GENERAL NOTES

- 1. THIS PROJECT IS IN CONFORMANCE WITH THE LATEST COUNTY HOWARD COUNTY STANDARDS UNLESS ALTERNATE COMPLIANCES
- 2. THE SUBJECT PROPERTY IS ZONED PGCC PER THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN.
- 3. THIS PROJECT IS SUBJECT TO THE 2ND AMENDED TURF VALLEY RESIDENTIAL SUB-DISTRICT FINAL DEVELOPMENT PLAN RECORDED AS PLAT #20286-20287 ON OCTOBER 24, 2008 AND THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND
- 4. 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
- 5. TRACT BOUNDARY IS BASED ON A FIELD SURVEY PERFORMED BY JOHN B. MILDENBERG IN MARCH. 2006.
- 6. THE EXISTING TOPOGRAPHY SHOWN IS BASED ON AERIAL TOPOGRAPHIC SURVEY PERFORMED BY WINGS AERIAL MAPPING, CO.
- AND FIELD SURVEYED LOCATIONS. IF NECESSARY, THE CONTRACTOR SHALL ADJUST ANY OR ALL STRUCTURE TOP ELEVATIONS
- 8. 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
- 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
- BY ECO-SCIENCE PROFESSIONALS, INC. ON MAY 26 2016. THE LIMITS SHOWN ARE IN ACCORDANCE WITH THOSE SHOWN ON
- 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
- 11. 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.
- 12. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO CEMETERIES, BURIAL GROUNDS OR HISTORIC STRUCTURES LOCATED ON
- 13. 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 dbg NOISF 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
- 14. 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
- 15. THIS SITE IS WITHIN THE METROPOLITAN DISTRICT.
- 16. WATER AND SEWER IS PUBLIC. THE CONTRACT NUMBER IS 14-4985-D. THE DRAINAGE AREA IS THE LITTLE PATUXENT. THIS SUBDIVISON IS SUBJECT TO SECTION 18.122B OF THE HOWARD COUNTY CODE. PUBLIC WATER AND/OR SEWER SERVICE HAS BEEN GRANTED UNDER THE TERMS AND PROVISIONS, THEREOF, EFFECTIVE TBD, ON WHICH DATE DEVELOPER AGREEMENT
- 17. THE GEO-TECHNICAL REPORT WAS PREPARED BY HILLIS-CARNES ENGINEERING ASSOCIATES, DATED APRIL 26, 2016
- 18. 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.
- 19. 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
- 20. STORMWATER MANAGEMENT IS PROVIDED BASED ON ENVIRONMENTAL SITE DESIGN TO THE MAXIMUM EXTENT PRACTICAL (FSD. TO THE MEP). FOR THIS PROJECT, ONE (M-6) MICRO BIO-RETENTION PRACTICE AND FOURTEEN (M-5) DRY WELLS SHALL BE UTILIZED TO TREAT THE PROPOSED IMPERVIOUS SURFACES. SEE SUMMARY TABLE ON THIS SHEET. ALL SWM PRACTICES SHALL
- 21. THE ARTICLES OF INCORPORATION FOR THE HOMEOWNERS ASSOCIATION SHALL BE ACCEPTED BY THE STATE DEPARTMENT OF ASSESSMENTS AND TAXATION PRIOR TO THE RECORDATION OF THE SUBDIVISION PLAT.
- 22. 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
- THE PURPOSE OF OPEN SPACE LOT 9 IS TO PRESERVE ENVIRONMENTAL AREAS SUCH AS WETLANDS AND WETLANDS BUFFER.
- 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.
- 23. THIS PROJECT IS EXEMPT FROM RECREATIONAL OPEN SPACE REQUIREMENTS SINCE IT IS ZONED PGCC.
- 24. THIS PROJECT IS EXEMPT FROM THE MODERATE INCOME HOUSING UNIT REQUIREMENT (COUNCIL BILL 35-2013) SINCE IT IS
- 25. 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
- A) THE R1-1 "STOP" SIGN AND STREET NAME SIGN (SNS) ASSEMBLY FOR THIS DEVELOPMENT MUST BE INSTALLED
 - B) THE TRAFFIC CONTROL DEVICE LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE FIELD APPROVED BY HOWARD COUNTY TRAFFIC DIVISION (410-313-2430) PRIOR TO THE INSTALLATION OF ANY OF THE TRAFFIC
 - C) ALL TRAFFIC CONTROL DEVICES AND THEIR LOCATIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE
 - D) ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED "QUICK PUNCH", SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL. PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. THE ANCHOR SHALL NOT EXTEND MORE THAN TWO "QUICK PUNCH" HOLES ABOVE GROUND LEVEL. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED

32. APPLICABLE PREVIOUS HOWARD COUNTY FILE REFERENCES:

S-86-013, ECP-15-077, SP-16-011, F-16-004, F-17-095, S-11-002

ROAD EXTENSION UPON SUBMISSION OF THE FIRST OF THE FOLLOWING:

34. WP-16-142, WAS APPROVED ON JUNE 21, 2016 WITH THE FOLLOWING CONDITIONS:

3. A SITE DEVELOPMENT PLAN LOCATED ON PARCEL 706.

16.144(R)(L)(I) WITH RESPECT TO S-11-002 MAY BE DENIED.

VALLEY PHASE 5 (F-15-079).

TURF VALLEY, RESORT ROAD EXTENSION: OR

33. WP-15-153, AN ALTERNATE COMPLIANCE TO SECTION 16.146 AND SECTION 16.1202(a) OF THE HOWARD COUNTY

A. 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

C. 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

A FINAL SUBDIVISION PLAN SUBDIVIDING PARCEL 706
 A FINAL SUBDIVISION PLAN RESUBDIVIDING BULK PARCELS RECORDED AS PART OF THE BLUFFS AT

. 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 WAVER APPROVAL (ON

OR BEFORE JULY 12, 2016). IF THE SUBMISSION IS NOT MADE BY THE ESTABLISHED DEADLINE THE PLAN SHALL

ACCORDING TO THE DPZ RESEARCH DIVISION THE PLAN WILL RECEIVE 114 ALLOCATIONS FOR THE CURRENT 2018

SCHOOLS TEST AND PASS FOR THE MANOR WOODS SCHOOL DISTRICT/ THE NORTHERN SCHOOL REGION AND THE

MOUNT VIEW MIDDLE SCHOOL DISTRICT GIVEN THAT THE APFO TESTS WILL PASS/ THE PLAN WILL BE ACCEPTED

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 THI PHASING PLAN DATED 4-29-2008. THIS PLAN PROPOSES 97 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

BE VOIDED AND THE APPLICATION FOR PLAN APPROVAL CONSIDERED WITHDRAWN IN ACCORDANCE WITH

REACTIVATION ALLOCATIONS MUST AGAIN BE GRANTED AND THE OPEN/CLOSED SCHOOLS TEST REPEATED.

ALLOCATION YEAR, THE GROWTH AND REVITALIZATION - ELLICOTT CITY PLANNING AREA. IT WILL TAKE THE

C. THE PETITIONER IS STRONGLY ADVISED THAT ADDITIONAL REQUESTS FOR WAIVERS OF SUBSECTION

B. 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

SUBBIVISION AND LAND DEVELOPMENT REGULATIONS WAS APPROVED ON JUNE 16, 2015 WITH THE FOLLOWING

B. 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-BUILDBLE.

- 27. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
- 28. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK
- 29. DRIVEWAYS SHALL BE PROVIDED PRIOR TO ISSUANCE OF A USE AND OCCUPANCY PERMIT FOR ANY NEW DWELLINGS FOR
- A) WIDTH 12' (16' SERVING MORE THAN ONE RESIDENCE). B) SURFACE - 6" OF CRUSHER RUN BASE WITH TAR AND CHIP COATING (1.5" MIN)
- GEOMETRY MAX 15% GRADE, MAX 10% GRADE CHANGE & MIN. 45' TURNING RADIUS.) STRUCTURES (CULVERTS/BRIDGES) — CAPABLE OF SUPPORTING 25 GROSS TONS (H25 LOAD) E) DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100 YEAR FLOODPLAIN WITH NO MORE THAN 1 FOOT DEPTH OVER
- F) STRUCTURE CLEARANCES MINIMUM 12 FEET G) MAINTENANCE - SUFFICIENT TO ENSURE ALL WEATHER USE
- 30. RESORT ROAD IS CLASSIFIED AS A LOCAL ROAD PER THE HOWARD COUNTY GENERAL PLAN. IT SHALL BE DESIGNED AS A MINOR COLLECTOR.
- 31. ALL FILL AREAS SHALL BE AT 95% COMPACTION IN ACCORDANCE WITH AASHTO T-180 STANDARDS.

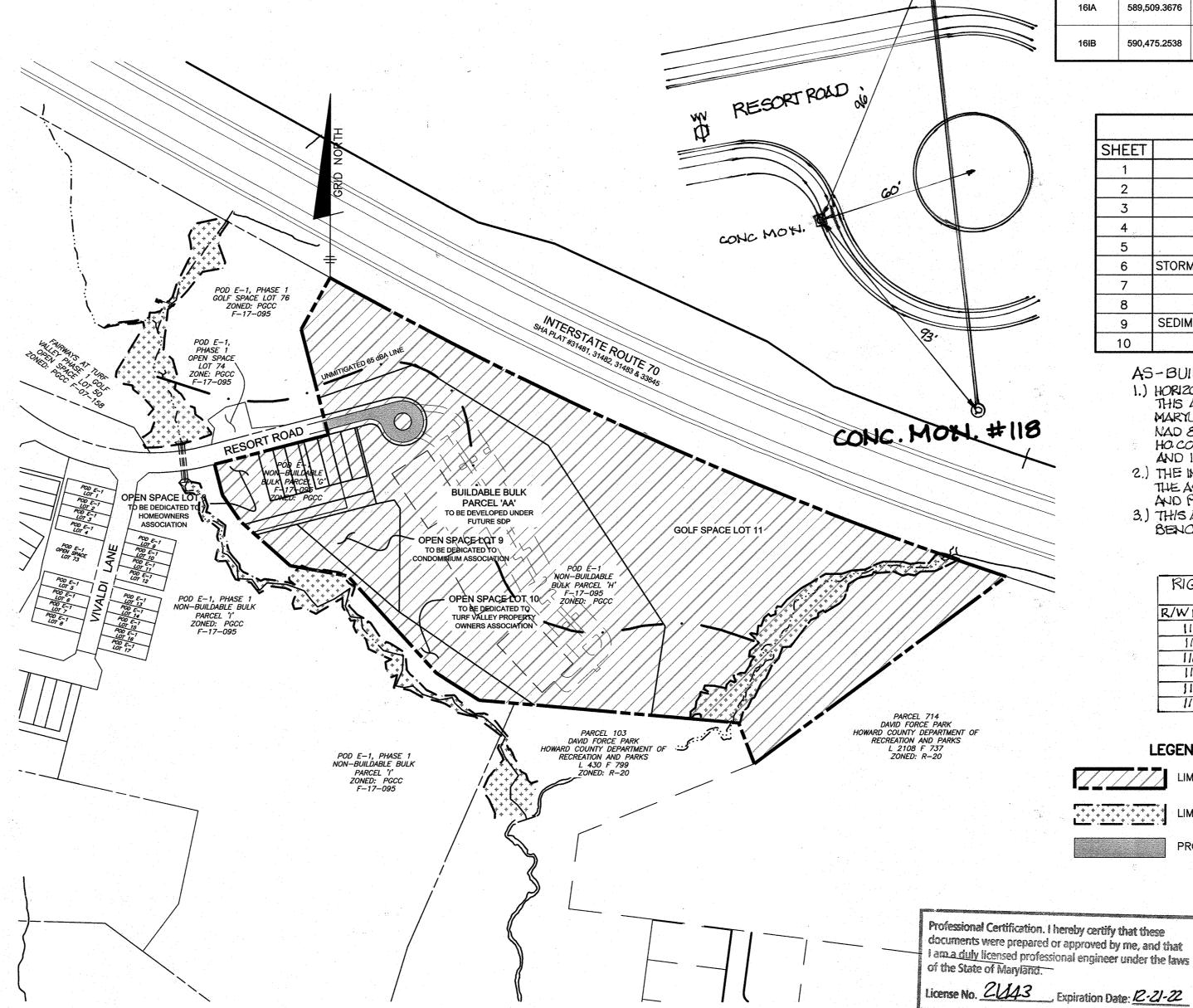
APPROVED: DEPARTMENT OF PUBLIC	
(feme	1/8/2019
CHIEF, BUREAU OF HIGHWAYS	DATE
APPROVED: DEPARTMENT OF PLANN	ING AND ZONING
Val & O	1-0/10
CHIEF, DIVISION OF LAND DEVELOPMENT	1/39/19 DATE
	1/29/19 DATE

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



1 inch = 200 ft.

(M-6) Micro Bio-Retention

(M-5) Drywell

(M-5) Drywel

(M-5) Drywell

(M-5) Drywel

(M-5) Drywel

(M-5) Drywell

10445 Resort Road

10443

10441

-10437

10437

10435

10435

10433

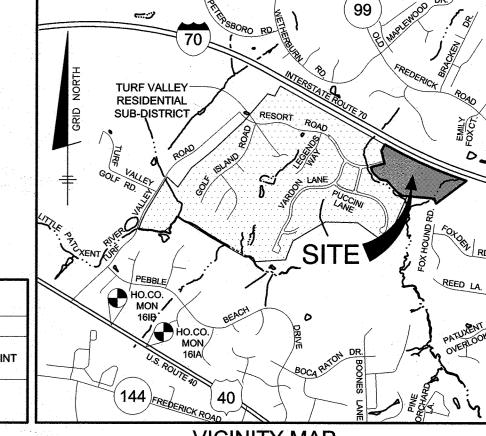
10433

10431

10431

Resort Road

BENCHMARKS									
NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION					
16IA	589,509.3676	1,346,343.632	462.988	RT. 40 0.35 MILES WEST OF RT-144 JOIN					
16IB	590,475.2538	1,344,753.9350	469.892	RT.40 0.8 MILES EAST OF MARRIOTTSVILLE ROAD					



VICINITY MAP

	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
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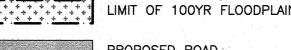
AS-BUILT NOTES:

- 1.) 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 IGIB
- 2.) THE INSTRUMENTS USED IN PERFORMING THE AS-BUILT WERE A 5" TOTAL STATION AND PRISM AND RIK GPS.
- 3.) THIS AS-BUILT WAS PERFORMED BY BENCHMARK ENGINEERING, INC.

R/W PT.NO.	DESCRIPTION	BEVATION
113	rebar & cap	462.29'
115	REBAR & CAP	462.72'
116	rebar e cap	460.17
117	REBAR ECAP	457.79'
118	CONC. MON.	460.34
119	REBAR & CAP	460.68'

LEGEND

LIMIT OF SUBMISSION



oned: PGCC		
iross Area	25.46	acres
00yr Floodplain	1.07	acres
teep Slopes 25% or >(outside floodplain)	1.11	acres
let Area	23.28	acres
lumber of Proposed Units:		
Single Family Detached:	0	5
Single Family Attached:	7	
Apartments:	0	**
Total:	7	
rea of Buildable Lots	0.67	acres
rea of Buildable Bulk Parcels	8.97	acres
rea of Proposed Right-of-way	0.44	acres
pen Space Calculations	-	
rea of Open Space Required (15% of gross)	3.82	acres
rea of Open Space Provided	15.38	acres
ecreational Open Space Required	NA	(PGCC)
arking Calculations		
arking Required SFA and SFD Lots:	1	8
2.5 spaces per unit (Section 133.0.D.2.a)		
arking Provided SFA and SFD Lots:	2	8
(2 spaces per garage + 2 spaces per drivew ay)		
arking Required Condominium/Apartment:	()
2.3 spaces per unit (Section 133.0.D.2.b)		
arking Provided Condominium/Apartment:	future	SDP **
Condominium/Apartments shall be shown on	Parcel 'AA	
under a future Site Development Plan		***************************************
	Samuella and the same of the s	Contraction and Contraction an

Site Analysis Data Chart

I hereby certify, by my seal, that to the best of my knowledge

Private

Private

Private

Private

Private

and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications

Donald Mason, P.E.

AS-BUILT CERTIFICATION

170 176

170 176 2.6

170 | 176 | 2.6

170 176 2.6

170 176 2.6

STORMWATER MANAGEMENT SUMMARY TABLE

12,906 57% 0.56 1.2

825 | 100% | 0.95 | 2.6

825 | 100% | 0.95 | 2.6

825 100% 0.95

100% 0.95 2.6

2.6

2.6

2.6

2.6

825 100% 0.95

825

825

825

#14 825 825 100% 0.95 2.6

#1 22.684

825

825

825

825

825

825

825

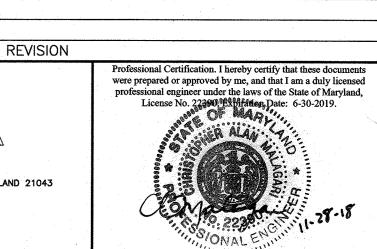
825

34,234 24,456

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 MB #2 constructed under F-16-004 and thus not be treated via new ESD practice.

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



. 1		
	OWNER:	
	MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400	
	115 S25 C169	
	DEVELOPER:	

DESIGN: DBT | DRAFT: DBT

DATE

RAVENWOOD AT TURF VALLEY

ANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093

LOTS 1-7, OPEN SPACE LOTS 8-10, GOLF SPACE LOT 11 & BUILDABLE BULK PARCEL 'A' (A Resubdivision of Non-Buldable 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

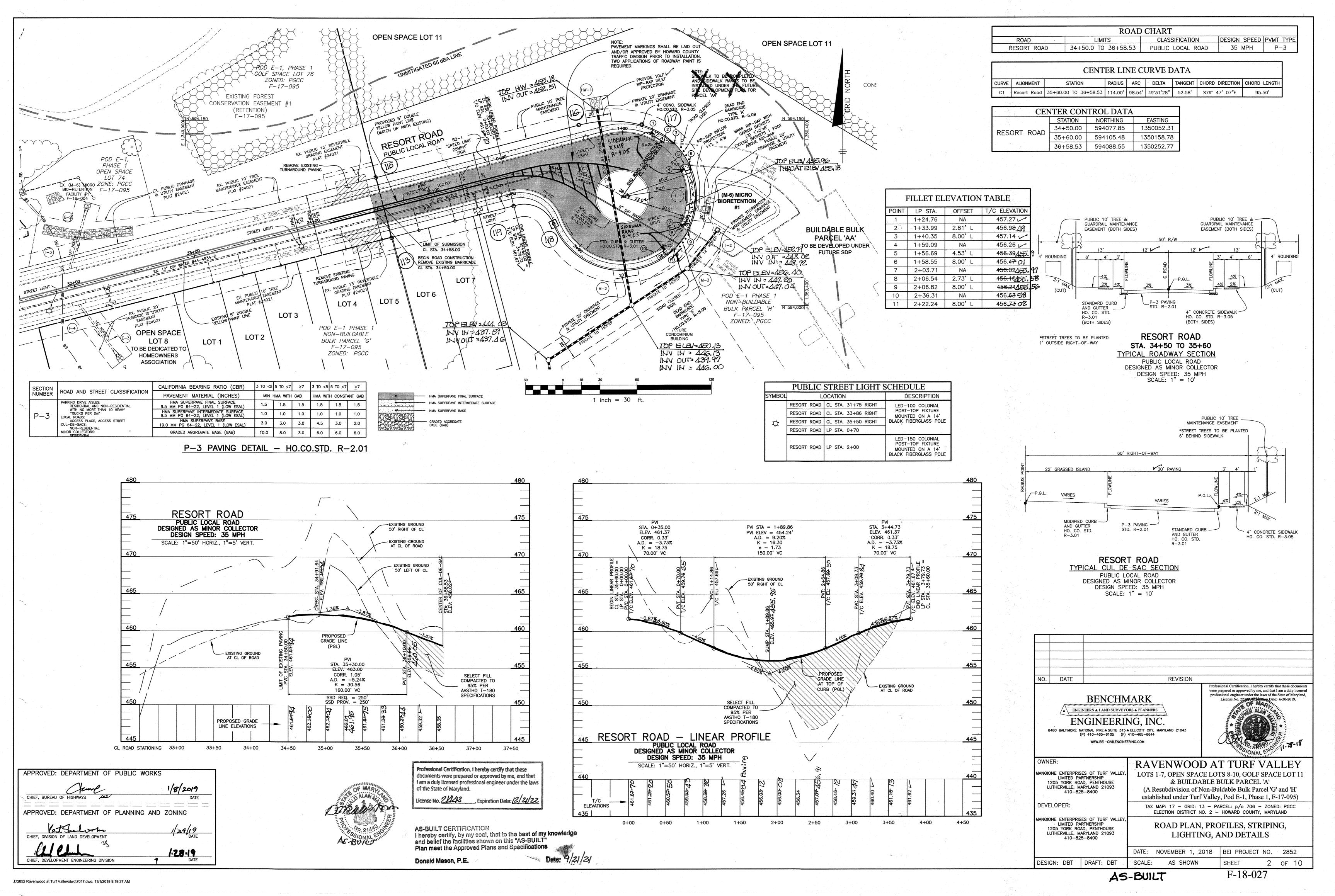
TITLE SHEET

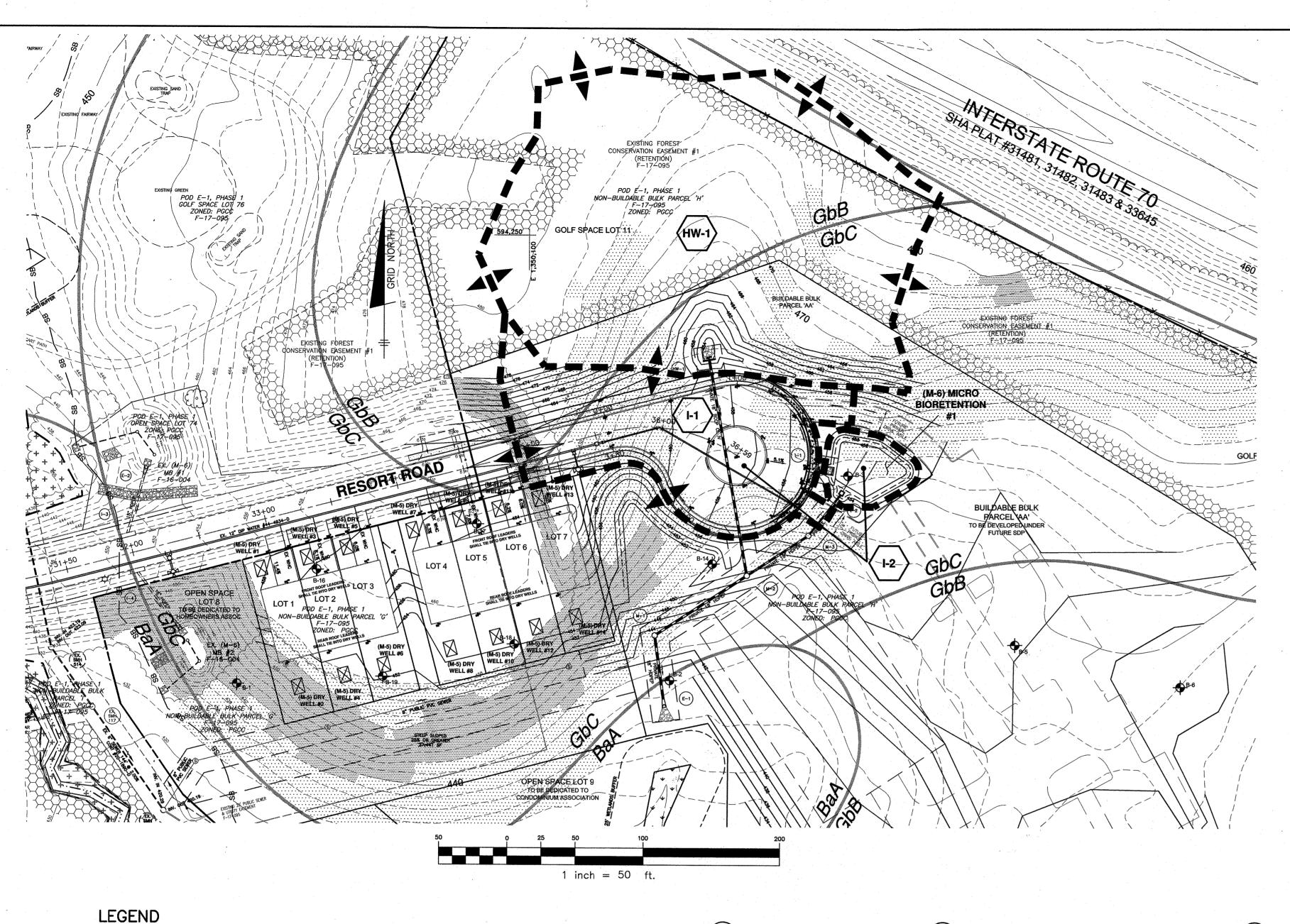
DATE: NOVEMBER 1, 2018 | BEI PROJECT NO. 2852

AS-BUILT

F-18-027

J:\2852 Ravenwood at Turf Vallev\dwa\7009.dwa. 11/1/2018 9:21:50 AM





,			STORM DRAIN STRUCT	URE SCHEDU	LE				
STRUCT			LOCATION	INV	INVERT		TOP	THROAT	MAINTENANC
NO.	TYPE	STD. DETAIL	Northing / Easting	Northing / Easting IN		OUT	ELEVATION	ELEVATION	
			INLETS						
I-1	Flow Thru A-5	SHA MD 374.68	N 594080.34 E 1350304.02	455.3718	72	455.03/648	455.9796	455.37 18	PUBLIC
1-2	S inlet	Ho.Co. D-4.22	N 594061.29 E 1350329.58	-	448.92 (4")	448. 25 (12")	453.00452	19 -	PRIVATE
						00		·	
			MANHOLES	3	59	46			
M-1	4' Diameter Pre-Cast	Ho.Co. G-5.12	N 593956.12 E 1350192.97		437.82 (18")	437. 62 (18")	444.0063		PRIVATE
M-2	4' Diameter Pre-Cast	Ho.Co. G-5.12	N 594000.38 E 1350260.27	V446.00 (18")	446.25 (12")	444-90 (18")430	.90 452.00/50	B	PRIVATE
M-3	4' Diameter Pre-Cast	Ho.Co. G-5.12	N 594030.01 E 1350305.34		447.45 (12")	447.26 (15")	456.5040		PRIVATE
			HEADWALLS & END	SECTIONS	152.51	452.51			
HW-1	TYPE 'C'	Ho. Co. D-5.21	N 594159.15 E 1350232.29		4 53.00 (18")	453.9 0 (18")			PRIVATE
E-1	18" HDPEP	NA	N 593903.00 E 1350200.27	-	-	436.00 (18")	•		PRIVATE

STRUCTURE LOCATION FOR TYPE A INLETS IS AT THE MIDPOINT ALONG THE GUTTE

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						

AREA AND "C" FACTOR TABULATION

PHASE	INLET#	ZONING	AREA (Ac)	"C" FACTOR	% IMPERVIOUS
		(Z)	(A)	(C)<25	(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

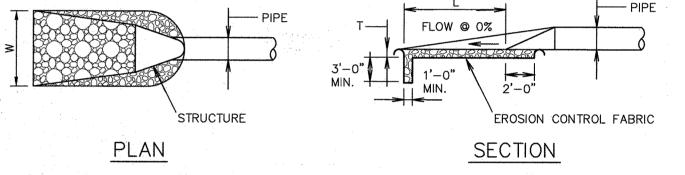
1. THE SUBGRADE FOR THE FILTER, RIP—RAP, OR GABION SHALL BE PREPARED TO THE REQUIRED LINES AND GRADES. ANY FILL REQUIRED IN THE SUBGRADE SHALL BE COMPACTED TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.

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.

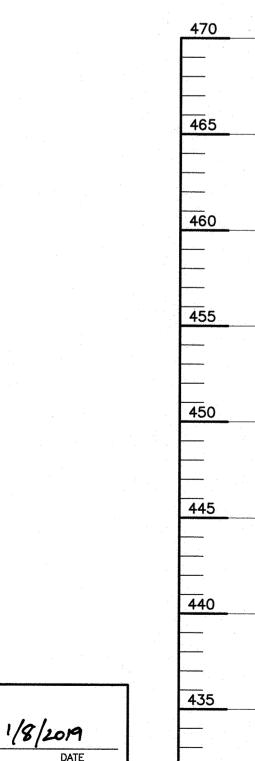
4. STONE FOR THE RIP—RAP OR GABION OUTLETS MAY BE PLACED BY EQUIPMENT. THEY SHALL BE CONSTRUCTED TO THE FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. THE STONE FOR HE RIP—RAP OR GABION OUTLETS SHALL BE DELIVERED AND PLACED IN A MANNER THAT 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.

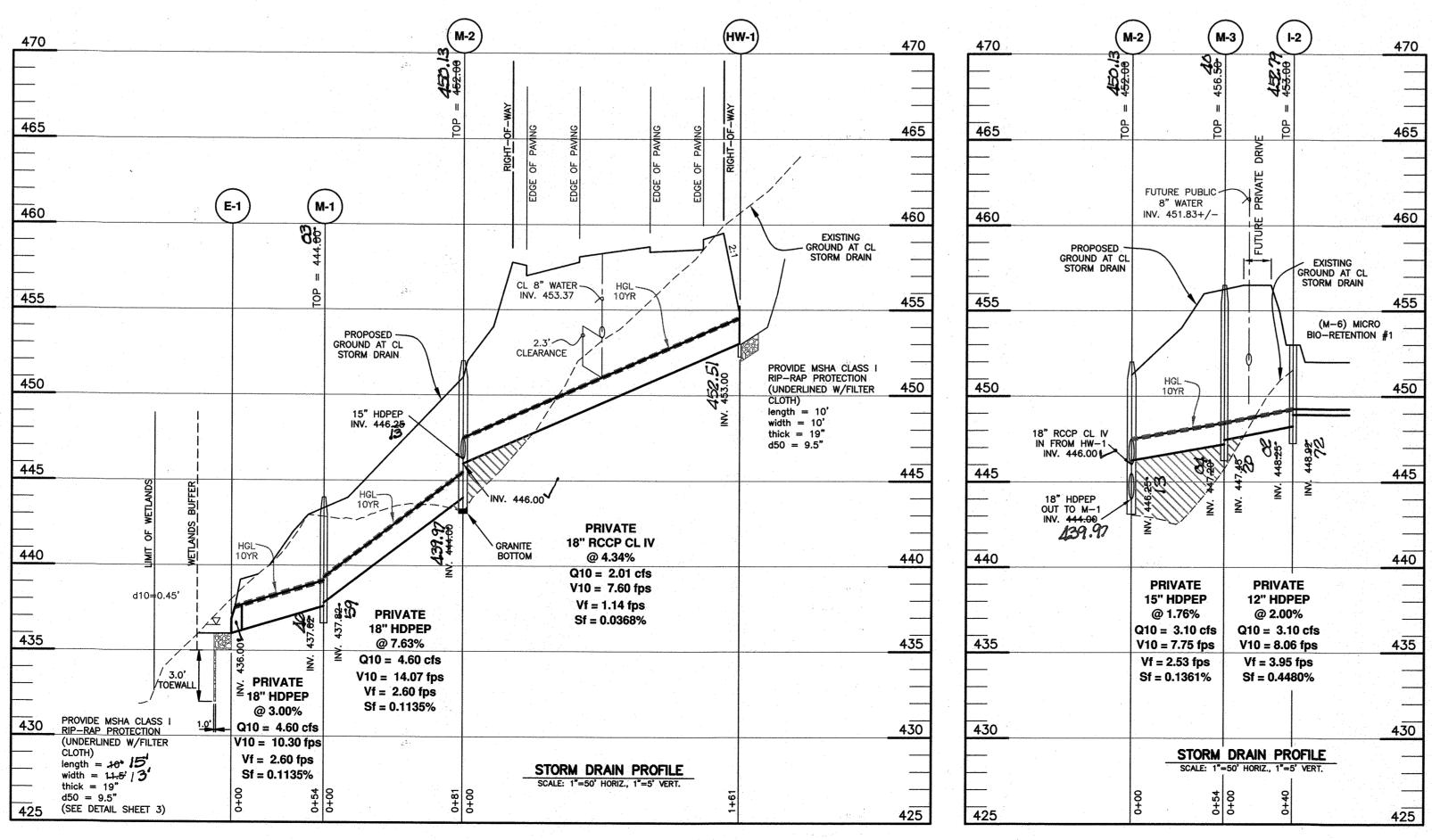
5. THE STONE SHALL BE PLACED SO THAT IT BLENDS IN WITH THE EXISTING GROUND. IF THE STONE IS PLACED TOO HIGH THEN THE FLOW WILL BE FORCED OUT OF THE CHANNEL AND SCOUR ADJACENT TO THE STONE WILL OCCUR.



STRUCTURE	Q ₂ fps	V ₂ fps	d ₂ (ft)	Q ₁₀ fps	V ₁₀ fps	d ₁₀ (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 10.0	13'11.5"	19"		1
										1		

OUTLET PROTECTION DETAIL NOT TO SCALE







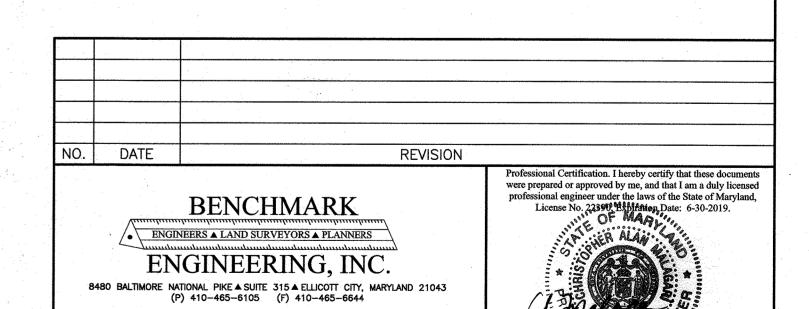
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 2/443 ____ Expiration Date: 12/2/22

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

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

Donald Mason, P.E.



OWNER:

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

DEVELOPER:

DESIGN: DBT DRAFT: DBT

WWW.BEI-CIVILENGINEERING.COM

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

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

STORM DRAIN DRAINAGE AREA

MAP, PROFILES, ND DETAILS

DATE: NOVEMBER 1, 2018 BEI PROJECT NO. 2852

SCALE: AS SHOWN SHEET 3 OF 10

AS-BUILT

F-18-027

CHIEF, DEVELOPMENT ENGINEERING DIVISION

CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PUBLIC WORKS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

EXISTING CONTOURS
SITE BOUNDARY

EXISTING CL STREAM

EXISTING TREELINE

STREAM BUFFER

SOILS DIVISION LINE

SOILS TYPE

STEEP SLOPES 25% OR GREATER

STEEP SLOPES 15% TO 24.99%

EASEMENT

DRAINAGE AREA

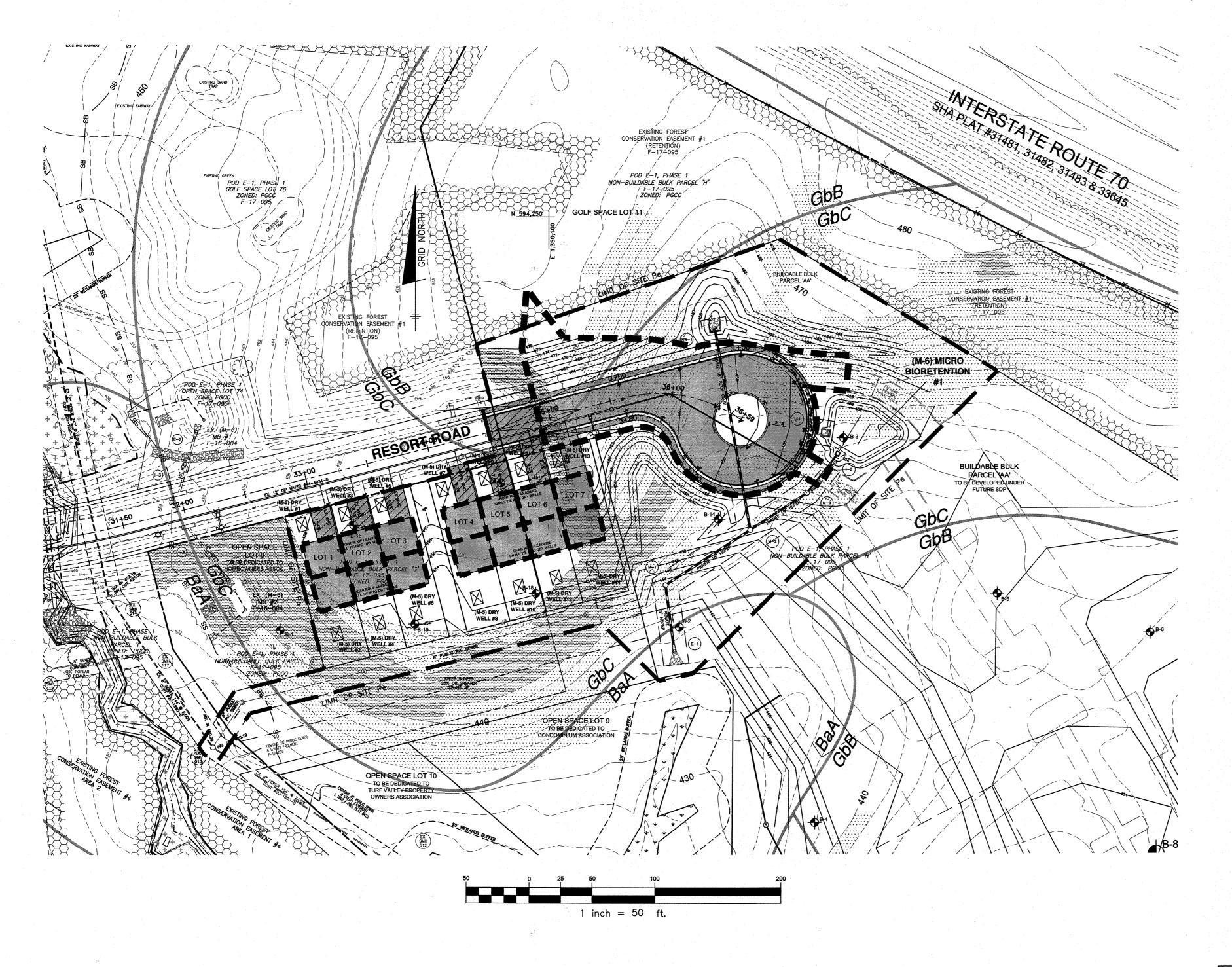
FOREST CONSERVATION

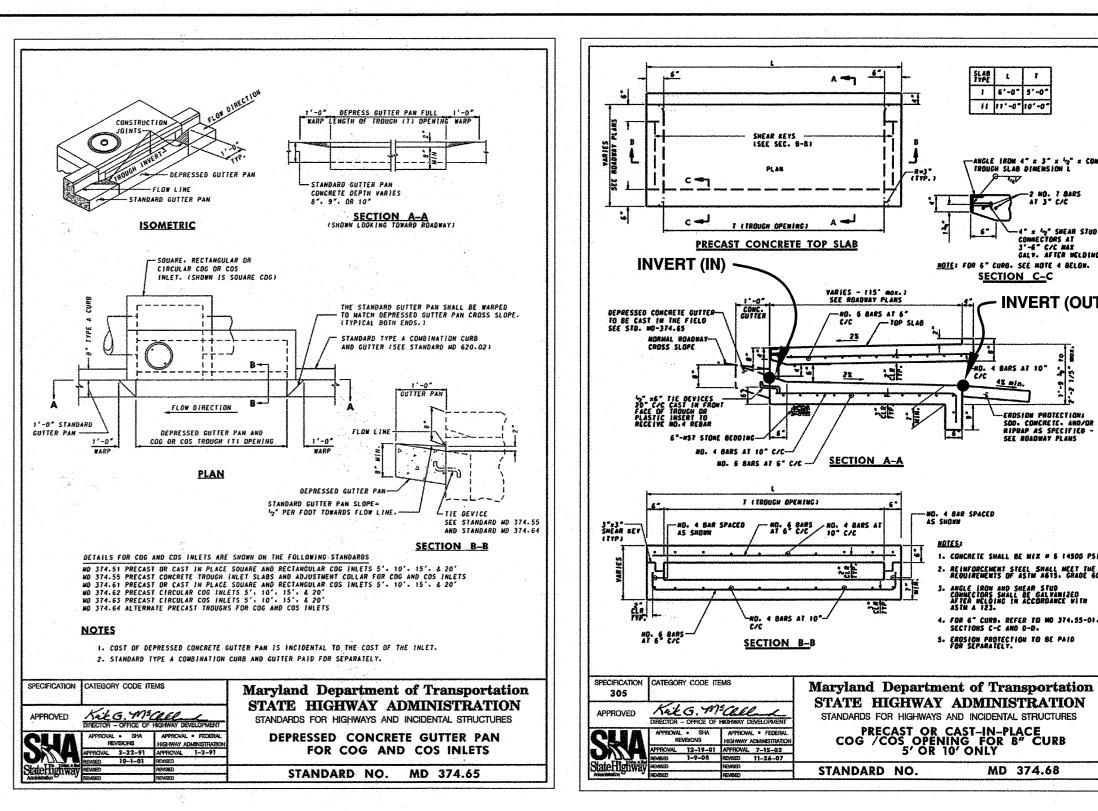
1.28.19

* * * * *

100YR FLOODPLAIN

EXISTING WETLANDS

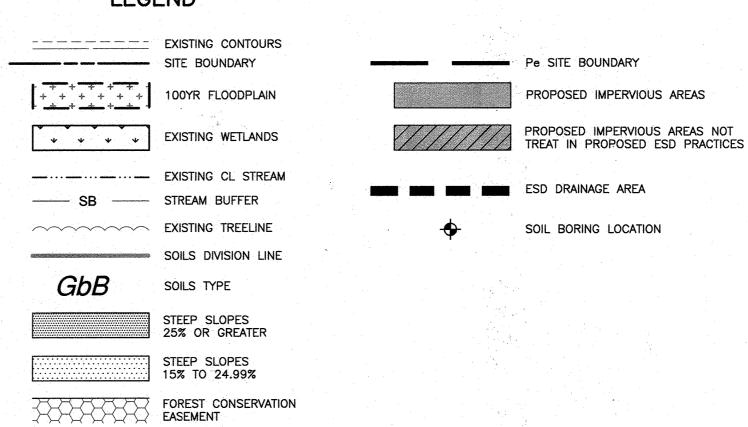




TYPICAL FLOW-THRU INLET DETAIL

NOT TO SCALE

LEGEND



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.2/2/3 Expiration Date: 12/21/22

DATE REVISION 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. 223300 Expiration Date: 6-30-2019. **BENCHMARK** ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE ▲ SUITE 315 ▲ ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6644 WWW.BEI-CIVILENGINEERING.COM OWNER: RAVENWOOD AT TURF VALLEY MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400 LOTS 1-7, OPEN SPACE LOTS 8-10, GOLF SPACE LOT 11 & BUILDABLE BULK PARCEL 'A' (A Resubdivision of Non-Buldable Bulk Parcel 'G' and 'H' established under Turf Valley, Pod E-1, Phase 1, F-17-095) DEVELOPER: TAX MAP: 17 - GRID: 13 - PARCEL: p/o 706 - ZONED: PGCC ELECTION DISTRICT NO. 2 - HOWARD COUNTY, MARYLAND MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400 STORMWATER MANAGEMENT DRAINAGE AREA MAP

AS-BUILT

SCALE:

DESIGN: DBT DRAFT: DBT

F-18-027

4 of 10

DATE: NOVEMBER 1, 2018 BEI PROJECT NO. 2852

SHEET

AS SHOWN

MOTE: FOR 6" CURB. SEE MOTE 4 BELOW.

SECTION C-C

1. CONCRETE SHALL BE MIZ # 6 14500 PS11.

2. REINFORCEHENT STEEL SHALL MEET THE REQUIREMENTS OF ASTM A615. GRADE 60.

3. ANGLE IRON AND SHEAR STUD CONNECTORS SHALL BE GALVANIZED AFTER WELDING IN ACCORDANCE WITH ASTM A 123. 4. FOR 6" CURB. REFER TO MO 374.55-01. SECTIONS C-C AND 0-0. S. EROSION PROTECTION TO BE PAID FOR SEPARATELY.

MD 374.68

-4" x '2" SHEAR STUD COMMECTORS AT 3'-6" C/C MAX GALV. AFTER WELDING

INVERT (OUT)

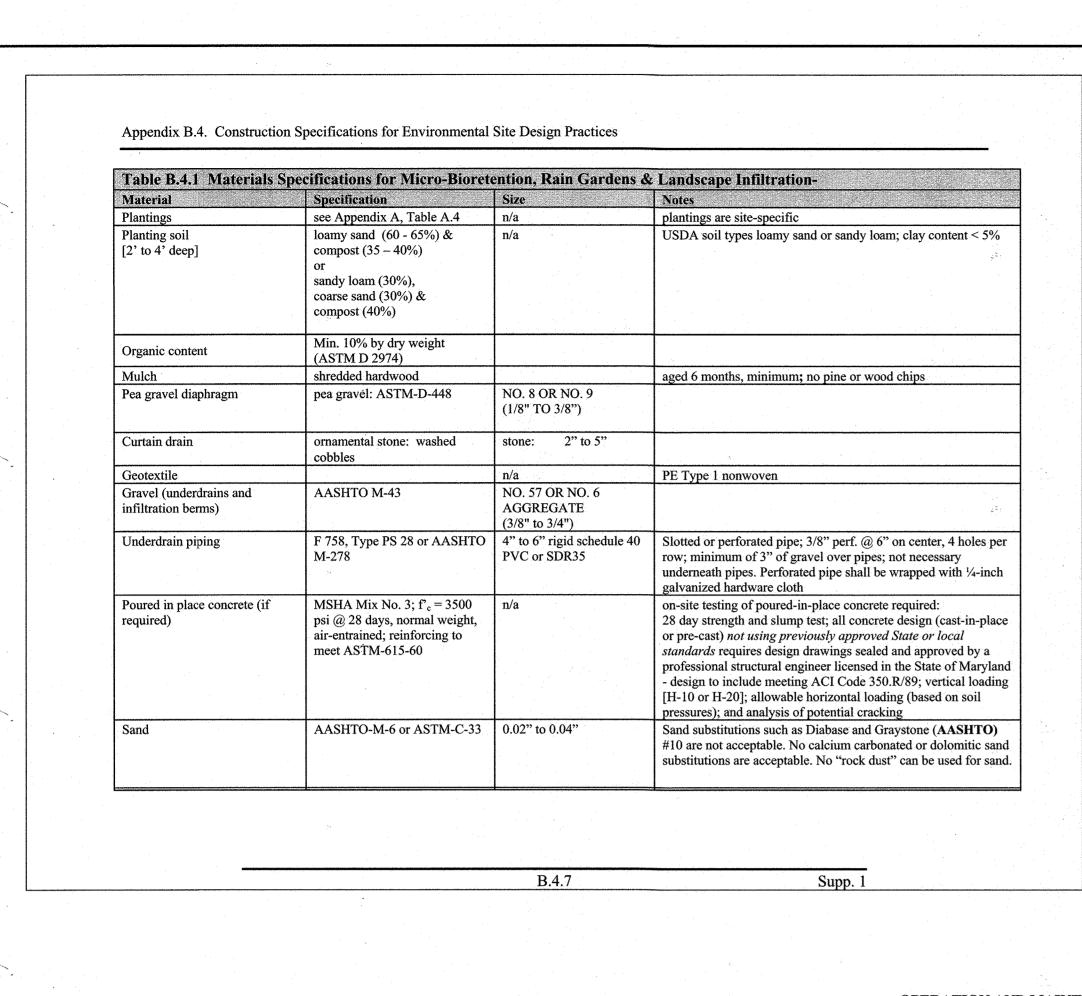
CHIEF, DEVELOPMENT ENGINEERING DIVISION

CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PUBLIC WORKS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

1/8/2019



(M-6) MICRO BIO-RETENTION LANDSCAPING CHART

shrub

erennial herbaceous plant

MB #1

1375

QUANTITY

2.5'-3' ht

quart bulb

quart bulb

TOTAL

1375

QUANTITY

OPERATION AND MAINTENANCE SCHEDULE FOR MICRO-BIORETENTION (M-6) a. The Owner shall maintain the plant material, mulch layer and soil layer annually. Maintenance of mulch and soil is limited to correcting areas of erosion or wash out. Any mulch replacement shall be done in the spring. Plant material shall be checked for disease and insect infestation and maintenance will address dead material and pruning. Acceptable

The Owner shall perform a plant inspection in the spring and in the fall of each year. During the inspection, the Owner shall remove dead and diseased vegetation considered beyond treatment, replace dead plant material with acceptable replacement plant material, treat diseased trees and shrubs, and replace all deficient stakes and wires.

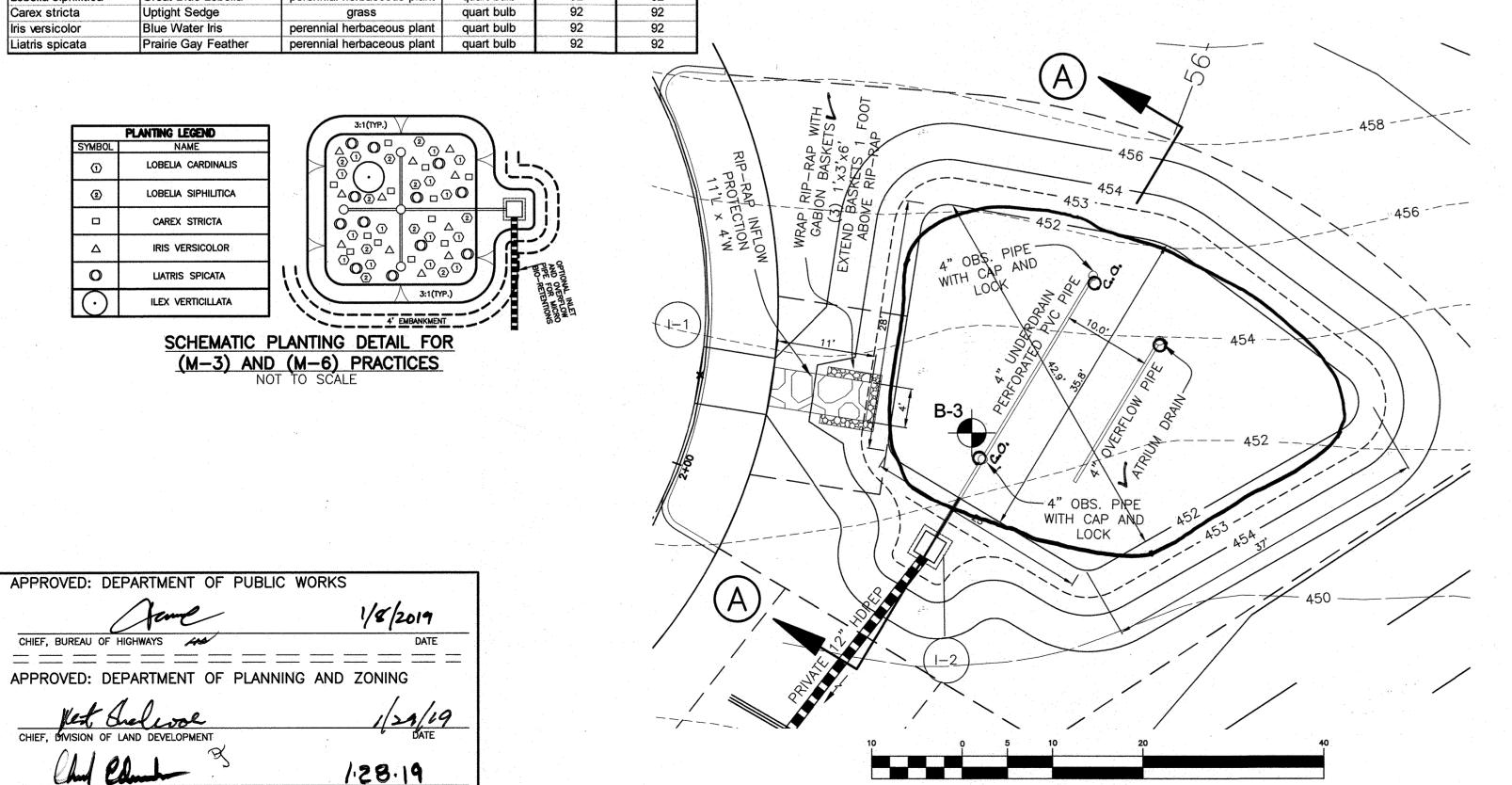
Manual Volume II, Table A.4.1 and 2.

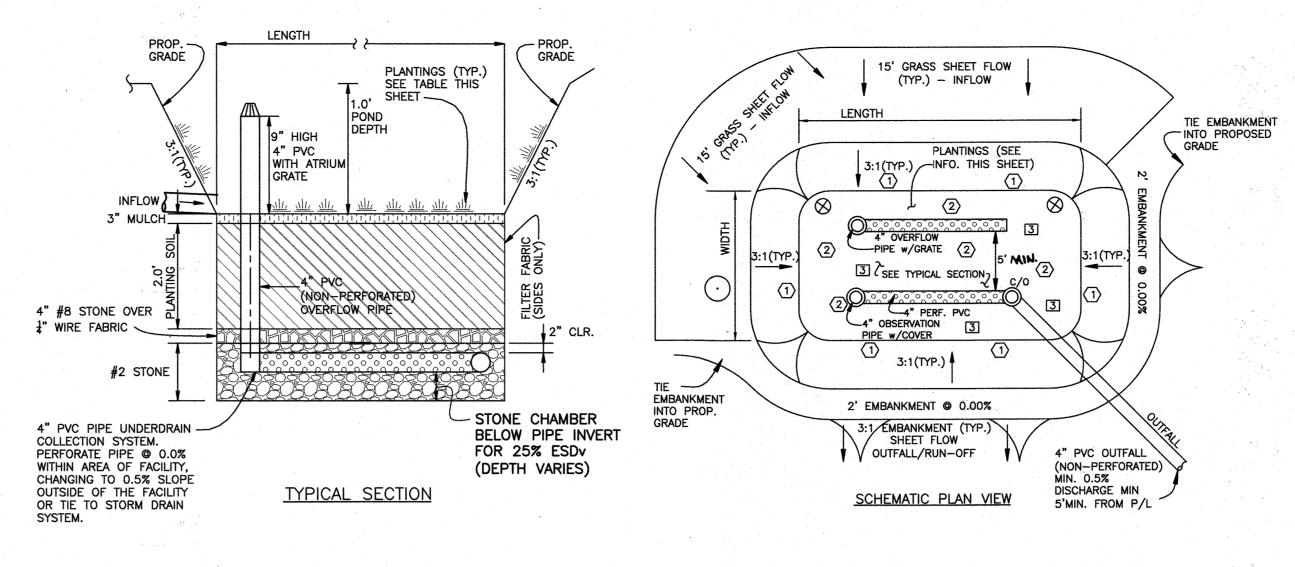
replacement plant material is limited to the following: 2000 Maryland Stormwater Design

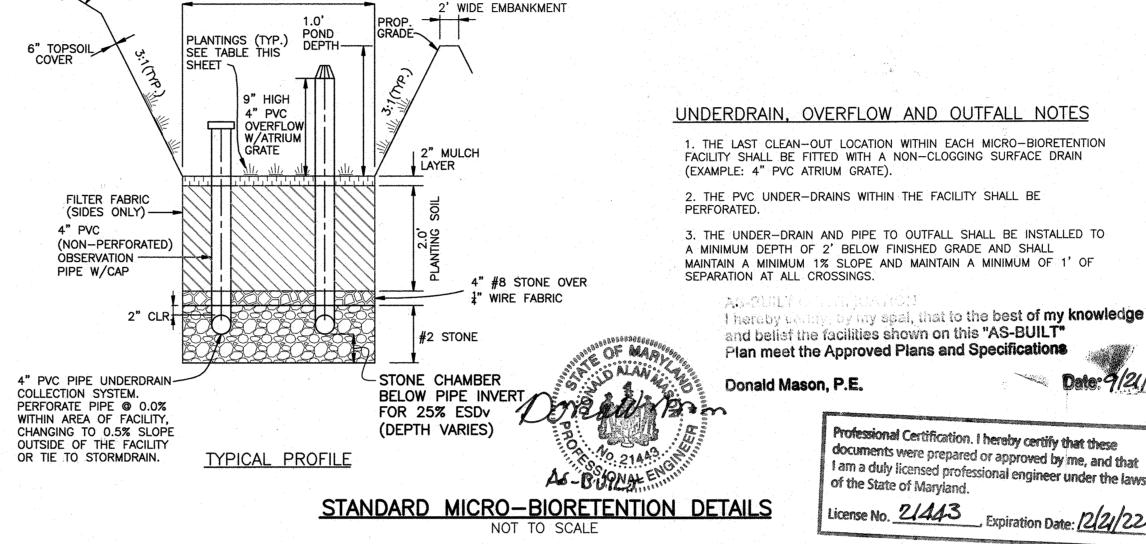
The Owner shall inspect the mulch each spring. The mulch shall be replaced every two to three years. The previous mulch layer shall be removed the new layer is applied.

1 inch = 10 ft.

The Owner shall correct soil erosion on an as needed basis, with a minimum of once per month and after each heavy storm.







- 446

SHEET FLOW

OTAL SURFACE AREA: 1,375 S.F. PLANTINGS (SEE DETAIL/CHAR 4" PVC OBSERVATION SHEET 4) PIPE WITH CAP 4" PVC **OBSERVATION** -PROPOSED PIPE WITH CAP " PVC WITH ATRIUM GRATE - 453 PONDING DEPTH 452.00 451.75 - 452 2" MULCH LAYER 451.83 451 WRAP WITH 2.0' DEEP PLANTING FILTER CLOTH (SIDES ONLY) 4" LAYER OF - 449 448.92 STONE RESERVOIR 447.96 4" PVC PIPE UNDERDRAIN COLLECTION SYSTEM -447 TO BE SLOTTED OR PERFORATED CROSS-SECTION A-A WITHIN AREA OF BMP. FOR PERFORATED PIPE, WRAP WITH (M-6) MICRO BIO-RETENTION #1 1/4" GALVANIZED HARDWARE CLOTH. DO NOT USE FILTER H.O.A. MAINTAINED SCALE: 1"=10' HORZ., 1"=1' VERT

EXISTING -

GROUND

CONSTRUCTION SPECIFICATIONS

B.4.C Specifications for Micro-Bioretention. Rain Gardens, Landscape Infiltration & Infiltration Berms

1. Material Specifications:

The allowable materials to be used in these practices are detailed in Table B.4.1

2. Filtering Media or Planting Soil:

The soil shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the micro-bioretention practice that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The planting soil shall be free of Bermuda grass, Quackgrass, Johnson grass, or other noxious weeds as specified under COMAR 15.08.01.05. The planting soil shall be tested and shall meet the following criteria:

Soil Component - Loamy Sand or Sandy Loam (USDA Soil Textural Classification)

- Organic Content Minimum 10% by dry weight (ASTM D 2974). In general, this can be met with a mixture of loamy and(60%-65%) and compost (35% to 40%) or sandy loam (30%), coarse sand (30%), and compost (40%). Clay Content - Media shall have a clay content of less than 5%.
- pH Range Should be between 5.5 7.0. Amendments (e.g., lime, iron sulfate plus sulfur) may be mixed into the soil to increase or decrease pH.
- There shall be at least one soil test per project. Each test shall consist of both the standard soil test for pH, and additional tests of organic matter, and soluble salts. A textural analysis is required from the site stockpiled topsoil. If topsoil is imported, then a texture analysis shall be performed for each location where the topsoil was excavated.

3. Compaction:

It is very important to minimize compaction of both the base of bioretention practices and the required backfill. When possible, use excavation hoes to remove original soil. If practices are excavated using a loader, the contractor should use wide track or marsh track equipment, or light equipment with turf type tires. Use of equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high-pressure tires will cause excessive compaction resulting in reduced infiltration rates and is not acceptable. Compaction will significantly contribute to design

Compaction can be alleviated at the base of the bioretention facility by using a primary tilling operation such as a chisel plow, ripper, or subsoiler. These tilling operations are to refracture the soil profile through the 12 inch compaction zone. Substitute methods must be approved by the engineer. Rototillers typically do not till deep enough to reduce the effects of compaction from heavy equipment.

Rototill 2 to 3 inches of sand into the base of the bioretention facility before backfilling the optional sand layer. Pump any ponded water before preparing (rototilling) base.

When backfilling the topsoil over the sand layer, first place 3 to 4 inches of topsoil over the sand, then rototill the sand/topsoil to create a gradation zone. Backfill the remainder of the topsoil to final grade.

When backfilling the bioretention facility, place soil in lifts 12" to 18". Do not use heavy equipment within the bioretention basin. Heavy equipment can be used around the perimeter of the basin to supply soils and sand. Grade bioretention materials with light equipment such as a compact loader or a dozer/loader with marsh tracks.

4. Plant Material:

Recommended plant material for micro-bioretention practices can be found in Appendix A, Section A.2.3.

5. Plant Installation:

Compost is a better organic material source, is less likely to float, and should be placed in the invert and other low areas. Mulch should be placed in surrounding to a uniform thickness of 2" to 3". Shredded or chipped hardwood mulch is the only accepted mulch. Pine mulch and wood chips will float and move to the perimeter of the bioretention area during a storm event and are not acceptable. Shredded mulch must be well aged (6 to 12 months) for acceptance.

Rootstock of the plant material shall be kept moist during transport and on-site storage. The plant root ball should be planted so 1/8th of the ball is above final grade surface. The diameter of the planting pit shall be at least six inches larger than the diameter of the planting ball. Set and maintain the plant straight during the entire planting process. Thoroughly water ground bed cover after installation.

Trees shall be braced using 2" by 2" stakes only as necessary and for the first growing season only. Stakes are to be equally spaced on the outside of the tree ball.

Grasses and legume seed should be drilled into the soil to a depth of at least one inch. Grass and legume plugs shall be planted following the non-grass ground cover planting specifications.

The topsoil specifications provide enough organic material to adequately supply nutrients from natural cycling. The primary function of the bioretention structure is to improve water quality. Adding fertilizers defeats, or at a minimum, impedes this goal. Only add fertilizer if wood chips or mulch are used to amend the soil. Rototill urea fertilizer at a rate of 2 pounds per 1000 square feet.

6. Underdrains:

Professional Certification. I hereby certify that these

of the State of Maryland.

documents were prepared or approved by me, and that

I am a duly licensed professional engineer under the law

License No. 2/443 __ Expiration Date: 2/2/22

Underdrains should meet the following criteria:

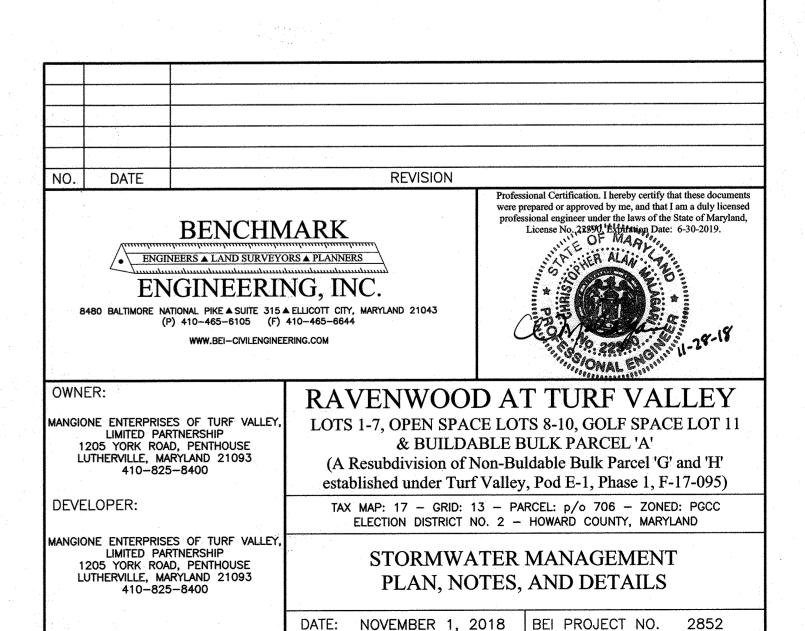
DESIGN: DBT | DRAFT: DBT

- Pipe- Should be 4" to 6" diameter, slotted or perforated rigid plastic pipe (ASTMF 758, Type PS 28, or AASHTO-M-278) in a gravel layer. The preferred material is slotted, 4" rigid pipe (e.g., PVC or HDPE).
- Perforations If perforated pipe is used, perforations should be 3/8" diameter located 6" on center with a
- minimum of four holes per row. Pipe shall be wrapped with a 1/4" (No. 4 or 4x4) galvanized hardware cloth. Gravel - The gravel layer (No. 57 stone preferred) shall be at least 3" thick above and below the underdrain.
- The main collector pipe shall be at a minimum 0.5% slope.
- A rigid, non-perforated observation well must be provided (one per every 1,0000 square feet) to provide a clean-out port and monitor performance of the filter.
- A 4" layer of pea gravel (1/4" to 3/4" stone) shall be located between the filter media and underdrain to prevent migration of fines into the underdrain. This layer may be considered part of the filter bed when bed thickness

The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%. Observation wells and/or clean-out pipes must be provided (one minimum per every 1000 square feet of surface area).

7. Miscellaneous:

These practices may not be constructed until all contributing drainage area has been stabilized



AS SHOWN

SCALE:

5 of 10

CHIEF, DEVELOPMENT ENGINEERING DIVISION

Facility square footage

PLANT NAME

0

lex verticillata

Lobelia cardinalis

Lobelia siphilitica

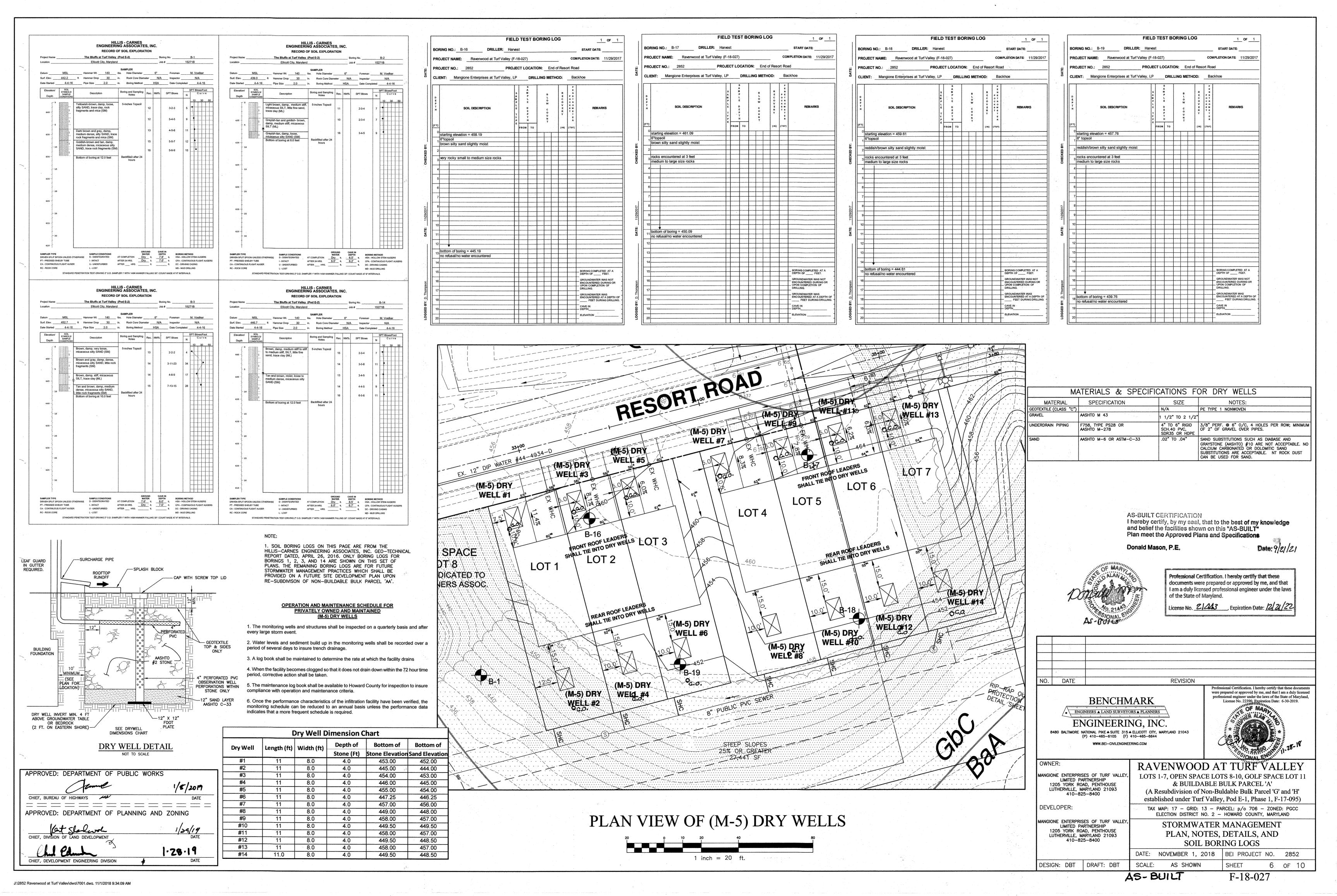
Carex stricta

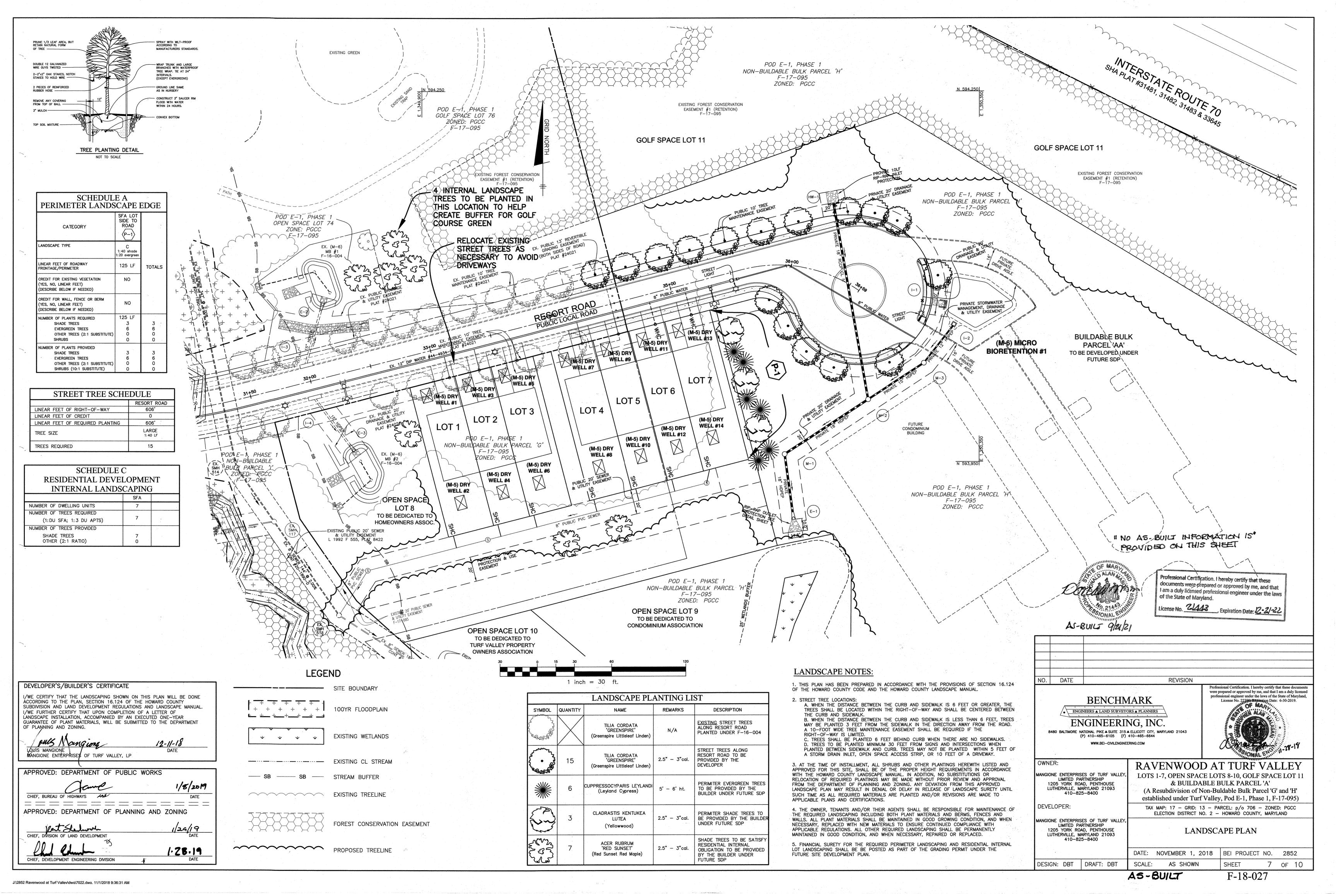
Iris versicolor

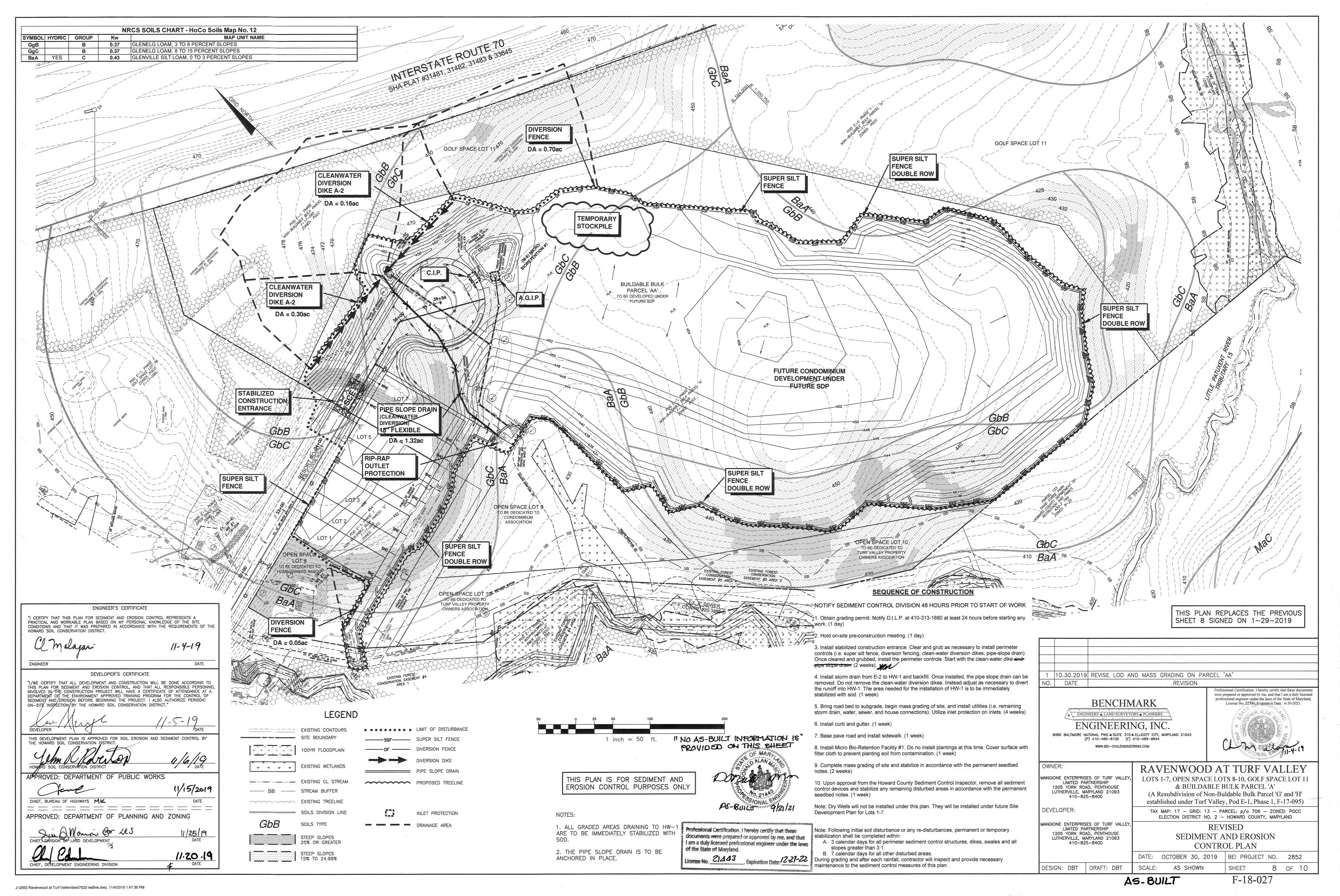
Liatris spicata

COMMON NAME

Cardinal flower







B-4 STANDARDS AND SPECIFICATIONS VEGETATIVE STABILIZATION

Using vegetation as cover to protect exposed soil from erosion

To promote the establishment of vegetation on exposed soil. Conditions Where Practice Applies On all disturbed areas not stabilized by other methods. This specification is divided into sections on

stabilization; soil preparation, soil amendments and topsoiling; seeding and mulching; temporary stabilization; and permanent stabilization

Effects on Water Quality and Quantity Stabilization practices are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, 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 runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Over time, vegetation

increase organic matter content and improve the water holding capacity of the soil and subsequent plant 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

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, restabilize following the original recommendations for lime, fertilizer, seedbed preparation, and seeding.

3. If an area has between 40 and 94 percent groundcover, over-seed and fertilize using half of the rates 4. Maintenance fertilizer rates for permanent seeding are shown in Table B.6.

B-4-1 STANDARDS AND SPECIFICATIONS INCREMENTAL STABILIZATION

Establishment of vegetative cover on cut and fill slopes.

within the root zone

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.

A. Incremental Stabilization - Cut Slopes 1. 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.

2. Construction sequence example (Refer to Figure B.1): a. Construct and stabilize all temporary swales or dikes that will be used to convey runoff around the excavation. b. Perform Phase 1 excavation, prepare seedbed, and stabilize.

c. Perform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase 1 areas as necessary.

d. 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

1. 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. 2. Stabilize slopes immediately when the vertical height of a lift reaches 15 feet, or when the grading operation ceases as prescribed in the plans.

3. 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. 4. Construction sequence example (Refer to Figure B.2): a. Construct and stabilize all temporary swales or dikes that will be used to divert runoff around

the fill. Construct silt fence on low side of fill unless other methods shown on the plans address this area. b. 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. c. Place Phase 1 fill, prepare seedbed, and stabilize d. Place Phase 2 fill, prepare seedbed, and stabilize

e. Place final phase fill, prepare seedbed, and stabilize. Overseed previously seeded areas as

Note: Once the placement of fill has begun the operation should be continuous from grubbing through the C. 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.

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

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

To provide a suitable soil medium for vegetative growth. Conditions Where Practice Applies Where vegetative stabilization is to be established.

Soil Preparation Temporary Stabilization

a. Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or rippers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 or flatter are to be tracked with ridges running parallel to the contour of the slope. Apply fertilizer and lime as prescribed on the plans.

Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means. Permanent Stabilization

a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are: i. Soil pH between 6.0 and 7.0. ii. Soluble salts less than 500 parts per million (ppm). iii. Soil contains less than 40 percent clay but enough fine grained material (greater than

30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if lovegrass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable. iv. Soil contains 1.5 percent minimum organic matter by weight.

v. Soil contains sufficient pore space to permit adequate root penetration. Application of amendments or topsoil is required if on-site soils do not meet the above

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.

Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Rake lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with

a heavy chain or other equipment to roughen the surface where site conditions will not

permit normal seedbed preparation. Track slopes 3:1 or flatter with tracked equipment

eaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seedbed loosening may be unnecessary on newly disturbed areas.

Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil

Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS

Topsoiling is limited to areas having 2:1 or flatter slopes where:

a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth. b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.

The original soil to be vegetated contains material toxic to plant growth. The soil is so acidic that treatment with limestone is not feasible. Areas having slopes steeper than 2:1 require special consideration and design Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:

a. Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1½ inches in diameter Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack

grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified. Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil. Topsoil Application

a. Erosion and sediment control practices must be maintained when applying topsoil.

Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets. Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition,

when the subsoil is excessively wet or in a condition that may otherwise be detrimental

to proper grading and seedbed preparation. Soil Amendments (Fertilizer and Lime Specifications) Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be

performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and

warranty of the producer. Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydroseeding) which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 98 to 100 percent will pass through a #20 mesh sieve. 4. Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of

soil by disking or other suitable means. Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of

Application

Rate (lb/ac.)

Hardiness Zone (from Figure B.3):

Seed Misture (from Table B.3):

Fescue, Tall

Bluegrass, Kentucky

Plant Species

Annual Ryegrass (Lolium perenne ssp

Cool-Season Grasses

Dats (Avena sativa

Barley (Hordeum vulgare)

Wheat (Triticum aestivum

ereal Rye (Secale cereale

extail Millet (Serataria italica)

Pearl Millet (Pennisetum glaucum

arm-Season Grasses

Multiflorum

Permanent Seeding Summary

1/4 - 1/2 in

1/4 - 1/2 in

1/4 - 1/2 in

5b and 6a

Table B.1: Temporary Seeding for Site Stabilization

Tall Fescue/Kentucky Bluegrass

Seeding

Mar 1 to May 1

Aug 1 to Oct 15

Mar 1 to May 15

Aug 1 to Oct 15

Seeding Rate 1/

120

tested. Adjustments are usually not needed for the cool-season grasses.

Oats are the recommended nurse crop for warm-season grasses

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

lb/ac |lb/1000 ft2 (inches)

1.0

2.2

1.7

2.8

2.8

0.7

1.0

1.0

1.0

0.5

0.5

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

for barley, oats, and wheat. For smaller-seeded grasses (annual ryegrass, pearl millet, foxtail millet), do not exceed more than 5% (by weight) of the overall permanent

seeding mix. Cereal rye generally should not be used as a nurse crop, unless planting will occur very late fall beyond the seeding dates for other temporary seedings.

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.

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

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

B-4-3 STANDARDS AND SPECIFICATIONS SEEDING AND MULCHING

Criteria

The application of seed and mulch to establish vegetative cover. To protect disturbed soils from erosion during and at the end of construction. Conditions Where Practice Applies

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

A. Seeding 1. Specifications

a. All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject to re-testing by a recognized seed laboratory. All seed used must have been tested within the 6 months immediately preceding the date of sowing such material on any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be available upon request to the inspector to verify type of seed and seeding rate.

b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws c. Inoculants: The inoculant for treating legume seed in the seed mixtures must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. Use four times the recommended rate when hydroseeding. Note: It is very important to keep inoculant as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less

d. Sod or seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of phyto-toxic materials.

2. Application a. Dry Seeding: This includes use of conventional drop or broadcast spreaders. i. Incorporate seed into the subsoil at the rates prescribed on Temporary Seeding Table B.1. Permanent Seeding Table B.3. or site-specific seeding summaries. ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate

in each direction. Roll the seeded area with a weighted roller to provide good

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

ii. Apply seed in two directions, perpendicular to each other. Apply half the

c. Hydroseeding: Apply seed uniformly with hydroseeder (slurry includes seed and i. If fertilizer is being applied at the time of seeding, the application rates should not exceed the following: nitrogen, 100 pounds per acre total of soluble

seeding rate in each direction.

nitrogen; P2O5 (phosphorous), 200 pounds per acre; K2O (potassium), 200 pounds per acre. ii. Lime: Use only ground agricultural limestone (up to 3 tons per acre may be applied by hydroseeding). Normally, not more than 2 tons are applied by

hydroseeding at any one time. Do not use burnt or hydrated lime when iii. Mix seed and fertilizer on site and seed immediately and without interruption.

iv. When hydroseeding do not incorporate seed into the soil. B. Mulching 1. Mulch Materials (in order of preference)

a. Straw consisting of thoroughly threshed wheat, rve, oat, or barley and reasonably bright in color. Straw is to be free of noxious weed seeds as specified in the Maryland Seed Law and not musty, moldy, caked, decayed, or excessively dusty Note: Use only sterile straw mulch in areas where one species of grass is desired b. Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state.

i. WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.

ii. WCFM, including dye, must contain no germination or growth inhibiting iii. WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform

suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material must form a blotter-like ground cover, on application having moisture absorption and percolation properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings. iv. WCFM material must not contain elements or compounds at

concentration levels that will be phyto-toxic. v. WCFM must conform to the following physical requirements: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 1.6 percent maximum and water holding capacity of 90 percent minimum.

2. Application

Fertilizer Rat

(10-20-20)

P205

90 lb/ac

(2 lb/

1000 sf)

Recommended Seeding Dates by Plant Hardiness Zone 3/

Mar 1 to May 15; Aug 1 to Oct 31

Mar 1 to May 15; Aug 1 to Oct 31

Mar 1 to May 15; Aug 1 to Oct 31

Mar 1 to May 15; Aug 1 to Oct 31

Mar 1 to May 15; Aug 1 to Nov 15

May 16 to Jul 31

May 16 to Jul 31

per acre

(1.0 lb/

100 sf)

K20

90 lb/ac

2 lb/

1000 sf)

2 tons/a

(90lb/

1000 sf)

7a and 7b

a. Apply mulch to all seeded areas immediately after seeding. b. When straw mulch is used, spread it over all seeded areas at the rate of 2 tons per acre to a uniform loose depth of 1 to 2 inches. Apply mulch to achieve a uniform distribution and depth so that the soil surface is not exposed. When using a mulch anchoring tool, increase the application rate to 2.5 tons per acre c. Wood cellulose fiber used as mulch must be applied at a net dry weight of 1500 pounds per

acre. Mix the wood cellulose fiber with water to attain a mixture with a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water

a. Perform mulch anchoring immediately following application of mulch to minimize loss by wind or water. This may be done by one of the following methods (listed by preference), depending upon the size of the area and erosion hazard: i. A mulch anchoring tool is a tractor drawn implement designed to punch and anchor

> mulch into the soil surface a minimum of 2 inches. This practice is most effective on large areas, but is limited to flatter slopes where equipment can operate safely. If used on sloping land, this practice should follow the contour. ii. Wood cellulose fiber may be used for anchoring straw. Apply the fiber binder at a net dry weight of 750 pounds per acre. Mix the wood cellulose fiber with water at a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water. iii. Synthetic binders such as Acrylic DLR (Agro-Tack), DCA-70, Petroset, Terra Tax II, Terra Tack AR or other approved equal may be used. Follow application rates as specified by the manufacturer. Application of liquid binders needs to be heavier at the edges where wind catches mulch, such as in valleys and on crests of banks.

Use of asphalt binders is strictly prohibited. iv. Lightweight plastic netting may be stapled over the mulch according to manufacturer recommendations. Netting is usually available in rolls 4 to 15 feet wide and 300 to 3 000 feet long.

B-4-5 STANDARDS AND SPECIFICATIONS

PERMANENT STABILIZATION

To stabilize disturbed soils with permanent vegetation. Purpose To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils. **Conditions Where Practice Applies** Exposed soils where ground cover is needed for 6 months or more.

A. Seed Mixtures 1. General Use

a Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan. b Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or

for special purposes such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guild, Section 342 - Critical Area Planting. c For sites having disturbed areas over 5 acres, use and show the rates recommended by the soil

testing agency. d For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 ½ pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown

in the Permanent Seeding Summary. 2. Turfgrass Mixtures a. Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.

Enter selected mixture(s), application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan. . Kentucky Bluegrass: Full sun Mixture: For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky Bluegrass Cultivars with each ranging from 10 to 35 percent of the total

b. Select one or more of the species or mixtures listed below based on the site conditions or purpose

mixture by weight. ii. Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky Bluegrass Cultivars with each ranging from

10 to 35 percent of the total mixture by weight. iii. Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes; Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended. iv. Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate:

1 ½ to 3 pounds per 1000 square feet. Notes: Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Memo #77, "Turfgrass Cultivar Recommendations for Maryland" Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line.

c. Ideal Times of Seeding for Turf Grass Mixtures Western MD: March 15 to June 1, August 1 to October 1 (Hardiness Zones: 5b. 6a) Central MD:March 1 to May 15, August 15 to October 15 (Hardiness Zone: 6b) Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15

(Hardiness Zones: 7a, 7b) d. Till areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 1 1/2 inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty.

e. If soil moisture is deficient, supply new seedings with adequate water for plant growth (½ to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is not especially true when seedings are made late in the planting season, in abnormally dry or hot seasons, or on

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

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foreman and inspector. b. Sod must be machine cut at a uniform soil thickness of 3/4 inch, plus or minus 1/4 inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and torn or uneven ends will not be acceptable. c. Standard size sections of sod must be strong enough to support their own weight and retain their

size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section. d. Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival. e. Sod must be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted

within this period must be approved by an agronomist or soil scientist prior to its installation. 2. Sod Installation a. During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the sod. b. Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly

Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots. c. Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints. Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensure solid contact exists between sod roots and the underlying soil surface. d. Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Complete the operations of laying, tamping and

wedged against each other. Stagger lateral joints to promote more uniform growth and strength.

irrigating for any piece of sod within eight hours 3. Sod Maintenance a. In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.

b. After the first week, sod watering is required as necessary to maintain adequate moisture content. c. Do not mow until the sod is firmly rooted. No more than 1/3 of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless

B-4-4 STANDARDS AND SPECIFICATIONS TEMPORARY STABLIZATION

To stabilize disturbed soils with vegetation for up to 6 months

To use fast growing vegetation that provides cover on disturbed soils. Conditions Where Practice Applies Exposed soils where ground cover is needed for a period of 6 months or less. For longer duration of time, permanent stabilization practices are required.

<u>Purpose</u>

1. Select one or more of the species or seed mixtures listed in Table B.1 for the appropriate Plant Hardiness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. If this Summary is not put on the plan and completed, then Table B.1 plus fertilizer and lime rates must be put on the plan. 2. For sites having soil tests performed, use and show the recommended rates by the testing agency.

Soil tests are not required for Temporary Seeding. 3. When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3.A.1.b and maintain until the next seeding season.

B-4-8 STANDARDS AND SPECIFICATIONS

STOCKPILE AREA A mound or pile of soil protected by appropriately designed erosion and sediment control measures

To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns. Conditions Where Practice Applies Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan. 2. The footprint of the stockpile must be sized to accommodate the anticipated volume of material

and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.

Runoff from the stockpile area must drain to a suitable sediment control practice. 4. Access the stockpile area from the upgrade side. 5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as

an earth dike, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner. 6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment

control practice must be used to intercept the discharge. . Stockpiles must be stabilized in accordance with the 3/7 day stabilization requirement as well as

Standard R-4-1 Incremental Stabilization and Standard R-4-4 Temporary Stabilization 8. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable sheeting.

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

H-5 STANDARDS AND SPECIFICATIONS

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.

Conditions Where Practice Applies Areas subject to dust blowing and movement where on and off-site damage is likely without treatment Specifications

Mulches: See Section B-4-2 Soil Preparation, Topsoiling, and Soil Amendments, Section B-4-3 Seeding and Mulching, and Section B-4-4 Temporary Stabilization. Mulch must be anchored to Vegetative Cover: See Section B-4-4 Temporary Stabilization. Tillage: Till to roughen surface and bring clods to the surface. Begin plowing on windward

side of site. Chisel-type plows spaced about 12 inches apart, spring-toothed harrows, and similar plows are examples of equipment that may produce the desired effect. Irrigation: Sprinkle site with water until the surface is moist. Repeat as needed. The site must not be irrigated to the point that runoff occurs.

material can be used to control air currents and soil blowing.

NOTE: PSD TO BE

INV. 437.7 -

ON SHEET 10.

PIPE SLOPE DRAIN

(CLEANWATER

DIVERSION)

18" FLEXIBLE PIPE

PIPE SLOPE DRAIN

SCALE: 1" = 50' HORIZ., 1" = 5' VERT.

EXISTING GROUND-

ANCHORED IN PLACE EVERY 10

FEET PER STANDARD DETAIL D-1

Barriers: Solid board fences, silt fences, snow fences, burlap fences, straw bales, and similar

Chemical Treatment: Use of chemical treatment requires approval by the appropriate plan

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PROVIDE 10 LF

MSHA CLASS I

RIP-RAP PROTECTION

1. A pre-construction meeting must occur with the Howard County Department of Public Works, Construction Inspection Division (CID), 410-3133-1855 after the future LOD and protected areas are marked clearly in the field. A minimum of 48 hours notice to CID must be given at the following stages:

a. Prior to the start of earth disturbance, b. Upon completion of the installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading, c. Prior to the start of another phase of construction or opening of another grading

d. Prior to the removal or modification of sediment control practices. 2. All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the <u>2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL</u>, and revisions thereto.

3. Following initial soil disturbance or re-disturbance, permanent or temporary stabilization is required within three (3) calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes steeper than 3 horizontal to 1 vertical (3:1); and seven (7) calendar days as to all other disturbed areas on the project site except for those areas under active grading.

4. All disturbed areas must be stabilized within the time period specified above in accordance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for topsoil (Sec. B-4-2), permanent seeding (Sec. B-4-5), temporary seeding (Sec. B-4-4) and mulching (Sec. B-4-3). Temporary stabilization with mulch alone can only be applied between the fall and spring seeding dates if the ground is frozen. Incremental stabilization (Sec. B-4-1) specifications shall be enforced in areas with >15' of cut and/or fill. Stockpiles (Sec. B-4-8) in excess of 20 feet must be benched with stable outlet. All concentrated flow, steep slope, and highly erodible areas shall receive soil stabilization matting (Sec. B-4-6).

5. All sediment control structures are to remain in place, and are to be maintained in operative condition until permission for their removal has been obtained from the CID

6. Site Analysis: 25.5 Total Area of Site: 8.6 Area Disturbed

0.5 Area to be roofed or paved: 8.1 Area to be vegetatively stabilized: 25,000^{*} _ Cu Yds Total cut:

25,000* SITE WITH AN ACTIVE GRADING PERMIT

7. Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance

8. Additional sediment control must be provided, if deemed necessary by the CID. The site

and all controls shall be inspected by the contractor weekly, and the next day after each

rain event. A written report by the contractor, made available upon request, is part of every inspection and should include:

 Inspection date •Inspection type (routine, pre-storm event, during rain event)

 Name and title of inspector • Weather information (current conditions as well as time and an=mount of last recorded precipitation • Brief description of project's status (e.g. percent complete) and/or current activities

 Evidence of sediment discharges • Identification of plan deficiencies • Identification of sediment controls that require maintenance • Identification of missing or improperly installed sediment controls

• Compliance status regarding the sequence of construction and stabilization requirements Photographs Monitoring/sampling • Maintenance and/or corrective action performed • Other inspection items as required by the General Permit for Stormwater Associated with

Construction Activities (NPDES, MDE). 9. Trenches for the construction of utilities is limited to three pipe lengths or that which can and shall be back filled and stabilized by the end of each work day, whichever is shorter.

10. Any major changes or revisions to the plan or sequence of construction must be

reviewed and approved by the HSCD prior to proceeding with construction. Minor revisions may be allowed by the CID per the list of HSCD-approved field changes. 11. Disturbance shall not occur outside the L.O.D. A project is to be sequenced so that grading activities begin on one grading unit (maximum acreage of 20 ac. per grading unit) at a time. Work may proceed to a subsequent grading unit when at least 50 percent of the

disturbed area in the preceding grading unit has been stabilized and approved by the CID. Unless otherwise specified and approved by the HSCD, no more than 20 acres cumulatively may be disturbed at a given time. 12. Wash water from any equipment, vehicles, wheels, pavement, and other sources must be

13. Topsoil shall be stockpiled and preserved on—site for redistribution onto final grade. 14. All silt fence and super silt fence shall be placed on—the—contour, and be imbricated a 25' minimum intervals, with lower ends curled uphill by 2' in elevation.

15. Stream channels must not be disturbed during the following restricted time periods

treated in a sediment basin or other approved washout structure.

• Use IV March 1 - May 31 16. A copy of this plan, the <u>2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL</u> <u>EROSION AND SEDIMENT CONTROL</u>, and associated permits shall be on—site and available when

• Use III and IIIP October 1 - April 30

• Use I and IP March 1 - June 15

*CUT/FILL NUMBERS ARE FOR SEDIMENT CONTROL PURPOSES ONLY. CONTRACTOR TO VERIFY. "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. 21443 _ Expiration Date: 12/4/22

NO. DATE REVISION were prepared or approved by me, and that I am a duly licens professional engineer under the laws of the State of Maryland **BENCHMARK** License No. 22399 Expiration Date: 6-30-2019. ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS ENGINEERING, INC 8480 BALTIMORE NATIONAL PIKE & SUITE 315 & ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6644

RAVENWOOD AT TURF VALLEY ANGIONE ENTERPRISES OF TURF VALLE LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE 410-825-8400

WWW.BEI-CIVILENGINEERING.COM

LUTHERVILLE, MARYLAND 21093 **DEVELOPER:**

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

LOTS 1-7, OPEN SPACE LOTS 8-10, GOLF SPACE LOT 11 & BUILDABLE BULK PARCEL 'A' (A Resubdivision of Non-Buldable 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

> SEDIMENT AND EROSION CONTROL NOTES

SCALE: AS SHOWN

F-18-027

DATE: NOVEMBER 1, 2018 BEI PROJECT NO. 2852 DESIGN: DBT | DRAFT: DBT

SHEET

DEVELOPER'S CERTIFICATE I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO HIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNE INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL O SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT. Nangume 12.11.18 DATE THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY

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

HOWARD SOIL CONSERVATION DISTRICT

CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF

APPROVED: DEPARTMENT OF PLANNING AND ZONING

1/8/2019

· 28 · 19

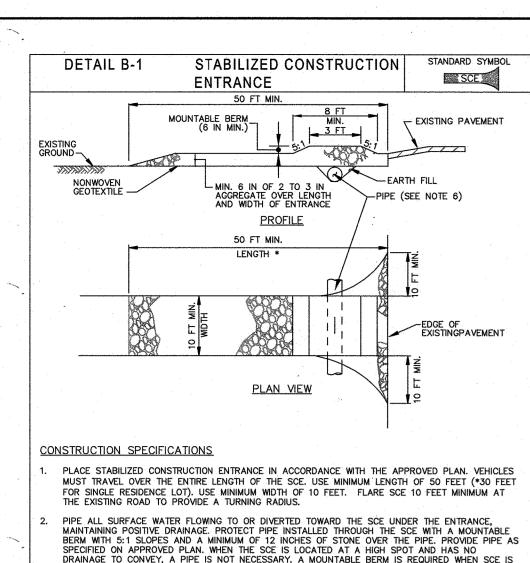
11-28-18

CHIEF. DEVELOPMENT ENGINEERING DIVISION

J:\2852 Ravenwood at Turf Vallev\dwa\7023.dwg. 11/1/2018 9:40:14 AM

AS-BUILT

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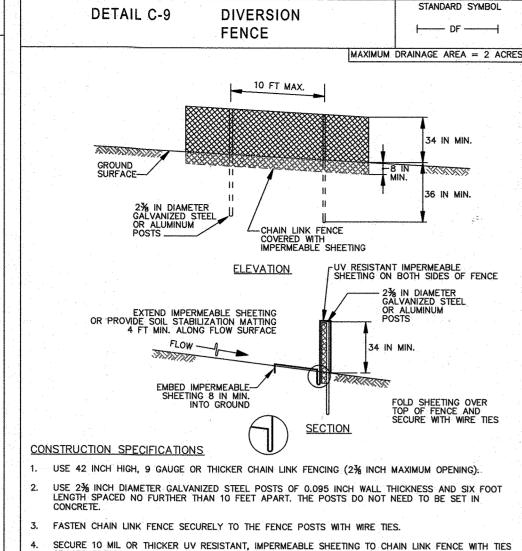


- DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS
- PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT, ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR

PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.

TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE. MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

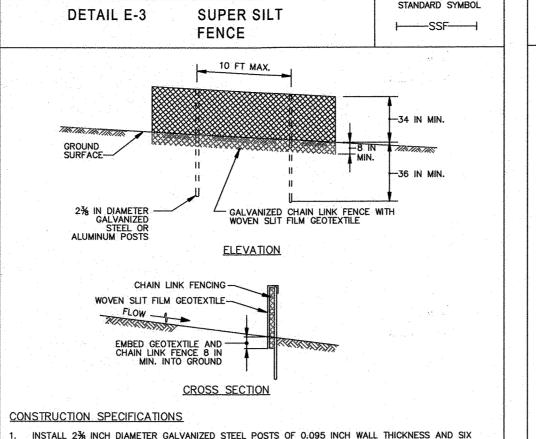
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE



SPACED EVERY 24 INCHES AT TOP, MID SECTION, AND BELOW GROUND SURFACE. EXTEND SHEETING A MINIMUM OF 4 FEET ALONG FLOW SURFACE AND EMBED END A MINIMUM OF 8 INCHES INTO GROUND. SOIL STABILIZATION MATTING MAY BE USED IN LIEU OF IMPERMEABLE SHEETING ALONG FLOW SURFACE.

WHEN TWO SECTIONS OF SHEETING ADJOIN EACH OTHER, OVERLAP BY 6 INCHES AND FOLD WITH KEEP FLOW SURFACE ALONG DIVERSION FENCE AND POINT OF DISCHARGE FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE. REPLACE

IMPERMEABLE SHEETING IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE. MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



INSTALL 2% INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36

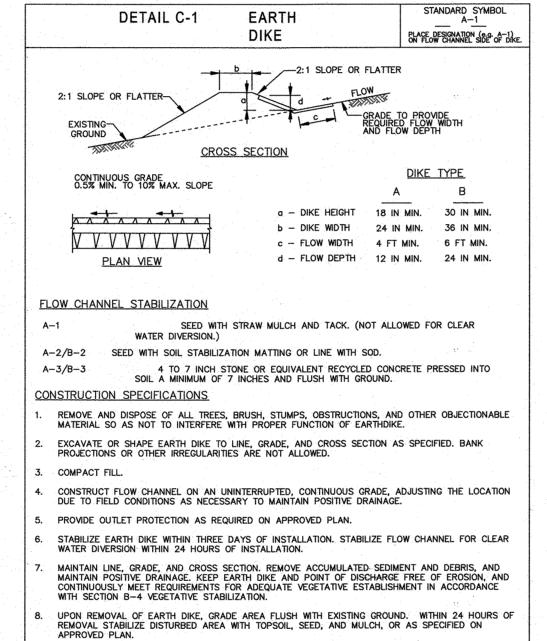
FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2% INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.

FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.

WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.

PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL

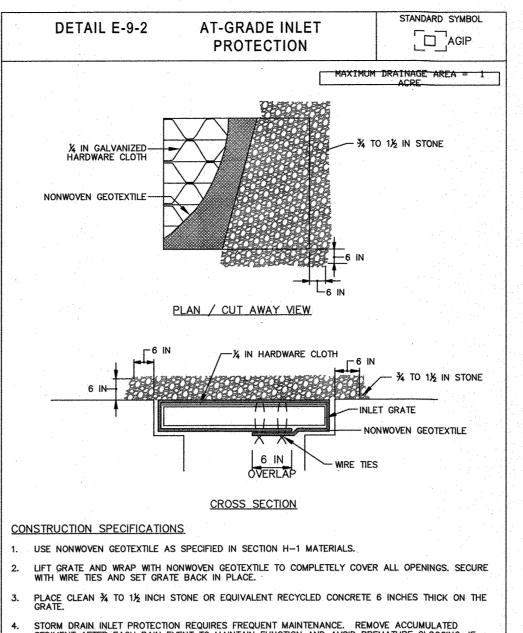
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

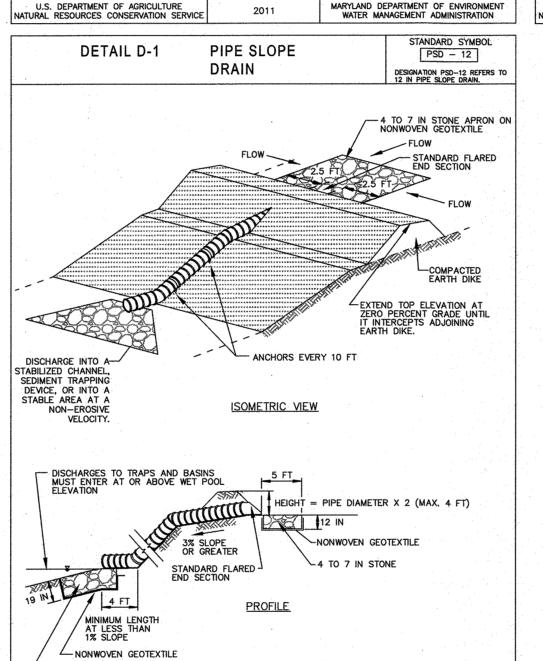
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VATURAL RESOURCES CONSERVATION SERVICE

MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



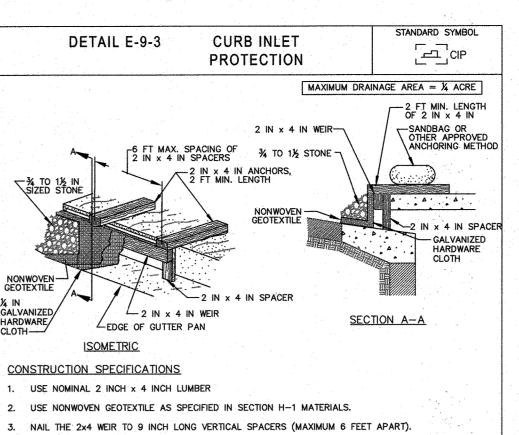
SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL



MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

PROVIDE ROCK OUTLET PROTECTION AS REQUIRED ON PLAN.



ATTACH A CONTINUOUS PIECE OF 1/4 INCH GALVANIZED HARDWARE CLOTH, WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4

PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE OF THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH TO THE 2x4 WEIR.

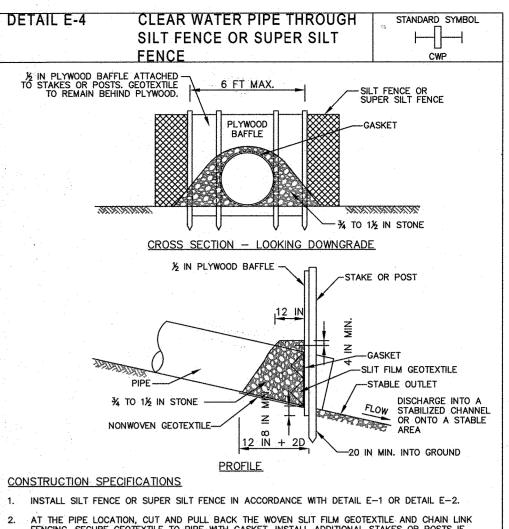
PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FEET LENGTH). EXTEND THE ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.

INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND THE ENDS OF THE THROAT OPENING. FORM THE HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND FACE OF CURB TO SPAN THE INLET OPENING. COVER THE HARDWARE CLOTH AND GEOTEXTILE WITH CLEAN 1/4 TO 11/2 INCH STONE OR EQUIVALENT RECYCLED CONCRETE.

AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.

STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL



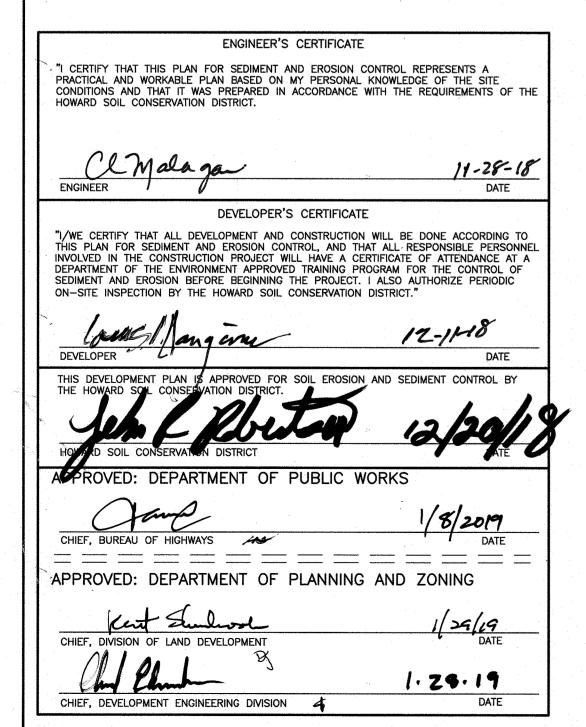
AT THE PIPE LOCATION, CUT AND PULL BACK THE WOVEN SLIT FILM GEOTEXTILE AND CHAIN LINK FENCING. SECURE GEOTEXTILE TO PIPE WITH GASKET. INSTALL ADDITIONAL STAKES OR POSTS IF NECESSARY TO ACCOMMODATE THE INSTALLATION OF THE BAFFLE BOARD.

ENTRENCH ½ INCH PLYWOOD BAFFLE A MINIMUM OF 8 INCHES AND SECURE TO THE UPGRADE SIDE OF THE FENCE STAKES OR POSTS. BAFFLE SHOULD BE AT LEAST THE HEIGHT OF THE FENCE. PLACE 1/4 TO 11/2 INCH STONE OR EQUIVALENT RECYCLED CONCRETE BEHIND THE PLYWOOD BAFFLE ON NONWOVEN GEOTEXTILE AND EXTEND 12 INCH MIN. ALONG TOP OF PIPE AND TO A HEIGHT OF 4 INCHES ABOVE THE TOP OF PIPE.

USE NONWOVEN AND WOVEN SLIT FILM GEOTEXTILES AS SPECIFIED IN SECTION H-1 MATERIALS.

REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN SEDIMENT REACHES 6 INCHES IN HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL BAFFLE, CHAIN LINK, AND GEOTEXTILE. REPLACE STONE IF DISPLACED. KEEP POINT OF DISCHARGE FREE OF EROSION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL MARYLAND DEPARTMENT OF ENVIRONMEN WATER MANAGEMENT ADMINISTRATION 2011



NO AS-BUILT INFORMATION IS PROVIDED ON THIS SHEET



1 OF 2

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. 2/4/3 __ Expiration Date: 12-2/-32

DATE REVISION Professional Certification. I hereby certify that these documen were prepared or approved by me, and that I am a duly licensed BENCHMARK ENGINEERS ▲ LAND SURVEYORS ▲ PLANNERS ENGINEERING, INC. 8480 BALTIMORE NATIONAL PIKE \$\text{SUITE} 315 \text{\$\text{ELLICOTT} CITY, MARYLAND} 21043 (P) 410-465-6105 (F) 410-465-6644 WWW.BEI-CIVILENGINEERING.COM RAVENWOOD AT TURF VALLEY MANGIONE ENTERPRISES OF TURF VALLEY LOTS 1-7, OPEN SPACE LOTS 8-10, GOLF SPACE LOT 11 LIMITED PARTNERSHIP & BUILDABLE BULK PARCEL 'A' 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 (A Resubdivision of Non-Buldable Bulk Parcel 'G' and 'H' 410-825-8400 established under Turf Valley, Pod E-1, Phase 1, F-17-095) DEVELOPER: TAX MAP: 17 - GRID: 13 - PARCEL: p/o 706 - ZONED: PGCC ELECTION DISTRICT NO. 2 - HOWARD COUNTY, MARYLAND MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP SEDIMENT AND EROSION

AS-BUILT

SCALE:

1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400

DESIGN: DBT | DRAFT: DBT

F-18-027

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CONTROL DETAILS

DATE: NOVEMBER 1, 2018 BEI PROJECT NO. 2852