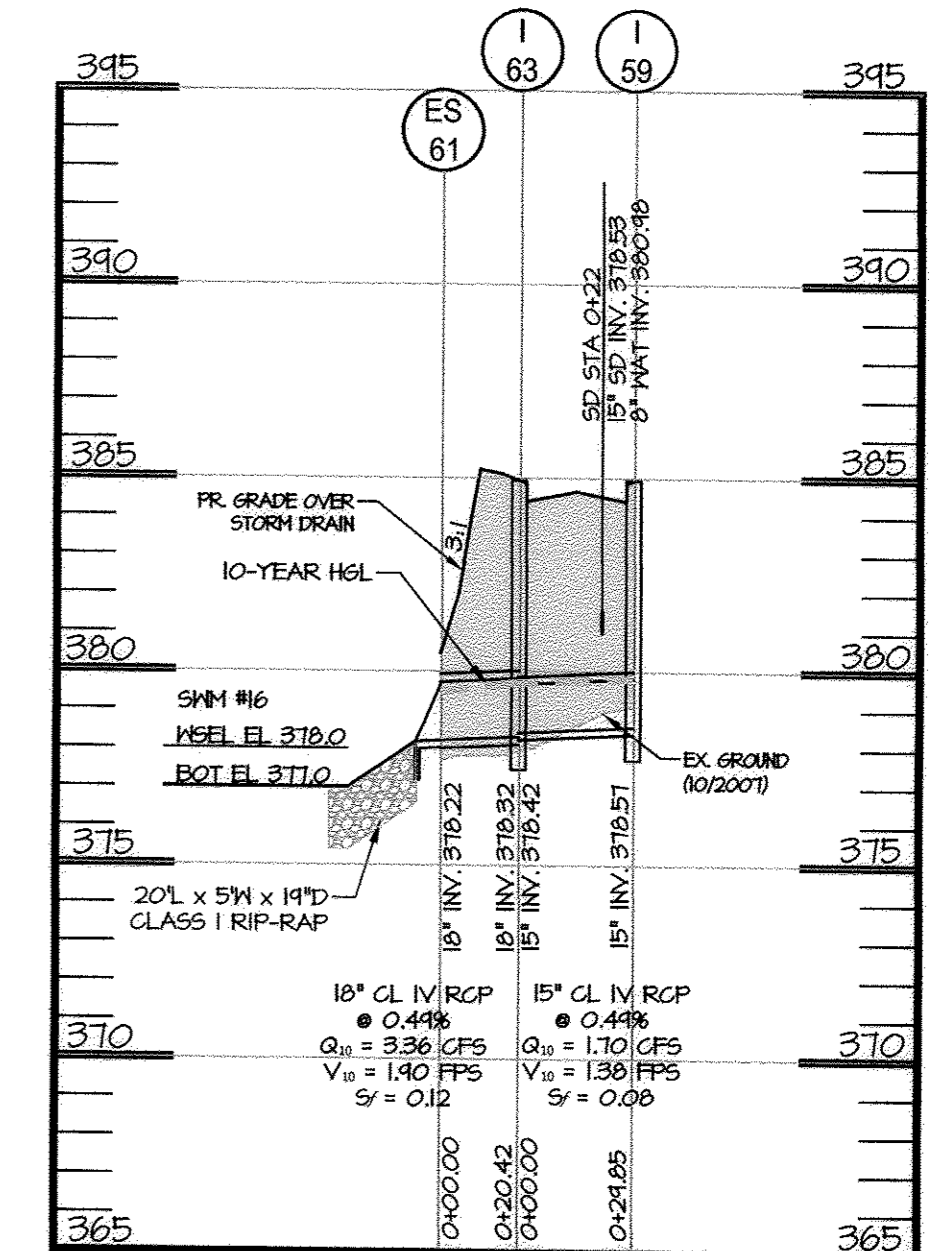
ES-93 TO I-95 PROFILE  
SCALE: H: 1"=50'  
V: 1"=5'



M52 TO I54 PROFILE  
SCALE: H: 1"=50'  
V: 1"=5'



ES-85 TO I-87 PROFILE  
SCALE: H: 1"=50'  
V: 1"=5'



ES-61 TO I-63 PROFILE  
SCALE: H: 1"=50'  
V: 1"=5'

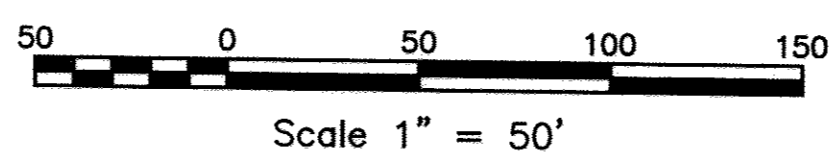
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

*M. Meunier*  
CHIEF, BUREAU OF HIGHWAYS  
DATE: 1/23/2018

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Chad Plumb*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE: 1/30/18

*Jim Morrison*  
CHIEF, LAND DEVELOPMENT DIVISION  
DATE: 2/6/18

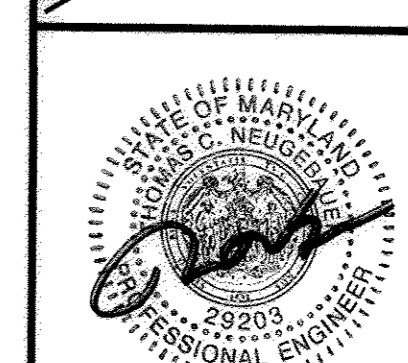


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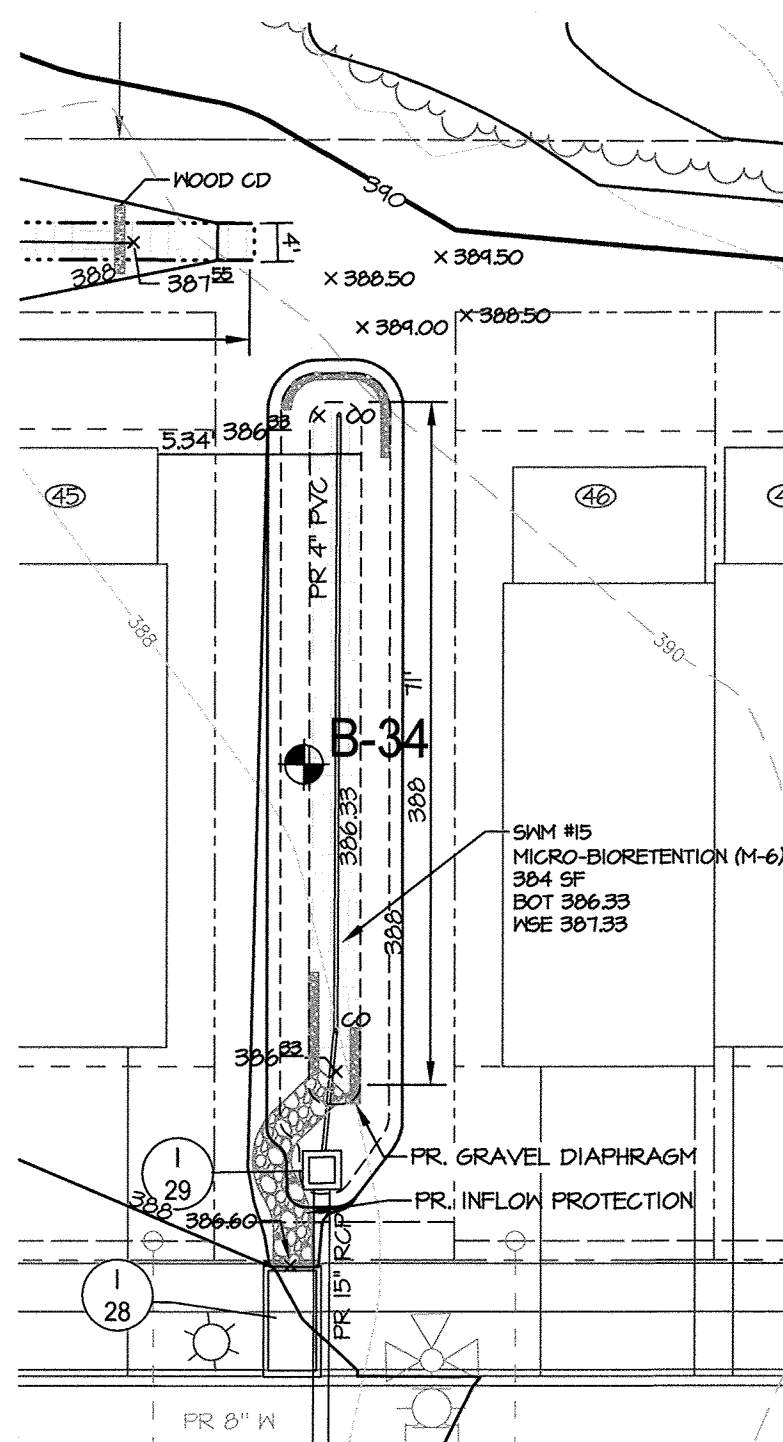
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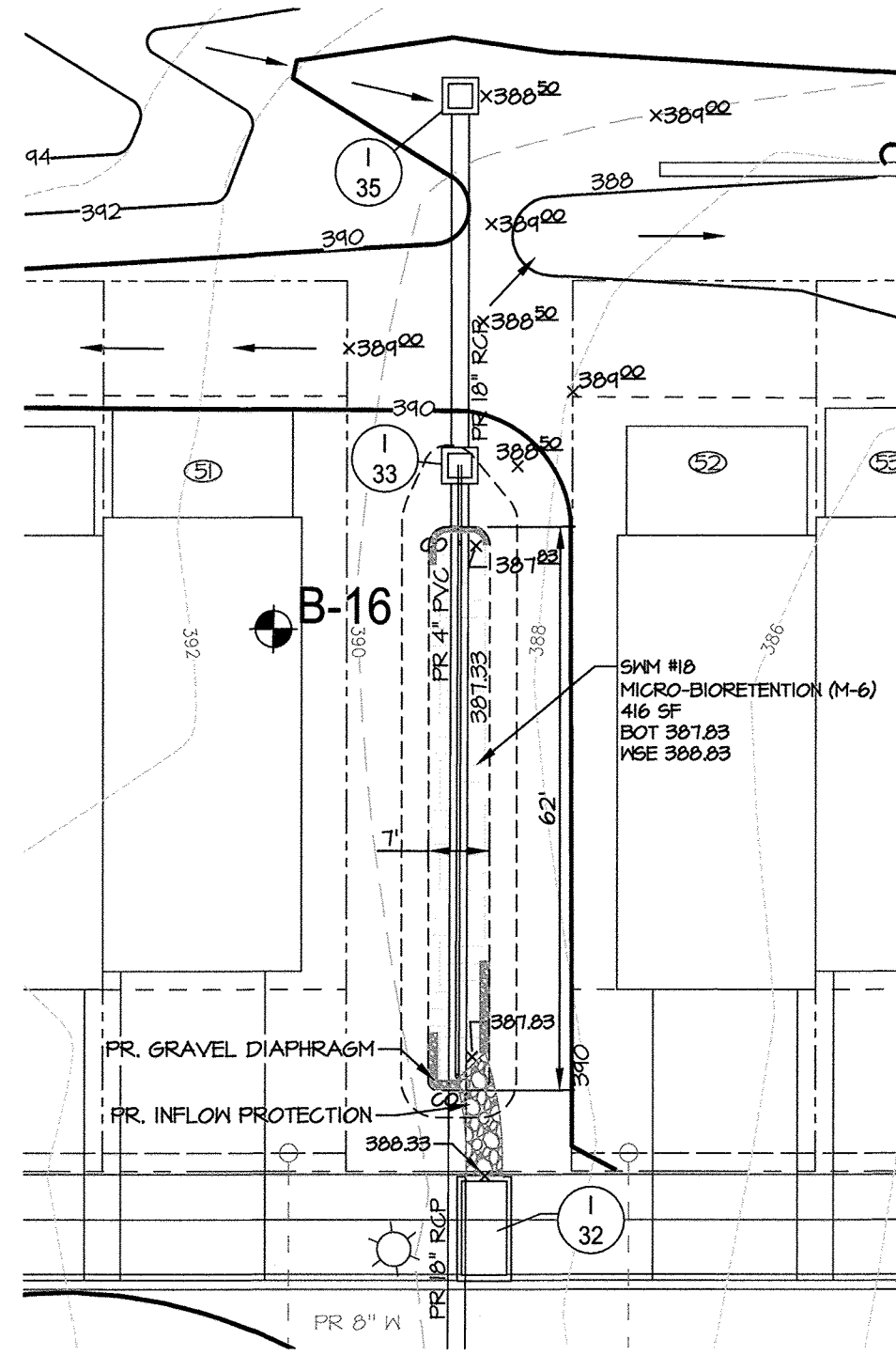
MRAGTA.COM  
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DATE	REVISIONS	JOB NO.:
		15368 x 02
		SCALE: 1" = 50'
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		DRAWN BY: ATS
		DESIGN BY: ATS
		REVIEW BY: TCN
		SHEET: 22 OF 44

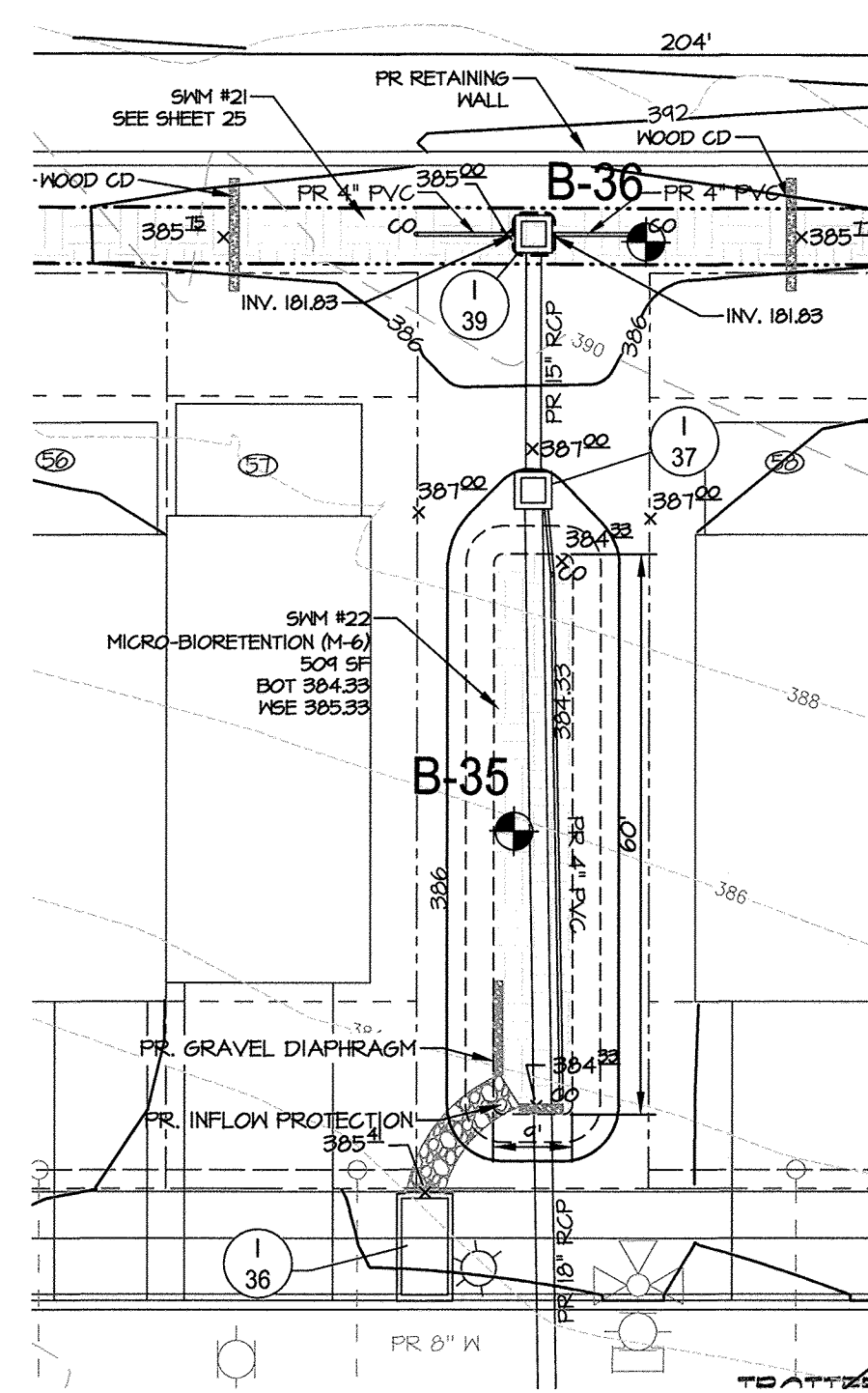




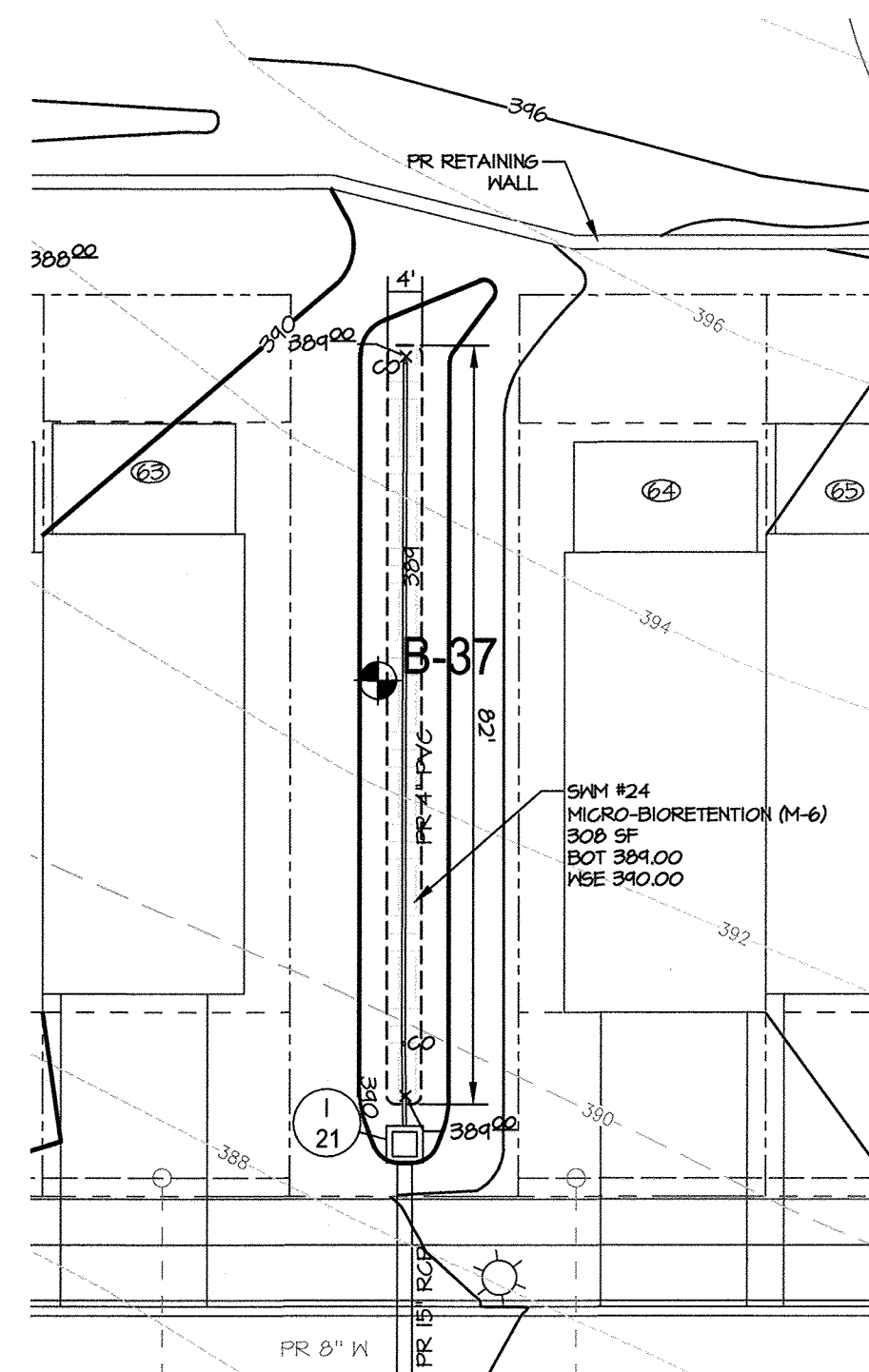
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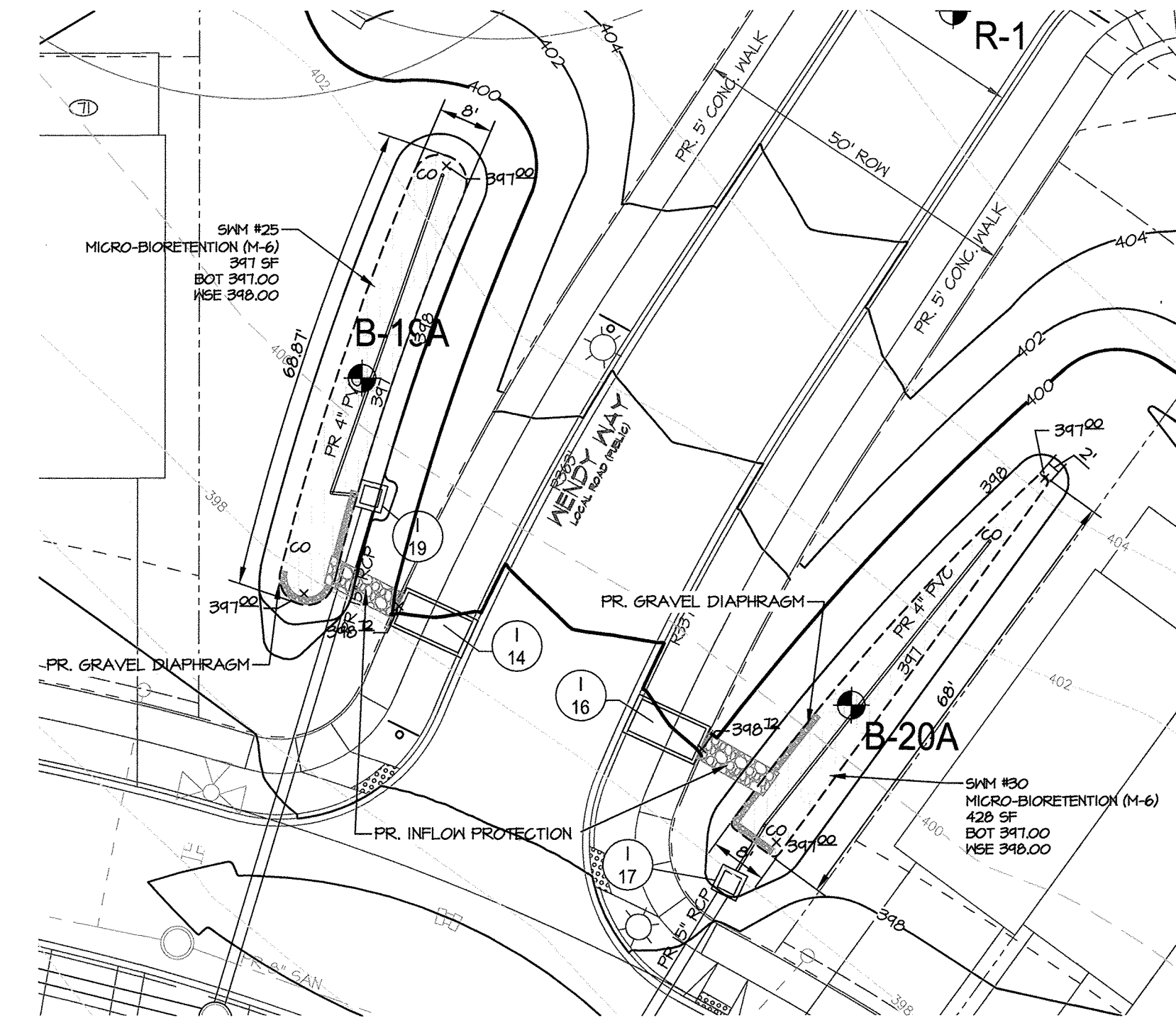
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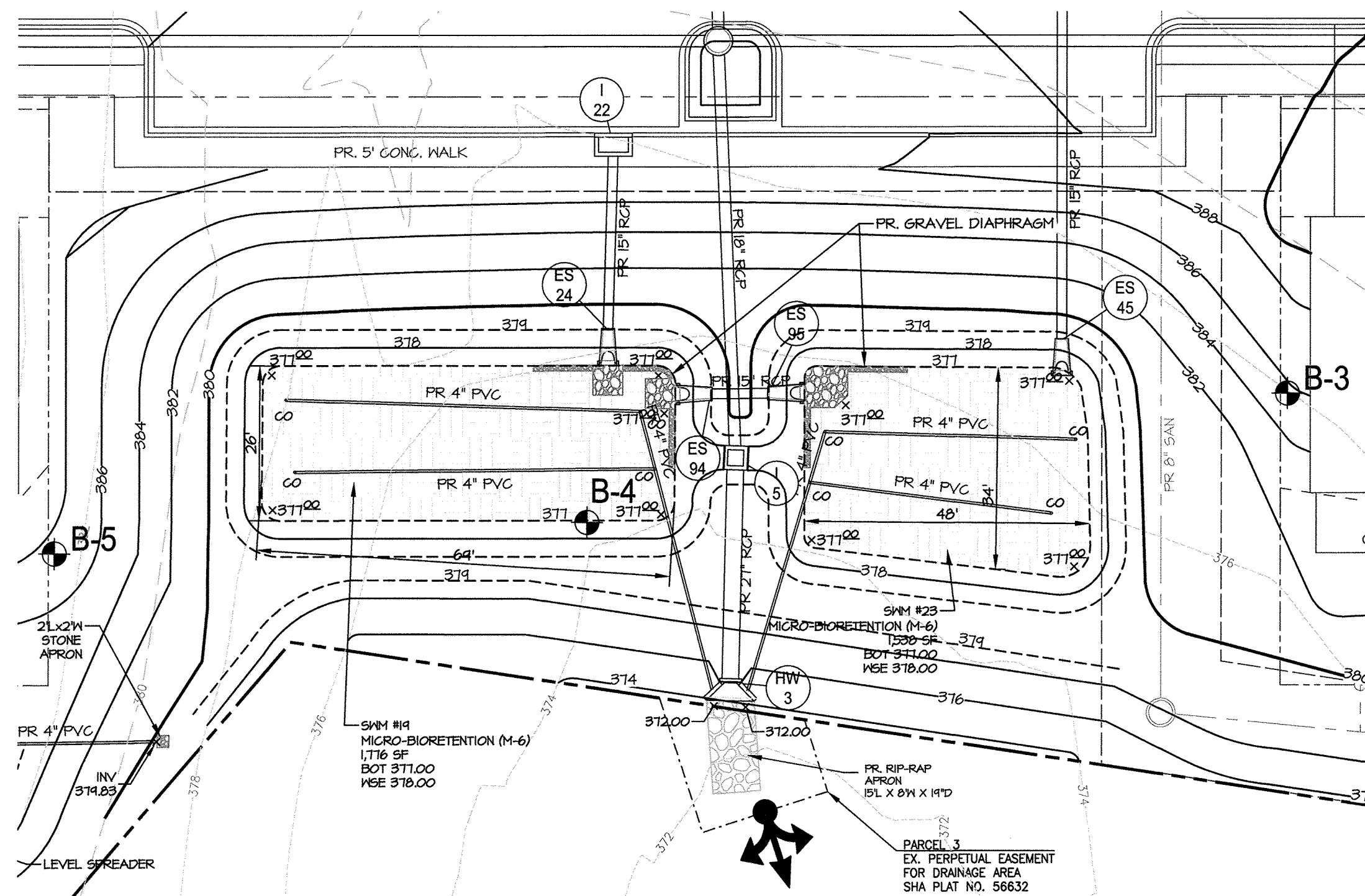
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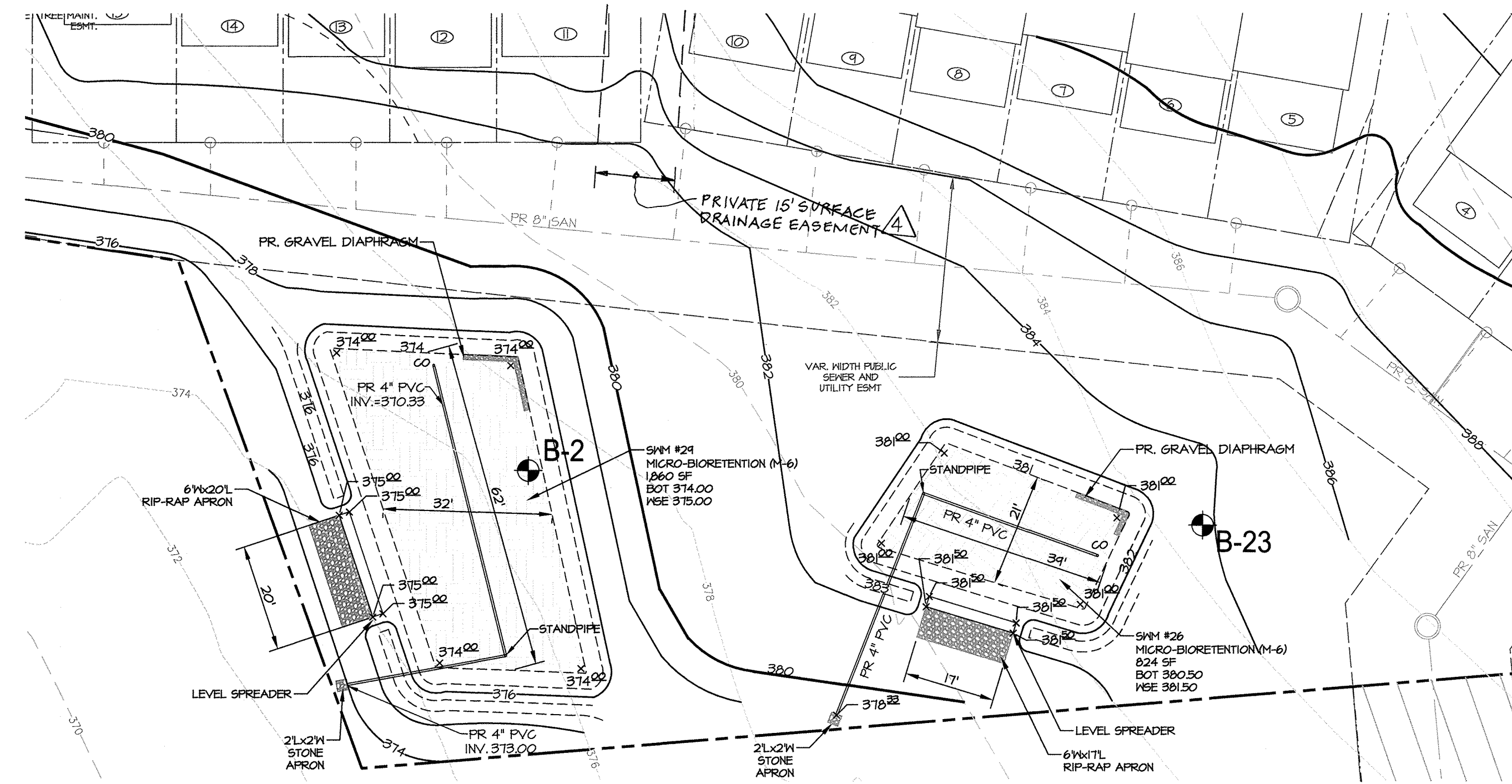
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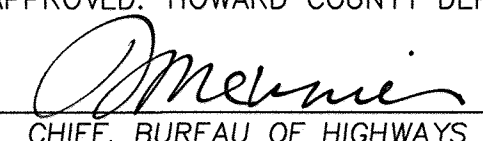
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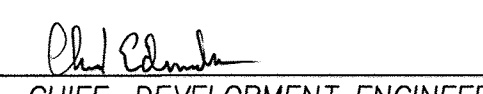


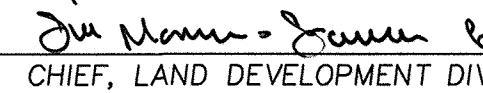
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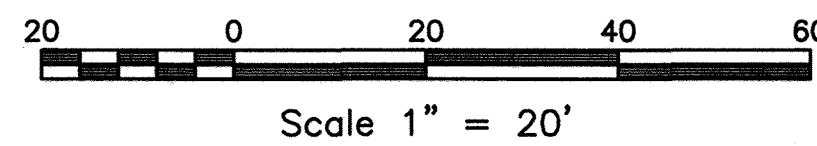


**SWM #26 & 29**  
SCALE: 1"=20'



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 1/23/2018  
 CHIEF, BUREAU OF HIGHWAYS DATE

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 1-30-18  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

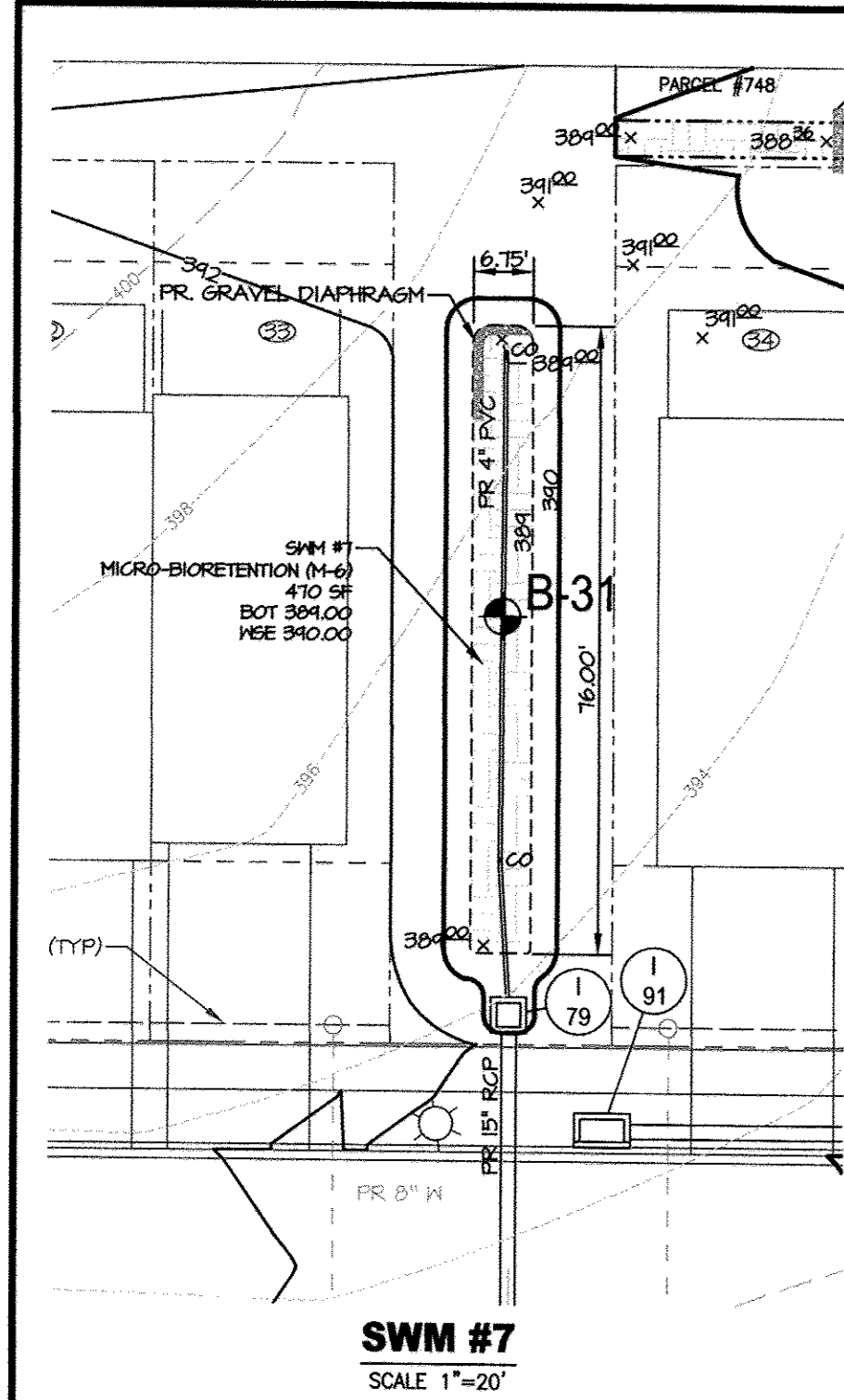
 2/16/18  
 CHIEF, LAND DEVELOPMENT DIVISION DATE



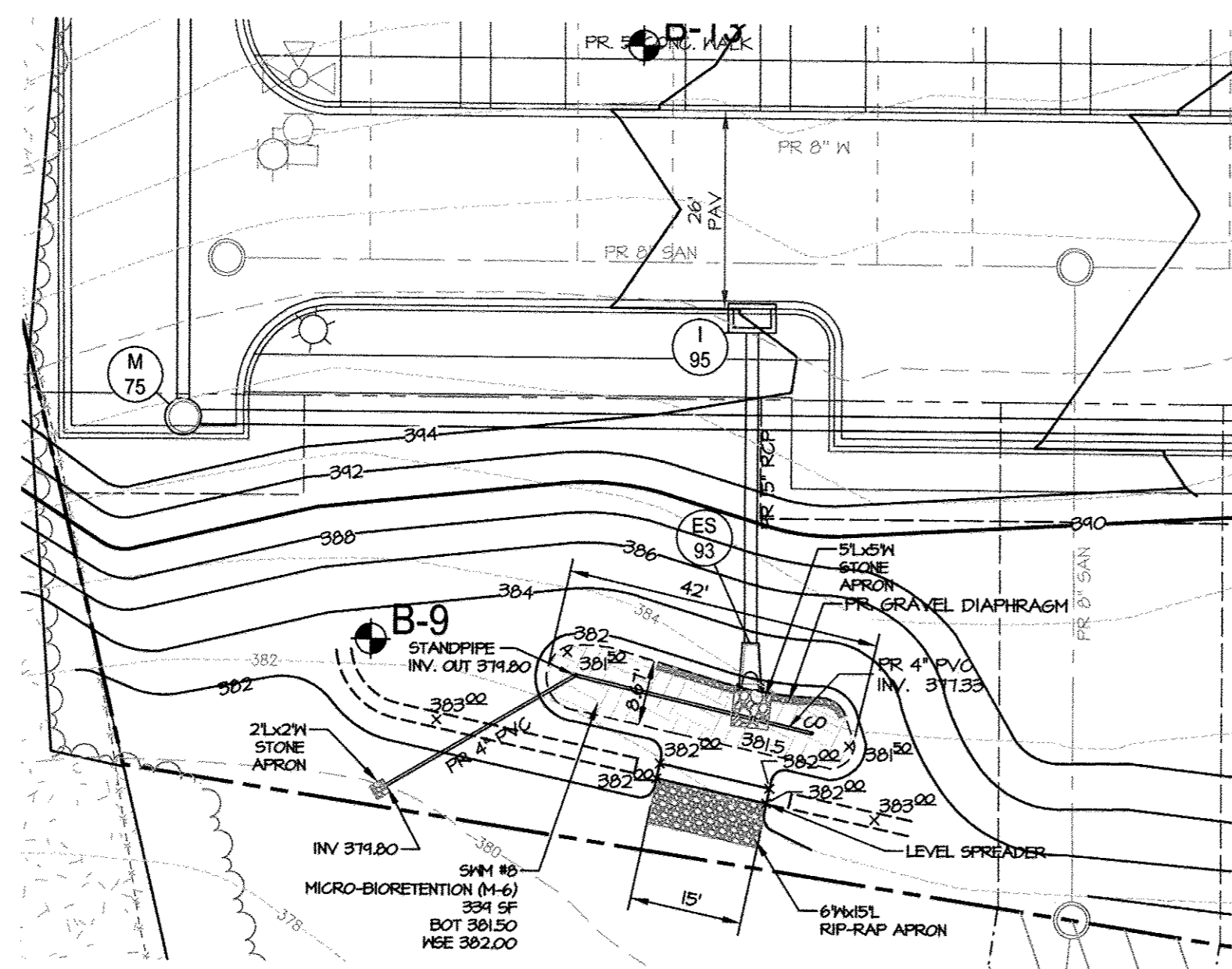
OWNER / APPLICANT / DEVELOPER:  
 HORSE FARM, LLC  
 ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
 COLUMBIA, MD 21045  
 CONTACT: RICHARD HAYWARD  
 PHONE: 410-997-7222

 <b>MORRIS &amp; RITCHIE ASSOCIATES, INC.</b> 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	
<b>TROTTER'S KNOLL - SECTION I</b> HORSE FARM PROPERTY 8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND STORMWATER MANAGEMENT PLAN TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-8 1ST ELECTION DISTRICT HOWARD COUNTY, MD 21043	
DATE: 1-2-19 REVISIONS: 4 ADDED PRIVATE EASEMENT JOB NO.: 15368 x 02 SCALE: 1" = 20' DATE: 9/13/2017 DRAWN BY: ATS DESIGN BY: ATS REVIEW BY: TCN SHEET: 23 OF 44	 MD PROFESSIONAL ENGINEERING CERTIFICATION: 12-12-17 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. 29203, EXPIRATION DATE: 06/16/2019.

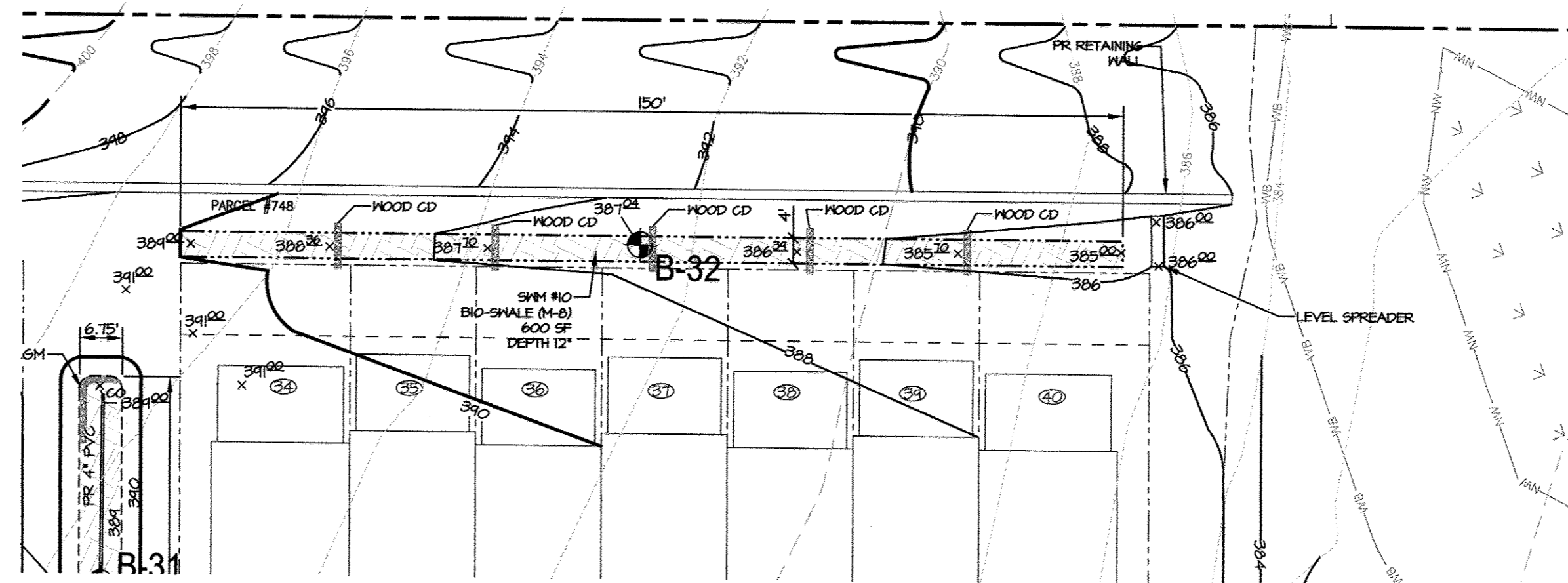




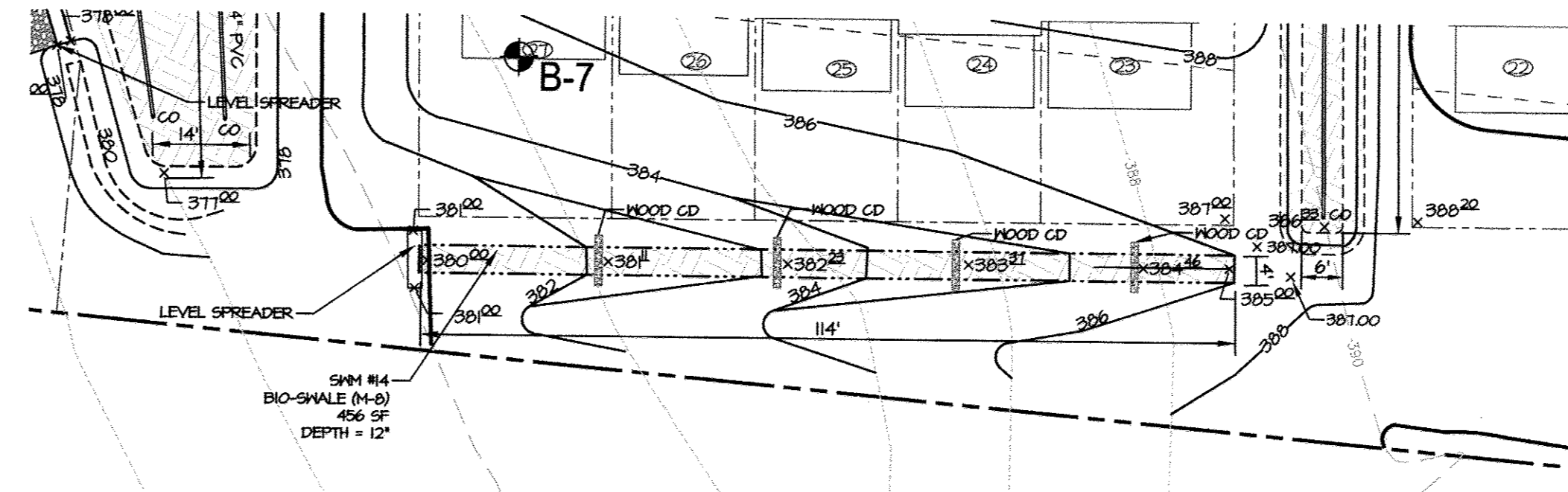
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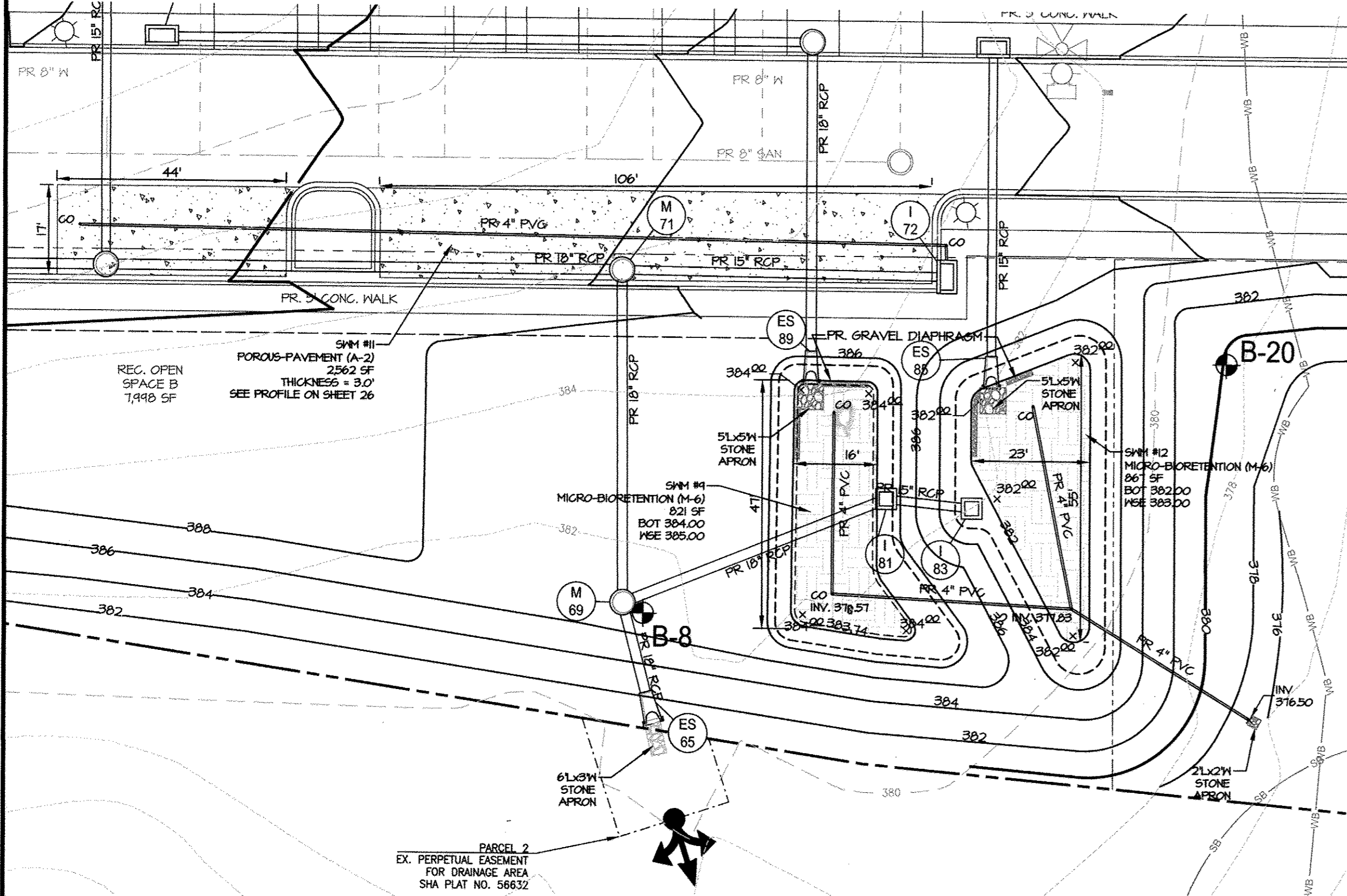
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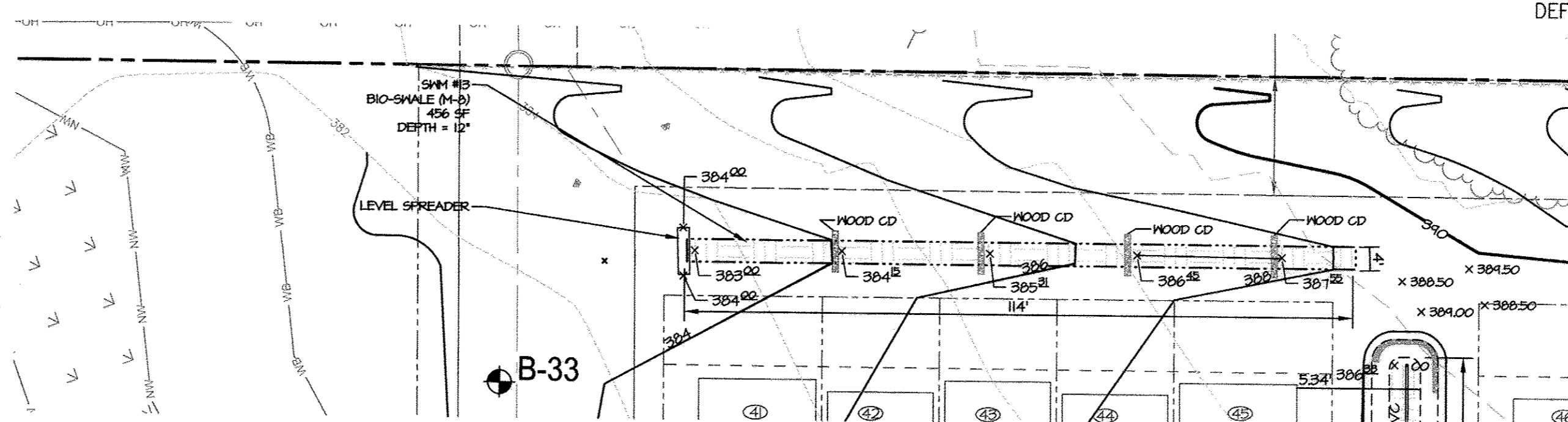
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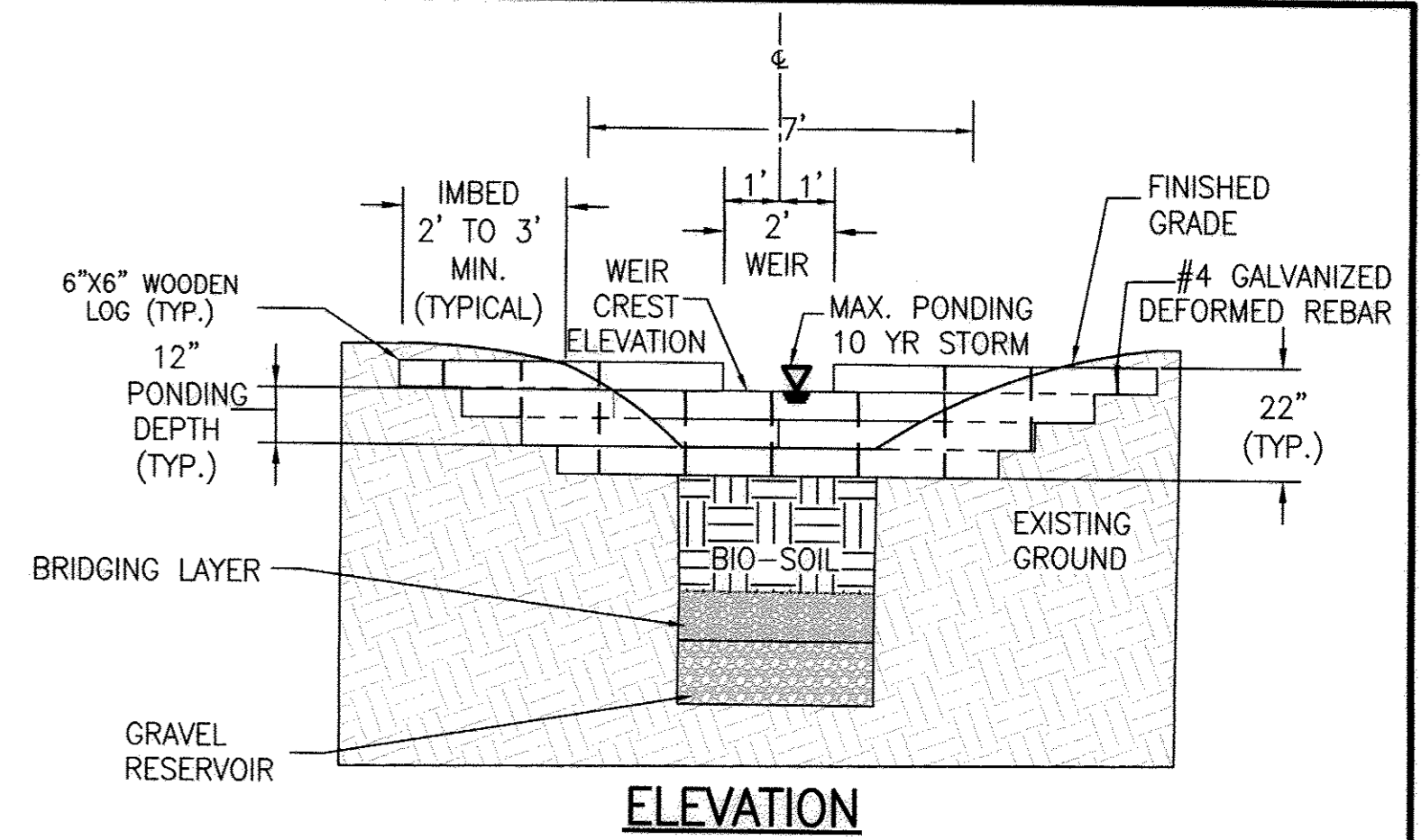
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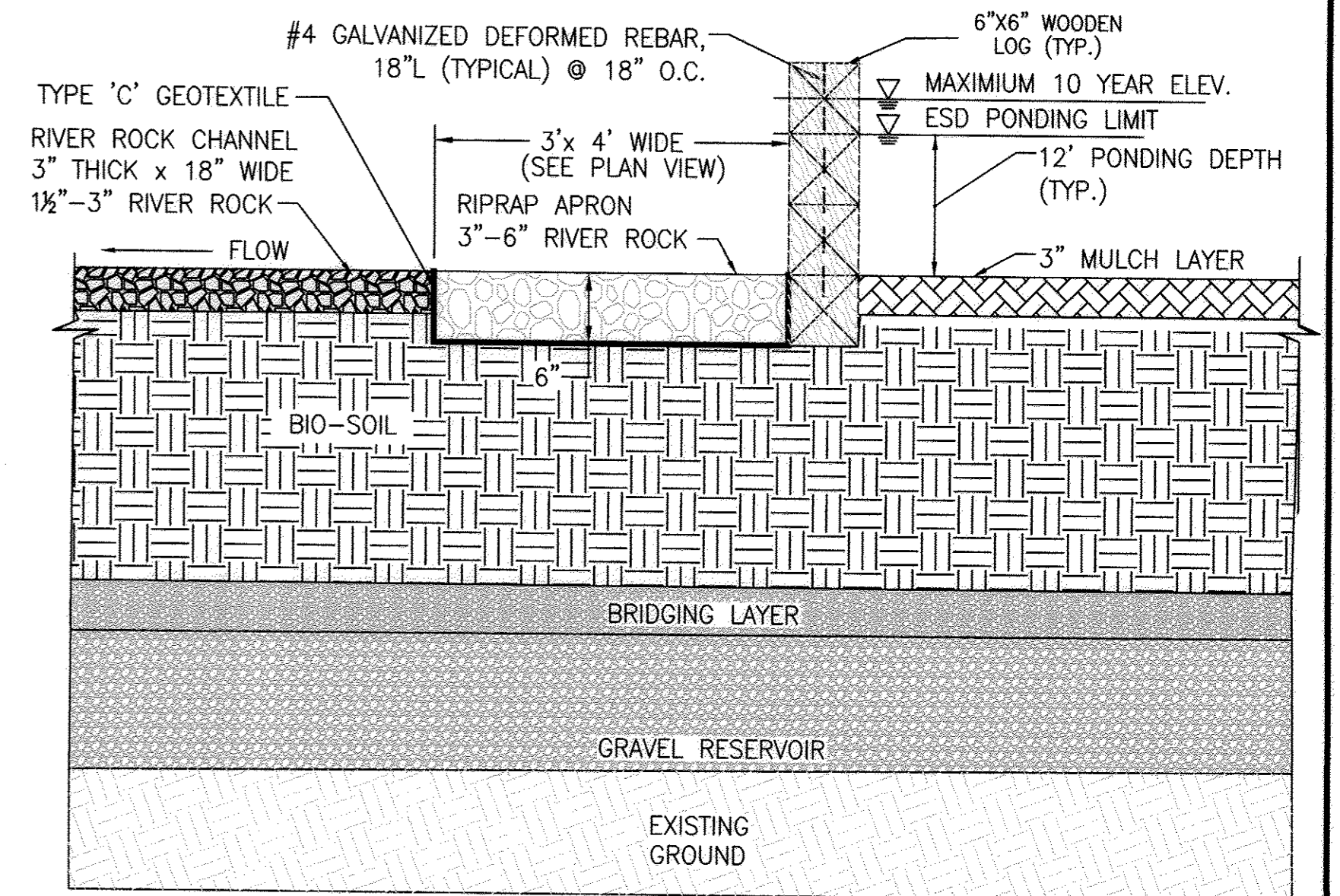
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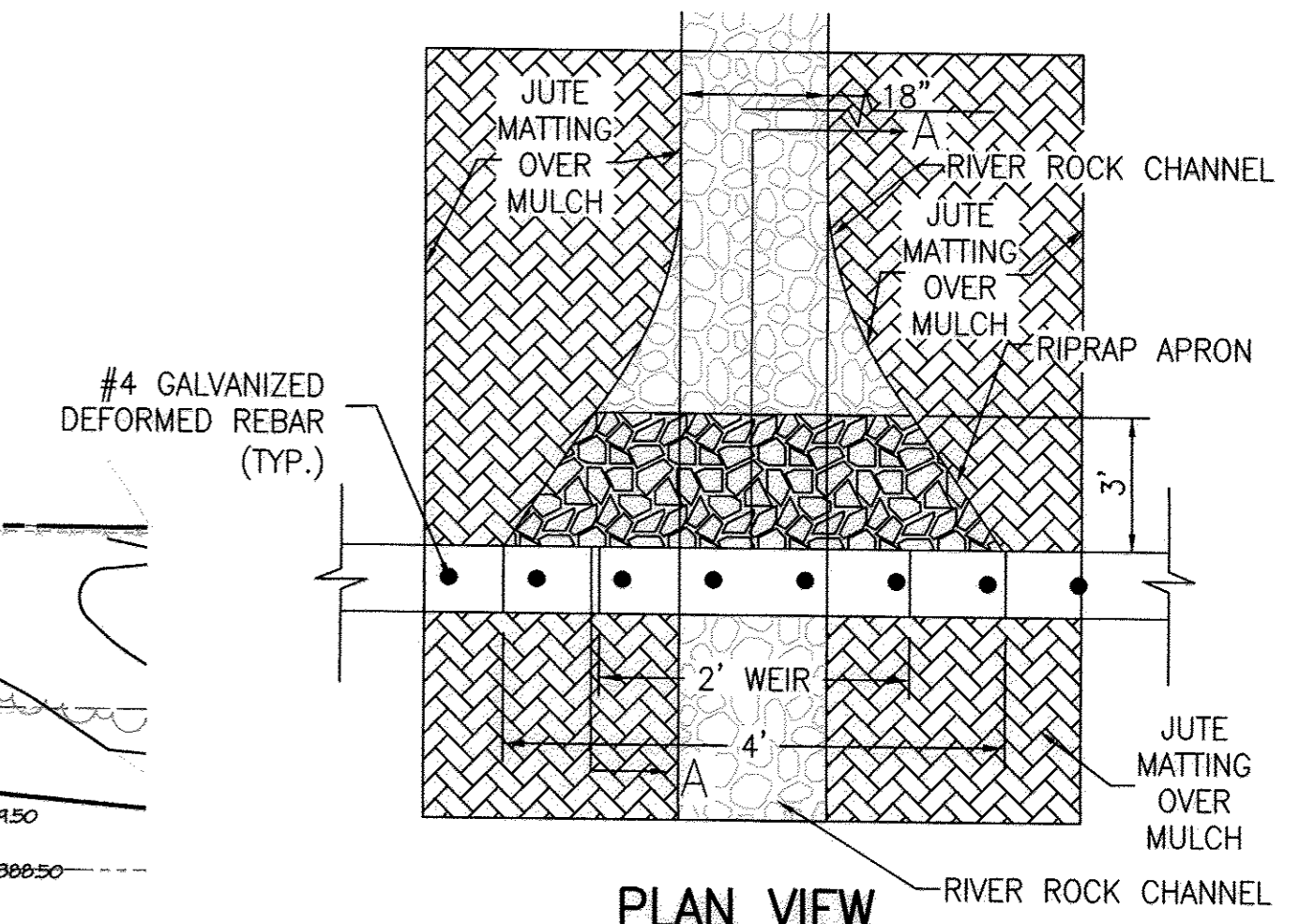
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SCALE 1"=20'



**ELEVATION**



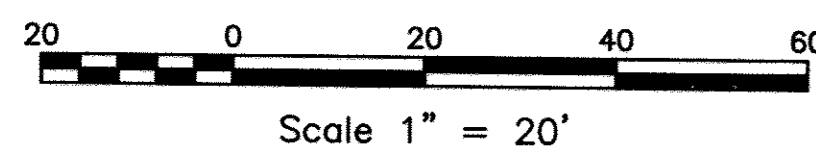
**SECTION A-A**



**PLAN VIEW**

**CHECK DAM DETAIL**

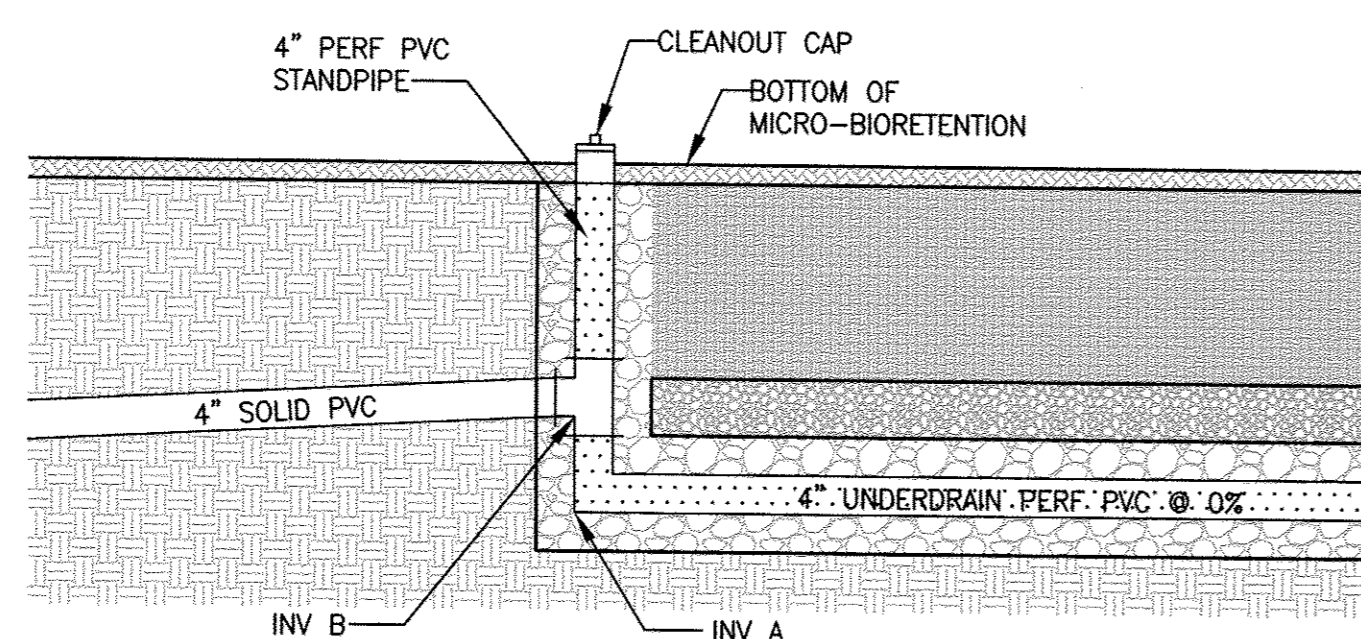
NOT TO SCALE



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Howard County*  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE: 1/23/2018

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Richard Hawward*  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 1-30-18

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Richard Hawward*  
 CHIEF, LAND DEVELOPMENT DIVISION  
 DATE: 1-30-18



**STANDPIPE DETAIL**  
N.T.S.

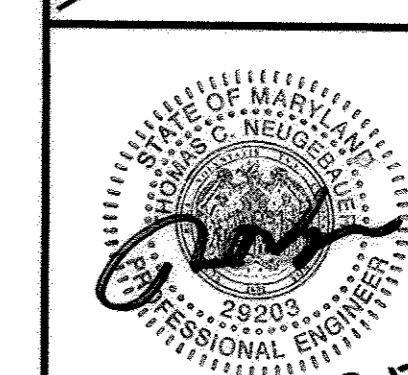
**STANDPIPE SCHEDULE**

FACILITY NUMBER	INV 'A'	INV 'B'
SWM #8	377.33	379.80
SWM #16	372.83	374.00
SWM #26	376.83	378.33
SWM #29	370.33	373.00

OWNER / APPLICANT / DEVELOPER:  
 HORSE FARM, LLC  
 ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
 COLUMBIA, MD 21045  
 CONTACT: RICHARD HAWWARD  
 PHONE: 410-997-7222



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 ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS  
 14280 PARK CENTER DRIVE  
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 (410) 792-9792 / (301) 776-1690  
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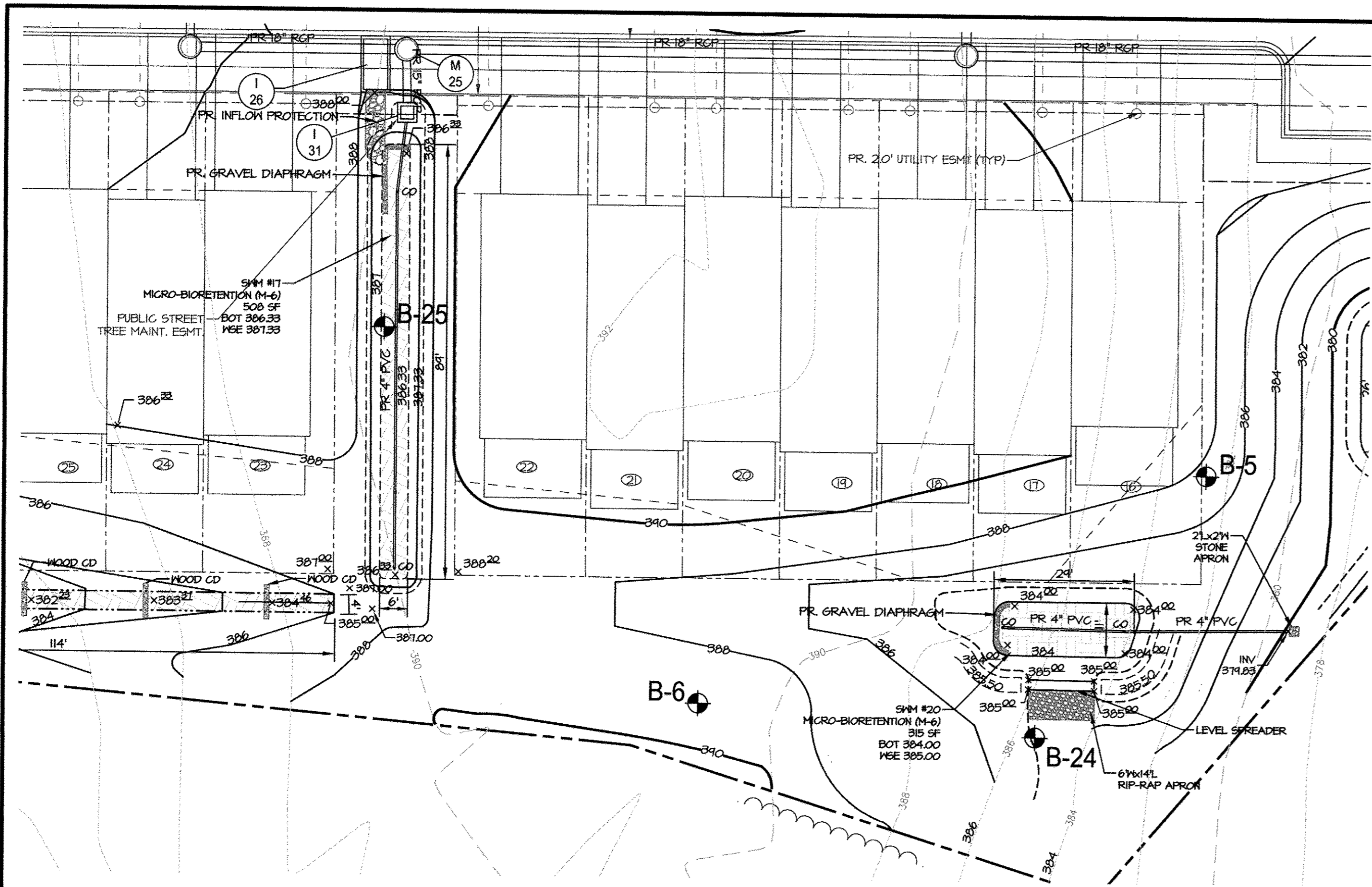


**TROTTER'S KNOLL - SECTION I**  
**HORSE FARM PROPERTY**  
 8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
**STORMWATER MANAGEMENT NOTES AND DETAILS**  
 TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-B  
 1ST ELECTION DISTRICT  
 HOWARD COUNTY, MD 21043

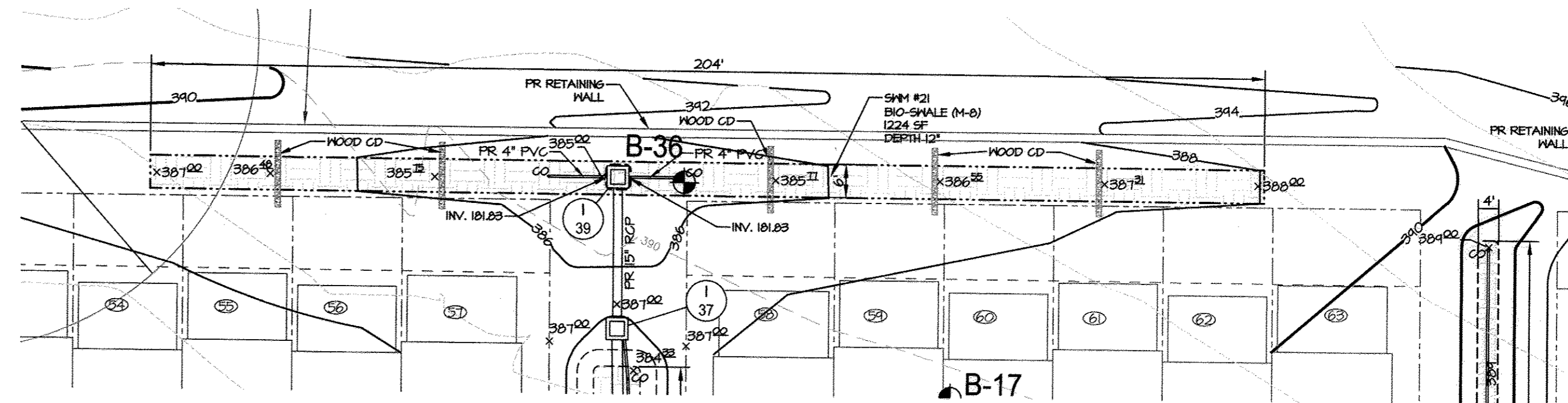
MD PROFESSIONAL ENGINEER CERTIFICATION: 12-12-17  
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 29203, EXPIRATION DATE: 06/16/2019.

DATE	REVISIONS	JOB NO.:
		15368 x 02
		SCALE: 1" = 20'
		DATE: 9/13/2017
		DRAWN BY: ATS
		DESIGN BY: ATS
		REVIEW BY: TCN
		SHEET: 24 OF 44

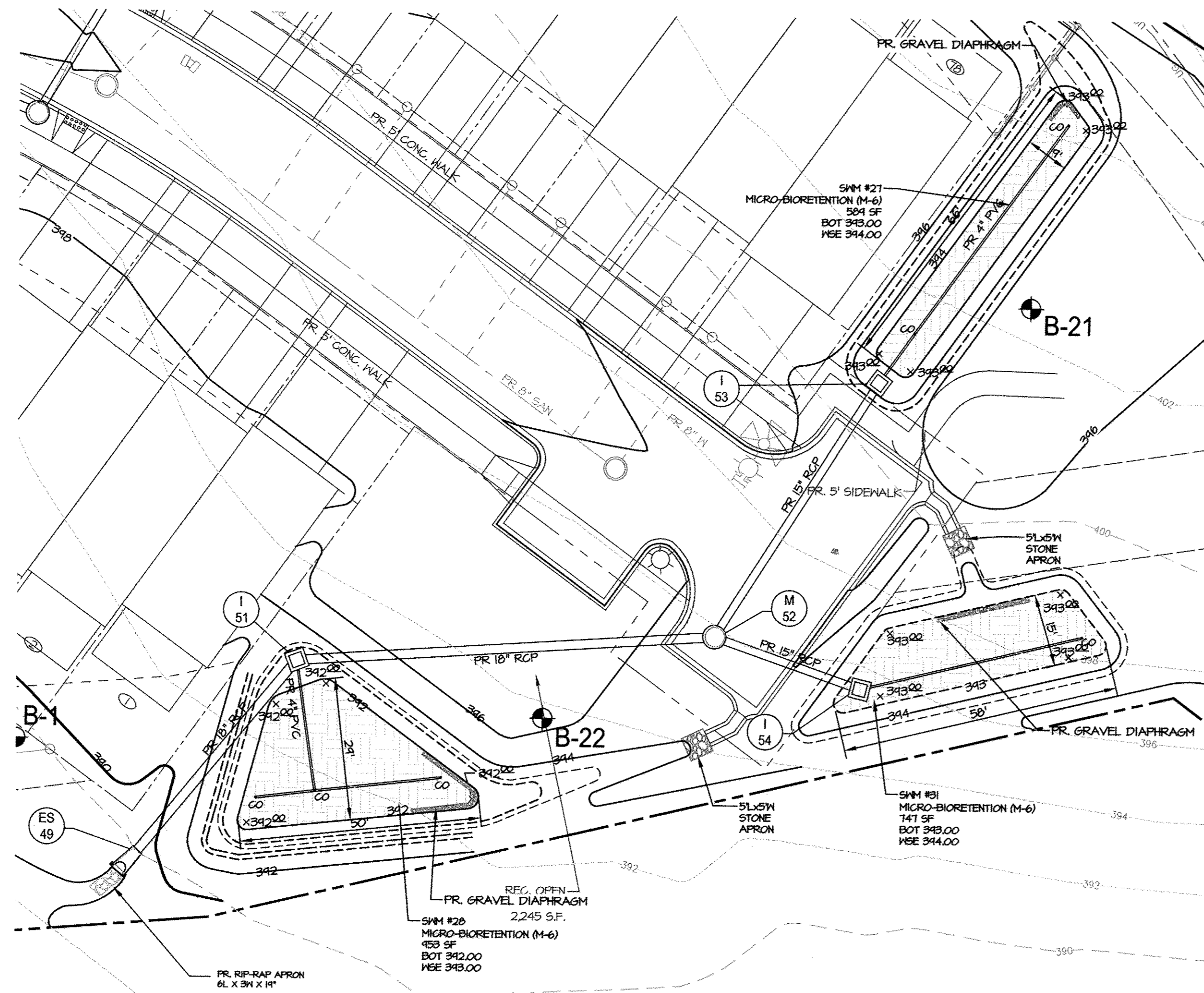




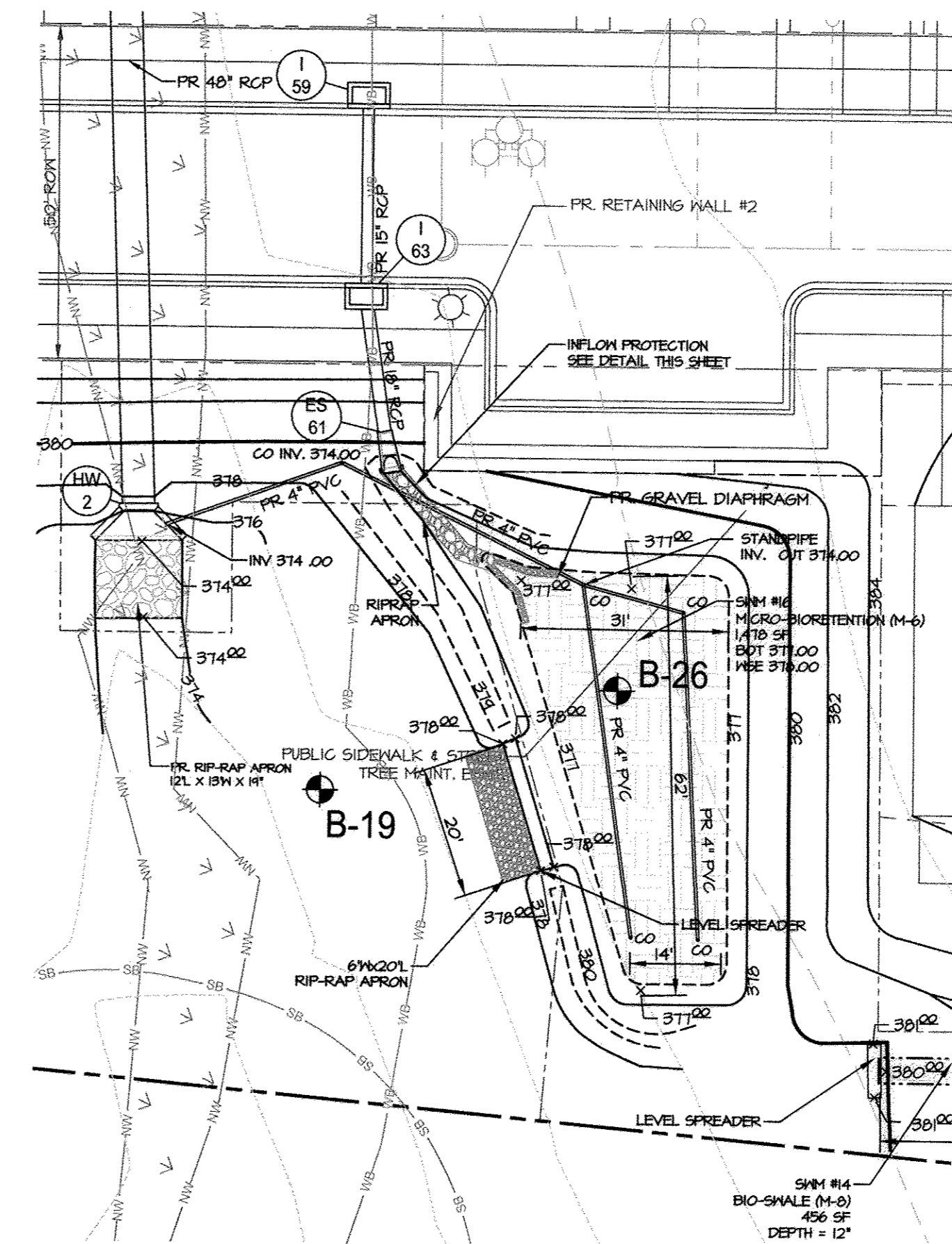
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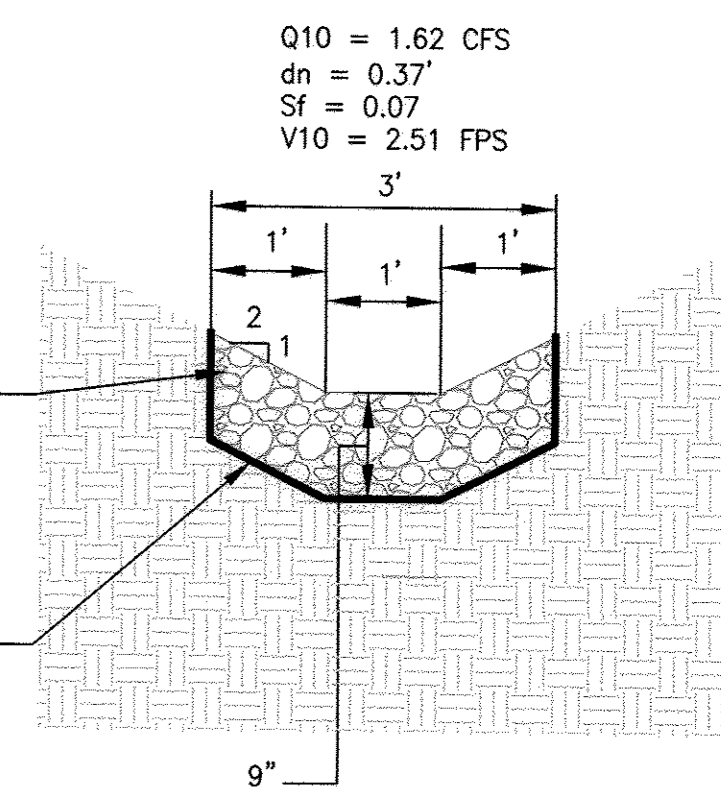
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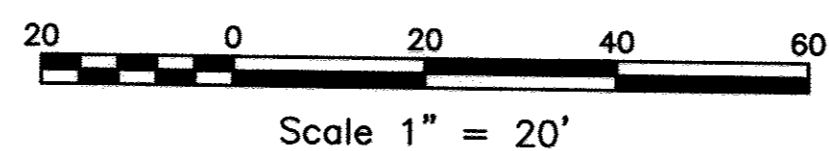
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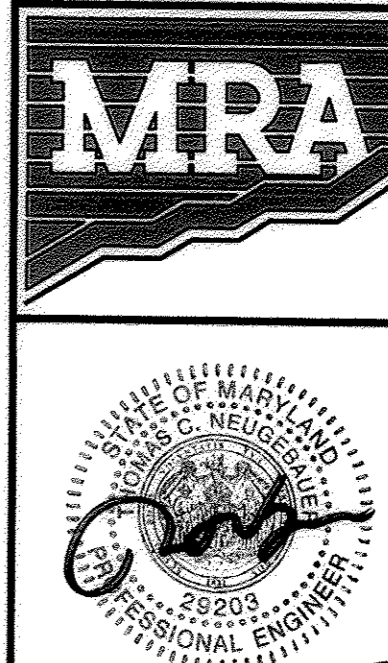


**INFLOW PROTECTION DETAIL AT ES-61**  
N.T.S.



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*[Signature]* 1/23/2018  
 CHIEF, BUREAU OF HIGHWAYS  
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*[Signature]* 1-30-18  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
*[Signature]* 2/1/18  
 CHIEF, LAND DEVELOPMENT DIVISION

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 MRAGTA.COM

**TROTTER'S KNOLL - SECTION I**  
 HORSE FARM PROPERTY  
 8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
 STORMWATER MANAGEMENT NOTES AND DETAILS

TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-8  
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DATE	REVISIONS	JOB NO.:
		15368 x 02
		SCALE: 1" = 20'
		DATE: 9/13/2017
		DRAWN BY: ATS
		DESIGN BY: ATS
		REVIEW BY: TCN
		SHEET: 25 OF 44



# 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 BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.05.

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

- SOIL 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 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 ALLEVIATED AT THE BASE OF THE MICRO-BIORETENTION AND BIOSWALE FACILITIES BY USING A PRIMARY TILLING OPERATION SUCH AS A CHISEL PLOW, RIPPER, 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 PLUGS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS.

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

## 6. UNDERDRAINS

UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:

- PIPE - SHOULD BE 4"-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 PEA GRAVEL (1/8" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".

## 7. MISCELLANEOUS

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

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

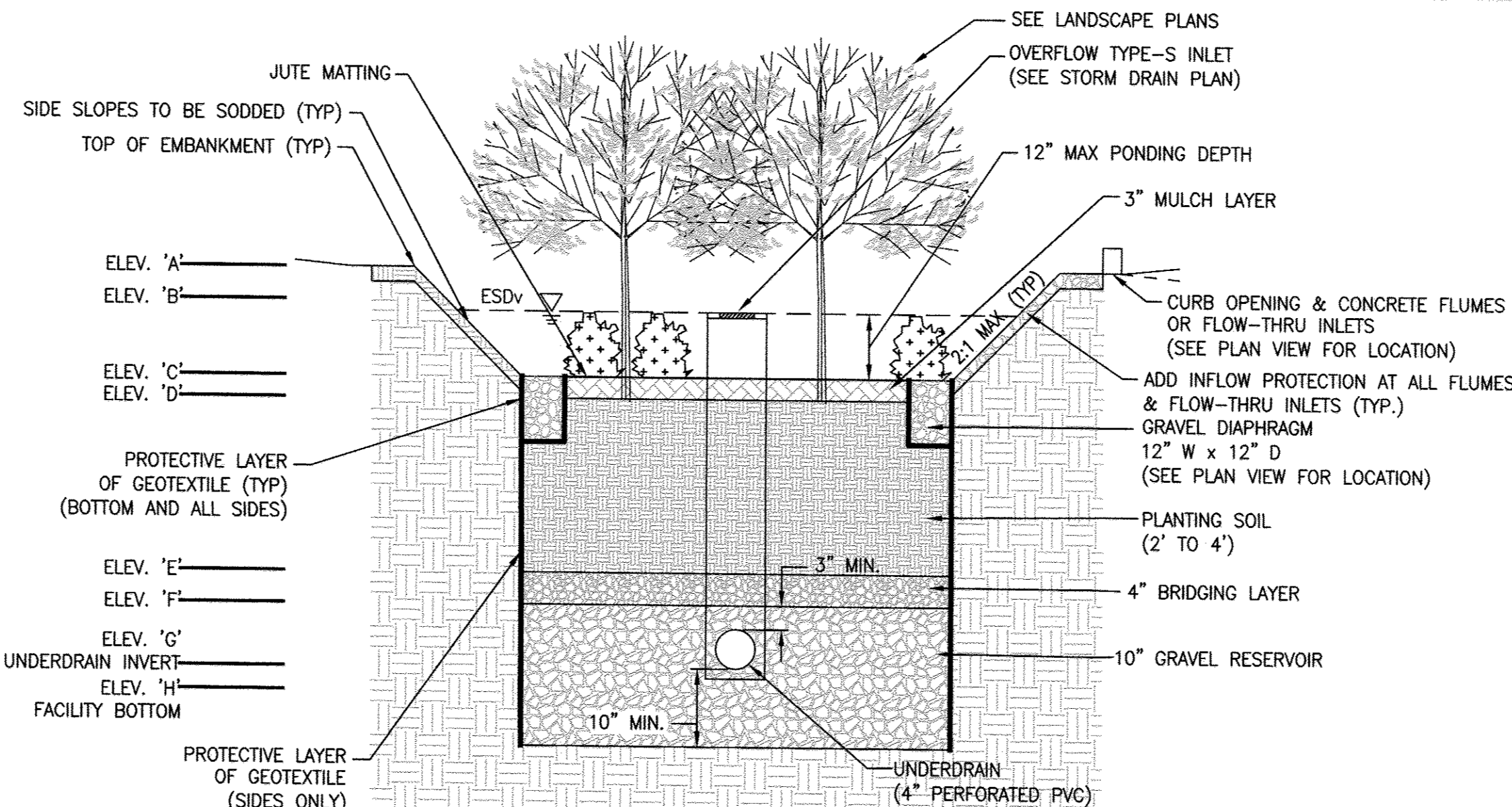
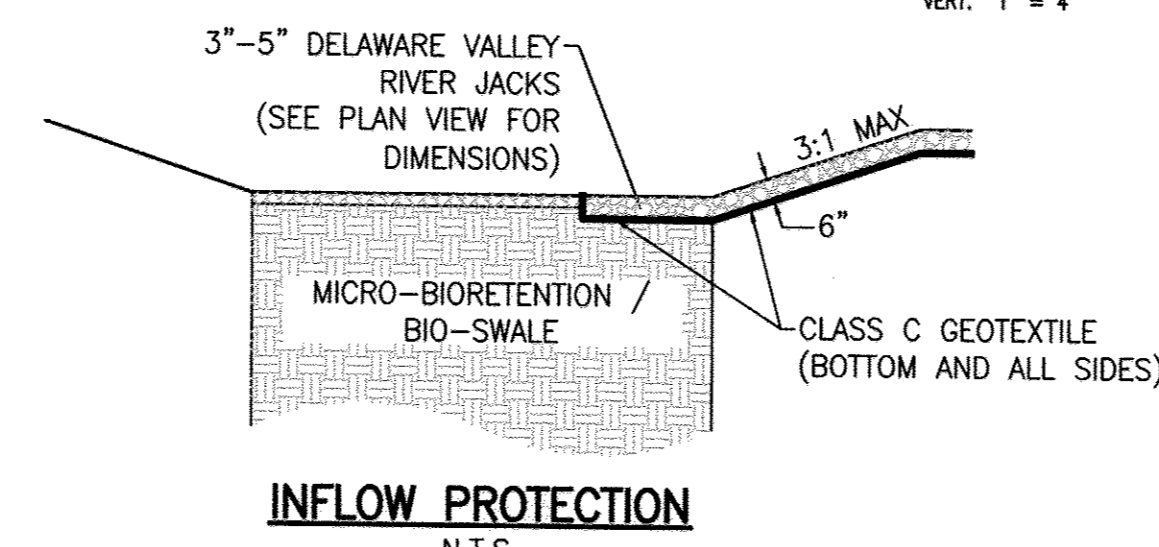
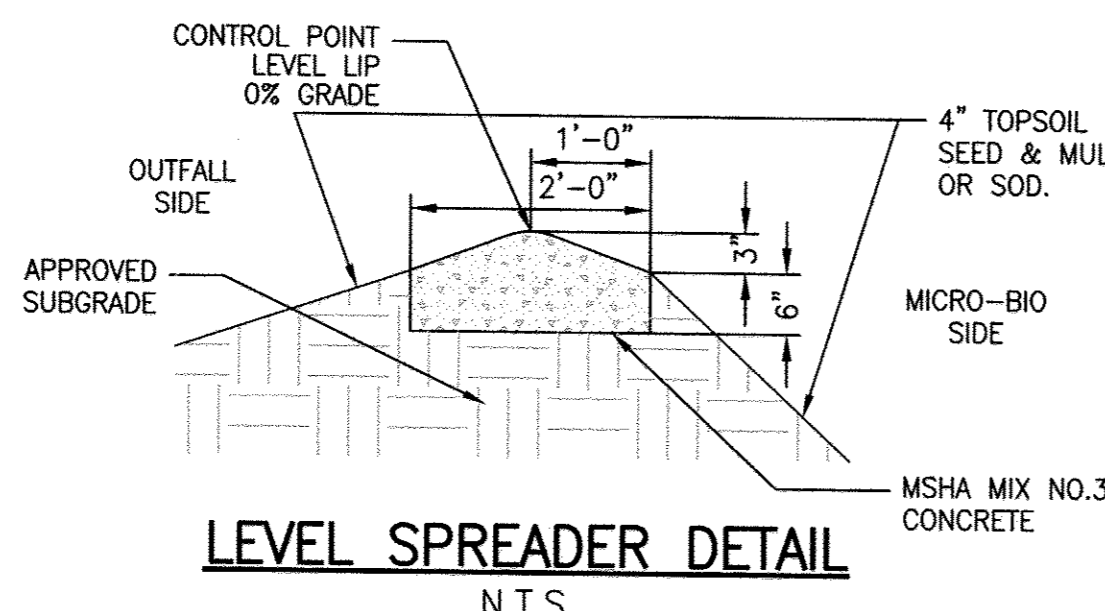
MATERIAL	SPECIFICATION	SIZE	NOTES
PLANTINGS	SEE APPENDIX A, TABLE A.4	N/A	PLANTINGS ARE SITE-SPECIFIC
PLANTING SOIL [2' TO 4' DEEP]	LOAMY SAND (60-65%) & COMPOST (35-40%) OR SANDY LOAM (30%), COARSE SAND (30%) & COMPOST (40%)	N/A	USDA SOILS TYPES LOAMY SAND OR SANDY LOAM; CLAY CONTENT < 5%
ORGANIC CONTENT	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 ENTRAINING, 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 350R/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

## 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  
 [Signature] 12/3/18  
 CHIEF, BUREAU OF HIGHWAYS  
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 1/30/18  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 [Signature] 2/6/18  
 CHIEF, LAND DEVELOPMENT DIVISION



## MICRO-BIORETENTION

MDE CLASSIFICATION M-6

(TYP. SECTION)

N.T.S.

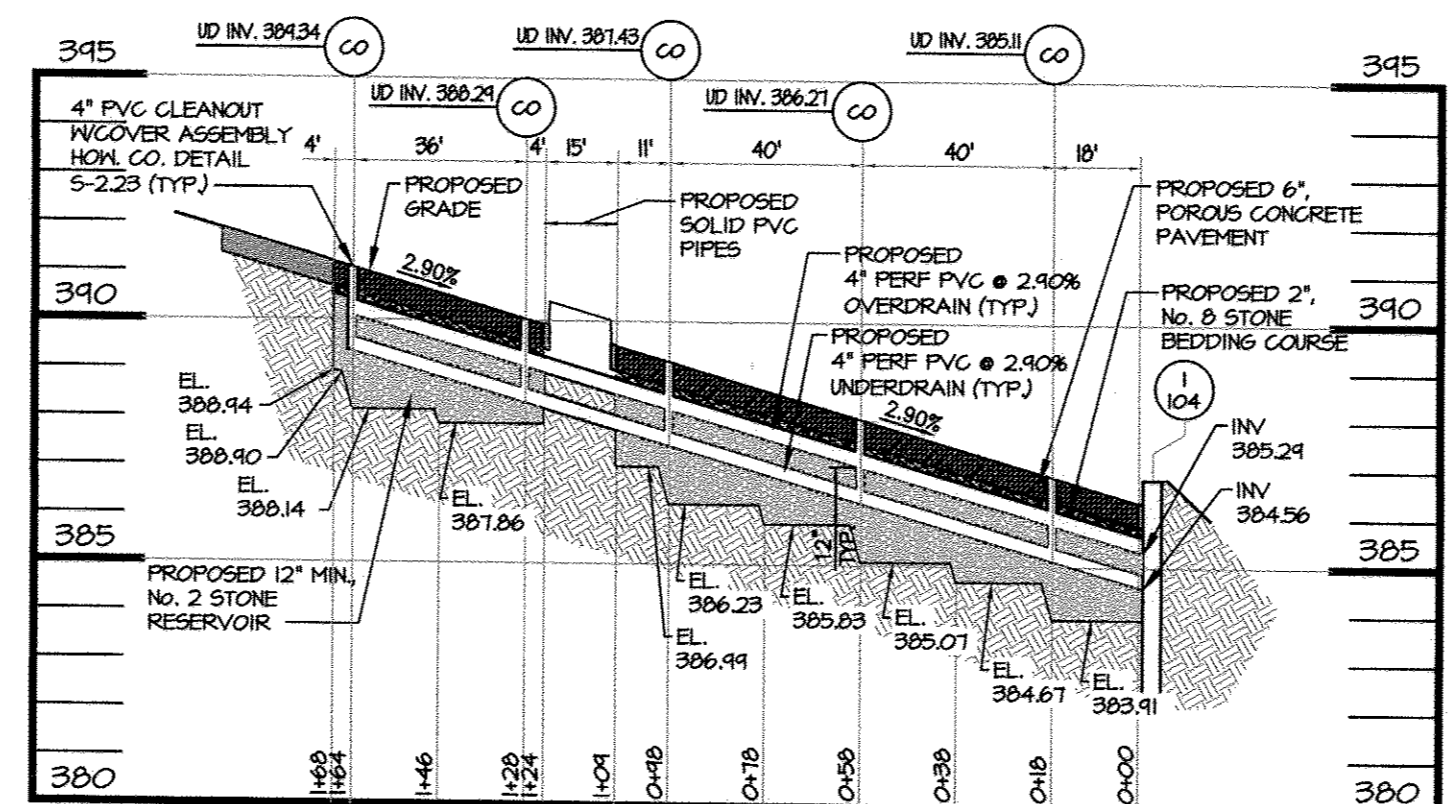
## MAINTENANCE CRITERIA FOR MICRO-BIORETENTION AND BIOSWALE FACILITIES

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

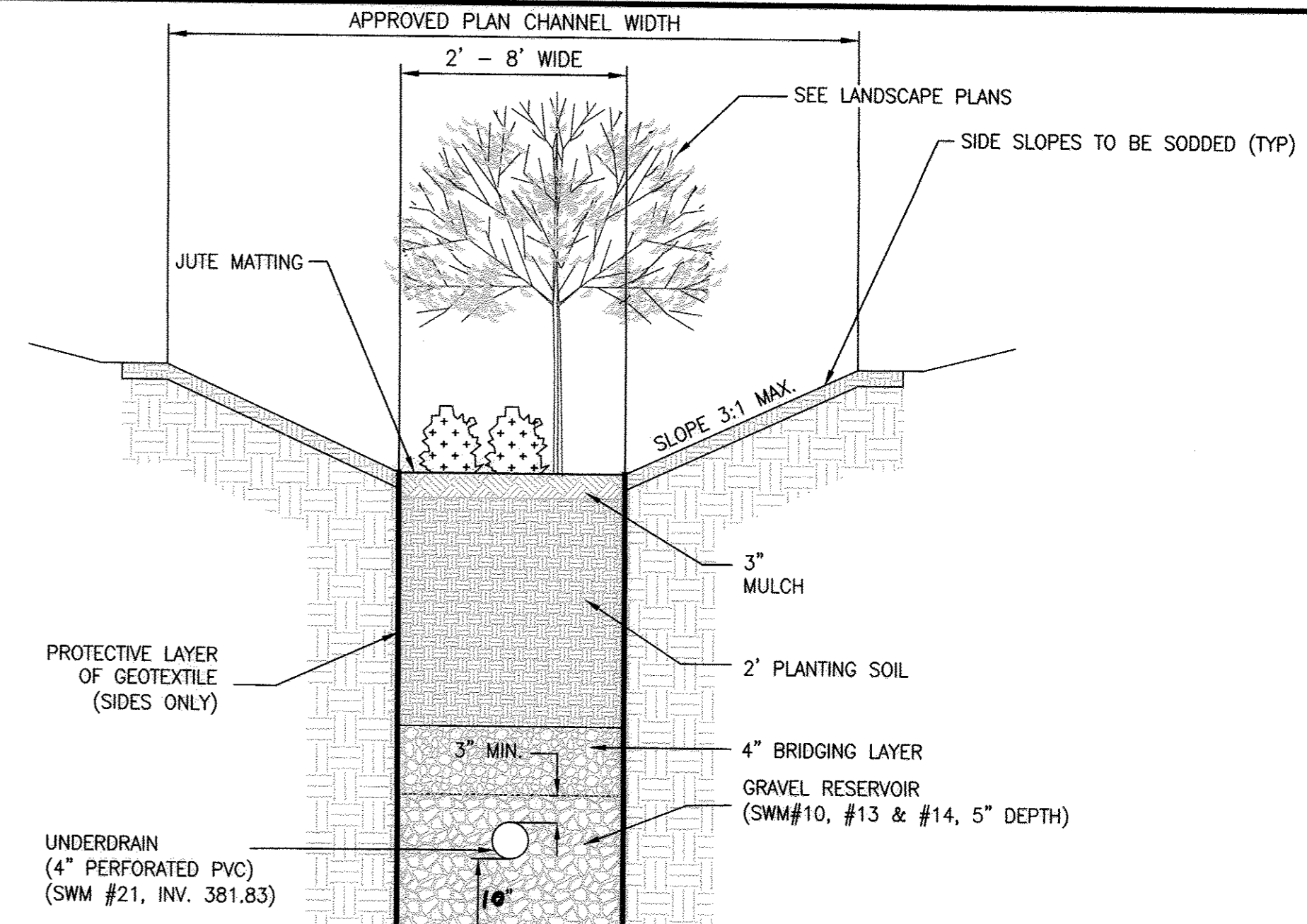
FACILITY NUMBER	TOP OF EMBANKMENT ELEV 'A'	ESDV PONDING ELEV 'B'	FACILITY SURFACE ELEV 'C'	PLANTING MEDIA TOP ELEV 'D'	PLANTING MEDIA BOTTOM ELEV 'E'	BRIDGING LAYER BOTTOM ELEV 'F'	UNDER DRAIN INVERT ELEV 'G'	STONE BOTTOM ELEV 'H'	FILTER BED AREA PROVIDED (TOP SF)
SWM #7	390.50	390.00	389.00	388.75	385.75	385.42	384.83	384.00	470
SWM #8	383.00	382.00	381.50	381.25	378.25	377.92	377.33	376.50	474
SWM #9	386.00	384.74	383.74	383.49	380.49	380.16	379.57	378.74	821
SWM #12	384.00	383.00	382.00	381.75	378.75	378.42	377.83	377.00	867
SWM #15	386.00	385.33	384.33	384.08	381.08	380.75	380.16	379.33	384
SWM #16	379.00	378.00	377.00	376.75	373.75	373.42	372.83	372.00	1478
SWM #17	388.33	387.33	386.33	386.08	383.08	382.75	382.16	381.33	508
SWM #18	389.00	388.33	387.33	387.08	384.08	383.75	383.16	382.33	416
SWM #19	379.00	378.00	377.00	376.75	373.75	373.42	372.83	372.00	1776
SWM #20	385.50	385.00	384.00	383.75	380.75	380.42	379.83	379.00	315
SWM #22	386.00	385.33	384.33	384.08	381.08	380.75	380.16	379.33	509
SWM #23	379.00	378.00	377.00	376.75	373.75	373.42	372.83	372.00	1538
SWM #24	391.00	390.00	389.00	388.75	385.75	385.42	384.83	384.00	308
SWM #25	398.50	398.00	397.00	396.75	393.75	393.42	392.83	392.00	397
SWM #26	382.00	381.50	381.00	380.75	377.75	377.42	376.83	376.00	824
SWM #27	395.50	395.00	394.00	393.75	390.75	390.42	389.83	389.00	589
SWM #28	394.00	393.00	392.00	391.75	388.75	388.42	387.83	387.00	953
SWM #29	376.50	375.50	374.50	374.25	371.25	370.92	370.33	369.50	1860
SWM #30	398.50	398.00	397.00	396.75	393.75	393.42	392.83	392.00	428
SWM #31	394.50	394.00	393.00	392.75	389.75	389.42	388.83	388.00	747



## POROUS PAVING PROFILE (SWM#11)

HOR. 1" = 40'

VERT. 1" = 4'



## BIO-SWALE CHART

## BIO-SWALE

MDE CLASSIFICATION M-8

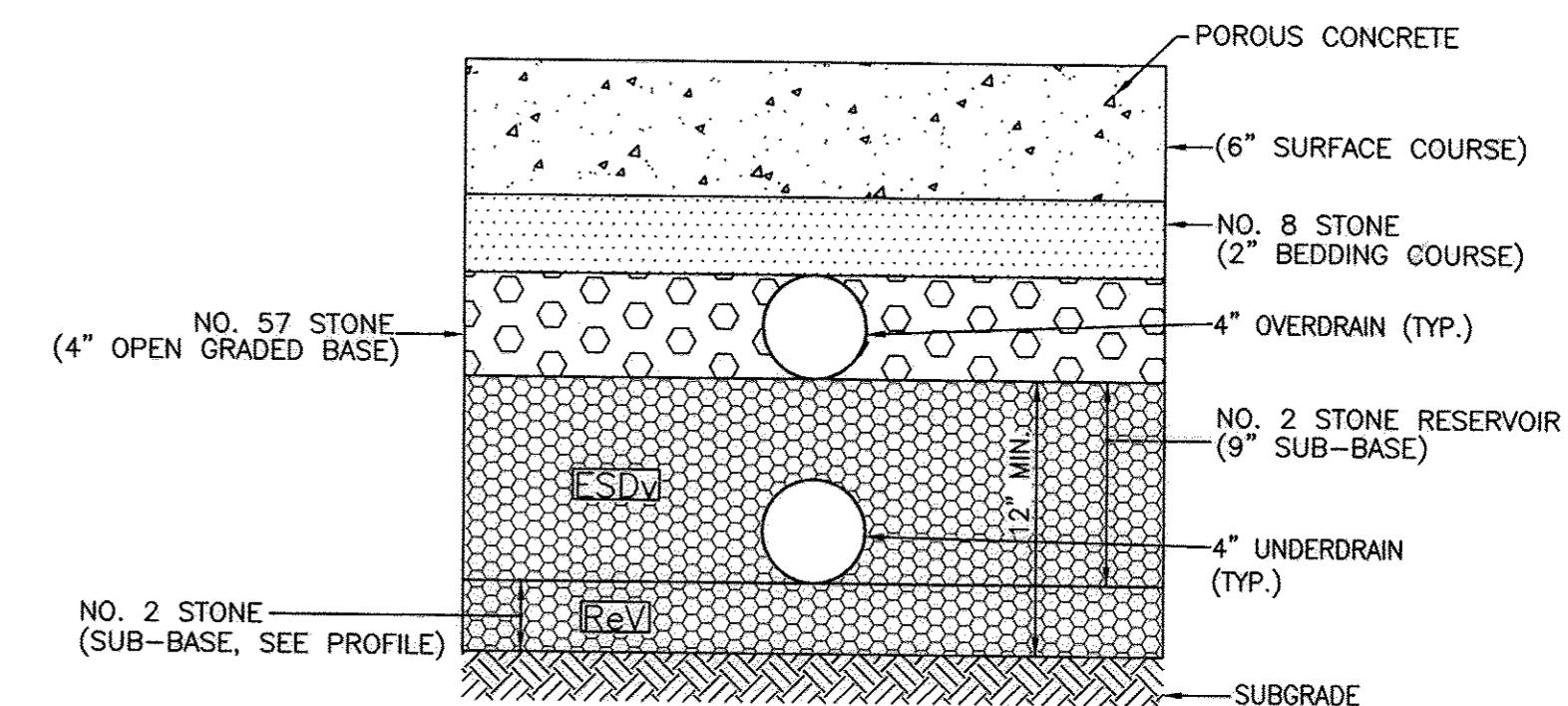
(TYPICAL SECTION)

N.T.S.

FACILITY NUMBER	SWALE LENGTH (LF)	SWALE WIDTH (LF)	PLANTING SOIL DEPTH (FT)	FILTER BED AREA PROVIDED (SF)	UNDER DRAIN INVERT ELEV
SWM #10	150	4	2'	600	N/A
SWM #13	114	4	2'	456	N/A
SWM #14	114	4	2'	456	N/A
SWM #21	204	6	2'	1224	381.83

## POROUS-PAVEMENT CHART

FACILITY NUMBER	SURFACE COURSE (POROUS 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 #11	6"	2"	4"	9"	3'-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 PAVER IS CHOSEN, CONTRACTOR TO PROVIDE EDGE TREATMENT DETAILS

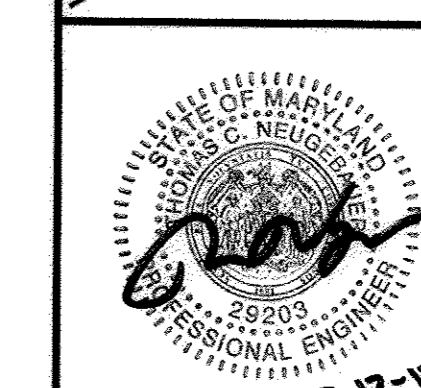
## PERMEABLE PAVEMENT SECTION

MDE CLASSIFICATION A 2

NOT TO SCALE



**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



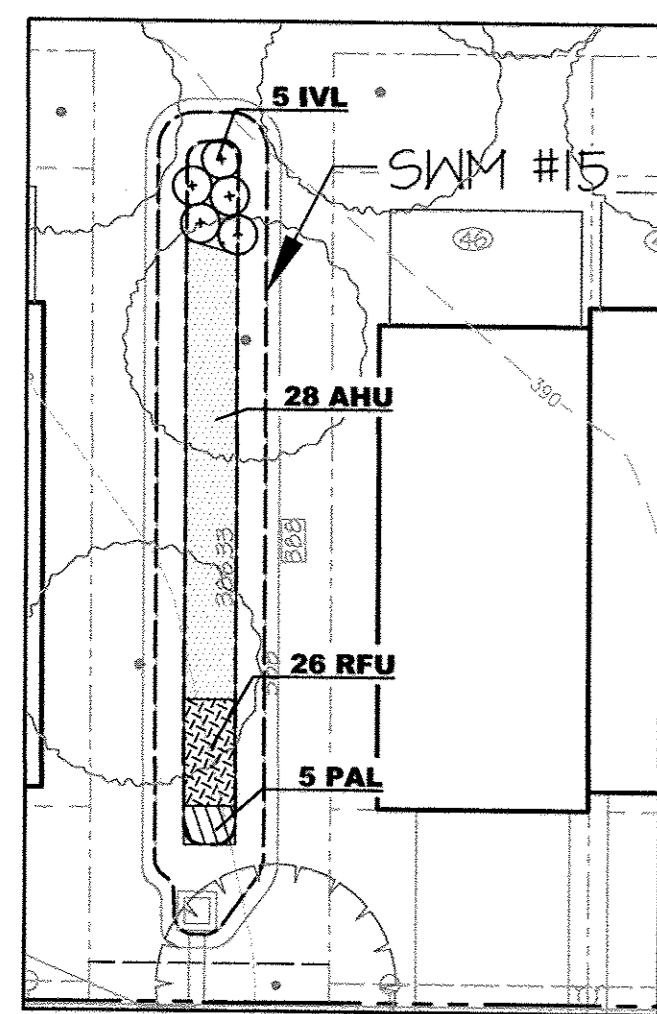
**TROTTER'S KNOLL - SECTION I**  
**HORSE FARM PROPERTY**  
 8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
**STORMWATER MANAGEMENT NOTES & DETAILS**  
 TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-8  
 1ST ELECTION DISTRICT  
 HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:
		15368 w 02
		SCALE: 1" = 20'
		DATE: 9/13/2017
		DRAWN BY: ATS
		DESIGN BY: ATS
		REVIEW BY: TCN
		SHEET: 26 OF 44

OWNER / APPLICANT / DEVELOPER:  
 HORSE FARM, LLC.  
 ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
 COLUMBIA, MD 21045  
 CONTACT: RICHARD HAYWARD  
 PHONE: 410-997-7222

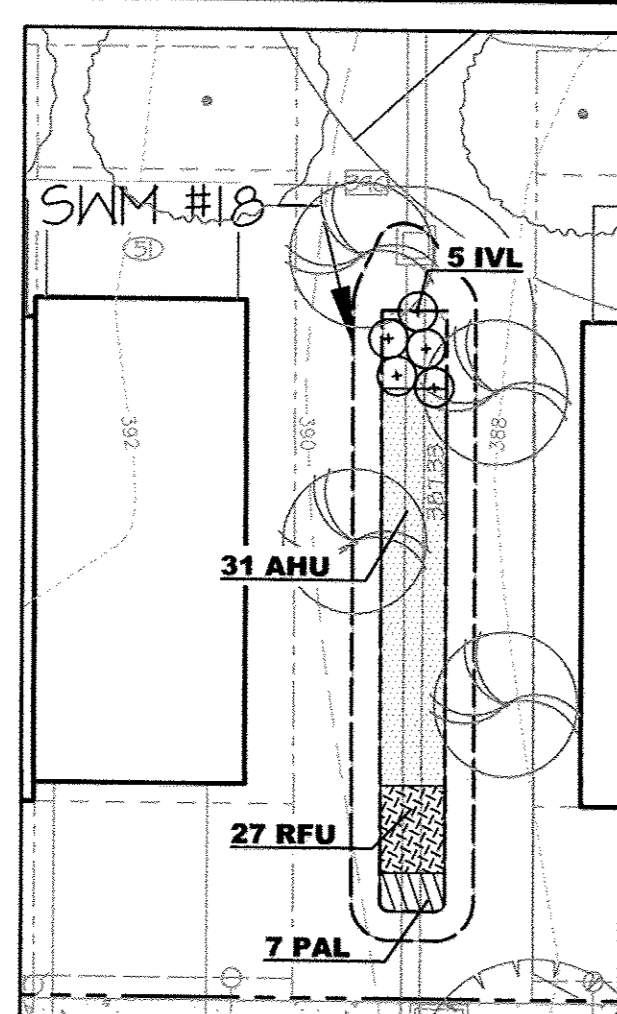
Scale 1" = 20'





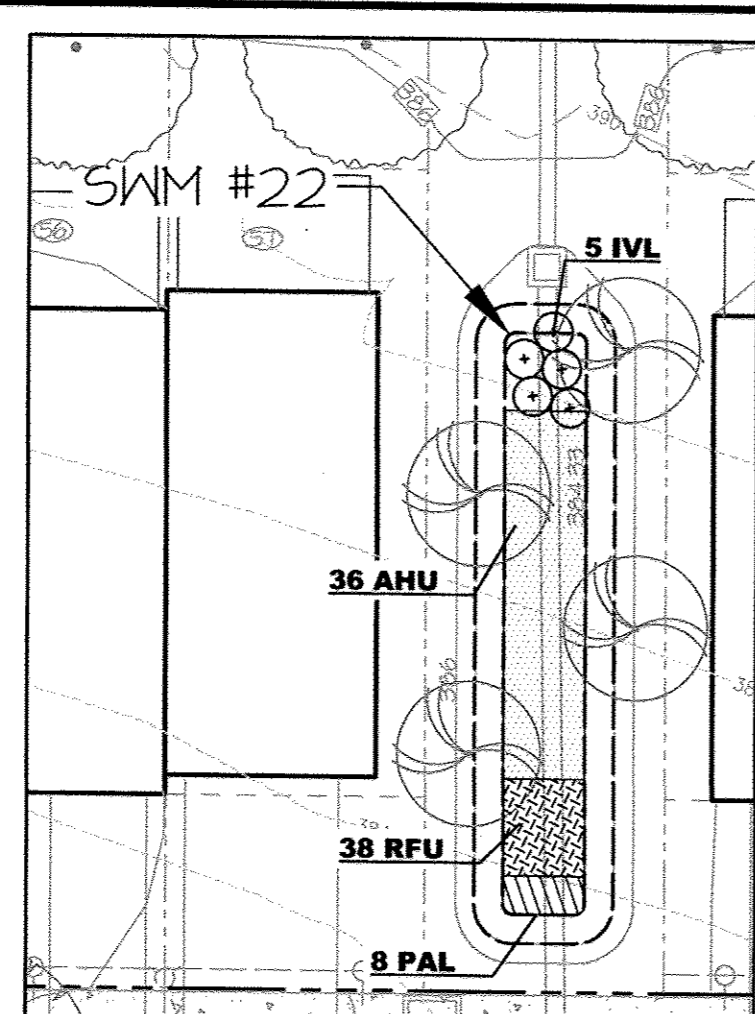
**SWM #15**  
SCALE: 1"=20'

KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>Trotters Knoll- Master Stormwater Plant Schedule- SWM #15</b>						
<b>SHRUBS</b>						
ML	<i>Ilex virginica</i> 'Little Henry'	Virginia Sweetspire	3 Gal.	CONT.	4' O.C.	5
						<b>TOTAL</b>
<b>PERENNIALS &amp; GRASSES</b>						
AHU	<i>Amsonia hubrichtii</i>	Threadleaf Amsonia	1 Gal.	CONT.	36" O.C.	28
PAL	<i>Pennisetum alopecuroides</i> 'Little Bunny'	Little Bunny Fountain Grass	1 Gal.	CONT.	24" O.C.	5
RFU	<i>Rudbeckia fulgida</i>	Orange Coneflower	1 Gal.	CONT.	18" O.C.	26
						<b>TOTAL</b>



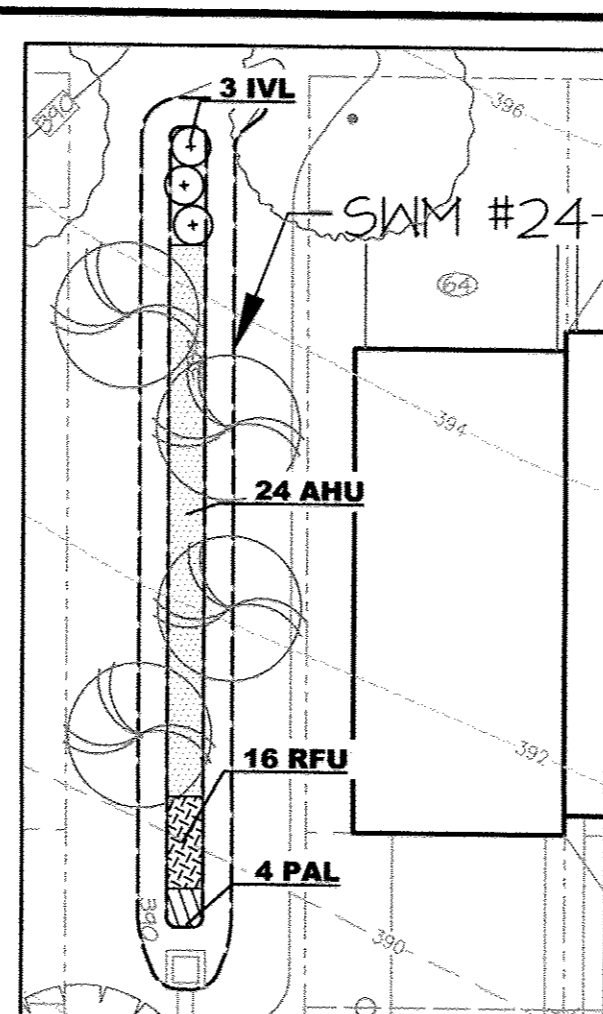
**SWM #18**  
SCALE: 1"=20'

KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>Trotters Knoll- Master Stormwater Plant Schedule- SWM #18</b>						
<b>SHRUBS</b>						
ML	<i>Ilex virginica</i> 'Little Henry'	Virginia Sweetspire	3 Gal.	CONT.	4' O.C.	5
						<b>TOTAL</b>
<b>PERENNIALS &amp; GRASSES</b>						
AHU	<i>Amsonia hubrichtii</i>	Threadleaf Amsonia	1 Gal.	CONT.	36" O.C.	31
PAL	<i>Pennisetum alopecuroides</i> 'Little Bunny'	Little Bunny Fountain Grass	1 Gal.	CONT.	24" O.C.	7
RFU	<i>Rudbeckia fulgida</i>	Orange Coneflower	1 Gal.	CONT.	18" O.C.	27
						<b>TOTAL</b>



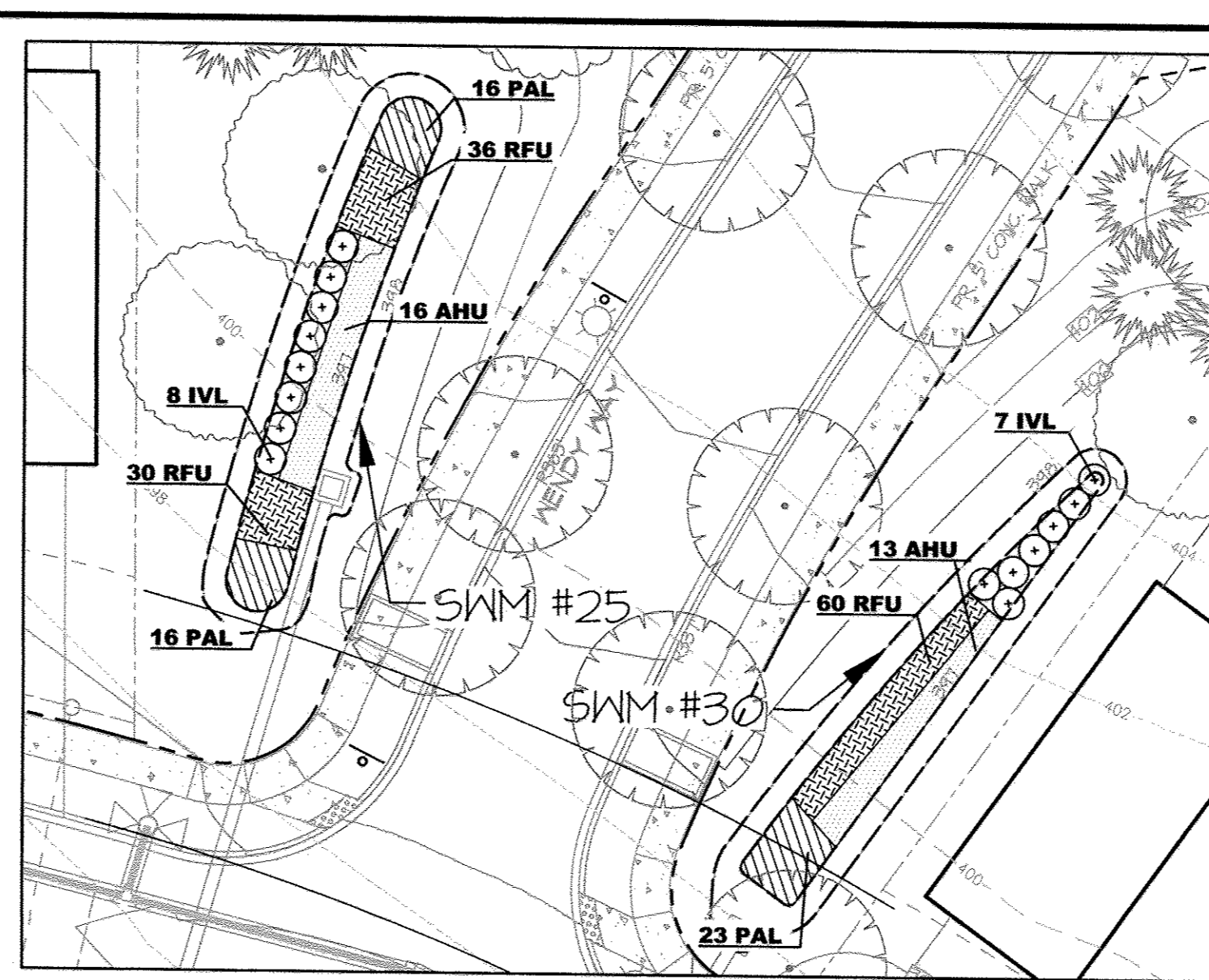
**SWM #22**  
SCALE: 1"=20'

KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>Trotters Knoll- Master Stormwater Plant Schedule- SWM #22</b>						
<b>SHRUBS</b>						
ML	<i>Ilex virginica</i> 'Little Henry'	Virginia Sweetspire	3 Gal.	CONT.	4' O.C.	5
						<b>TOTAL</b>
<b>PERENNIALS &amp; GRASSES</b>						
AHU	<i>Amsonia hubrichtii</i>	Threadleaf Amsonia	1 Gal.	CONT.	36" O.C.	36
PAL	<i>Pennisetum alopecuroides</i> 'Little Bunny'	Little Bunny Fountain Grass	1 Gal.	CONT.	24" O.C.	8
RFU	<i>Rudbeckia fulgida</i>	Orange Coneflower	1 Gal.	CONT.	18" O.C.	38
						<b>TOTAL</b>

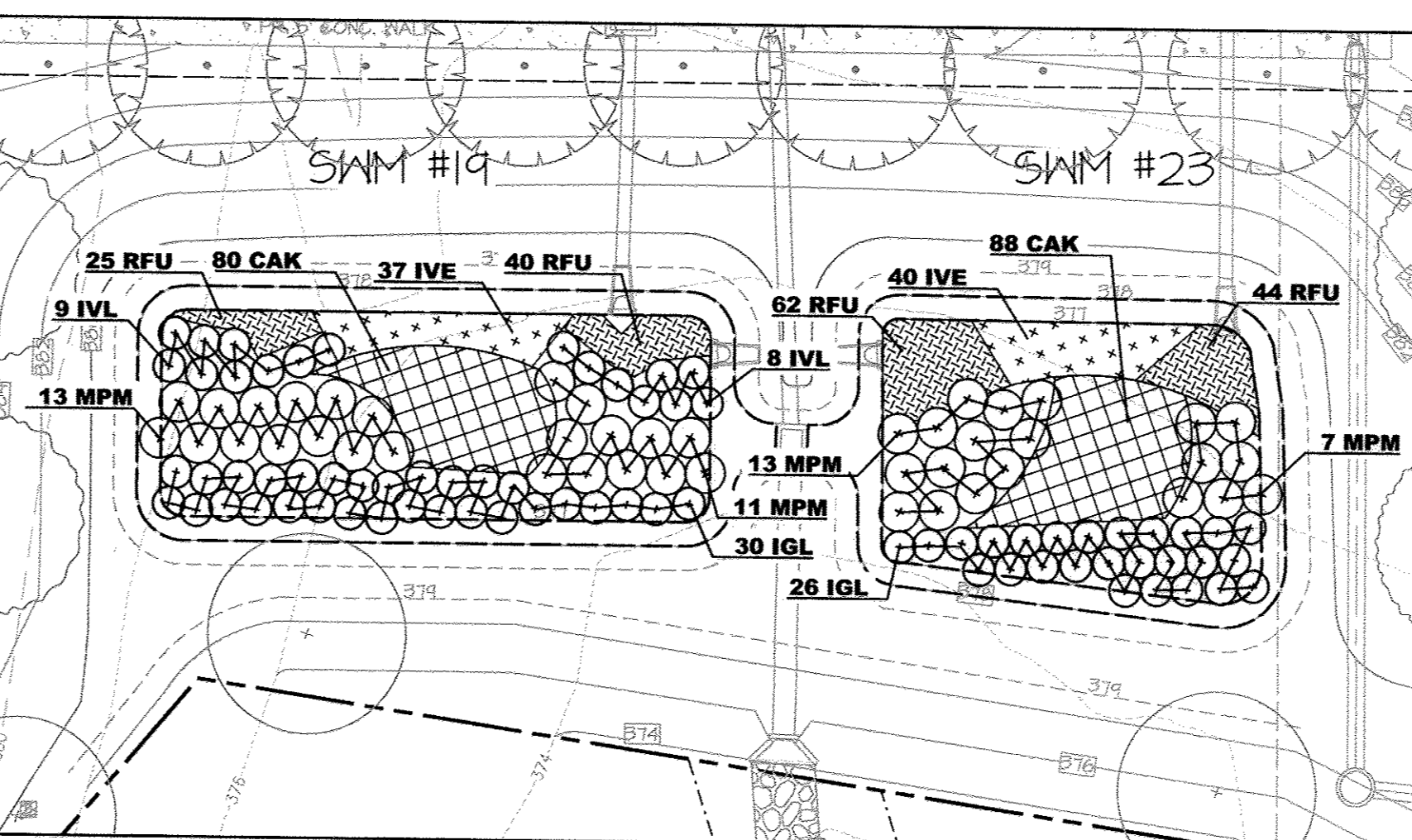


**SWM #24**  
SCALE: 1"=20'

KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>Trotters Knoll- Master Stormwater Plant Schedule- SWM #24</b>						
<b>SHRUBS</b>						
ML	<i>Ilex virginica</i> 'Little Henry'	Virginia Sweetspire	3 Gal.	CONT.	4' O.C.	3
						<b>TOTAL</b>
<b>PERENNIALS &amp; GRASSES</b>						
AHU	<i>Amsonia hubrichtii</i>	Threadleaf Amsonia	1 Gal.	CONT.	36" O.C.	24
PAL	<i>Pennisetum alopecuroides</i> 'Little Bunny'	Little Bunny Fountain Grass	1 Gal.	CONT.	24" O.C.	4
RFU	<i>Rudbeckia fulgida</i>	Orange Coneflower	1 Gal.	CONT.	18" O.C.	16
						<b>TOTAL</b>



**SWM #25 & #30**  
SCALE: 1"=20'



**SWM #19 & #23**  
SCALE: 1"=20'

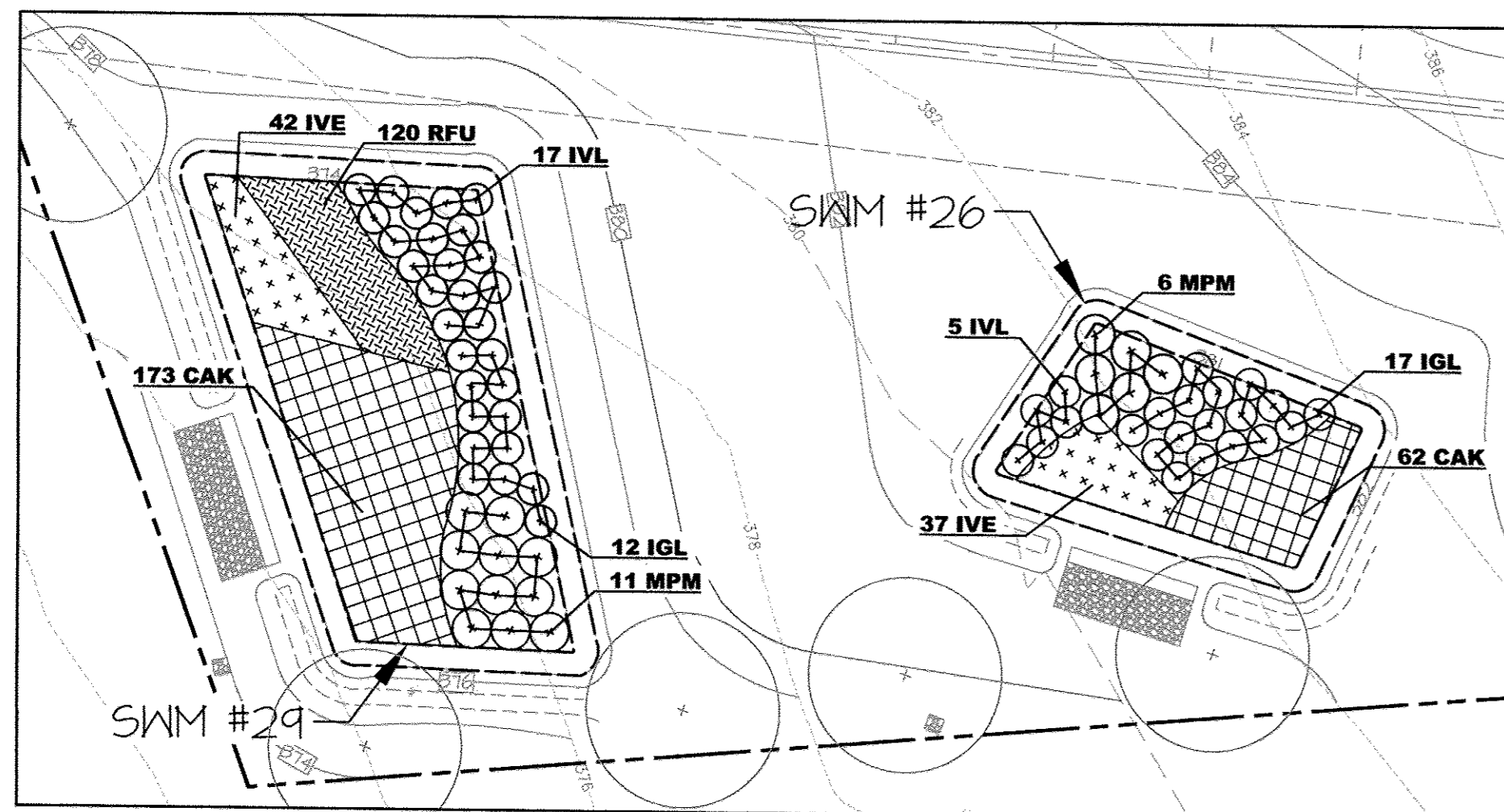
KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>Trotters Knoll- Master Stormwater Plant Schedule- SWM #19</b>						
<b>SHRUBS</b>						
IGL	<i>Ilex glabra</i> 'Shamrock'	Inkberry	3 Gal.	CONT.	4' O.C.	30
ML	<i>Ilex virginica</i> 'Little Henry'	Virginia Sweetspire	3 Gal.	CONT.	4' O.C.	17
MPM	<i>Myrica pensylvanica</i> 'Myrman'	Myrman Northern Bayberry	3 Gal.	CONT.	5' O.C.	24
						<b>TOTAL</b>
<b>PERENNIALS &amp; GRASSES</b>						
CAK	<i>Calamagrostis x acutiflora</i> 'Karl Foerster'	Feather Reed Grass	3 Gal.	CONT.	24" O.C.	80
IVE	<i>Iris versicolor</i>	Blue Flag Iris	1 Gal.	CONT.	24" O.C.	37
RFU	<i>Rudbeckia fulgida</i>	Orange Coneflower	1 Gal.	CONT.	18" O.C.	65
						<b>TOTAL</b>

KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>Trotters Knoll- Master Stormwater Plant Schedule- SWM #23</b>						
<b>SHRUBS</b>						
IGL	<i>Ilex glabra</i> 'Shamrock'	Inkberry	3 Gal.	CONT.	4' O.C.	26
MPM	<i>Myrica pensylvanica</i> 'Myrman'	Myrman Northern Bayberry	3 Gal.	CONT.	5' O.C.	20
						<b>TOTAL</b>
<b>PERENNIALS &amp; GRASSES</b>						
CAK	<i>Calamagrostis x acutiflora</i> 'Karl Foerster'	Feather Reed Grass	3 Gal.	CONT.	24" O.C.	88
IVE	<i>Iris versicolor</i>	Blue Flag Iris	1 Gal.	CONT.	24" O.C.	40
RFU	<i>Rudbeckia fulgida</i>	Orange Coneflower	1 Gal.	CONT.	18" O.C.	106
						<b>TOTAL</b>

KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>Trotters Knoll- Master Stormwater Plant Schedule- SWM #25</b>						
<b>SHRUBS</b>						
ML	<i>Ilex virginica</i> 'Little Henry'	Virginia Sweetspire	3 Gal.	CONT.	4' O.C.	8
						<b>TOTAL</b>
<b>PERENNIALS &amp; GRASSES</b>						
AHU	<i>Amsonia hubrichtii</i>	Threadleaf Amsonia	1 Gal.	CONT.	36" O.C.	16
PAL	<i>Pennisetum alopecuroides</i> 'Little Bunny'	Little Bunny Fountain Grass	1 Gal.	CONT.	24" O.C.	32
RFU	<i>Rudbeckia fulgida</i>	Orange Coneflower	1 Gal.	CONT.	18" O.C.	66
						<b>TOTAL</b>

KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>Trotters Knoll- Master Stormwater Plant Schedule- SWM #30</b>						
<b>SHRUBS</b>						
ML	<i>Ilex virginica</i> 'Little Henry'	Virginia Sweetspire	3 Gal.	CONT.	4' O.C.	7
						<b>TOTAL</b>
<b>PERENNIALS &amp; GRASSES</b>						
AHU	<i>Amsonia hubrichtii</i>	Threadleaf Amsonia	1 Gal.	CONT.	36" O.C.	13
PAL	<i>Pennisetum alopecuroides</i> 'Little Bunny'	Little Bunny Fountain Grass	1 Gal.	CONT.	24" O.C.	23
RFU	<i>Rudbeckia fulgida</i>	Orange Coneflower	1 Gal.	CONT.	18" O.C.	60
						<b>TOTAL</b>

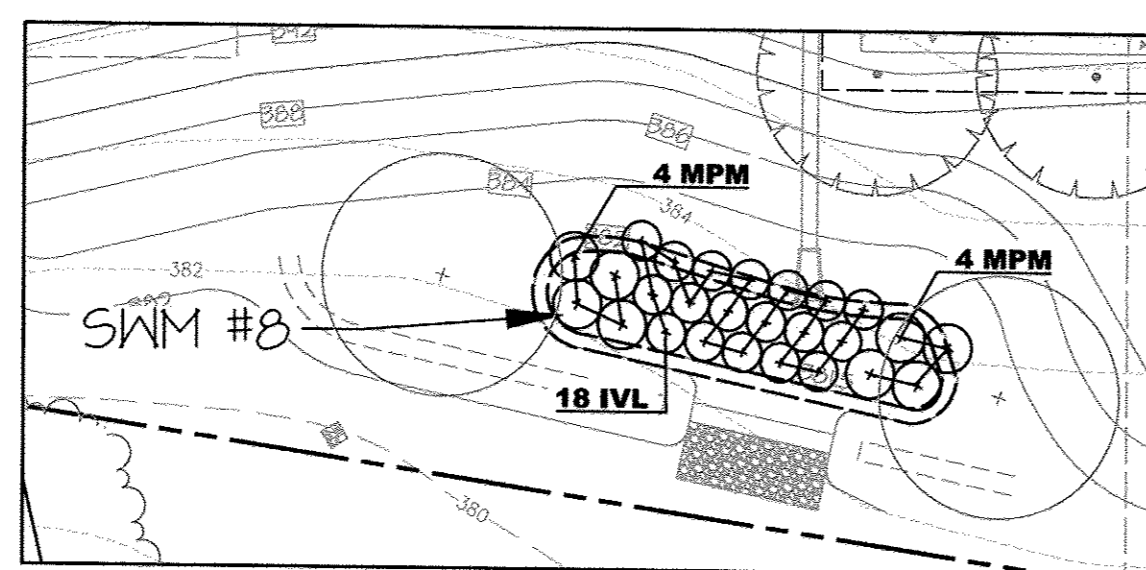
KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>Trotters Knoll- Master Stormwater Plant Schedule- SWM #7</b>						
<b>SHRUBS</b>						
ML	<i>Ilex virginica</i> 'Little Henry'	Virginia Sweetspire	3 Gal.	CONT.	4' O.C.	3
						<b>TOTAL</b>
<b>PERENNIALS &amp; GRASSES</b>						
AHU	<i>Amsonia hubrichtii</i>	Threadleaf Amsonia	1 Gal.	CONT.	36" O.C.	36
PAL	<i>Pennisetum alopecuroides</i> 'Little Bunny'	Little Bunny Fountain Grass	1 Gal.	CONT.	24" O.C.	7
RFU	<i>Rudbeckia fulgida</i>	Orange Coneflower	1 Gal.	CONT.	18" O.C.	31
						<b>TOTAL</b>



**SWM #29 & #26**  
SCALE: 1"=20'

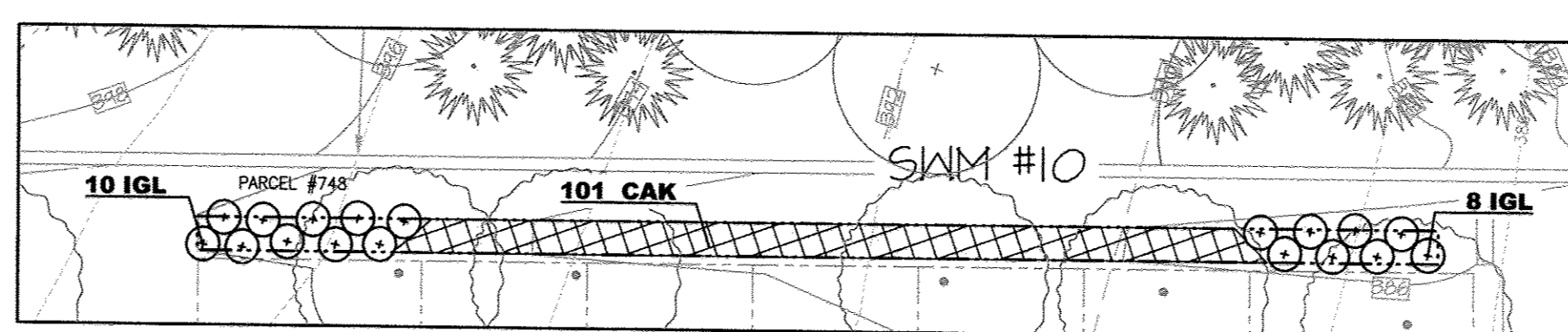
KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>Trotters Knoll- Master Stormwater Plant Schedule- SWM #29</b>						
<b>SHRUBS</b>						
IGL	<i>Ilex glabra</i> 'Shamrock'	Inkberry	3 Gal.	CONT.	4' O.C.	12
ML	<i>Ilex virginica</i> 'Little Henry'	Virginia Sweetspire	3 Gal.	CONT.	4' O.C.	17
MPM	<i>Myrica pensylvanica</i> 'Myrman'	Myrman Northern Bayberry	3 Gal.	CONT.	5' O.C.	11
						<b>TOTAL</b>
<b>PERENNIALS &amp; GRASSES</b>						
CAK	<i>Calamagrostis x acutiflora</i> 'Karl Foerster'	Feather Reed Grass	3 Gal.	CONT.	24" O.C.	173
IVE	<i>Iris versicolor</i>	Blue Flag Iris	1 Gal.	CONT.	24" O.C.	42
RFU	<i>Rudbeckia fulgida</i>	Orange Coneflower	1 Gal.	CONT.	18" O.C.	120
						<b>TOTAL</b>

KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>Trotters Knoll- Master Stormwater Plant Schedule- SWM #26</b>						
<b>SHRUBS</b>						
IGL	<i>Ilex glabra</i> 'Shamrock'	Inkberry	3 Gal.	CONT.	4' O.C.	17
ML	<i>Ilex virginica</i> 'Little Henry'	Virginia Sweetspire	3 Gal.	CONT.	4' O.C.	5
MPM	<i>Myrica pensylvanica</i> 'Myrman'	Myrman Northern Bayberry	3 Gal.	CONT.	5' O.C.	6
						<b>TOTAL</b>
<b>PERENNIALS &amp; GRASSES</b>						
CAK	<i>Calamagrostis x acutiflora</i> 'Karl Foerster'	Feather Reed Grass	3 Gal.	CONT.	24" O.C.	62
IVE	<i>Iris versicolor</i>	Blue Flag Iris	1 Gal.	CONT.	24" O.C.	37
						<b>TOTAL</b>



**SWM #8**  
SCALE: 1"=20'

KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>Trotters Knoll- Master Stormwater Plant Schedule- SWM #8</b>						
<b>SHRUBS</b>						
ML	<i>Ilex virginica</i> 'Little Henry'	Virginia Sweetspire	3 Gal.	CONT.	4' O.C.	18
MPM	<i>Myrica pensylvanica</i> 'Myrman'	Myrman Northern Bayberry	3 Gal.	CONT.	5' O.C.	6
						<b>TOTAL</b>



**SWM #10**  
SCALE: 1"=20'

KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>Trotters Knoll- Master Stormwater Plant Schedule- SWM #10</b>						
<b>SHRUBS</b>						
IGL	<i>Ilex glabra</i> 'Shamrock'	Inkberry	3 Gal.	CONT.	4' O.C.	18
						<b>TOTAL</b>
<b>PERENNIALS &amp; GRASSES</b>						
CAK	<i>Calamagrostis x acutiflora</i> 'Karl Foerster'	Feather Reed Grass	3 Gal.	CONT.	24" O.C.	101
						<b>TOTAL</b>

**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. 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
- EX. STREAM BUFFER
- EX. SPECIMEN TREE
- PR. LOT LINE
- PR. BUILDING FOOTPRINT
- PR. BUILDING SETBACK
- PR. CURB AND GUTTER
- PR. SIDEWALK
- PR. RETAINING WALL
- PR. RECREATIONAL OPEN SPACE
- PR. POROUS PAVEMENT
- PR. STREET LIGHT (LED-100 COLONIAL)
- PR. STREET LIGHT (LED-150 COLONIAL)
- PR. 8" SEWER LINE
- PR. 8" WATER LINE
- PR. WATER HOUSE CONNECTION
- PR. SEWER HOUSE CONNECTION
- PR. STORMWATER MANAGEMENT FACILITY
- PR. BIOSWALE
- PR. 0.5' CONTOUR
- PR. 1' CONTOUR
- PR. 2' CONTOUR
- PR. 10' CONTOUR
- PR. STREET SHADE TREE
- PR. PARKING SHADE TREE
- PR. BUFFER SHADE TREE
- PR. BUFFER EVERGREEN TREE
- PR. RESIDENTIAL SHADE TREE
- PR. RESIDENTIAL ORNAMENTAL TREE
- SPECIMEN MITIGATION SHADE TREE PLANTING
- PR. SWM SHRUB
- PR. SWM PERENNIAL

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 [Signature] 1/23/18  
 CHIEF, BUREAU OF HIGHWAYS  
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 1/30/18  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 [Signature] 2/6/19  
 CHIEF, LAND DEVELOPMENT DIVISION

**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

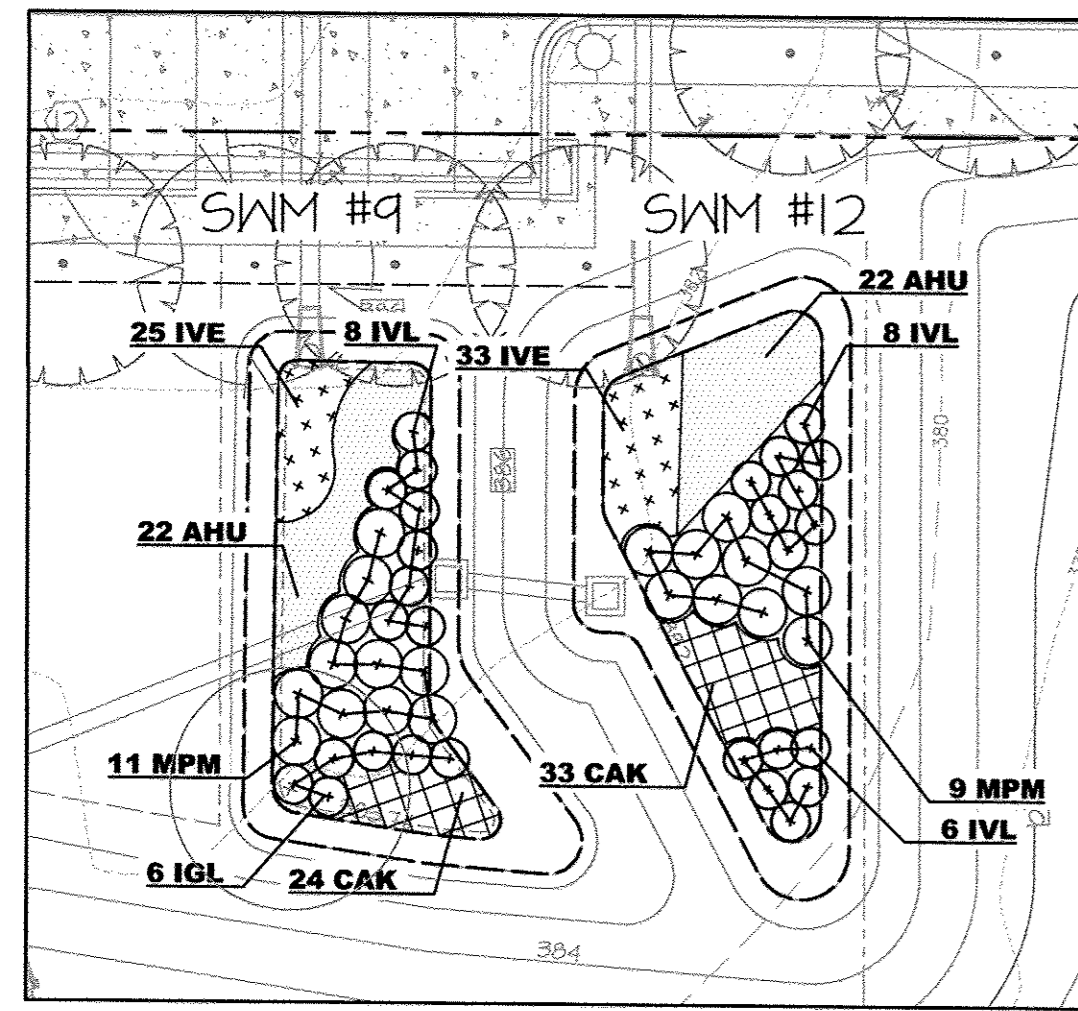
**TROTTER'S KNOLL - SECTION I**  
 HORSE FARM PROPERTY  
 8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
 SWM LANDSCAPE DETAILS

TAX MAP 37 GRDS 2 PARCEL 748 ZONED: R-SA-8  
 1ST ELECTION DISTRICT  
 HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:
		15368 x 02
		SCALE: 1" = 20'
		DATE: 9/13/2017
		DRAWN BY: CRM
		DESIGN BY: CRM
		REVIEW BY: CMG
		SHEET: 27 OF 44

OWNER / APPLICANT / DEVELOPER:  
 HORSE FARM, LLC.  
 ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
 COLUMBIA, MD 21045  
 CONTACT: RICHARD HAYWARD  
 PHONE: 410-987-7222

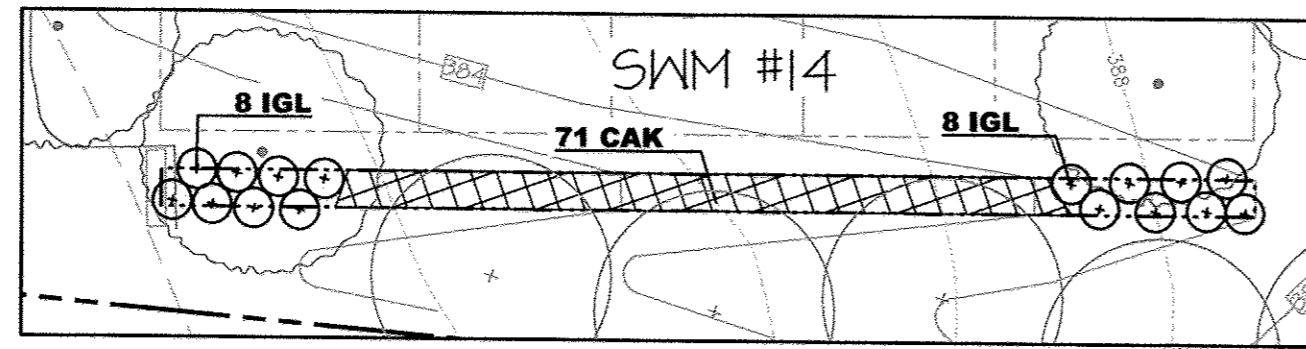




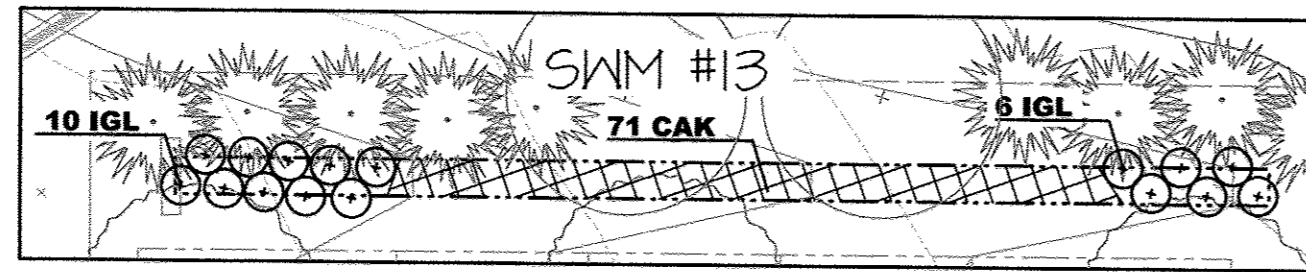
**SWM #9 & #12**  
SCALE: 1"=20'

KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>Trotters Knoll- Master Stormwater Plant Schedule- SWM #9</b>						
<b>SHRUBS</b>						
IGL	<i>Ilex glabra</i> 'Shamrock'	Inkberry	3 Gal.	CONT.	4' O.C.	6
IVL	<i>Itea virginica</i> 'Little Henry'	Virginia Sweetspire	3 Gal.	CONT.	4' O.C.	8
MPM	<i>Myrica pensylvanica</i> 'Myrman'	Myrman Northern Bayberry	3 Gal.	CONT.	5' O.C.	11
						<b>TOTAL</b>
<b>PERENNIALS &amp; GRASSES</b>						
AHU	<i>Amsonia hubrichtii</i>	Threadleaf Amsonia	1 Gal.	CONT.	36" O.C.	22
CAK	<i>Calamagrostis x acutiflora</i> 'Karl Foerster'	Feather Reed Grass	3 Gal.	CONT.	24" O.C.	24
IVE	<i>Iris versicolor</i>	Blue Flag Iris	1 Gal.	CONT.	24" O.C.	25
						<b>TOTAL</b>
						<b>71</b>

KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>Trotters Knoll- Master Stormwater Plant Schedule- SWM #12</b>						
<b>SHRUBS</b>						
IVL	<i>Itea virginica</i> 'Little Henry'	Virginia Sweetspire	3 Gal.	CONT.	4' O.C.	14
MPM	<i>Myrica pensylvanica</i> 'Myrman'	Myrman Northern Bayberry	3 Gal.	CONT.	5' O.C.	9
						<b>TOTAL</b>
						<b>23</b>
<b>PERENNIALS &amp; GRASSES</b>						
AHU	<i>Amsonia hubrichtii</i>	Threadleaf Amsonia	1 Gal.	CONT.	36" O.C.	22
CAK	<i>Calamagrostis x acutiflora</i> 'Karl Foerster'	Feather Reed Grass	3 Gal.	CONT.	24" O.C.	33
IVE	<i>Iris versicolor</i>	Blue Flag Iris	1 Gal.	CONT.	24" O.C.	33
						<b>TOTAL</b>
						<b>88</b>



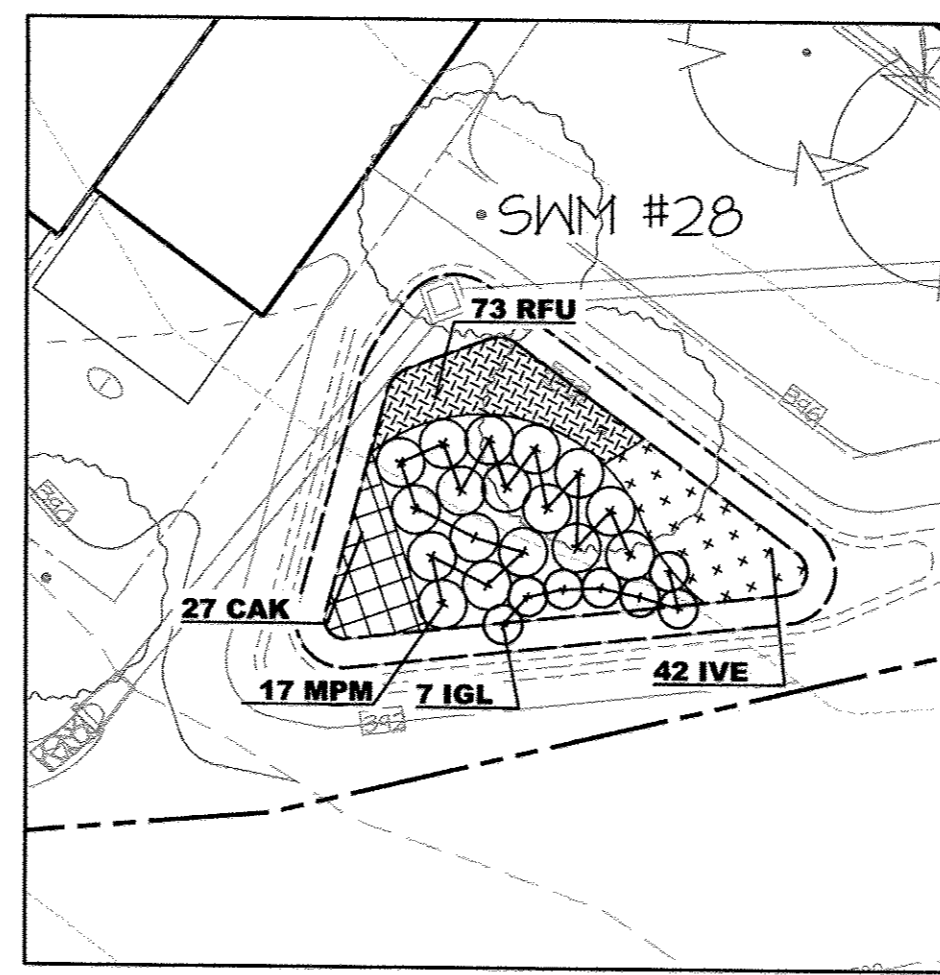
**SWM #14**  
SCALE: 1"=20'



**SWM #13**  
SCALE: 1"=20'

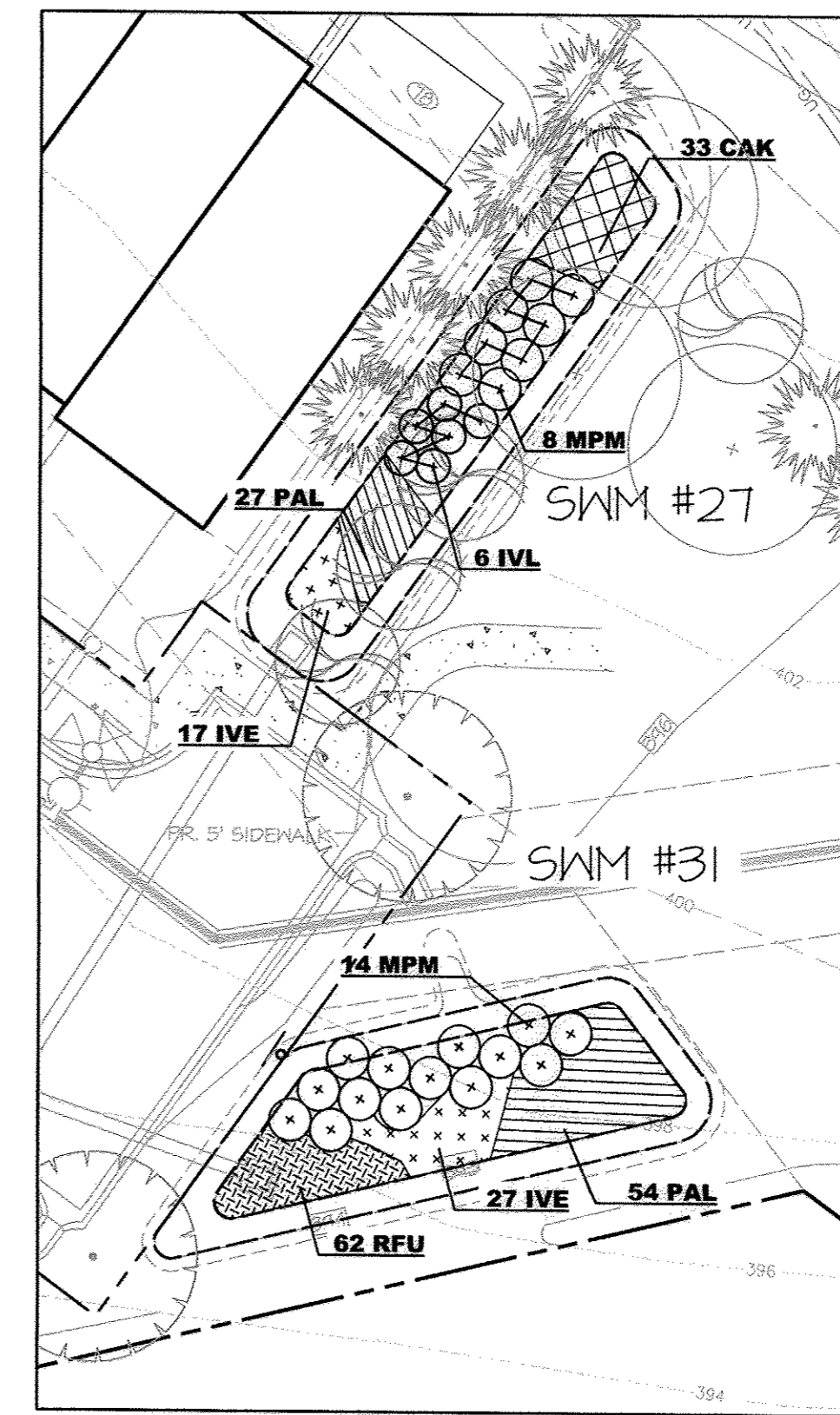
KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>Trotters Knoll- Master Stormwater Plant Schedule- SWM #14</b>						
<b>SHRUBS</b>						
IGL	<i>Ilex glabra</i> 'Shamrock'	Inkberry	3 Gal.	CONT.	4' O.C.	16
						<b>TOTAL</b>
						<b>16</b>
<b>PERENNIALS &amp; GRASSES</b>						
CAK	<i>Calamagrostis x acutiflora</i> 'Karl Foerster'	Feather Reed Grass	3 Gal.	CONT.	24" O.C.	71
						<b>TOTAL</b>
						<b>71</b>

KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>Trotters Knoll- Master Stormwater Plant Schedule- SWM #13</b>						
<b>SHRUBS</b>						
IGL	<i>Ilex glabra</i> 'Shamrock'	Inkberry	3 Gal.	CONT.	4' O.C.	16
						<b>TOTAL</b>
						<b>16</b>
<b>PERENNIALS &amp; GRASSES</b>						
CAK	<i>Calamagrostis x acutiflora</i> 'Karl Foerster'	Feather Reed Grass	3 Gal.	CONT.	24" O.C.	71
						<b>TOTAL</b>
						<b>71</b>



**SWM #28**  
SCALE: 1"=20'

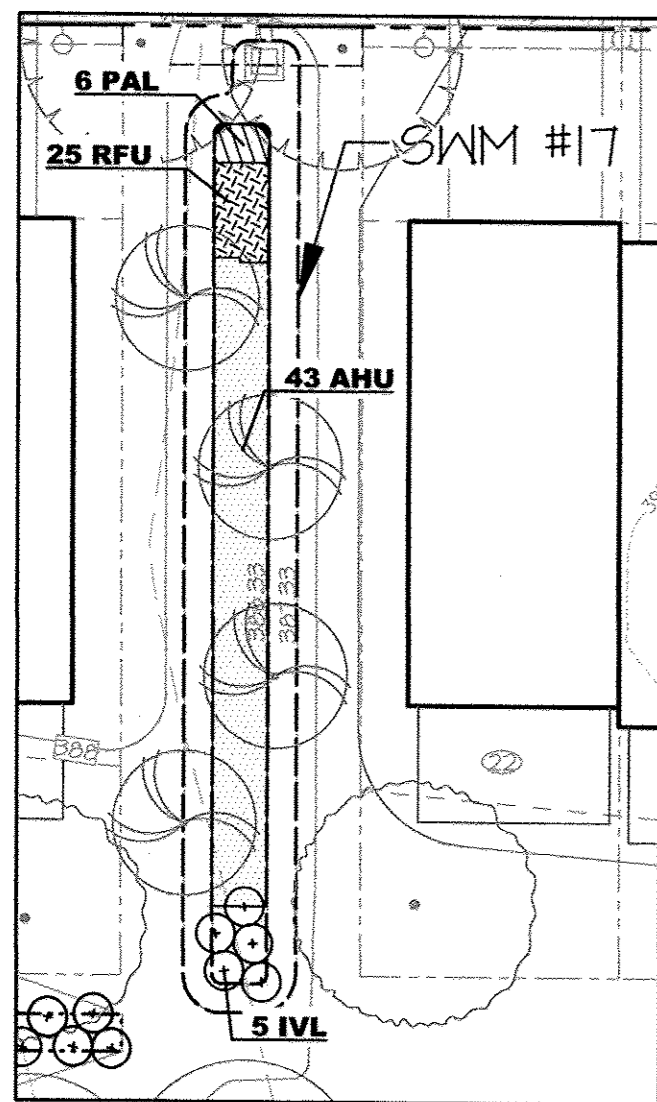
KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>Trotters Knoll- Master Stormwater Plant Schedule- SWM #28</b>						
<b>SHRUBS</b>						
IGL	<i>Ilex glabra</i> 'Shamrock'	Inkberry	3 Gal.	CONT.	4' O.C.	7
MPM	<i>Myrica pensylvanica</i> 'Myrman'	Myrman Northern Bayberry	3 Gal.	CONT.	5' O.C.	17
						<b>TOTAL</b>
						<b>24</b>
<b>PERENNIALS &amp; GRASSES</b>						
CAK	<i>Calamagrostis x acutiflora</i> 'Karl Foerster'	Feather Reed Grass	3 Gal.	CONT.	24" O.C.	27
IVE	<i>Iris versicolor</i>	Blue Flag Iris	1 Gal.	CONT.	24" O.C.	42
RFU	<i>Rudbeckia fulgida</i>	Orange Coneflower	1 Gal.	CONT.	18" O.C.	73
						<b>TOTAL</b>
						<b>142</b>



**SWM #27 & #31**  
SCALE: 1"=20'

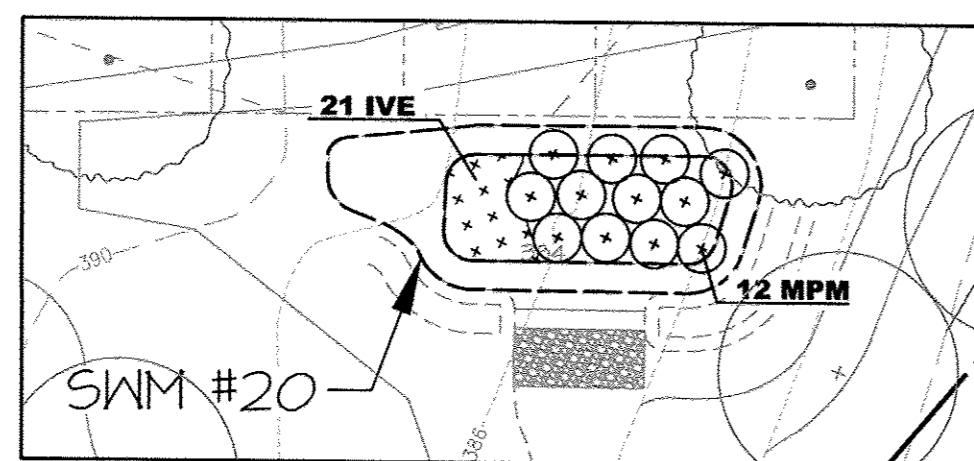
KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>Trotters Knoll- Master Stormwater Plant Schedule- SWM #27</b>						
<b>SHRUBS</b>						
IVL	<i>Itea virginica</i> 'Little Henry'	Virginia Sweetspire	3 Gal.	CONT.	4' O.C.	6
MPM	<i>Myrica pensylvanica</i> 'Myrman'	Myrman Northern Bayberry	3 Gal.	CONT.	5' O.C.	8
						<b>TOTAL</b>
						<b>14</b>
<b>PERENNIALS &amp; GRASSES</b>						
CAK	<i>Calamagrostis x acutiflora</i> 'Karl Foerster'	Feather Reed Grass	3 Gal.	CONT.	24" O.C.	33
IVE	<i>Iris versicolor</i>	Blue Flag Iris	1 Gal.	CONT.	24" O.C.	17
PAL	<i>Pennisetum alopecuroides</i> 'Little Bunny'	Little Bunny Fountain Grass	1 Gal.	CONT.	24" O.C.	27
						<b>TOTAL</b>
						<b>77</b>

KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>Trotters Knoll- Master Stormwater Plant Schedule- SWM #31</b>						
<b>SHRUBS</b>						
MPM	<i>Myrica pensylvanica</i> 'Myrman'	Myrman Northern Bayberry	3 Gal.	CONT.	5' O.C.	14
						<b>TOTAL</b>
						<b>14</b>
<b>PERENNIALS &amp; GRASSES</b>						
IVE	<i>Iris versicolor</i>	Blue Flag Iris	1 Gal.	CONT.	24" O.C.	27
PAL	<i>Pennisetum alopecuroides</i> 'Little Bunny'	Little Bunny Fountain Grass	1 Gal.	CONT.	24" O.C.	54
RFU	<i>Rudbeckia fulgida</i>	Orange Coneflower	1 Gal.	CONT.	18" O.C.	62
						<b>TOTAL</b>
						<b>143</b>



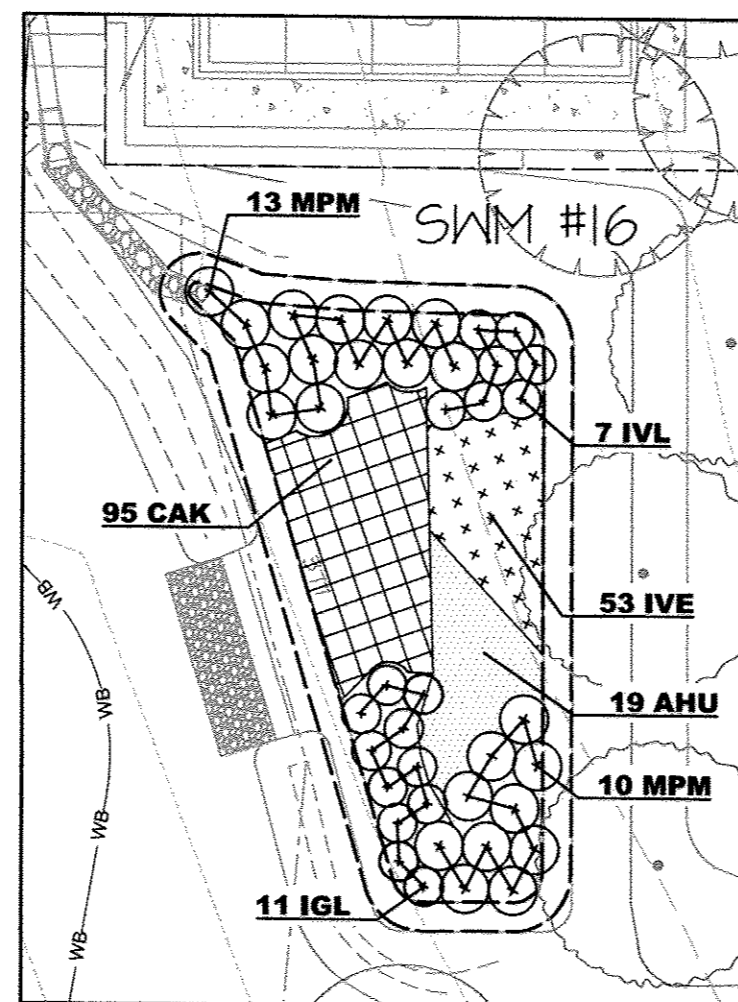
**SWM #17**  
SCALE: 1"=20'

KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>Trotters Knoll- Master Stormwater Plant Schedule- SWM #17</b>						
<b>SHRUBS</b>						
IVL	<i>Itea virginica</i> 'Little Henry'	Virginia Sweetspire	3 Gal.	CONT.	4' O.C.	5
						<b>TOTAL</b>
						<b>5</b>
<b>PERENNIALS &amp; GRASSES</b>						
AHU	<i>Amsonia hubrichtii</i>	Threadleaf Amsonia	1 Gal.	CONT.	36" O.C.	43
PAL	<i>Pennisetum alopecuroides</i> 'Little Bunny'	Little Bunny Fountain Grass	1 Gal.	CONT.	24" O.C.	6
RFU	<i>Rudbeckia fulgida</i>	Orange Coneflower	1 Gal.	CONT.	18" O.C.	25
						<b>TOTAL</b>
						<b>74</b>



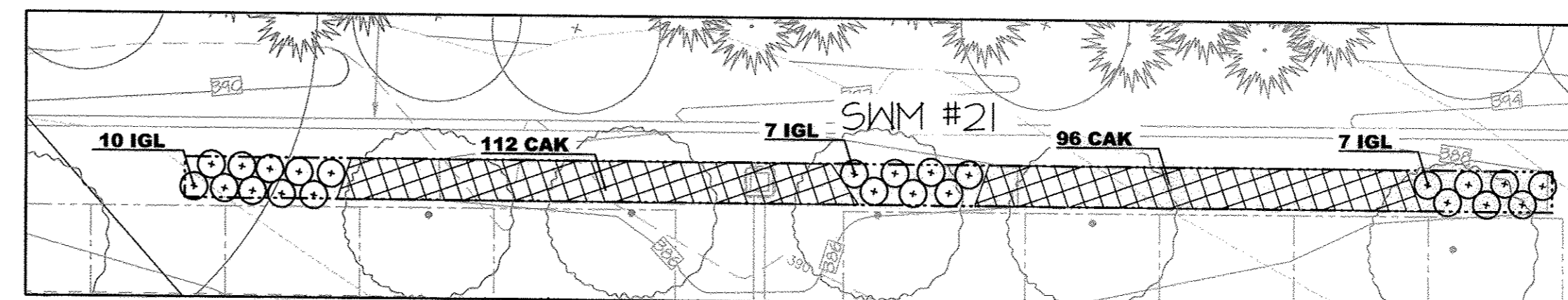
**SWM #20**  
SCALE: 1"=20'

KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>Trotters Knoll- Master Stormwater Plant Schedule- SWM #20</b>						
<b>SHRUBS</b>						
MPM	<i>Myrica pensylvanica</i> 'Myrman'	Myrman Northern Bayberry	3 Gal.	CONT.	5' O.C.	12
						<b>TOTAL</b>
						<b>12</b>
<b>PERENNIALS &amp; GRASSES</b>						
IVE	<i>Iris versicolor</i>	Blue Flag Iris	1 Gal.	CONT.	24" O.C.	21
						<b>TOTAL</b>
						<b>21</b>



**SWM #16**  
SCALE: 1"=20'

KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>Trotters Knoll- Master Stormwater Plant Schedule- SWM #16</b>						
<b>SHRUBS</b>						
IGL	<i>Ilex glabra</i> 'Shamrock'	Inkberry	3 Gal.	CONT.	4' O.C.	11
IVL	<i>Itea virginica</i> 'Little Henry'	Virginia Sweetspire	3 Gal.	CONT.	4' O.C.	7
MPM	<i>Myrica pensylvanica</i> 'Myrman'	Myrman Northern Bayberry	3 Gal.	CONT.	5' O.C.	23
						<b>TOTAL</b>
						<b>41</b>
<b>PERENNIALS &amp; GRASSES</b>						
AHU	<i>Amsonia hubrichtii</i>	Threadleaf Amsonia	1 Gal.	CONT.	36" O.C.	19
CAK	<i>Calamagrostis x acutiflora</i> 'Karl Foerster'	Feather Reed Grass	3 Gal.	CONT.	24" O.C.	95
IVE	<i>Iris versicolor</i>	Blue Flag Iris	1 Gal.	CONT.	24" O.C.	53
						<b>TOTAL</b>
						<b>167</b>



**SWM #21**  
SCALE: 1"=20'

KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>Trotters Knoll- Master Stormwater Plant Schedule- SWM #21</b>						
<b>SHRUBS</b>						
IGL	<i>Ilex glabra</i> 'Shamrock'	Inkberry	3 Gal.	CONT.	4' O.C.	24
						<b>TOTAL</b>
						<b>24</b>
<b>PERENNIALS &amp; GRASSES</b>						
CAK	<i>Calamagrostis x acutiflora</i> 'Karl Foerster'	Feather Reed Grass	3 Gal.	CONT.	24" O.C.	208
						<b>TOTAL</b>
						<b>208</b>

**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. 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
- EX. STREAM BUFFER
- EX. SPECIMEN TREE
- PR. LOT LINE
- PR. BUILDING FOOTPRINT
- PR. BUILDING SETBACK
- PR. CURB AND GUTTER
- PR. SIDEWALK
- PR. RETAINING WALL
- PR. RECREATIONAL OPEN SPACE
- PR. POROUS PAVEMENT
- PR. STREET LIGHT (LED-100 COLONIAL)
- PR. STREET LIGHT (LED-150 COLONIAL)
- PR. 8" SEWER LINE
- PR. 8" WATER LINE
- PR. WATER HOUSE CONNECTION
- PR. SEWER HOUSE CONNECTION
- PR. STORMWATER MANAGEMENT FACILITY
- PR. BIOSWALE
- PR. 0.5' CONTOUR
- PR. 1' CONTOUR
- PR. 2' CONTOUR
- PR. 10' CONTOUR
- PR. STREET SHADE TREE
- PR. PARKING SHADE TREE
- PR. BUFFER SHADE TREE
- PR. BUFFER EVERGREEN TREE
- PR. RESIDENTIAL SHADE TREE
- PR. RESIDENTIAL ORNAMENTAL TREE
- SPECIMEN MITIGATION SHADE TREE PLANTING
- PR. SWM SHRUB
- PR. SWM PERENNIAL

**MASTER STORMWATER PLANT SCHEDULE**

KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>Trotters Knoll- Master Stormwater Plant Schedule</b>						
<b>SHRUBS</b>						
IGL	<i>Ilex glabra</i> 'Shamrock'	Inkberry	3 Gal.	CONT.	4' O.C.	183
IVL	<i>Itea virginica</i> 'Little Henry'	Virginia Sweetspire	3 Gal.	CONT.	4' O.C.	133
MPM	<i>Myrica pensylvanica</i> 'Myrman'	Myrman Northern Bayberry	3 Gal.	CONT.	5' O.C.	163
						<b>TOTAL</b>
						<b>479</b>
<b>PERENNIALS &amp; GRASSES</b>						
AHU	<i>Amsonia hubrichtii</i>	Threadleaf Amsonia	1 Gal.	CONT.	36" O.C.	290
CAK	<i>Calamagrostis x acutiflora</i> 'Karl Foerster'	Feather Reed Grass	3 Gal.	CONT.	24" O.C.	1068
IVE	<i>Iris versicolor</i>	Blue Flag Iris	1 Gal.	CONT.	24" O.C.	374
PAL	<i>Pennisetum alopecuroides</i> 'Little Bunny'	Little Bunny Fountain Grass	1 Gal.	CONT.	24" O.C.	173
RFU	<i>Rudbeckia fulgida</i>	Orange Coneflower	1 Gal.	CONT.	12" O.C.	715
						<b>TOTAL</b>
						<b>2618</b>

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

*Melanie*  
CHIEF, BUREAU OF HIGHWAYS  
DATE: 1/23/2018

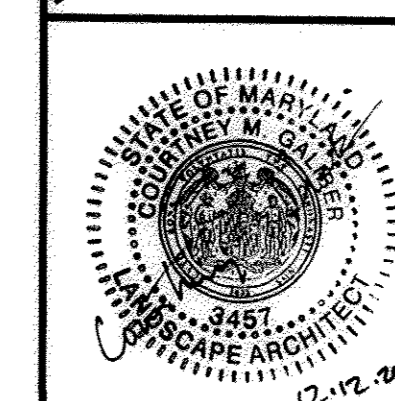
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Phil Ender*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE: 1/30/18

*Joe Hannon*  
CHIEF, LAND DEVELOPMENT DIVISION  
DATE: 2/1/18

OWNER / APPLICANT / DEVELOPER:

HORSE FARM, LLC.  
ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
COLUMBIA, MD 21045  
CONTACT: RICHARD HAYWARD  
PHONE: 410-997-7222

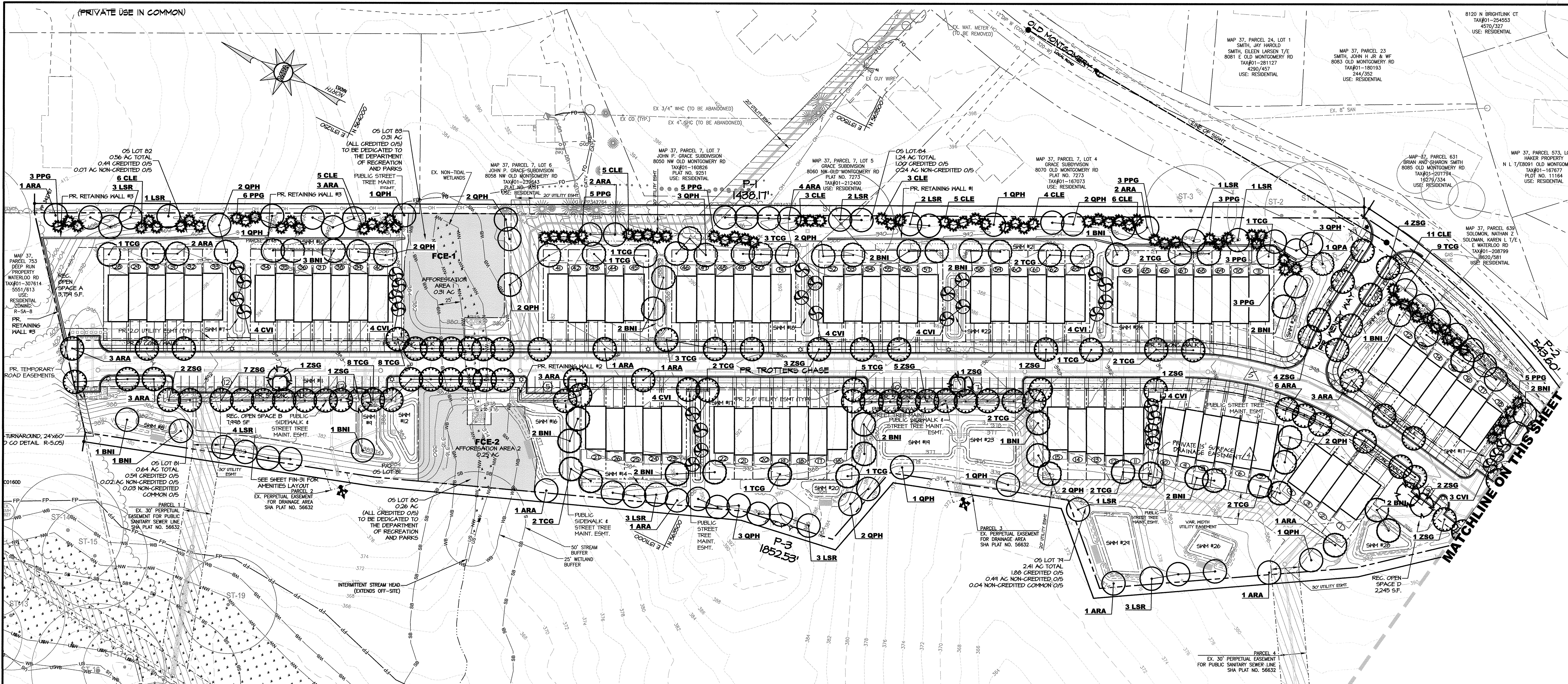


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**TROTTER'S KNOLL - SECTION I**  
**HORSE FARM PROPERTY**  
8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
**SWM LANDSCAPE DETAILS**  
TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-8  
1ST ELECTION DISTRICT  
HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.: 15368 x 02
		SCALE: 1" = 20'
		DATE: 9/13/2017
		DRAWN BY: CRM
		DESIGN BY: CRM
		REVIEW BY: CMG
		SHEET: 28 OF 44





**LANDSCAPE PLAN**  
SCALE: 1"=50'

**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. SEWER LINE
- EX. STREAM
- 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. NON TIDAL WETLANDS
- EX. TIDAL WETLANDS
- EX. 25' WETLAND BUFFER
- EX. FLOODPLAIN
- EX. WATERS OF THE US
- EX. STREAM BUFFER
- EX. SPECIMEN TREE
- PR. 0.5' CONTOUR
- PR. 1' CONTOUR
- PR. 2' CONTOUR
- PR. 10' CONTOUR
- PR. STORMWATER MANAGEMENT FACILITY
- PR. BIOSWALE
- PR. AFFORESTATION & FOREST CONSERVATION EASEMENT
- PR. LOT LINE
- PR. BUILDING FOOTPRINT
- PR. CURB AND GUTTER
- PR. SIDEWALK
- PR. RETAINING WALL
- PR. LINE OF SIGHT
- PR. RECREATIONAL OPEN SPACE
- PR. POROUS PAVEMENT
- PR. STREET LIGHT (LED-100 COLONIAL)
- PR. STREET LIGHT (LED-150 COLONIAL)
- UTILITY EASEMENT
- TEMPORARY ROADWAY EASEMENT
- GRADING EASEMENT
- PR. PUBLIC STREET TREE & SIDEWALK MAINTENANCE EASEMENT
- PR. PUBLIC STREET TREE EASEMENT
- PR. 8" SEWER LINE
- PR. 8" WATER LINE
- PR. WATER HOUSE CONNECTION
- PR. SEWER HOUSE CONNECTION
- PR. STREET SHADE TREE
- PR. PARKING SHADE TREE
- PR. BUFFER SHADE TREE
- PR. BUFFER EVERGREEN TREE
- PR. RESIDENTIAL SHADE TREE
- PR. RESIDENTIAL ORNAMENTAL TREE
- SPECIMEN MITIGATION SHADE TREE PLANTING

**Trotters Knoll - Master Site Plant Schedule**

KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>SHADE TREES</b>						
ARA	<i>Acer rubrum</i> 'Autumn Blaze'	Autumn Blaze Red Maple	2-1/2" - 3" Cal.	B&B	As Shown	19
BNI	<i>Betula nigra</i> 'Heritage'	Heritage Clump River Birch	10'-12' Ht.	B&B	As Shown	30
LSR	<i>Liquidambar styraciflua</i> 'Rotundiloba'	Rotundiloba Sweetgum	2-1/2" - 3" Cal.	B&B	As Shown	24
QPA	<i>Quercus palustris</i>	Pin Oak	3" - 4" Cal.	B&B	As Shown	1
QPH	<i>Quercus phellos</i>	Willow Oak	2-1/2" - 3" Cal.	B&B	As Shown	33
TCG	<i>Tilia cordata</i> 'Greenspire'	Greenspire Littleleaf Linden	2-1/2" - 3" Cal.	B&B	As Shown	28
ZSG	<i>Zelkova serrata</i> 'Village Green'	Village Green Japanese Zelkova	2-1/2" - 3" Cal.	B&B	As Shown	7
					<b>TOTAL</b>	<b>142</b>
<b>EVERGREEN TREES</b>						
CLE	<i>Cupressus leylandii</i>	Leyland cypress	5'-6" ht.	B&B	As Shown	56
PPG	<i>Picea pungens</i> 'Glauca'	Colorado Blue Spruce	6'-8" ht.	B&B	As Shown	36
					<b>TOTAL</b>	<b>92</b>
<b>MINOR DECIDUOUS TREES</b>						
CVI	<i>Chinoanthus virginicus</i>	Fringetree	1-1/2" - 2" Cal.	B&B	As Shown	32
					<b>TOTAL</b>	<b>32</b>

**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 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: Richard Hayward, Vice President DATE: 12/14/17  
SIGNATURE: Richard Hayward

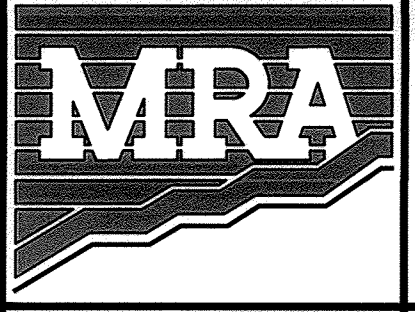
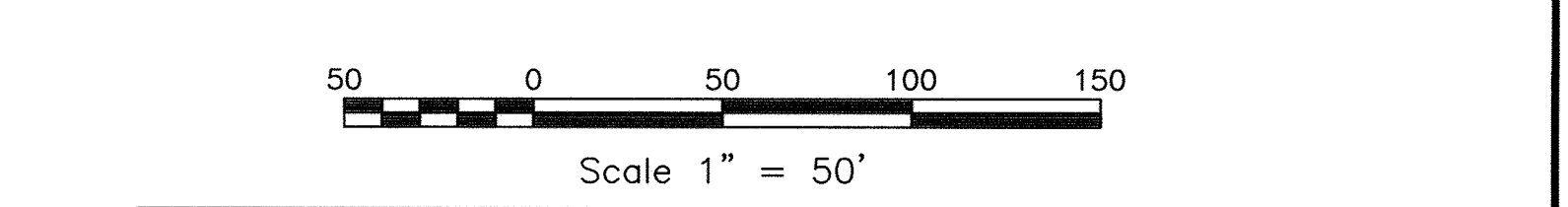
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
Melanie 1/23/2018  
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
Richard Hayward 1/30/18  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

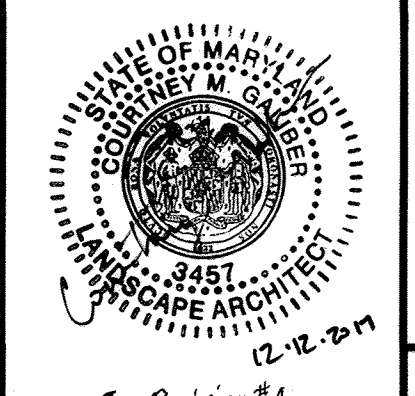
Duane Cannon 2/16/18  
CHIEF, LAND DEVELOPMENT DIVISION DATE

**Trotters Knoll - Street Tree Plant Schedule**

KEY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING	QTY
<b>SHADE TREES</b>						
ARA	<i>Acer rubrum</i> 'Autumn Blaze'	Autumn Blaze Red Maple	2-1/2" - 3" Cal.	B&B	As Shown	20
TCG	<i>Tilia cordata</i> 'Greenspire'	Greenspire Littleleaf Linden	2-1/2" - 3" Cal.	B&B	As Shown	31
ZSG	<i>Zelkova serrata</i> 'Village Green'	Village Green Japanese Zelkova	2-1/2" - 3" Cal.	B&B	As Shown	30
					<b>TOTAL</b>	<b>81</b>



**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  
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**TROTTER'S KNOLL - SECTION I**  
**HORSE FARM PROPERTY**  
8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
**FINAL LANDSCAPE PLAN**

TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-8  
1ST ELECTION DISTRICT  
HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:
1-2-19	ADDED PRIVATE EASEMENT	15368 x 02
01-11-19	REVISED DRIVEWAYS	SCALE: 1" = 50'
		DATE: 9/13/2017
		DRAWN BY: CRM
		DESIGN BY: CRM
		REVIEW BY: CMG
		SHEET: 29 OF 44

**OWNER / APPLICANT / DEVELOPER:**  
HORSE FARM, LLC  
ADDRESS: 9200 RUNSEY ROAD, SUITE 200  
COLUMBIA, MD 21045  
CONTACT: RICHARD HAYWARD  
PHONE: 410-997-7222

**LANDSCAPE SCHEDULE A**  
PERIMETER LANDSCAPE BUFFER REQUIREMENTS

CATEGORY	P-1 ADJACENT TO SINGLE FAMILY DETACHED	P-2 ADJACENT TO ROADWAY	P-3 ADJACENT TO NON RESIDENTIAL
LANDSCAPE TYPE - SINGLE FAMILY ATTACHED	C	C	A
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	1438.17'	545.80'	1852.53'
CREDIT FOR EXISTING VEGETATION	104'	NO	125.81'
CREDIT FOR WALL, FENCE, OR BERM	NO	NO	NO
PERIMETER IN RIGHT-OF-WAY	NO	62.17'	NO
NUMBER OF PLANTS REQUIRED			
SHADE TREES	33	12	29
EVERGREEN TREES	68	24	0
SHRUBS	0	0	0
NUMBER OF PLANTS PROVIDED			
SHADE TREES	33	12	29
EVERGREEN TREES	68	24	0
SHRUBS	0	0	0



**LANDSCAPE NOTES**

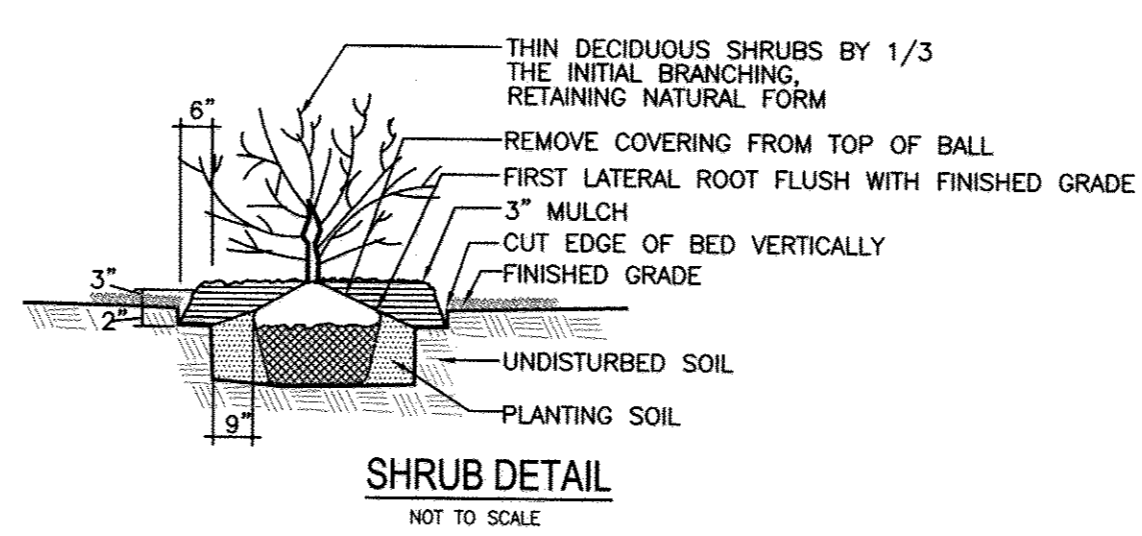
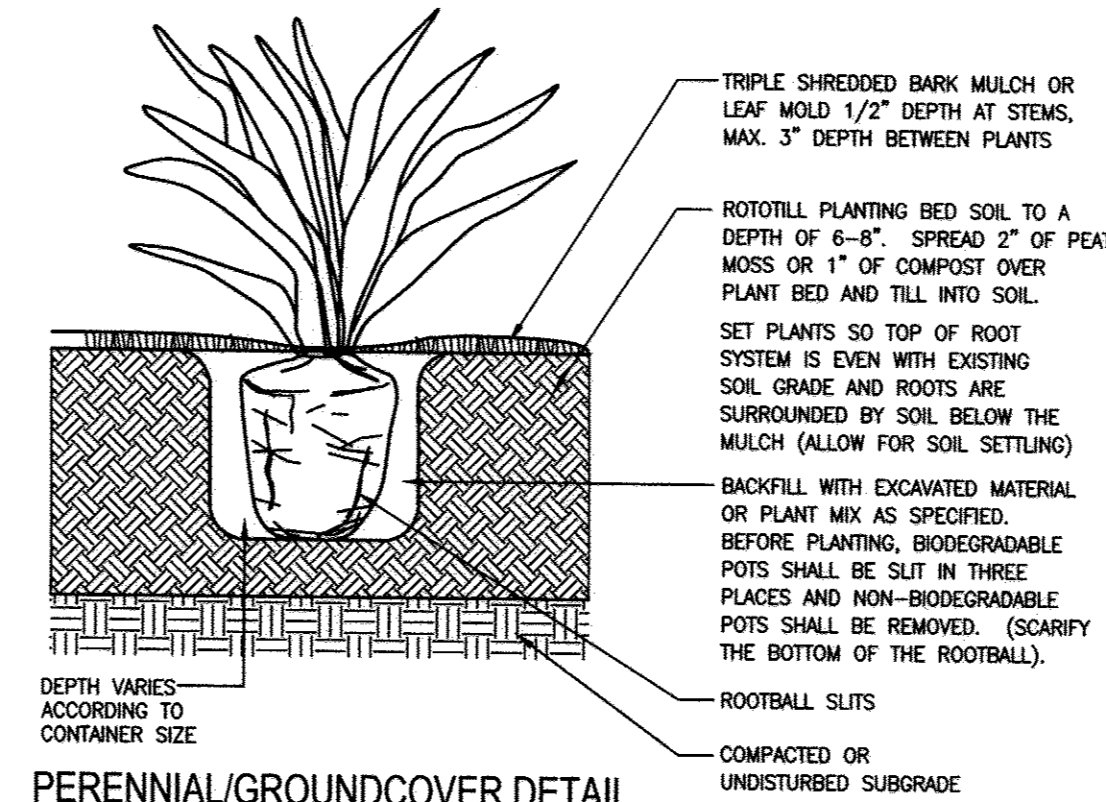
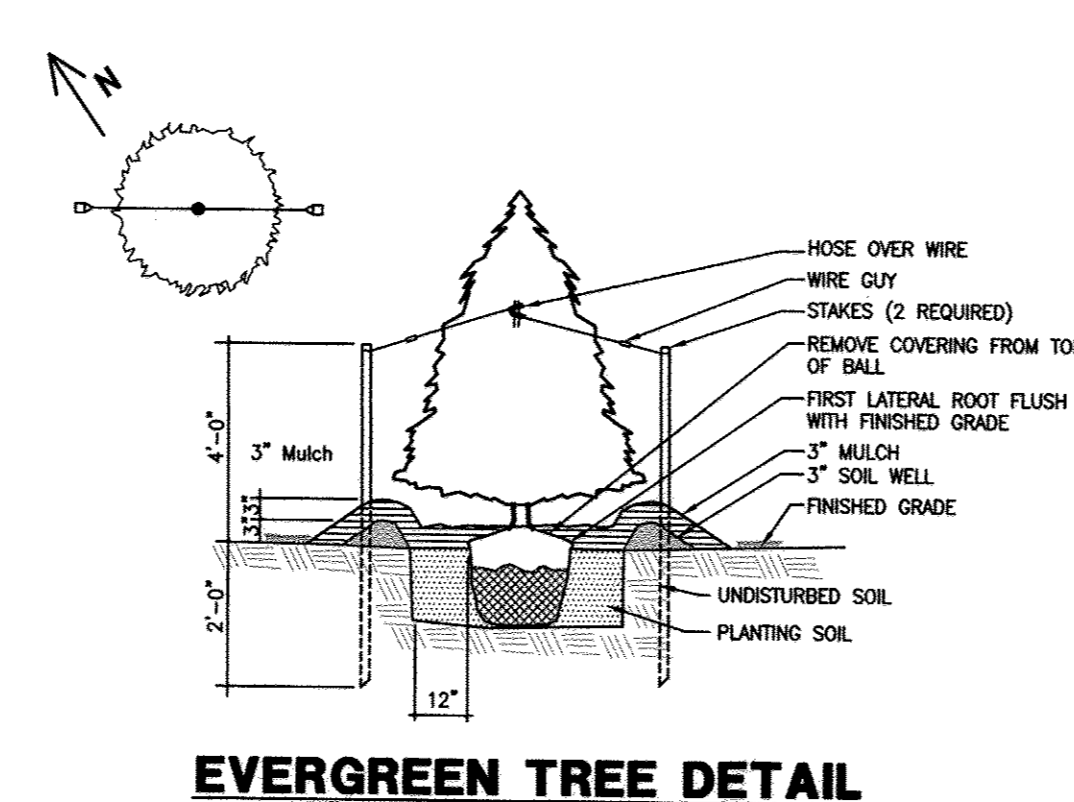
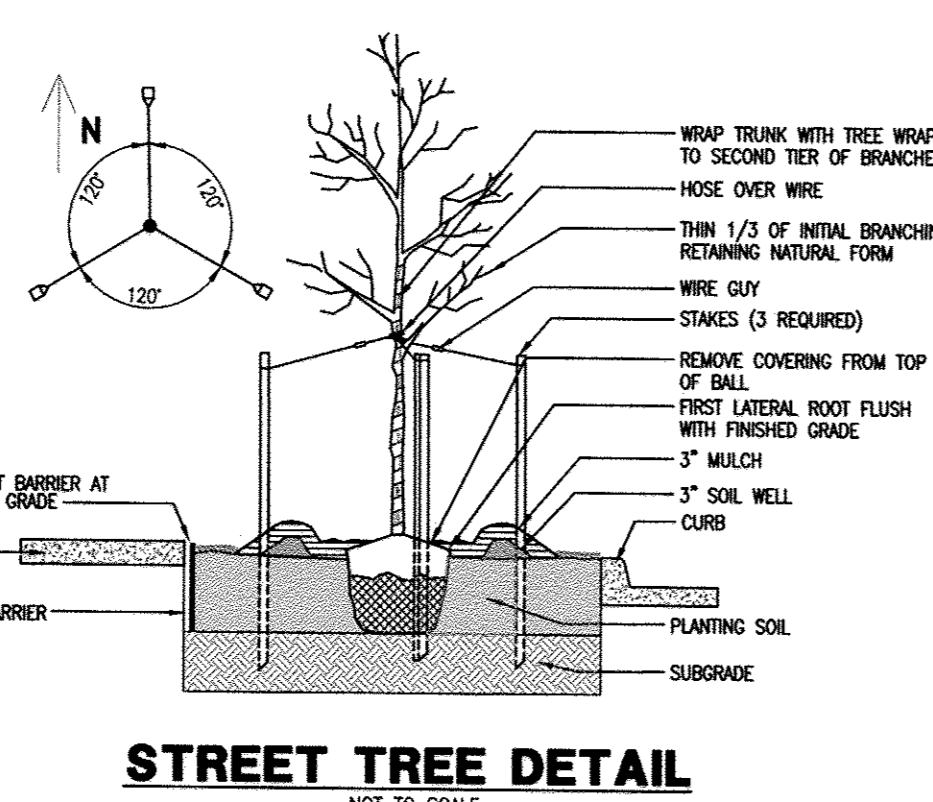
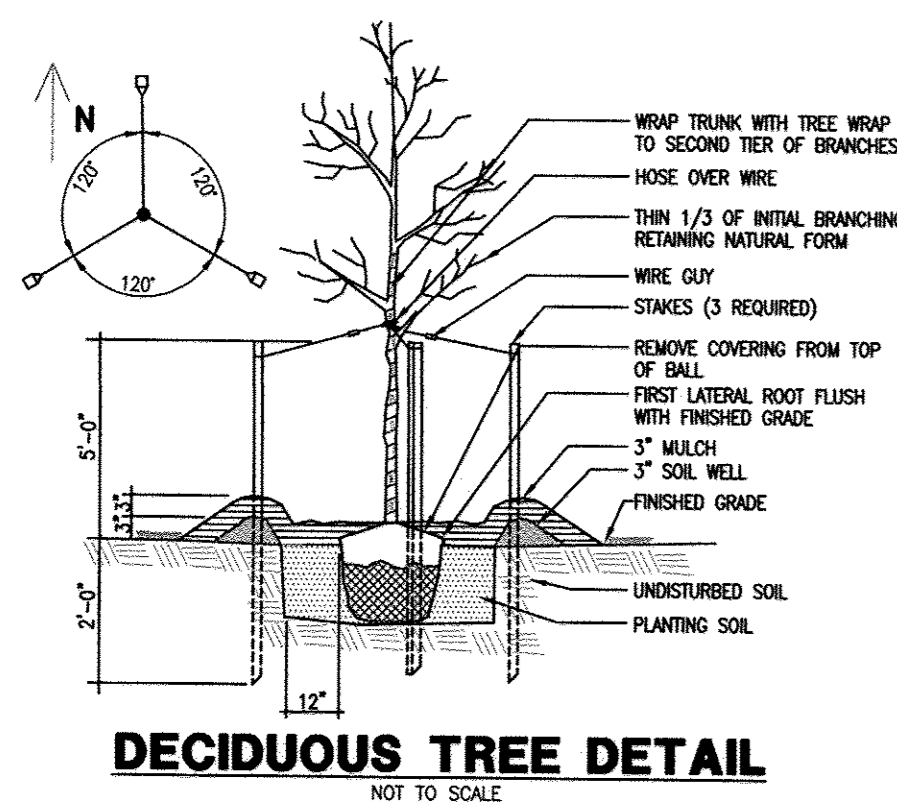
- ALL PLANT MATERIAL SHALL BE NURSERY GROWN AND SHALL COMPLY WITH THE 'AMERICAN STANDARD FOR NURSERY STOCK' (ANSI Z60.1), LATEST EDITION, AND ALL ADDENDA PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
- TREES AND SHRUBS SHALL BE TYPICAL OF THEIR SPECIES AND VARIETY, HAVE NORMAL GROWTH HABIT, WELL 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 AND HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING. 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 'V' 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.
- SEEDING AREAS THAT WASH OUT MUST BE FILLED AND GRADED AS NECESSARY AND THEN RESEDED. 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.
- LANDSCAPING FOR LOT(S) 1-83 ARE PROVIDED IN ACCORDANCE WITH A CERTIFIED LANDSCAPE PLAN (SHEETS 29 AND 30 INCLUDED WITH THE ROAD CONSTRUCTION PLAN SET) IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING SHALL BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$61,200 (142 SHADE TREES @ \$300.00 EA., 124 ORNAMENTAL/EVERGREEN TREES @ \$150.00 EA.).
- 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 HEREWITH 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.
- STREET TREES SHALL BE PLACED A MINIMUM OF 30' FROM ALL SIGNS AND INTERSECTIONS WHEN PLANTED BETWEEN THE SIDEWALK AND CURB, AND BE LOCATED WITH CONSIDERATION OF UNDERGROUND UTILITIES AND STRUCTURES. STREET TREES MAY NOT BE PLANTED WITHIN 5' OF A DRAIN INLET STRUCTURE, 5' OF AN OPEN SPACE ACCESS STRIP, OR 10' OF A DRIVEWAY.
- A LANDSCAPE ALTERNATIVE COMPLIANCE HAS BEEN SUBMITTED FOR ADMINISTRATIVE APPROVAL TO ALLOW STREET TREES TO BE LOCATED WITHIN 8' OF A DRIVEWAY.

RESIDENTIAL PARKING LANDSCAPE REQUIREMENTS	
NUMBER OF PARKING SPACES	49
NUMBER OF ISLANDS REQUIRED	5
NUMBER OF ISLANDS PROVIDED	10
SHADE TREES REQUIRED	5
SHADE TREES PROVIDED	5

RESIDENTIAL PLANTING REQUIREMENTS	
NUMBER OF UNITS	78
NUMBER OF PLANTINGS REQUIRED	78 SHADE TREES
NUMBER OF PLANTINGS PROVIDED	
SHADE TREES	62
ORNAMENTAL TREES (2:1 SUBSTITUTION)	32

STREET TREES			
	LENGTH	REQUIRED	PROVIDED
TROTTER'S CHASE - PUBLIC ROAD	1,557.35 LF	78 TREES	78 TREES*
WENDY WAY - PUBLIC ROAD	165.93 LF	8 TREES	8 TREES

\* 5 TREES ARE PARKING LOT TREES ADJACENT TO THE TROTTER'S CHASE RIGHT-OF-WAY



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

*Meunier* 1/23/2018  
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*John Adams* 1-30-18  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

*Jim Hannon* 2/16/18  
 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 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

NAME *Richard Hayward, Vice President* DATE *12/14/17*

SIGNATURE *Richard Hayward*

**MORRIS & RITCHIE ASSOCIATES, INC.**  
 ENGINEERS, PLANNERS, SURVEYORS AND LANDSCAPE ARCHITECTS  
 14280 PARK CENTER DRIVE  
 LAUREL, MD 20707  
 (410) 792-9792 / (301) 776-1690  
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**TROTTER'S KNOLL - SECTION I**  
**HORSE FARM PROPERTY**  
 8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
 LANDSCAPE DETAILS

TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-8  
 1ST ELECTION DISTRICT  
 HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:
		15368 x 02
		SCALE: AS SHOWN
		DATE: 9/13/2017
		DRAWN BY: CRM
		DESIGN BY: CRM
		REVIEW BY: CMG
		SHEET: 30 OF 44

OWNER / APPLICANT / DEVELOPER:

HORSE FARM, LLC.  
 ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
 COLUMBIA, MD 21045  
 CONTACT: RICHARD HAYWARD  
 PHONE: 410-997-7222

P:\WORK\15368 PROJECTS\HOWARD\LANDSCAPE\15368-FIN-30-UP.dwg, 12/13/2017 7:35:52 AM, C:\BIBR...  
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Victor Stanley, Inc.

P.O. DRAWER 330 - DUMFRIES, MD 20754 USA  
TEL: (301) 853-8300 - FAX: (410) 257-7579

PRODUCT SPECIFICATIONS

CADD Department VITEMS 9  
DRAWN R.D.N. REV. 2/4/09

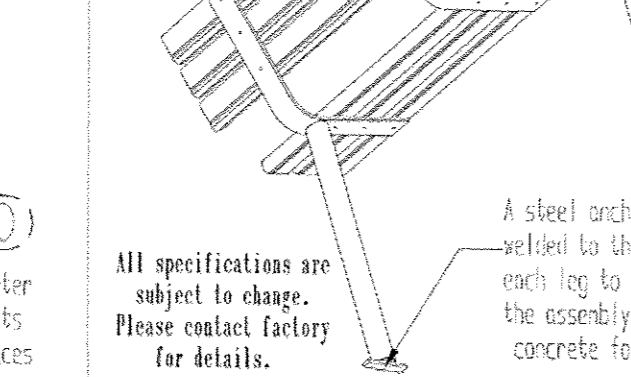
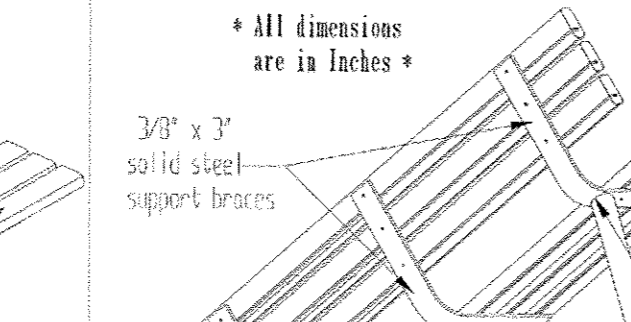
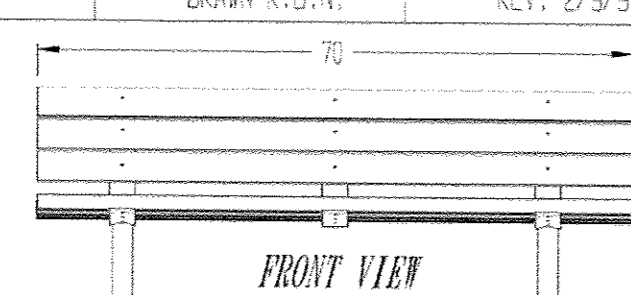
HOMESTEAD SERIES MODEL-2  
Standard 6 Foot Length  
Standard Permanent Mount  
With Optional Recycled Second  
Site Systems 2" x 4" Slats

For your convenience and economy this bench is shipped partially unassembled

All fabricated components are steel shot blasted, etched, phosphatized and electroplated with powder coated with 100% polyester powder coatings.

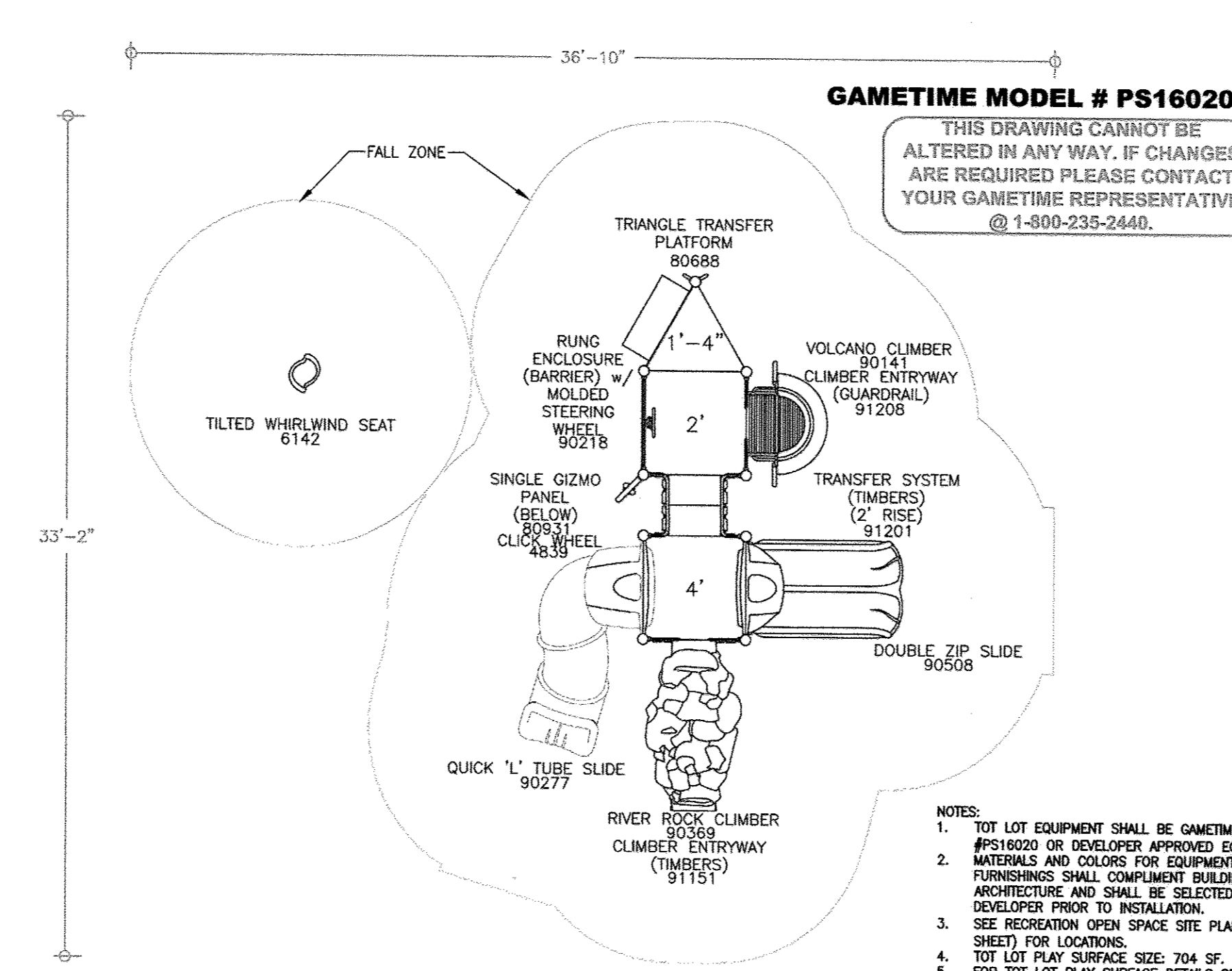
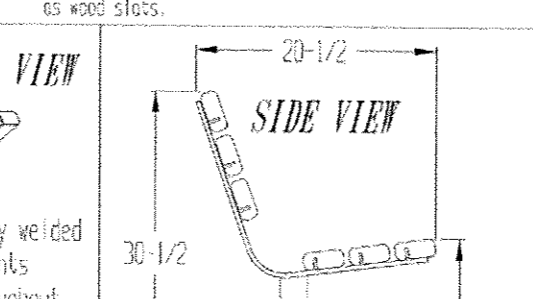
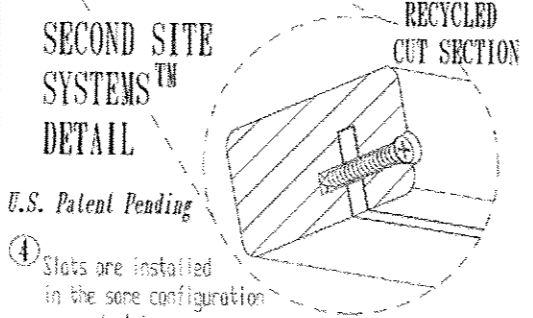
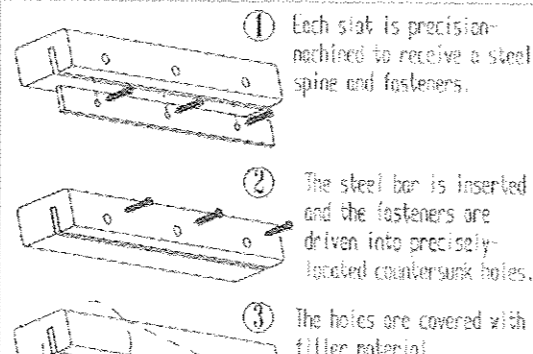
The Model-2 bench is comprised of (6) 2" x 4" (nominal) recycled wood slats.

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BENCH DETAIL  
SCALE: N.T.S.

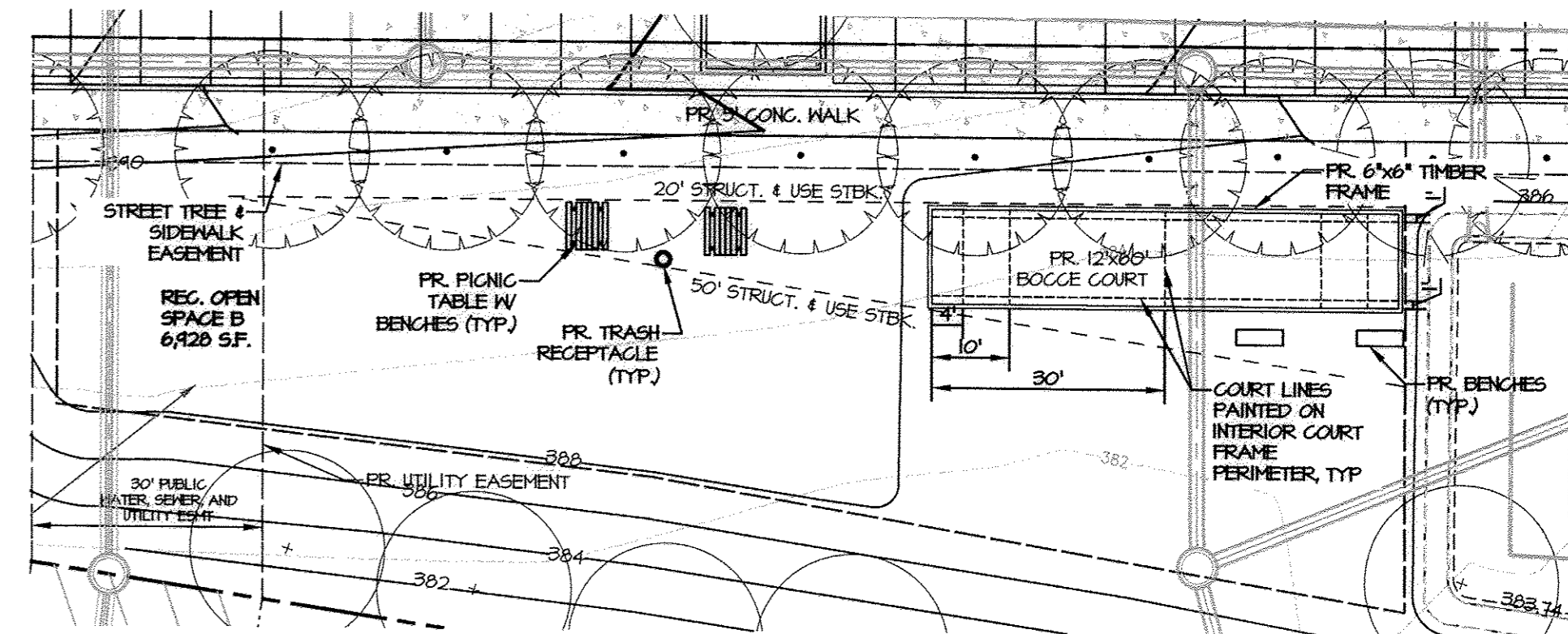
- NOTES:
1. BENCHES SHALL BE 6' VICTOR STANLEY HOMESTEAD SERIES MODEL-2 OR DEVELOPER APPROVED EQUIVALENT.
  2. MATERIALS AND COLORS FOR EQUIPMENT AND FURNISHINGS SHALL COMPLY WITH BUILDING ARCHITECTURE AND SHALL BE SELECTED BY DEVELOPER PRIOR TO INSTALLATION.
  3. SEE RECREATION OPEN SPACE SITE PLANS (THIS SHEET) FOR LOCATIONS.



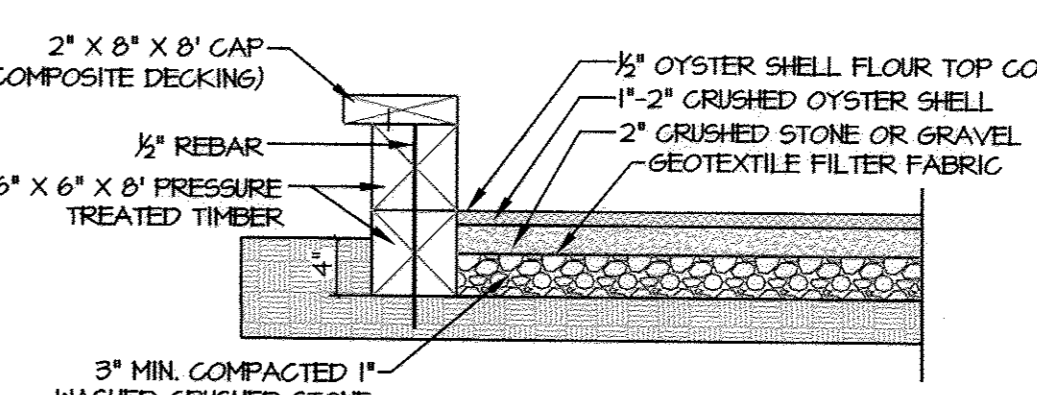
TOT LOT  
SCALE: N.T.S.

PLAY SURFACE NOTES:

1. PLAY SURFACE SHALL BE SURFACE AMERICA PLAYGROUND POURED-IN-PLACE SURFACING OR DEVELOPER APPROVED EQUIVALENT.
2. PERIMETER OF PLAY SURFACE SHALL BE EDGED WITH CONCRETE HEADER CURB.
3. HEADER CURB SHALL BE FLUSH WITH TOP OF PLAY SURFACE AND ADJOINING SIDEWALKS.
4. PLAY SURFACE SHALL BE INSTALLED OVER COMPACTED SOIL AND 6" CRUSHED STONE.
5. CRUSHED STONE SHALL MEET THE FOLLOWING REQUIREMENTS:
  - A HOMOGENEOUS MIXTURE OF FINE AND MEDIUM STONE IS APPLIED IN MULTIPLE LAYERS AND COMPACTED USING A MECHANICAL COMPACTOR AND/OR ROLLER TO PROVIDE AN EVEN PLANE.
  - THE CRUSHED STONE BASE MUST BE TIGHTLY COMPACTED AND SMOOTH. A 2% SLOPE IS RECOMMENDED.
  - 95% STANDARD PROCTOR COMPACTION (AS PER ASTM TEST) IS OF CRITICAL IMPORTANCE.
  - STONE FOR THE BASE MUST BE A HOMOGENEOUS MIX OF 3/4" STONE DOWN TO FINES AND YOU NEED TO ACHIEVE A 95% COMPACTION.
  - THE MINIMUM DEPTH OF THE CRUSHED STONE BASE IS 4". TYPICAL THICKNESS RANGE IS 4"-6". CRUSHED STONE BASE LAYERS THICKER THAN 6" ARE MORE CHALLENGING TO ACHIEVE THE NECESSARY 95% COMPACTION RATE THROUGHOUT THE BASE. THICKNESS IS NEVER TO EXCEED 10".
  - CRUSHED STONE BASE MUST BE FULLY CONTAINED.
6. CONTRACTOR SHALL INSURE POSITIVE DRAINAGE ALONG PLAY SURFACE.
7. PLAY SURFACE COLOR SHALL BE CHOSEN BY DEVELOPER.



RECREATION OPEN SPACE B AMENITIES  
SCALE: 1"=20'



- NOTES:
1. LEAVE A 1" GAP BETWEEN ENDS OF TOP 6"x6"x8" TIMBER FOR DRAINAGE.
  2. SLOPE OF SURFACE OF COURT SHOULD NOT EXCEED 1% IN ANY DIRECTION.

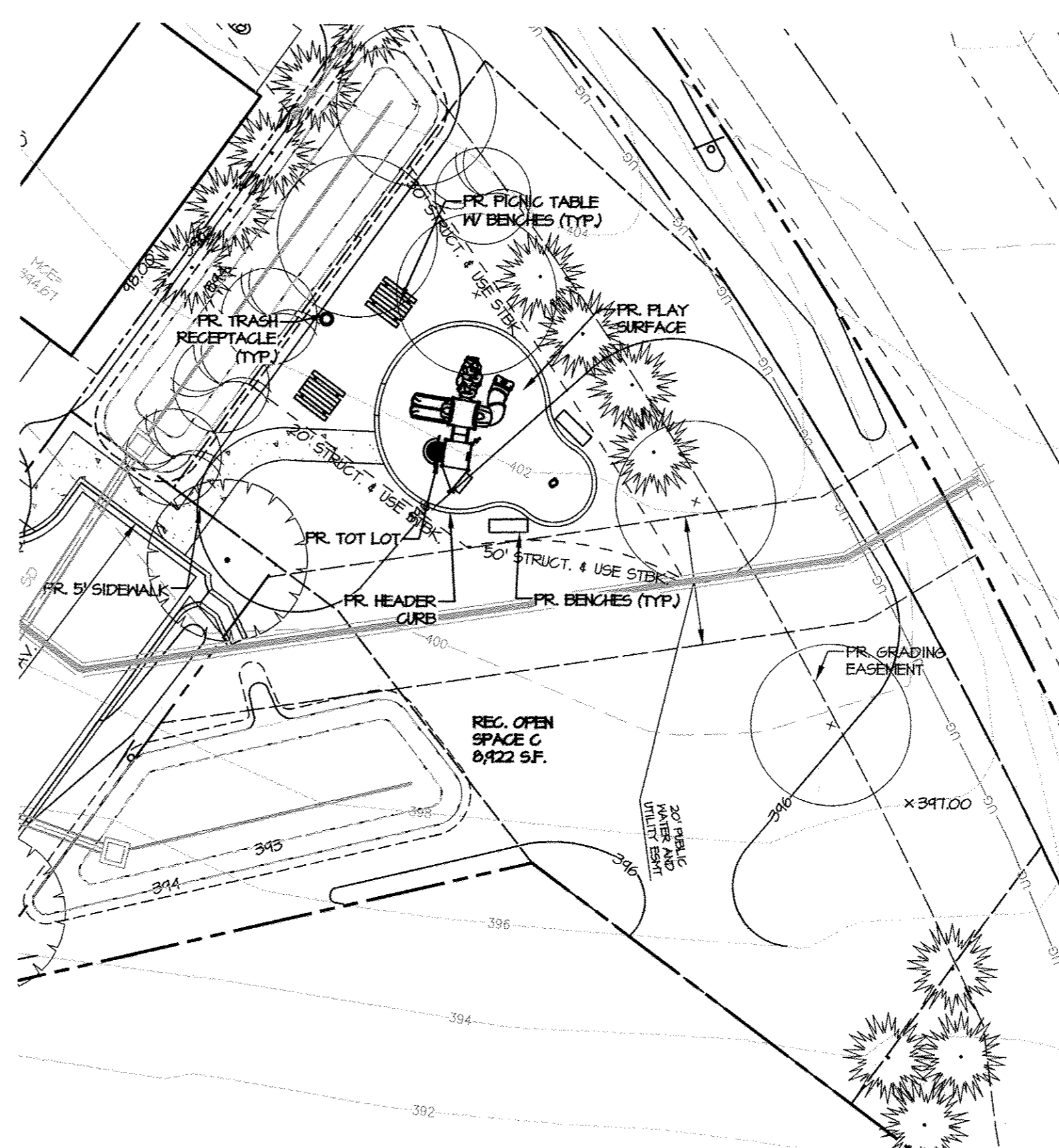
BOCCO COURT DETAIL  
SCALE: N.T.S.

LEGEND

- EX. PROPERTY LINE
- EX. SPECIMEN TREE
- PR. 0.5' CONTOUR
- PR. 1' CONTOUR
- PR. 2' CONTOUR
- PR. 10' CONTOUR
- PR. LIMITS OF DISTURBANCE
- PR. 8" SEWER LINE
- PR. 6" WATER LINE
- PR. WATER HOUSE CONNECTION
- PR. SEWER HOUSE CONNECTION
- PR. LOT LINE
- PR. BUILDING FOOTPRINT
- PR. BUILDING SETBACK
- PR. CURB AND GUTTER
- PR. SIDEWALK
- PR. RECREATIONAL OPEN SPACE
- PR. POROUS PAVEMENT
- PR. STREET LIGHT (LED-100 COLONIAL)
- PR. STREET LIGHT (LED-150 COLONIAL)

NOTES:

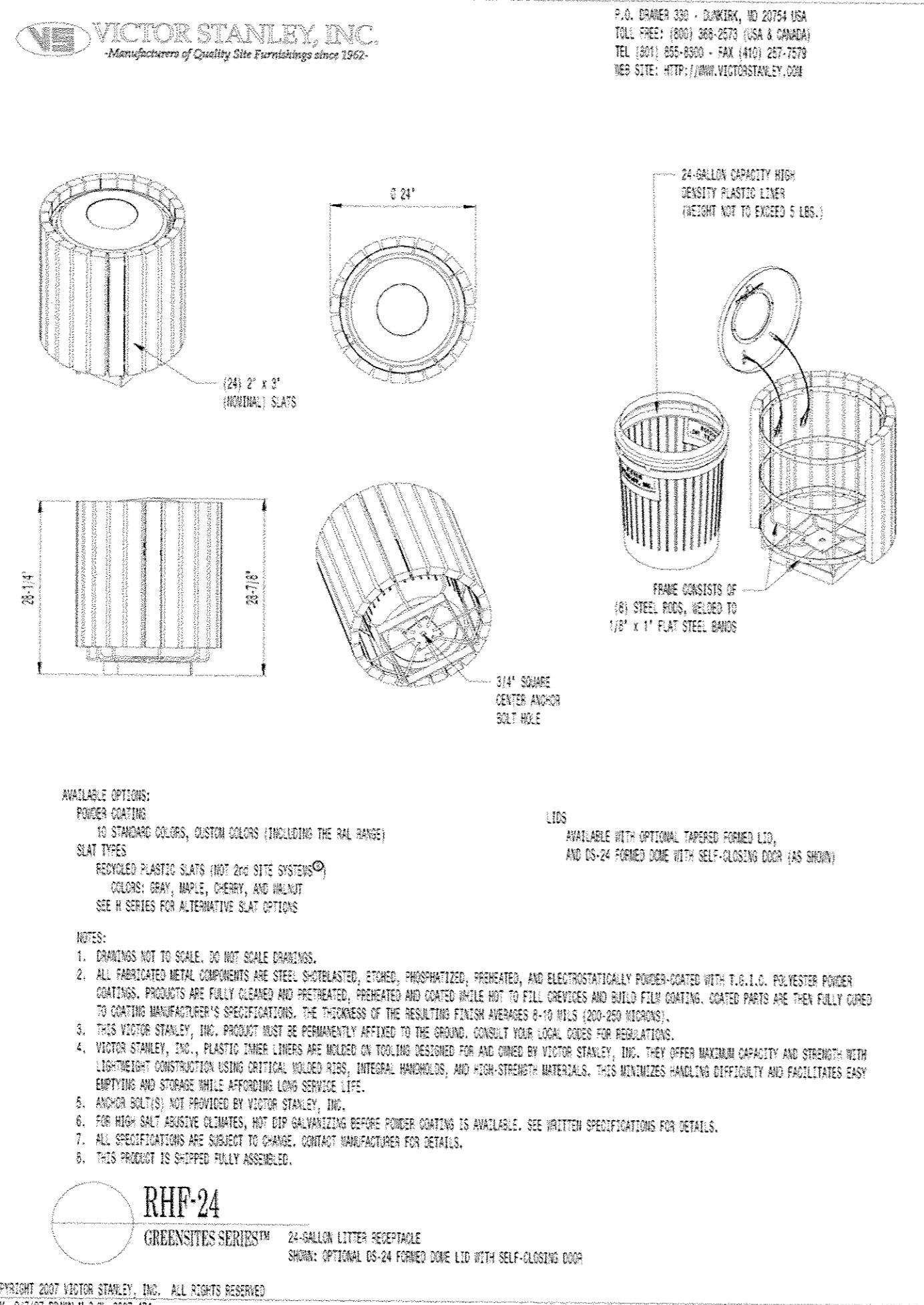
1. THE DEVELOPER SHALL ERECT A SIGN IDENTIFYING THE LOCATION FOR THE RECREATIONAL OPEN SPACE AREAS WITHIN THE SUBDIVISION.



RECREATION OPEN SPACE C AMENITIES  
SCALE: 1"=20'

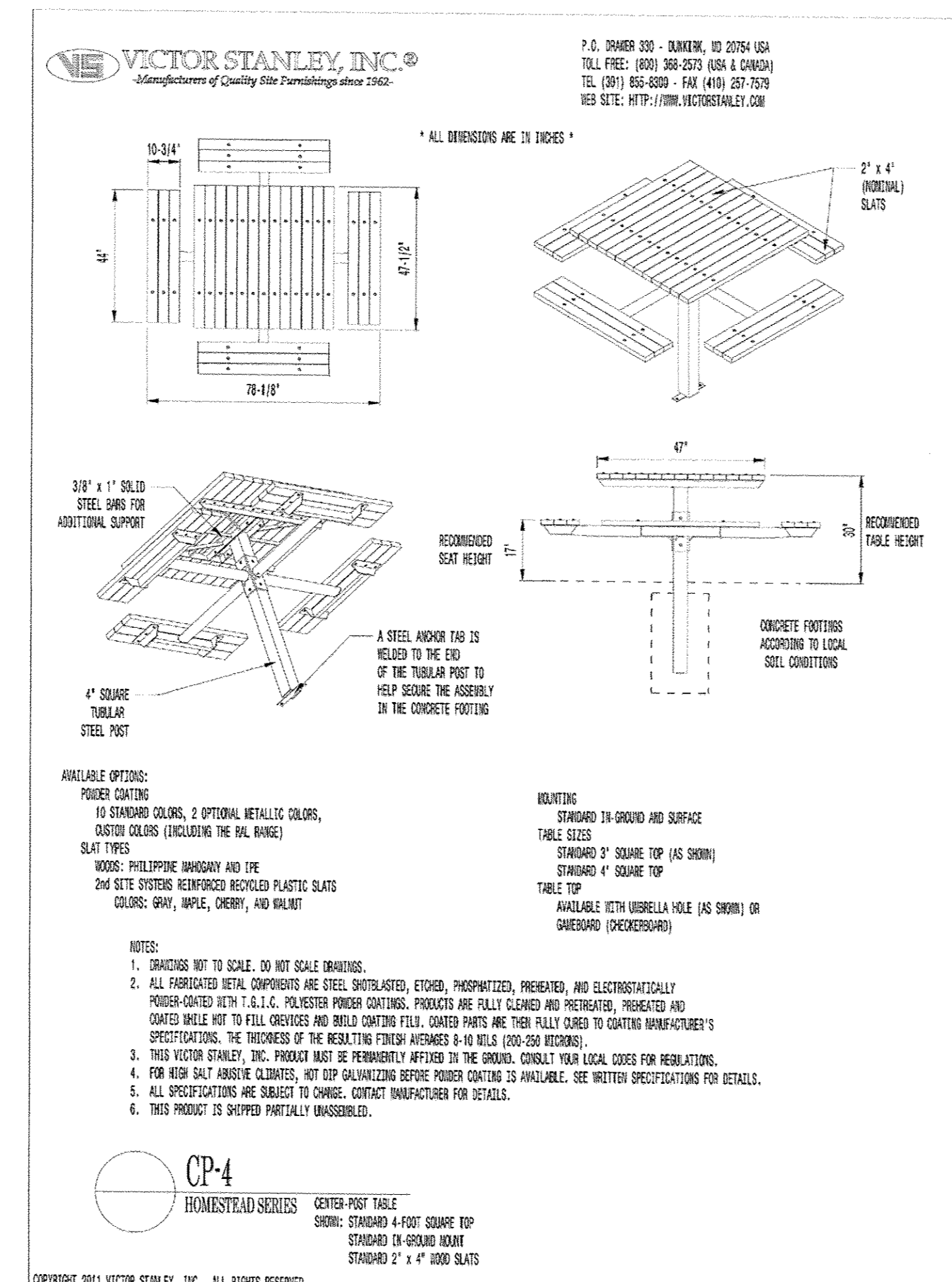
OWNER / APPLICANT / DEVELOPER:

HORSE FARM, LLC  
ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
COLUMBIA, MD 21045  
CONTACT: RICHARD HAYWARD  
PHONE: 410-997-7222



TRASH RECEPTACLE DETAIL  
SCALE: N.T.S.

- NOTES:
1. TRASH RECEPTACLE SHALL BE 24 GALLON VICTOR STANLEY GREEN SERIES RHF-24 OR DEVELOPER APPROVED EQUIVALENT.
  2. MATERIALS AND COLORS FOR EQUIPMENT AND FURNISHINGS SHALL COMPLY WITH BUILDING ARCHITECTURE AND SHALL BE SELECTED BY DEVELOPER PRIOR TO INSTALLATION.
  3. SEE RECREATION OPEN SPACE SITE PLANS (THIS SHEET) FOR LOCATIONS.



PICNIC TABLE DETAIL  
SCALE: N.T.S.

- NOTES:
1. PICNIC TABLES SHALL BE 4' SQUARE VICTOR STANLEY HOMESTEAD SERIES CP-4 OR DEVELOPER APPROVED EQUIVALENT.
  2. MATERIALS AND COLORS FOR EQUIPMENT AND FURNISHINGS SHALL COMPLY WITH BUILDING ARCHITECTURE AND SHALL BE SELECTED BY DEVELOPER PRIOR TO INSTALLATION.
  3. SEE RECREATION OPEN SPACE SITE PLANS (THIS SHEET) FOR LOCATIONS.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Melanie* 1/23/2018  
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*John Edward* 1/30/18  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*John Edward* 2/6/18  
CHIEF, LAND DEVELOPMENT DIVISION DATE

**MORRIS & RITCHE ASSOCIATES, INC.**  
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**TROTTER'S KNOLL - SECTION I**  
HORSE FARM PROPERTY  
8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
RECREATION AMENITY DETAILS

TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-8  
1ST ELECTION DISTRICT  
HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:	15368 x 02
		SCALE:	AS SHOWN
		DATE:	9/13/2017
		DRAWN BY:	CRM
		DESIGN BY:	CRM
		REVIEW BY:	CMG
		SHEET:	31 OF 44

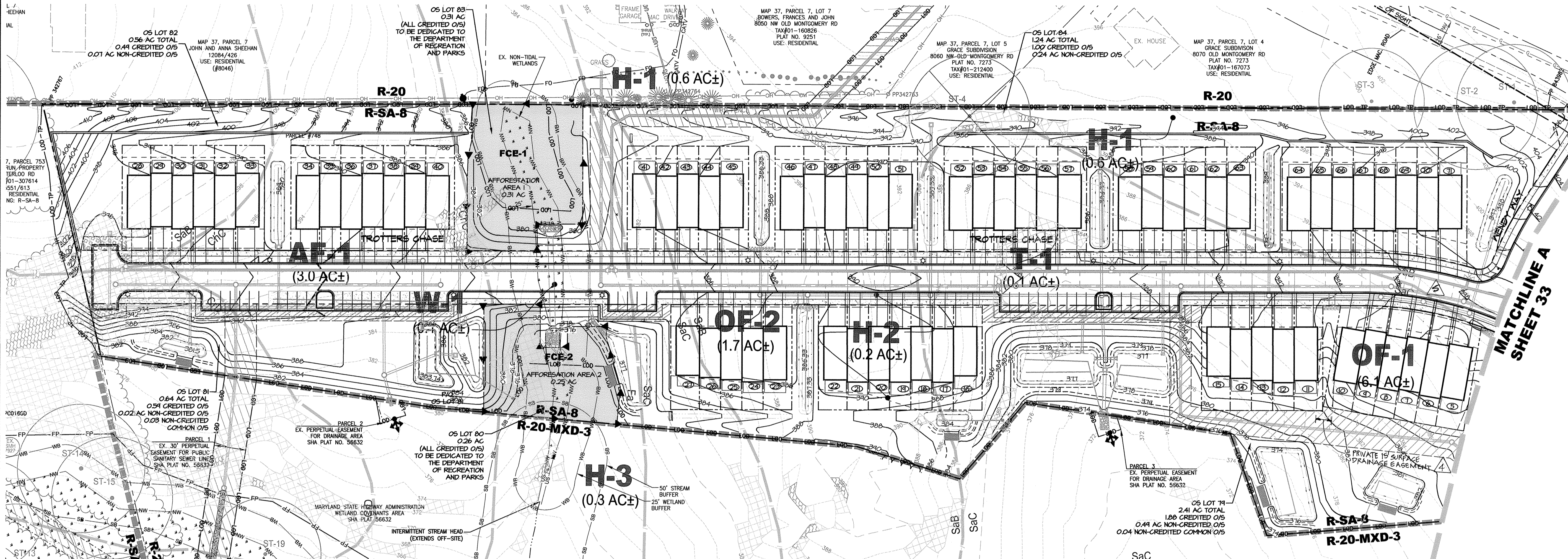
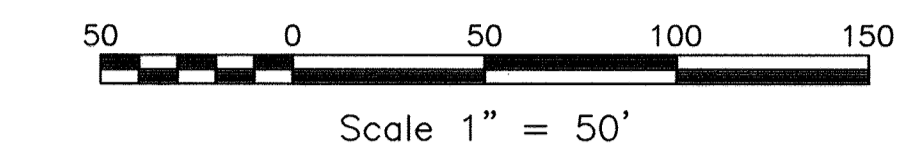
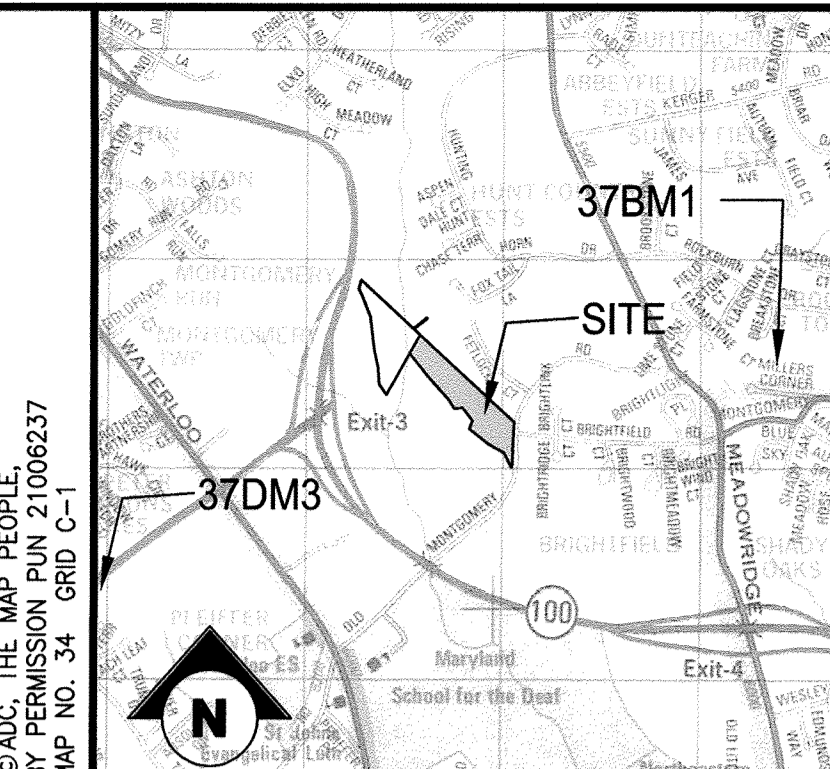


**SOILS CHART**

SYMBOL	NAME/DESCRIPTION	HYDRIC SOIL	K FACTOR
ChC	CHILLUM-RUSSET LOAM, 5 TO 10 PERCENT SLOPES	NO	0.37 CHILLUM COMPONENT 0.24 RUSSET COMPONENT
CvD	CROOM AND EVESBORO SOILS, 10 TO 15 PERCENT SLOPES	NO	0.28 CROOM COMPONENT 0.15 EVESBORO COMPONENT
Fa	FALLSTON SANDY LOAM, 0 TO 2 PERCENT SLOPES	YES	0.02
GcC	GLADSTONE-LEGORE COMPLEX, 8 TO 15 PERCENT SLOPES	NO	0.20 GLADSTONE COMPONENT 0.32 LEGORE COMPONENT
Ha	HATBORO-CODORUS SILT LOAM, 0 TO 3 PERCENT SLOPES	YES	0.37 HATBORO COMPONENT 0.37 CODORUS COMPONENT
JbB	JACKLAND SILT LOAM, 3 TO 8 PERCENT SLOPES	NO	0.43
LgC	LEGORE SILT LOAM, 8 TO 15 PERCENT SLOPES	NO	0.32
SaB	SASSAFRAS LOAM, 2 TO 5 PERCENT SLOPES	NO	0.24
SoC	SASSAFRAS LOAM, 5 TO 10 PERCENT SLOPES	NO	0.24

1. SOURCE: THE UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCE CONSERVATION SERVICE'S WEB SOIL SURVEY, CONSULTED APRIL 22, 2011 AND VERIFIED JUNE 23, 2015. AVAILABLE ONLINE AT <HTTP://NASSUR.SURVEY.NRCS.USDA.GOV/APPS/>. K FACTORS SHOWN ARE FOR WHOLE SOIL.  
2. HYDRIC SOILS INFORMATION ADAPTED FROM THE NATIONAL HYDRIC SOILS LIST FOR MARYLAND, AT <HTTP://SOILS.USDA.GOV/USE/HYDRIC/LISTS/STATE.HTML>, CONSULTED ON JUNE 23, 2015.

# TROTTER'S KNOLL HORSE FARM PROPERTY FOREST CONSERVATION PLAN HOWARD COUNTY, MARYLAND



**AFFORESTATION EASEMENT AREAS**

AFFORESTATION AREA #1	0.31 AC
AFFORESTATION AREA #2	0.25 AC
<b>TOTAL</b>	<b>0.56 AC</b>

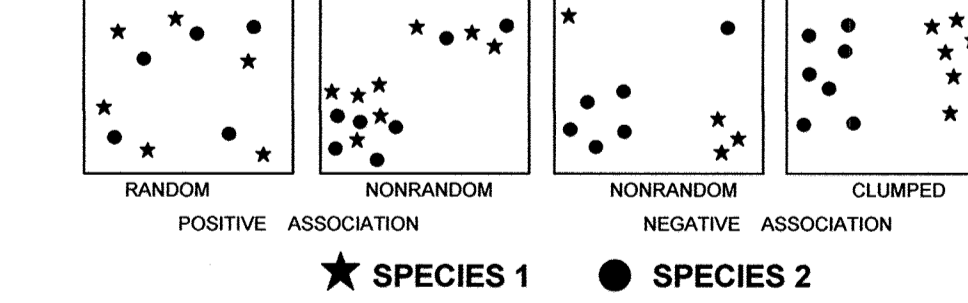
**LEGEND**

- 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. 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. 15-25% SLOPES
- EX. 25%+ SLOPES
- EX. SOILS
- PR. STORMWATER MANAGEMENT FACILITY
- PR. AFFORESTATION & FOREST CONSERVATION EASEMENT
- PR. REFORESTATION SIGN
- PR. 8" SEWER LINE
- PR. 8" WATER LINE
- PR. WATER HOUSE CONNECTION
- PR. SEWER HOUSE CONNECTION
- PR. STORM DRAIN MANHOLE
- PR. LOT LINE
- PR. BUILDING FOOTPRINT
- PR. BUILDING SETBACK
- PR. CURB AND GUTTER
- PR. SIDEWALK
- PR. RETAINING WALL
- PR. LINE OF SIGHT

**PLANT MANAGEMENT PLAN**

TASKS	MONTHS
RECOMMENDED, OPTIMAL TIME RECOMMENDED WITH ADDITIONAL CARE	SEP, OCT, NOV
RECOMMENDED DEPENDENT UPON SITE CONDITIONS	MAY, JUN, JUL, AUG, SEPT, OCT, NOV
DEPENDENT UPON SITE CONDITIONS; WEEKLY WATERING IS STRONGLY RECOMMENDED FROM MAY THROUGH OCTOBER UNLESS WEEKLY RAINFALL EQUALS 1" MINIMUM 2 TIMES A YEAR	MAY, JUN, JUL, AUG, SEPT, OCT, NOV

**Typical Forest Tree Distribution Patterns**



Note: Naturally occurring populations of trees tend to be found in informal groupings. A cluster of trees is really a mosaic of different species groups. The objective of an afforestation / reforestation plan is to select the appropriate species and distribution pattern for a chosen site that mimics natural patterns.

**PLANTING DISTRIBUTION PATTERNS**

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
 [Signature] 1/23/18  
 CHIEF, BUREAU OF HIGHWAYS DATE  
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 1/30/18  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE  
 [Signature] 2/6/18  
 CHIEF, LAND DEVELOPMENT DIVISION DATE

**SPECIMEN TREE (FOR SECTION 1 ONLY)**

NUMBER	SCIENTIFIC NAME	COMMON NAME	DBH	CONDITION
ST-1	QUERCUS VELUTINA	BLACK OAK	36"	GOOD
ST-2	QUERCUS VELUTINA	BLACK OAK	39"	GOOD
ST-3	QUERCUS FALCATA	SOUTHERN RED OAK	33"	GOOD
ST-4	QUERCUS PALAUSTRIS	PIN OAK	38"	GOOD
ST-19	PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	35"	POOR

**SPECIMEN TREE RETENTION PROCEDURES**

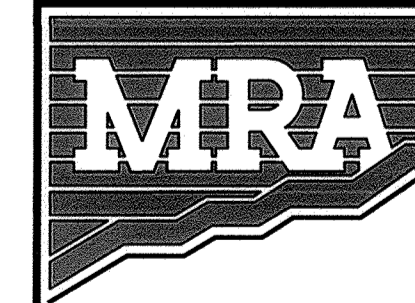
- THESE NOTES PERTAIN TO SPECIMEN TREES ST-1, ST-2, ST-3 & ST-19 WHOSE CRITICAL ROOT ZONES ARE IMPACTED BY THE PROPOSED DISTURBANCE.
- AFTER LIMIT OF DISTURBANCE (LOD) IS STAKED IN THE FIELD USE A VIBRATORY KNIFE TO SEVER THE ROOTS ALONG THE LOD WITHIN THE CRITICAL ROOT ZONE (CRZ).
- CONTACT WITH A CERTIFIED ARBORIST TO PERFORM TREE PRUNING AND FERTILIZATION PRIOR TO AND DURING CONSTRUCTION.

**REFORESTATION REQUIREMENTS**

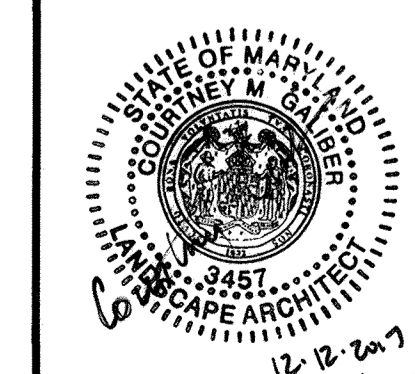
REFORESTATION AREA = 0.56 AC x 200 TREES/ACRE = 112 TOTAL TREES.  
 REFORESTATION AREAS SHALL BE RANDOMIZED MIX OF TREES:  
 RED MAPLE (20%), FLOWERING DOGWOOD (20%), BLACK GUM (20%), BLACK CHERRY (20%), AND NORTHERN RED OAK (20%).  
 SEE SHEET 33 FOR DETAILED PLANT LIST.  
 REFER TO THE PLANTING DISTRIBUTION PATTERNS DETAIL ON THIS SHEET.  
**MAINTENANCE NOTES:**  
 1. THE MAINTENANCE PROGRAM IS AS FOLLOWS:  
 A. THE AREA SHALL BE OUTLINED BY THE TREE PROTECTION DEVICE, TPD, FOR THE 2 YEAR PERIOD.  
 B. THE AREA PROTECTED BY THE TPD WILL BE MOWED 2 TIMES PER YEAR TO ASSURE WEED CONTROL AND ALLOW TREES A CHANCE TO SURVIVE.  
 C. THE LANDSCAPE CONTRACTOR WILL BE RESPONSIBLE FOR TREE CARE AND REPORTING TO THE CLIENT ACCORDING TO THE FOLLOWING SCHEDULE:  
 YEAR 1: 3 TIMES: MAR-APR, JUL-AUG, OCT-NOV.  
 YEAR 2: 2 TIMES/YEAR: APR-MAY, SEPT-OCT.  
 D. PLANTS WILL BE FIELD CHECKED AT LEAST THREE TIMES DURING THE FIRST YEAR, WITH WATERING AND WEEDING AND CONTROL OF UNDESIRABLE VEGETATION IF NEEDED. PLANTS WILL BE FIELD CHECKED TWO TIMES DURING THE SECOND YEAR WITH REINFORCEMENT PLANTING IF NEEDED. A RECORD OF SURVIVAL TO BE MAINTAINED DURING THE FIELD CHECKS. FIELD DATA FORMS WILL BE SENT TO THE CLIENT AFTER EACH VISIT. DEAD PLANTS WILL BE REPLACED TO MAINTAIN AT LEAST 100% SURVIVAL.  
 2. THE PERIMETER FENCING WILL BE REMOVED AFTER YEAR 2, BASED ON DATE PLANTED.

**SITE ANALYSIS**

- OWNER/APPLICANT: HORSE FARM LLC  
C/O LOVELL AMERICA  
9200 RUMSEY ROAD  
SUITE 200  
COLUMBIA, MD 21045  
CONTACT: RICHARD HAYWARD  
410-997-7222
- TAX MAP/GRID/PARCEL: 37/2/748
- TAX ACCOUNT NUMBER: 01301780
- SITE ADDRESS: 8090 OLD MONTGOMERY RD.  
ELLICOTT CITY, MD 21043
- TOTAL PROPERTY AREA: 115.54 AC
- 100 YEAR FLOODPLAIN: 0.00 AC
- NON-TIDAL WETLANDS ONSITE: 0.13 AC
- NON-TIDAL WETLAND 25' BUFFER: 0.36 AC
- RIGHT-OF-WAY DEDICATION: 0.11 AC
- NET TRACT AREA: 115.54 AC
- AREA USED FOR FOREST CONSERVATION CALCULATION: 115.59 AC\*  
\*INCLUDES 0.05 AC OF DISTURBANCE ON ADJACENT PARCEL 753.
- ZONING: R-SA-B
- EXISTING USE: RESIDENTIAL AND VACANT
- PROPOSED USE: RESIDENTIAL
- THERE ARE NO STREAMS ONSITE.
- THERE IS EXISTING 50' STREAM BUFFER ONSITE.
- THERE ARE NO HISTORIC FEATURES ONSITE.
- THERE ARE NO STEEP SLOPES ONSITE.



**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 I**  
 HORSE FARM PROPERTY  
 8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
**FOREST CONSERVATION PLAN**  
 COVER SHEET  
 TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-B  
 1ST ELECTION DISTRICT  
 HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:
5-23-18	REVISED OFFSITE FOREST RETENTION TO 2.00 AC	15368 x 02
1-2-19	ADDED PRIVATE EASEMENT	SCALE: 1" = 50'
01-11-19	REVISED DRIVEWAYS	DATE: 9/13/2017
		DRAWN BY: CRM
		DESIGN BY: CRM
		REVIEW BY: CMG
		SHEET: 32 OF 44







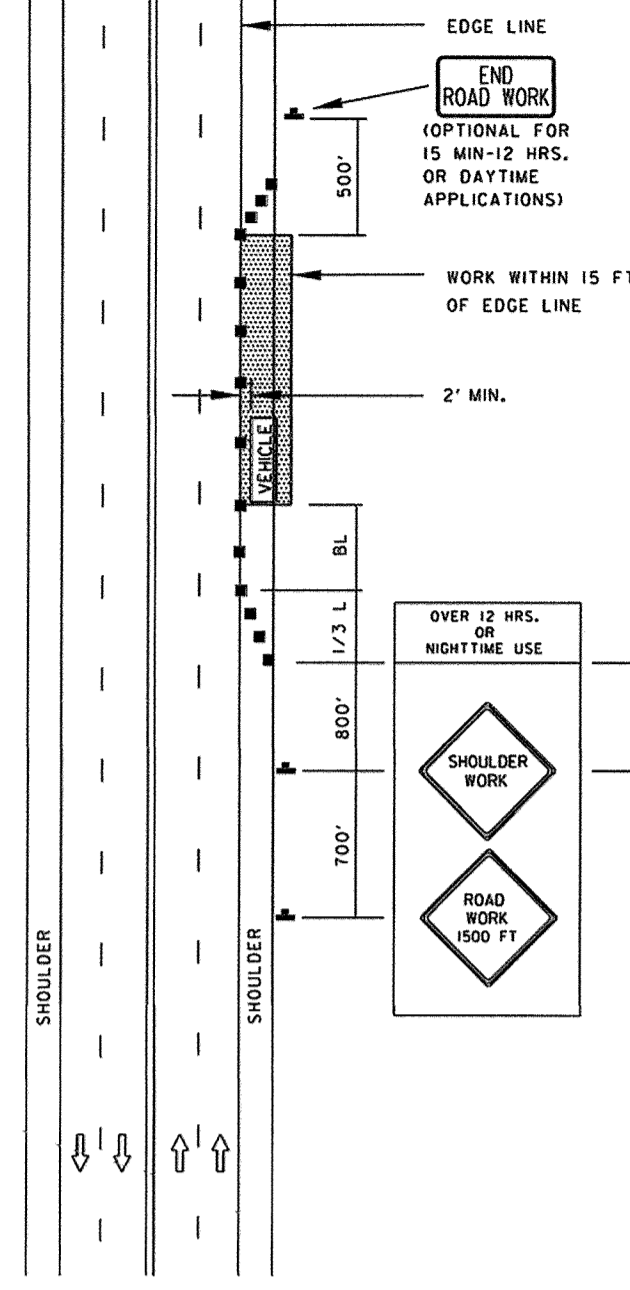
**TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION**

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

**NOTES:**  
SHOULDER CLOSED SIGNS ARE REQUIRED IN PLACE OF SHOULDER WORK SIGNS WHEN THE SHOULDER IS CLOSED BY POSITIVE PROTECTION (TEMPORARY CONCRETE BARRIER OR SIMILAR DEVICE); REFER TO STANDARD NO. MD 104.06-18.  
WHEN WORK INVOLVES A PAVEMENT EDGE DROP-OFF, REFER TO STANDARD NOS. MD 104.06-15 TO MD 104.06-19.  
THERE SHALL BE A MINIMUM OF SEVEN CHANNELIZING DEVICES IN THE SHOULDER TAPER.  
THE ENGINEER SHOULD CONSIDER ADDITIONAL ADJACENT LANE CLOSURES WHEN THE POSSIBILITY OF UNPLANNED TRAVELWAY ENCROACHMENTS EXISTS.

**KEY:**

- CHANNELIZING DEVICES
- ▲ SIGN SUPPORT
- FACE OF SIGN
- ↑ DIRECTION OF TRAFFIC
- ▨ WORK SITE

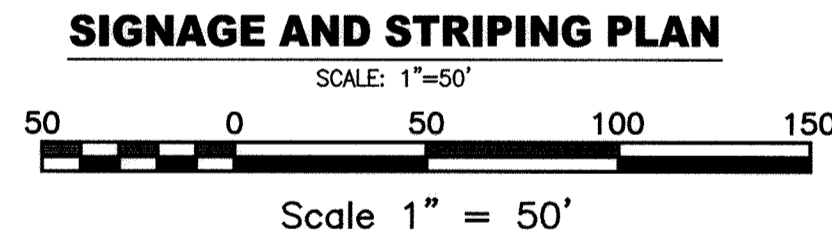
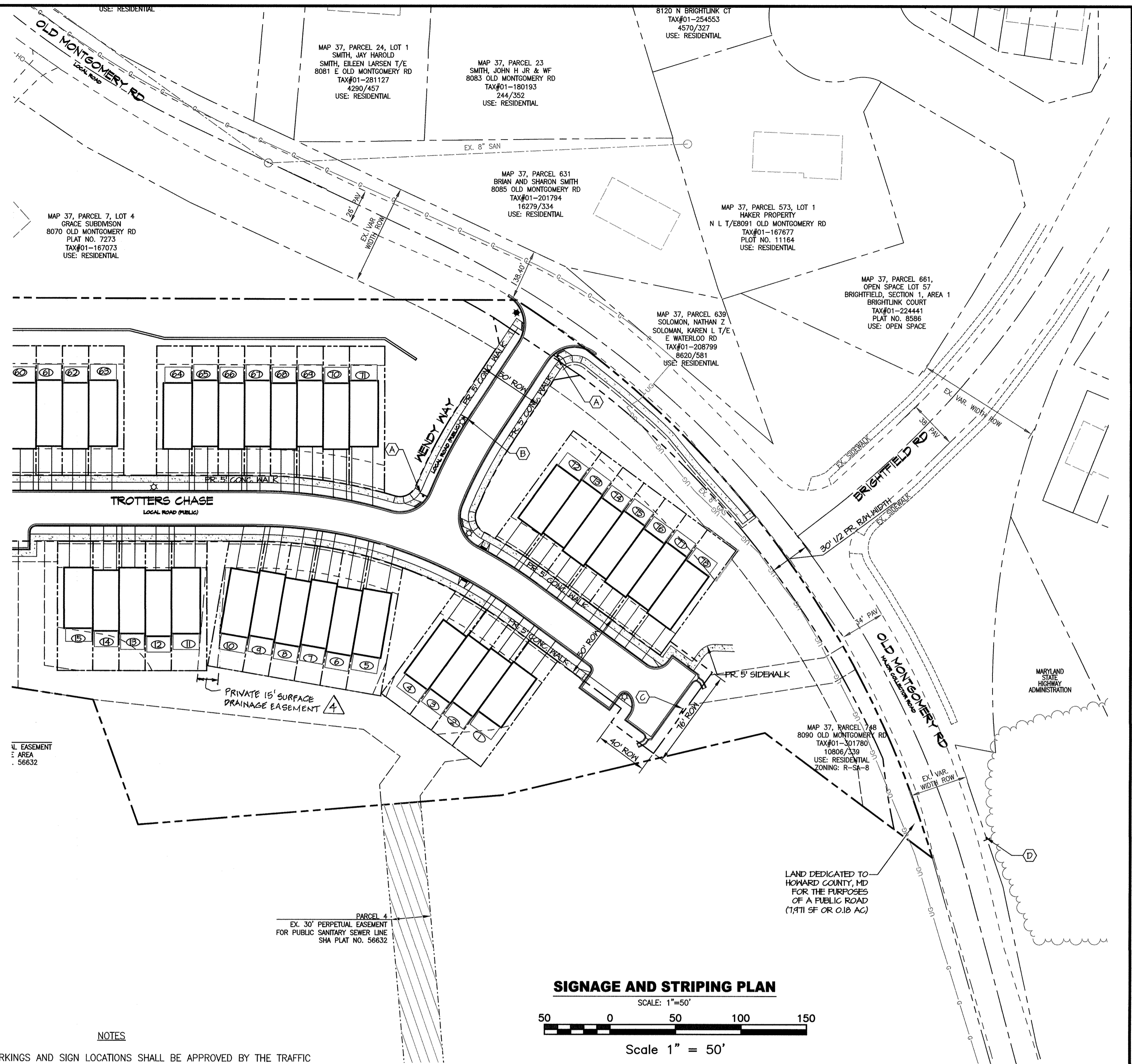


SPECIFICATION 104	CATEGORY CODE ITEMS
APPROVED	DIRECTOR - OFFICE OF TRAFFIC AND SAFETY
APPROVAL	REVISIONS
APPROVAL	REVISIONS
APPROVAL	REVISIONS
APPROVAL	REVISIONS

**Maryland Department of Transportation  
STATE HIGHWAY ADMINISTRATION**  
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES  
**SHOULDER WORK/MULTILANE UNDIV.  
EQ/LESS THAN 40 MPH**  
STANDARD NO. MD 104.03-02

**LEGEND**

- EX. PROPERTY LINE
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- PR. SIDEWALK
- PR. RETAINING WALL



**NOTES**

1. MARKINGS AND SIGN LOCATIONS SHALL BE APPROVED BY THE TRAFFIC DIVISION PRIOR TO INSTALLATIONS (410-313-5752)

- (A) STOP SIGN (30" X 30")
- (B) R2-1 "SPEED LIMIT 25"
- (C) SIGN - "NO PARKING IN TEE-TURNAROUND"
- (D) W2-1(1) "SIDE ROADS AHEAD", ALSO INCLUDE ROAD NAME PANELS



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Melanie* 1/23/18  
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Chi Chandra* 1-30-18  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Duane* 2/6/18  
CHIEF, LAND DEVELOPMENT DIVISION DATE

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**TROTTER'S KNOLL - SECTION I  
HORSE FARM PROPERTY**  
8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
TRAFFIC CONTROL PLAN

TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-8  
1ST ELECTION DISTRICT  
HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:
1-2-19	4) ADOPTED PRIVATE EASEMENT	15368 x 02

SCALE: 1" = 50'  
DATE: 9/13/2017  
DRAWN BY: AT5  
DESIGN BY: AT5  
REVIEW BY: TON  
SHEET: 34 OF 44

MD PROFESSIONAL CERTIFICATION: 12-12-17  
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. 29203, EXPIRATION DATE: 06/16/2019.

**OWNER / APPLICANT / DEVELOPER:**  
HORSE FARM, LLC  
ADDRESS: 9200 RUNSEY ROAD, SUITE 200  
COLUMBIA, MD 21045  
CONTACT: RICHARD HAYWARD  
PHONE: 410-997-7222



LOG OF BORING NO. B-1	LOG OF BORING NO. B-2	LOG OF BORING NO. B-3	LOG OF BORING NO. B-4	LOG OF BORING NO. B-5	LOG OF BORING NO. B-6																																																																																																								
<p>PROJECT: Trotter's Knoll PROJECT NO.: 0712112 PROJECT LOCATION: Howard County, Maryland</p> <p>DATE STARTED: 4/23/14 DATE COMPLETED: 4/23/14 DRILLING CONTRACTOR: Connelly and Associates, Inc. DRILLER: N. Alweillem DRILLING METHOD: HSA SAMPLING METHOD: Split Spoon with Automatic Hammer</p> <p>WATER LEVEL (ft): 12.5 DATE: 4/23/14 CAUSED BY: PIPE</p> <p>WATER ENCOUNTERED DURING DRILLING (ft): 38.3 GROUND SURFACE ELEVATION: 378.3 EQUIPMENT: CME-55 LC2 LOGGED BY: MEW CHECKED BY: ADM</p> <table border="1"> <thead> <tr> <th>DEPTH (ft)</th> <th>DESCRIPTION</th> <th>REMARKS</th> </tr> </thead> <tbody> <tr><td>0.0 - 0.5</td><td>1.32 1 393.3</td><td>SC Brown, moist, loose, Silty SAND, trace gravel.</td></tr> <tr><td>0.5 - 1.0</td><td>3.44 8 388.3</td><td>CL Orange Brown to Brown, moist, medium silty, Sandy Lean CLAY, trace Silty SAND.</td></tr> <tr><td>1.0 - 1.5</td><td>3.42 6 389.3</td><td>SC Gray Brown, moist, loose, Clayey SAND.</td></tr> <tr><td>1.5 - 2.0</td><td>4.55 10 383.3</td><td>SC Brown to Bligh, moist, loose, Clayey SAND.</td></tr> <tr><td>2.0 - 2.5</td><td>4.44 4 375.3</td><td>ML Orange Brown to Brown and White, moist, medium silty, Sandy SILT, trace Gravel (Residual Soil).</td></tr> <tr><td>2.5 - 3.0</td><td>4.44 4 375.3</td><td>ML Orange Brown to Brown and White, moist, medium silty, Sandy SILT, trace Gravel (Residual Soil).</td></tr> </tbody> </table> <p>NOTES: Boring terminated at 15 feet. 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Alweillem DRILLING METHOD: HSA SAMPLING METHOD: Split Spoon with Automatic Hammer</p> <p>WATER LEVEL (ft): 14.0 DATE: 4/23/14 CAUSED BY: PIPE</p> <p>WATER ENCOUNTERED DURING DRILLING (ft): 44.0 GROUND SURFACE ELEVATION: 378.3 EQUIPMENT: CME-55 LC2 LOGGED BY: MEW CHECKED BY: ADM</p> <table border="1"> <thead> <tr> <th>DEPTH (ft)</th> <th>DESCRIPTION</th> <th>REMARKS</th> </tr> </thead> <tbody> <tr><td>0.0 - 0.5</td><td>1.42 3 374.3</td><td>CL Brown, moist, soft, Sandy Lean CLAY, trace Gravel and trace Silty SAND.</td></tr> <tr><td>0.5 - 1.0</td><td>3.44 8 374.3</td><td>CL Gray Brown to Brown, moist, very stiff, Lean CLAY with trace Silty SAND.</td></tr> <tr><td>1.0 - 1.5</td><td>3.42 6 374.3</td><td>CL Brown, moist, stiff, Sandy Lean CLAY with Gravel.</td></tr> <tr><td>1.5 - 2.0</td><td>4.44 10 371.3</td><td>ML Light Green to Brown with trace Gravel, moist, medium dense, SILT, Sandy SILT, trace Clay (Residual Soil).</td></tr> <tr><td>2.0 - 2.5</td><td>4.44 4 366.3</td><td>SC Orange Brown with Gravel, moist, medium dense, Silty SAND, trace Rock Fragments (Residual Soil).</td></tr> <tr><td>2.5 - 3.0</td><td>4.44 4 366.3</td><td>SC Orange Brown with Gravel, moist, medium dense, Silty SAND, trace Rock Fragments (Residual Soil).</td></tr> </tbody> </table> <p>NOTES: Boring terminated at 15 feet. Infiltration Test at 4.0 ft. Average Infiltration Rate: 1.6 in/hr.</p>	DEPTH (ft)	DESCRIPTION	REMARKS	0.0 - 0.5	1.42 3 374.3	CL Brown, moist, soft, Sandy Lean CLAY, trace Gravel and trace Silty SAND.	0.5 - 1.0	3.44 8 374.3	CL Gray Brown to Brown, moist, very stiff, Lean CLAY with trace Silty SAND.	1.0 - 1.5	3.42 6 374.3	CL Brown, moist, stiff, Sandy Lean CLAY with Gravel.	1.5 - 2.0	4.44 10 371.3	ML Light Green to Brown with trace Gravel, moist, medium dense, SILT, Sandy SILT, trace Clay (Residual Soil).	2.0 - 2.5	4.44 4 366.3	SC Orange Brown with Gravel, moist, medium dense, Silty SAND, trace Rock Fragments (Residual Soil).	2.5 - 3.0	4.44 4 366.3	SC Orange Brown with Gravel, moist, medium dense, Silty SAND, trace Rock Fragments (Residual Soil).	<p>PROJECT: Trotter's Knoll PROJECT NO.: 0712112 PROJECT LOCATION: Howard County, Maryland</p> <p>DATE STARTED: 4/23/14 DATE COMPLETED: 4/23/14 DRILLING CONTRACTOR: Connelly and Associates, Inc. DRILLER: N. Alweillem DRILLING METHOD: HSA SAMPLING METHOD: Split Spoon with Automatic Hammer</p> <p>WATER LEVEL (ft): 12.0 DATE: 4/23/14 CAUSED BY: PIPE</p> <p>WATER ENCOUNTERED DURING DRILLING (ft): 37.4 GROUND SURFACE ELEVATION: 374.1 EQUIPMENT: CME-55 LC2 LOGGED BY: MEW CHECKED BY: ADM</p> <table border="1"> <thead> <tr> <th>DEPTH (ft)</th> <th>DESCRIPTION</th> <th>REMARKS</th> </tr> </thead> <tbody> <tr><td>0.0 - 0.5</td><td>1.42 3 374.1</td><td>SC Brown, moist, very loose, Clayey SAND, trace Gravel (Residual Soil).</td></tr> <tr><td>0.5 - 1.0</td><td>3.44 8 372.1</td><td>CL Brown to Light Brown, moist, medium dense, Poorly-Graded GRAVEL with Silty SAND.</td></tr> <tr><td>1.0 - 1.5</td><td>3.42 6 372.1</td><td>ML Brown to Light Green Brown, moist, medium stiff, Sandy SILT (Residual Soil).</td></tr> <tr><td>1.5 - 2.0</td><td>4.44 10 367.1</td><td>ML Orange Brown to Lime Green Brown, moist, stiff, Sandy SILT (Residual Soil).</td></tr> <tr><td>2.0 - 2.5</td><td>4.44 4 367.1</td><td>ML Blue/Gray to Brown Green, moist, very stiff, Sandy SILT (Residual Soil).</td></tr> <tr><td>2.5 - 3.0</td><td>4.44 4 367.1</td><td>ML Blue/Gray to Brown Green, moist, very stiff, Sandy SILT (Residual Soil).</td></tr> </tbody> </table> <p>NOTES: Boring terminated at 15 feet. 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Alweillem DRILLING METHOD: HSA SAMPLING METHOD: Split Spoon with Automatic Hammer</p> <p>WATER LEVEL (ft): 12.0 DATE: 4/23/14 CAUSED BY: PIPE</p> <p>WATER ENCOUNTERED DURING DRILLING (ft): 37.7 GROUND SURFACE ELEVATION: 378.7 EQUIPMENT: CME-55 LC2 LOGGED BY: MEW CHECKED BY: ADM</p> <table border="1"> <thead> <tr> <th>DEPTH (ft)</th> <th>DESCRIPTION</th> <th>REMARKS</th> </tr> </thead> <tbody> <tr><td>0.0 - 0.5</td><td>1.42 3 377.7</td><td>SC Brown, moist, loose, Silty Lean CLAY, trace Gravel.</td></tr> <tr><td>0.5 - 1.0</td><td>3.44 8 377.7</td><td>CL Brown to Gray Brown, moist, stiff, Sandy Lean CLAY.</td></tr> <tr><td>1.0 - 1.5</td><td>3.42 6 377.7</td><td>ML Light Brown to White, moist, medium stiff, Sandy SILT (Residual Soil).</td></tr> <tr><td>1.5 - 2.0</td><td>4.44 10 372.7</td><td>ML Lime Green to Light Green Brown, dry to moist, stiff, Sandy SILT (Residual Soil).</td></tr> <tr><td>2.0 - 2.5</td><td>4.44 4 367.7</td><td>SC Orange Brown to Green Brown, moist, medium dense, Silty SAND, trace Rock Fragments (Residual Soil).</td></tr> <tr><td>2.5 - 3.0</td><td>4.44 4 367.7</td><td>SC Orange Brown to Green Brown, moist, medium dense, Silty SAND, trace Rock Fragments (Residual Soil).</td></tr> </tbody> </table> <p>NOTES: Boring terminated at 15 feet. Infiltration Test at 4.0 ft. Average Infiltration Rate: 2.2 in/hr.</p>	DEPTH (ft)	DESCRIPTION	REMARKS	0.0 - 0.5	1.42 3 377.7	SC Brown, moist, loose, Silty Lean CLAY, trace Gravel.	0.5 - 1.0	3.44 8 377.7	CL Brown to Gray Brown, moist, stiff, Sandy Lean CLAY.	1.0 - 1.5	3.42 6 377.7	ML Light Brown to White, moist, medium stiff, Sandy SILT (Residual Soil).	1.5 - 2.0	4.44 10 372.7	ML Lime Green to Light Green Brown, dry to moist, stiff, Sandy SILT (Residual Soil).	2.0 - 2.5	4.44 4 367.7	SC Orange Brown to Green Brown, moist, medium dense, Silty SAND, trace Rock Fragments (Residual Soil).	2.5 - 3.0	4.44 4 367.7	SC Orange Brown to Green Brown, moist, medium dense, Silty SAND, trace Rock Fragments (Residual Soil).
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1.0 - 1.5	3.42 6 389.3	SC Gray Brown, moist, loose, Clayey SAND.																																																																																																											
1.5 - 2.0	4.55 10 383.3	SC Brown to Bligh, moist, loose, Clayey SAND.																																																																																																											
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APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

*Melvin*  
CHIEF, BUREAU OF HIGHWAYS

DATE: 1/23/2018

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Paul Edman*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

DATE: 1/30/18

*Jim Mansour*  
CHIEF, LAND DEVELOPMENT DIVISION

DATE: 2/16/18

**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  
MRGAT.COM

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**TROTTER'S KNOLL - SECTION I**  
HORSE FARM PROPERTY  
8080 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
SWM BORINGS PLAN

TAX MAP 37 023 2 PARCEL 748 ZONED: R-SA-8  
1ST ELECTION DISTRICT  
HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:
		15368 x 02
		SCALE: 1" = 50'
		DATE: 9/13/2017
		DRAWN BY: ATS
		DESIGN BY: ATS
		REVIEW BY: TCN
		SHEET: 35 OF 44

OWNER / APPLICANT / DEVELOPER:  
HORSE FARM, LLC  
ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
COLUMBIA, MD 21045  
CONTACT: RICHARD HAYWARD  
PHONE: 410-997-7222







**LOG OF BORING NO. B-33** Sheet 1 of 1

PROJECT: Trotter's Knoll  
PROJECT NO: 0712162  
PROJECT LOCATION: Howard County, Maryland

DATE STARTED: 07/16  
DATE COMPLETED: 07/16  
DRILLING CONTRACTOR: Geo-Service, Inc.  
DRILLER: J. Beavers  
LOGGED BY: MEW  
CHECKED BY: BTJ

WATER LEVEL (ft): 10.3  
DATE: 07/16  
CAVED BY: PPE

WATER ENCOUNTERED DURING DRILLING (ft): Dry  
GROUND SURFACE ELEVATION: 381.1  
DATE: 07/16  
EQUIPMENT: CME-700  
LOGGED BY: MEW  
CHECKED BY: BTJ

DEPTH (ft)	LOGS	DESCRIPTION	REMARKS				
0-1	0.0	1.0-2	4	SC	Grp Brown, moist, very loose, Clayey SAND	Topsoil 2 in.	
0-2	0.0	1.4	5.3-3	CL	Light Gray, moist, medium stiff, Lean CLAY		
0-3	4.0	1.4	3.4-4	7	SC	Light Gray, moist, medium dense, Clayey SAND, trace gravel	
0-4	6.5	1.5	7.8-9	17	SC	Light Gray, moist, stiff, Sandy Lean CLAY (Plasticity)	
0-5	9.0	1.6	24.0	9	SC	Grp, Orange Brown, moist, loose, Silty SAND (Plasticity)	
0-6	18.0	1.6	8.1-10	21	SC	Orange Brown, moist, medium dense, Silty SAND (Plasticity)	

NOTES:  
1. Boring terminated at 15 feet.  
2. From Infiltration testing was not performed due to inability to achieve groundwater present near the planned test depth.

GEO-TECHNOLOGY ASSOCIATES, INC.  
1080 Park Center Drive, Suite A  
Laurel, MD 20707

**LOG OF BORING NO. B-34** Sheet 1 of 1

PROJECT: Trotter's Knoll  
PROJECT NO: 0712162  
PROJECT LOCATION: Howard County, Maryland

DATE STARTED: 07/16  
DATE COMPLETED: 07/16  
DRILLING CONTRACTOR: Geo-Service, Inc.  
DRILLER: J. Beavers  
LOGGED BY: MEW  
CHECKED BY: BTJ

WATER LEVEL (ft): 7.9  
DATE: 07/16  
CAVED BY: PPE

WATER ENCOUNTERED DURING DRILLING (ft): Dry  
GROUND SURFACE ELEVATION: 388.8  
DATE: 07/16  
EQUIPMENT: CME-700  
LOGGED BY: MEW  
CHECKED BY: BTJ

DEPTH (ft)	LOGS	DESCRIPTION	REMARKS				
0-1	0.0	1.0	2.4-7	11	SC	Brown, moist, medium dense, Clayey SAND	Topsoil 2 in.
0-2	2.0	1.4	5.6-4	9	SM	Fine, moist, loose, Silty SAND (Plasticity)	
0-3	4.0	1.8	3.4-6	10	SC	Light Gray, moist, medium dense, Silty SAND, trace gravel	
0-4	6.5	1.8	9.9-14	23	SC	Dark Brown, moist, medium dense, Clayey SAND (Plasticity)	
0-5	10.0	1.8	7.8-9	14	SC	Dark Brown, moist, medium dense, Silty SAND (Plasticity)	
0-6	18.0	1.8	3.1-12.0	31	SC	Dark Brown, moist, medium dense, Clayey SAND (Plasticity)	

NOTES:  
1. Boring terminated at 15 feet.  
2. From Infiltration testing was not performed due to inability to achieve groundwater present near the planned test depth.

GEO-TECHNOLOGY ASSOCIATES, INC.  
1080 Park Center Drive, Suite A  
Laurel, MD 20707

**LOG OF BORING NO. B-35** Sheet 1 of 1

PROJECT: Trotter's Knoll  
PROJECT NO: 0712162  
PROJECT LOCATION: Howard County, Maryland

DATE STARTED: 07/16  
DATE COMPLETED: 07/16  
DRILLING CONTRACTOR: Geo-Service, Inc.  
DRILLER: J. Beavers  
LOGGED BY: MEW  
CHECKED BY: BTJ

WATER LEVEL (ft): 12.3  
DATE: 07/16  
CAVED BY: PPE

WATER ENCOUNTERED DURING DRILLING (ft): Dry  
GROUND SURFACE ELEVATION: 385.8  
DATE: 07/16  
EQUIPMENT: CME-700  
LOGGED BY: MEW  
CHECKED BY: BTJ

DEPTH (ft)	LOGS	DESCRIPTION	REMARKS				
0-1	0.0	0.0	6.7-4	388.8	SC	Brown, moist, medium dense, Clayey SAND	Topsoil 1 in.
0-2	2.0	1.2	5.0-9	38	SC	Brown, moist, very stiff, Sandy Lean CLAY with Gravel	
0-3	4.0	1.8	4.6-4	14	SC	Brown, moist, stiff, Lean CLAY, trace Sand	
0-4	6.5	1.8	7.8-9	18	SC	Light Gray to Light Brown, moist, medium dense, Silty SAND, trace mica (Plasticity)	
0-5	10.0	1.8	7.8-9	17	SC	Light Brown, moist, medium dense, Silty SAND (Plasticity)	
0-6	13.5	1.8	4.0-6	10	SC	Light Green Brown, moist, stiff, SILT (Plasticity)	

NOTES:  
1. Boring terminated at 15 feet.  
2. Infiltration Test at 6.5 feet. Average Infiltration Rate: 0.1 in/hr.

GEO-TECHNOLOGY ASSOCIATES, INC.  
1080 Park Center Drive, Suite A  
Laurel, MD 20707

**LOG OF BORING NO. B-36** Sheet 1 of 1

PROJECT: Trotter's Knoll  
PROJECT NO: 0712162  
PROJECT LOCATION: Howard County, Maryland

DATE STARTED: 07/16  
DATE COMPLETED: 07/16  
DRILLING CONTRACTOR: Geo-Service, Inc.  
DRILLER: J. Beavers  
LOGGED BY: MEW  
CHECKED BY: BTJ

WATER LEVEL (ft): 14.3  
DATE: 07/16  
CAVED BY: PPE

WATER ENCOUNTERED DURING DRILLING (ft): Dry  
GROUND SURFACE ELEVATION: 382.9  
DATE: 07/16  
EQUIPMENT: CME-700  
LOGGED BY: MEW  
CHECKED BY: BTJ

DEPTH (ft)	LOGS	DESCRIPTION	REMARKS				
0-1	0.0	1.0	4.0-9	391.0	SC	Brown, dry to moist, loose, Clayey SAND	Topsoil 1 in.
0-2	2.0	1.0	8.6-6	17	SC	Brown, dry to moist, medium dense, Clayey SAND with Gravel	
0-3	4.0	1.6	4.0-9	15	SC	Light Brown, moist, stiff, Lean CLAY, trace Silty SAND	
0-4	6.5	1.7	4.0-7	13	SC	Light Gray to Light Brown, moist, medium dense, Silty SAND, trace mica (Plasticity)	
0-5	10.0	1.4	4.0-9	9	SC	Brown to Light Brown, moist, loose, Clayey SAND (Plasticity)	
0-6	14.0	1.5	3.4-6	10	SC	Brown, moist, loose, Finely graded SAND with Silt (Plasticity)	
0-7	18.0	1.8	3.4-6	10	SC	Light Brown, moist, loose, Silty SAND (Plasticity)	

NOTES:  
1. Boring terminated at 20 feet.  
2. Infiltration Test at 8.5 feet. Average Infiltration Rate: <1.1 in/hr.

GEO-TECHNOLOGY ASSOCIATES, INC.  
1080 Park Center Drive, Suite A  
Laurel, MD 20707

**LOG OF BORING NO. B-37** Sheet 1 of 1

PROJECT: Trotter's Knoll  
PROJECT NO: 0712162  
PROJECT LOCATION: Howard County, Maryland

DATE STARTED: 07/16  
DATE COMPLETED: 07/16  
DRILLING CONTRACTOR: Geo-Service, Inc.  
DRILLER: J. Beavers  
LOGGED BY: MEW  
CHECKED BY: BTJ

WATER LEVEL (ft): 10.3  
DATE: 07/16  
CAVED BY: PPE

WATER ENCOUNTERED DURING DRILLING (ft): Dry  
GROUND SURFACE ELEVATION: 382.7  
DATE: 07/16  
EQUIPMENT: CME-700  
LOGGED BY: MEW  
CHECKED BY: BTJ

DEPTH (ft)	LOGS	DESCRIPTION	REMARKS				
0-1	0.0	1.0	2.4-7	24	SC	Brown, dry, medium dense, Silty SAND, trace Gravel	Topsoil 1 in.
0-2	2.0	1.8	10.0-2.0	40	SC	Orange Brown, moist, medium dense, Silty SAND	
0-3	4.0	1.8	3.4-4	19	SC	Light Brown to Tan, moist, very stiff, Lean CLAY, trace Silty SAND	
0-4	6.5	1.8	5.7-11	18	SC	Light Brown, moist, medium dense, Clayey SAND (Plasticity)	
0-5	10.0	1.8	4.7-9	15	SC	Fine to Medium, moist, medium dense, Clayey SAND (Plasticity)	
0-6	13.5	1.8	5.6-4	8	SC	Light Gray, moist, loose, Moderate Silty SAND (Plasticity)	

NOTES:  
1. Boring terminated at 15 feet.  
2. Infiltration Test at 8.5 feet. Average Infiltration Rate: 0.1 in/hr.

GEO-TECHNOLOGY ASSOCIATES, INC.  
1080 Park Center Drive, Suite A  
Laurel, MD 20707

**LOG OF BORING NO. R-1** Sheet 1 of 1

PROJECT: Trotter's Knoll  
PROJECT NO: 0712162  
PROJECT LOCATION: Howard County, Maryland

DATE STARTED: 07/16  
DATE COMPLETED: 07/16  
DRILLING CONTRACTOR: Geo-Service, Inc.  
DRILLER: J. Beavers  
LOGGED BY: MEW  
CHECKED BY: BTJ

WATER LEVEL (ft): 10.3  
DATE: 07/16  
CAVED BY: PPE

WATER ENCOUNTERED DURING DRILLING (ft): Dry  
GROUND SURFACE ELEVATION: 386.8  
DATE: 07/16  
EQUIPMENT: CME-700  
LOGGED BY: MEW  
CHECKED BY: BTJ

DEPTH (ft)	LOGS	DESCRIPTION	REMARKS				
0-1	0.0	1.0	5.7-2	54	SC	Brown, dry, medium dense, Silty SAND, trace Rock Fragments	Topsoil 1 in.
0-2	2.0	1.8	10.0-2.0	40	SC	Brown, dry, loose, Finely-graded SAND with Gravel, trace Silty SAND	
0-3	4.0	1.6	13.0-2.0	30	SC	Brown, moist, medium dense, Silty SAND with Gravel	
0-4	6.5	1.3	11.0-4	20	SC	Brown to Light Brown, moist, medium stiff, Sandy Lean CLAY	
0-5	10.0	1.8	9.0-7	7	SC	Light Gray, moist, loose, Moderate Silty SAND (Plasticity)	

NOTES:  
1. Boring terminated at 10 feet.

GEO-TECHNOLOGY ASSOCIATES, INC.  
1080 Park Center Drive, Suite A  
Laurel, MD 20707

**LOG OF BORING NO. R-2** Sheet 1 of 1

PROJECT: Trotter's Knoll  
PROJECT NO: 0712162  
PROJECT LOCATION: Howard County, Maryland

DATE STARTED: 07/16  
DATE COMPLETED: 07/16  
DRILLING CONTRACTOR: Geo-Service, Inc.  
DRILLER: J. Beavers  
LOGGED BY: MEW  
CHECKED BY: BTJ

WATER LEVEL (ft): 10.3  
DATE: 07/16  
CAVED BY: PPE

WATER ENCOUNTERED DURING DRILLING (ft): Dry  
GROUND SURFACE ELEVATION: 385.8  
DATE: 07/16  
EQUIPMENT: CME-700  
LOGGED BY: MEW  
CHECKED BY: BTJ

DEPTH (ft)	LOGS	DESCRIPTION	REMARKS				
0-1	0.0	1.0	5.4-4	12	SC	Brown, dry, medium dense, Silty SAND with Gravel	Topsoil 1 in.
0-2	2.0	1.8	5.4-4	14	CL	Brown, moist, stiff, Sandy Lean CLAY	
0-3	4.0	1.8	6.4-7	11	SC	Brown, moist, medium dense, Clayey SAND, trace Gravel	
0-4	6.5	1.8	4.6-6	12	CL	Light Gray, moist, stiff, Sandy Lean CLAY (Plasticity)	
0-5	9.0	1.8	3.4-4	10	SC	Light Gray, moist, stiff, Sandy Lean CLAY, trace mica (Plasticity)	

NOTES:  
1. Boring terminated at 10 feet.

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Laurel, MD 20707

**LOG OF BORING NO. R-3** Sheet 1 of 1

PROJECT: Trotter's Knoll  
PROJECT NO: 0712162  
PROJECT LOCATION: Howard County, Maryland

DATE STARTED: 07/16  
DATE COMPLETED: 07/16  
DRILLING CONTRACTOR: Geo-Service, Inc.  
DRILLER: J. Beavers  
LOGGED BY: MEW  
CHECKED BY: BTJ

WATER LEVEL (ft): 10.3  
DATE: 07/16  
CAVED BY: PPE

WATER ENCOUNTERED DURING DRILLING (ft): Dry  
GROUND SURFACE ELEVATION: 385.8  
DATE: 07/16  
EQUIPMENT: CME-700  
LOGGED BY: MEW  
CHECKED BY: BTJ

DEPTH (ft)	LOGS	DESCRIPTION	REMARKS				
0-1	0.0	1.0	2.3-3	391.0	SC	Dark Brown, moist, loose, Clayey SAND, trace Rock Fragments	Topsoil 2 in.
0-2	2.0	1.8	6.9-18	20	SC	Light Brown, dry to moist, medium dense, Silty SAND, trace mica	
0-3	4.0	1.8	7.8-7	16	SC	Light Brown, moist, medium dense, Silty SAND, trace mica (Plasticity)	
0-4	6.5	1.8	4.7-6	13	SC	Light Gray to Tan, moist, medium dense, Clayey SAND (Plasticity)	
0-5	10.0	1.8	10.15-13	23	SC	Light Gray, dry to moist, medium dense, Finely-graded SAND, trace Gravel (Plasticity)	
0-6	14.0	1.8	4.8-7	13	SC	Light Gray to Tan, moist, medium dense, Clayey SAND (Plasticity)	

NOTES:  
1. Boring terminated at 15 feet.

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**LOG OF BORING NO. R-4** Sheet 1 of 1

PROJECT: Trotter's Knoll  
PROJECT NO: 0712162  
PROJECT LOCATION: Howard County, Maryland

DATE STARTED: 07/16  
DATE COMPLETED: 07/16  
DRILLING CONTRACTOR: Geo-Service, Inc.  
DRILLER: J. Beavers  
LOGGED BY: MEW  
CHECKED BY: BTJ

WATER LEVEL (ft): 10.3  
DATE: 07/16  
CAVED BY: PPE

WATER ENCOUNTERED DURING DRILLING (ft): Dry  
GROUND SURFACE ELEVATION: 378.4  
DATE: 07/16  
EQUIPMENT: CME-700  
LOGGED BY: MEW  
CHECKED BY: BTJ

DEPTH (ft)	LOGS	DESCRIPTION	REMARKS				
0-1	0.0	1.0	1.4-2	3	SC	Light Brown, moist, very loose, Clayey SAND	Topsoil 2 in.
0-2	2.0	1.8	4.4-4	9	SC	Light Brown to Tan, moist, loose, Clayey SAND (Plasticity)	
0-3	4.0	1.8	3.4-6	5	SC	Light Gray with Orange Brown, moist, stiff, Sandy Lean CLAY	
0-4	6.5	1.8	3.0-6	9	SC	Light Brown, moist, medium dense, Finely-graded SAND, trace mica (Plasticity)	
0-5	10.0	1.8	3.4-6	10	SC	Yellow Brown to Brown, moist, stiff, Sandy SILT, trace Clay (Plasticity)	
0-6	14.0	1.8	5.9-4	23	SC	Dark Gray Brown, moist, medium dense, Moderate Silty SAND (Plasticity)	
0-7	18.0	2	1000"	1000"	SC	Dark Green Gray, moist, very dense, Purplish Whitish-red ROCK (Plasticity)	

NOTES:  
1. Auger refusal at 19.2 feet.

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Laurel, MD 20707

**LOG OF BORING NO. R-5** Sheet 1 of 1

PROJECT: Trotter's Knoll  
PROJECT NO: 0712162  
PROJECT LOCATION: Howard County, Maryland

DATE STARTED: 07/16  
DATE COMPLETED: 07/16  
DRILLING CONTRACTOR: Geo-Service, Inc.  
DRILLER: J. Beavers  
LOGGED BY: MEW  
CHECKED BY: BTJ

WATER LEVEL (ft): 10.3  
DATE: 07/16  
CAVED BY: PPE

WATER ENCOUNTERED DURING DRILLING (ft): Dry  
GROUND SURFACE ELEVATION: 378.4  
DATE: 07/16  
EQUIPMENT: CME-700  
LOGGED BY: MEW  
CHECKED BY: BTJ

DEPTH (ft)	LOGS	DESCRIPTION	REMARKS				
0-1	0.0	1.0	1.1-1	2	SC	Brown, moist, very loose, Silty SAND	Topsoil 2 in.
0-2	2.0	1.0	4.4-4	8	SC	Brown, moist, loose, Silty Clayey SAND with Gravel	
0-3	4.0	1.0	4.2-6	18	SC	Light Brown, dry, medium dense, Silty SAND, trace Gravel (Plasticity)	
0-4	6.5	1.0	4.7-9	10	SC	Brown, moist, medium dense, Finely-graded SAND, trace Silt (Plasticity)	
0-5	10.0	1.0	3.0-3	8	SC	Brown, dry to moist, loose, Finely-graded SAND with Silt (Plasticity)	
0-6	14.0	1.4	3.0-3	15	SC	Brown to Light Brown, moist, medium dense, Silty SAND (Plasticity)	
0-7	18.0	1.8	6.0-15	24	SC	Boring terminated at 20 feet.	

NOTES:  
1. Boring terminated at 20 feet.

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Laurel, MD 20707

**LOG OF BORING NO. RW-1** Sheet 1 of 1

PROJECT: Trotter's Knoll  
PROJECT NO: 0712162  
PROJECT LOCATION: Howard County, Maryland

DATE STARTED: 07/16  
DATE COMPLETED: 07/16  
DRILLING CONTRACTOR: Geo-Service, Inc.  
DRILLER: J. Beavers  
LOGGED BY: MEW  
CHECKED BY: BTJ

WATER LEVEL (ft): 10.3  
DATE: 07/16  
CAVED BY: PPE

WATER ENCOUNTERED DURING DRILLING (ft): Dry  
GROUND SURFACE ELEVATION: 409.9  
DATE: 07/16  
EQUIPMENT: CME-700  
LOGGED BY: MEW  
CHECKED BY: BTJ

DEPTH (ft)	LOGS	DESCRIPTION	REMARKS				
0-1	0.0	1.0	7.2-3	5	SC	Dark Brown, moist, loose, Silty SAND, trace Gravel and Shell Fragments	Topsoil 1 in.
0-2	2.0	1.8	5.4-4	12	SC	Orange Brown, moist, medium dense, Finely-graded SAND, trace Silty SAND	
0-3	4.0	1.8	15.0-2.0	83	SC	Silt, dry, very dense, Highly Weathered ROCK (Plasticity)	
0-4	6.5	1.8	6.6-7	13	SC	Fine to Light Gray, moist, medium dense, Clayey SAND (Plasticity)	
0-5	10.0	1.8	4.7-9	15	SC	Light Brown, moist, medium dense, Silty SAND (Plasticity)	
0-6	13.5	1.8	5.6-4	8	SC	Light Gray, moist, loose, Silty SAND (Plasticity)	

NOTES:  
1. Boring terminated at 15 feet.

GEO-TECHNOLOGY ASSOCIATES, INC.  
1080 Park Center Drive, Suite A  
Laurel, MD 20707

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*[Signature]*  
CHIEF, BUREAU OF HIGHWAYS  
DATE: 1/23/2018

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*[Signature]*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE: 1/30/18

*[Signature]*  
CHIEF, LAND DEVELOPMENT DIVISION  
DATE: 2/6/18

**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 I**  
HORSE FARM PROPERTY  
8090 OLD MONTGOMERY ROAD, ELLICOTT CITY MARYLAND  
SWM BORINGS PLAN

TAX MAP 37 GRIDS 2 PARCEL 748 ZONED: R-SA-8  
1ST ELECTION DISTRICT  
HOWARD COUNTY, MD 21043

DATE	REVISIONS	JOB NO.:	SCALE:
		15368 x 02	1" = 50'
		DATE: 9/13/2017	DRAWN BY: ATS
		DESIGN BY: ATS	REVIEW BY: TCN
		SHEET: 37 OF 44	

MD PROFESSIONAL CERTIFICATION: 12-17-17  
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. 29203, EXPIRATION DATE: 06/16/2019.

OWNER / APPLICANT / DEVELOPER:  
HORSE FARM, LLC  
ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
COLUMBIA, MD 21045  
CONTACT: RICHARD HAYWARD  
PHONE: 410-997-7222



# SEGMENTAL RETAINING WALL SPECIFICATIONS

## PART 1 - GENERAL

### 1.1 WORK INCLUDES

FURNISHING AND INSTALLING SEGMENTAL RETAINING WALL UNITS, GEOGRID REINFORCEMENT, WALL FILL, AND BACKFILL TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS AND AS SPECIFIED HEREIN. THE CONTRACT ALSO INCLUDES THE FURNISHING AND INSTALLING OF ALL APPURTENANT MATERIALS, EQUIPMENT, AND LABOR REQUIRED FOR CONSTRUCTION OF THE GEOGRID REINFORCED, SEGMENTAL RETAINING WALL. ALL EXISTING AND PROPOSED CONSTRUCTION AND SITE GRADING INFORMATION WAS REFERENCED FROM THE REVISED ELECTRONIC SITE PLANS PREPARED AND PROVIDED BY MORRIS & RITCHIE ASSOCIATES (MRA), THE PROJECT CIVIL ENGINEER, IN JULY OF 2017.

### 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 GEOGRIDS.
- 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.
- GEOGRIDS 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

- GEOGRID 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.
- EROSION CONTROL BLANKETS CONSIST OF A WEB OF POLYOLEFIN FIBERS SECURELY BOUNDED BY POLYOLEFIN THREADS BETWEEN TWO HIGH STRENGTH POLYOLEFIN NETS.
- 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 GEOGRID ZONE.

### 2.2 MATERIALS

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

#### A. CONCRETE UNITS

- MASONRY UNITS SHOULD BE STRAIGHT-FACED KEYSTONE STANDARD II OR STANDARD III RETAINING WALL UNITS FOR RETAINING WALLS NOS. 1 AND 3. MASONRY UNITS SHOULD BE STRAIGHT-FACED COMPAC II OR COMPAC III RETAINING WALL UNITS FOR RETAINING WALL NO. 2. 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 WITH 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 ASHTO 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.

#### 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 SUBSTITUTION CONCRETE UNITS, USE OF OTHER COMPATIBLE CONNECTOR SYSTEMS MAY BE ALLOWED WITH THE PRIOR APPROVAL OF THE GEOTECHNICAL ENGINEER.

#### D. GEOGRID

GEOGRID SHOULD BE MIRAGRID Q3XT, SYNTHEX SF 35, OR EQUIVALENT AS APPROVED BY THE GEOTECHNICAL ENGINEER. THE GEOGRID SHOULD HAVE AN ALLOWABLE STRENGTH OF 1,918 POUNDS PER FOOT. 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 ASHTO A-2-4, OR MORE GRANULAR, BASED ON THE AVAILABLE SUBSURFACE INFORMATION. SUITABLE MATERIALS MAY BE AVAILABLE FROM ON-SITE EXCAVATIONS. HOWEVER, SEGREGATION AND STOCKPILING OF SUITABLE MATERIALS WILL BE REQUIRED. IF ADEQUATE QUANTITIES OF THIS MATERIAL ARE NOT AVAILABLE ON-SITE, IMPORTED BACKFILL SHOULD MEET THE ABOVE REQUIREMENTS AND SHOULD BE APPROVED BY THE GEOTECHNICAL ENGINEER.

#### F. CONTROLLED FILL

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 ASHTO 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 GEOCOMPOSITE SHOULD BE DC4200 GEOTEXTILE MANUFACTURED BY TENAX CORPORATION, INC. 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, GEOGRID 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 ASSUMED 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 PROFFERED WITH A LOADED DUMP TRUCK. ANY SOFT OR UNSTABLE AREAS IDENTIFIED DURING PROFFERING 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 COMPACT UNITS OR BY TRIMMING THE STANDARD II 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. GEOGRID INSTALLATION

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

### F. FILL PLACEMENT

- 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 GEOGRID.
- 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 GEOGRID REMAINS TAUT.
- TRACKED CONSTRUCTION EQUIPMENT SHOULD NOT BE OPERATED BEHIND OR ABOVE THE WALL.
- RUBBER-TIRED EQUIPMENT MAY PASS OVER THE GEOGRID 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

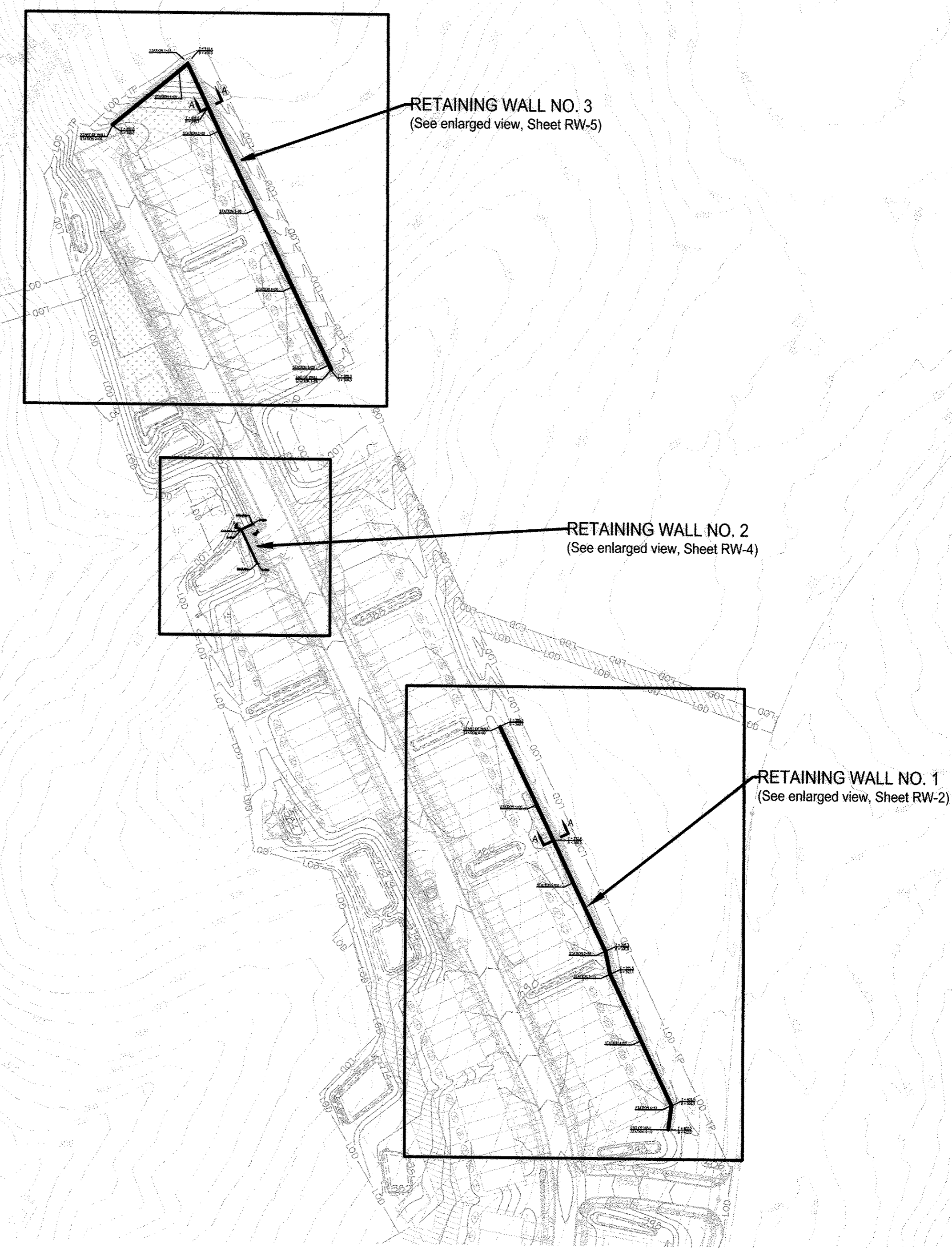
- DRAINAGE FILL SHOULD BE PLACED BEHIND THE WALL TO THE LIMITS SHOWN. THE DRAINAGE FILL SHOULD BE A MINIMUM OF 12-INCHES THICK. THE DRAINAGE FILL SHOULD BE ASTM #57 STONE. THE DRAINAGE FILL SHOULD BE WRAPPED IN FILTER FABRIC (MIRAFI 140N OR EQUAL) AS SHOWN ON THE DRAWINGS.
- POSITIVE DRAINAGE SHOULD 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.

## PART 4 - CONSTRUCTION OBSERVATION AND TESTING

- RETAINING WALLS SHOULD ONLY BE CONSTRUCTED UNDER THE OBSERVATION OF A REGISTERED PROFESSIONAL ENGINEER AND A CERTIFIED (IN-CE, 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 PSF.
- DESIGN INTERNAL FRICTION ANGLE FOR REINFORCED FILL SOIL = 28 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 LOCATION PLAN**  
SCALE: 1" = 100'

THE LOCATION PLAN WAS ADAPTED FROM THE ELECTRONIC EXISTING PLANS AND THE REVISED SITE DEVELOPMENT PLANS, PREPARED AND PROVIDED BY MRA IN JULY OF 2017.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

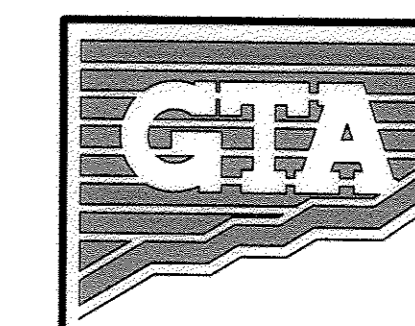
*[Signature]* 1/23/2018  
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

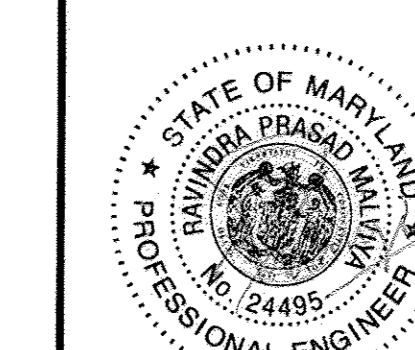
*[Signature]* 1/30/18  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 2/6/18  
CHIEF, LAND DEVELOPMENT DIVISION DATE

**RW-1**



**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.GTAEANG.COM



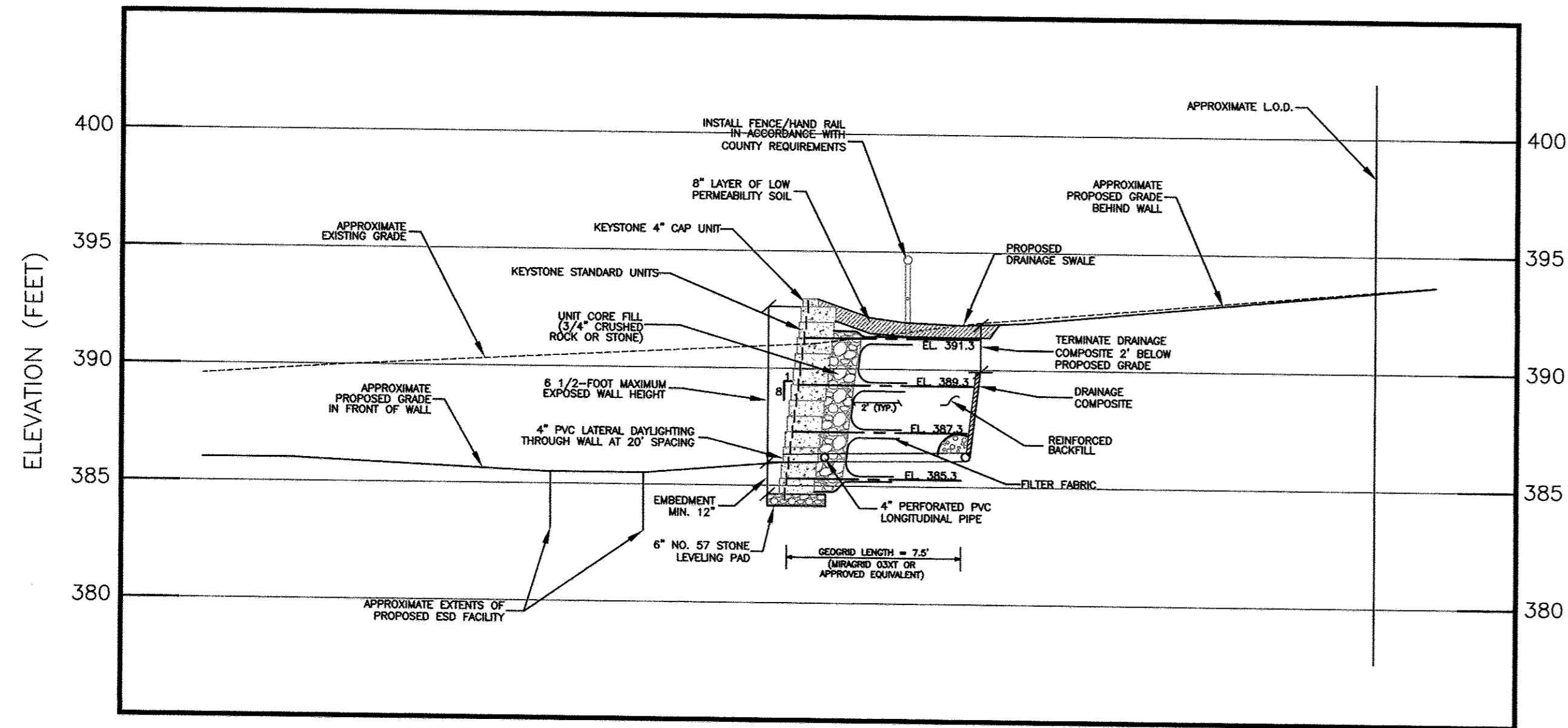
TROTTER'S KNOLL - SECTION 1  
PROPOSED RETAINING WALLS NOS. 1-3  
PLAN AND GENERAL NOTES  
HOWARD COUNTY, MARYLAND

DATE	REVISIONS	JOB NO.:
9/14/2017	PROPOSED GRADING / WALL LAYOUTS	071211X2
		SCALE: AS SHOWN
		DATE: 9/1/16
		DRAWN BY: MEW
		DESIGN BY: MEW
		REVIEW BY: RPM
		SHEET: 38 OF 44

OWNER / APPLICANT / DEVELOPER:  
HORSE FARM, LLC.  
ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
COLUMBIA, MD 21045  
CONTACT: RICHARD HAYWARD  
PHONE: 410-997-7222

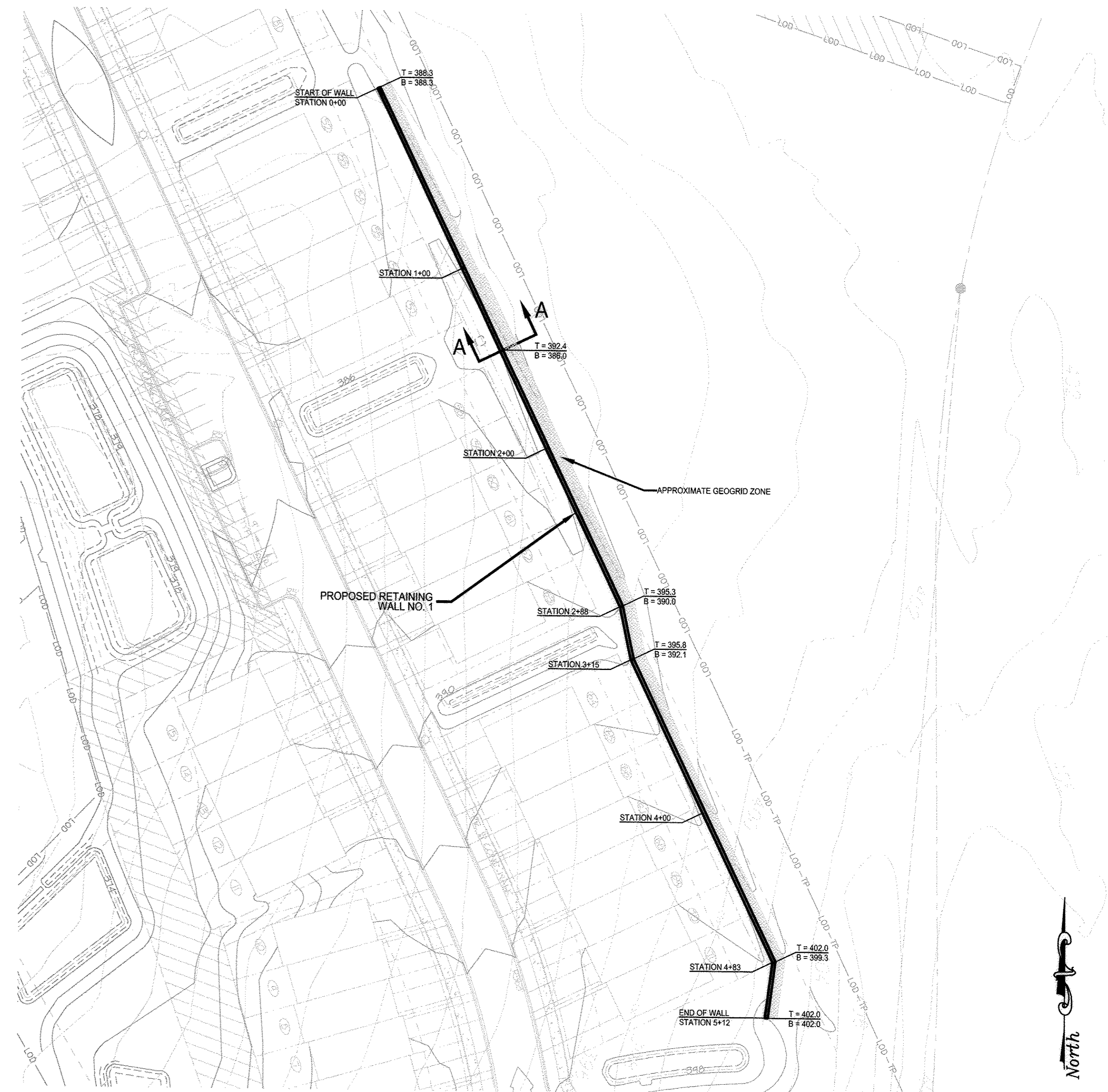
MD PROFESSIONAL CERTIFICATION:  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 24495, EXPIRATION DATE: 10/30/19.





**RETAINING WALL NO. 1 - SECTION A-A (APPROXIMATE STATION 1+46)**

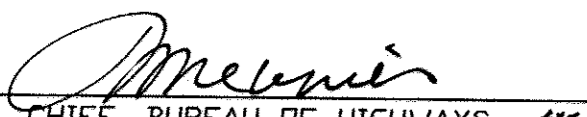
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VERTICAL SCALE: 1" = 5'





**RETAINING WALL NO. 1 - PLAN VIEW**

SCALE: 1" = 40'


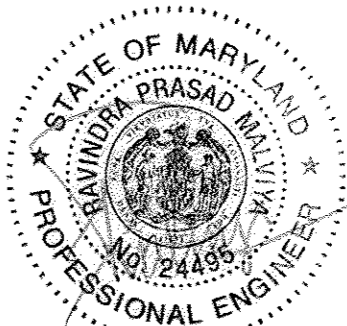
THE LOCATION PLAN WAS ADAPTED FROM THE ELECTRONIC EXISTING PLANS AND REVISED SITE DEVELOPMENT PLANS, PREPARED AND PROVIDED BY MRA IN JULY OF 2017.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
  
 CHIEF, BUREAU OF HIGHWAYS  
 DATE: 1/23/18

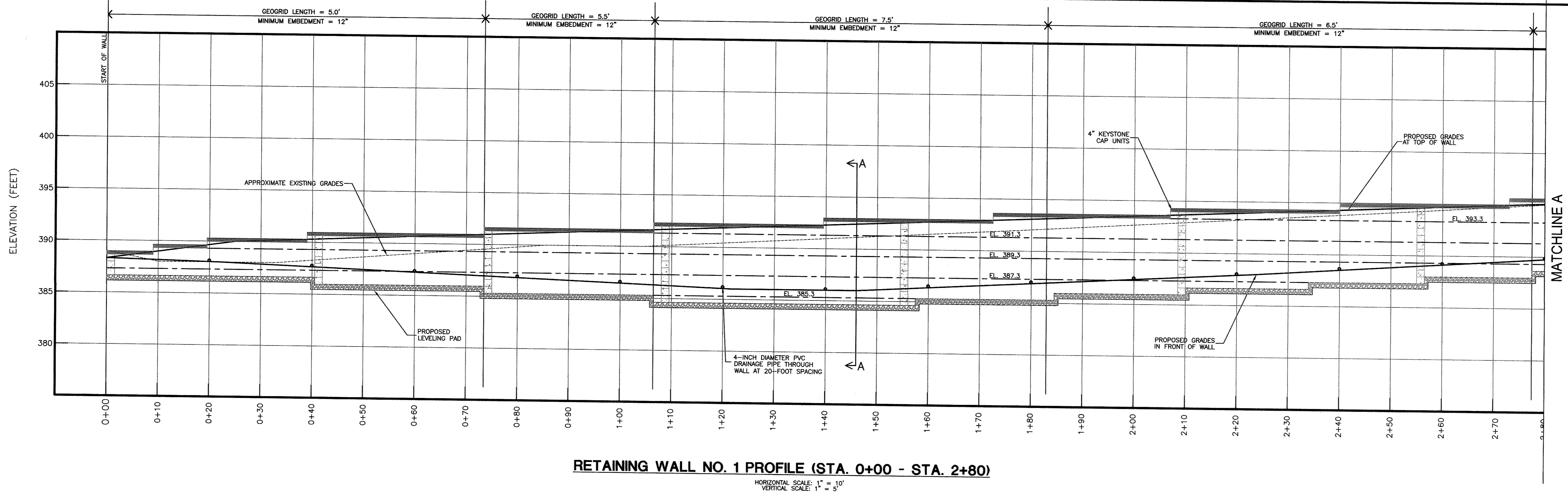
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 1/30/18

  
 CHIEF, LAND DEVELOPMENT DIVISION  
 DATE: 2/1/18

**RW-2**

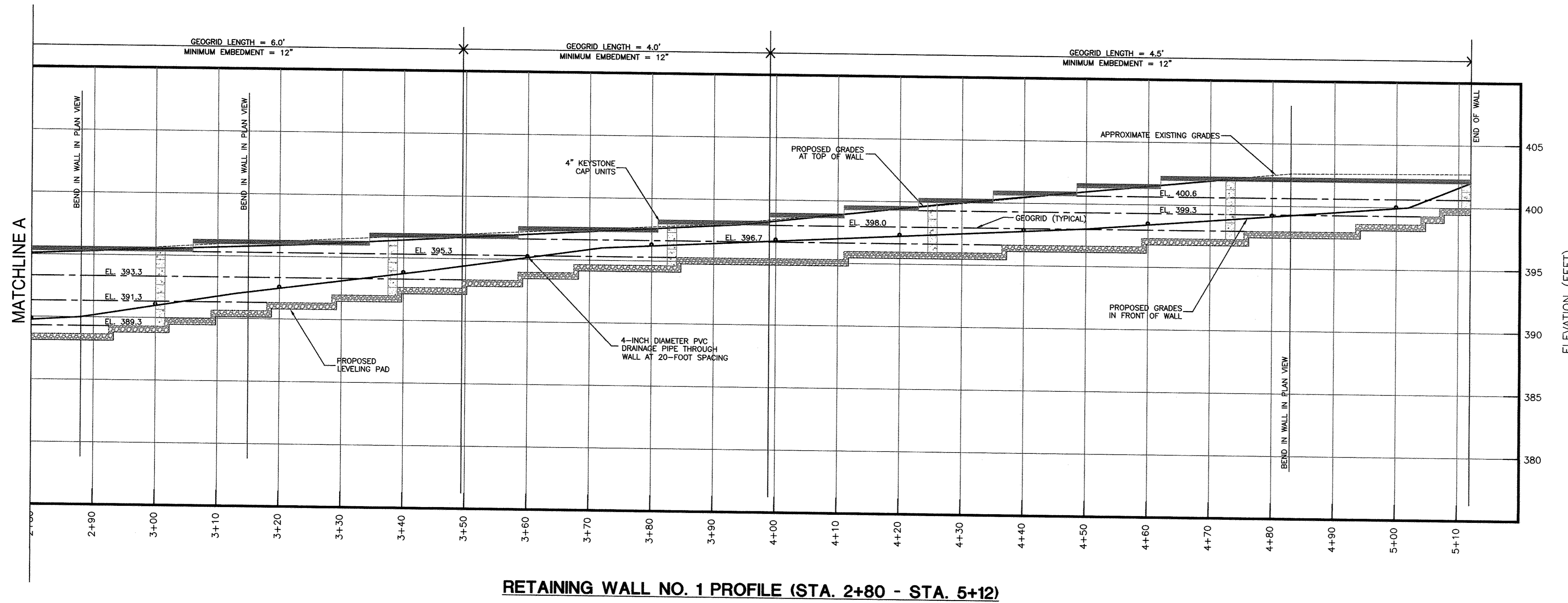
 <b>GEO-TECHNOLOGY ASSOCIATES, INC.</b> GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS 14280 PARK CENTER DRIVE, SUITE A LAUREL, MARYLAND 20707 (410) 792-9446 or (301) 470-4470 FAX: (410) 792-7395 WWW.GTAENG.COM	<b>TROTTER'S KNOLL - SECTION 1</b> <b>PROPOSED RETAINING WALL NO. 1</b> PLAN & SECTION HOWARD COUNTY, 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. 24485, EXPIRATION DATE: 10/30/19.	<table border="1"> <thead> <tr> <th>DATE</th> <th>REVISIONS</th> <th>JOB NO.:</th> </tr> </thead> <tbody> <tr> <td>9/14/2017</td> <td>PROPOSED GRADING / WALL LAYOUTS</td> <td>071211X2</td> </tr> <tr> <td></td> <td></td> <td>SCALE: AS SHOWN</td> </tr> <tr> <td></td> <td></td> <td>DATE: 9/1/16</td> </tr> <tr> <td></td> <td></td> <td>DRAWN BY: MEW</td> </tr> <tr> <td></td> <td></td> <td>DESIGN BY: MEW</td> </tr> <tr> <td></td> <td></td> <td>REVIEW BY: RPM</td> </tr> <tr> <td></td> <td></td> <td>SHEET: 39 OF 44</td> </tr> </tbody> </table>	DATE	REVISIONS	JOB NO.:	9/14/2017	PROPOSED GRADING / WALL LAYOUTS	071211X2			SCALE: AS SHOWN			DATE: 9/1/16			DRAWN BY: MEW			DESIGN BY: MEW			REVIEW BY: RPM			SHEET: 39 OF 44
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		REVIEW BY: RPM																								
		SHEET: 39 OF 44																								





**RETAINING WALL NO. 1 PROFILE (STA. 0+00 - STA. 2+80)**

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



**RETAINING WALL NO. 1 PROFILE (STA. 2+80 - STA. 5+12)**

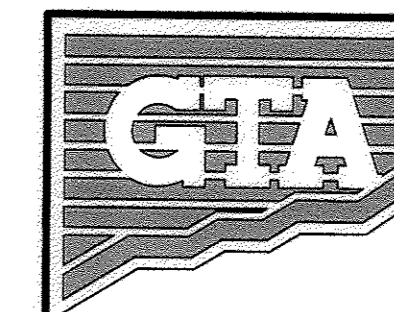
HORIZONTAL SCALE: 1" = 10'  
VERTICAL SCALE: 1" = 5'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Meem*  
CHIEF, BUREAU OF HIGHWAYS  
DATE: 1/23/2018

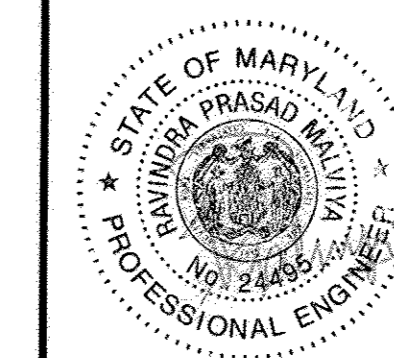
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*John Edmon*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE: 1-30-18

*Jim Monahan*  
CHIEF, LAND DEVELOPMENT DIVISION  
DATE: 2/8/18

OWNER / APPLICANT / DEVELOPER:  
HORSE FARM, LLC  
ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
COLUMBIA, MD 21045  
CONTACT: RICHARD HAYWARD  
PHONE: 410-997-7222



**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 1  
PROPOSED RETAINING WALL NO. 1  
PROFILE

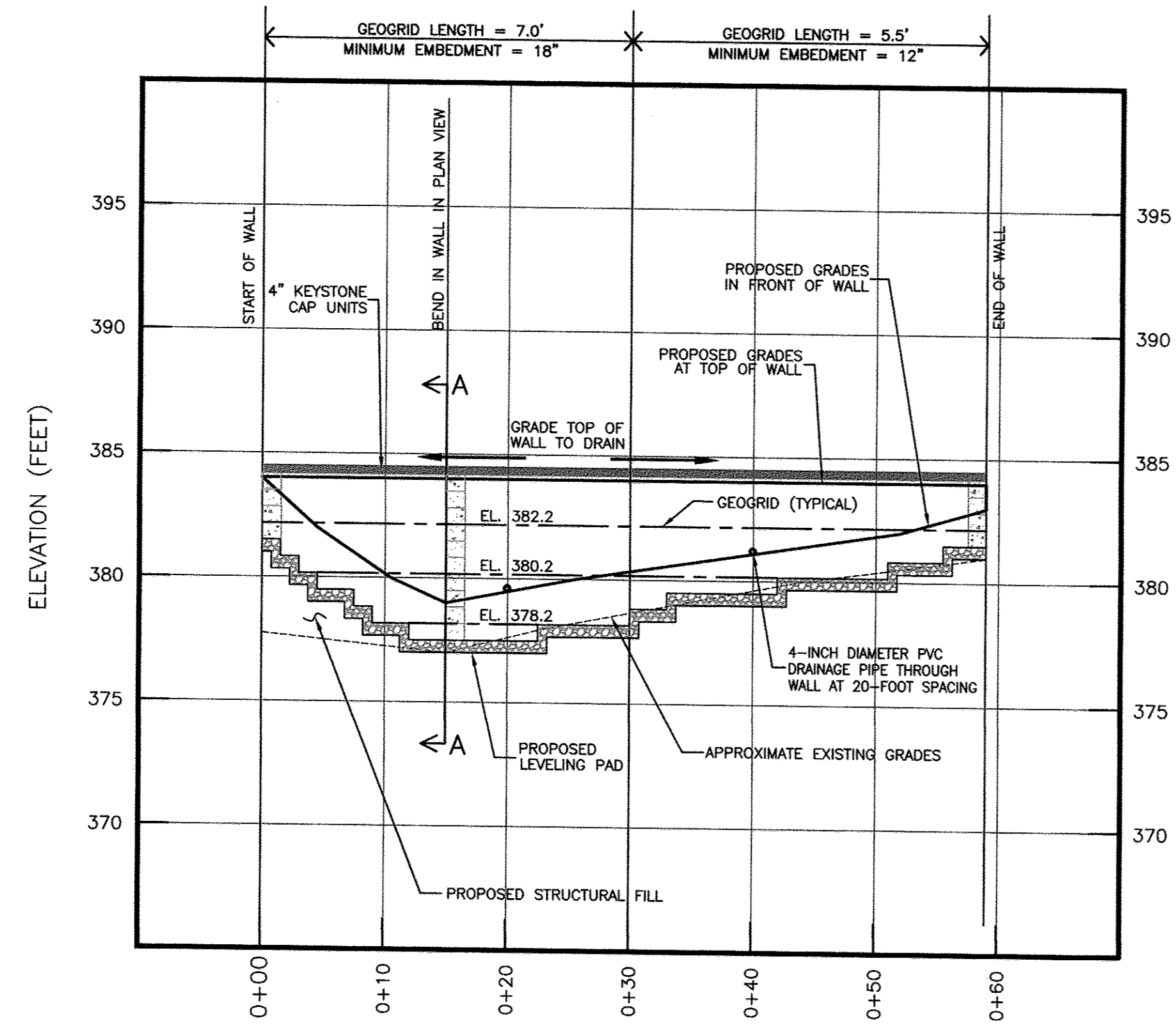
HOWARD COUNTY, MARYLAND

MD PROFESSIONAL CERTIFICATION:  
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DATE	REVISIONS	JOB NO.: 071211X2
9/14/2017	PROPOSED GRADING / WALL LAYOUTS	SCALE: AS SHOWN
		DATE: 9/1/16
		DRAWN BY: MEW
		DESIGN BY: MEW
		REVIEW BY: RPM
		SHEET: 40 OF 44

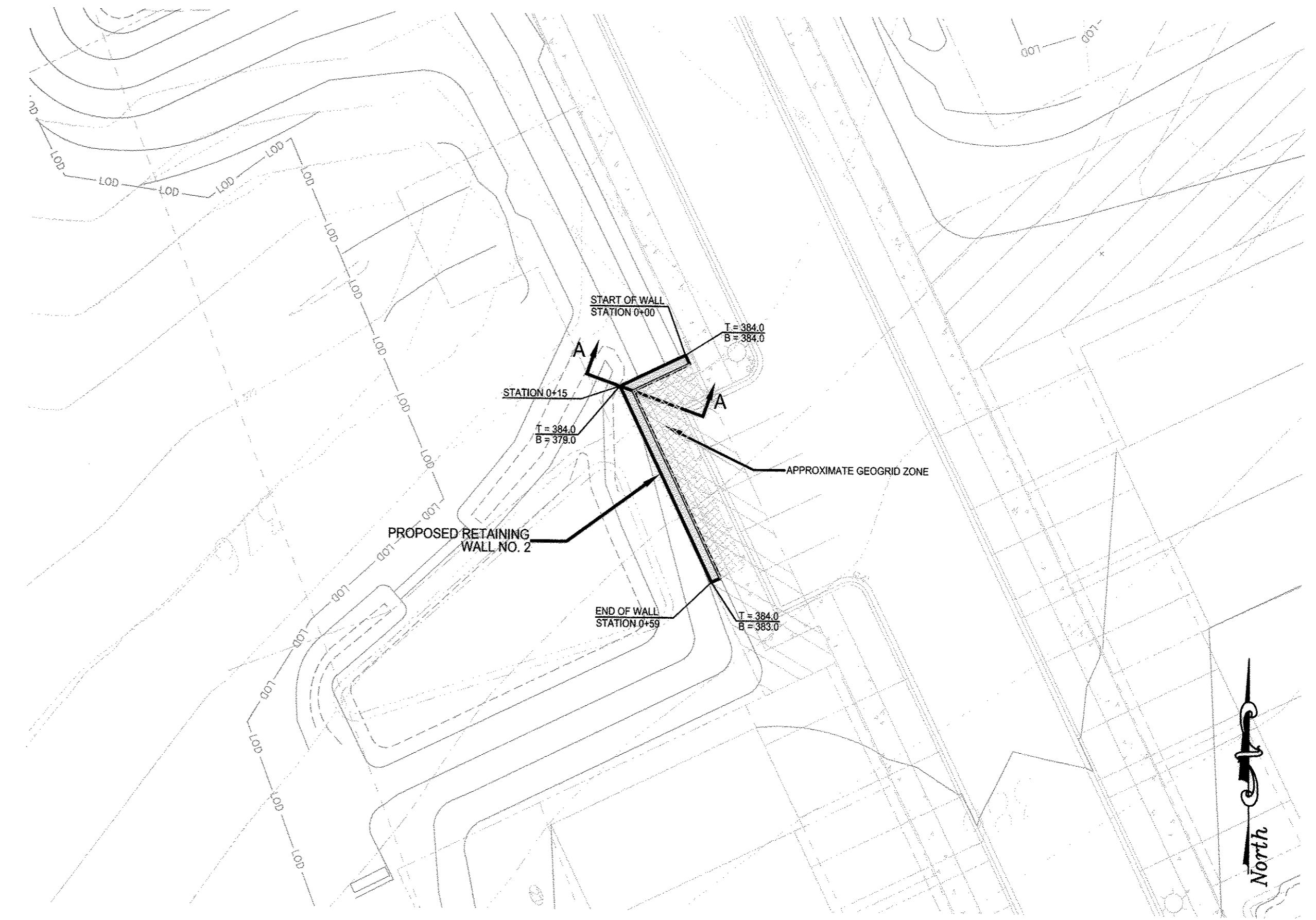
**RW-3**





**RETAINING WALL NO. 2 PROFILE**

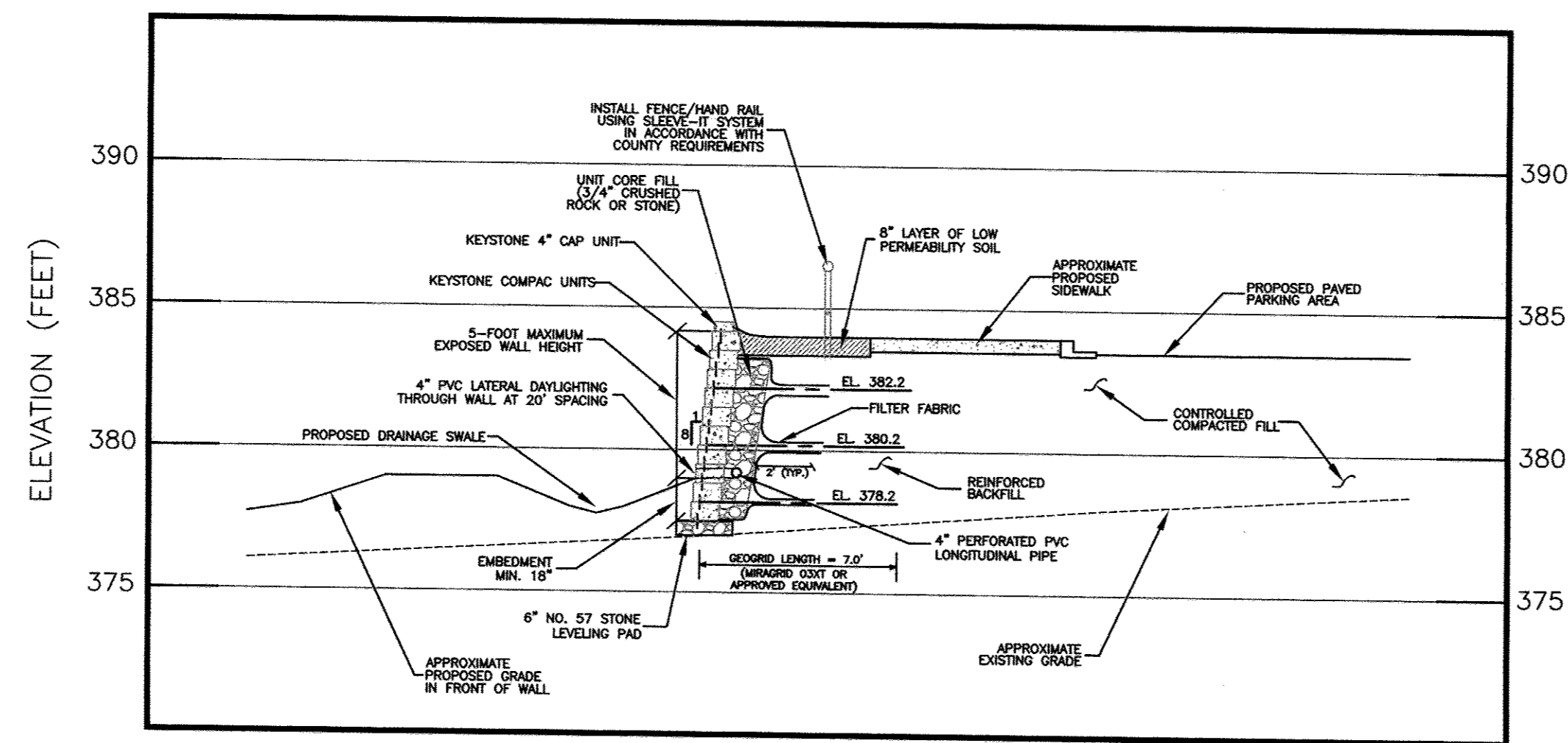
HORIZONTAL SCALE: 1" = 10'  
VERTICAL SCALE: 1" = 5'



**RETAINING WALL NO. 2 - PLAN VIEW**

SCALE: 1" = 20'

THE LOCATION PLAN WAS ADAPTED FROM THE ELECTRONIC EXISTING PLANS AND REVISED SITE DEVELOPMENT PLANS, PREPARED AND PROVIDED BY MRA IN JULY OF 2017.



**RETAINING WALL NO. 2 - SECTION A-A (APPROXIMATE STATION 0+15)**

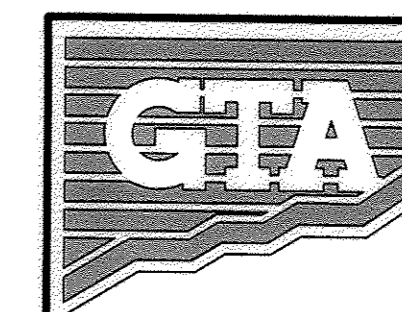
HORIZONTAL SCALE: 1" = 5'  
VERTICAL SCALE: 1" = 5'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*Melania* 1/30/18  
 CHIEF, BUREAU OF HIGHWAYS DATE

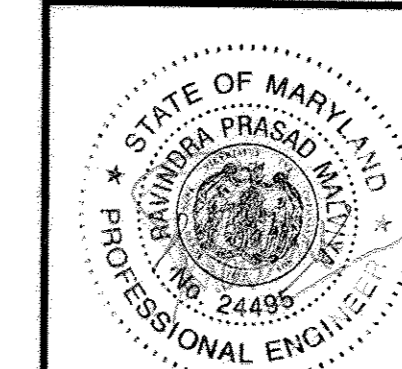
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Phil Edmon* 1/30/18  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Die Namer* 2/6/18  
 CHIEF, LAND DEVELOPMENT DIVISION DATE

OWNER / APPLICANT / DEVELOPER:  
 HORSE FARM, LLC.  
 ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
 COLUMBIA, MD 21045  
 CONTACT: RICHARD HAYWARD  
 PHONE: 410-997-7222



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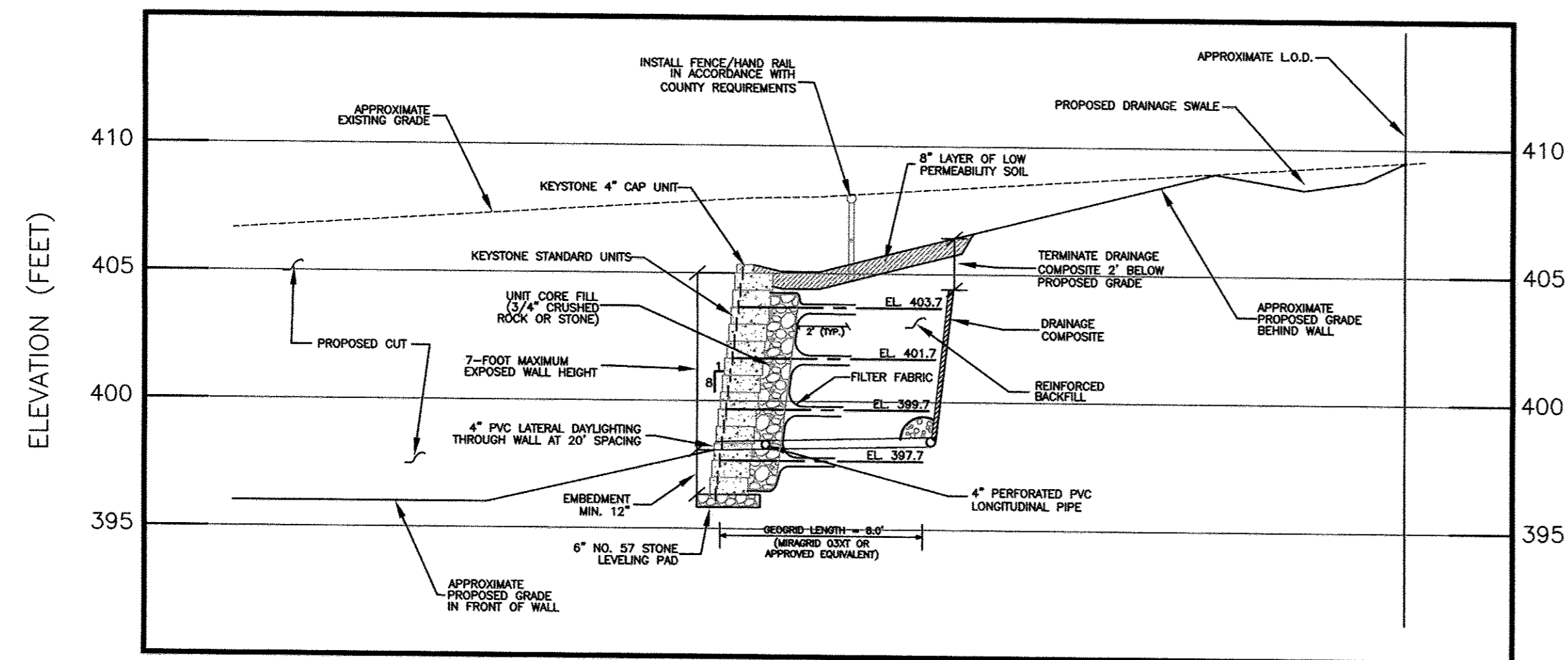
TROTTER'S KNOLL - SECTION 1  
 PROPOSED RETAINING WALL NO. 2  
 PLAN, PROFILE, & SECTION

HOWARD COUNTY, MARYLAND

DATE	REVISIONS	JOB NO.:
9/14/2017	PROPOSED GRADING / WALL LAYOUTS	071211X2
		SCALE: AS SHOWN
		DRAWN BY: MEW
		DESIGN BY: MEW
		REVIEW BY: RPM
		SHEET: 41 OF 44

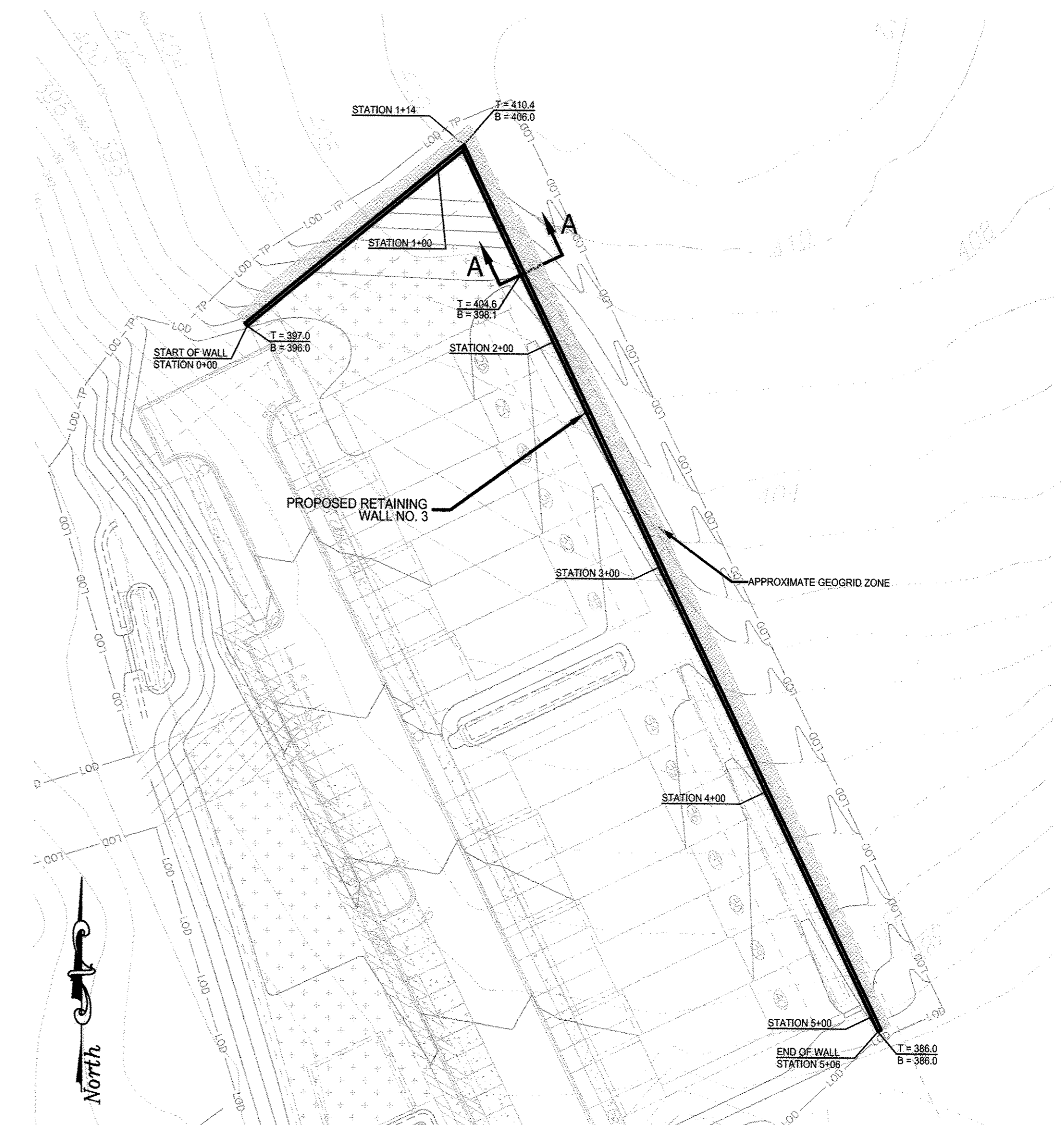
**RW-4**





**RETAINING WALL NO. 3 - SECTION A-A (APPROXIMATE STATION 1+34)**

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



**RETAINING WALL NO. 3 - PLAN VIEW**

SCALE: 1" = 40'

THE LOCATION PLAN WAS ADAPTED FROM THE ELECTRONIC EXISTING PLANS AND REVISED SITE DEVELOPMENT PLANS, PREPARED AND PROVIDED BY MRA IN JULY OF 2017.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*[Signature]* 1/23/2018  
 CHIEF, BUREAU OF HIGHWAYS DATE

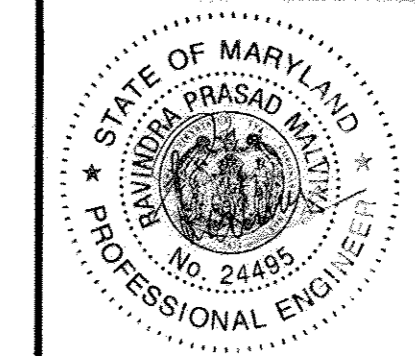
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*[Signature]* 1.30.18  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 2/1/18  
 CHIEF, LAND DEVELOPMENT DIVISION DATE

**RW-5**



**GEO-TECHNOLOGY ASSOCIATES, INC.**  
 GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS  
 14280 PARK CENTER DRIVE, SUITE A  
 LAUREL, MARYLAND 20707  
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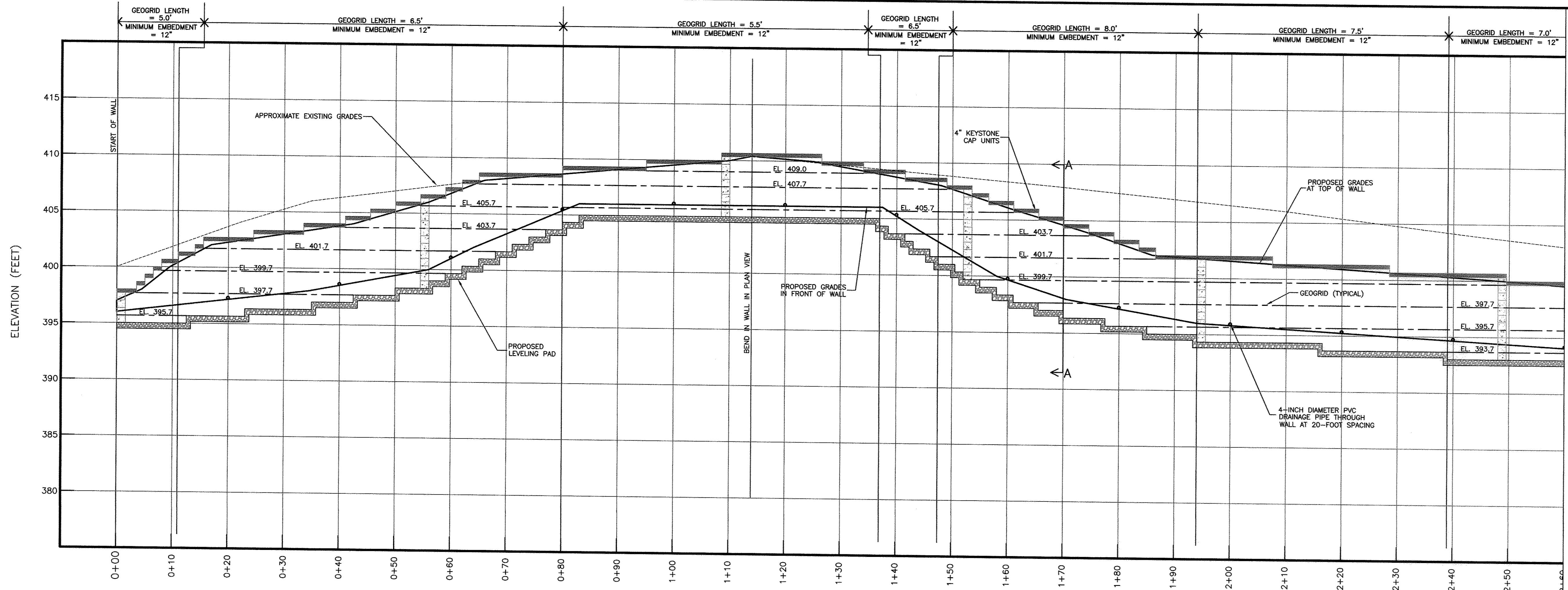
TROTTER'S KNOLL - SECTION 1  
 PROPOSED RETAINING WALL NO. 3  
 PLAN & SECTION  
 HOWARD COUNTY, MARYLAND

MD PROFESSIONAL CERTIFICATION:  
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DATE	REVISIONS	JOB NO.: 071211X2
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		DATE: 9/1/16
		DRAWN BY: MEW
		DESIGN BY: MEW
		REVIEW BY: RPM
		SHEET: 42 OF 44

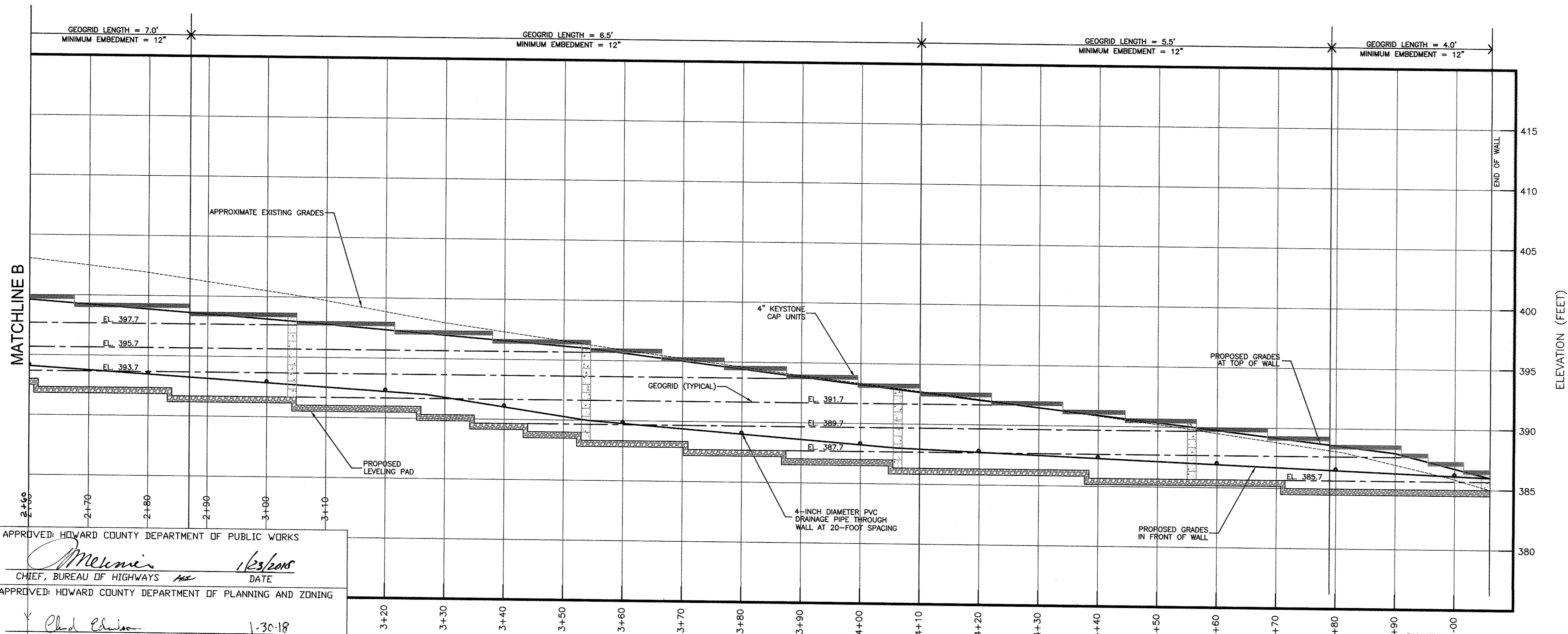
OWNER / APPLICANT / DEVELOPER:  
 HORSE FARM, LLC.  
 ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
 COLUMBIA, MD 21045  
 CONTACT: RICHARD HAYWARD  
 PHONE: 410-997-7222





**RETAINING WALL NO. 3 PROFILE (STA. 0+00 - STA. 2+60)**

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



**RETAINING WALL NO. 3 PROFILE (STA. 2+60 - STA. 5+06)**

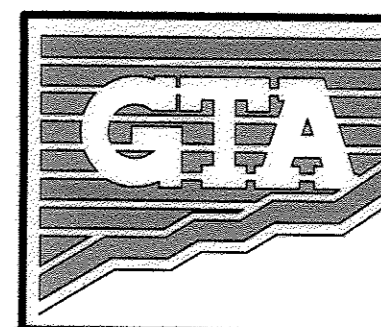
HORIZONTAL SCALE: 1" = 10'  
VERTICAL SCALE: 1" = 5'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS  
*M. Mesmer* 1/23/18  
CHIEF, BUREAU OF HIGHWAYS DATE

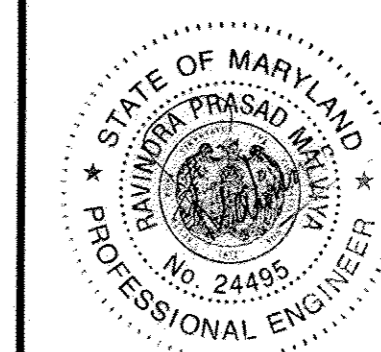
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*Phil Edison* 1/30/18  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Neil Homan-Barnes for URS* 2/6/18  
CHIEF, LAND DEVELOPMENT DIVISION DATE

OWNER / APPLICANT / DEVELOPER:  
HORSE FARM, LLC.  
ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
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TROTTER'S KNOLL - SECTION 1  
PROPOSED RETAINING WALL NO. 3  
PROFILE  
HOWARD COUNTY, MARYLAND

DATE	REVISIONS	JOB NO.: 071211X2
9/14/2017	PROPOSED GRADING / WALL LAYOUTS	SCALE: AS SHOWN
		DATE: 9/1/16
		DRAWN BY: MEW
		DESIGN BY: MEW
		REVIEW BY: RPM
		SHEET: 43 OF 44

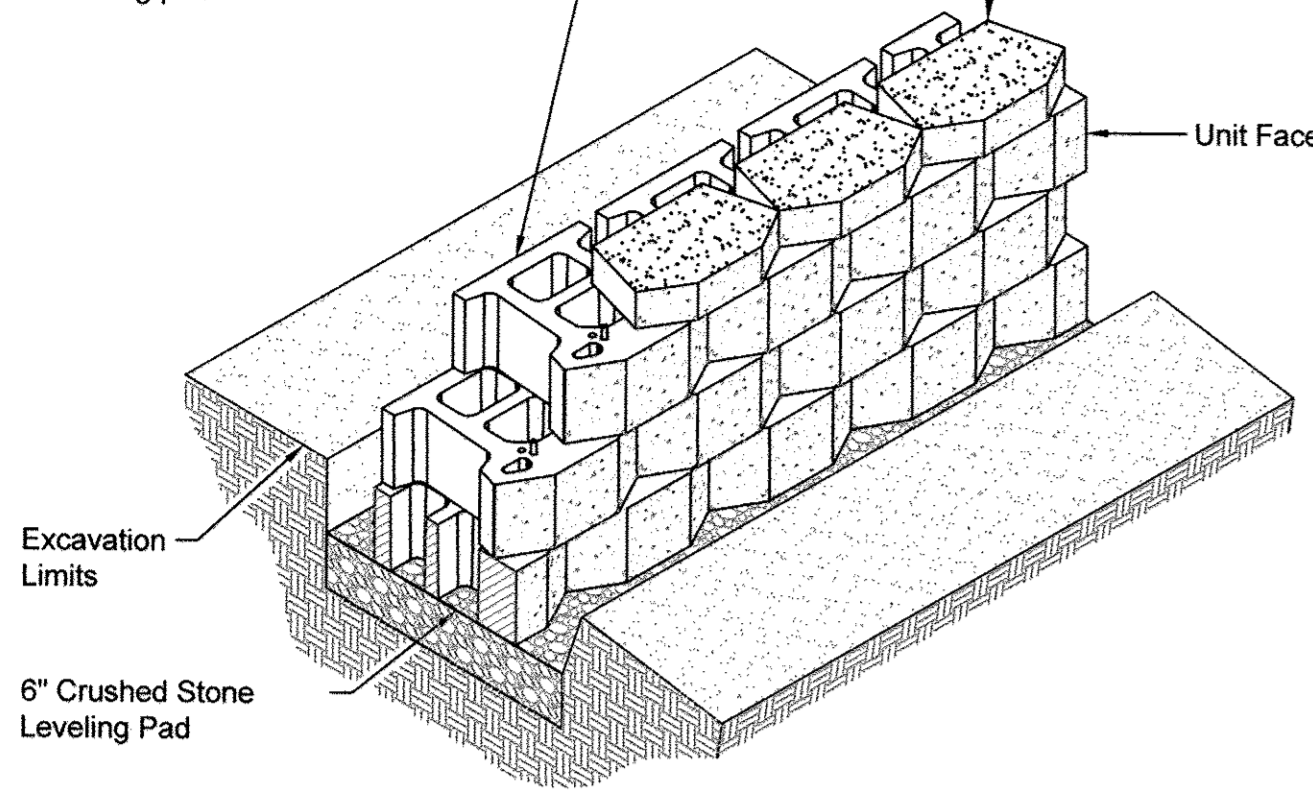
**RW-6**



**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

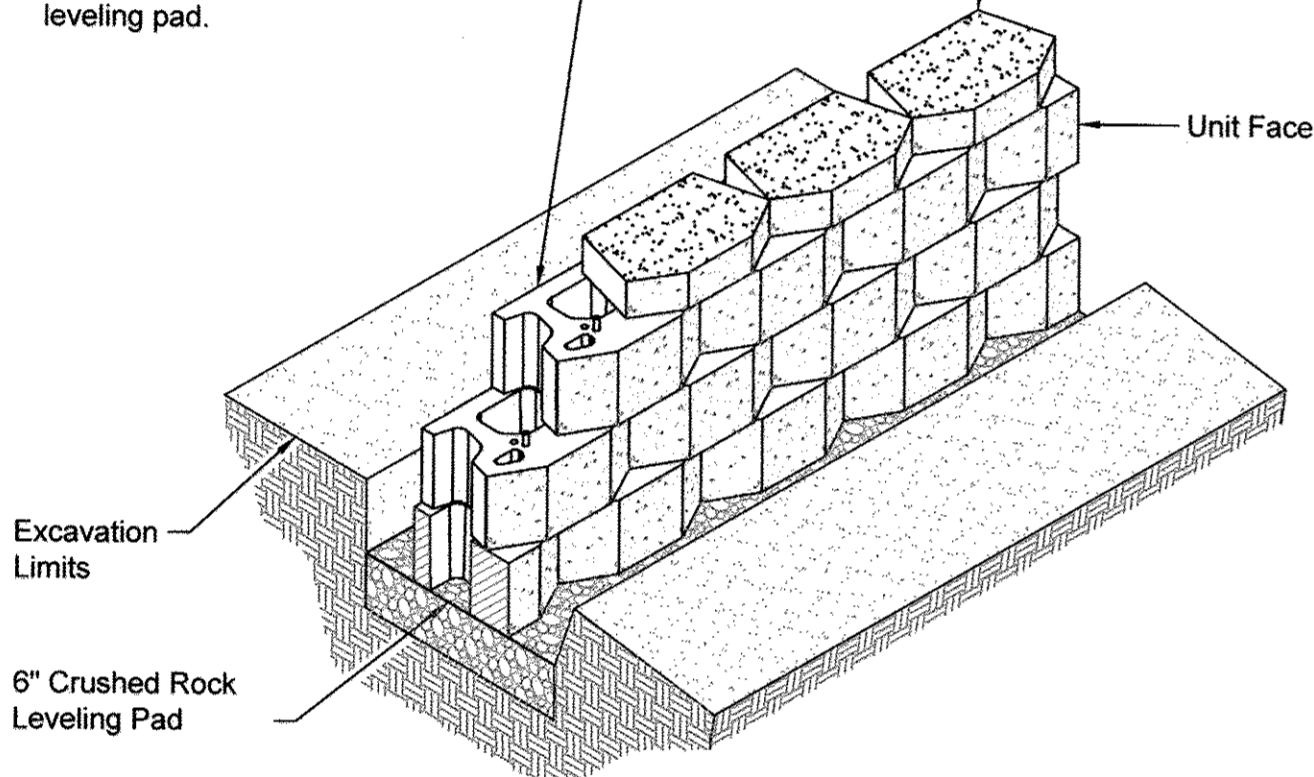


**Standard II Unit/Base Pad Isometric Section View**

**Base Leveling Pad Notes:**

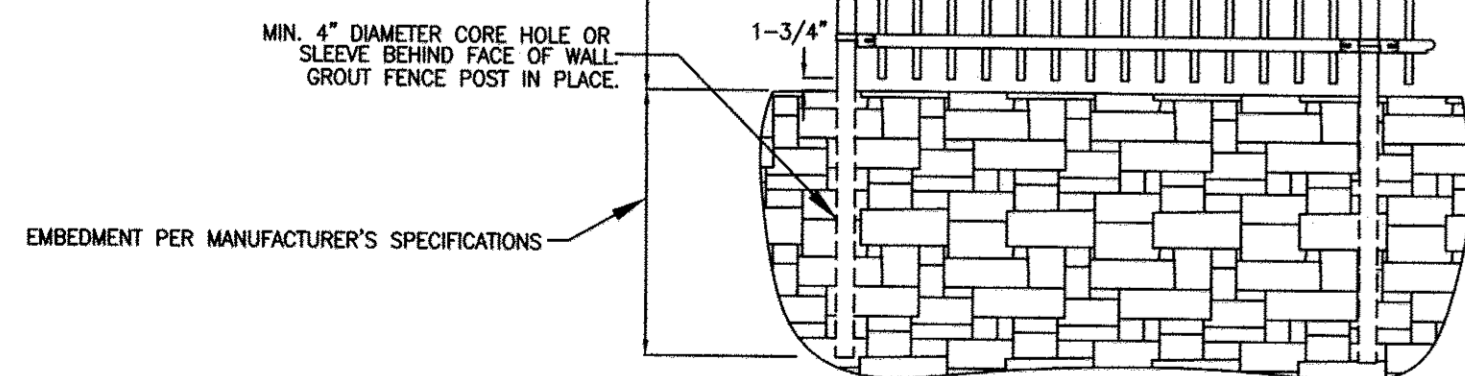
1. The leveling pad is to be constructed of crushed stone.
2. The base foundation is to be approved by the site geotechnical engineer prior to placement of the leveling pad.

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

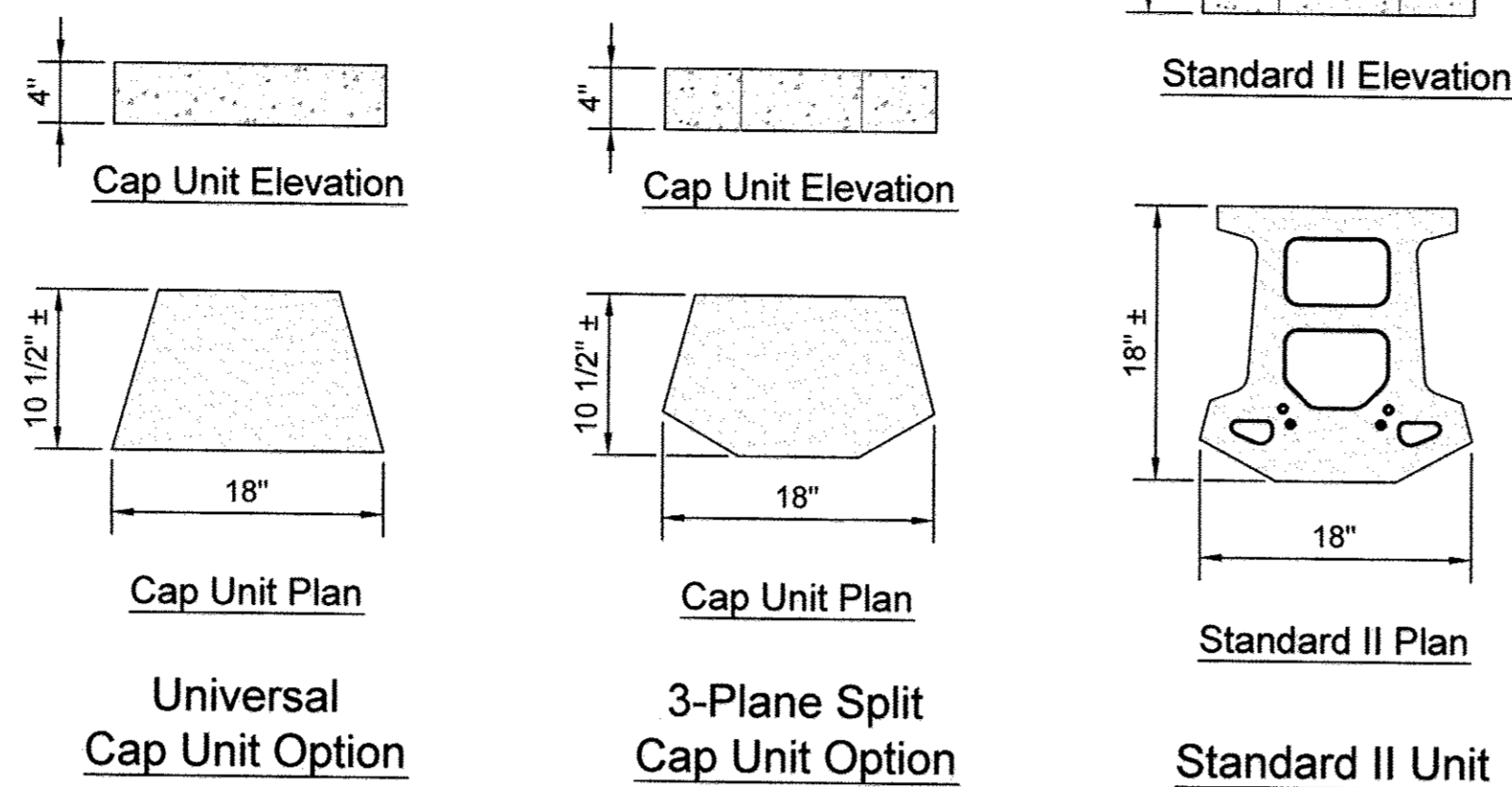


**Compac II Unit/Base Pad Isometric Section View**

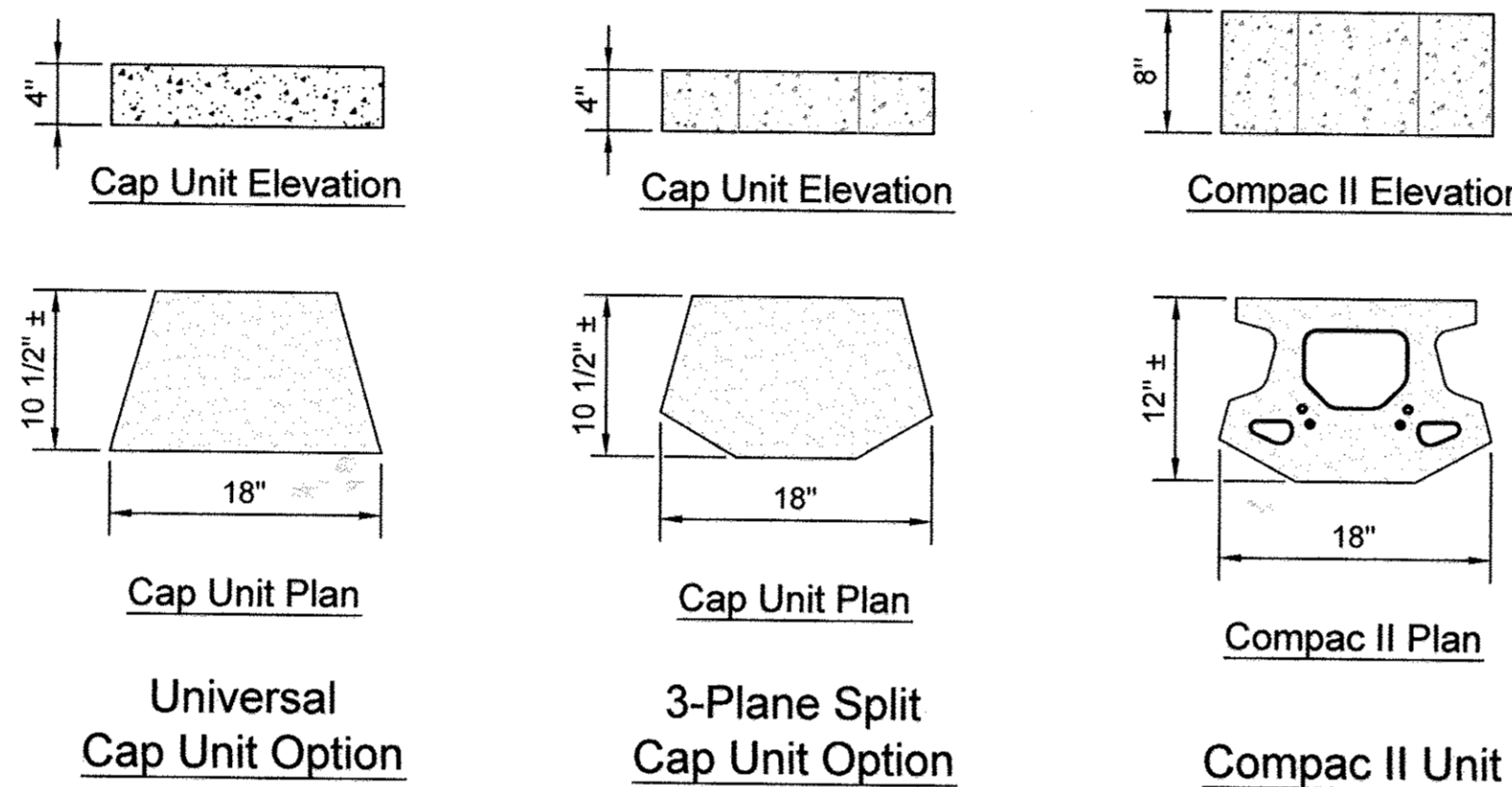
NOTE: ALTERNATE FENCE STYLES AND DETAILS MAY BE USED WITH THE PRIOR APPROVAL OF THE OWNER AND THE GEOTECHNICAL ENGINEER. THE FENCE SHALL BE INSTALLED WHERE THERE IS A DROP OFF GREATER THAN 30 INCHES, IN ACCORDANCE WITH COUNTY REQUIREMENTS. THE FENCE MUST BE AT LEAST 42 INCHES HIGH AND SHALL NOT ALLOW THE PASSAGE OF A 4-INCH SPHERE. THE FENCE SHOULD COMPLY WITH THE COUNTY BUILDING CODE REQUIREMENTS.



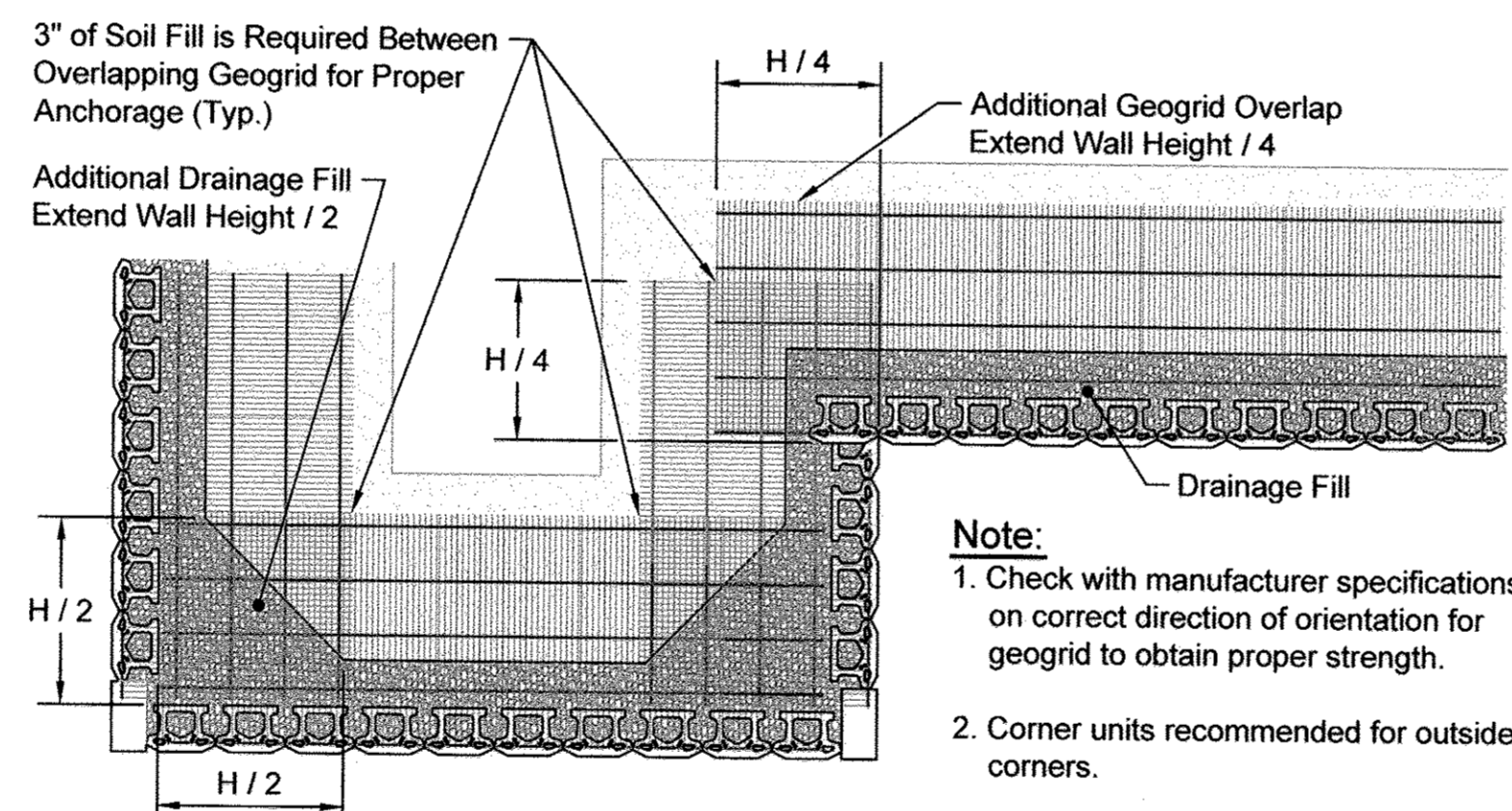
**Fence Elevation Detail**



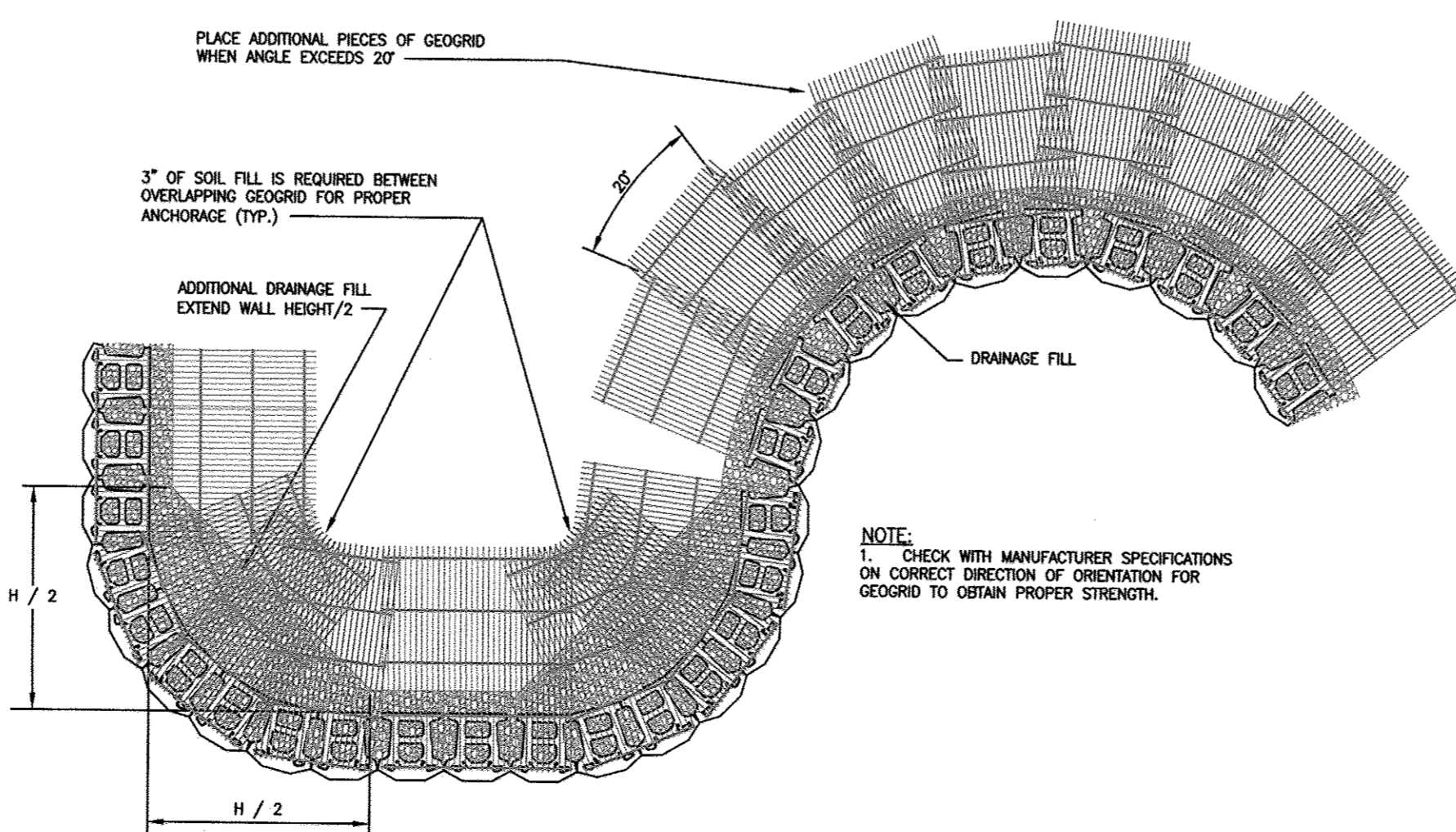
**Standard II Unit**



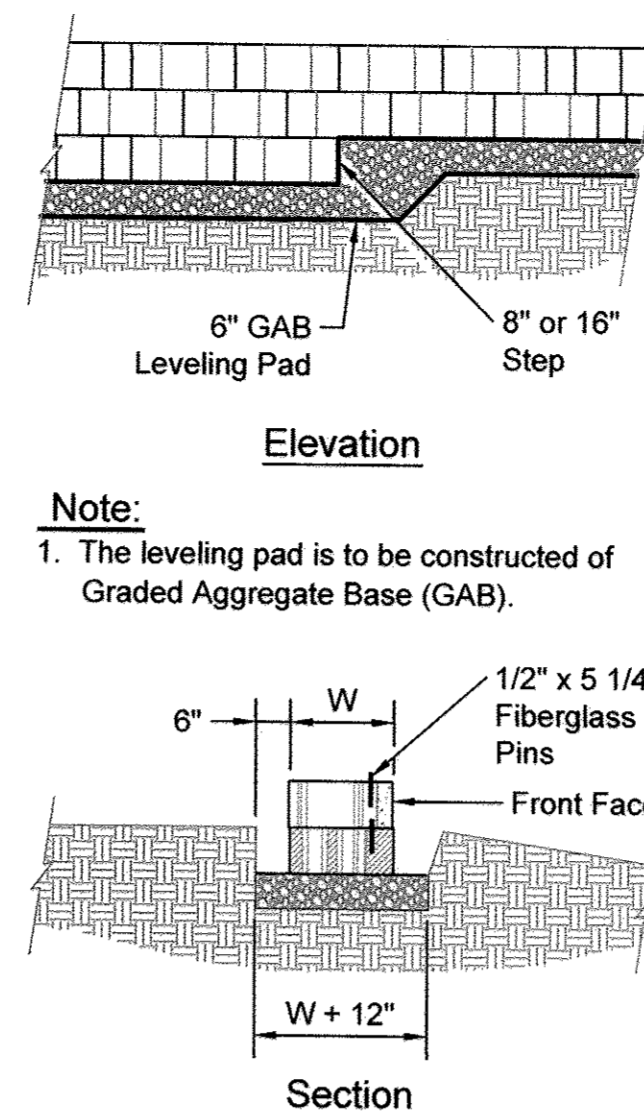
**Compac II Unit**



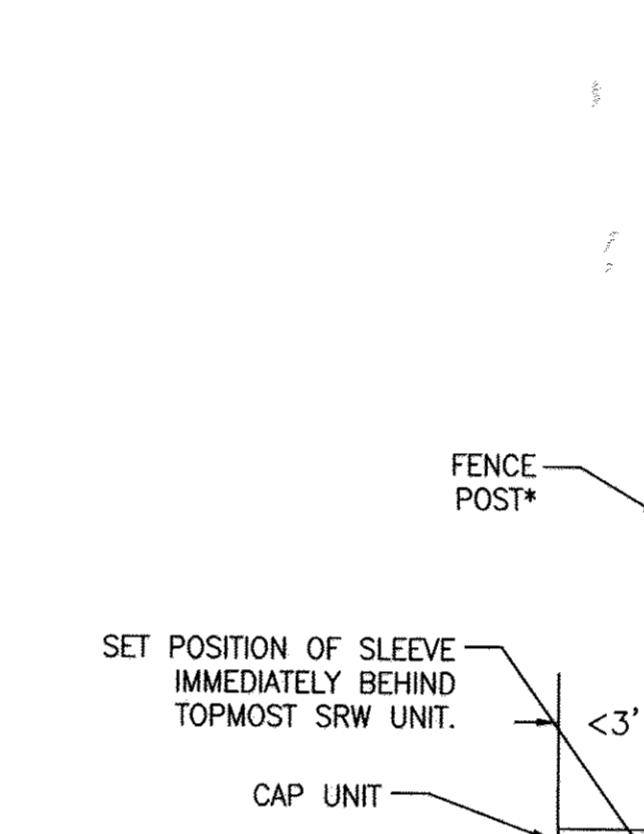
**Geogrid Installation at Corners**



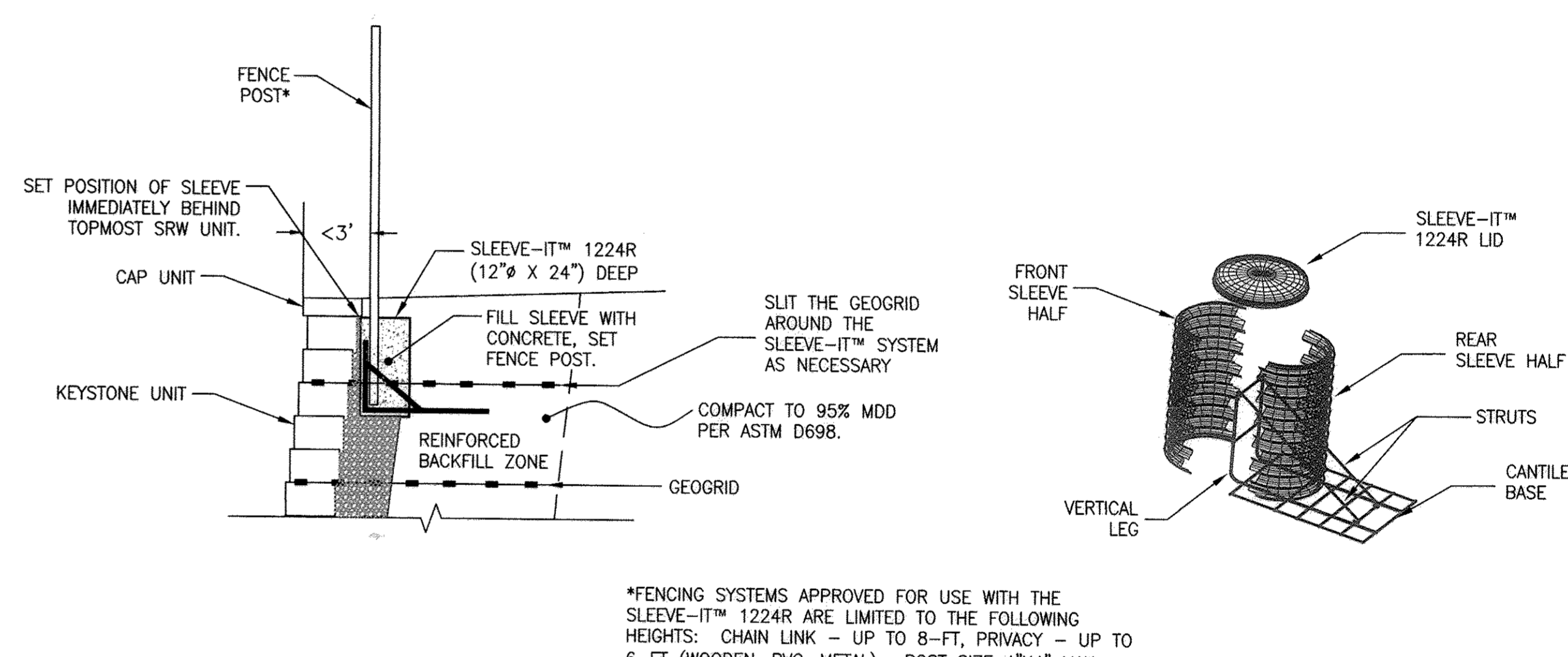
**GEOGRID INSTALLATION ON CURVES**



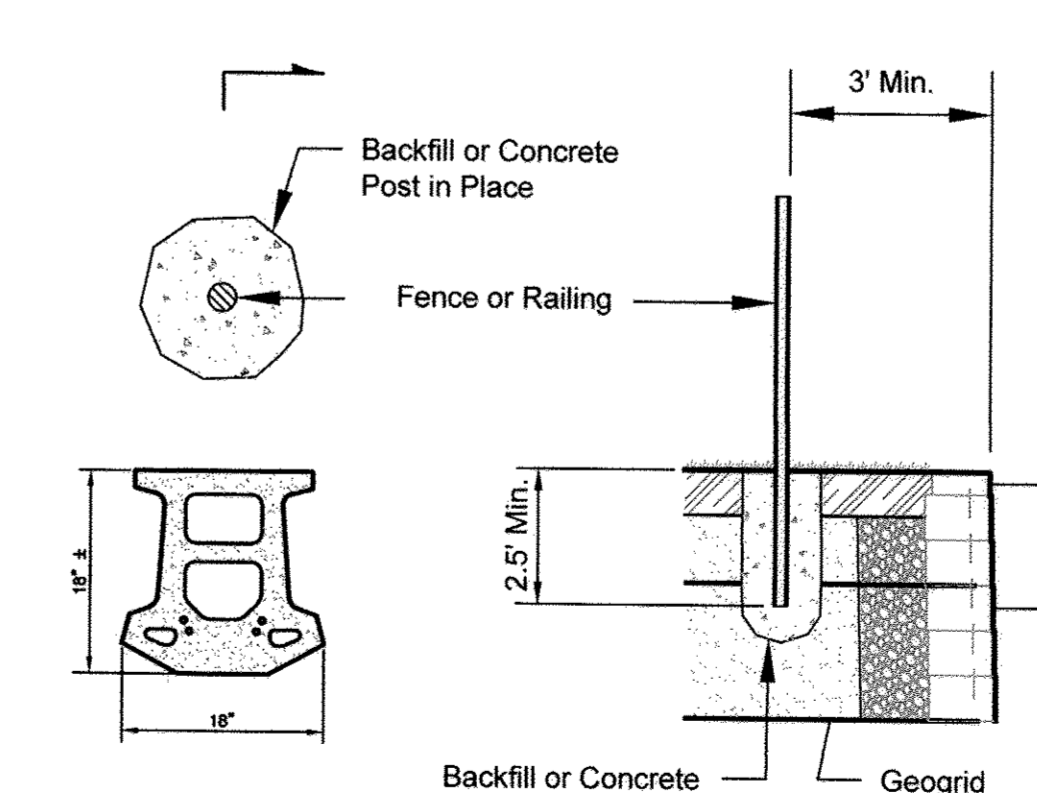
**Leveling Pad Detail**



**Grid & Pin Connection**



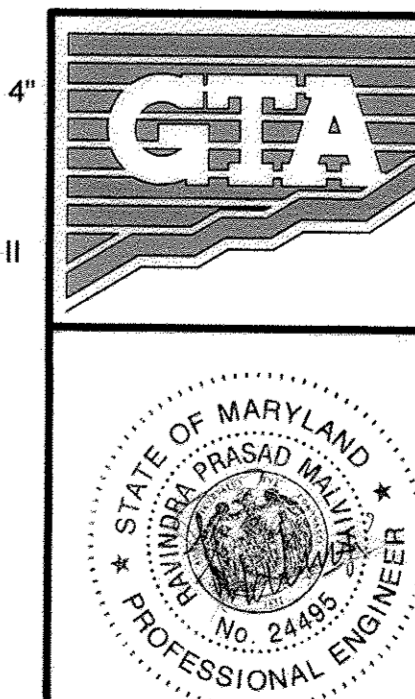
**DETAIL OF FENCE POST INSTALLATION USING SLEEVE-IT™ 1224R N.T.S.**



**TYPICAL DETAIL FOR FENCE/RAILING**

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS	
<i>[Signature]</i>	1/23/2018
CHIEF, BUREAU OF HIGHWAYS	DATE
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING	
<i>[Signature]</i>	1-30-18
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE
<i>[Signature]</i>	2/16/18
CHIEF, LAND DEVELOPMENT DIVISION	DATE

OWNER / APPLICANT / DEVELOPER:  
HORSE FARM, LLC.  
ADDRESS: 9200 RUMSEY ROAD, SUITE 200  
COLUMBIA, MD 21045  
CONTACT: RICHARD HAYWARD  
PHONE: 410-997-7222



**RW-7**  
**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 1 PROPOSED RETAINING WALLS NOS. 1-3 TYPICAL DETAILS HOWARD COUNTY, MARYLAND		
DATE	REVISIONS	JOB NO.: 071211X2
9/14/2017	PROPOSED GRADING / WALL LAYOUTS	SCALE: AS SHOWN
		DATE: 9/1/16
		DRAWN BY: MEW
		DESIGN BY: MEW
		REVIEW BY: RPM
		SHEET: 44 OF 44