

**GENERAL NOTES**

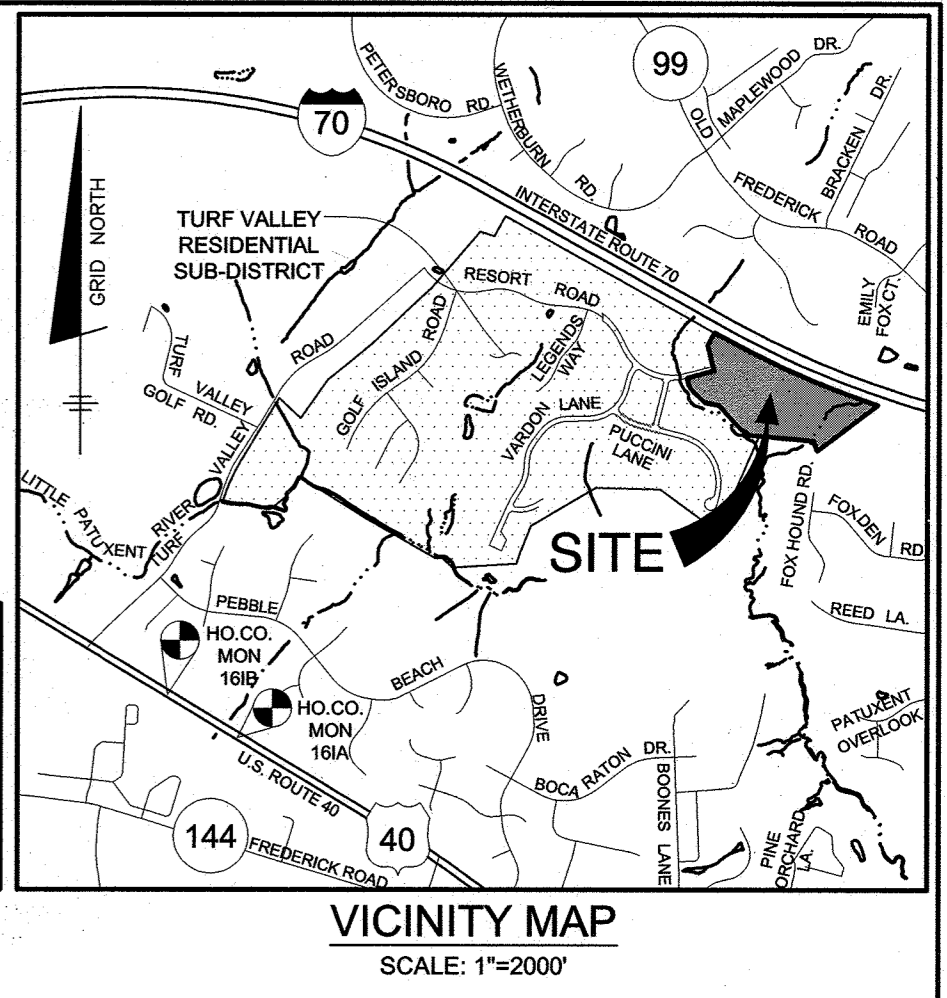
- THIS PROJECT IS IN CONFORMANCE WITH THE LATEST COUNTY HOWARD COUNTY STANDARDS UNLESS ALTERNATE COMPLIANCES HAVE BEEN APPROVED AND NOTED BELOW.
- THE SUBJECT PROPERTY IS ZONED PGCC PER THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN.
- THIS PROJECT IS SUBJECT TO THE 2ND AMENDED TURF VALLEY RESIDENTIAL SUB-DISTRICT FINAL DEVELOPMENT PLAN RECORDED AS PLAT #20288-20287 ON OCTOBER 24, 2006 AND THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENTS NO. 161A AND 161B WERE USED FOR THIS PROJECT.
- TRACT BOUNDARY IS BASED ON A FIELD SURVEY PERFORMED BY JOHN B. MILDBERG IN MARCH, 2006.
- THE EXISTING TOPOGRAPHY SHOWN IS BASED ON AERIAL TOPOGRAPHIC SURVEY PERFORMED BY WINGS AERIAL MAPPING, CO., FLOWN ON OR ABOUT JANUARY, 2006 AND BY GRADES SHOWN ON THE BLUFFS AT TURF VALLEY ROAD CONSTRUCTION PLANS, F-16-004.
- THE EXISTING UTILITIES SHOWN ON THESE PLANS HAVE BEEN TAKEN FROM AERIAL SURVEY, APPROVED CONTRACT DRAWINGS, AND FIELD SURVEYED LOCATIONS. IF NECESSARY, THE CONTRACTOR SHALL ADJUST ANY OR ALL STRUCTURE TOP ELEVATIONS TO MATCH PROPOSED GRADES.
- NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS, STREAMS, THEIR REQUIRED BUFFERS, 100-YR FLOODPLAIN, FOREST CONSERVATION EASEMENTS, OR STEEP SLOPES 25% OR GREATER THAT ARE MORE THAN 20,000 SF OF CONTIGUOUS AREA LOCATED ON THIS SITE. THERE IS ONE AREA OF STEEP SLOPES GREATER THAN 15% ON-SITE LOCATED AROUND LOTS 1-7. THE TOTAL AREA OF THE STEEP SLOPES IS 27,441 SF. HOWEVER, 10,514 SF OF THAT WAS CREATED BY THE DEVELOPER DURING THE CONSTRUCTION OF RESORT ROAD UNDER F-16-004. IT WAS ALWAYS THE INTENTION FOR RESORT ROAD TO BE EXTENDED IN THE FUTURE, AND AS SUCH, IT WAS ALWAYS KNOWN THAT THESE MAN-MADE STEEP SLOPES WOULD BE DISTURBED UPON THAT EXTENSION. THE DEPARTMENT OF PLANNING AND ZONING DETERMINED THIS DISTURBANCE TO BE A NECESSARY DISTURBANCE.
- THE WETLAND LIMITS FOR TURF VALLEY ARE BASED ON A STUDY CONDUCTED BY EXPLORATION RESEARCH, INC. AND VERIFIED BY ECO-SCIENCE PROFESSIONALS, INC. ON MAY 26 2016. THE LIMITS SHOWN ARE IN ACCORDANCE WITH THOSE SHOWN ON THE 4TH AMENDMENT TO THE TURF VALLEY COMPREHENSIVE SKETCH PLAN (S-86-13, PB 368) APPROVED JULY 28, 2006.
- THE 100-YEAR FLOODPLAIN LIMITS SHOWN ALONG THE STREAM ON THE SOUTHWEST PORTION OF THE SITE IS BASED ON A STUDY PREPARED BY BENCHMARK ENGINEERING, INC. IN SEPTEMBER, 2016 AND APPROVED BY THE DEPARTMENT OF PLANNING AND ZONING UNDER SP-16-011 ON MARCH 29, 2017. THE FLOODPLAIN LIMIT ALONG THE STREAM ON THE SOUTHEAST PORTION OF THE SITE (LITTLE PATUXENT RIVER TRIBUTARY 15) IS BASED ON FEMA FLOOD INSURANCE MAP NUMBER 24027C0090D, EFFECTIVE NOVEMBER 6, 2013.
- THE DEPARTMENT OF PLANNING AND ZONING HAS DETERMINED THAT THE DISTURBANCE TO THE STREAM AND WETLAND BUFFERS ASSOCIATED WITH THE INSTALLATION OF THE UNDERGROUND UTILITIES IS NECESSARY IN ACCORDANCE WITH SUBSECTION 16.116(c) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
- TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO CEMETERIES, BURIAL GROUNDS OR HISTORIC STRUCTURES LOCATED ON THE SUBJECT PROPERTY.
- THE NOISE STUDY WAS PREPARED BY HUSH ACOUSTICS DATED OCTOBER 23, 2016 AND APPROVED UNDER SP-16-011. THE 65 dBA 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 65 dBA NOISE EXPOSURE. THE 65 dBA NOISE LINE ESTABLISHED BY HOWARD COUNTY IS TO ALERT DEVELOPERS, BUILDERS, AND FUTURE RESIDENTS THAT AREAS BEYOND THIS THRESHOLD MAY EXCEED GENERALLY ACCEPTED NOISE LEVELS ESTABLISHED BY THE U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT.
- THE TRAFFIC STUDY WAS PREPARED BY TRAFFIC GROUP ON JANUARY 7, 2005 AND WAS APPROVED UNDER THE 4TH AMENDED COMPREHENSIVE SKETCH PLAN ON APRIL 27, 2006.
- THIS SITE IS WITHIN THE METROPOLITAN DISTRICT.
- WATER AND SEWER IS PUBLIC. THE CONTRACT NUMBER IS 14-4985-D. THE DRAINAGE AREA IS THE LITTLE PATUXENT. THIS SUBDIVISION IS SUBJECT TO SECTION 16.122B OF THE HOWARD COUNTY CODE. PUBLIC WATER AND/OR SEWER SERVICE HAS BEEN GRANTED UNDER THE TERMS AND PROVISIONS, THEREOF, EFFECTIVE 1/1/00, ON WHICH DATE DEVELOPER AGREEMENT #24-4985-D WAS FILED AND ACCEPTED.
- THE GEO-TECHNICAL REPORT WAS PREPARED BY HILLIS-CARNES ENGINEERING ASSOCIATES, DATED APRIL 26, 2016.
- THE FOREST STAND DELINEATION FOR THIS PARCEL WAS PREPARED BY ECO-SCIENCE PROFESSIONALS, INC. ON JULY 16, 2007. THE FOREST CONSERVATION OBLIGATION WAS PREVIOUSLY PROVIDED UNDER POD E-1, PHASE 1, F-17-095 VIA THE ON-SITE RETENTION OF NET TRACT AREA FOREST WITHIN FOREST CONSERVATION EASEMENTS.
- LANDSCAPING IS PROVIDED IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL VIA A CERTIFIED LANDSCAPE PLAN AS PART OF THIS PLAN SET. FINANCIAL SURETY FOR THE REQUIRED PERIMETER AND INTERNAL RESIDENTIAL LANDSCAPE OBLIGATIONS SHALL BE POSTED AS PART OF THE GRADING PERMIT UNDER THE FUTURE SITE DEVELOPMENT PLAN.
- STORMWATER MANAGEMENT IS PROVIDED BASED ON ENVIRONMENTAL SITE DESIGN TO THE MAXIMUM EXTENT PRACTICAL (ESD TO THE MEP). FOR THIS PROJECT, ONE (M-8) MICRO BIO-RETENTION TANK AND FOURTEEN (M-5) SWI D Wells SHALL BE PROVIDED TO TREAT THE PROPOSED IMPERVIOUS SURFACES. SEE SUMMARY TABLE ON THIS SHEET. ALL SWI D Wells SHALL BE PRIVATELY OWNED AND PRIVATELY MAINTAINED.
- THE ARTICLES OF INCORPORATION FOR THE HOMEOWNERS ASSOCIATION SHALL BE ACCEPTED BY THE STATE DEPARTMENT OF ASSESSMENTS AND TAXATION PRIOR TO THE RECORDED OF THE SUBDIVISION PLAN.
- THE PURPOSE OF OPEN SPACE LOT 8 IS TO CREATE A BUFFER BETWEEN THE BUILDABLE LOTS AND THE SURROUNDING PROPERTIES AND FOR THE USE OF THE RESIDENCES WITHIN THE SUBDIVISION. IT SHALL BE DEDICATED TO THE HOMEOWNERS ASSOCIATION. THE PURPOSE OF OPEN SPACE LOT 9 IS TO PRESERVE ENVIRONMENTAL AREAS SUCH AS WETLANDS AND WETLANDS BUFFER. IT SHALL BE DEDICATED TO THE CONDOMINIUM ASSOCIATION. THE PURPOSE OF OPEN SPACE LOT 10 IS TO CREATE A BUFFER FROM FUTURE DEVELOPMENT OF PARCEL 'AA' AND ADJACENT POD E-1 SUBDIVISION AND TO PRESERVE THE ENVIRONMENTAL AREAS SUCH AS WETLANDS, WETLANDS BUFFER, AND STREAM BUFFER. IT SHALL BE DEDICATED TO THE TURF VALLEY PROPERTY OWNERS ASSOCIATION, INC. THE PURPOSE OF GOLF SPACE LOT 11 IS TO PRESERVE THE ENVIRONMENTAL AREAS SUCH AS WETLANDS, STREAMS, THEIR BUFFERS, 100-YEAR FLOODPLAIN AND FOREST CONSERVATION EASEMENT. IT SHALL REMAIN THE PROPERTY OF THE OWNER/DEVELOPER FOR GOLF AND GOLF ANCILLARY USE.
- THIS PROJECT IS EXEMPT FROM RECREATIONAL OPEN SPACE REQUIREMENTS SINCE IT IS ZONED PGCC.
- THIS PROJECT IS EXEMPT FROM THE MODERATE INCOME HOUSING UNIT REQUIREMENT (COUNCIL BILL 35-2013) SINCE IT IS ZONED PGCC.
- STREET LIGHT PLACEMENT AND TYPE OF FIXTURES AND POLES SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (2006), SECTION 5.5.A. A MINIMUM OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
- TRAFFIC CONTROL DEVICES:
  - THE "T" SIGN AND STREET NAME SIGN (SNS) ASSEMBLY FOR THIS DEVELOPMENT MUST BE INSTALLED BEFORE THE BASE PAVING IS COMPLETED.
  - THE TRAFFIC CONTROL DEVICE LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE FIELD APPROVED BY HOWARD COUNTY TRAFFIC DIVISION (410-313-2430) PRIOR TO THE INSTALLATION OF ANY OF THE TRAFFIC CONTROL DEVICES.
  - ALL TRAFFIC CONTROL DEVICES AND THEIR LOCATIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUMUTCD).
  - ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED "QUICK PUNCH", SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. THE ANCHOR SHALL NOT EXTEND MORE THAN TWO "QUICK PUNCH" HOLES ABOVE GROUND LEVEL. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
- APPLICABLE PREVIOUS HOWARD COUNTY FILE REFERENCES:
  - S-86-013, ECP-15-077, SP-16-011, F-16-004, F-17-095, S-11-002.
  - WP-15-153. AN ALTERNATE COMPLIANCE TO SECTION 16.146 AND SECTION 16.1202(C) OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS WAS APPROVED ON JUNE 16, 2015 WITH THE FOLLOWING CONDITIONS:
    - THE PETITIONER SHALL SUBMIT TO DPZ A PRELIMINARY PLAN IN ACCORDANCE WITH S-11-002 AND THE REQUIREMENTS OF SECTION 16.146 OF THE COUNTY CODE ON OR BEFORE JUNE 5, 2016. THIS PLAN MAY OMIT THE AREA WITHIN THE LIMITS OF THE BLUFFS AT TURF VALLEY, RESORT ROAD EXTENSION FINAL SUBDIVISION PLAN.
    - THE PETITIONER SHALL INDICATE THE BULK PARCELS RECORDED AS PART OF THE FINAL SUBDIVISION PLAN FOR THE BLUFFS AT TURF VALLEY, RESORT ROAD EXTENSION AS NON-BUILDABLE.
    - THE PETITIONER SHALL SUBMIT A FOREST CONSERVATION PLAN TO INCLUDE THE RELATED DATA WITHIN THE LIMITS OF DISTURBANCE OF THE FINAL SUBDIVISION PLAN SUBMITTED FOR THE BLUFFS AT TURF VALLEY, RESORT ROAD EXTENSION UPON SUBMISSION OF THE FIRST OF THE FOLLOWING:
      - A FINAL SUBDIVISION PLAN RESUBDIVIDING BULK PARCELS RECORDED AS PART OF THE BLUFFS AT TURF VALLEY, RESORT ROAD EXTENSION; OR
      - A FINAL SUBDIVISION PLAN SUBDIVIDING PARCEL 706
      - A SITE DEVELOPMENT PLAN LOCATED ON PARCEL 706.
- WP-16-142. WAS APPROVED ON JUNE 21, 2016 WITH THE FOLLOWING CONDITIONS:
  - THE PETITIONER SHALL SUBMIT TO THE DEPARTMENT OF PLANNING AND ZONING A PRELIMINARY PLAN OR A PRELIMINARY-EQUIVALENT SKETCH PLAN IN ACCORDANCE WITH THE APPROVED SKETCH PLAN S-11-002 AND THE REQUIREMENTS OF SECTION 16.146 OF THE HOWARD COUNTY CODE WITHIN 21 DAYS OF WAIVER APPROVAL (ON OR BEFORE JULY 12, 2016). IF THE SUBMISSION IS NOT MADE BY THE ESTABLISHED DEADLINE THE PLAN SHALL BE VOIDED AND THE APPLICATION FOR PLAN APPROVAL CONSIDERED WITHDRAWN IN ACCORDANCE WITH SUBSECTION 16.144(O)(1)(V).
  - THE PETITIONER IS ADVISED THAT THE GRANTING OF 114 HOUSING UNIT ALLOCATIONS TO S-11-002 WAS RESCINDED UPON VOIDING OF THE PLAN DUE TO THE MISSED MILESTONE DEADLINE. THEREFORE, UPON REACTION ALLOCATIONS MUST AGAIN BE GRANTED AND THE OPEN/CLOSED SCHOOLS TEST REPEATED. ACCORDING TO THE DPZ RESEARCH DIVISION THE PLAN WILL RECEIVE 114 ALLOCATIONS FOR THE CURRENT 2018 ALLOCATION YEAR, THE GROWTH AND REVITALIZATION - ELLICOTT CITY PLANNING AREA. IT WILL TAKE THE SCHOOLS TEST AND PASS FOR THE MANOR WOODS SCHOOL DISTRICT, THE NORTHERN SCHOOL REGION AND THE MOUNT VERN MIDDLE SCHOOL DISTRICT GIVEN THAT THE APPO TEST WILL PASS/ THE PLAN WILL BE ACCEPTED FOR PROCESSING FOR THIS 114-UNIT PHASE.
  - THE PETITIONER IS STRONGLY ADVISED THAT ADDITIONAL REQUESTS FOR WAIVERS OF SUBSECTION 16.144(R)(1)(U) WITH RESPECT TO S-11-002 MAY BE DENIED.
- THE BLUFFS AT TURF VALLEY (S-11-002) CONSTITUTED 114 UNITS WHICH MET THE SKETCH PLAN MILESTONE DATES OF 7-1-2010 THRU 3-31-2011 FOR 114 UNITS FOR YEAR 2013 ALLOCATION AS ESTABLISHED BY THE PHASING PLAN DATED 4-28-2008. THIS PLAN PROPOSES 87 UNITS. THE 17 REMAINING UNITS FROM S-11-002 ARE BEING TRANSFERRED TO VILLAGES AT TURF VALLEY, PHASE 3 (F-08-085) TO REPLACE SOME OF THE 35 UNITS WHICH TRANSFERRED FROM VILLAGES AT TURF VALLEY PHASE 3 (F-08-085) TO VILLAGES AT TURF VALLEY PHASE 5 (F-15-079).

# ROAD CONSTRUCTION PLANS

## RAVENWOOD AT TURF VALLEY

(FORMERLY THE BLUFFS AT TURF VALLEY)

### A Resubdivision of Non-Buildable Bulk Parcels 'G' and 'H' established under Turf Valley, Pod E-1, Phase 1, F-17-095

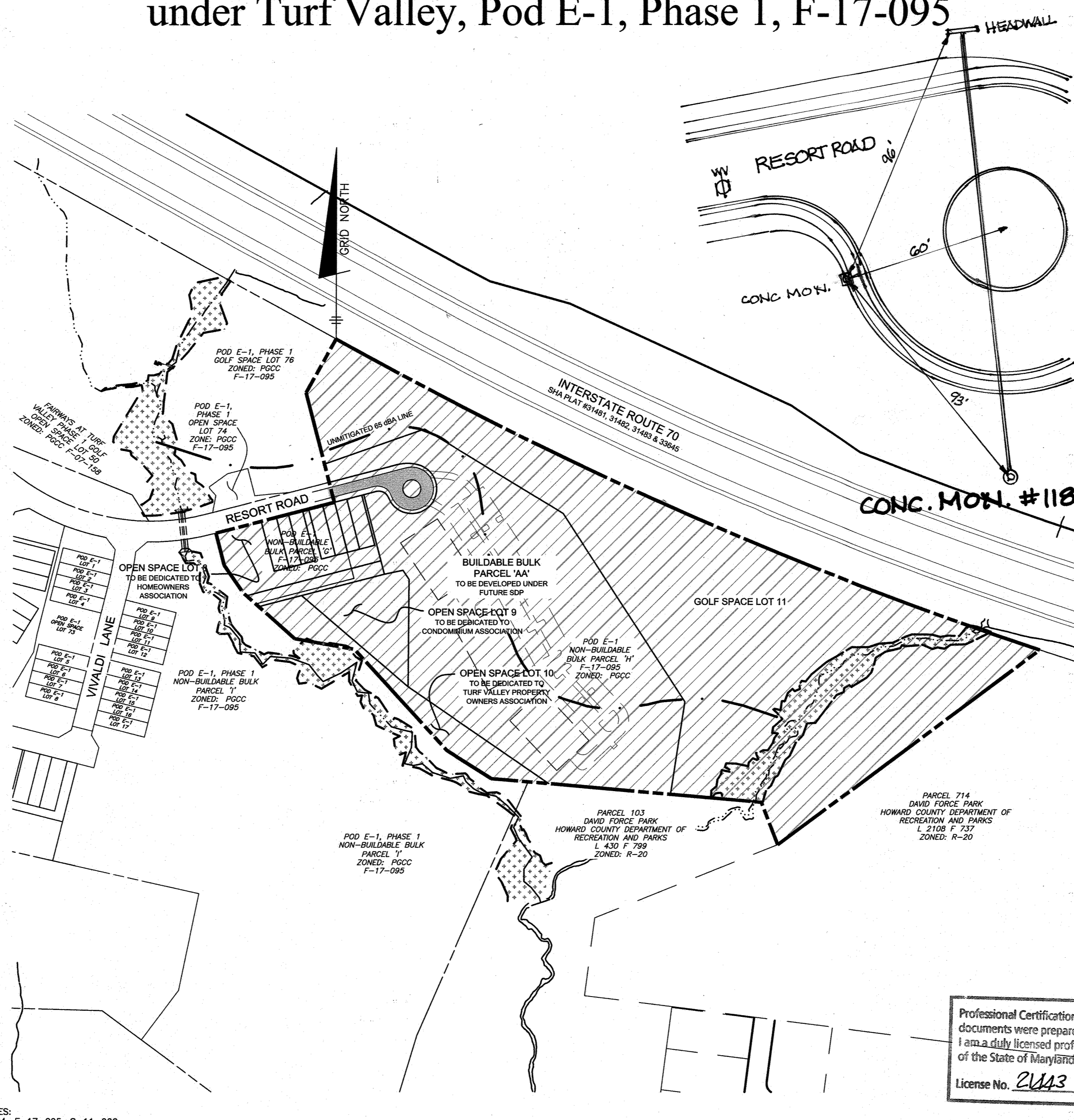
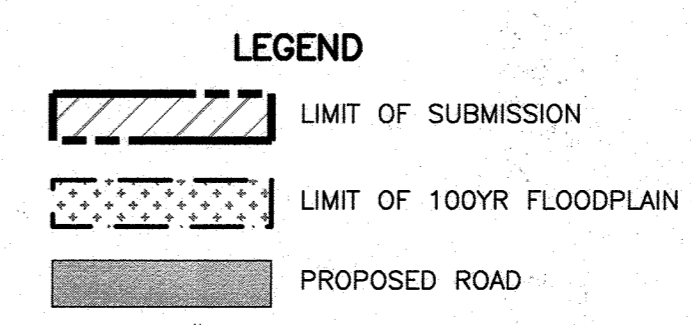


BENCHMARKS				
NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION
161A	589,509.3676	1,346,343.632	462.988	RT. 40 0.35 MILES WEST OF RT-144 JOINT
161B	590,475.2538	1,344,753.9350	469.892	RT.40 0.8 MILES EAST OF MARRIOTTVILLE ROAD

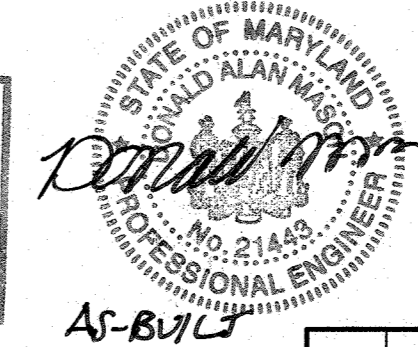
SHEET INDEX	
SHEET	TITLE
1	TITLE SHEET
2	ROAD PLAN, PROFILE, STRIPING, STREET LIGHTING AND DETAILS
3	STORM DRAIN DRAINAGE AREA MAP, PROFILES, AND DETAILS
4	STORMWATER MANAGEMENT DRAINAGE AREA MAP
5	STORMWATER MANAGEMENT PLAN, DETAILS, AND NOTES
6	STORMWATER MANAGEMENT PLAN, DETAILS, AND NOTES AND BORING LOGS
7	LANDSCAPE PLAN
8	GRADING, SEDIMENT & EROSION CONTROL PLAN
9	SEDIMENT & EROSION CONTROL NOTES AND SEQUENCE OF CONSTRUCTION
10	SEDIMENT & EROSION CONTROL DETAILS

- AS-BUILT NOTES:**
- HORIZONTAL AND VERTICAL DATUM FOR THIS AS-BUILT IS BASED ON THE MARYLAND STATE REFERENCE SYSTEM NAD 83 / ADJ 07AS PROJECTED FROM HO CO GEODETIC CONTROL STATIONS 1618 AND 1748.
  - THE INSTRUMENTS USED IN PERFORMING THE AS-BUILT WERE A 5" TOTAL STATION AND PRISM AND RTK GPS.
  - THIS AS-BUILT WAS PERFORMED BY BENCHMARK ENGINEERING, INC.

R/W PT. NO.	DESCRIPTION	ELEVATION
113	REBAR & CAP	462.89'
115	REBAR & CAP	462.78'
116	REBAR & CAP	462.19'
117	REBAR & CAP	463.79'
118	CONC. MON.	462.34'
119	REBAR & CAP	462.68'



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. 2143, Expiration Date: 12-21-22



AS-BUILT CERTIFICATION  
 I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications.  
 Donald Mason, P.E. Date: 9/21/21

STORMWATER MANAGEMENT SUMMARY TABLE																
Lot	Address	Practice	DA (#)	Imp Area (sf)	% Imp	Rv	P		Total EStv		Pp		Ownership			
							Required	Provided	Required	Provided	Required (left) Provided	Required (left) Provided				
Parcel 'AA'	NA	(M-6) Micro Bio-Retention	#1	22,684	12,906	57%	0.58	1.2	454	1366	2125	2150	2.0	Private		
1	10445 Resort Road	(M-5) Drywell	#1	825	825	100%	0.95	2.6			170	176	2.6	Private		
2	10445 Resort Road	(M-5) Drywell	#2	825	825	100%	0.95	2.6			170	176	2.6	Private		
3	10443 Resort Road	(M-5) Drywell	#3	825	825	100%	0.95	2.6			170	176	2.6	Private		
4	10443 Resort Road	(M-5) Drywell	#4	825	825	100%	0.95	2.6			170	176	2.6	Private		
5	10441 Resort Road	(M-5) Drywell	#5	825	825	100%	0.95	2.6			170	176	2.6	Private		
6	10441 Resort Road	(M-5) Drywell	#6	825	825	100%	0.95	2.6			170	176	2.6	Private		
4	10437 Resort Road	(M-5) Drywell	#7	825	825	100%	0.95	2.6			170	176	2.6	Private		
4	10437 Resort Road	(M-5) Drywell	#8	825	825	100%	0.95	2.6			170	176	2.6	Private		
5	10435 Resort Road	(M-5) Drywell	#9	825	825	100%	0.95	2.6			170	176	2.6	Private		
5	10435 Resort Road	(M-5) Drywell	#10	825	825	100%	0.95	2.6			170	176	2.6	Private		
6	10433 Resort Road	(M-5) Drywell	#11	825	825	100%	0.95	2.6			170	176	2.6	Private		
6	10433 Resort Road	(M-5) Drywell	#12	825	825	100%	0.95	2.6			170	176	2.6	Private		
7	10431 Resort Road	(M-5) Drywell	#13	825	825	100%	0.95	2.6			170	176	2.6	Private		
7	10431 Resort Road	(M-5) Drywell	#14	825	825	100%	0.95	2.6			170	176	2.6	Private		
									Totals per Individual Drainage Area	34,234	24,456		462	4620		
									Totals per Overall Site Pe Delineation	113,636	29,111	30%	0.32	1.6	4648	

Notes:  
 1. The Pp required column is based on individual drainage area imperviousness.  
 2. There is 4,655 sf of impervious area not treated via on-site ESD.  
 1,715 sf of this area is made up of road paving and sidewalk and 2,940 of this area is made up of the individual driveways. These areas will drain back towards MG #2 constructed under F-16-004 and thus not be treated via new ESD practice.

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 [Signature] 1/8/2019  
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 1/29/19  
 CHIEF, DIVISION OF LAND DEVELOPMENT

[Signature] 1/28/19  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

NO.	DATE	REVISION

**BENCHMARK ENGINEERING, INC.**  
 ENGINEERS & LAND SURVEYORS & PLANNERS  
 8480 BALTIMORE NATIONAL PIKE SUITE 315 • ELLICOTT CITY, MARYLAND 21043  
 (P) 410-465-6105 (F) 410-465-6644  
 WWW.BEI-CIVLENGINEERING.COM

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. 2143, Expiration Date: 12-21-22

OWNER:  
 MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP  
 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093  
 410-825-8400

DEVELOPER:  
 MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP  
 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093  
 410-825-8400

**RAVENWOOD AT TURF VALLEY**  
 LOTS 1-7, OPEN SPACE LOTS 8-10, GOLF SPACE LOT 11 & BUILDABLE BULK PARCEL 'A'  
 established under Turf Valley, Pod E-1, Phase 1, F-17-095  
 (A Resubdivision of Non-Buildable Bulk Parcel 'G' and 'H')

TAX MAP: 17 - GRID: 13 - PARCEL: p/o 706 - ZONED: PGCC  
 ELECTION DISTRICT NO. 2 - HOWARD COUNTY, MARYLAND

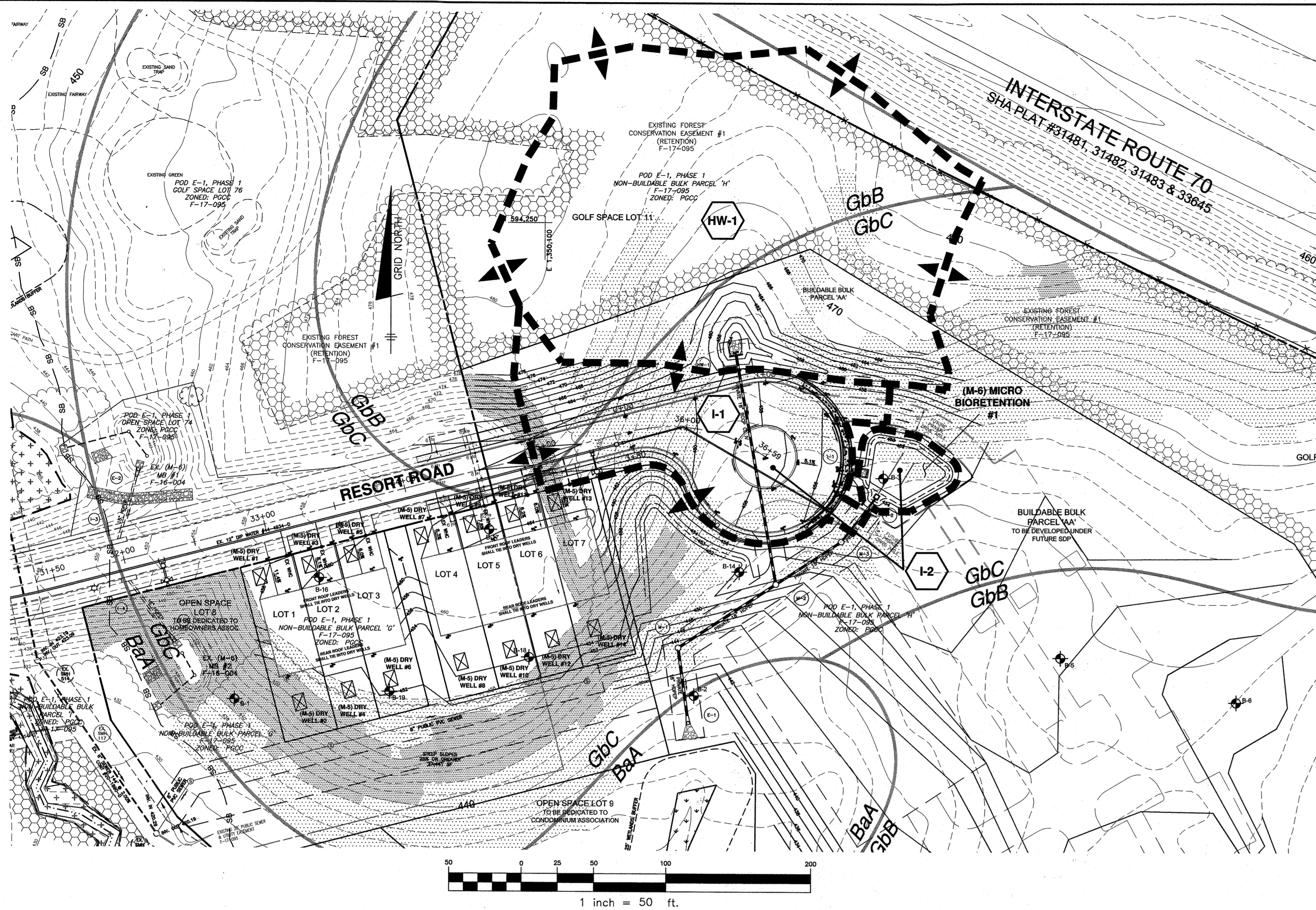
TITLE SHEET

DATE: NOVEMBER 1, 2018 BEI PROJECT NO. 2852  
 SCALE: AS SHOWN SHEET 1 OF 10









STORM DRAIN STRUCTURE SCHEDULE									
STRUCT NO.	TYPE	STD. DETAIL	LOCATION		INVERT IN	INVERT OUT	TOP ELEVATION	THROAT ELEVATION	MAINTENANCE
			Northing / Easting						
INLETS									
I-1	Flow Thru A-5	SHA MD 374.68	N 594080.34	E 1350304.02	455.3718	448.82(4")	455.9716	455.3718	PUBLIC
I-2	S Inlet	Ho.Co. D-4.22	N 594061.29	E 1350325.58		448.25(12")	453.00(12")		PRIVATE
MANHOLES									
M-1	4' Diameter Pre-Cast	Ho.Co. G-5.12	N 593956.12	E 1350192.97		437.82(18")	437.82(18")	444.00(18")	PRIVATE
M-2	4' Diameter Pre-Cast	Ho.Co. G-5.12	N 594000.38	E 1350260.27	446.00(18")	446.35(12")	444.00(18")	452.08(18")	PRIVATE
M-3	4' Diameter Pre-Cast	Ho.Co. G-5.12	N 594030.01	E 1350305.34	447.48(12")	447.48(15")	456.60(18")		PRIVATE
HEADWALLS & END SECTIONS									
HW-1	TYPE 'C'	Ho. Co. D-5.21	N 594159.15	E 1350232.29	462.51	462.51			PRIVATE
E-1	18" HDPEP	NA	N 593903.00	E 1350200.27		463.90(18")	436.00(18")		PRIVATE

STRUCTURE LOCATION FOR MANHOLES IS AT THE CENTER OF THE MANHOLE  
 STRUCTURE LOCATION FOR TYPE 'A' INLETS IS AT THE MIDPOINT ALONG THE GUTTER PAN  
 STRUCTURE LOCATION FOR TYPE 'S' INLETS IS AT THE CENTER OF THE GRATE  
 STRUCTURE LOCATION FOR END SECTIONS IS AT THE MIDPOINT OF THE END OF THE STRUCTURE  
 PRECAST STRUCTURES MEETING HS-20 LOADING MAY BE USED.

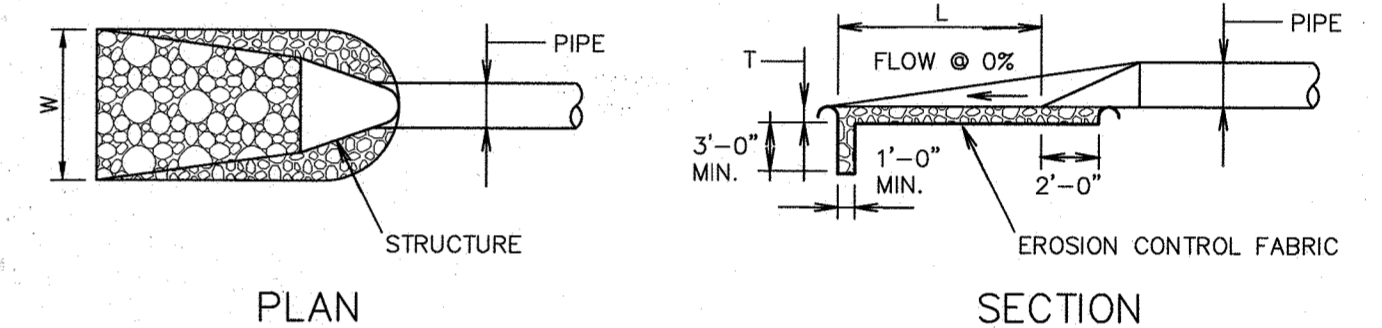
STORM DRAIN PIPE SCHEDULE			
SIZE	TYPE	LENGTH (L.F.)	MAINTENANCE
12"	HDPEP	40	PRIVATE
15"	HDPEP	54	PRIVATE
18"	HDPEP	135	PRIVATE
18"	RCCP CL IV	161	PRIVATE

All pipes shall have smooth interior. No interior corrugations.

AREA AND "C" FACTOR TABULATION					
PHASE	INLET #	ZONING (Z)	AREA (Ac) (A)	"C" FACTOR (C)<25	% IMPERVIOUS (P)>25
NA	HW-1	PGCC	1.41	0.19	0.0
NA	I-1	PGCC	0.52	0.76	83.2
NA	I-2	PGCC	0.59	0.70	73.5

CONSTRUCTION SPECIFICATIONS

1. THE SUBGRADE FOR THE FILTER, RIP-RAP, OR GABION SHALL BE PREPARED TO THE REQUIRED LINES AND GRADES. ANY FILL REQUIRED IN THE SUBGRADE SHALL BE COMPACTED TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
2. THE ROCK OR GRAVEL SHALL CONFORM TO THE SPECIFIED GRADING LIMITS WHEN INSTALLED RESPECTIVELY IN THE RIP-RAP OR FILTER.
3. GEOTEXTILE CLASS C28 OR BETTER SHALL BE PROTECTED FROM PUNCHING, CUTTING, OR TEARING. ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE SHALL BE PREPARED BY PLACING ANOTHER PIECE OF GEOTEXTILE FABRIC OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE FABRIC. ALL OVERLAPS WHETHER FOR REPAIRS OR FOR JOINING TWO PIECES OF GEOTEXTILE FABRIC SHALL BE A MINIMUM OF ONE FOOT.
4. STONE FOR THE RIP-RAP OR GABION OUTLETS MAY BE PLACED BY EQUIPMENT. THEY SHALL BE CONSTRUCTED TO THE FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. THE STONE FOR THE RIP-RAP OR GABION OUTLETS SHALL BE DELIVERED AND PLACED IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. RIP-RAP SHALL BE PLACED IN A MANNER TO PREVENT DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE FABRIC. HAND PLACEMENT WILL BE REQUIRED TO THE EXTENT NECESSARY TO PREVENT DAMAGE TO THE PERMANENT WORKS.
5. THE STONE SHALL BE PLACED SO THAT IT BLENDS IN WITH THE EXISTING GROUND. IF THE STONE IS PLACED TOO HIGH THEN THE FLOW WILL BE FORCED OUT OF THE CHANNEL AND SCOUR ADJACENT TO THE STONE WILL OCCUR.



STRUCTURE	Q <sub>2</sub> fps	V <sub>2</sub> fps	d <sub>2</sub> (ft)	Q <sub>10</sub> fps	V <sub>10</sub> fps	d <sub>10</sub> (ft)	d50	LENGTH(L)	WIDTH(W)	THICK.(T)	SHA CLASS
E-1	2.54	8.73	0.33	4.53	10.30	0.45	9.5"	15'-0"	13'-4.5"	19"	I

OUTLET PROTECTION DETAIL  
NOT TO SCALE

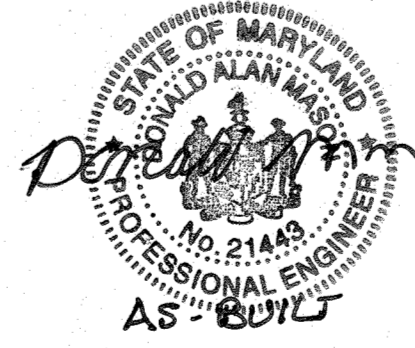
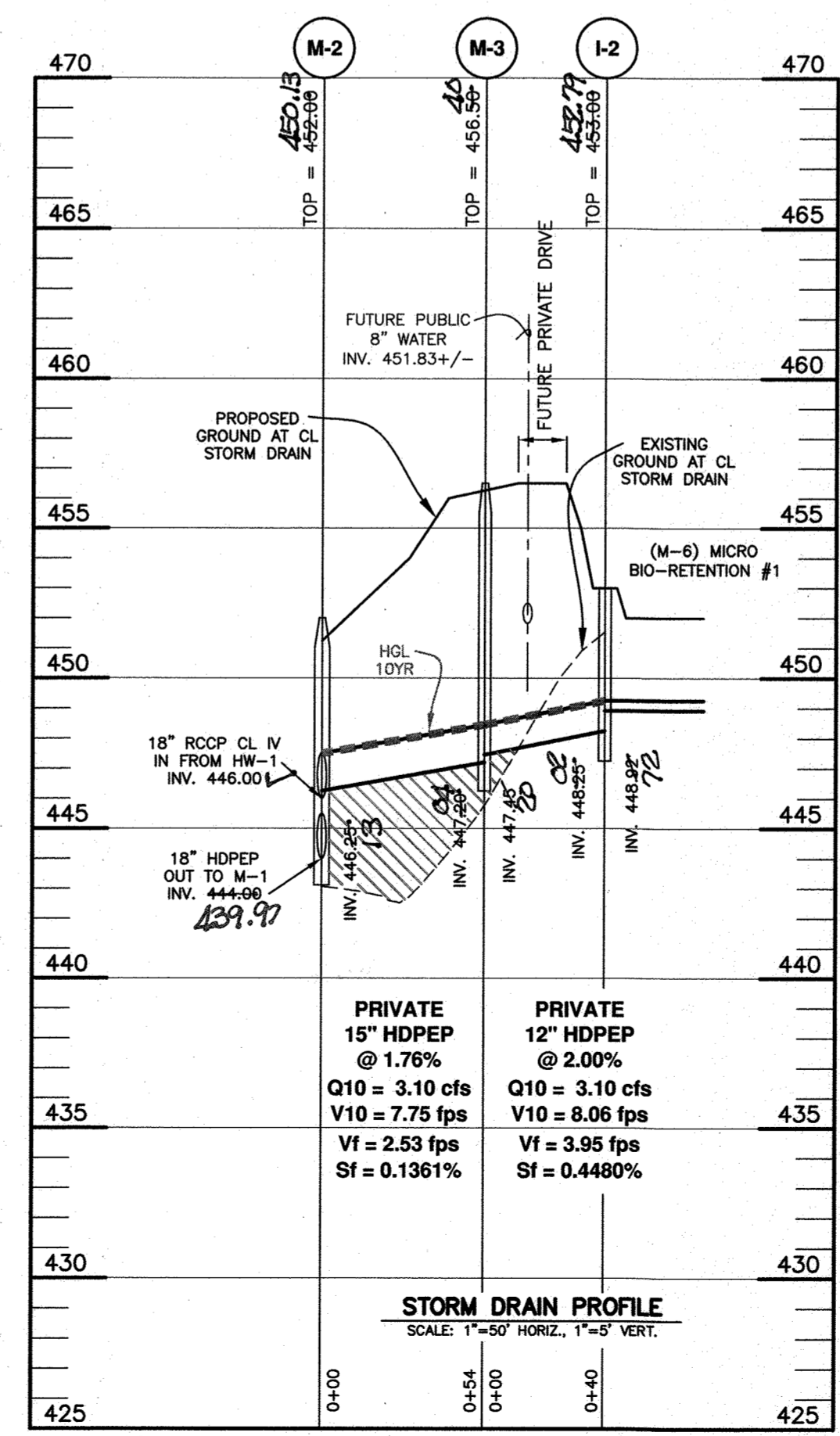
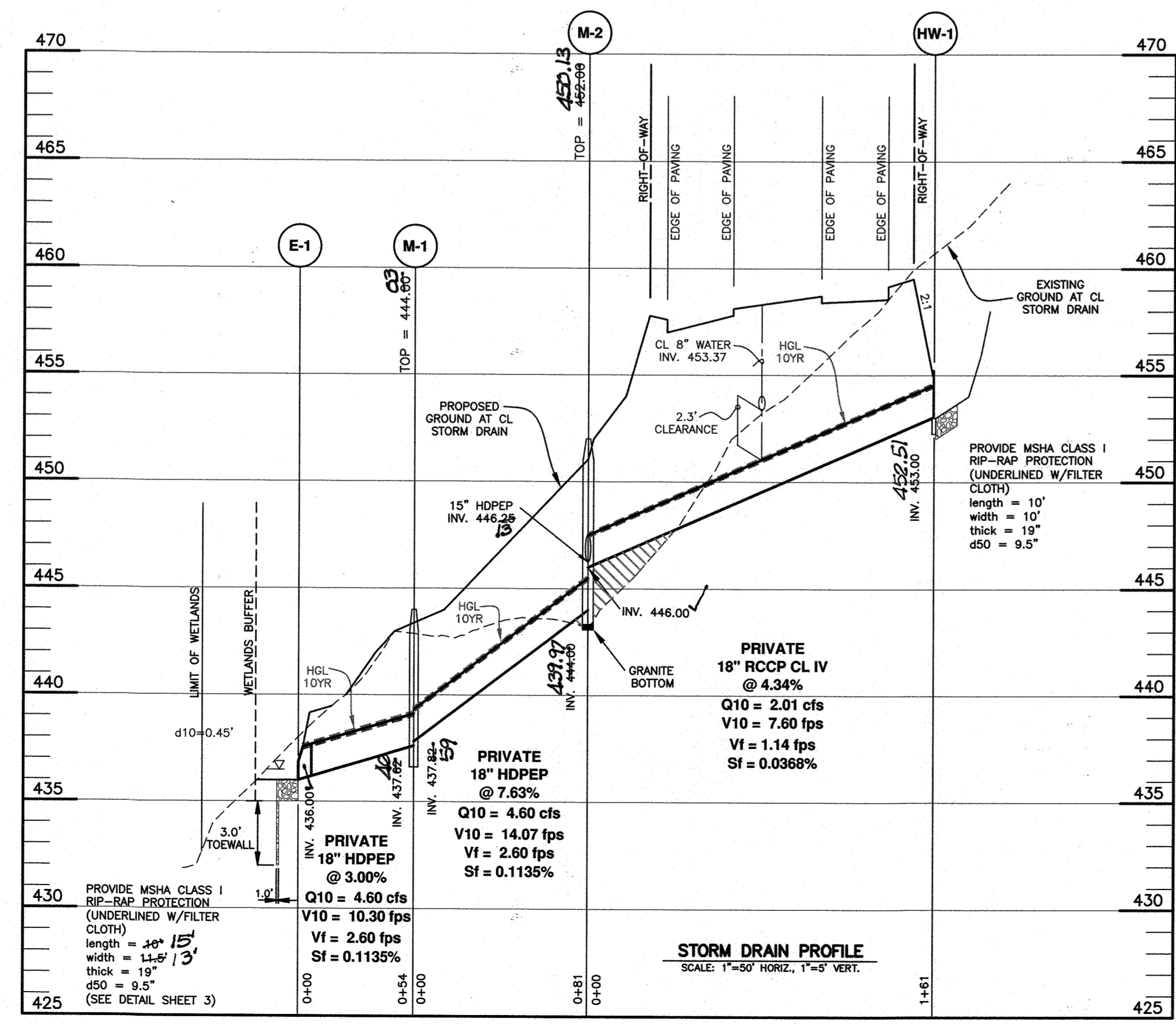
LEGEND

- EXISTING CONTOURS
- SITE BOUNDARY
- 100YR FLOODPLAIN
- EXISTING WETLANDS
- EXISTING CL STREAM
- SB STREAM BUFFER
- EXISTING TREELINE
- SOILS DIVISION LINE
- SOILS TYPE
- STEEP SLOPES 25% OR GREATER
- STEEP SLOPES 15% TO 24.99%
- FOREST CONSERVATION EASEMENT
- DRAINAGE AREA

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 [Signature] 1/8/2019  
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 1/29/19  
 CHIEF, DIVISION OF LAND DEVELOPMENT

[Signature] 1-28-19  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

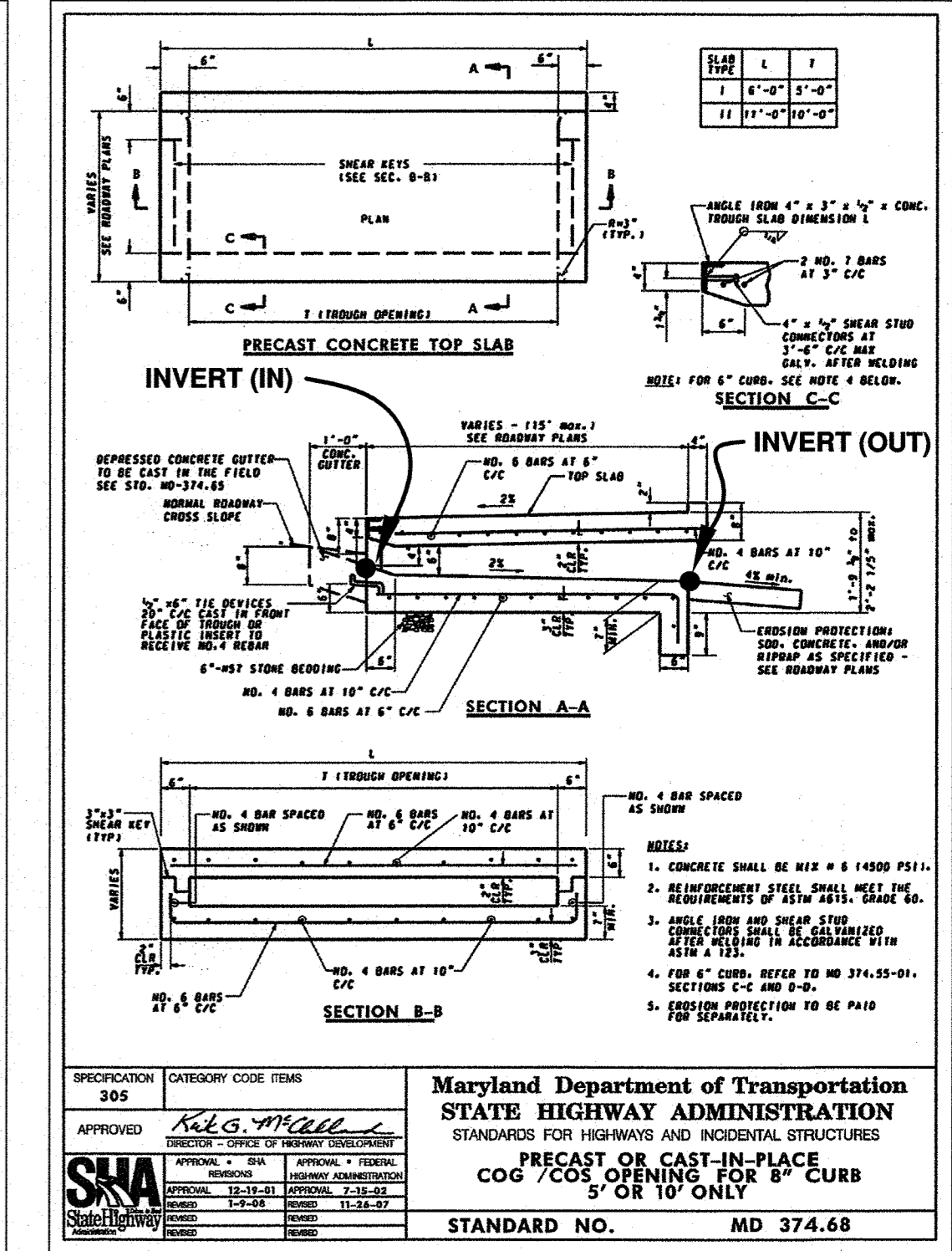
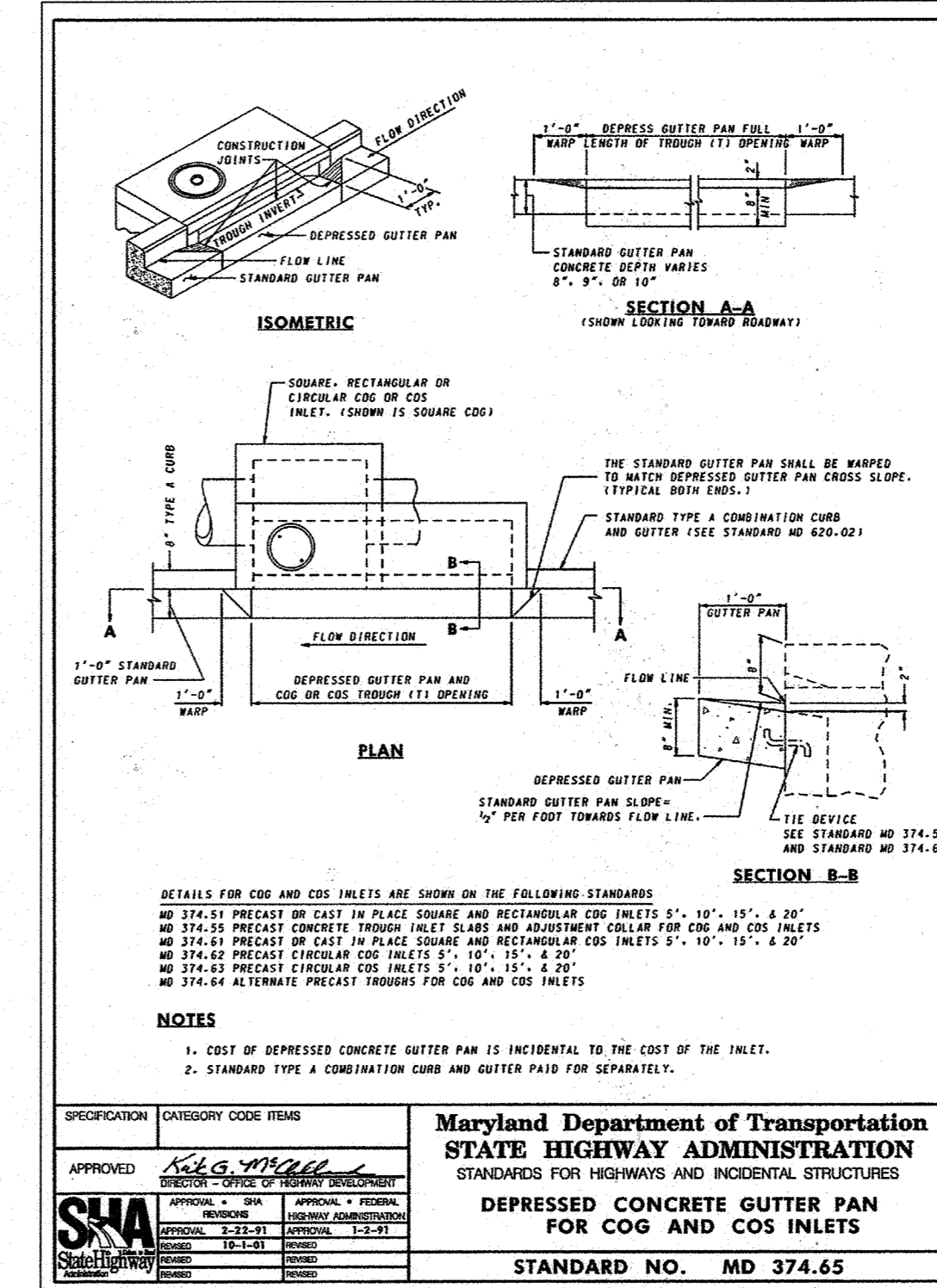
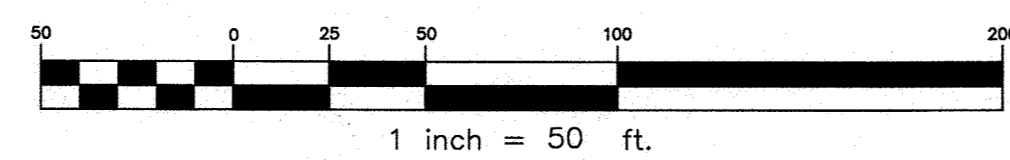
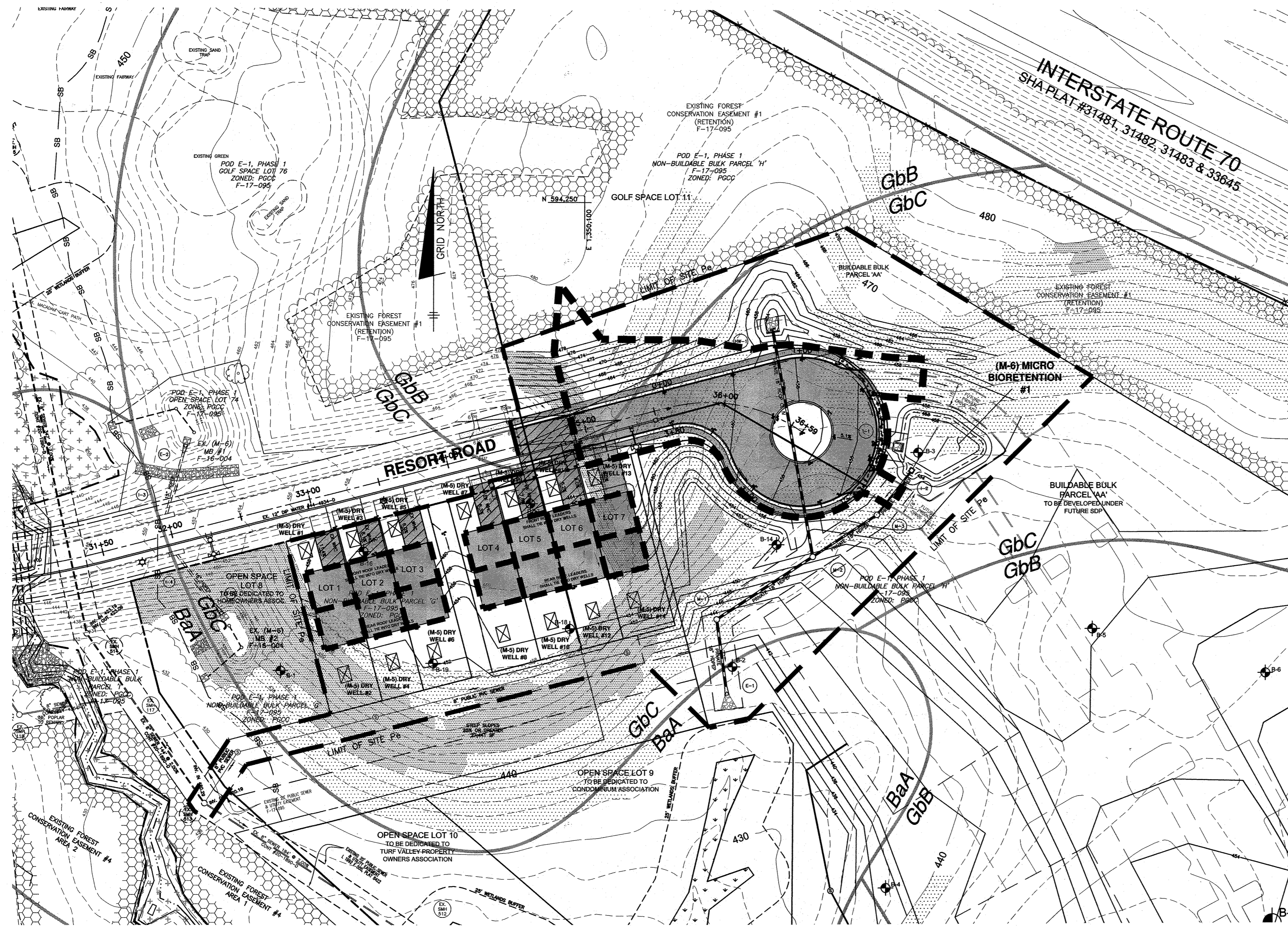


Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.  
 License No. 21443 Expiration Date: 12/21/22

AS-BUILT CERTIFICATION  
 I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications  
 Donald Mason, P.E. Date: 1/21/21

NO.	DATE	REVISION
<b>BENCHMARK ENGINEERING, INC.</b> 8480 BALTIMORE NATIONAL PIKE & SUITE 315A ELICOTT CITY, MARYLAND 21043 (P) 410-465-8105 (F) 410-465-8644 WWW.BE-CIVILENGINEERING.COM		
OWNER: MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400		
DEVELOPER: MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400		
RAVENWOOD AT TURF VALLEY LOTS 1-7, OPEN SPACE LOTS 8-10, GOLF SPACE LOT 11 & BUILDABLE BULK PARCEL 'A' (A Resubdivision of Non-Buildable Bulk Parcel 'G' and 'H' established under Turf Valley, Pod E-1, Phase 1, F-17-095)		
TAX MAP: 17 - GRID: 13 - PARCEL p/o 706 - ZONED: PGCC ELECTION DISTRICT NO. 2 - HOWARD COUNTY, MARYLAND		
<b>STORM DRAIN DRAINAGE AREA MAP, PROFILES, ND DETAILS</b>		
DATE: NOVEMBER 11, 2018	BEI PROJECT NO. 2852	
DESIGN: DBT	DRAFT: DBT	SHEET 3 OF 10





TYPICAL FLOW-THRU INLET DETAIL  
 NOT TO SCALE

LEGEND

- EXISTING CONTOURS
- SITE BOUNDARY
- 100YR FLOODPLAIN
- EXISTING WETLANDS
- EXISTING CL STREAM
- SB STREAM BUFFER
- EXISTING TREELINE
- SOILS DIVISION LINE
- GbB** SOILS TYPE
- STEEP SLOPES 25% OR GREATER
- STEEP SLOPES 15% TO 24.99%
- FOREST CONSERVATION EASEMENT
- P<sub>6</sub> SITE BOUNDARY
- PROPOSED IMPERVIOUS AREAS
- PROPOSED IMPERVIOUS AREAS NOT TREAT IN PROPOSED ESD PRACTICES
- ESD DRAINAGE AREA
- SOIL BORING LOCATION

SEE SHEET 1 FOR STORMWATER MANAGEMENT SUMMARY TABLE

"NO AS-BUILT INFORMATION IS PROVIDED ON THIS SHEET"

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. 21243, Expiration Date: 12/21/22

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 DATE: 1/8/2019  
 CHIEF, BUREAU OF HIGHWAYS  
 APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 DATE: 1/29/19  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE: 1-28-19  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

NO.	DATE	REVISION
<b>BENCHMARK ENGINEERING, INC.</b> 8480 BALTIMORE NATIONAL PIKE & SUITE 315 & ELLICOTT CITY, MARYLAND 21043 (P) 410-465-8105 (F) 410-465-6644 WWW.BEI-CIVILENGINEERING.COM		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. 22300, Expiration Date: 6/30-2019. 
OWNER: MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400		<b>RAVENWOOD AT TURF VALLEY</b> LOTS 1-7, OPEN SPACE LOTS 8-10, GOLF SPACE LOT 11 & BUILDABLE BULK PARCEL 'A' (A Resubdivision of Non-Buildable Bulk Parcel 'G' and 'H' established under Turf Valley, Pod E-1, Phase 1, F-17-095)
DEVELOPER: MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400		<b>STORMWATER MANAGEMENT DRAINAGE AREA MAP</b> DATE: NOVEMBER 1, 2018 BEI PROJECT NO. 2852 SCALE: AS SHOWN SHEET 4 OF 10
DESIGN: DBT	DRAFT: DBT	







**HILLS-CARNES ENGINEERING ASSOCIATES, INC.**  
RECORD OF SOIL EXPLORATION

Project Name: The Bluffs at Turf Valley (Pod E2) Location: Elkton City, Maryland

Boring No.: B-15 DRILLER: Harvest START DATE: 11/28/2017

PROJECT NAME: Ravenwood at Turf Valley (F-18-027) COMPLETION DATE: 11/28/2017

CLIENT: Mangione Enterprises at Turf Valley, LP DRILLING METHOD: Backhoe

Depth	SOIL DESCRIPTION	Remarks	SPT Blows	Notes
0	Yellowish-brown, damp, loamy silty SAND, trace silt, rock fragments and mica (SM)	5 inches Topsoil	3-3	
12			5-6	
13			4-6	
14			5-7	
15			5-6	
16			5-6	
17			5-6	
18			5-6	
19			5-6	
20			5-6	

**HILLS-CARNES ENGINEERING ASSOCIATES, INC.**  
RECORD OF SOIL EXPLORATION

Project Name: The Bluffs at Turf Valley (Pod E2) Location: Elkton City, Maryland

Boring No.: B-2 START DATE: 11/28/2017

PROJECT NAME: Ravenwood at Turf Valley (F-18-027) COMPLETION DATE: 11/28/2017

CLIENT: Mangione Enterprises at Turf Valley, LP DRILLING METHOD: Backhoe

Depth	SOIL DESCRIPTION	Remarks	SPT Blows	Notes
0	Light brown, damp, medium silty micaceous SILT, fine fine sand, trace mica (ML)	5 inches Topsoil	3-4	
11			3-4	
12			3-4	
13			3-4	
14			3-4	
15			3-4	
16			3-4	
17			3-4	
18			3-4	
19			3-4	
20			3-4	

**FIELD TEST BORING LOG** 1 of 1

BORING NO.: B-16 DRILLER: Harvest START DATE: 11/28/2017

PROJECT NAME: Ravenwood at Turf Valley (F-18-027) COMPLETION DATE: 11/28/2017

CLIENT: Mangione Enterprises at Turf Valley, LP DRILLING METHOD: Backhoe

Depth	SOIL DESCRIPTION	Remarks	SPT Blows	Notes
0	Light brown, damp, medium silty micaceous SILT, fine fine sand, trace mica (ML)	5 inches Topsoil	3-4	
11			3-4	
12			3-4	
13			3-4	
14			3-4	
15			3-4	
16			3-4	
17			3-4	
18			3-4	
19			3-4	
20			3-4	

**FIELD TEST BORING LOG** 1 of 1

BORING NO.: B-17 DRILLER: Harvest START DATE: 11/28/2017

PROJECT NAME: Ravenwood at Turf Valley (F-18-027) COMPLETION DATE: 11/28/2017

CLIENT: Mangione Enterprises at Turf Valley, LP DRILLING METHOD: Backhoe

Depth	SOIL DESCRIPTION	Remarks	SPT Blows	Notes
0	Light brown, damp, medium silty micaceous SILT, fine fine sand, trace mica (ML)	5 inches Topsoil	3-4	
11			3-4	
12			3-4	
13			3-4	
14			3-4	
15			3-4	
16			3-4	
17			3-4	
18			3-4	
19			3-4	
20			3-4	

**FIELD TEST BORING LOG** 1 of 1

BORING NO.: B-18 DRILLER: Harvest START DATE: 11/28/2017

PROJECT NAME: Ravenwood at Turf Valley (F-18-027) COMPLETION DATE: 11/28/2017

CLIENT: Mangione Enterprises at Turf Valley, LP DRILLING METHOD: Backhoe

Depth	SOIL DESCRIPTION	Remarks	SPT Blows	Notes
0	Light brown, damp, medium silty micaceous SILT, fine fine sand, trace mica (ML)	5 inches Topsoil	3-4	
11			3-4	
12			3-4	
13			3-4	
14			3-4	
15			3-4	
16			3-4	
17			3-4	
18			3-4	
19			3-4	
20			3-4	

**FIELD TEST BORING LOG** 1 of 1

BORING NO.: B-19 DRILLER: Harvest START DATE: 11/28/2017

PROJECT NAME: Ravenwood at Turf Valley (F-18-027) COMPLETION DATE: 11/28/2017

CLIENT: Mangione Enterprises at Turf Valley, LP DRILLING METHOD: Backhoe

Depth	SOIL DESCRIPTION	Remarks	SPT Blows	Notes
0	Light brown, damp, medium silty micaceous SILT, fine fine sand, trace mica (ML)	5 inches Topsoil	3-4	
11			3-4	
12			3-4	
13			3-4	
14			3-4	
15			3-4	
16			3-4	
17			3-4	
18			3-4	
19			3-4	
20			3-4	

**HILLS-CARNES ENGINEERING ASSOCIATES, INC.**  
RECORD OF SOIL EXPLORATION

Project Name: The Bluffs at Turf Valley (Pod E2) Location: Elkton City, Maryland

Boring No.: B-3 START DATE: 11/28/2017

PROJECT NAME: Ravenwood at Turf Valley (F-18-027) COMPLETION DATE: 11/28/2017

CLIENT: Mangione Enterprises at Turf Valley, LP DRILLING METHOD: Backhoe

Depth	SOIL DESCRIPTION	Remarks	SPT Blows	Notes
0	Brown, damp, very loose, micaceous silty SAND (SM)	5 inches Topsoil	2-2	
13			3-11-23	
14			4-6	
15			7-13-15	
16			6-6	
17			6-6	
18			6-6	
19			6-6	
20			6-6	

**HILLS-CARNES ENGINEERING ASSOCIATES, INC.**  
RECORD OF SOIL EXPLORATION

Project Name: The Bluffs at Turf Valley (Pod E2) Location: Elkton City, Maryland

Boring No.: B-4 START DATE: 11/28/2017

PROJECT NAME: Ravenwood at Turf Valley (F-18-027) COMPLETION DATE: 11/28/2017

CLIENT: Mangione Enterprises at Turf Valley, LP DRILLING METHOD: Backhoe

Depth	SOIL DESCRIPTION	Remarks	SPT Blows	Notes
0	Brown, damp, medium silty to medium silty SAND, fine fine sand, trace mica (ML)	5 inches Topsoil	3-4	
15			3-4	
16			3-4	
17			3-4	
18			3-4	
19			3-4	
20			3-4	

**FIELD TEST BORING LOG** 1 of 1

BORING NO.: B-15 DRILLER: Harvest START DATE: 11/28/2017

PROJECT NAME: Ravenwood at Turf Valley (F-18-027) COMPLETION DATE: 11/28/2017

CLIENT: Mangione Enterprises at Turf Valley, LP DRILLING METHOD: Backhoe

Depth	SOIL DESCRIPTION	Remarks	SPT Blows	Notes
0	Light brown, damp, medium silty micaceous SILT, fine fine sand, trace mica (ML)	5 inches Topsoil	3-4	
11			3-4	
12			3-4	
13			3-4	
14			3-4	
15			3-4	
16			3-4	
17			3-4	
18			3-4	
19			3-4	
20			3-4	

**FIELD TEST BORING LOG** 1 of 1

BORING NO.: B-17 DRILLER: Harvest START DATE: 11/28/2017

PROJECT NAME: Ravenwood at Turf Valley (F-18-027) COMPLETION DATE: 11/28/2017

CLIENT: Mangione Enterprises at Turf Valley, LP DRILLING METHOD: Backhoe

Depth	SOIL DESCRIPTION	Remarks	SPT Blows	Notes
0	Light brown, damp, medium silty micaceous SILT, fine fine sand, trace mica (ML)	5 inches Topsoil	3-4	
11			3-4	
12			3-4	
13			3-4	
14			3-4	
15			3-4	
16			3-4	
17			3-4	
18			3-4	
19			3-4	
20			3-4	

**FIELD TEST BORING LOG** 1 of 1

BORING NO.: B-18 DRILLER: Harvest START DATE: 11/28/2017

PROJECT NAME: Ravenwood at Turf Valley (F-18-027) COMPLETION DATE: 11/28/2017

CLIENT: Mangione Enterprises at Turf Valley, LP DRILLING METHOD: Backhoe

Depth	SOIL DESCRIPTION	Remarks	SPT Blows	Notes
0	Light brown, damp, medium silty micaceous SILT, fine fine sand, trace mica (ML)	5 inches Topsoil	3-4	
11			3-4	
12			3-4	
13			3-4	
14			3-4	
15			3-4	
16			3-4	
17			3-4	
18			3-4	
19			3-4	
20			3-4	

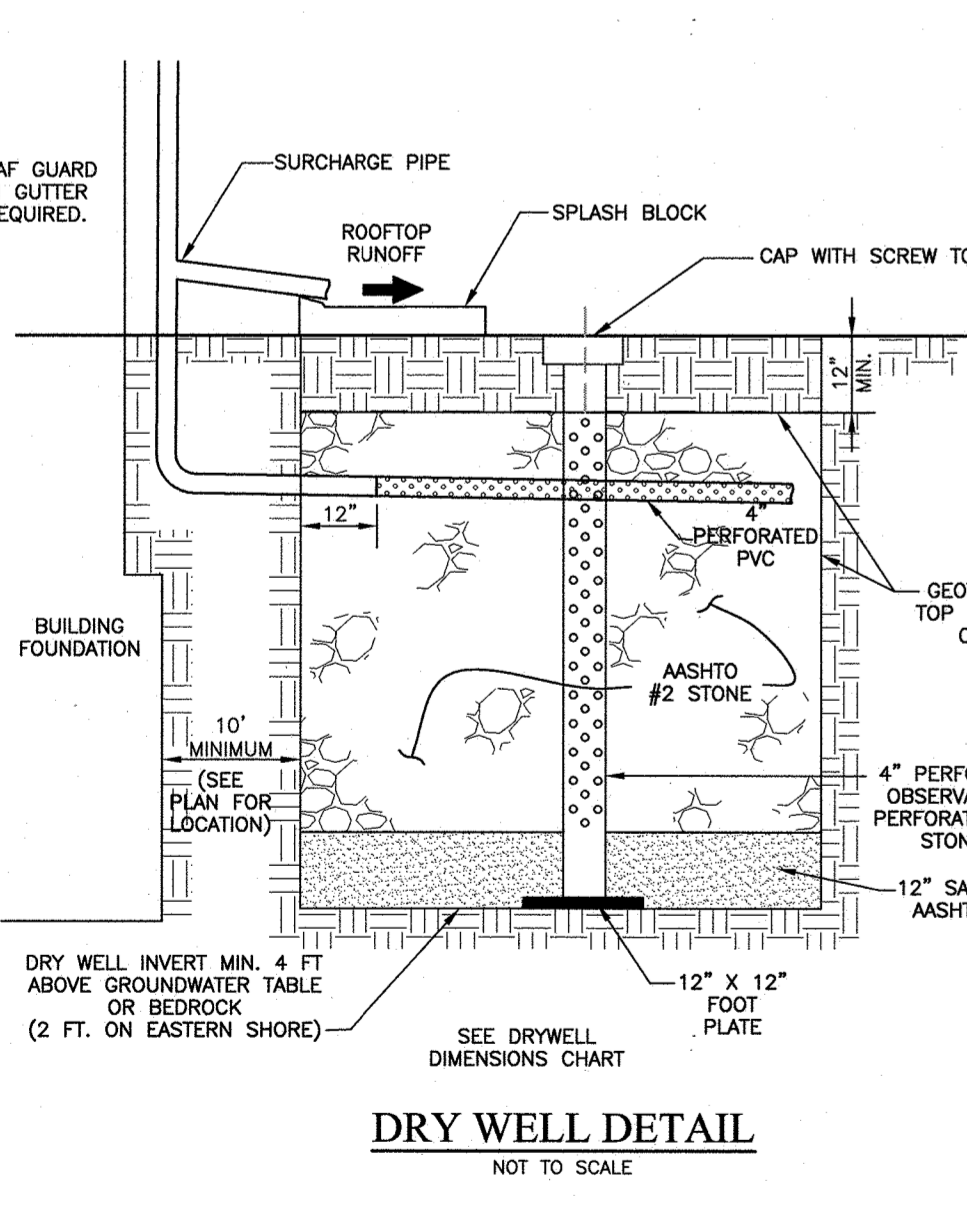
**FIELD TEST BORING LOG** 1 of 1

BORING NO.: B-19 DRILLER: Harvest START DATE: 11/28/2017

PROJECT NAME: Ravenwood at Turf Valley (F-18-027) COMPLETION DATE: 11/28/2017

CLIENT: Mangione Enterprises at Turf Valley, LP DRILLING METHOD: Backhoe

Depth	SOIL DESCRIPTION	Remarks	SPT Blows	Notes
0	Light brown, damp, medium silty micaceous SILT, fine fine sand, trace mica (ML)	5 inches Topsoil	3-4	
11			3-4	
12			3-4	
13			3-4	
14			3-4	
15			3-4	
16			3-4	
17			3-4	
18			3-4	
19			3-4	
20			3-4	

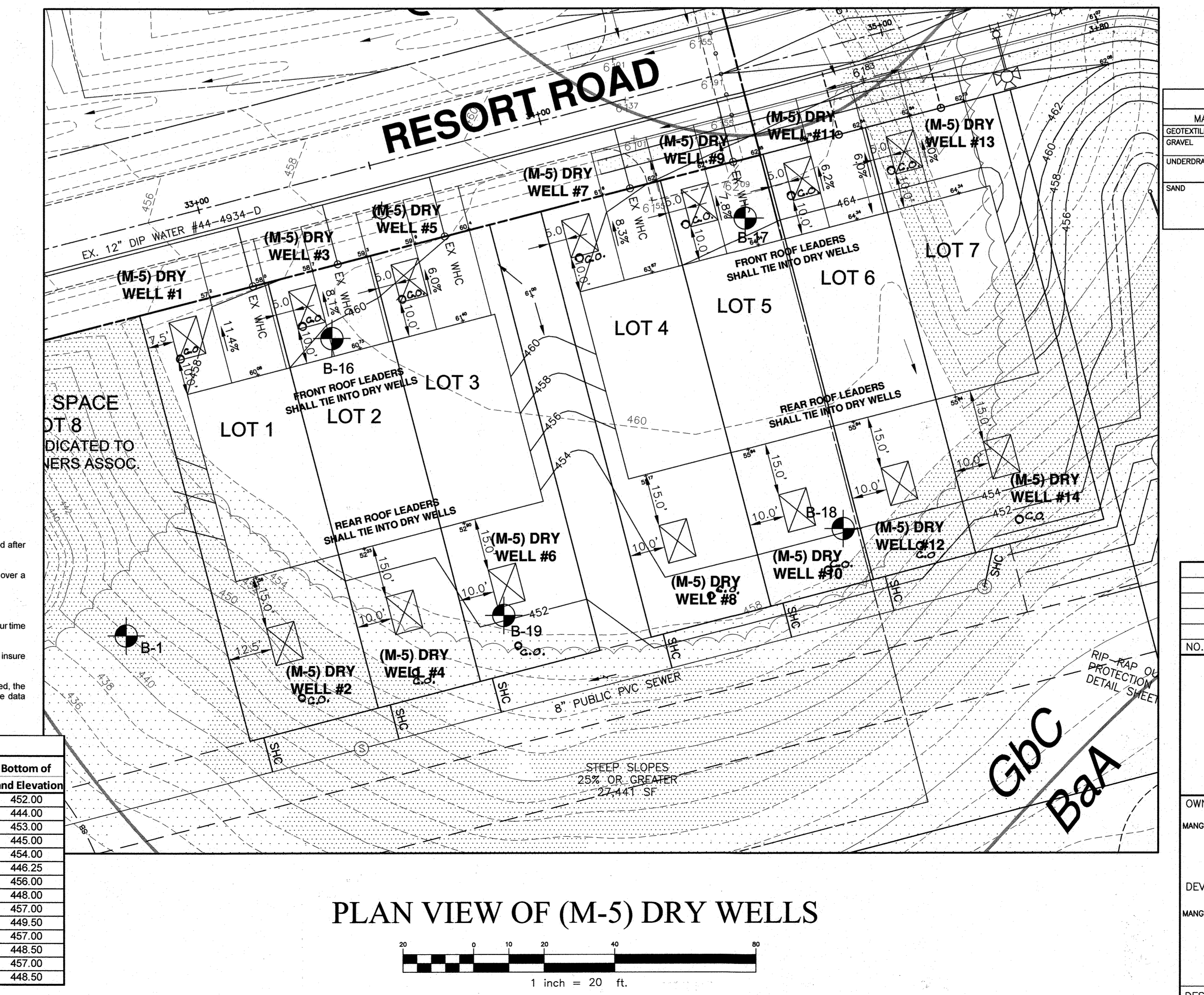


**OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED (M-5) DRY WELLS**

- The monitoring wells and structures shall be inspected on a quarterly basis and after every large storm event.
- Water levels and sediment build up in the monitoring wells shall be recorded over a period of several days to insure trench drainage.
- A log book shall be maintained to determine the rate at which the facility drains.
- When the facility becomes clogged so that it does not drain down within the 72 hour time period, corrective action shall be taken.
- The maintenance log book shall be available to Howard County for inspection to insure compliance with operation and maintenance criteria.
- Once the performance characteristics of the infiltration facility have been verified, the monitoring schedule can be reduced to an annual basis unless the performance data indicates that a more frequent schedule is required.

**Dry Well Dimension Chart**

Dry Well	Length (ft)	Width (ft)	Depth of Stone (ft)	Bottom of Stone Elevation	Bottom of Sand Elevation
#1	11	8.0	4.0	453.00	452.00
#2	11	8.0	4.0	445.00	444.00
#3	11	8.0	4.0	454.00	453.00
#4	11	8.0	4.0	446.00	445.00
#5	11	8.0	4.0	455.00	454.00
#6	11	8.0	4.0	447.25	446.25
#7	11	8.0	4.0	457.00	456.00
#8	11	8.0	4.0	449.00	448.00
#9	11	8.0	4.0	458.00	457.00
#10	11	8.0	4.0	449.50	448.50
#11	11	8.0	4.0	458.00	457.00
#12	11	8.0	4.0	449.50	448.50
#13	11	8.0	4.0	458.00	457.00
#14	11.0	8.0	4.0	449.50	448.50



**MATERIALS & SPECIFICATIONS FOR DRY WELLS**

MATERIAL	SPECIFICATION	SIZE	NOTES:
GEOTEXTILE (CLASS C)	AASHTO M 43	N/A	PE TYPE 1 NONWOVEN
GRAVEL	AASHTO M 43	1 1/2" TO 2 1/2"	
UNDERDRAIN PIPING	F758, TYPE PS28 OR AASHTO M-278	4" TO 6" RIGID SCH.40 PVC, SCH.35 OR HDPE	3/8" PERF. @ 6" O/C, 4 HOLES PER ROW; MINIMUM OF 2" OF GRAVEL OVER PIPES.
SAND	AASHTO M-6 OR ASTM-C-33	.02" TO .04"	SAND SUBSTITUTIONS SUCH AS DIABASE AND GRAYSTONE (AASHTO) #10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATE OR DOLOMITIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NO ROCK DUST CAN BE USED FOR SAND.

**AS-BUILT CERTIFICATION**  
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications

Donald Mason, P.E. Date: 9/21/21

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. 21243 Expiration Date: 12/21/22

APPROVED: DEPARTMENT OF PUBLIC WORKS  
1/5/2019  
APPROVED: DEPARTMENT OF PLANNING AND ZONING  
1/29/19  
1-28-19

**BENCHMARK ENGINEERING, INC.**  
8480 BALTIMORE NATIONAL PIKE & SUITE 315 • ELLICOTT CITY, MARYLAND 21043  
(P) 410-485-6105 (F) 410-485-6644  
WWW.BEI-CIVILENGINEERING.COM

**OWNER:**  
MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP  
1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400

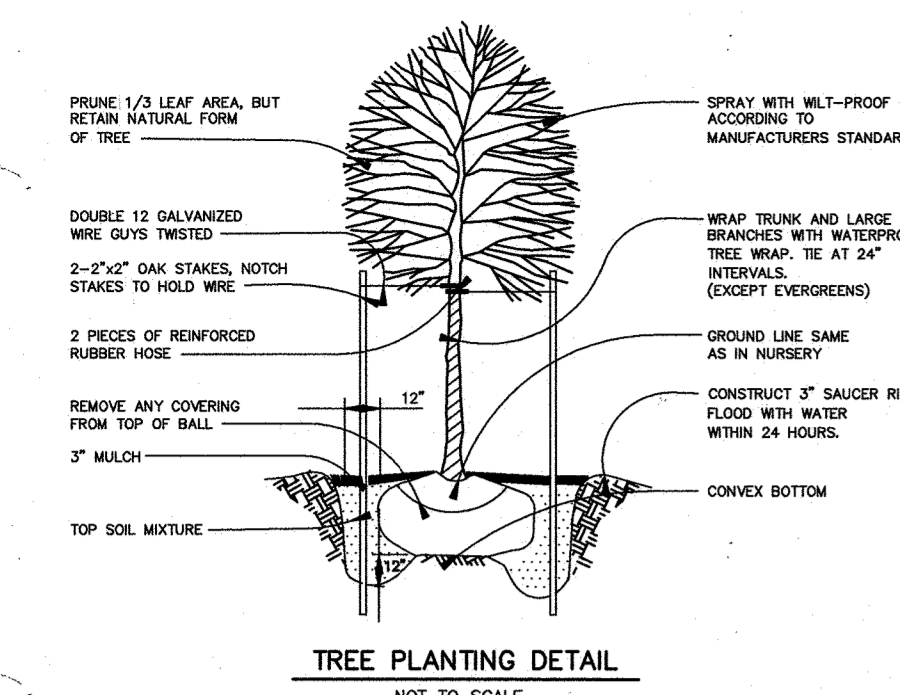
**DEVELOPER:**  
MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP  
1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400

**RAVENWOOD AT TURF VALLEY**  
LOTS 1-7, OPEN SPACE LOTS 8-10, GOLF SPACE LOT 11 & BUILDABLE BULK PARCEL 'A'  
(A Resubdivision of Non-Buildable Bulk Parcel 'G' and 'H' established under Turf Valley, Pod E-1, Phase 1, F-17-095)

**STORMWATER MANAGEMENT PLAN, NOTES, DETAILS, AND SOIL BORING LOGS**

DATE: NOVEMBER 1, 2018 BEI PROJECT NO. 2852  
DESIGN: DBT DRAFT: DBT SCALE: AS SHOWN SHEET 6 OF 10





**SCHEDULE A PERIMETER LANDSCAPE EDGE**

CATEGORY	SFA LOT SIDE TO ROAD (P-1)	TOTALS
LANDSCAPE TYPE	C	
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	1:40 shade 1:20 evergreen	125 LF
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO	
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO	
NUMBER OF PLANTS REQUIRED		125 LF
SHADE TREES	3	3
EVERGREEN TREES	6	6
OTHER TREES (2:1 SUBSTITUTE)	0	0
SHRUBS	0	0
NUMBER OF PLANTS PROVIDED		
SHADE TREES	3	3
EVERGREEN TREES	6	6
OTHER TREES (2:1 SUBSTITUTE)	0	0
SHRUBS (10:1 SUBSTITUTE)	0	0

**STREET TREE SCHEDULE**

	RESORT ROAD
LINEAR FEET OF RIGHT-OF-WAY	606'
LINEAR FEET OF CREDIT	0
LINEAR FEET OF REQUIRED PLANTING	606'
TREE SIZE	LARGE 1:40 LF
TREES REQUIRED	15

**SCHEDULE C RESIDENTIAL DEVELOPMENT INTERNAL LANDSCAPING**

	SFA
NUMBER OF DWELLING UNITS	7
NUMBER OF TREES REQUIRED (1:DU SFA; 1:3 DU APTS)	7
NUMBER OF TREES PROVIDED	
SHADE TREES	7
OTHER (2:1 RATIO)	0

**DEVELOPER'S/BUILDER'S CERTIFICATE**

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

*Louis Mangione* 12-11-18 DATE  
LOUIS MANGIONE  
MANGIONE ENTERPRISES OF TURF VALLEY, LP

**APPROVED: DEPARTMENT OF PUBLIC WORKS**

*James* 1/5/2019 DATE  
CHIEF, BUREAU OF HIGHWAYS

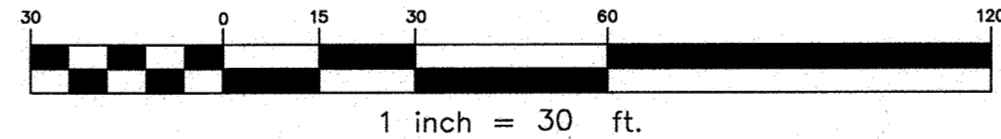
**APPROVED: DEPARTMENT OF PLANNING AND ZONING**

*Pat Skelton* 1/24/19 DATE  
CHIEF, DIVISION OF LAND DEVELOPMENT

*Phil* 1-28-19 DATE  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

**LEGEND**

- SITE BOUNDARY
- 100YR FLOODPLAIN
- EXISTING WETLANDS
- EXISTING CL. STREAM
- STREAM BUFFER
- EXISTING TREELINE
- FOREST CONSERVATION EASEMENT
- PROPOSED TREELINE



**LANDSCAPE PLANTING LIST**

SYMBOL	QUANTITY	NAME	REMARKS	DESCRIPTION
		TILIA CORDATA 'GREENSPIRE' (Greenspire Littleleaf Linden)	N/A	EXISTING STREET TREES ALONG RESORT ROAD PLANTED UNDER F-16-004
	15	TILIA CORDATA 'GREENSPIRE' (Greenspire Littleleaf Linden)	2.5' - 3' cal.	STREET TREES ALONG RESORT ROAD TO BE PROVIDED BY THE DEVELOPER
	6	CUPRESSOCYPARIS LEYLANDI (Leyland Cypress)	5' - 6' ht.	PERIMETER EVERGREEN TREES TO BE PROVIDED BY THE BUILDER UNDER FUTURE SDP
	3	CLADRASITIS KENTUCKEA LUTEA (Yellowwood)	2.5' - 3' cal.	PERIMETER SHADE TREES TO BE PROVIDED BY THE BUILDER UNDER FUTURE SDP
	7	ACER RUBRUM 'RED SUNSET' (Red Sunset Red Maple)	2.5' - 3' cal.	SHADE TREES TO BE SATISFY RESIDENTIAL INTERNAL OBLIGATION TO BE PROVIDED BY THE BUILDER UNDER FUTURE SDP

**LANDSCAPE NOTES:**

- THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL.
- STREET TREE LOCATIONS:
  - A. WHEN THE DISTANCE BETWEEN THE CURB AND SIDEWALK IS 6 FEET OR GREATER, THE TREES SHALL BE LOCATED WITHIN THE RIGHT-OF-WAY AND SHALL BE CENTERED BETWEEN THE CURB AND SIDEWALK.
  - B. WHEN THE DISTANCE BETWEEN THE CURB AND SIDEWALK IS LESS THAN 6 FEET, TREES MAY BE PLANTED 3 FEET FROM THE SIDEWALK IN THE DIRECTION AWAY FROM THE ROAD. A 10-FOOT WIDE TREE MAINTENANCE EASEMENT SHALL BE REQUIRED IF THE RIGHT-OF-WAY IS LIMITED.
  - C. TREES SHALL BE PLANTED 6 FEET BEHIND CURB WHEN THERE ARE NO SIDEWALKS.
  - D. TREES TO BE PLANTED MINIMUM 30 FEET FROM SIGNS AND INTERSECTIONS WHEN PLANTED BETWEEN SIDEWALK AND CURB. TREES MAY NOT BE PLANTED WITHIN 5 FEET OF A STORM DRAIN INLET, OPEN SPACE ACCESS STRIP, OR 10 FEET OF A DRIVEWAY.
- AT THE TIME OF INSTALLMENT, 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 RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO APPLICABLE PLANS AND CERTIFICATIONS.
- THE OWNER, TENANTS AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING INCLUDING BOTH PLANT MATERIALS AND BERMS, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.
- FINANCIAL SURETY FOR THE REQUIRED PERIMETER LANDSCAPING AND RESIDENTIAL INTERNAL LOT LANDSCAPING SHALL BE POSTED AS PART OF THE GRADING PERMIT UNDER THE FUTURE SITE DEVELOPMENT PLAN.

NO.	DATE	REVISION

**BENCHMARK ENGINEERING, INC.**  
ENGINEERS & LAND SURVEYORS & PLANNERS  
8480 BALTIMORE NATIONAL PIKE SUITE 315 & ELLICOTT CITY, MARYLAND 21043  
(P) 410-465-8105 (F) 410-465-8844  
WWW.BE-CIVILENGINEERING.COM

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. 21443 Expiration Date: 12-21-22  
AS-BUILT 9/16/21

**OWNER:**  
MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP  
1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400

**DEVELOPER:**  
MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP  
1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400

**RAVENWOOD AT TURF VALLEY**  
LOTS 1-7, OPEN SPACE LOTS 8-10, GOLF SPACE LOT 11 & BUILDABLE BULK PARCEL 'A'  
(A Resubdivision of Non-Buildable Bulk Parcel 'G' and 'H' established under Turf Valley, Pod E-1, Phase 1, F-17-095)

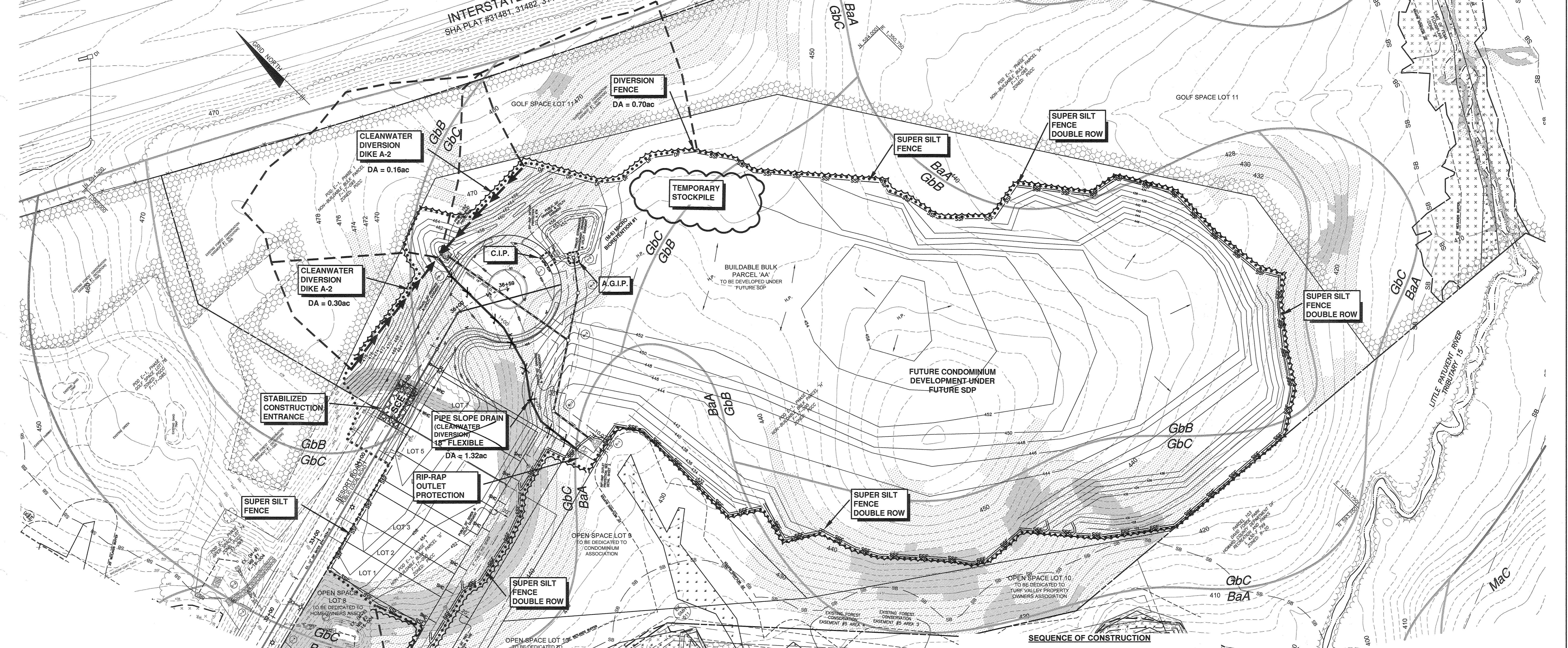
TAX MAP: 17 - GRID: 13 - PARCEL: p/o 706 - ZONED: PGCC  
ELECTION DISTRICT NO. 2 - HOWARD COUNTY, MARYLAND

**LANDSCAPE PLAN**

DATE: NOVEMBER 1, 2018 BEI PROJECT NO. 2852  
DESIGN: DBT DRAFT: DBT SCALE: AS SHOWN SHEET 7 OF 10



NRCS SOILS CHART - HoCo Soils Map No. 12			
SYMBOL	HYDRIC	GROUP	MAP UNIT NAME
GgB		B	0.37 GLENELG LOAM, 3 TO 8 PERCENT SLOPES
GgC		B	0.37 GLENELG LOAM, 8 TO 15 PERCENT SLOPES
BaA	YES	C	0.43 GLENVILLE SILT LOAM, 0 TO 3 PERCENT SLOPES



**ENGINEER'S CERTIFICATE**

I 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.

*Cl. Malapan* 11-4-19  
ENGINEER DATE

**DEVELOPER'S CERTIFICATE**

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

*John R. Deaton* 11-5-19  
DEVELOPER DATE

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

*John R. Deaton* 4/6/19  
HOWARD SOIL CONSERVATION DISTRICT DATE

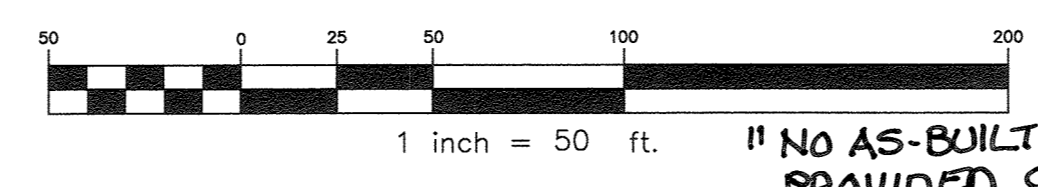
APPROVED: DEPARTMENT OF PUBLIC WORKS  
*[Signature]* 11/5/2019  
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*[Signature]* 11/25/19  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*[Signature]* 11-20-19  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

**LEGEND**

--- EXISTING CONTOURS	..... LIMIT OF DISTURBANCE
--- SITE BOUNDARY	--- SSF SUPER SILT FENCE
--- 100YR FLOODPLAIN	--- DF DIVERSION FENCE
--- EXISTING WETLANDS	--->>> DIVERSION DIKE
--- EXISTING CL. STREAM	--- PIPE SLOPE DRAIN
--- SB STREAM BUFFER	--- PROPOSED TREELINE
--- EXISTING TREELINE	--- INLET PROTECTION
--- SOILS DIVISION LINE	--- DRAINAGE AREA
--- SOILS TYPE	
--- STEEP SLOPES 25% OR GREATER	
--- STEEP SLOPES 15% TO 24.99%	



**"NO AS-BUILT INFORMATION IS PROVIDED ON THIS SHEET"**

THIS PLAN IS FOR SEDIMENT AND EROSION CONTROL PURPOSES ONLY



**NOTES:**

- ALL GRADED AREAS DRAINING TO HW-1 ARE TO BE IMMEDIATELY STABILIZED WITH SOD.
- THE PIPE SLOPE DRAIN IS TO BE ANCHORED IN PLACE.

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. 21443, Expiration Date: 12-31-22

- SEQUENCE OF CONSTRUCTION**
- Obtain grading permit. Notify D.I.L.P. at 410-313-1880 at least 24 hours before starting any work. (1 day)
  - Hold on-site pre-construction meeting. (1 day)
  - Install stabilized construction entrance. Clear and grub as necessary to install perimeter controls (i.e. super silt fence, diversion fencing, clean-water diversion dikes, pipe-slope drain). Once cleared and grubbed, install the perimeter controls. Start with the clean-water dike and pipe-slope drain. (2 weeks)
  - Install storm drain from E-2 to HW-1 and backfill. Once installed, the pipe slope drain can be removed. Do not remove the clean-water diversion dikes. Instead adjust as necessary to divert the runoff into HW-1. The area needed for the installation of HW-1 is to be immediately stabilized with sod. (1 week)
  - Bring road bed to subgrade, begin mass grading of site, and install utilities (i.e. remaining storm drain, water, sewer, and house connections). Utilize inlet protection on inlets. (4 weeks)
  - Install curb and gutter. (1 week)
  - Base pave road and install sidewalk. (1 week)
  - Install Micro Bio-Retention Facility #1. Do not install plantings at this time. Cover surface with filter cloth to prevent planting soil from contamination. (1 week)
  - Complete mass grading of site and stabilize in accordance with the permanent seedbed notes. (2 weeks)
  - Upon approval from the Howard County Sediment Control Inspector, remove all sediment control devices and stabilize any remaining disturbed areas in accordance with the permanent seedbed notes. (1 week)
- Note: Dry Wells will not be installed under this plan. They will be installed under future Site Development Plan for Lots 1-7.

Note: Following initial soil disturbance or any re-disturbances, permanent or temporary stabilization shall be completed within:

- 3 calendar days for all perimeter sediment control structures, dikes, swales and all slopes greater than 3:1.
- 7 calendar days for all other disturbed areas.

During grading and after each rainfall, contractor will inspect and provide necessary maintenance to the sediment control measures of this plan.

THIS PLAN REPLACES THE PREVIOUS SHEET 8 SIGNED ON 1-29-2019

<p>1 10.30.2019 REVISE LOD AND MASS GRADING ON PARCEL 'AA'</p>	
NO.	DATE
<p><b>BENCHMARK ENGINEERING, INC.</b> 8400 BALTIMORE NATIONAL PIKE &amp; SUITE 315 &amp; ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6644 WWW.BD-CIVLENGINEERING.COM</p>	
<p>OWNER: MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP, 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400</p>	
<p>DEVELOPER: MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP, 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400</p>	
<p>PROJECT: RAVENWOOD AT TURF VALLEY LOTS 1-7, OPEN SPACE LOTS 8-10, GOLF SPACE LOT 11 &amp; BUILDABLE BULK PARCEL 'A' (A Resubdivision of Non-Buildable Bulk Parcel 'G' and 'H' established under Turf Valley, Pod E-1, Phase 1, F-17-095)</p>	
<p>TAX MAP: 17 - GRID: 13 - PARCEL: 0/0 706 - ZONED: PGCC ELECTION DISTRICT NO. 2 - HOWARD COUNTY, MARYLAND</p>	
<p>REVISED SEDIMENT AND EROSION CONTROL PLAN</p>	
DATE: OCTOBER 30, 2019	BEI PROJECT NO. 2852
DESIGN: DBT	DRAFT: DBT
SCALE: AS SHOWN	SHEET 8 OF 10



**B-4 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION**

Using vegetation as cover to protect exposed soil from erosion.

To promote the establishment of vegetation on exposed soil.

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

**Criteria**

1. 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 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 in 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, reestablishes following the original recommendations for time, fertilizer, seedbed preparation, and seeding.

3. If an area has less than 40 and 94 percent groundcover, over-seed and fertilize using half of the rates originally specified.

4. Maintenance fertilizer rates for permanent seeding are shown in Table B.6.

**B-4-1 STANDARDS AND SPECIFICATIONS FOR INCREMENTAL STABILIZATION**

**Definition**

Establishment of vegetative cover on cut and fill slopes.

**Purpose**

To provide timely vegetative cover on cut and fill slopes as work progresses.

**Conditions Where Practice Applies**

Any cut or fill slope greater than 15 feet in height. This practice also applies to stockpiles.

**Criteria**

A. Incremental Stabilization - Cut Slopes

- Excavate and stabilize cut slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all cut slopes as the work progresses.
- Construction sequence example (Refer to Figure B.1):
  - Construct and stabilize all temporary swales or dikes that will be used to convey runoff around the excavation.
  - Perform Phase 1 excavation, prepare seedbed, and stabilize.
  - Perform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase 1 areas as necessary.
  - Perform final phase excavation, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once excavation has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

B. Incremental Stabilization - Fill Slopes

- Construct and stabilize fill slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all slopes as the work progresses.
- Stabilize slopes immediately when the vertical height of a fill reaches 15 feet, or when the grading operation ceases as prescribed in the plans.
- At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
- Construction sequence example (Refer to Figure B.2):
  - Construct and stabilize all temporary swales or dikes that will be used to divert runoff around the fill. Construct sill fence on low side of fill unless other methods shown on the plans address this area.
  - At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
  - Place Phase 1 fill, prepare seedbed, and stabilize.
  - Place Phase 2 fill, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once the placement of fill has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

Figure B.

**ENGINEER'S CERTIFICATE**

"I 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.

*Cl. Malaga* 11-28-18  
ENGINEER DATE

**DEVELOPER'S CERTIFICATE**

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

*John C. Blanton* 12/20/18  
DEVELOPER DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS  
*James* 1/5/2019  
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*Christy* 1/28/19  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

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

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

To provide a suitable soil medium for vegetative growth.

**Criteria**

A. Soil Preparation

- Temporary Stabilization**
  - Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or ripper mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.
  - Apply fertilizer line as prescribed on the plans.
  - Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disk or other suitable means.
- Permanent Stabilization**
  - A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
    - Soil pH between 6.0 and 7.0.
    - Soluble salts less than 500 parts per million (ppm).
    - Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: If lowgrass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
    - Soil contains 1.5 percent minimum organic matter by weight.
  - Soil conditions sufficient pore space to permit adequate root penetration.

Application of amendments or topsoil is required if one or more of the above conditions.

G. Graded areas must be maintained in a true and even grade as specified on the approved plan, then scarified or otherwise loosened to a depth of 3 to 5 inches.

H. Soil amendments as specified on the approved plan or as indicated by the results of a soil test.

I. Mix soil amendments into the top 3 to 5 inches of soil by disk or other suitable means. Rate lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment in a line in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.

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

The application of seed and mulch to establish vegetative cover.

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

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

**Criteria**

A. Seeding

- Specifications**
  - All seed must meet the requirements of the Maryland State Seed Law. All seed must be tested by re-testing by a recognized seed laboratory. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be available upon request to the Inspector to verify type of seed and seeding rate.
  - Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.
  - Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until use. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.
  - Sod or seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phytotoxic materials.
- Application**
  - Dry Seeding:** This includes use of conventional drop or broadcast spreaders.
    - 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.
    - Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with a weighted roller to provide good seed to soil contact.
  - Drill or Outdragger Seeding:** Mechanized seeders that apply and cover seed with soil.
  - Outdragger Seeding:** Mechanized seeders that apply and cover seed with soil as well as provide at least 1/4 inch of soil covering. Seedbed must be firm after planting.
  - Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction.
- Hydroseeding:** Apply seed uniformly with hydroseeder (slurry includes seed and fertilizer).
  - If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of soluble nitrogen; P2O5 (phosphorus), 200 pounds per acre; K2O (potassium), 200 pounds per acre.
  - Lime: Use only ground agricultural limestone (up to 3 tons per acre) which may be applied by hydroseeding. Normally, no more than 2 tons are applied by hydroseeding at any one time. Do not use burnt or hydrated lime when hydroseeding.
  - Mix seed and fertilizer on site and seed immediately and without interruption. When hydroseeding do not incorporate seed into the soil.

B. Mulching

- Mulch Materials (in order of preference)**
  - Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably bright in color. Straw is to be free of weed seeds as defined in the Maryland Seed Law and not musty, moldy, caked, decayed, or excessively dusty.
  - Use only sterile straw mulch in areas where one species of grass is desired.
  - Wood Cellulose Fiber Mulch (WCFM): Consisting of specially prepared wood cellulose processed into a uniform fibrous physical state.
    - WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
    - WCFM, including dye, must contain no germination or growth inhibiting factors.
    - WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch must be applied to a minimum depth of 2 inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should follow the contour.
    - Wood cellulose fiber may be used for anchoring straw. Apply the fiber binder at a net dry weight of 750 pounds per acre. Mix the wood cellulose fiber with water at a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
    - WCFM material must not contain elements or compounds at concentration levels that will be phytotoxic.
    - WCFM must conform to the following physical requirements: fiber length not less than 100 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 1.6 percent maximum and water holding capacity of 90 percent minimum.

**Permanent Seeding Summary**

No.	Species	Application Rate (lb/ac)	Seeding Rate (lb/1000 ft <sup>2</sup> )	Seeding Depth (inches)	Fertilizer Rate (10-20-20)				Lime Rate
					N	P2O5	K2O		
9	Bluegrass, Kentucky	60	Mar 1 to May 15 Aug 1 to Oct 15	1/4 - 1/2 in	45 pounds per acre (1.0 lb/100 sf)	90 lb/ac (2 lb/1000 sf)	90 lb/ac (2 lb/1000 sf)	2 tons/ac (900 lb/1000 sf)	

**Table B.1: Temporary Seeding for Site Stabilization**

Plant Species	Seeding Rate 1/ lb/ac	Seeding Depth 2/ (inches)	Recommended Seeding Dates by Plant Hardness Zone 3/	
			5b and 6a	7a and 7b
<b>Cool-Season Grasses</b>				
Annual Ryegrass (Lolium perenne ssp. Multiflorum)	40	1.0	0.5	Mar 1 to May 15; Aug 1 to Oct 31
Barley (Hordeum vulgare)	96	2.2	1.0	Mar 1 to May 15; Aug 1 to Oct 31
Oats (Avena sativa)	72	1.7	1.0	Mar 1 to May 15; Aug 1 to Oct 31
Wheat (Triticum aestivum)	120	2.8	1.0	Mar 1 to May 15; Aug 1 to Oct 31
Cereal Rye (Secale cereale)	112	2.8	1.0	Mar 1 to May 15; Aug 1 to Nov 15
<b>Warm-Season Grasses</b>				
Foxtail Millet (Setaria italica)	30	0.7	0.5	May 16 to Jul 31
Pearl Millet (Pennisetum glaucum)	20	0.5	0.5	May 16 to Jul 31

Notes:

1/ Seeding rates for the warm season grasses are in pounds of Pure Live Seed (PLS). Actual planting rates shall be adjusted to reflect percent seed germination and purity, as tested. Adjustments are usually not needed for the cool-season grasses.

Seeding rates listed above are for temporary seedings, when planted alone. When planted as a nurse crop with permanent seed mixes, use 1/3 of the seeding rate listed above for barley, oats, and wheat. For smaller-seeded grasses (annual ryegrass, pearl millet, foxtail millet), do not exceed more than 5% by volume of the overall permanent seed mix. Cereal rye seed should not be used as a nurse crop, unless it will occur very late in the season. Cereal rye has allelopathic properties that inhibit the germination and growth of other plants. If it must be used as a nurse crop, seed at 1/3 of the rate listed above.

Oats are the recommended nurse crop for warm-season grasses.

2/ For sandy soils, plant seeds at twice the depth listed above.

3/ The planting dates listed are averages for each zone and may require adjustment to reflect local conditions, especially near the boundaries of the zone.

**B-4-4 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION**

To stabilize disturbed soils with permanent vegetation.

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

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

**Criteria**

A. Seed Mixtures

- General Use**
  - Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
  - Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special uses such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guide, Section 342 - Critical Area Planting.
  - For sites having disturbed areas over 5 acres, use and show the rates recommended by the soil testing agency.
  - For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 1/2 pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary.
- Turfgrass Mixtures**
  - Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.
  - Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan. For use in areas that receive intensive management.
    - Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky Bluegrass Cultivars with each ranging from 10 to 35 percent of the total by weight.
    - Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky Bluegrass Cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
    - Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes: Certified Tall Fescue/Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.
    - Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1 1/2 to 3 pounds per 1000 square feet.

**B-4-5 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA**

To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

**Criteria**

- The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
- The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a site slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.
- Runoff from the stockpile area must drain to a suitable sediment control practice.
- Access the stockpile area from the upgrade side.
- Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
- Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
- Stockpiles must be stabilized in accordance with the 37 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization.
- If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable sheeting.

**Maintenance**

The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Site slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 30 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.

**DUST CONTROL**

Controlling the suspension of dust particles from construction activities.

To prevent blowing and movement of dust from exposed soil surfaces to reduce on and off-site damage including health and traffic hazards.

**Criteria**

1. General Specifications

- Class of turfgrass must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector.
- Sod must be machine cut to a uniform soil thickness of 3/4 inch, plus or minus 1/8 inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and torn or uneven edges will not be acceptable.
- Standard size sections of sod must be strong enough to support their own weight and retain their shape and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.
- Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
- Sod must be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period must be approved by an agronomist or soil scientist prior to its installation.

2. Sod Installation

- During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the sod.
- Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Stagger lateral joints to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.
- Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints. Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensure soil contact exists between sod rows and as underlying soil surface.
- Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the soil are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of sod within eight hours.

3. Sod Maintenance

- In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.
- After the first week, soil watering is required as necessary to maintain adequate moisture content. Do not mow until the sod is firmly rooted. No more than 1/3 of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless otherwise specified.

**B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA**

To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

**Criteria**

- The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
- The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a site slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.
- Runoff from the stockpile area must drain to a suitable sediment control practice.
- Access the stockpile area from the upgrade side.
- Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
- Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
- Stockpiles must be stabilized in accordance with the 37 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization.
- If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable sheeting.

**Maintenance**

The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Site slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 30 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.

**DUST CONTROL**

Controlling the suspension of dust particles from construction activities.

To prevent blowing and movement of dust from exposed soil surfaces to reduce on and off-site damage including health and traffic hazards.

**Criteria**

1. General Specifications

- Class of turfgrass must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector.
- Sod must be machine cut to a uniform soil thickness of 3/4 inch, plus or minus 1/8 inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and torn or uneven edges will not be acceptable.
- Standard size sections of sod must be strong enough to support their own weight and retain their shape and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.
- Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
- Sod must be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period must be approved by an agronomist or soil scientist prior to its installation.

2. Sod Installation

- During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the sod.
- Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Stagger lateral joints to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.
- Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints. Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensure soil contact exists between sod rows and as underlying soil surface.
- Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the soil are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of sod within eight hours.

3. Sod Maintenance

- In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.
- After the first week, soil watering is required as necessary to maintain adequate moisture content. Do not mow until the sod is firmly rooted. No more than 1/3 of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless otherwise specified.

**B-4-4 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION**

To stabilize disturbed soils with permanent vegetation.

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

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

**Criteria**

A. Seed Mixtures

- General Use**
  - Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
  - Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special uses such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guide, Section 342 - Critical Area Planting.
  - For sites having disturbed areas over 5 acres, use and show the rates recommended by the soil testing agency.
  - For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 1/2 pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary.
- Turfgrass Mixtures**
  - Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.
  - Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan. For use in areas that receive intensive management.
    - Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky Bluegrass Cultivars with each ranging from 10 to 35 percent of the total by weight.
    - Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky Bluegrass Cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
    - Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes: Certified Tall Fescue/Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.
    - Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1 1/2 to 3 pounds per 1000 square feet.

**B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA**

To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

**Criteria**

- The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
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- If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable sheeting.

**Maintenance**

The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Site slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 30 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.

**DUST CONTROL**

Controlling the suspension of dust particles from construction activities.

To prevent blowing and movement of dust from exposed soil surfaces to reduce on and off-site damage including health and traffic hazards.

**Criteria**

1. General Specifications

- Class of turfgrass must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector.
- Sod must be machine cut to a uniform soil thickness of 3/4 inch, plus or minus 1/8 inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and torn or uneven edges will not be acceptable.
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2. Sod Installation

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- Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints. Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensure soil contact exists between sod rows and as underlying soil surface.
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3. Sod Maintenance

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**B-4-4 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION**

To stabilize disturbed soils with permanent vegetation.

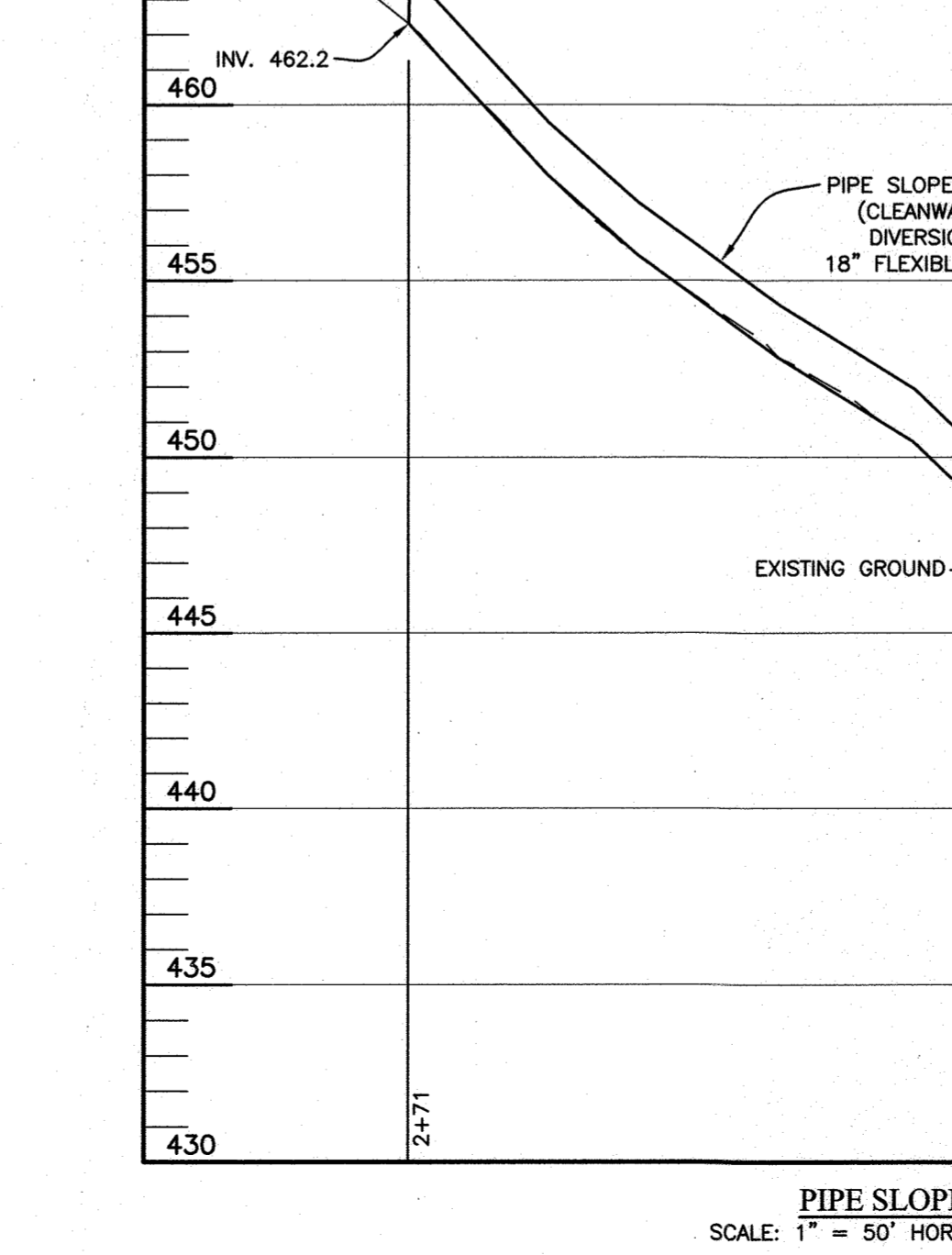
To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils.

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

**Criteria**

A. Seed Mixtures

- General Use**
  - Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
  - Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special uses such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guide, Section 342 - Critical Area Planting.
  - For sites having disturbed areas over 5 acres, use and show the rates recommended by the soil testing agency.
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- Turfgrass Mixtures**
  - Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.
  - Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan. For use in areas that receive intensive management.
    - Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky Bluegrass Cultivars with each ranging from 10 to 35 percent of the total by weight.
    - Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky Bluegrass Cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
    - Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes: Certified Tall Fescue/Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.
    - Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1 1/2 to 3 pounds per 1000 square feet.



**B-4-4 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION**

To stabilize disturbed soils with permanent vegetation.

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

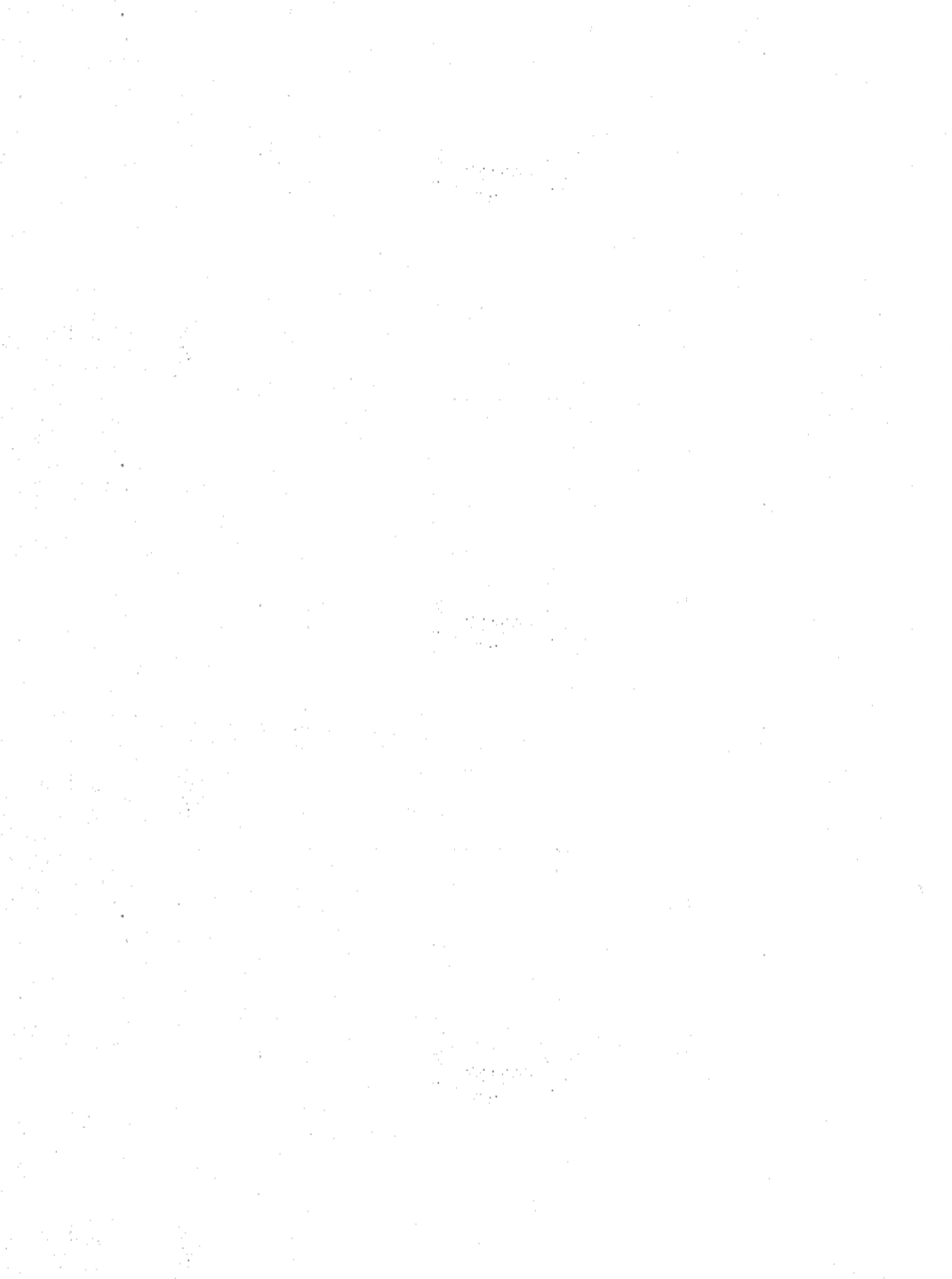
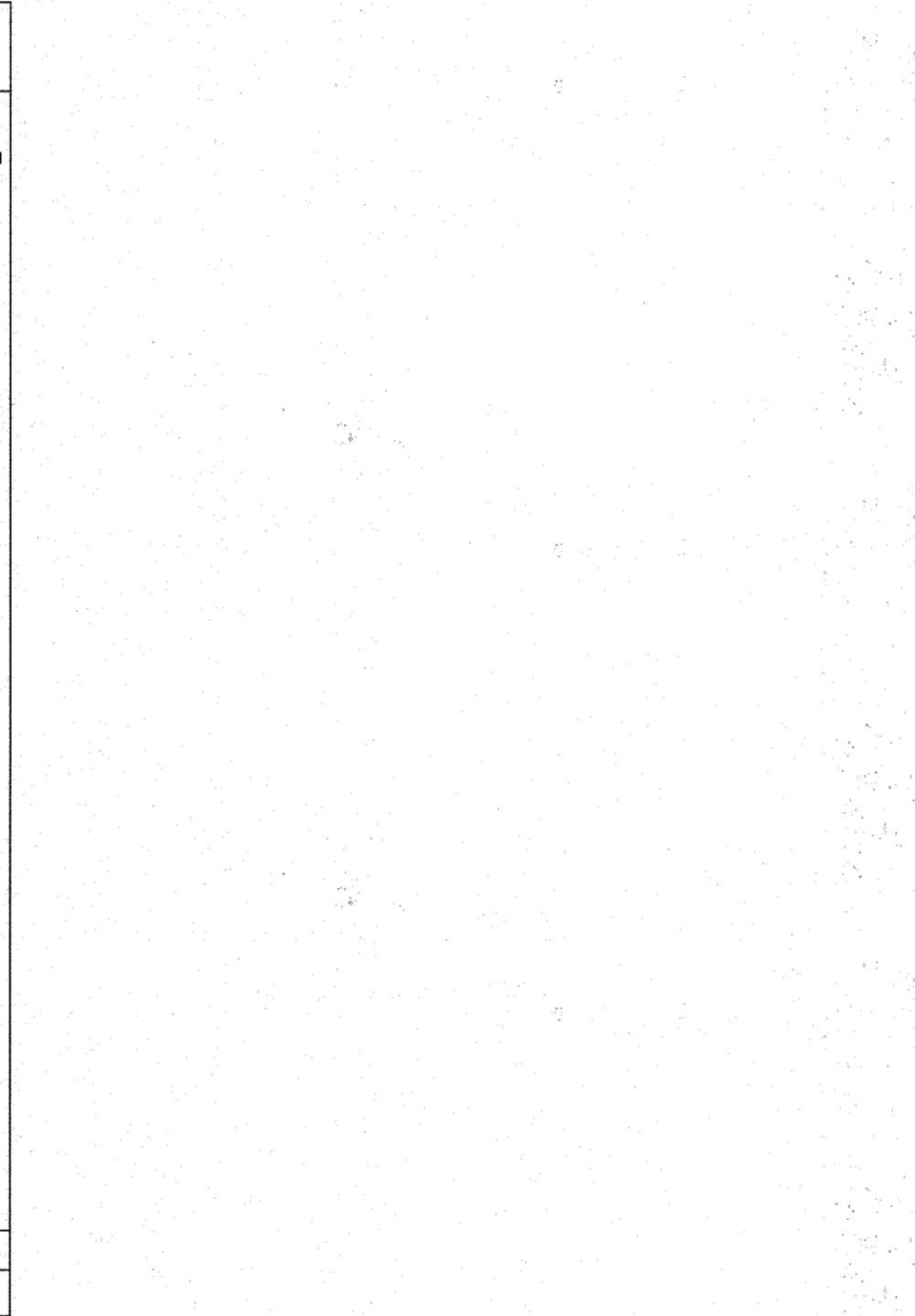
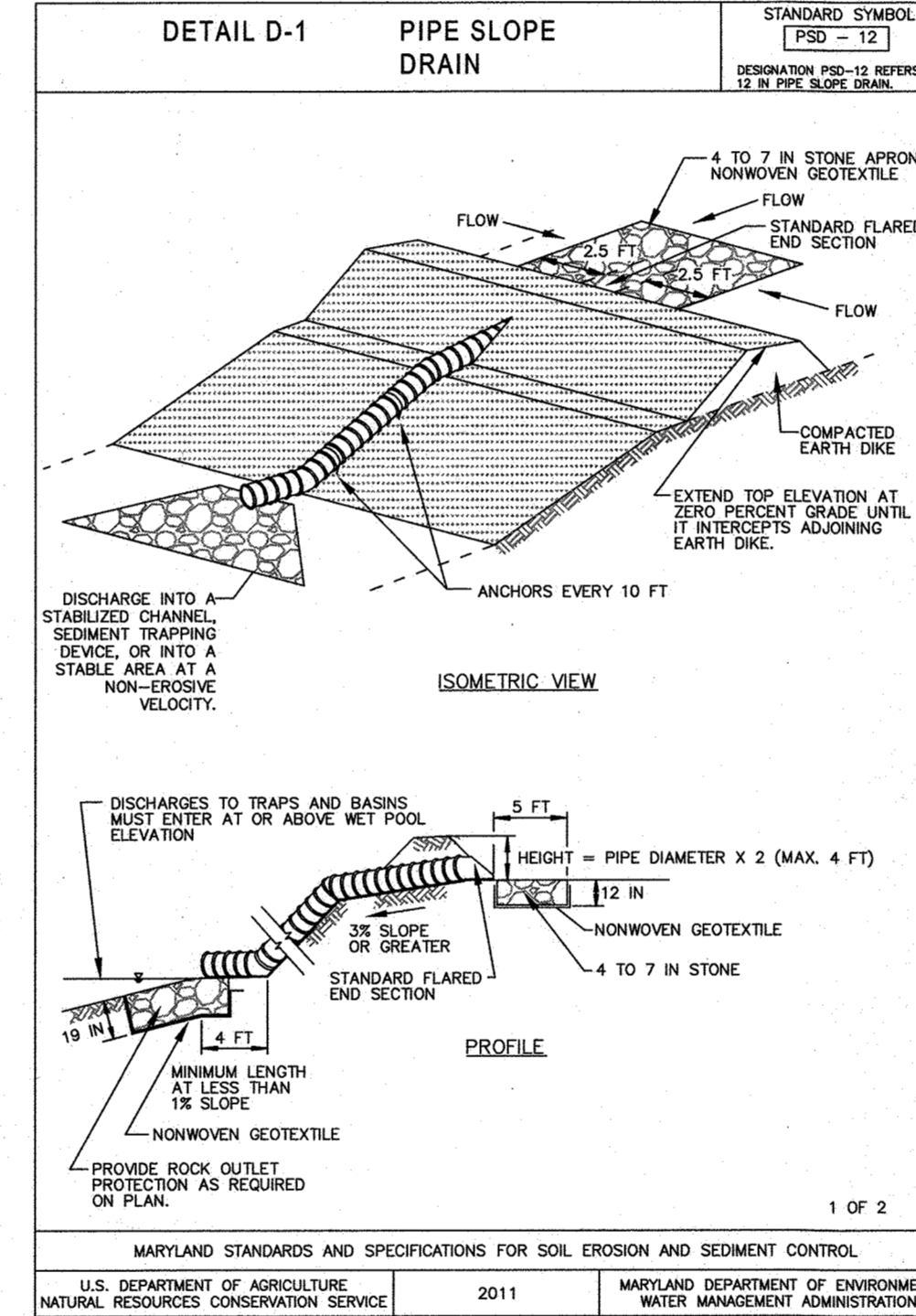
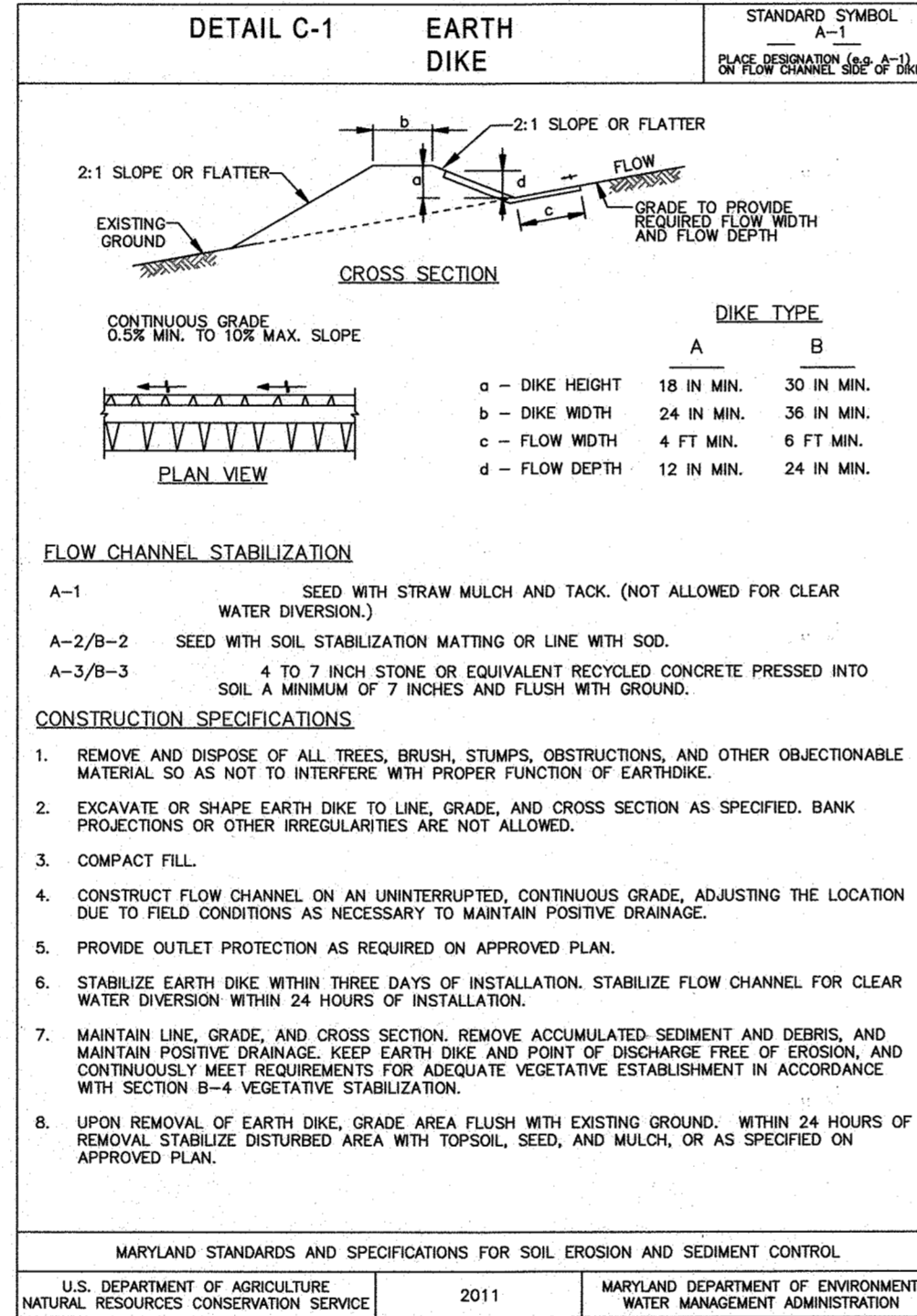
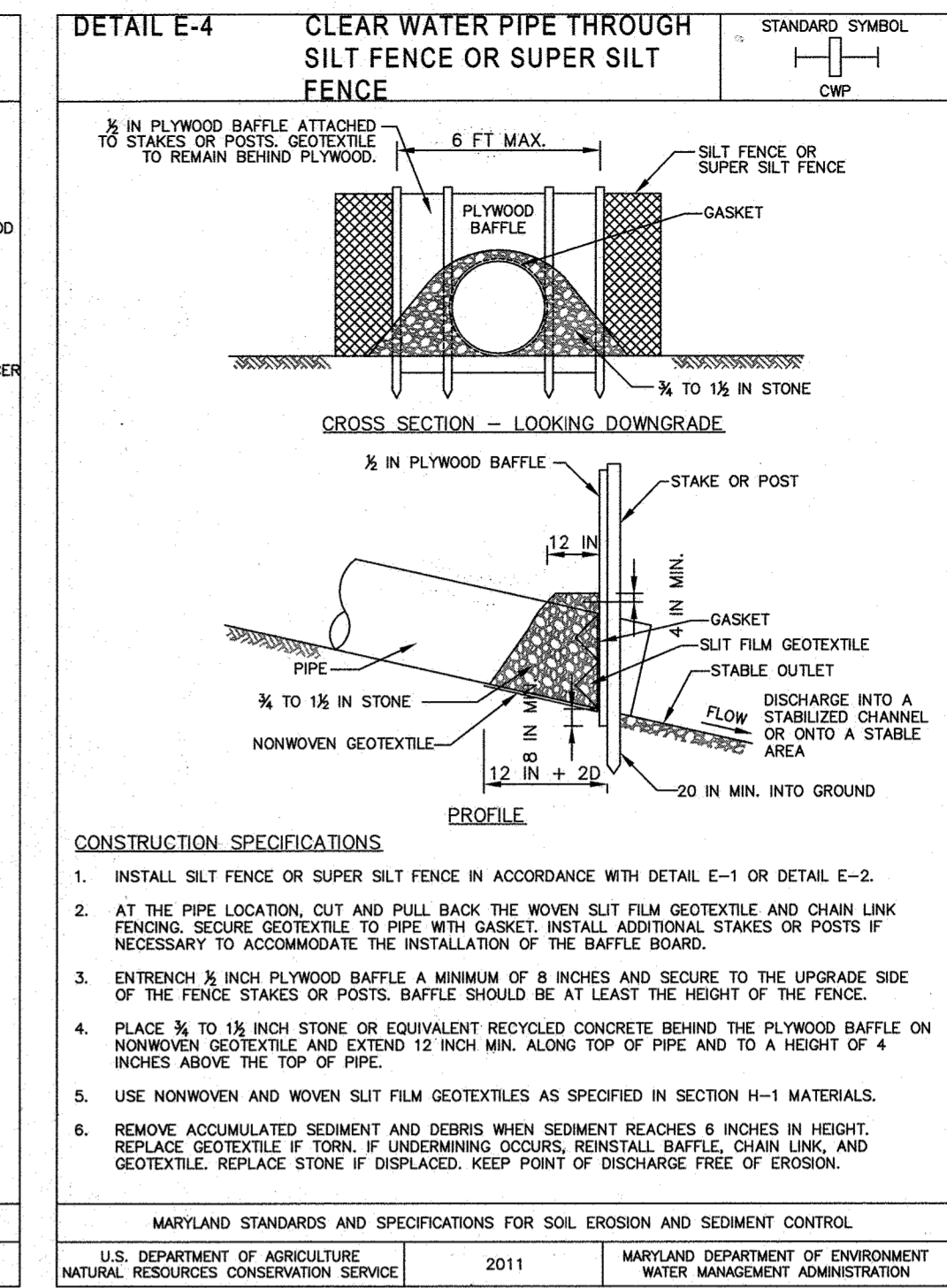
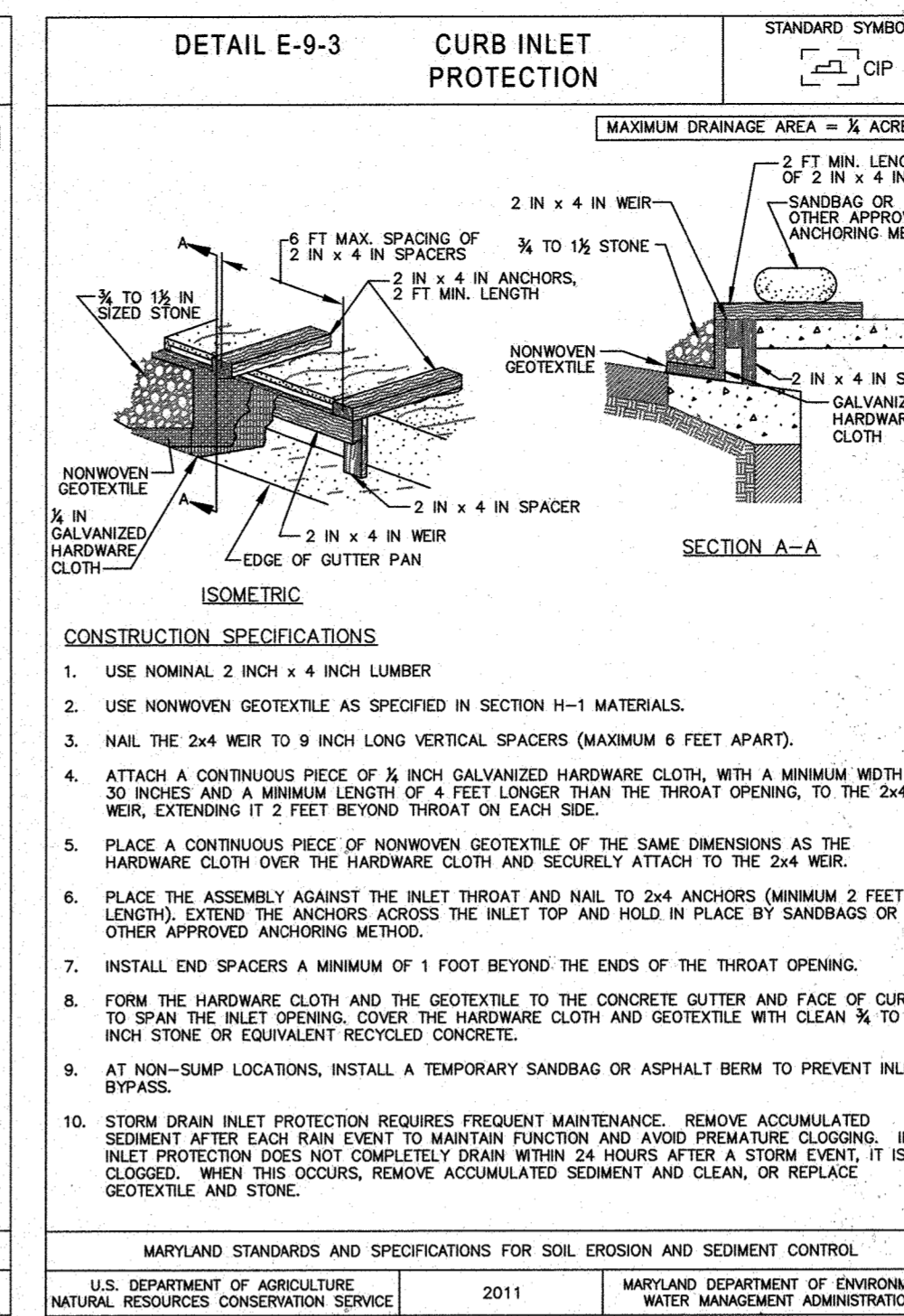
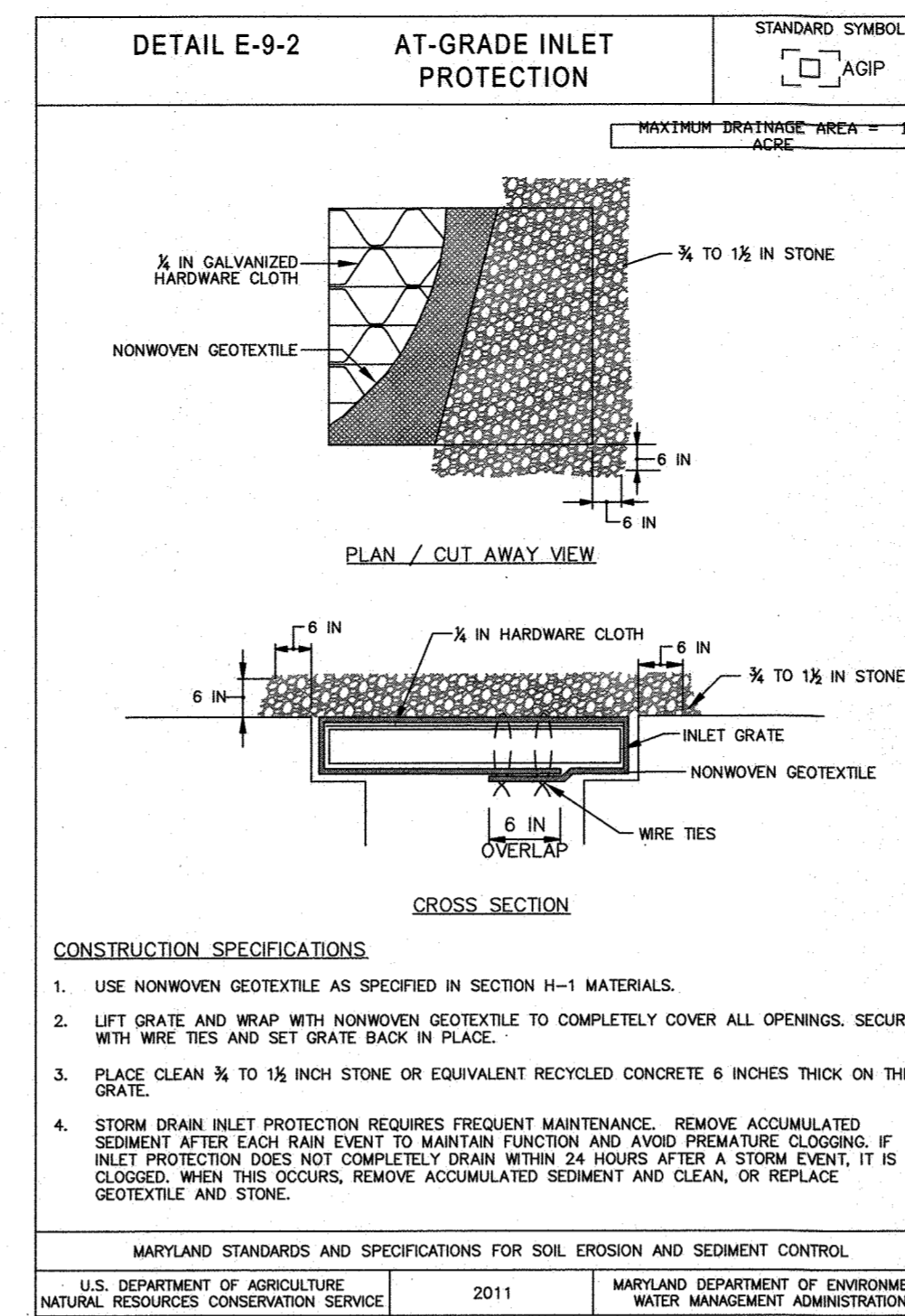
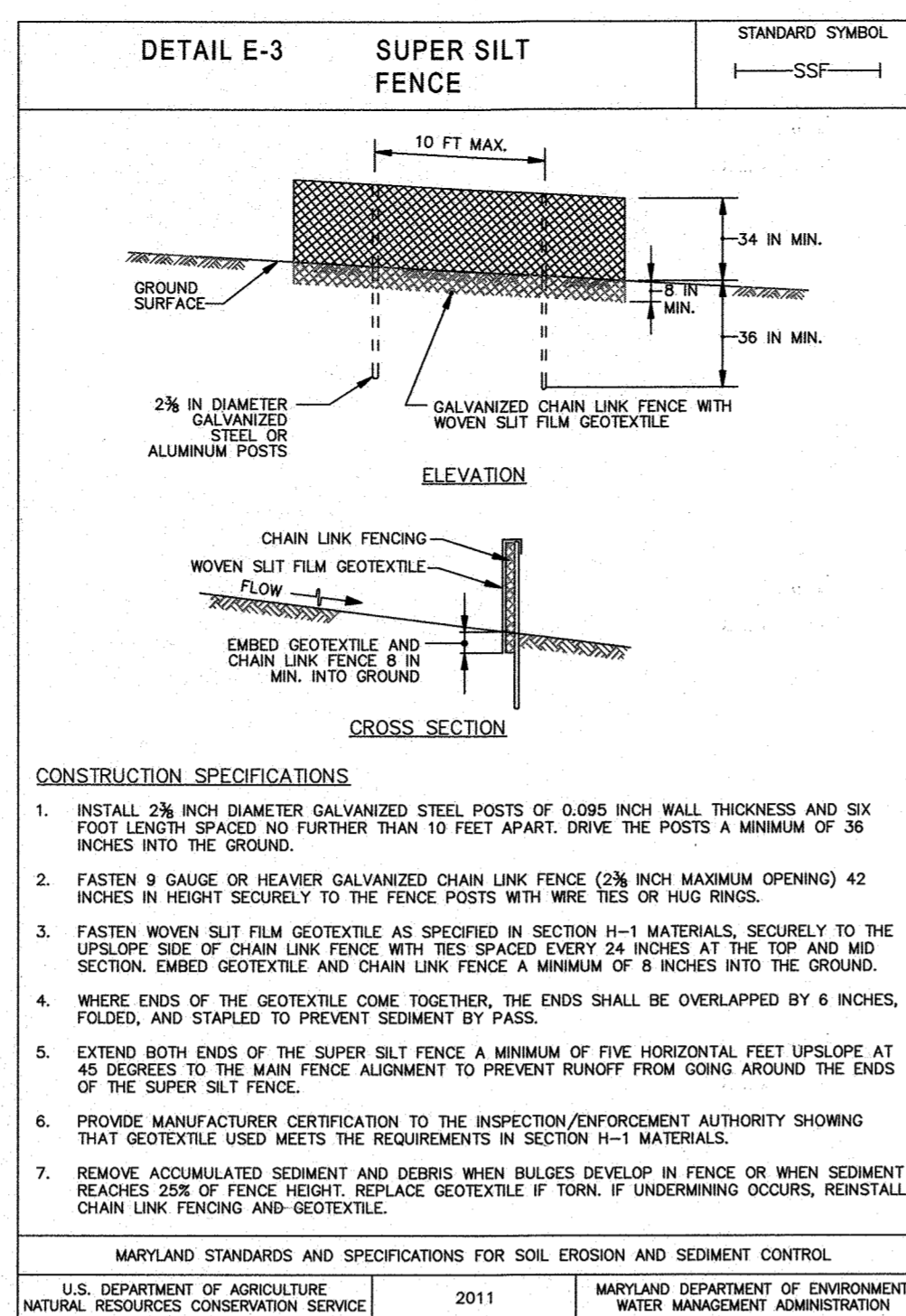
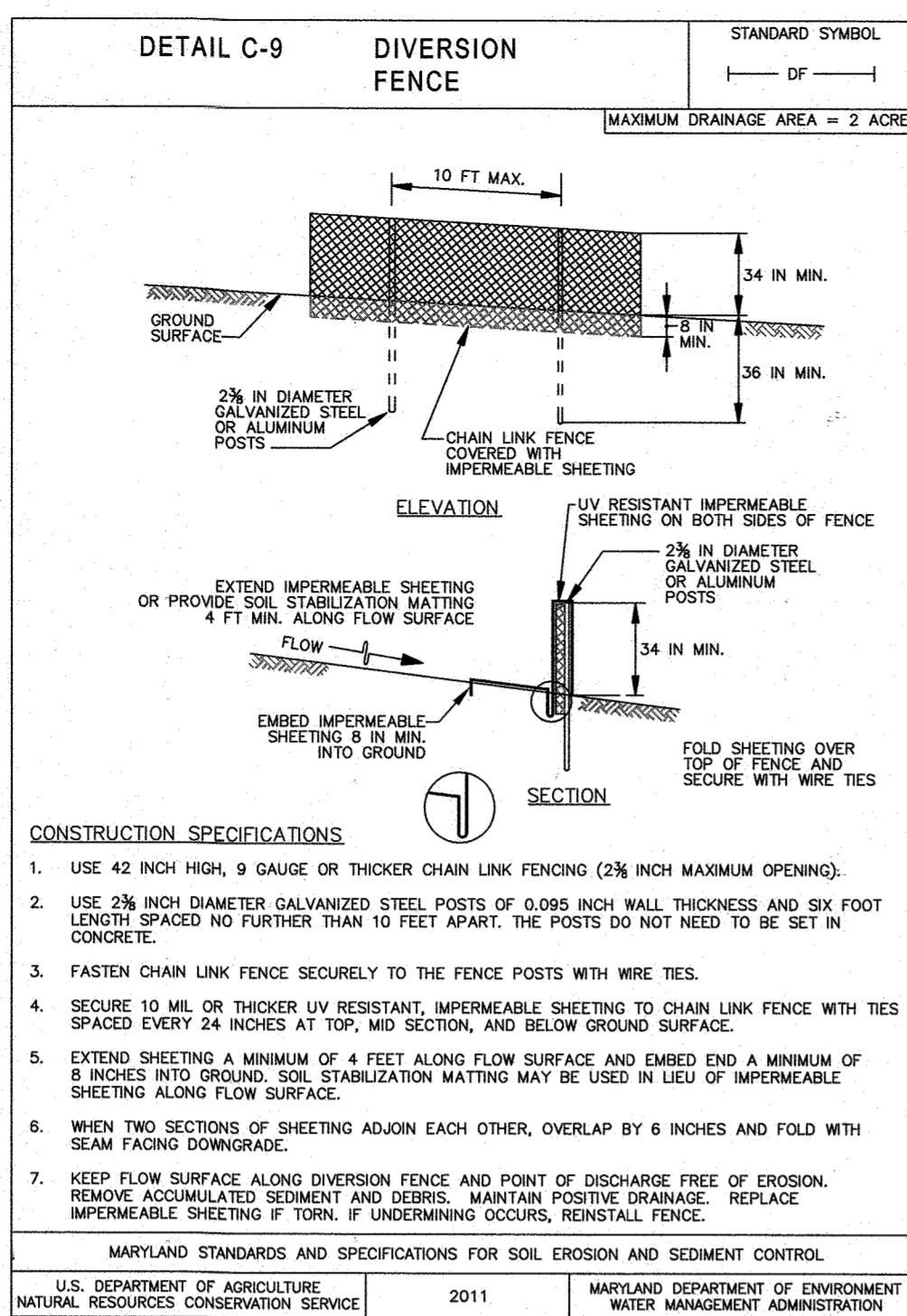
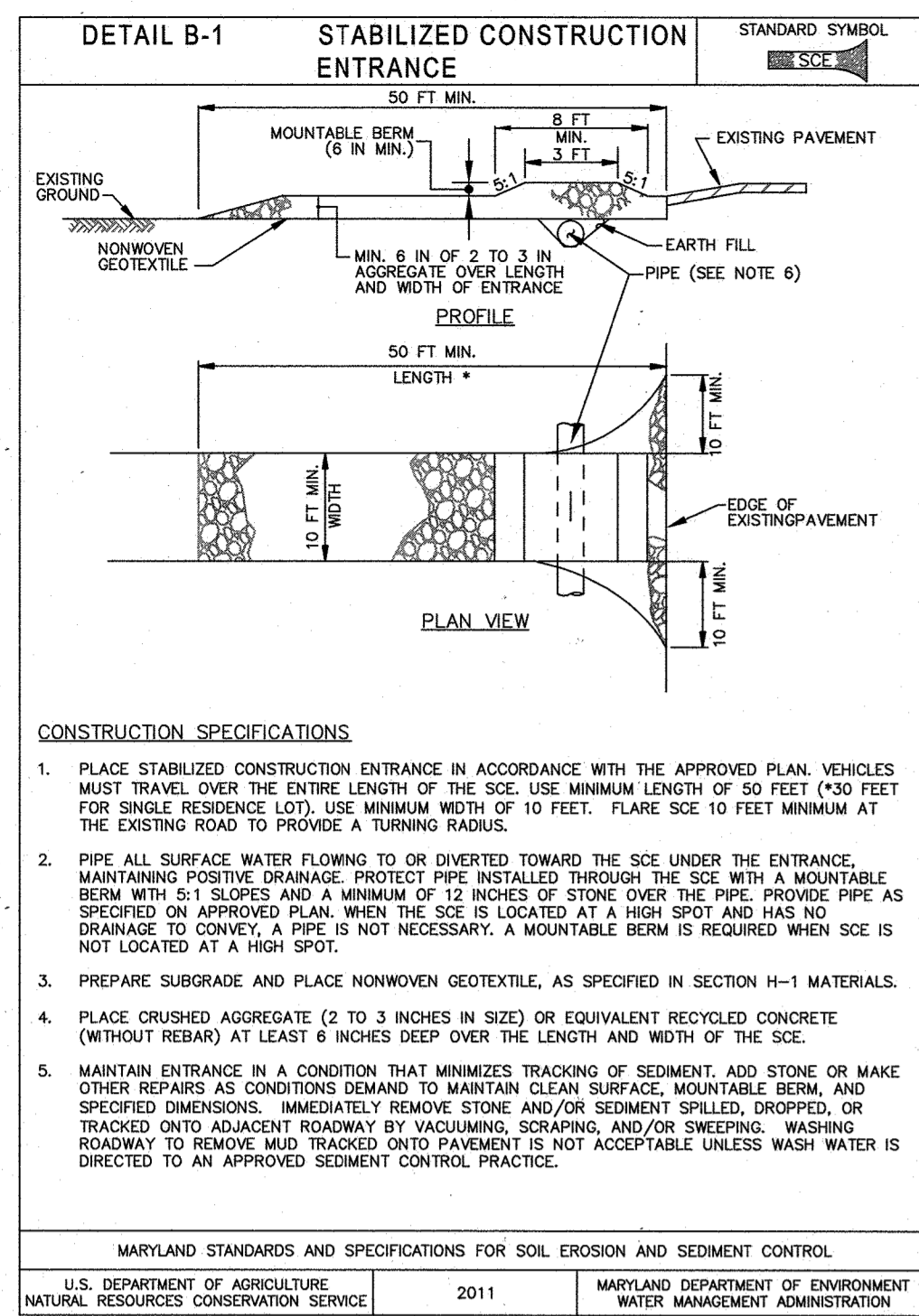
Exposed soils where ground cover is needed for 6 months or more.

**Criteria**

A. Seed Mixtures

- General Use**
  - Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
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  - For sites having disturbed areas over 5 acres, use and show the rates recommended by the soil testing agency.
  - For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 1/2 pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary.
- Turfgrass Mixtures**
  - Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.
  - Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan. For use in areas that receive intensive management.
    - Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky Bluegrass Cultivars with each ranging from 10 to 35 percent





**ENGINEER'S CERTIFICATE**

I 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.

*CL Mala ga* 11-28-18  
ENGINEER DATE

**DEVELOPER'S CERTIFICATE**

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

*John E. Pberton* 12-11-18  
DEVELOPER DATE

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

*John E. Pberton* 12/29/18  
HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

*James* 1/8/2019  
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

*Keith S. Johnson* 1/29/19  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Chad Phelan* 1-29-19  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

**ENGINEER'S CERTIFICATE**

I 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.

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ENGINEER DATE

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I 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.

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*Keith S. Johnson* 1/29/19  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Chad Phelan* 1-29-19  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

**ENGINEER'S CERTIFICATE**

I 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.

*CL Mala ga* 11-28-18  
ENGINEER DATE

**DEVELOPER'S CERTIFICATE**

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

*John E. Pberton* 12-11-18  
DEVELOPER DATE

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

*John E. Pberton* 12/29/18  
HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

*James* 1/8/2019  
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

*Keith S. Johnson* 1/29/19  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Chad Phelan* 1-29-19  
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CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Chad Phelan* 1-29-19  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

NO.	DATE	REVISION

**BENCHMARK ENGINEERING, INC.**  
ENGINEERS & LAND SURVEYORS & PLANNERS  
8400 BALTIMORE NATIONAL PIKE & SUITE 315 • ELLICOTT CITY, MARYLAND 21043  
(P) 410-465-8105 (F) 410-465-8644  
WWW.BEI-CIVILENGINEERING.COM

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. 21443, Expiration Date: 12-31-22

**OWNER:** MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP, 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400

**DEVELOPER:** MANGIONE ENTERPRISES OF TURF VALLEY, 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400

**RAVENWOOD AT TURF VALLEY**  
LOTS 1-7, OPEN SPACE LOTS 8-10, GOLF SPACE LOT 11 & BUILDABLE BULK PARCEL 'A'  
(A Resubdivision of Non-Buildable Bulk Parcel 'G' and 'H' established under Turf Valley, Pod E-1, Phase 1, F-17-095)

TAX MAP: 17 - GRID: 13 - PARCEL: p/o 706 - ZONED: PCCC  
ELECTION DISTRICT NO. 2 - HOWARD COUNTY, MARYLAND

**SEDIMENT AND EROSION CONTROL DETAILS**

DATE: NOVEMBER 1, 2018 BEI PROJECT NO. 2852  
SCALE: AS SHOWN SHEET 10 OF 10