HARFORD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS
BID NO. 16-272

PLUMTREE AT TOLLGATE ROUNDABOUT

STORMWATER MANAGEMENT CERTIFICATIONS AND APPROVALS

ENGINEERS CERTIFICATION

"I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED BY ME OR UNDER MY SUPERVISION AND MEETS THE MINIMUM STANDARDS OF THE HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS, UNITED STATES DEPARTMENT OF AGRICULTURE – SOIL CONSERVATION SERVICE, AND/OR THE DEPARTMENT OF NATURAL RESOURCES, WATER RESOURCES ADMINISTRATION".

SIGNATURE — DATE 3-16-15

20840
P.E. NO

AS BUILT CERTIFICATION (HC)

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THESE CONSTRUCTION DRAWINGS WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS.

SIGNATURE — P.E. NO.

PRINT NAME — DATE

CERTIFY MEANS TO STATE OR DECLAIM A PROFESSIONAL OPINION BASED UPON ONSITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION. THE ONSITE INSPECTION AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERED STANDARDS. CERTIFY DOES NOT MEAN IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS, INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

DEVELOPERS / LANDOWNERS CERTIFICATION

I HEREBY CERTIFY THAT ALL PROPOSED WORK SHOWN ON THESE CONSTRUCTION DRAWING(S) AND ON THE APPROVED SEDIMENT CONTROL DRAWING(S) SHALL BE ACCOMPLISHED PURSUANT TO THESE PLANS. I / WE ALSO UNDERSTAND THAT IT IS MY / OUR RESPONSIBILITY TO HAVE THE CONSTRUCTION SUPERVISED AND CERTIFIED, INCLUDING THE SUBMITTAL OF "AS-BUILT" PLANS, BY A REGISTERED PROFESSIONAL ENGINEER WITHIN 30 DAYS OF COMPLETION.

SIGNATURE — DATE 8-10-15

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT ALL PROPOSED WORK SHOWN ON 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, LICENCE NO. 20840 EXPIRATION DATE: 5-21-17

SIGNATURE — DATE 3-16-15

Jeffrey M. Stratmeyer
PRINT NAME

FIELD VERIFICATION CERTIFICATION

I HEREBY CERTIFY THAT I COMPLETED A FIELD VERIFICATION TO THE INFORMATION SHOWN ON THE PLANS ON 5-23-15 AND THAT THE INFORMATION SHOWN ON THE PLANS IS IN AGREEMENT WITH THE ACTUAL FIELD CONDITIONS.

SIGNATURE — DATE 3-16-15

Jeffrey M. Stratmeyer
PRINTED NAME

STORMWATER MANAGEMENT AS-BUILT CERTIFICATION (SHA)

I HEREBY CERTIFY THAT THE STORMWATER MANAGEMENT FACILITY (FACILITIES) SHOWN ON THE PLANS AND INDIVIDUALLY IDENTIFIED BELOW HAS (HAVE) BEEN CONSTRUCTED IN ACCORDANCE WITH THE PLANS INCLUDED UNDER THE MARYLAND DEPARTMENT OF THE ENVIRONMENT APPROVAL, EXCEPT AS NOTED IN GREEN ON THE "AS-BUILT" DRAWINGS. FURTHERMORE, THE GREEN-NOTED EXCEPTIONS DO NOT ADVERSELY AFFECT THE DESIGN AND/OR THE INTENDED PERFORMANCE OF THE FACILITY (FACILITIES).

BIO SWALE - BMP # 122214
MICRO BIO RETENTION - BMP # 122215

EACH SWM FACILITY IS IDENTIFIED INDIVIDUALLY BY A UNIQUE SWM FACILITY NUMBER

NAME (Printed) — SIGNATURE

MARYLAND REGISTRATION NUMBER — DATE

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, LICENCE NO. _____ EXPIRATION DATE: _____."

"CERTIFY" MEANS TO STATE OR DECLARE A PROFESSIONAL OPINION BASED UPON ON SUFFICIANT AND APPROPRATE ONSITE INSPECTIONS AND MATERIAL TESTS CONDUCTED DURING CONSTRUCTION.

NOTE: AS-BUILT CHECKLISTS CONTAINED IN THE CONTRACT DRAWINGS SHALL BE COMPLETED BY THE AS BUILT INSPECTOR AND SUBMITTED TO THE SHA ALONG WITH THIS CERTIFICATION.

LOCATION MAP
SCALE 1" = 2000'

STORMWATER MANAGEMENT APPROVALS

REVIEWED & APPROVAL RECOMMENDED
R Bruce Appell 2/1/16
WATER RESOURCES ENGINEERING

APPROVAL RECOMMENDED
Michael L. Rist 2/1/16
CHIEF ENGINEER

APPROVAL RECOMMENDED
02/01/16
DEPUTY DIRECTOR OF PUBLIC WORKS

APPROVAL
2-3-16
ACTING DIRECTOR OF PUBLIC WORKS

HARFORD COUNTY BILLING NO. 99957
THESE PLANS HAVE BEEN REVIEWED BY HARFORD COUNTY AND MEET THE TECHNICAL REQUIREMENTS FOR STORMWATER MANAGEMENT ONLY.

INDEX OF SHEETS

1. TITLE SHEET
2. ROAD PLAN
3. DETAILS AND TYPICAL SECTION
4. ROAD PROFILES
5. COORDINATE DATA, STORM DRAIN PROFILES AND DETAILS
6. GRADING & SEDIMENT CONTROL PLAN
7. SEDIMENT CONTROL NOTES & DETAILS
8. STORM WATER MANAGEMENT SPECIFICATIONS, DETAILC, & PLAN (FAC# 1)
9. STORM WATER MANAGEMENT SPECIFICATIONS, DETAILC, & PLAN (FAC# 2 & 3)
10. STORM WATER MANAGEMENT AND SEDIMENT CONTROL DA MAPS
11. SWM, EROSION AND SEDIMENT CONTROL OVERLAY PLAN (AND SEDIMENT DETAILS)
12. DETAILS - SIGNING & PAVEMENT MARKING - TRAFFIC CONTROL PLAN
13. LANDSCAPE PLAN
14. LANDSCAPE NOTES
15. TREE REMOVAL PLAN

T-1 TRAFFIC SIGNAL PLAN
T-2 TRAFFIC GENERAL INFORMATION SHEET
X-1 CROSS SECTION PLAN
X-2 CROSS SECTIONS
X-3 CROSS SECTIONS
S-1 PLUMTREE ROAD ADDITIONAL SIDEWALK PLAN

ESD AND UNIFIED SIZING CRITERIA

ENVIRONMENTAL SITE DESIGN
VOLUME (ESD): PROVIDED 5855 CF
REQUIRED 5648 CF

WQv, REv & CPv INCLUDED IN ESDv

OVER BANK PROTECTION VOL: 10 Yr MANAGEMENT PROVIDED

SWM SITE ANAYLSIS

TOTAL SITE AREA 1.65 Ac.
ON SITE DISTURBED AREA 1.65 Ac.
ON SITE IMPERVIOUS AREA 0.86 Ac.
ONSITE SWM WATERSHED WINTERS RUM

Owner:
HARFORD COUNTY GOVERNMENT
HARFORD COUNTY MARYLAND
220 South Main Street
Bel Air, Maryland
Contact Person: Rick Bates
Phone No. 410-638-3509

Prepared By :
DEPARTMENT OF PUBLIC WORKS
HARFORD COUNTY MARYLAND
212 South Bond Street
Bel Air, Maryland
Phone No. 410-638-3509

SEDIMENT CONTROL PLAN # 59820
SWM PLAN # 99957
SHA BMP TRACKING # 122214
SHA BMP TRACKING # 122215

CAPITAL ROAD PLANS APPROVALS

REVIEWED AND APPROVAL RECOMMENDED:
PROJECT ENGINEER

REVIEWED AND APPROVAL RECOMMENDED:
4-29-16
CHIEF ENGINEER / ACTING DIRECTOR OF DPW

APPROVAL RECOMMENDED:
N/A
DEPUTY DIRECTOR OF PUBLIC WORKS

APPROVED:
4-29-16
ACTING DIRECTOR OF PUBLIC WORKS

STATE OF MARYLAND — JEFFREY M. STRATMEYER — 20840 — REGISTERED PROFESSIONAL ENGINEER

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 Number 20840
Expiration Date: 5-21-17

GENERAL NOTES

1. SPECIFICATIONS: ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH MARYLAND STATE HIGHWAY ADMINISTRATIONS "SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS" DATED JANUARY 2008, AND THE MOST RECENT REVISIONS THEREOF AND ADDITIONS THERETO.

   THE GENERAL PROVISIONS FOR THIS PROJECT ARE THOSE INCLUDED IN THE "HARFORD COUNTY ROAD CODE" GENERAL PROVISIONS COUNTY FUNDED PROJECTS, SECTIONS 100-110.

2. UTILITIES: UTILITY LOCATIONS SHOWN ON THE PLANS ARE BASED ON LIMITED INFORMATION AVAILABLE. HOWEVER, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE ACCURACY OF THIS INFORMATION. THE COST OF REPAIR OR REPLACEMENT OF ANY SUCH FACILITIES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE BORNE BY HIM.

3. UTILITY RELOCATIONS: UTILITY RELOCATIONS MADE NECESSARY BY THE HIGHWAY WORK WILL BE ACCOMPLISHED BY THE UTILITY OWNERS AT NO COST TO THE CONTRACTOR. WHEN SUCH WORK IS NECESSARY, THE CONTRACTOR SHALL NOTIFY APPROPRIATE PERSONNEL AS FOLLOWS:

   CONTACT "MISS UTILITY" PHONE 1-800-257-7777, 48 HOURS IN ADVANCE FOR LOCATION OF ANY UTILITIES.

   CONTACT BALTIMORE GAS & ELECTRIC CO. - PHONE NO. 1-410-291-3119, 48 HOURS IN ADVANCE OF BEGINNING ANY CONSTRUCTION.

4. STANDARD DETAILS: REFERENCE MADE TO STANDARDS ARE TAKEN FROM THE HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS, BOOK OF STANDARD DETAILS DATED JUNE 2008, AND FROM STANDARD DETAILS FOR DESIGN AND CONSTRUCTION" AND FROM "THE MARYLAND STATE HIGHWAY ADMINISTRATION'S BOOK OF STANDARDS-HIGHWAY AND INCI-DENTAL STRUCTURES", IT WILL BE THE CONTRACTOR'S RESPONSIBILITY THAT THE STANDARD DRAWINGS IN HIS POSSESSION ARE THE LATEST REVISED STANDARDS UP TO AND INCLUDING THE DATE OF THE ADVERTISEMENT OF THIS CONTRACT.

5. RIGHT-OF-WAY LINES: RIGHT-OF-WAY LINES SHOWN ON THESE PLANS DO NOT INCLUDE EASEMENTS. THEY ARE FOR ASSISTANCE IN INTERPRETING THE PLANS ONLY. THESE LINES DO NOT REPRESENT THE OFFICIAL PROPERTY ACQUISITION LINES, FOR OFFICIAL FEE RIGHT-OF-WAY AND EASEMENT INFORMATION, SEE THE APPROPRIATE RIGHT-OF-WAY PLATS.

6. SOIL CONSERVATION: THE CONTRACTOR SHALL TAKE EXTREME CAUTION NOT TO DISTURB THE EXISTING VEGETATION OUTSIDE THE LIMITS OF CONSTRUCTION. STOCKPILING AND STAGING WILL NOT BE ALLOWED ON SITE, THE CONTRACTOR MUST SECURE AN OFF-SITE AREA AND ANY NECESSARY PERMITS. SOIL STABILIZATION WILL CONFORM TO 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. THE CONTRACTOR WILL OBTAIN APPROVAL OF THE HARFORD COUNTY SOIL CONSERVATION DISTRICT FOR HIS PLANS IN CONTROLLING SEDIMENT EROSION FOR THE BORROW AREA AND DISPOSING OF ANY WASTE EXCAVATION.

7. EXISTING MAILBOXES AND EXISTING SIGNS: ALL EXISTING MAILBOXES, SIGNS AND PAPER BOXES DISTURBED DURING CONSTRUCTION SHALL BE TEMPORARILY RESET IMMEDIATELY AND PERMANENTLY RESET AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE INCIDENTAL TO ALL OTHER ITEMS IN THE CONTRACT.

8. NEW INLETS SHALL BE BACKFILLED WITH NO. 57 AGGREGATE FOR A WIDTH OF 1.5 FEET OUTSIDE PERIMETER OF STRUCTURE AS PER SECTION 305 OF THE HARFORD COUNTY ROAD CODE.

9. SURVEYS: PRIMARARY CONTROLS
   COORDINATES SHOWN HEREON ARE REFERRED TO THE MARYLAND COORDINATE SYSTEM (NAD 83/1991)

   SURVEYS:ON SITE CONTROLS

BM # TLG3 N 668560.44400 E 1500229.28600 ELEV 325.85500 tr pin cap gws	BM # TT4 N 668860.05108 E 1500098.18956 ELEV 315.85312 tr pin cap gws
BM # TT1 N 668490.76281 E 1500562.16660 ELEV 336.82800 tr pin cap gws	BM # WP1 N 668791.05400 E 1500089.98400 ELEV 318.71200 TR B/C SET fwa
BM # TT2 N 668734.68669 E 1500470.24511 ELEV 329.81000 tr pin cap gws	BM # WP2 N 668632.77400 E 1500643.64700 ELEV 342.88300 TR B/C SET fwa
BM # TT3 N 668712.50212 E 1500092.34739 ELEV 320.89900 tr pin cap gws	BM # WP3 N 668806.97500 E 1500461.87400 ELEV 327.72600 TR B/C SET fwa

10. HARFORD COUNTY REQUIRES ALL INLETS TO BE BICYCLE SAFE CONSTRUCTION. GRATES SHALL BE APPROVED BY HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS.

11. THE FOLLOWING SHA STANDARDS (CONSTRUCTION AND TEMPORARY TRAFFIC CONTROL) ARE REQUIRED FOR THIS PROJECT:
    A) MD 620.02 - SHA TYPE 'A' CURB AND GUTTER
    B) MD 354.01 - TYPE 'C' HEADWALL
    C) MD 655.12 - SIDEWALK RAMPS PARELLEL
    D) MD 378.03 - TYPE 'K' INLET
    E) MD 374.73 - TYPE 'S' INLET
    F) MD 374.68 - SHA 5' COG CURB OPENING

    FOR ALL STANDARDS REFER TO ON THE PLANS THE CONTRACTOR MUST GO TO THE SHA BOOK OF STANDARDS WHICH WILL HAVE THE CURRENT VERSION. THE BOOK OF STANDARDS CAN BE ACCESSED AT: http://apps.roads.maryland.gov/BusinessWithSHA/bizStdsSpecs/desManualStdPub/publicationsonline/ohd/bookstd/index.asp

    ALL ITEMS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT VERSION OF THE REFERENCED STANDARD AT THE TIME OF CONSTRUCTION.

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE 1" = 1000'

1-TITLE.DGN

HARFORD COUNTY STREET LIGHT SCHEDULE

LOCATION	CHECK ONE: INSTALL	REMOVE	UPGRADE	RELOCATE	FIXTURE TYPE/ SIZE / COLOR	CHECK ONE: CUSTOMER OWNED	CUSTOMER LEASED	POLE TYPE / SIZE / COLOR	CHECK ONE: CUSTOMER OWNED	CUSTOMER LEASED	STATION OFFSET
TOLLGATE RD AT PLUMTREE RD NORTH FILLET (N)	✓				CUT-OFF PENDANT W/12' ARM / 250 LED SV EQUIVAENT/ BRONZE	✓		FIBERGLASS / 30' / BRONZE	✓		PLUM STA 10+07.48 OFFSET 28.22' LT.
TOLLGATE RD AT PLUMTREE RD EAST FILLET (E)	✓				CUT-OFF PENDANT W/12' ARM / 250 LED SV EQUIVAENT/ BRONZE	✓		FIBERGLASS / 30' / BRONZE	✓		TOLL STA 0+07.45 OFFSET 26.82' LT.
TOLLGATE RD AT PLUMTREE RD WEST FILLET (W)	✓				CUT-OFF PENDANT W/12' ARM / 250 LED SV EQUIVAENT/ BRONZE	✓		FIBERGLASS / 30' / BRONZE	✓		TOLL STA 44+41.41 OFFSET 26.65' LT.
TOLLGATE RD AT PLUMTREE RD SOUTH FILLET (S)				✓	CUT-OFF PENDANT W/15' ARM ON RELOCATED POLE/ 250 LED SV EQUIVAENT *		✓	WOODEN POLE #233916 *		✓	PLUM STA 0+08.69 OFFSET 18.93' RT.

NOTE: ALLSTREET LIGHTS ARE TO BE INSTALLED 3' MINIMUM BEHIND FACE OF CURB OR 1' MINIMUM BEHIND SIDEWALK (SEE DETAIL SHEET 3)

* EXISTING LIGHT; LLC 7006 - 175 MERCURY VAPOR WITH 10' ARM ON POLE #233916 TO BE REMOVER.

TYPE # 2 ISLAND

PROVIDE 7" CURB & GUTTER AROUND ISLANDS. INSIDE CURB PROVIDE 8" COLORED CONCRETE PAVEMENT W/ STD. GALV. WIRE MESH. STAMP WITH HERRINGBONE USED BRICK PATTERN, BRICK-RED COLOR. PROVIDE 8" GRADED AGGREGATE BASE. PROVIDE 1-4" PVC SLEVE IN CONC. & THROUGH STONE BASE FOR SIGN.

TYPE # 1 ISLAND

PROVIDE TYPE "C" CURB & GUTTER AROUND ISLANDS. INSIDE CURB PROVIDE 8" COLORED CONCRETE PAVEMENT W/ STD. GALV. WIRE MESH. STAMP WITH HERRINGBONE USED BRICK PATTERN. BRICK-RED COLOR. PROVIDE 8" GRADED AGGREGATE BASE. PROVIDE 2-4" PVC SLEVES IN CONC. & THROUGH STONE BASE FOR SIGN.

SEE SHEET 5 AND 8 FOR COORDINATE DATA

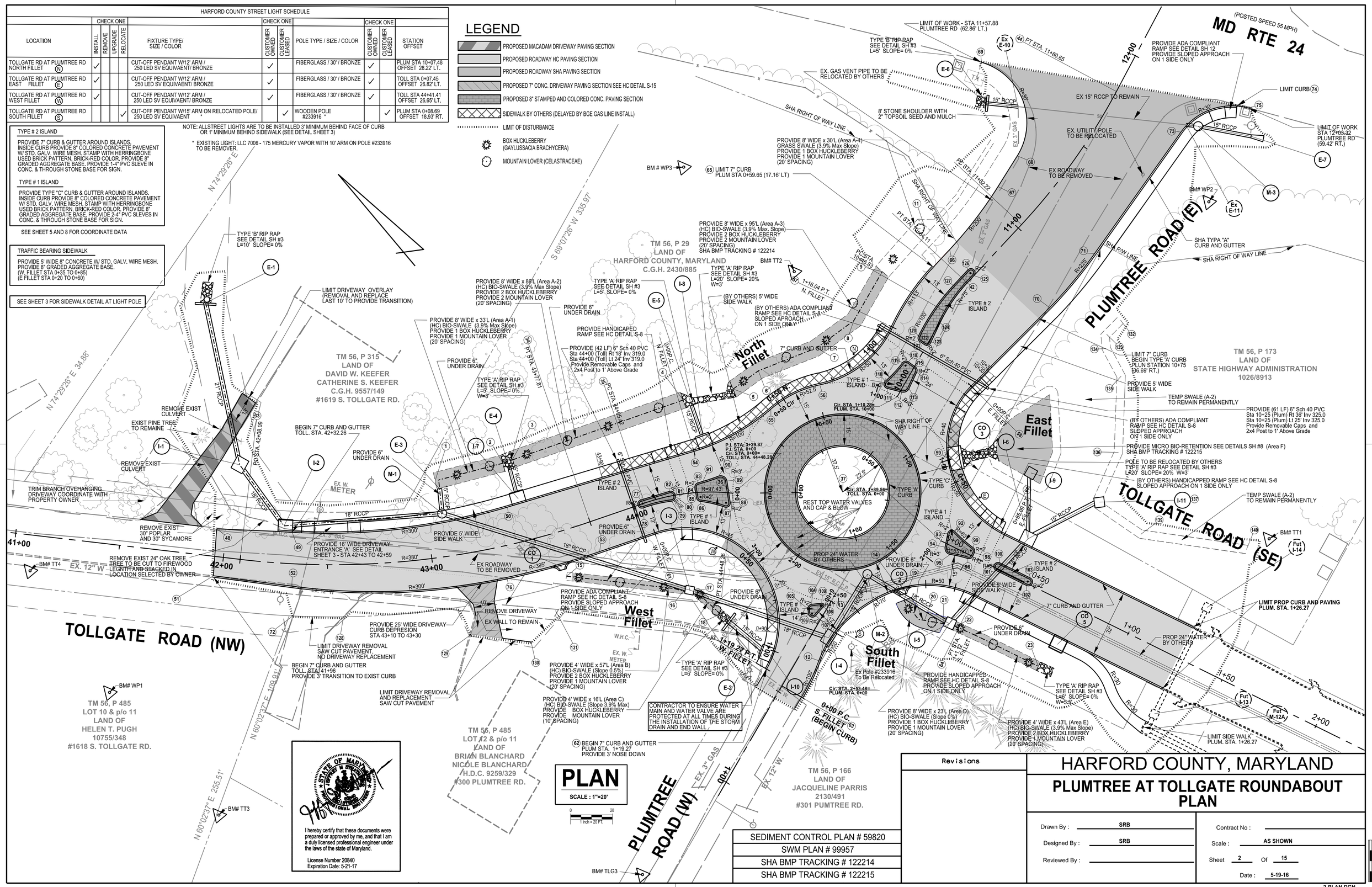
TRAFFIC BEARING SIDEWALK

PROVIDE 5' WIDE 8" CONCRETE W/ STD. GALV. WIRE MESH. PROVIDE 8" GRADED AGGREGATE BASE.
(W. FILLET STA 0+35 TO 0+85)
(E FILLET STA 0+20 TO 0+60)

SEE SHEET 3 FOR SIDEWALK DETAIL AT LIGHT POLE

LEGEND

- PROPOSED MACADAM DRIVEWAY PAVING SECTION
- PROPOSED ROADWAY HC PAVING SECTION
- PROPOSED ROADWAY SHA PAVING SECTION
- PROPOSED 7" CONC. DRIVEWAY PAVING SECTION SEE HC DETAIL S-15
- PROPOSED 8" STAMPED AND COLORED CONC. PAVING SECTION
- SIDEWALK BY OTHERS (DELAYED BY BGE GAS LINE INSTALL)
- LIMIT OF DISTURBANCE
- BOX HUCKLEBERRY (GAYLUSSACIA BRACHYCERA)
- MOUNTAIN LOVER (CELASTRACEAE)



PLAN

SCALE : 1"=20'

0 20
1 Inch = 20 FT.

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 Number 20840
Expiration Date: 5-21-17

SEDIMENT CONTROL PLAN # 59820
SWM PLAN # 99957
SHA BMP TRACKING # 122214
SHA BMP TRACKING # 122215

Revisions

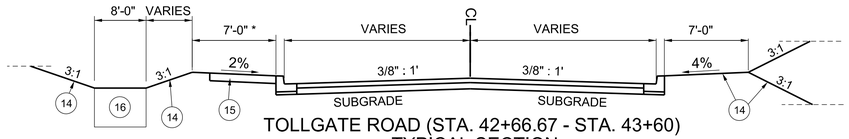
HARFORD COUNTY, MARYLAND

PLUMTREE AT TOLLGATE ROUNDABOUT PLAN

Drawn By : SRB
Designed By : SRB
Reviewed By :

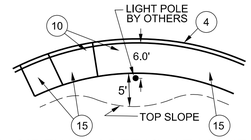
Contract No :
Scale : AS SHOWN
Sheet 2 Of 15
Date : 5-19-16

2-PLAN.DGN



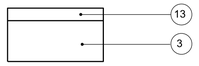
TOLLGATE ROAD (STA. 42+66.67 - STA. 43+60) TYPICAL SECTION

NOT TO SCALE



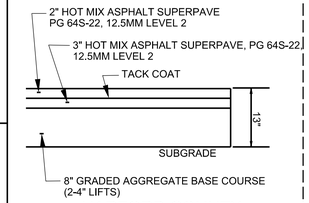
TYP. SIDEWALK DETAIL AT LIGHT POLE

NOT TO SCALE



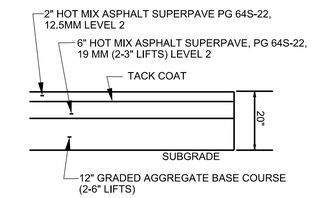
MACADAM DRIVEWAY SECTION

N.T.S.



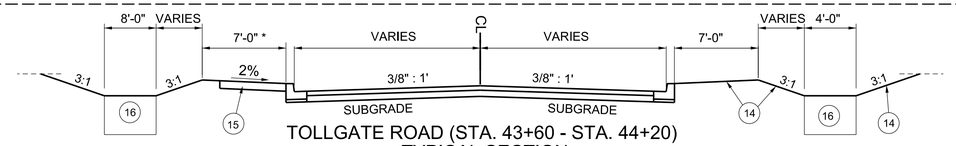
HARFORD COUNTY PAVING SECTION

NO SCALE



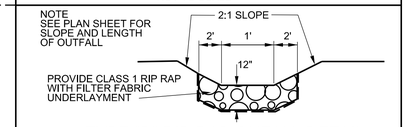
SHA PAVING SECTION FROM STATION 10+75 PLUNTREE RD

NO SCALE



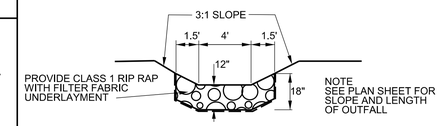
TOLLGATE ROAD (STA. 43+60 - STA. 44+20) TYPICAL SECTION

NOT TO SCALE



TYPE "B" RIP RAP OUFALL DETAIL

NOT TO SCALE



TYPE "A" RIP RAP OUFALL DETAIL

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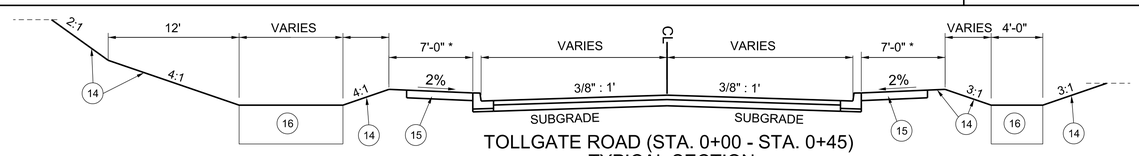

TOLLGATE ROAD (STA. 0+00 - STA. 0+45) TYPICAL SECTION

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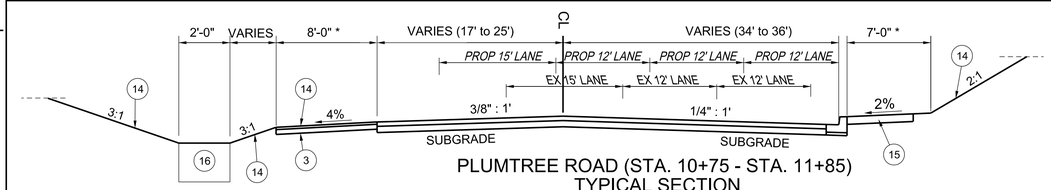
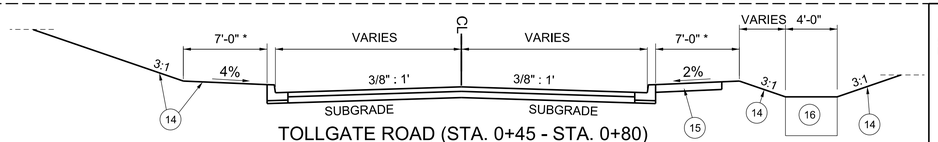


PLUMTREE ROAD (STA. 10+75 - STA. 11+85) TYPICAL SECTION

NOT TO SCALE



TOLLGATE ROAD (STA. 0+45 - STA. 0+80) TYPICAL SECTION

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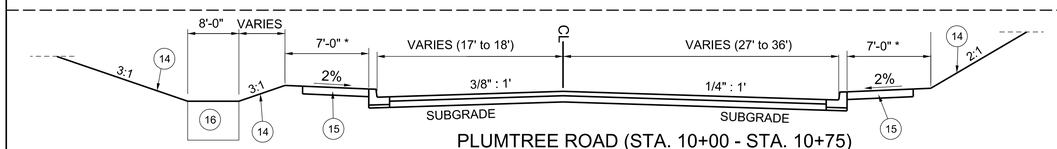
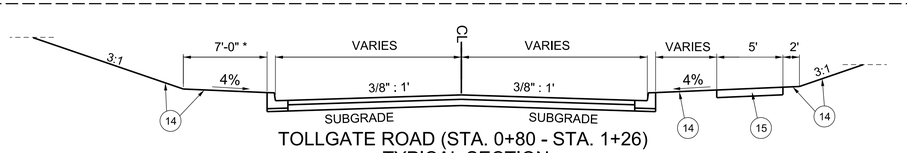


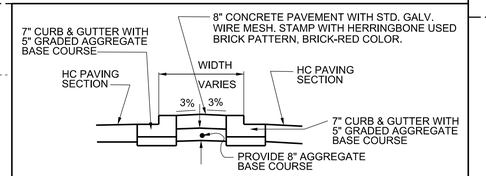
PLUMTREE ROAD (STA. 10+00 - STA. 10+75) TYPICAL SECTION

NOT TO SCALE



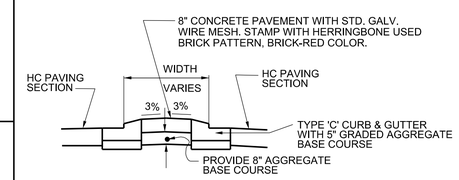
TOLLGATE ROAD (STA. 0+80 - STA. 1+26) TYPICAL SECTION

NOT TO SCALE



TYPICAL SECTION THROUGH TYPE #2 ISLANDS WITH TYPE 7" CURB

NOT TO SCALE



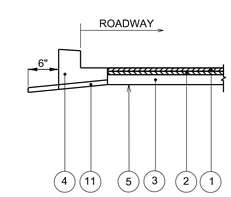
TYPICAL SECTION THROUGH TYPE #1 ISLANDS WITH TYPE 'C' CURB

NOT TO SCALE

LEGEND

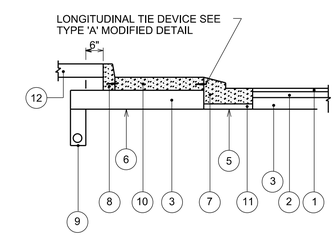
1. 2" HOT MIX ASPHALT SURFACE SUPERPAVE 12.5MM PG 64S-22
2. 3" HOT MIX ASPHALT BASE SUPERPAVE 12.5MM PG 64S-22
3. 8" BASE COURSE USING GRADED AGGREGATE BASE PLACED IN 2 4" LAYERS
4. 7" COMB. CURB & GUTTER (HC S-1)
5. TOP OF SUBGRADE
6. LIMIT OF CLASS 1 EXCAVATION
7. TYPE 'C' COMBINATION CURB & GUTTER (HC S-4)
8. 16" TYPE 'A' CURB (STD.NO. MD 620.02)
9. 6" PERFORATED CIRCULAR PIPE WITHIN ROUNDABOUT (CONTINGENCY) (SEE DETAIL THIS SHEET)
10. 8" CONCRETE PAVEMENT FOR TRUCK APRON W/ STD. GALV. WIRE MESH. STAMP WITH HERRINGBONE USED BRICK PATTERN, BRICK-RED COLOR.
11. 5" BASE COURSE USING GRADED AGGREGATE BASE
12. 6" TOPSOIL
13. 2" HOT MIX ASPHALT SURFACE SUPERPAVE 9.5MM PG 64S-22
14. 2" TOPSOIL SEED AND MULCH
15. 5' WIDE CONC. SIDEWALK WITH 3" STONE BASE SEE HC DETAIL S-11
16. BIO-SWALE SEE SHEET 8 AND 9

NOTE:
FOR CURB CONSTRUCTION SEE HA. CO. PLATE S-1 AND SHA. STD. NO. MD-620.02



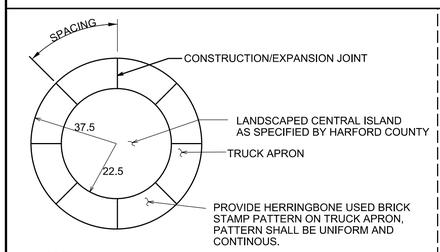
PAVING DETAIL 'A'

N.T.S.



PAVING DETAIL 'B'

N.T.S.

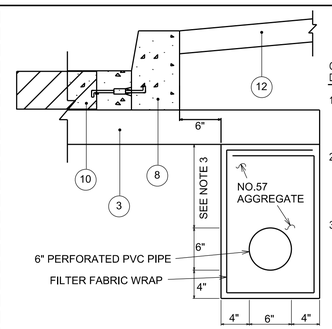


NOTES:

1. CONSTRUCT 8 SLABS @ 29.45' OUTER SPACING.
2. CONSTRUCTION/EXPANSION JOINTS SHALL CONFORM TO STD. NO. MD-572.92.
3. LOCATION OF CONSTRUCTION/EXPANSION JOINTS IN TRUCK APRON AND TYPE A CURB SHOULD MATCH.
4. TRUCK APRON SHALL BE MIX#6 CONCRETE 4500 PSI W/STD. GALV. MESH

ROUNDABOUT TRUCK SLAB DETAIL

N.T.S.

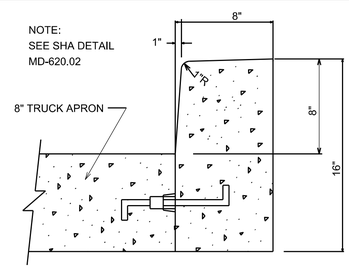


GENERAL NOTES FOR UNDER-DRAIN INSTALLATION:

1. LONGITUDINAL UNDERDRAIN SHALL BE CONSTRUCTED PRIOR TO AGGREGATE BASE COURSE UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
2. THE CONTRACTOR SHALL PROTECT THE UNDERDRAIN TRENCH AND AGGREGATE FROM CONTAMINATION BY SOIL AND OTHER DEBRIS UNTIL THE AGGREGATE BASE COURSE IS PLACED.
3. MINIMUM DEPTH 4" MAXIMUM DEPTH 10" AT OUTLET. PIPE SHALL HAVE CONSTANT RATE OF FALL.

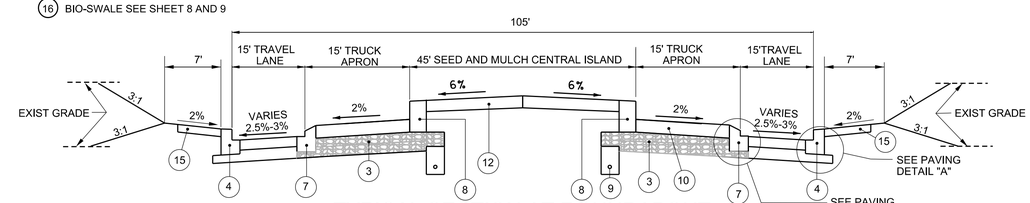
PLACEMENT OF LONGITUDINAL UNDERDRAIN PIPE WITHIN ROUNDABOUT(CONTINGENT)

N.T.S.



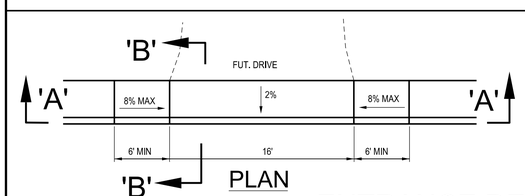
TYPE 'A' COMBINATION CONCRETE CURB & GUTTER

N.T.S

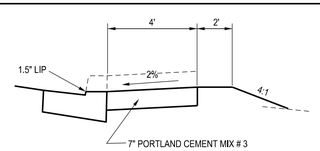


TYPICAL SECTION AT ROUNDABOUT

N.T.S.



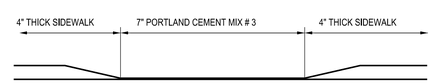
PLAN



SECTION 'B-B'

ENTRANCE DETAIL 'A'

NOT TO SCALE



SECTION 'A-A'

STATE OF MARYLAND
FRED M. STUDY
No. 20840
REGISTERED PROFESSIONAL ENGINEER

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 Number 20840
Expiration Date: 5-21-17

Revisions

HARFORD COUNTY, MARYLAND

PLUMTREE AT TOLLGATE ROUNDABOUT DETAILS AND TYPICAL SECTIONS

Drawn By :	SRB	Contract No :	
Designed By :	SRB	Scale :	AS SHOWN
Reviewed By :		Sheet 3 Of 15	
		Date :	2-17-16

ADC MAP :

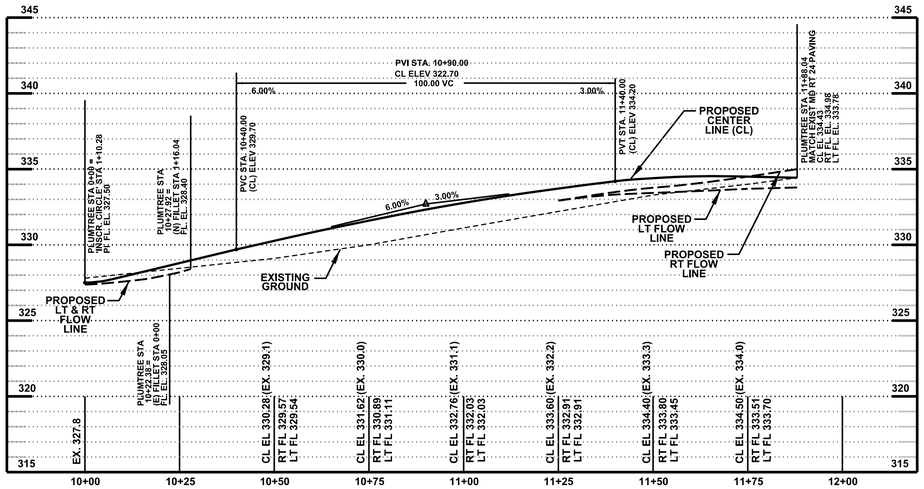
TAX MAP :

HCG BILLING ID No.:

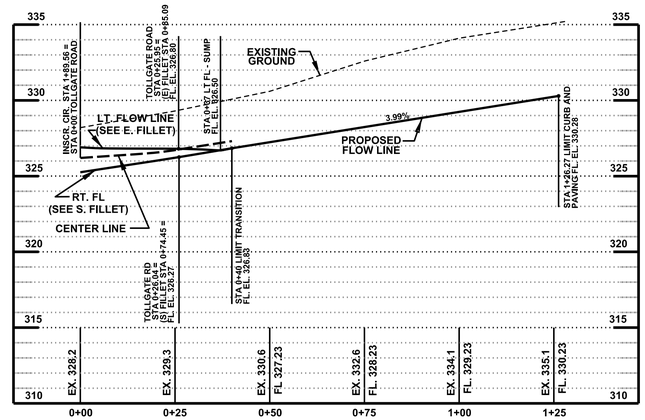
HCG DWG ID No.:

SCALE 1 TO 1

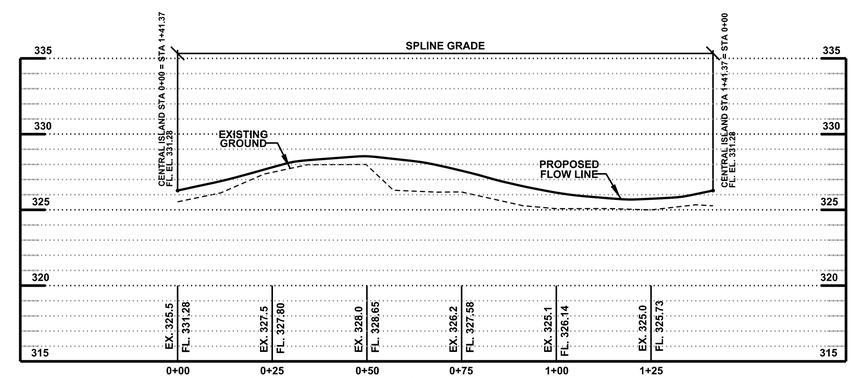
3-DETAILS.DGN



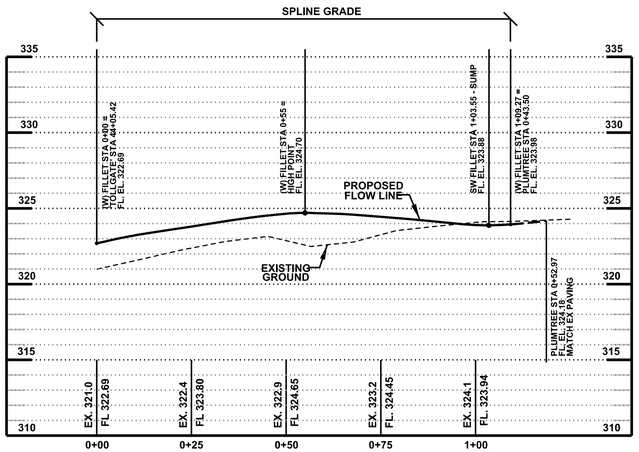
PROFILE ALONG PLUNTREE ROAD (EAST OF ROUNDABOUT)



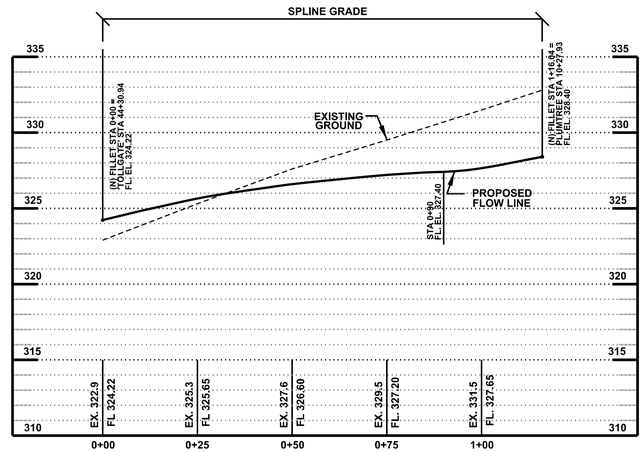
PROFILE ALONG TOLLGATE ROAD (SE OF ROUNDABOUT)



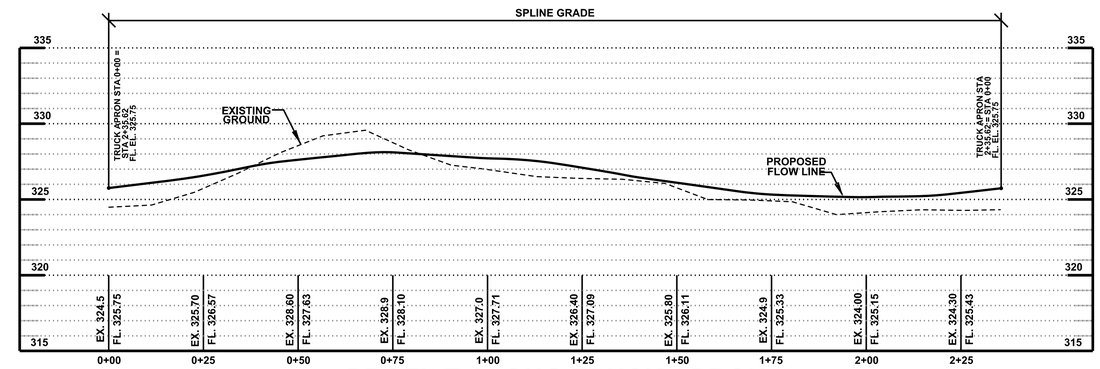
PROFILE ALONG CENTRAL ISLAND



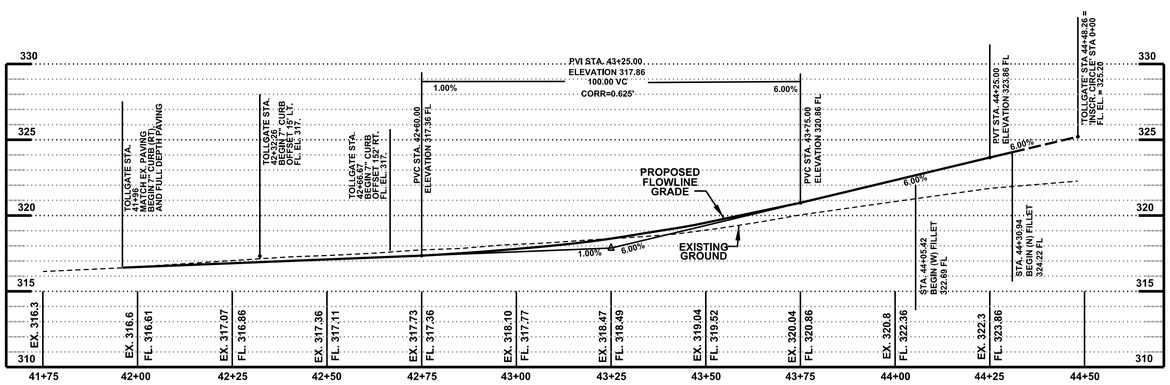
PROFILE ALONG WEST FILLET



PROFILE ALONG NORTH FILLET



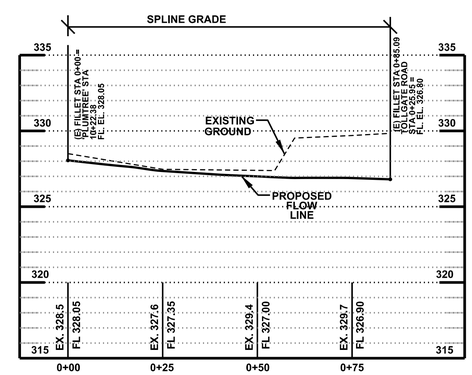
PROFILE ALONG TRUCK APRON



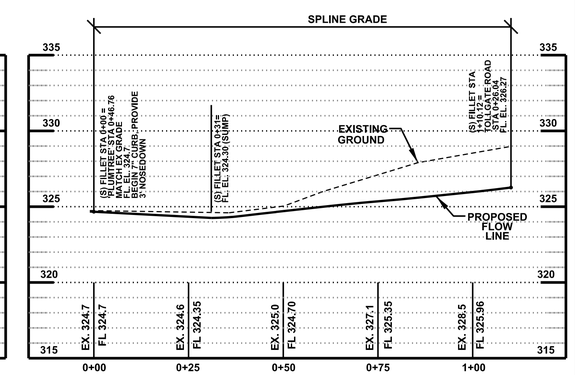
PROFILE ALONG TOLLGATE ROAD (NW OF ROUNDABOUT)

PROFILES

SCALE : HORZ. 1" = 20'
VERT. 1" = 5'



PROFILE ALONG EAST FILLET



PROFILE ALONG SOUTH FILLET

STATE OF MARYLAND
JEFFREY W. SHUMAKER
No. 20840
PROFESSIONAL ENGINEER

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 Number 20840
Expiration Date: 5-21-17

Revisions	HARFORD COUNTY, MARYLAND
	PLUMTREE AT TOLLGATE ROUNDABOUT
	ROUNDABOUT PROFILE SHEET
	Drawn By : SRB — Contract No :
	Designed By : SRB — Scale : AS SHOWN
	Reviewed By : — Sheet 4 Of 15
	Date : 12-10-15

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE 1 1in

PLAN-2D FINAL.DGN (View 3)

COORDINATE DATA

PT.	NORTH	EAST	DESCRIPTION	LOCATION
32	669040.05	1499951.88	PT STA. 38+77.54	TOLLGATE RD (NW) CENTER LINE
33	668799.64	1500178.74	PC STA. 42+08.09	
34	668705.85	1500318.49	PT STA. 43+77.81	
35	668695.92	1500344.25	PC STA. 44+05.42	
36	668672.35	1500379.62	STA. 44+48.28	
37	668639.01	1500420.17	CENTER CIRCLE	
38	668590.93	1500441.26	STA 0+00	TOLLGATE RD (SE) CENTER LINE
39	668407.81	1500521.62	STA 2+00	
40	668657.15	1500469.44	STA 10+00	PLUMTREE RD (E) CENTER LINE
41	668673.33	1500513.39	PC STA 10+46.83	
42	668677.38	1500530.14	PT STA 10+64.11	
43	668682.04	1500567.97	PC STA 11+02.22	
44	668701.62	1500643.68	PT STA 11+80.65	
45	668746.32	1500754.35	STA 13+00	
46	668602.58	1500382.37	STA 0+00	PLUMTREE RD (W) CENTER LINE
47	668568.56	1500288.34	STA 1+00	
48	668818.04	1500179.52	BEGIN WORK	TOLLGATE (NW) LEFT EDGE
49	668793.56	1500206.11	BEGIN CURB PC	
50	668736.58	1500292.82	PT	
51	668801.86	1500163.89	BEGIN WORK	TOLLGATE (NW) RIGHT EDGE
52	668773.97	1500189.39	PC	
76	668711.05	1500270.84	PCC	
53	668691.96	1500312.82	PT	
54	668699.69	1500378.22	STA 0+00 BEGIN	NORTH FILLET
55	668691.50	1500419.38	PRC	
56	668685.36	1500444.82	PRC	
57	668684.09	1500489.20	STA 1+16.4 END	
58	668638.38	1500499.92	STA 0+00 BEGIN	EAST FILLET
59	668619.15	1500469.08	PCC	
60	668573.62	1500466.34	STA 0+85.09 END	
61	668681.92	1500338.86	STA 0+00 BEGIN	WEST FILLET
62	668597.59	1500337.92	STA 1+19.27 END	
63	668576.53	1500342.07	STA 0+00 BEGIN	SOUTH FILLET
12	668584.56	1500359.65	STA 0+19.36 PRC	
13	668591.21	1500381.79	STA 0+42.69 PCC	
14	668586.39	1500411.34	STA 0+65.89 PCC	
64	668560.68	1500437.07	STA 1+10.12 END	
65	668693.59	1500522.63	END CURB	PLUMTREE (E) LEFT EDGE
66	668694.99	1500533.99	PC	
67	668703.17	1500571.05	PT	
68	668708.51	1500587.56	PC	
69	668753.82	1500603.22	PT MATCH EX.	
70	668642.93	1500552.78	PC	PLUMTREE (E) RIGHT EDGE
71	668648.94	1500585.85	PT	
73	668666.88	1500654.81	PC	
74	668659.27	1500683.36	END CURB	
75	668655.02	1500686.96	PT MATCH EX.	
77	668698.21	1500343.81	323.00 FL EL	TYPE 2 ISLAND / TOLLGATE (NW)
78	668694.50	1500342.34	323.00 FL EL	
79	668688.27	1500354.73	323.80 FL EL	
80	668688.95	1500357.57	323.85 FL EL	
81	668689.68	1500357.98	323.85 FL EL	
82	668692.50	1500357.04	323.80 FL EL	
83	668686.92	1500369.95	324.40 FL EL	TYPE 1 ISLAND
84	668686.11	1500367.45	324.40 FL EL	
85	668681.84	1500364.88	324.30 FL EL	
86	668679.45	1500365.13	324.30 FL EL	
87	668669.36	1500372.66	325.00 FL EL	
88	668669.24	1500376.03	325.10 FL EL	
89	668678.44	1500384.02	325.30 FL EL	
90	668681.82	1500383.27	325.20 FL EL	
91	668685.92	1500372.27	324.50 FL EL	
92	668590.63	1500449.20	326.35 FL EL	TYPE 1 ISLAND / TOLLGATE (SE)
93	668592.28	1500446.23	326.30 FL EL	
94	668588.89	1500438.89	326.05 FL EL	
95	668585.63	1500438.15	326.05 FL EL	
96	668576.24	1500445.64	326.45 FL EL	
97	668575.54	1500448.19	326.50 FL EL	
98	668576.38	1500449.89	326.60 FL EL	
99	668578.65	1500450.95	326.65 FL EL	
100	668564.75	1500456.03	326.85 FL EL	TYPE 2 ISLAND
101	668563.15	1500452.37	326.85 FL EL	
102	668548.26	1500458.90	327.60 FL EL	
103	668549.87	1500462.56	327.60 FL EL	
104	668608.74	1500376.06	324.70 FL EL	TYPE 1 ISLAND / PLUMTREE RD (W)
105	668608.67	1500372.72	324.65 FL EL	
106	668605.19	1500370.37	324.70 FL EL	
107	668602.06	1500372.38	324.70 FL EL	
108	668602.78	1500376.75	324.75 FL EL	
109	668606.00	1500378.07	324.75 FL EL	
110	668666.52	1500469.43	327.85 FL EL	TYPE 1 ISLAND / PLUMTREE (E)
111	668663.60	1500467.69	327.85 FL EL	
112	668656.32	1500470.80	327.85 FL EL	
113	668655.20	1500473.62	327.85 FL EL	
114	668660.19	1500484.26	328.10 FL EL	
115	668662.50	1500485.36	328.15 FL EL	
118	668666.55	1500484.33	328.10 FL EL	
119	668668.01	1500481.96	328.05 FL EL	
120	668672.86	1500495.91	328.90 FL EL	TYPE 2 ISLAND
121	668670.48	1500494.79	328.90 FL EL	
122	668667.91	1500495.52	328.95 FL EL	
123	668666.63	1500498.28	329.05 FL EL	
124	668671.09	1500507.97	329.70 FL EL	
42	668677.38	1500530.14	331.00 FL EL	
125	668677.97	1500534.88	331.30 FL EL	
126	668681.94	1500534.39	331.15 FL EL	
127	668680.69	1500524.22	330.50 FL EL	
72	668762.71	1500180.88	LIMITS OF DRIVEWAYS	TOLLGATE RD (NW)
128	668747.04	1500199.16		
129	668701.12	1500240.12		
130	668679.92	1500259.99		
131	668683.93	1500278.54		
132	668616.55	1500574.91	CENTERLINE TEMP SWALE TO REMAIN PERMANENTLY	ABOVE EAST FILLET
133	668615.70	1500565.46		
134	668610.58	1500560.96		
135	668595.85	1500557.89		
136	668568.76	1500533.48		
137	668556.39	1500511.25		
139	668531.88	1500516.50		
140	668493.82	1500550.52		
65	668693.59	1500522.63	BEGIN 8' SHLD.	PLUMTREE (E) LEFT EDGE (GRAVEL SHOULDER)
69	668753.82	1500603.22	END 8' SHLD.	

.25

PIPE SCHEDULE

FROM STR. (INV IN)	TO STR. (INV OUT)	LENGTH	PIPE TYPE AND SIZE
E-1 (307.00)	I-1 (307.79)	79	21" RCCP (CL 4)
I-1 (309.67)	I-2 (309.85)	36	18" RCCP (CL 4)
I-2 (310.05)	M-1 (310.43)	76	18" RCCP (CL 4)
M-1 (310.63)	I-3 (312.94)	124	18" RCCP (CL 4)
I-3 (313.14)	I-4 (313.50)	70	18" RCCP (CL 4)
I-4 (313.70)	M-2 (313.88)	36	18" RCCP (CL 4)
M-2 (314.08)	I-5 (314.31)	46	18" RCCP (CL 4)
I-5 (314.51)	I-6 (315.47)	55	18" RCCP (CL 4)
I-6 (322.90)	I-11 (328.55)	36	15" RCCP (CL 4)
I-6 (319.22)	I-9 (319.50)	28	15" RCCP (CL 4)
M-1 (314.00)	E-3 (316.70)	12	15" RCCP (CL 4)
E-4 (317.50)	I-7 (317.64)	14	15" RCCP (CL 4)
E-5 (320.90)	I-8 (321.08)	18	15" RCCP (CL 4)
E-2 (319.70)	I-10 (319.93)	23	15" RCCP (CL 4)
E-6 (328.45)	Ex E-10 (327.71)	12	15" RCCP (CL 4)
Ex E-11 (330.55)	M-3 (330.68)	6	15" RCCP (CL 4)
M-3 (330.88)	E-7 (332.35)	26	15" RCCP (CL 4)

STRUCTURE SCHEDULE

	STR. #	TYPE	TOP ELEV.	INV. IN	INV. OUT	VERT. DEPTH	LOCATION NORTH	LOCATION EAST	COOR. LOC.
	I-1	TYPE 'S' SINGLE INLET HC DETAIL D-21	313.90 (TG)	309.67	307.79	6.1	668834.42	1500207.65	
	I-2	STD 5' COG INLET HC DETAIL D-33	316.90 (FL)	310.05	309.85	7.1	668795.71	1500203.82	
#	I-3	TYPE 'S' SINGLE INLET HC DETAIL D-21	319.20 (TG)	313.14	312.94	6.3	668650.02	1500334.09	
	I-4	TYPE DOUBLE 'S' INLET HC DETAIL D-24	324.30 (FL)	313.70	313.50	10.8	668589.09	1500370.58	
#	I-5	TYPE 'S' SINGLE INLET HC DETAIL D-21	324.50 (TG)	314.51	314.31	10.2	668557.93	1500419.26	
#	I-6	STD 5' COG INLET HC DETAIL D-33	326.50 (FL)	322.90 318.22	315.47	11.0	668563.58	1500470.74	
	I-7	STD 5' COG INLET HC DETAIL D-33	319.45 (FL)	-	317.64	1.8	668734.24	1500298.23	
	I-8	STD 5' COG INLET HC DETAIL D-33	324.35 (FL)	-	321.08	3.6	668697.37	1500384.09	
	I-9	TYPE 'S' SINGLE INLET SHA MD-374.73	326.00 (TG)	-	318.50	7.5	668588.12	1500495.08	
	I-10	STD 5' COG INLET HC DETAIL D-33	323.88 (FL)	-	319.93	4.0	668600.63	1500344.33	
	I-11	'K' INLET (Open Ends) SHA MD-378.03	332.75 (TG)	-	328.55	3.8	668556.39	1500511.25	
#	M-1	TYPE B MANHOLE HC DETAIL D-44	318.50 (TM)	310.63 314.00	310.43	8.1	668754.33	1500266.85	
	M-2	TYPE A MANHOLE HC DETAIL D-42	325.40 (TM)	313.88	314.08	11.3	668601.35	1500404.04	
	M-3	48" SQ. MANHOLE SHA MD-383.00	335.21 (TM)	330.08	330.68	4.5	668663.76	1500662.97	
	CO-1	STD CURB OPENING SHA MD-640.02	319.95 (FL)				668699.37	1500294.93	
	CO-2	STD CURB OPENING SHA MD-640.02	325.31 (FL)				668585.87	1500412.50	
	CO-3	10' COG CURB OPENING SHA MD-374.68	327.10 (FL)				668618.44	1500469.08	
	CO-5	5' COG CURB OPENING SHA MD-374.68	328.12 (FL)				668518.46	1500455.60	
	E-1	TYPE C CONC HEADWALL HC DETAIL D-11	-	-	307.00		668904.22	1500244.94	
	E-2	TYPE C CONC HEADWALL HC DETAIL D-11	-	-	319.70		668626.94	1500338.55	
	E-3	END PIPE	-	316.20			668764.21	1500273.55	
	E-4	END PIPE	-	317.50			668751.04	1500305.88	
	E-5	END PIPE	-	-	320.90		668717.21	1500391.53	
	E-6	TYPE C CONC HEADWALL SHA DETAIL MD-354.01	-	-	326.45		668737.36	1500592.35	
	E-7	CONC ENDSECTION SHA DETAIL MD-368.02	-	332.35			668643.78	1500679.25	

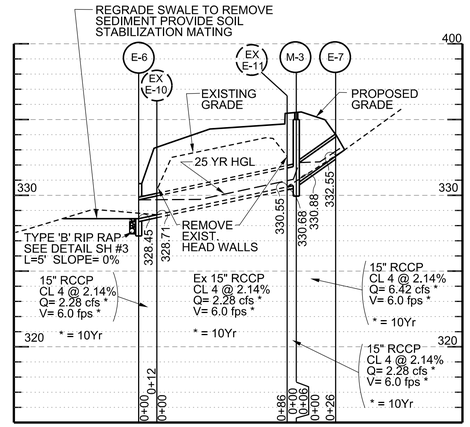
(FL) = FLOW LINE ELEV.

(TG) = TOP GRATE ELEV.

(TM) = TOP MANHOLE RIM ELEVATION

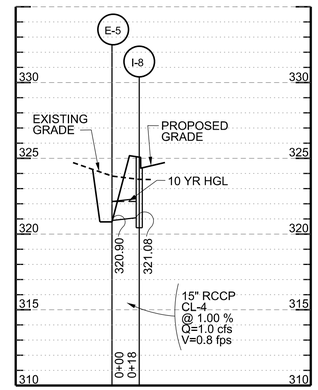
= COORDINATE LOCATION

= PROVIDE UNDER DRAIN KNOCKOUTS FOR SWM, SEE PLAN AND PROFILES



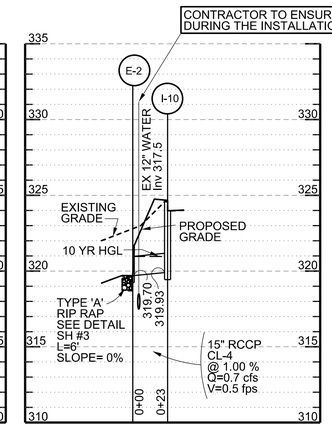
STORM DRAIN PROFILE

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



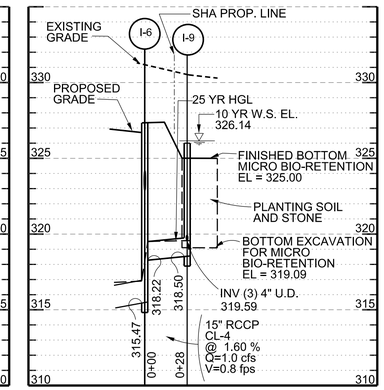
STORM DRAIN PROFILE

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



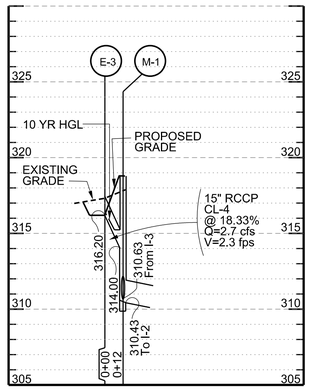
STORM DRAIN PROFILE

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



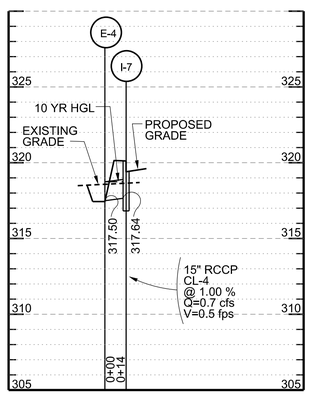
STORM DRAIN PROFILE

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



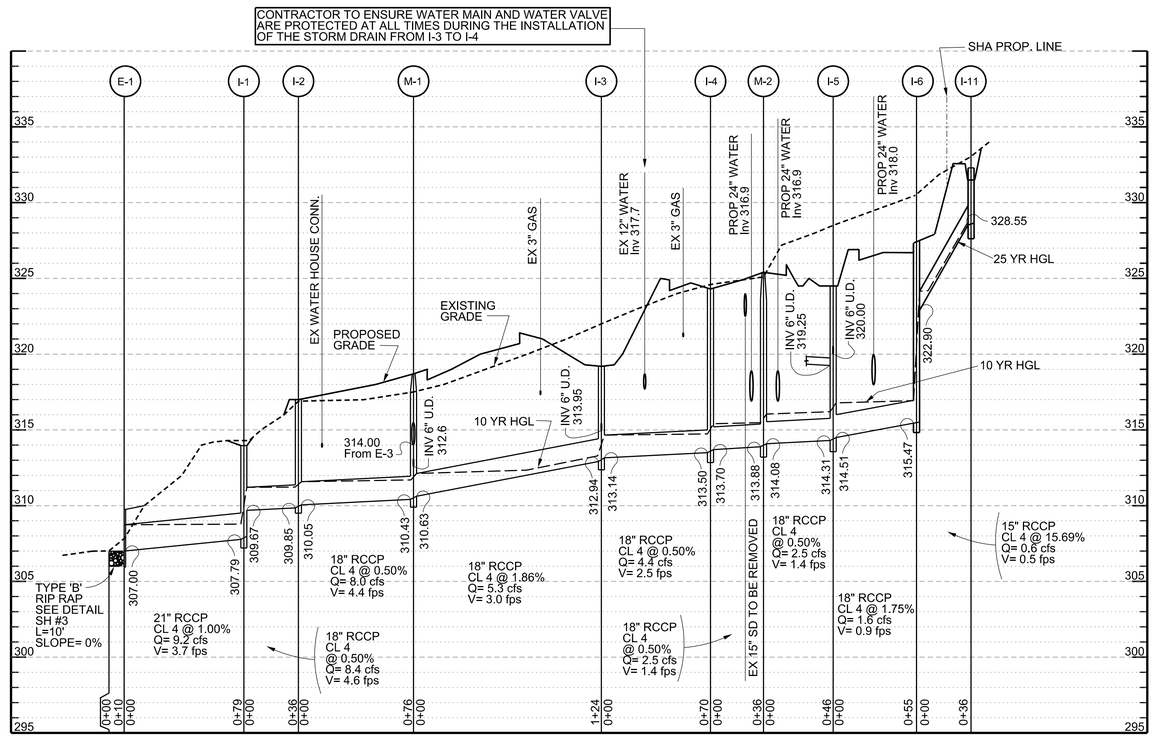
STORM DRAIN PROFILE

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



STORM DRAIN PROFILE

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



STORM DRAIN PROFILE

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

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 Number 20840
Expiration Date: 5-21-17

SWM PLAN # 99957

Revisions

HARFORD COUNTY, MARYLAND

PLUMTREE AT TOLLGATE ROUNDABOUT

COORDINATE DATA, STORM DRAIN PROFILES AND DETAILS

Drawn By : SRB
Designed By : SRB
Reviewed By :

Contract No :
Scale : AS SHOWN
Sheet 5 Of 15
Date : 12-10-15

3-DETAILS.DGN

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:

LEGEND

- PROPOSED MACADAM DRIVEWAY PAVING SECTION
- PROPOSED ROADWAY HC PAVING SECTION
- PROPOSED ROADWAY SHA PAVING SECTION
- PROPOSED 7" CONC. DRIVEWAY PAVING SECTION SEE HC DETAIL S-15
- PROPOSED 8" STAMPED AND COLORED CONC. PAVING SECTION
- LIMIT OF DISTURBANCE

INSTALL STORM DRAIN SYSTEM FROM I-11 TO E-3 & E-1 AND TEMP SWALE ABOVE 1-11 PRIOR TO START OF GRADING

DISTURBANCE AT E-6 & DOWNSTREAM E-6, AND E-7 AND UPSTREAM E-7 MUST BE ACCOMPLISHED DURING A NOAA 3 DAY DRY WEATHER FORCAST

STONE CHECK DAMS 0.75' HIGH 20' SPACING

STONE CHECK DAMS 0.75' HIGH 20' SPACING

STONE CHECK DAMS 0.75' HIGH 20' SPACING

TEMP SWALE A-2 TO REMAIN PERMANENTLY

BIORETENTION SWALES : INSTALL ONLY THAT AMOUNT OF SWALE THAT CAN BE COMPLETED AND STABILIZED BY THE END OF THE WORK DAY

PLAN

SCALE : 1"=20'

1 inch = 20 FT.

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 Number 20840
Expiration Date: 5-21-17

SEDIMENT CONTROL PLAN # 59820

SWM PLAN # 99957

Revisions

HARFORD COUNTY, MARYLAND

PLUMTREE AT TOLLGATE ROUNDABOUT GRADING AND SEDIMENT CONTROL PLAN

Drawn By :	SRB	Contract No :	
Designed By :	SRB	Scale :	AS SHOWN
Reviewed By :		Sheet 6 Of 15	
		Date :	12-10-15

6-SED PLAN.DGN

ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.:

PERMANENT VEGETATIVE STABILIZATION

ALL DISTURBED AREAS WHICH ARE NOT BE PAVED, SHALL BE PERMANENTLY STABILIZED AS FOLLOWS:

A). SEEDBED PREPARATION:
LOOSEN UPPER THREE INCH BY RAKING,DISCING, OR OTHER ACCEPTABLE MEANS AFTER SPREADING FOUR INCHES OF TOP SOIL.

B). SOIL AMENDMENTS:
APPLY 500 LBS. PER ACRE OF 10-10-10 FERTILIZER AND TWO TONS PER ACRE OF LIME.

C). SEEDING:*
FOR PERIODS MARCH1 TO MAY 15 AND AUGUST 15 TO OCTOBER 15, SEED WITH 125LBS. PER ACRE OF TALL FESCUE, 15 LBS. PER ACRE OF PERENNIAL RYEGRASS, AND 10 LBS. OF KENTUCKY BLUEGRASS.

FOR PERIOD OF MARCH 16 TO AUGUST 14, SEED WITH 110 LBS. PER ACRE OF TALL FESCUE AND 3 LBS. PER ACRE OF WEEPING LOVEGRASS.

FOR PERIOD OF OCTOBER 16 TO FEBRUARY 28, PROTECT SITE BY: OPTIONS (1) 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, (2) USE SOD OR (3) SEED WITH 60LBS. PER ACRE OF TALL FESCUE AND MULCH WITH 2 TONS PER ACRE OF WELL ANCHORED STRAW.
NOTE: FOR QUICK COVER WITH TALL FESCUE, ADD 2 LBS. OF SMALL GRAIN PER 1,000 SQ.FT.

D). MULCHING SPECIFICATIONS
MULCH SHALL BE APPLIED TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.

APPLY 2 TONS PER ACRE OF STRAW OVER ALL SEEDD AREAS. IF A MULCH ANCHORING TOOL IS TO BE USED, THE RATE SHALL BE INCREASED TO 2.5 TONS PER ACRE.**

MULCH ANCHORING SHALL BE PERFORMED IMMEDIATELY FOLLOWING MUCH APPLICATION TO MINIMIZE LOSS BY WIND AND WATER. THE TYPE OF MULCH ANCHORING USED MUST COMPLY WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS.

* IF OTHER SEED MIXES ARE TO BE SUBSTITUTED, THEY MUST COMPLY WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS, CHAPTER 20, TABLE 25.
** IF A DIFFERENT TYPE OF MULCH IS TO BE USED, IT MUST COMPLY WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS, CHAPTER 20.

TEMPORARY VEGETATION STABILIZATION

A). SEEDBED PREPARATION:
LOOSEN UPPER THREE INCHES BY DISCING, RAKING OR OTHER ACCEPTABLE MEANS.

B). SOIL AMENDMENTS:
APPLY 600 LBS. PER ACRE OF 10-10-10 FERTILIZER AND TWO TONS PER ACRE OF LIME.

C). SEEDING:
FOR PERIOD OF MARCH 11 TO APRIL 30 AND AUGUST 15 TO NOVEMBER 15, SEED WITH 2.5 BU PER ACRE OF CEREAL RYE PLUS 30 LBS. PER ACRE OF TALL FESCUE OR 5 LBS. PER ACRE OF REDTOP OR 20 LBS. PER ACRE OF PERENNIAL RYEGRASS.

FOR PERIODS LOF MAY1 TO AUGUST 14, SEED WITH 3 LBS. PER ACRE OF WEEPING LOVEGRASS OR 40 LBS. PER ACRE OF JAPANESE OR FOXTAIL MILLET.

FOR PERIODS OF NOVEMBER 16 TO FEBRUARY 28, PROTECT THE SITE BY APPLYING TWO TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOD.

D). MULCHING SPECIFICATIONS:
MULCH SHALL BE APPLIED TO ALL SEEDED AREAS. IMMEDIATELY AFTER SEEDING.
APPLY TWO TONS PER ACREA OF STRAW OVER ALL SEEDED AREAS. IF A MULCH ANCHORING TOOL IS TO BE USED, THE RATE SHALL BE INCREASED TO 25 TONS PER ACRE.**
MULCH ANCHORING SHALL BE PERFORMED IMMEDIATELY FOLLOWING MULCH APPLICATION TO MINIMIZE LOSS BY WIND AND AETER. THE MULCH ANCHORING TOOL MUST COMPLY WITH THE 1994 MARYLAND STANDARDS SPECIFICATIONS.

* IF OTHER SEED MIXES ARE TO BE SUBSTITUTED, THEY MUST COMPLY WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS, CHAPTER 20, TABLE 25
** IF A DIFFERENT TYPE OF MULCH IS TO BE USED, IT MUST COMPLY WITH THE 1994 MAYLAND STANDARDS AND SPECIFICATIONS, CHAPTER 20.

SEQUENCE OF CONSTRUCTION

1. NOTIFY HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS, SEDIMENT CONTROL INSPECTOR, 48 HOURS PRIOR TO CONSTRUCTION.
2. CLEAR AND GRUB FOR AND INSTALL PERIMETER SEDIMENT CONTROLS: SUPER SILT FENCE AND STABILIZED CONSTRUCTION ENTRANCE.
3. INSTALL STORM DRAIN SYSTEM FROM I-11 TO E-3 & E-1, AND TEMPORARY SWALE ABOVE I-11, ALSO INSTALL INLET PROTECTION, GABION OUTLET STRUCTURE AND EARTH DIKES PRIOR TO START OF GRADING OPERATIONS
4. CLEAR AND GRUB ROADWAY AREA.
5. GRADE ROADS AND INSTALL REMINDER OF STORM DRAIN (INCLUDING E-6 TO E-7) AND INLET PROTECTION. INSTALL CR-6 BASE COURSE IMMEDIATELY AFTER INSTALLATION OF INLETS AND CURBS.
DISTURBANCE AT E-6 & DOWNSTREAM E-6, AND E-7 AND UPSTREAM E-7 MUST BE ACCOMPLISHED DURING A NOAA 3 DAY DRY WEATHER FORCAST.
6. PAVE ROADWAY.
7. PROVIDE PERMANENT SEEDING IN ALL DISTURBED AREAS.
9. INSTALL SWM MICRO BIO-RETENTION AND BIO-SWALES THAN STABILIZE ALL DISTURBED AREAS. (SEE SEQUENCE OF CONSTRUCTION FOR BIO-SWALES AND MICRO BIO-RETENTION SH# 9)
9. REMOVE REMAINING SEDIMENT CONTROL DEVICES WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR.

OWNER'S CERTIFICATION

"I/We certify that all development and construction will be done according to this plan of development and plan for erosion and sediment control and that any responsible personnel involved in the construction project will have a Certificate of Attendance at a Department of Natural Resources Approved Training Program for the Control of Sediment and Erosion before beginning the project. I also authorize periodic onsite inspection by the Harford Soil Conservation District or their authorized agents, or as deemed necessary."

[signature] 6-6-15
OWNER DATE

ENGINEER'S CERTIFICATION

"I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL AND STORM WATER MANAGEMENT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THIS SITE CONDITIONS AND THAT IT WAS PREPARED WITH THE STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, DATED APRIL 1983."

[signature] 6-6-15
ENGINEER DATE

PROFESSIONAL CERTIFICATION.
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND,

LICENSE NO	EXPIRATION DATE:
24840	5-21-17

HARFORD COUNTY SEDIMENT CONTROL NOTES

1. A GRADING UNIT OF 20 ACRES IS THE MAXIMUM CONTIGUOUS AREA ALLOWED TO BE GRADED AT A GIVEN TIME.
2. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PROCEEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY DPW. NO MORE THAN THIRTY ACRES CUMULATIVELY MAY BE DISTURBED AT ANY GIVEN TIME.
3. THE CONTRACTOR/OWNER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS. FURTHER, NO CONSTRUCTION ACTIVITY SHALL TAKE PLACE UNTIL ALL REQUIRED PERMITS HAVE BEEN OBTAINED.
4. THE LIMITS OF DISTURBANCE SHALL BE CLEARLY DELINEATED IN THE FIELD PRIOR TO GRADING OF THE SITE TO ENSURE COMPLIANCE WITH APPROVED PLANS. ALL FOREST RETENTION AREAS WILL BE DELINEATED WITH BLAZE ORANGE FENCE AS WELL AS ANY SWM INFILTRATION PRACTICE PRIOR TO ANY CLEARING. WORK BEYOND THE LIMITS OF DISTURBANCE AND IN ANY AREA INSIDE THE FOREST RETENTION AND SWM INFILTRATION AREA IS CONSIDERED TO BE A VIOLATION OF THIS PLAN.
5. ALL SEDIMENT CONTROL PRACTICES MUST BE INSTALLED PRIOR TO ANY CONSTRUCTION ACTIVITY. UPON COMPLETION OF THE INSTALLATION OF PERIMETER SEDIMENT CONTROL PRACTICES THE SITE MUST BE INSPECTED BY THE DEPARTMENT OF PUBLIC WORKS (DPW). NO ADDITIONAL CONSTRUCTION ACTIVITY WILL BE AUTHORIZED WITHOUT THE APPROVAL FROM DPW.
6. ALL POINTS OF INGRESS AND EGRESS SHALL BE PROTECTED TO PREVENT TRACKING OF MUD INTO PUBLIC WAYS. DURING CONSTRUCTION, EVERY MEANS WILL BE TAKEN TO CONTROL SOIL EROSION AND SILTATION. IF NECESSARY A WASH RACK MAY NEED TO BE ESTABLISHED.
7. EARTH DIKES, SEDIMENT TRAPS, ETC. WILL BE LOCATED AS SHOWN ON THESE DRAWINGS. FIELD CHANGES AND MINOR ADJUSTMENTS ARE PERMISSIBLE AS LONG AS THE INSTALLATION FUNCTIONS AND CONFORMS TO SPECIFICATIONS. THE SITE INSPECTOR PRIOR TO INSTALLATION MUST APPROVE ALL SUCH CHANGES. MAJOR CHANGES TO THE APPROVED PLAN WILL REQUIRE RE-APPROVAL BY THE HARFORD SOIL CONSERVATION DISTRICT.
8. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:
   a) THREE CALENDAR DAYS ON SLOPES GREATER THAN 3:1, ALL WATERWAYS AND TO THE SURFACE OF ALL PERIMETER CONTROLS.
   b) SEVEN CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS OF THE PROJECT SITE.
9. DUST CONTROL MUST BE MANAGED AS PART OF ALL SEDIMENT CONTROL PLANS. FAILURE TO DO SO IS A VIOLATION OF THIS PLAN.
10. SEDIMENT BASINS MUST BE BUILT TO DESIGN SPECIFICATIONS SHOWN ON THE PLAN. IF THE BASIN IS TO BE USED AS A FUTURE SWM FACILITY, THE BASIN WILL BE BUILT IN ACCORDANCE WITH THE LATEST MD-378 STANDARDS AND SPECIFICATIONS. SPECIFIED MATERIALS MUST BE USED. NO CHANGES OR MODIFICATIONS WILL BE MADE WITHOUT WRITTEN AUTHORIZATION OF THE HARFORD SOIL CONSERVATION DISTRICT.
11. TEMPORARY FENCING SHALL BE PLACED AROUND ALL SEDIMENT BASINS, TRAPS, AND PONDS DURING CONSTRUCTION AND SITE GRADING.
12. AT THE END OF EACH WORKING DAY ALL SEDIMENT CONTROL PRACTICES WILL BE INSPECTED AND LEFT OPERATIONAL. A WEEKLY LOG WILL BE KEPT IN ACCORDANCE WITH NOI/NPDES REGULATIONS. A COPY OF THE APPROVED SEDIMENT CONTROL PLANS SHALL BE AVAILABLE AT THE SITE AT ALL TIMES.
13. ENSURE POSITIVE DRAINAGE TO ALL ROAD INLETS DURING ALL PHASES OF ROAD CONSTRUCTION TO ENSURE POSITIVE FLOW TO TRAPS AND OR BASINS.
14. CUT AND/OR FILL SHALL BE DONE IN CONFORMANCE WITH 2011 EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS FOR LAND GRADING.
15. SURFACE FLOWS OVER CUT AND FILL SLOPES SHALL BE CONTROLLED BY EITHER REDIRECTING FLOWS FROM TRAVERSING THE SLOPES OR BY INSTALLING MECHANICAL DEVICES TO SAFELY CONVEY WATER DOWN SLOPES WITHOUT CAUSING EROSION.
16. OFF-SITE WASTE OR BORROW AREAS SHALL HAVE AN APPROVED EROSION AND SEDIMENT CONTROL PLAN PRIOR TO THE IMPORT OR EXPORT OF MATERIAL TO/FROM THE PROJECT SITE.
17. ALL MATERIAL ORIGINATING FROM THE DEVELOPMENT OF THE PROPERTY AND DEPOSITED ON THE PUBLIC RIGHT-OF-WAY SHALL BE IMMEDIATELY REMOVED.
18. STORM DRAIN INLETS AND OUTLETS SHALL BE PROTECTED PER 2011 EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS.
19. TOPSOIL, LIMING, FERTILIZING, SEEDING, MULCHING, SOD, ETC. ARE ALL ESSENTIAL PARTS OF THE SEDIMENT CONTROL PLAN AND MUST BE COMPLETED ALONG WITH ALL OTHER PRACTICES.
20. TRAPS TO BE REMOVED SHALL BE DEWATERED AS PER THE 2011 EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS.
21. PRIOR TO REMOVAL OF TRAPS OR CONVERSION OF SEDIMENT BASINS TO SWM FACILITIES, THE STORM DRAINS WILL BE FLUSHED
22. SEDIMENT CONTROL PRACTICES WILL BE MAINTAINED UNTIL ALL DISTURBED AREAS FOR WHICH THE PRACTICES WERE INSTALLED HAVE BEEN STABILIZED. SEDIMENT CONTROL PRACTICES MAY BE REMOVED ONLY WITH THE AUTHORIZATION OF THE DPW INSPECTOR. ALL DISTURBED AREAS RESULTING FROM THE REMOVAL OF SEDIMENT CONTROL DEVICES SHALL BE STABILIZED IMMEDIATELY. REMOVAL PRIOR TO INSPECTOR'S APPROVAL CONSTITUTES A VIOLATION.

SITE ANALYSIS

TOTAL AREA TO BE STABILIZED = 0.79 AC
TOTAL DISTURBED AREA = 1.65 AC
TOTAL AREA TO BE PAVED = 0.86 SY

TOTAL CUT = 5200 CY
TOTAL FILL = 1130 CY

CONTRACTOR SHALL DISPOSE OF EXCESS SOIL ONLY AT A LOCATION WITH AN ACTIVE GRADING PERMIT AND APROVED SEDINENT CONTROL PLAN

NPDES ID POINT - N 668639.01
E 1500420.17

EROSION AND SEDIMENT CONTROL

PLAN # 59820

RECOMMEND FOR APPROVAL

[signature] 8-21-15
HARFORD COUNTY DPW

TECHNICAL CONCURRENCE

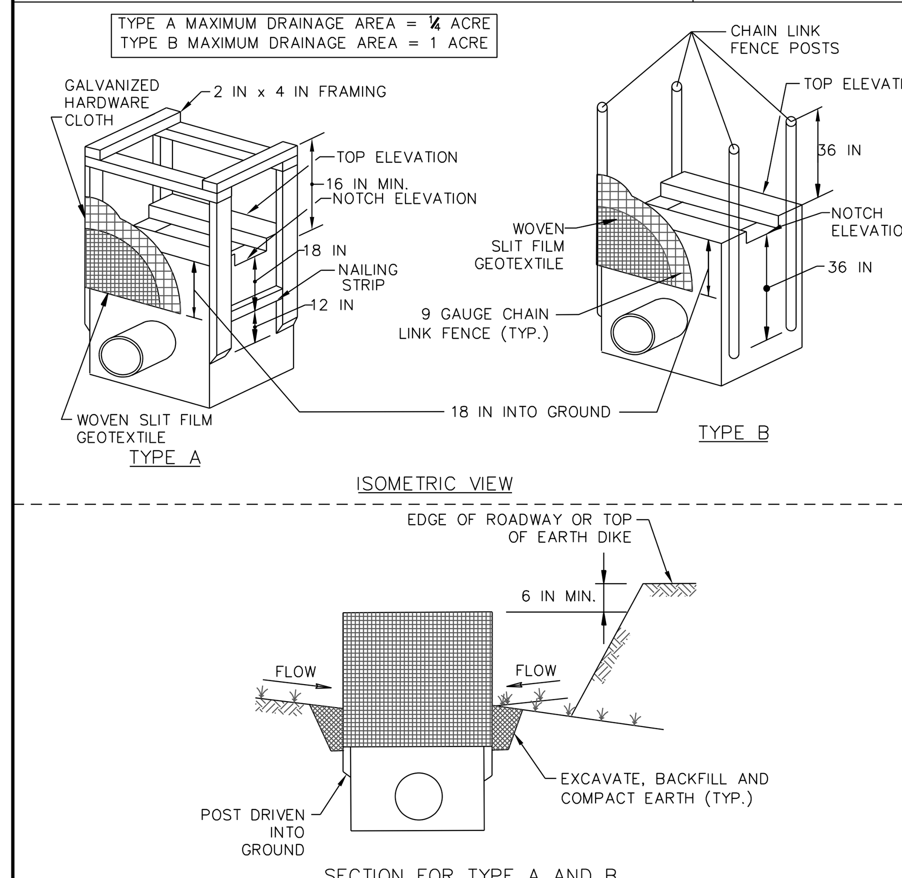
[signature] 8-24-15
HARFORD SOIL CONSERVATION DISTRICT

APPROVED

[signature] 8/25/15
HARFORD SOIL CONSERVATION DISTRICT

DETAIL E-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL: SIP



1 OF 2

CONSTRUCTION SPECIFICATIONS

1. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
2. EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.
3. FOR TYPE A, USE NOMINAL 2 INCH X 4 INCH CONSTRUCTION GRADE LUMBER POSTS, DRIVEN 1 FOOT INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE NAIL STRIPS BETWEEN THE POSTS ON THE ENDS OF THE INLET. ASSEMBLE THE TOP PORTION OF THE 2X4 FRAME AS SHOWN. STRETCH ½ INCH GALVANIZED HARDWARE CLOTH TIGHTLY AROUND THE FRAME AND FASTEN SECURELY. FASTEN GEOTEXTILE SECURELY TO THE HARDWARE CLOTH WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND HARDWARE CLOTH A MINIMUM OF 18 INCHES BELOW THE WEIR CREST. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLAPPED AND FOLDED, THEN FASTENED TO THE POST.

   FOR TYPE B, USE 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND 6 FOOT LENGTH, DRIVEN A MINIMUM OF 36 INCHES BELOW THE WEIR CREST AT EACH CORNER OF THE STRUCTURE. FASTEN 9 GAUGE OR HEAVIER CHAIN LINK FENCE, 42 INCHES IN HEIGHT, SECURELY TO THE FENCE POSTS WITH WIRE TIES. FASTEN GEOTEXTILE SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 18 INCHES BELOW THE WEIR CREST.
4. BACKFILL AROUND THE INLET IN LOOSE 4 INCH LIFTS AND COMPACT UNTIL SOIL IS LEVEL WITH THE NOTCH ELEVATION ON THE ENDS AND TOP ELEVATION ON THE SIDES.
5. 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.

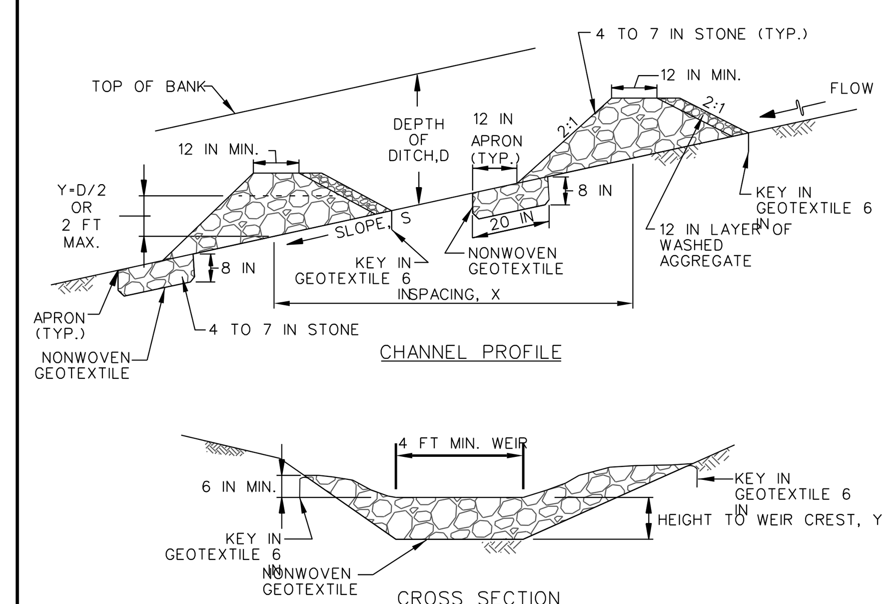
2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL D-2 STONE CHECK DAM

STANDARD SYMBOL: CD



CONSTRUCTION SPECIFICATIONS

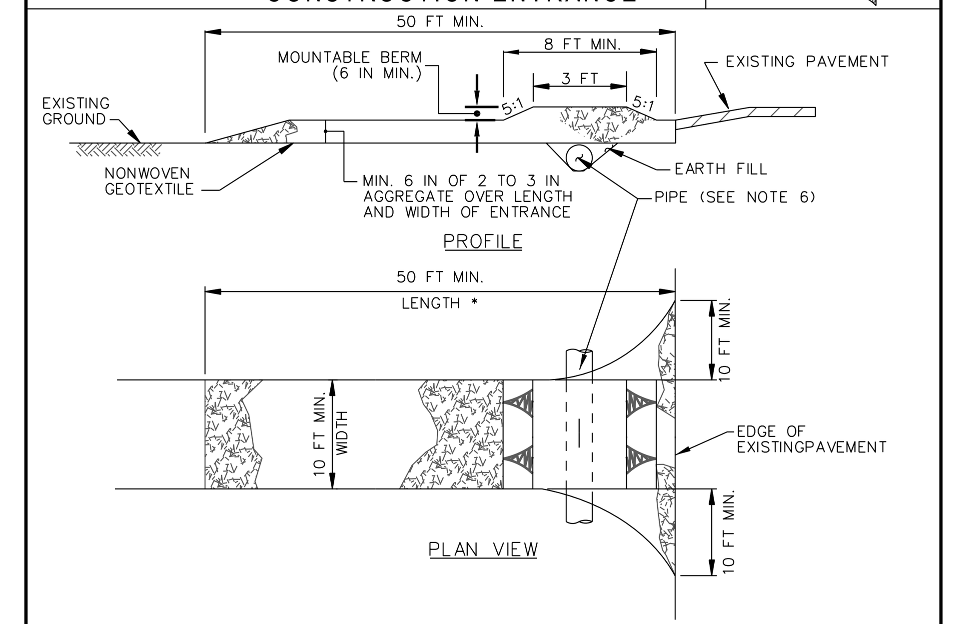
1. PREPARE SWALES IN ACCORDANCE WITH THE CONSTRUCTION SPECIFICATIONS DESCRIBED IN SECTION C-2, STANDARDS AND SPECIFICATIONS FOR TEMPORARY SWALE, OR AS SPECIFIED ON PLAN.
2. PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, UNDER THE BOTTOM AND SIDES OF THE DAM PRIOR TO PLACEMENT OF STONE. CONSTRUCT THE CHECK DAM WITH WASHED 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) WITH SIDE SLOPES OF 2:1 OR FLATTER AND A MINIMUM TOP WIDTH OF 12 INCHES. PLACE THE STONE SO THAT IT COMPLETELY COVERS THE WIDTH OF THE CHANNEL AND CHANNEL BANKS. FORM THE WEIR SO THAT TOP OF THE OUTLET CREST IS APPROXIMATELY 6 INCHES LOWER THAN THE OUTER EDGES. LINE THE UPSTREAM FACE OF THE DAM WITH A 1 FOOT THICK LAYER OF WASHED AGGREGATE (¾ TO 1½ INCH).
3. SET THE HEIGHT FOR THE WEIR CREST EQUAL TO ONE-HALF THE DEPTH OF THE CHANNEL OR DITCH. TO AVOID SCOUR THE MAXIMUM HEIGHT OF THE WEIR CREST MUST NOT EXCEED 2.0 FEET.
4. REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES ONE-HALF OF THE HEIGHT OF THE WEIR CREST. MAINTAIN LINE, GRADE, AND CROSS SECTION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE



CONSTRUCTION SPECIFICATIONS

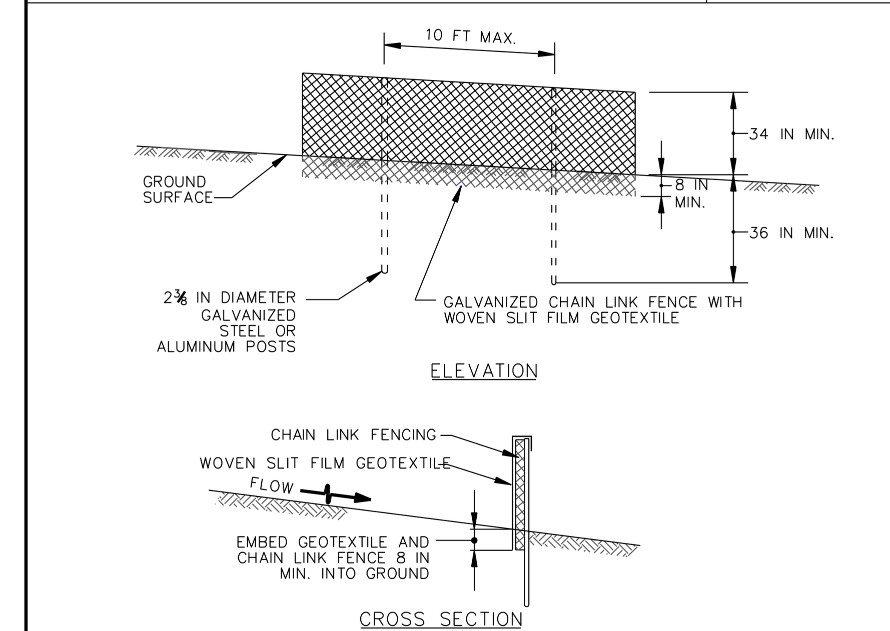
1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
4. 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.
5. 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 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	201 1	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL: SSF



CONSTRUCTION SPECIFICATIONS

1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
3. 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.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT
   45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
7. 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 CHAIN LINK FENCING AND GEOTEXTILE.

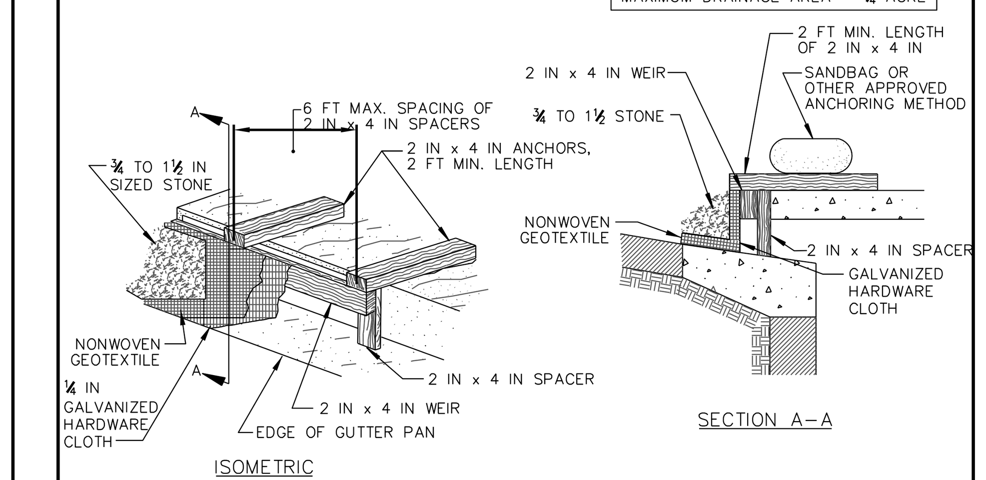
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-9-3 CURB INLET PROTECTION

STANDARD SYMBOL: CIP

MAXIMUM DRAINAGE AREA = ¼ ACRE



CONSTRUCTION SPECIFICATIONS

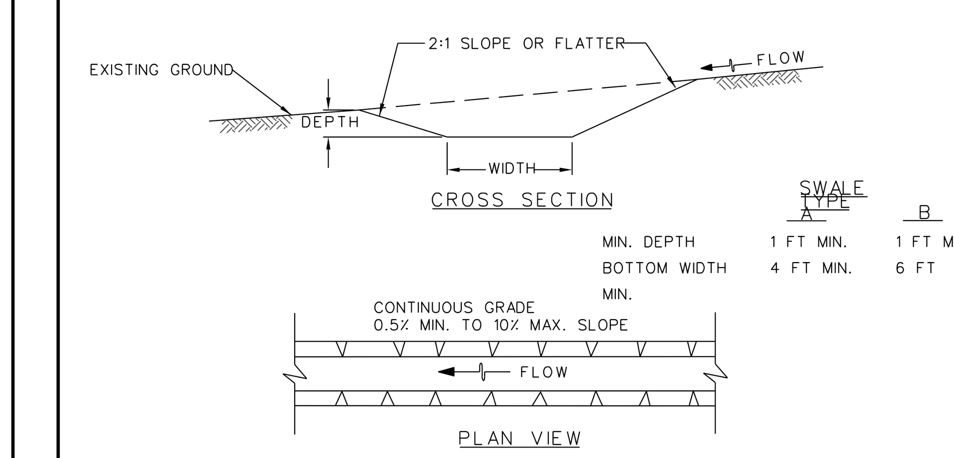
1. USE NOMINAL 2 INCH x 4 INCH LUMBER
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
3. NAIL THE 2x4 WEIR TO 9 INCH LONG VERTICAL SPACERS (MAXIMUM 6 FEET APART).
4. ATTACH A CONTINUOUS PIECE OF ¼ INCH GALVANIZED HARDWARE CLOTH, WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4 WEIR, EXTENDING IT 2 FEET BEYOND THROAT ON EACH SIDE.
5. 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.
6. 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.
7. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND THE ENDS OF THE THROAT OPENING.
8. 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 ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE.
9. AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
10. 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

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

DETAIL C-2 TEMPORARY SWALE

STANDARD SYMBOL: A-1



SWALE TYPE	A	B
MIN. DEPTH	1 FT MIN.	1 FT MIN.
BOTTOM WIDTH MIN.	4 FT MIN.	6 FT

FLOW CHANNEL STABILIZATION

A-1 SEED WITH STRAW MULCH AND TACK. (NOT ALLOWED FOR CLEAR WATER DIVERSION.)

A-2/B-2 SEED WITH SOIL STABILIZATION MATTING OR LINE WITH SOD.

A-3/B-3 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO SOIL A MINIMUM OF 7 INCHES AND FLUSH WITH GROUND.

CONSTRUCTION SPECIFICATIONS

1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF TEMPORARY SWALE.
2. EXCAVATE OR SHAPE TEMPORARY SWALE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.
3. STABILIZE TEMPORARY SWALE WITHIN THREE DAYS OF INSTALLATION. STABILIZE SWALES USED FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.
4. CONSTRUCT FLOW CHANNEL ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.
5. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
6. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS, AND MAINTAIN POSITIVE DRAINAGE. KEEP TEMPORARY SWALE AND POINT OF DISCHARGE FREE OF EROSION, AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
7. UPON REMOVAL OF TEMPORARY SWALE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

OWNER / ENGINEER
HARFORD COUNTY GOVERNMENT
212 S BOND STREET
BEL AIR MARYLAND 21014

(410-638-3509)
CONTACT PERSON
RICK BATES

SEDIMENT CONTROL PLAN # 59820

SHA BMP TRACKING #

Revisions

HARFORD COUNTY, MARYLAND

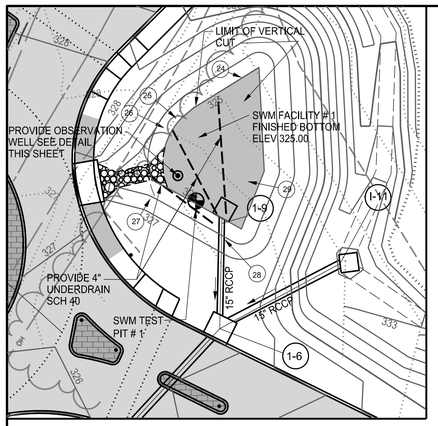
PLUMTREE AT TOLLGATE ROUNDABOUT SEDIMENT CONTROL NOTES & DETAILS

Drawn By : SRB
Designed By : SRB
Reviewed By :

Contract No :
Scale : NO SCALE
Sheet 7 Of 13
Date : 9/23/15

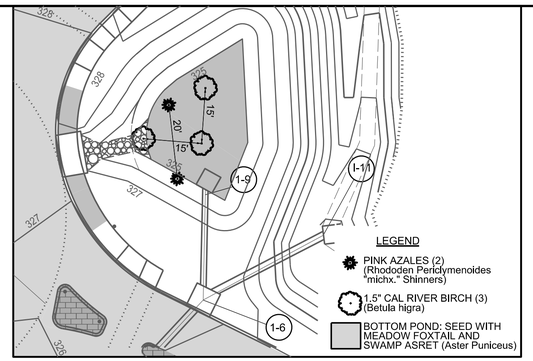
SCALE : 1 inch

7-SEDNOTE.DGN



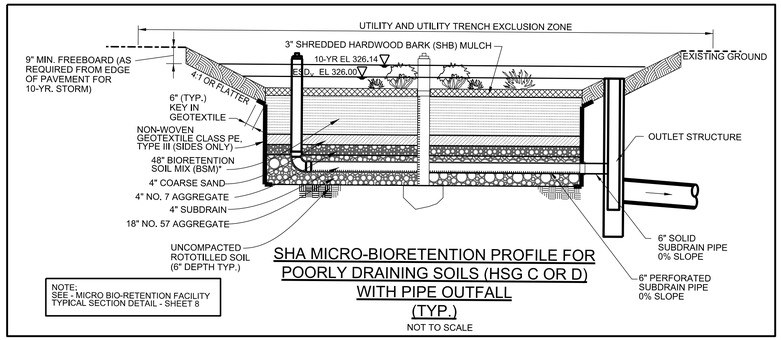
MICRO BIO-RETENTION PLAN

SCALE 1"=20'



STORM WATER MANAGEMENT LANDSCAPING PLAN FOR MICRO BIO-RETENTION

SCALE 1"=20'



SHA MICRO-BIORETENTION PROFILE FOR POORLY DRAINING SOILS (HSG C OR D) WITH PIPE OUTFALL (TYP.)

NOT TO SCALE

POND BOTTOM SEEDING NOTES FOR MICRO-BIORETENTION

A). SEEDBED PREPARATION:

LOOSEN UPPER THREE INCH BY RAKING,DISCING, OR OTHER ACCEPTABLE MEANS AFTER SPREADING FOUR INCHES OF TOP SOIL.

B). SOIL AMENDMENTS:

APPLY 12 LBS. PER 1000 SF OF 10-10-10 FERTILIZER

APPLY 100LB PER 1000 SF OF LIME.

C). SEEDING:

SEED WITH 5 LBS. PER 1000 SF OF ANNUAL RYE GRASS,
1.0 LBS. PER 1000 SF OF WHITE CLOVER,
0.5 LBS. PER 1000 SF OF MEADOW FOXTAIL AND
2.0 OZ PER 1000 SF OF SWAMP ASTER (SWAMP ASTER SHOULD BE PLANTED EARLY SPRING)

GRASS SHALL BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST 1"

D). MULCHING SPECIFICATIONS
MULCH SHALL BE APPLIED TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.

APPLY 100LB PER 1000 SF OF STRAW OVER ALL SEED AREAS.

MULCH ANCHORING SHALL BE PERFORMED IMMEDIATELY FOLLOWING MUCH APPLICATION TO MINIMIZE LOSS BY WIND AND WATER. THE TYPE OF MULCH ANCHORING USED SHALL BE CELLULOSE FIBER OR LIQUID BINDER AND MUST COMPLY WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS.

BIO-SWALE SEEDING NOTES

A). SEEDBED PREPARATION:

LOOSEN UPPER THREE INCH BY RAKING,DISCING, OR OTHER ACCEPTABLE MEANS AFTER SPREADING FOUR INCHES OF TOP SOIL.

B). SOIL AMENDMENTS:

APPLY 12 LBS. PER 1000 SF OF 10-10-10 FERTILIZER

APPLY 100LB PER 1000 SF OF LIME.

C). SEEDING:

SEED WITH 5 LBS. PER 1000 SF OF ANNUAL RYE GRASS,
1.0 LBS. PER 1000 SF OF REED CANARY GRASS,
1 OZ . PER 1000 SF OF REDTOP AND
4 OZ. PER 1000 SF OF BIRDSFOOT TREEFOIL
SHOULD BE PLANTED 3/1-5/15 OR 8/15-10/15

(MILLET MAY BE USED AS A NURSE CROP BETWEEN THE DATES OF 5/16 & 8/14. ADD 10 lbs/AC TO THE STANDARD PERMANENT SEED MIX.)

GRASS SHALL BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST 1"

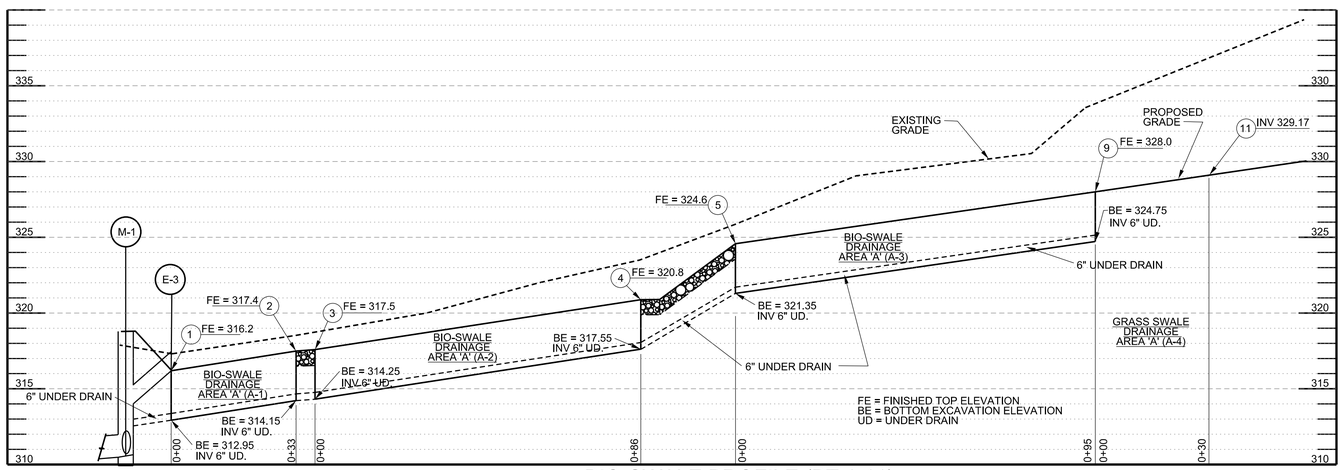
D). MULCHING SPECIFICATIONS
MULCH SHALL BE APPLIED TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.

APPLY 100LB PER 1000 SF OF STRAW OVER ALL SEED AREAS.

MULCH ANCHORING SHALL BE PERFORMED IMMEDIATELY FOLLOWING MUCH APPLICATION TO MINIMIZE LOSS BY WIND AND WATER. THE TYPE OF MULCH ANCHORING USED SHALL BE CELLULOSE FIBER OR LIQUID BINDER AND MUST COMPLY WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS.

COORDINATE DATA			
CENTERLINE BIO-SWALE			
PT	NORTH	EAST	
1	668768.46	1500274.29	A-1
2	668754.06	1500304.60	
3	668752.57	1500309.32	A-2
4	668721.81	1500390.07	
5	668710.53	1500411.71	A-3
6	668709.38	1500426.61	
7	668699.86	1500455.05	
8	668698.39	1500476.95	
9	668707.61	1500502.48	
9	668707.61	1500502.48	Gass Swale A-4
11	668712.01	1500532.18	
15	668693.09	1500293.18	B
16	668651.95	1500332.19	
17	668648.13	1500335.89	C
18	668631.89	1500337.92	
19	668580.54	1500409.33	D
20	668566.90	1500410.87	
21	668559.39	1500416.13	
22	668555.46	1500420.15	E
23	668515.06	1500438.39	

VERTICAL CUT COORDINATE DATA		
MICRO BIO-RETENTION		
PT	NORTH	EAST
24	668611.08	1500526.04
25	668614.01	1500505.89
26	668614.00	1500501.83
27	668602.22	1500487.12
28	668581.40	1500495.08
29	668589.22	1500509.54



BIO-SWALE PROFILE (PT 1-11)

SCALE: HORIZ. 1"= 20'
VERT. 1"= 5'

D.A. SUMMARY FOR : MICRO BIO-RETENTION And BIO-SWALES		
AREA	ACRES (AC)	IMPERU (AC)
A (Bio-Swales)	0.51	0.24
B (Bio-Swale)	0.30	0.07
C (Bio-Swales)	0.22	0.04
D (Bio-Swales)	0.13	0.10
E (Bio-Swales)	0.10	0.03
F (Micro Bio-Retention)	0.38	0.22

DESIGN POINT SUMMARY		
DP	CONDITION	Q10 (cfs)
1	EXIST	6.83
1	PROPOSED	4.46

PROPOSED DRAINAGE AREA SUMMARY				
LABEL	AREA AC	AREA SQ.MI.	10 YR RUN	TC (HR)
P-1	4.04	0.0063	57.5	0.33
E-1	4.33	0.0068	63.8	0.35

Inspection during Construction: for Bio-Swales and Micro-Bioretention Facility

Regular inspections shall be made during the following stages of construction by the Engineer in charge:

1. During excavation to subgrade and placement and backfill of underdrain systems.
2. During placement of filter media.
3. During construction of apurtenant conveyance.
4. Upon completion of final grading and establishment of permanent stabilization.

Maintenance Criteria for Micro-Bioretention Facility

Facilities shall be inspected twice a year.

The top few inches of filter media should be removed and replaced when water ponds for more than 48 hours. Silts and sediment should be removed from the surface of the filter bed when accumulation exceeds one inch.

The top two to three inches of mulch should be replaced as necessary.

Occasional pruning and replacement of dead vegetation is necessary. If specific plants are not surviving, more appropriate species should be used. Watering may be required during prolonged dry periods.

CONSTRUCTION CRITERIA for Bio-Swales and Micro-Bioretention Facility

Erosion and Sediment Control: Bio-Swales and Micro-bioretention practices should not be constructed until the contributing drainage area is stabilized.

Soil Compaction: Excavation should be conducted in dry conditions with equipment located outside of the practice to minimize bottom and sidewall compaction. Only lightweight, low ground-contact equipment should be used within micro-bioretention practices and the bottom scarified before installing underdrains and filtering media.

Underdrain Installation: Gravel for the underdrain system should be clean, washed, and free of fines. Underdrain pipes should be checked to ensure that both the material and perforations meet specifications. The upstream ends of the underdrain pipe should be capped prior to installation.

Filter Media Installation: Bio-Swales and Bioretention soils may be mixed on-site before placement. However, soils should not be placed under saturated conditions. The filter media should be placed and graded using excavators or backhoes operating adjacent to the practice and be placed in horizontal layers (12 inches per lift maximum). Proper compaction of the media will occur naturally. Spraying or sprinkling water on each lift until saturated may quicken settling times.

Landscape Installation: The optimum planting time is during the Fall. Spring planting is also acceptable.

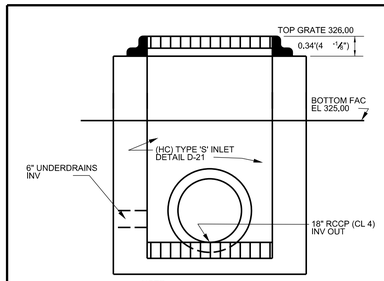
Materials Specifications for BioSwales			
Material	Specification	Size	Notes
Plantings	See Sheet 9	n/a	See Sheet 9 SWM Landscaping Plan
Planting Soil [2' to 4'deep]	loamy sand (60 – 65%) & compost (35 – 40%) or sandy loam (30%), coarse sand (30%) & compost (40%)	n/a	USDA soil types loamy sand or sandy loam; clay content <5% PH range 5.5 - 7.0 amendments may be mixed into soil to increase or decrease PH.
Organic content	Min. 10% by dry weight (ASTM D 2974)		
Mulch	shredded hardwood		Aged 6 months, minimum; no pine or wood chips
Pea gravel diaphragm	pea gravel: ASTM-D-448 (1/8" to 3/8")	NO. 8 or NO. 9	Washed
Curtain drain	Ornamental stone: washed cobbles	Stone: 2" to 5"	
Geotextile		n/a	PE Type 1 non woven, or woven 125 gpm
Gravel (underdrains and infiltration berms)	AASHTO – M-43 AGGREGATE (3/8" to 3/4")	NO. 57 OR NO. 6	Washed
Underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR 35	Slotted or perforated pipe; 3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes. Perforated pipe shall be wrapped twice with ¼-inch galvanized hardware cloth.
Poured in placed concrete	MSHA Mix No. 3; f'c = 3500 psi @ 28 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	n/a	On-site testing of poured-in place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) not using previously approved State or local standards requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland – design to include meeting ACI code 350,R/89; vertical loading [H-10 orH-20]; allowable horizontal loading (based on soil pressures); and analysis of potential cracking.
Sand	AASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone (AASHTO) #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.
SHA No. 7 Agg. Layer	(¼ to 3/4)	NO.7	Washed

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 Number 24804
Expiration Date: 2-25-17

SWM PLAN # 99957

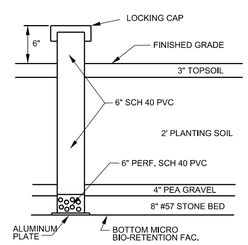
SHA BMP TRACKING # 122214
SHA BMP TRACKING # 122215



NOTE:
SEE (HC) TYPE 'S' INLET DETAIL D-21

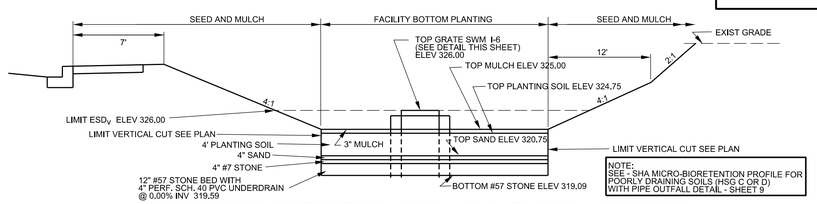
SWM - I-6 DETAIL

N.T.S



OBSERVATION WELL FOR MICRO BIO-RETENTION FAC.

NOT TO SCALE



MICRO BIO-RETENTION FACILITY - TYPICAL SECTION

N.T.S

Revisions

HARFORD COUNTY, MARYLAND

PLUMTREE AT TOLLGATE ROUNDABOUT SWM - SPECIFICATIONS, DETAILS AND PLAN

Drawn By : SRB
Designed By : SRB
Reviewed By :

Contract No :
Scale : AS SHOWN
Sheet 8 Of 15
Date : 1-22-16

\SH 8 9 SWM PLAN DETAILS NOTES.DGN

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:

MAINTENANCE NOTES FOR BIO RETENTION

1. DURING THE FIRST YEAR OF OPERATION, THE GRASS BOTTOM SHOULD BE INSPECTED AFTER EACH MAJOR STORM TO ENSURE THAT IT IS FUNCTIONING PROPERLY. AFTERWARDS, INSPECTIONS SHOULD BE BASED ON THE FIRST YEAR'S MAINTENANCE EXPERIENCE, BUT NOT LESS THAN TWICE EACH YEAR (MARCH & SEPTEMBER).

2. BOTTOM SOIL TO BE TILLED AND REVEGETATED IF WATER DOES NOT DRAIN WITHIN 48 HOURS.

3. RILLS IN THE FACILITY SHALL BE FILLED WITH SUITABLE MATERIAL AND THOROUGHLY COMPACTED. THESE AREAS SHALL BE RESEEDED OR RESODDED, LIMED AND FERTIZLIED AS NEEDED.

4. ANY ACCUMULATED TRASH AND DEBRIS SHALL BE REMOVED MANUALLY AT THE TIME OF EACH INSPECTION AND / OR MOWING OPERATION.

5. DETERIORATION OF OUTLET STRUCTURE OR EMBANKMENT SHALL BE REPORTED TO THE HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS AS SOON AS DISCOVERED AND PRIOR TO REPAIR.

6. THE TOP FEW INCHES OF FILTER MEDIA SHOULD BE REMOVED AND REPLACED WHEN WATER PONDS FOR MORE THAM 48 HOURS. SILT AND SEDIMENT SHOULD BE REMOVED FROM THE SURFACE OF THE FILTER BED WHEN ACCUMULATION EXCEEDS 1".

7. OCCASIONAL PRUNING AND REPLACEMENT OF DEAD VEGETATION IS NECESSARY. IF SPACIFIC PLANTS ARE NOT SURVIVING, MORE APPROPRIATE SPECIES SHOULD BE USED. WATERING MAY BE REQUIRED DURING PROLONGED DRY PEROIDS.

8. LAWN AREAS MUST BE MOWED WHEN GRASS IS 12"

9. ALL REQUIRED MAINTENANCE SHALL BE PERFORMED BY THE OWNER (STATE HIGHWAY ADMINISTRATION) OR THE OWNER'S REPRESENTATIVE OR BENEFICIAL USER'S AT THE OWNER'S OR BENEFICIAL USER'S EXPENSE.

SEQUENCE OF CONSTRUCTION FOR BIO-RETENTION

1. NOTIFY CERTIFYING ENGINEER TWO WEEKS ADVANCE OF CONSTRUCTION. CONTACT HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS AT 410-638-3127 AND SCHEDULE PRECONSTRUCTION MEETING.

2. CLEAR AND GRUB FOR SEDIMENT CONTROL INSTALLATION. INSTALL SEDIMENT CONTROLS.

3. EXCAVATE FACILITY TO PROPOSED BOTTOM ELEVATION AND INSTALL OUTFALL STRUCTURE AND OUTFALL PIPE & UNDERDRAIN.

4. INSTALL #57 STONE, PEA GRAVEL, STRAW LATER, PLANTING SOIL AND TOP SOIL PER SWM FACILITY 1 DETAILS, BIO-RETENTION FACILITY 1 SHALL NOT BE USED FOR SEDIMENT CONTROL.

5. REQUEST FINAL INSPECTION BY HARFORD COUNTY INSPECTOR AND CERTIFYING ENGINEER.

6. STORM DRAINS SHALL BE FLUSHED PRIOR TO REMOVE OF REMAINING SEDIMENT CONTROL MEASURES.

7. WITH THE PRIOR PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, REMOVE ANY SEDIMENT CONTROL MEASURES REMAINING. FINE GRADE AND STABILIZE THOSE AREAS IN ACORDANCE WITH THE PERMANENT SEEDING SPECIFICATION.

8. WITHIN 30 DAYS OF COMPLETION, PREPARE AND SUBMIT "AS-BUILT" PLANS. HARFORD COUNTY DPW SITE INSPECTORCONTRACTOR TO TAKE PHOTOS DURING CONSTRUCTION. PHOTOS TO BE INCLUDED IN AS-BUILT SUBMITAL.

NOTE: MANDATORY NOTIFICATION OF HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS SWM INSPECTOR PRIOR TO COMPLETION OF EACH INDICATED STAGE. CALL 410-638-3545 EXT. 2431 OR 2440 WITH 24 HOURS NOTICE.

MAINTENANCE NOTES FOR BIO-SWALES

1. DURING THE FIRST YEAR OF OPERATION, THE BIO-SWALE GRASS BOTTOM SHOULD BE INSPECTED AFTER EACH MAJOR STORM TO ENSURE THAT IT IS FUNCTIONING PROPERLY. AFTERWARDS, INSPECTIONS SHOULD BE BASED ON THE FIRST YEAR'S MAINTENANCE EXPERIENCE, BUT NOT LESS THAN TWICE EACH YEAR (MARCH & SEPTEMBER).

2. BOTTOM SOIL TO BE TILLED AND REVEGETATED IF WATER DOES NOT DRAIN WITHIN 48 HOURS.

3. ANY ACCUMULATED TRASH AND DEBRIS SHALL BE REMOVED MANUALLY AT THE TIME OF EACH INSPECTION AND / OR MOWING OPERATION.

4. OCCASIONAL PRUNING AND REPLACEMENT OF DEAD VEGETATION IS NECESSARY. IF SPACIFIC PLANTS ARE NOT SURVIVING, MORE APPROPRIATE SPECIES SHOULD BE USED. WATERING MAY BE REQUIRED DURING PROLONGED DRY PEROIDS.

5. LAWN AREAS MUST BE MOWED WHEN GRASS IS 12"

6. ALL REQUIRED MAINTENANCE SHALL BE PERFORMED BY THE OWNER (HARFORD COUNTY) OR THE OWNER'S REPRESENTATIVE OR BENEFICIAL USER'S AT THE OWNER'S OR BENEFICIAL USER'S EXPENSE.

SEQUENCE OF CONSTRUCTION FOR BIO-SWALES

1. NOTIFY CERTIFYING ENGINEER TWO WEEKS ADVANCE OF CONSTRUCTION. CONTACT HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS AT 410-638-3127 AND SCHEDULE PRECONSTRUCTION MEETING.

2. CLEAR AND GRUB FOR SEDIMENT CONTROL INSTALLATION. INSTALL SEDIMENT CONTROLS.

3. EXCAVATE FACILITY TO PROPOSED BOTTOM ELEVATION. INSTALL #57 STONE, PEA GRAVEL, STRAW LAYER, PLANTING SOIL AND TOP SOIL PER BIO-SWALE DETAIL.

4. REQUEST FINAL INSPECTION BY HARFORD COUNTY INSPECTOR AND CERTIFYING ENGINEER.

5. WITH THE PRIOR PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, REMOVE ANY SEDIMENT CONTROL MEASURES REMAINING. FINE GRADE AND STABILIZE THOSE AREAS IN ACORDANCE WITH THE PERMANENT SEEDING SPECIFICATION.

6. WITHIN 30 DAYS OF COMPLETION, PREPARE AND SUBMIT "AS-BUILT" PLANS. HARFORD COUNTY DPW SITE INSPECTORCONTRACTOR TO TAKE PHOTOS DURING CONSTRUCTION. PHOTOS TO BE INCLUDED IN AS-BUILT SUBMITAL.

NOTE: MANDATORY NOTIFICATION OF HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS SWM INSPECTOR PRIOR TO COMPLETION OF EACH INDICATED STAGE. CALL 410-638-3545 EXT. 2431 OR 2440 WITH 24 HOURS NOTICE.

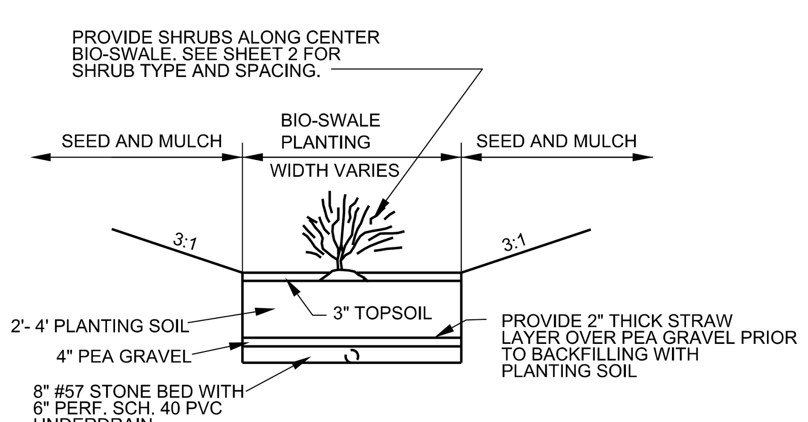
BIO-SWALE CONSTRUCTION CHART

DA	Location	Bottom Width	Length	Side Slopes	Planting Medium Depth	1" Q (cfs)	1" V (fps)	10 Yr. Q (cfs)	10 Yr. V (fps)	See Detail
A	N. Fillet (Pt 1 - 2) (A-1)	8'	33	3:1	24"	1.19	0.8	3.31	1.7	(HC) Bio-Swale
A	N. Fillet (Pt 3 - 4) (A-2)	8'	86	3:1	24"	1.19	0.8	3.31	1.7	(HC) Bio-Swale
A	N. Fillet (Pt 5 - 9) (A-3)	8'	78	3:1	24"	1.19	0.8	3.31	1.7	(HC) Bio-Swale
A	N. Fillet (Pt 9 - 11) (A-4) GRASS SWALE	8'	82	3:1		1.19	0.8	3.31	1.7	Grass Swale
B	W. Fillet (Pt 15 - 16)	4'	57	3:1	48"	0.18	0.3	0.91	0.7	(HC) Bio-Swale
C	W. Fillet (Pt 17 - 18)	4'	16	3:1	48"	0.11	0.4	0.54	1.1	(HC) Bio-Swale
D	S. Fillet (Pt 19- 21)	8'	23	3:1	48"	0.27	0.2	0.65	0.3	(HC) Bio-Swale
E	S. Fillet (Pt 22 - 23)	4'	43	3:1	39"	0.11	0.4	0.42	1.0	(HC) Bio-Swale

NOTE

ESD "N" = 0.24 (For Flows To 4" Depth)
ESD "N" = 0.11 (For Flows Over 4" Depth)

Q 10 "N" = 0.06 (For Flows Less Than 6")
Q 10 "N" = 0.04 (For Flows 6" abd Over)



(HC) BIO-SWALE - TYPICAL SECTION

N.T.S

NOTES FOR BIO-SWALE AND MICRO BIO-RETENTION

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 sand (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.

Compaction

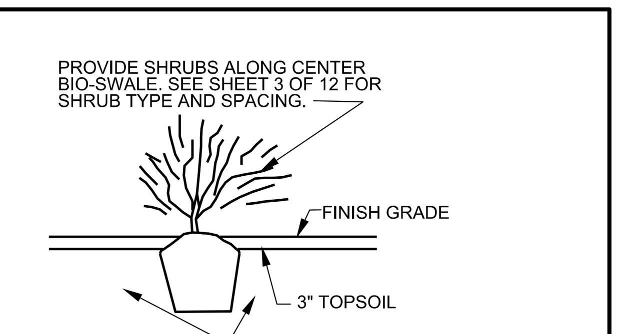
It is very important to minimize compaction of both the base of bioretention practices and the required backfill. When possible, use excavation hoes to remove original soil. If practices are excavated using a loader, the contractor should use wide track or marsh track equipment, or light equipment with 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 failure.

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.

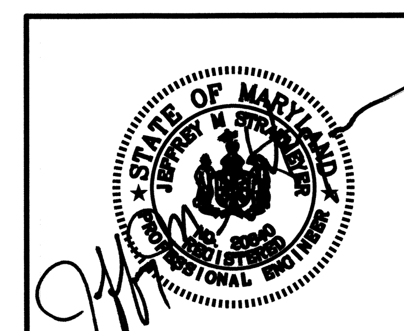
When backfilling the topsoil over the sand layer, first place 3 to 4 inches of topsoil over the sand, then rototill the sand/topsoil to create a gradation zone. Backfill the remainder of the topsoil to final grade.

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.



BIO-SWALE SHRUB DETAIL

N.T.S



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 Number 24804
Expiration Date: 2-25-17

As-Built Inspection Tabulations/Checklist for BMP Number:
MDE No.:

Accepted by MDE:

Name Date

SWALES CONSTRUCTION CHECKLIST

ACTIVITY	ON SITE INSPECTION DATE	INSPECTOR INITIALS	ACCEPTANCE DATE
Excavated to proper size and location			
Underdrain system and/ or observation well installed according to plans			
Placement of geotextiles and filter fabric according to plans			
Placement and composition of filter media			
Placement of gravel diaphragm, weirs, and/ or check dams			
Appurtenant conveyance systems (diversion structures, pre-filters, filters, inlet, outlets, orifices and flow distribution structures) installed according to plan			
Completion of final grading and establishment of permanent stabilization			

AB Inspector required to perform inspection on site for these steps as required by COMAR 26.17.02.10
Revised February 2011

As-Built Inspection Tabulations/Checklist for BMP Number:
MDE No.:

Accepted by MDE:

Name Date

MIRCOBIORETENTION CONSTRUCTION CHECKLIST

ACTIVITY	ON SITE INSPECTION DATE	INSPECTOR INITIALS	ACCEPTANCE DATE
Excavated to proper size and location			
Subdrain system and/ or observation well installed according to plans			
Placement of geotextiles and filter fabric according to plans			
Placement of gravel diaphragm			
Appurtenant conveyance systems (diversion structures, pre-filters, filters, inlet, outlets, orifices and flow distribution structures) installed according to plan			
Composition of Filter Media			

AB Inspector required to perform inspection on site for these steps as required by COMAR 26.17.02.10
The As-Built Inspector is to verify the construction activities while activity is performed as listed above.
Revised February 2011

As-Built Inspection Tabulations/Checklist for BMP Number:
MDE No.:

Accepted by MDE:

Name Date

M-8 BIO-SWALES MDE TABULATIONS

ACTIVITY	DESIGNED	AS-BUILT	DIFFERENCE	INSPECTOR INITIALS	ACCEPTANCE DATE
As-Built Survey	N/A				
Bottom width					
Left side slope (ft/ ft)					
Right side slope (ft/ ft)					
Length					
Number of Check Dams/ Weirs					
10-Year Freeboard					
Maximum Channel slope (ft/ft)					
Underdrain Pipe Diameter					
Thickness of Filter Media					
Composition of Filter Media					

Revised February 2011

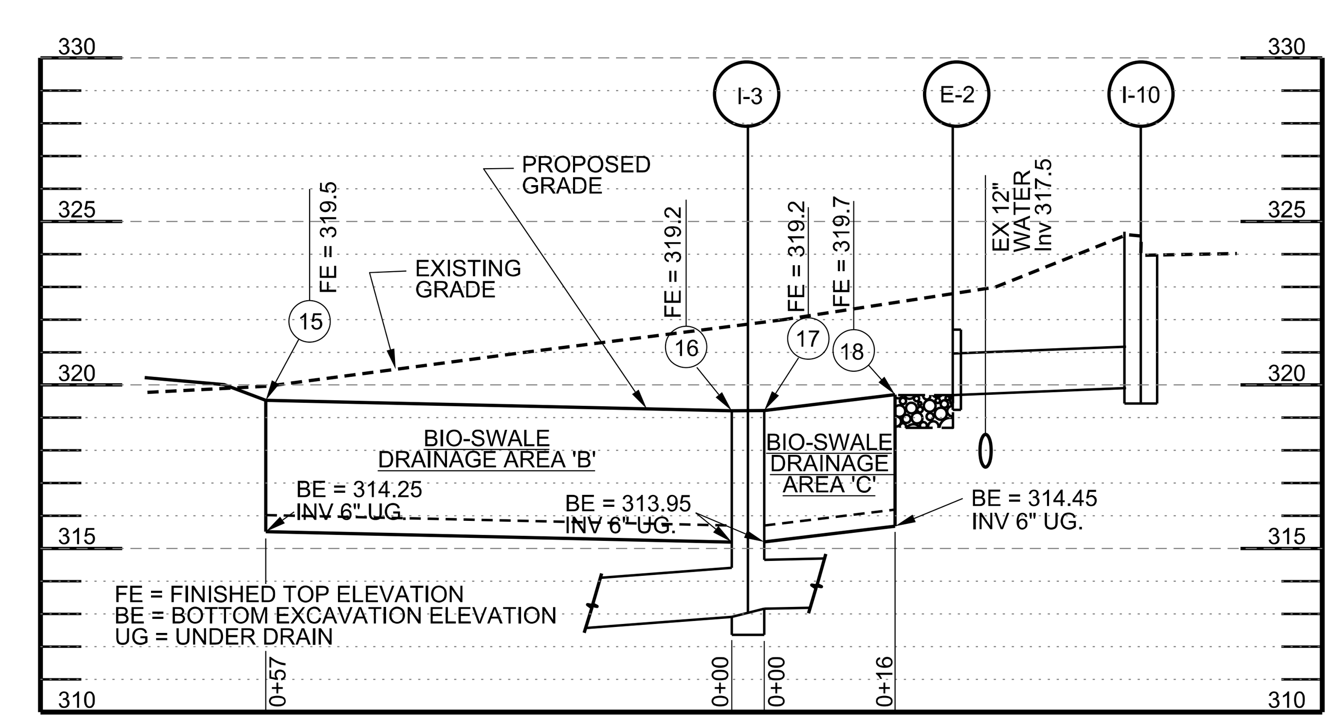
As-Built Inspection Tabulations/Checklist for BMP Number:
MDE No.:

Accepted by MDE:

Name Date

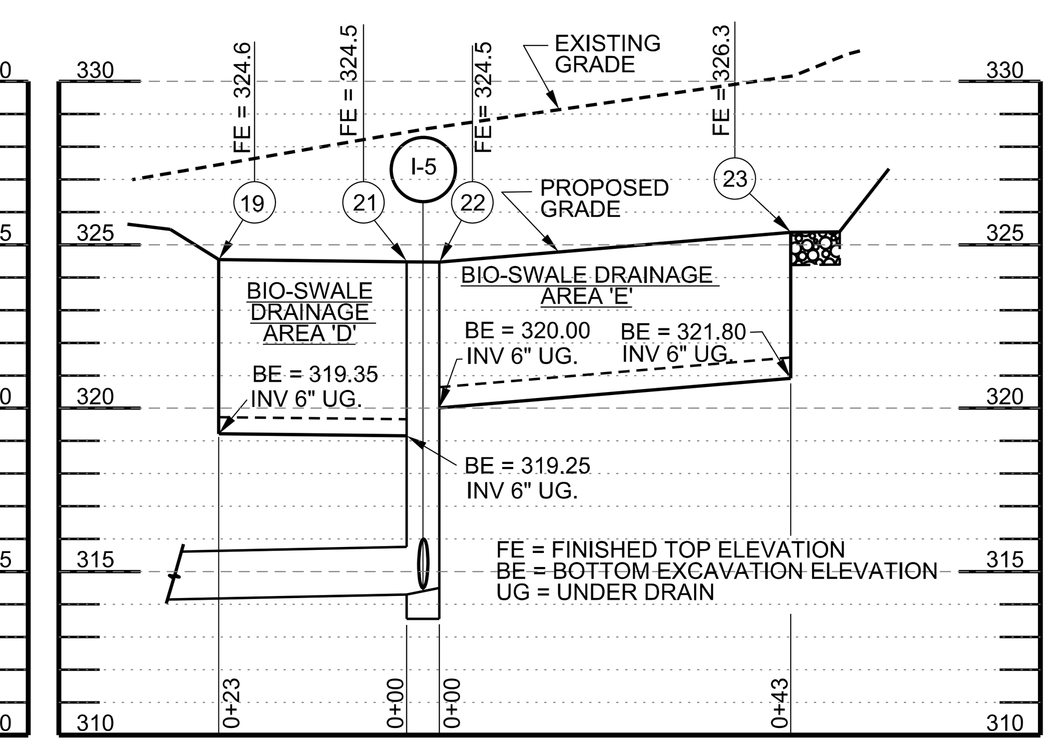
MICROBIORETENTION MDE TABULATIONS

ACTIVITY	DESIGNED	AS-BUILT	DIFFERENCE	INSPECTOR INITIALS	ACCEPTANCE DATE
As-Built Survey	N/A				
Forebay Area					
Forebay Volume					
Filter Bed Area (L x W)					
Filter Bed Surface Elevation					
Filter Inlet Pipe Size					
Filter Inlet Pipe Elevation					
Filter Inlet Pipe Invert					
Outlet Pipe (Subdrain) Size					
Outlet Pipe (Subdrain) Elevation					
Observation well installed according to plans					



BIO-SWALE PROFILE (PT 15-16, 17-18)

SCALE: HORIZ. 1"= 20'
VERT. 1"= 5'



BIO-SWALE PROFILE (PT 19-21, 22-23)

SCALE: HORIZ. 1"= 20'
VERT. 1"= 5'

ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.:

SWM PLAN # 99957

SHA BMP TRACKING # 122214
SHA BMP TRACKING # 122215

Revisions

HARFORD COUNTY, MARYLAND

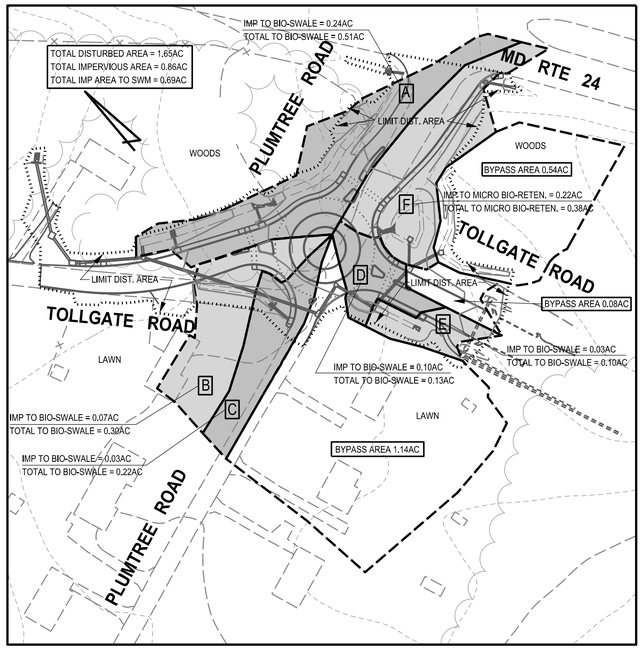
PLUMTREE AT TOLLGATE ROUNDABOUT
SWM - SPECIFICATIONS, DETAILS AND PLAN

Drawn By : SRB
Designed By : SRB
Reviewed By :

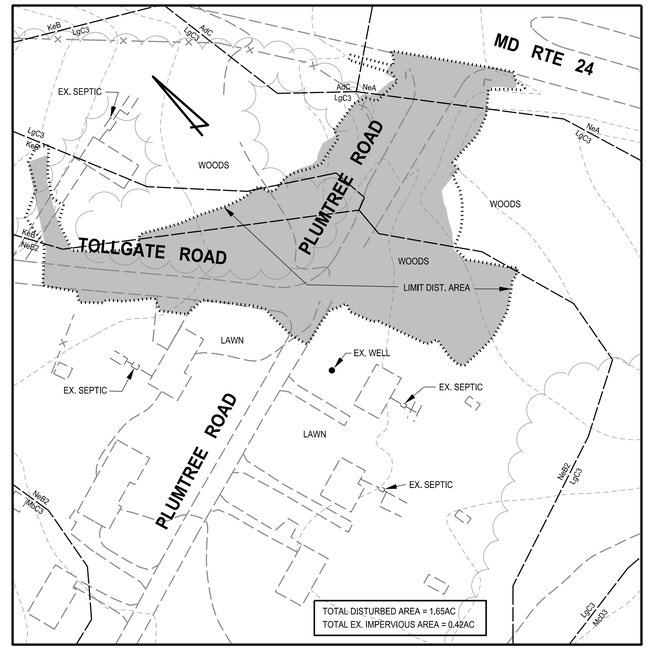
Contract No :
Scale : AS SHOWN
Sheet 9 Of 15
Date : 12-10-15

SCALE : 1 inch

\SH 8 9 SWM PLAN DETAILS NOTES.DGN



PROPOSED DA MAP FOR
MICRO-BIORETENTION & BIO-SWALE COMPUTATIONS
SCALE = 1" = 80'



EXISTING DA MAP FOR
MICRO-BIORETENTION & BIO-SWALE COMPUTATIONS
SCALE = 1" = 80'

M-6 MICRO BIO-RETENTION MDE TABULATIONS

ACTIVITY	DESIGNED	AS-BUILT	DIFFERENCE	INSPECTORS INITIALS	ACCEPTANCE DATE
As Built Survey	N/A				
Filter Bed Width	26 FT				
Filter Bed Length	39 FT				
Top of BSM Elevations	325.00				
Left Side Sllope	4:1				
Right Side Slope	4:1				
ESD Storage Volume					
ESD Storage Elevation	326.00				
Top Of Overflow Inlet	326.00				
Outlet Pipe Diameter / Type	15" RCCP				
Outlet Pipe Invert	318.50				
10 Year Freeboard	12.5 IN				
Underdrain Pipe Diameter	4"				
Thickness of Filter Medium	4 FT				
Composition of Filter Media	BSM				

SWM TEST PIT # 1

DATE OF TEST PIT 8-28-15
METHOD = BACK HOE

TEST PIT GROUND ELEV = 331.0

6" TOP SOIL

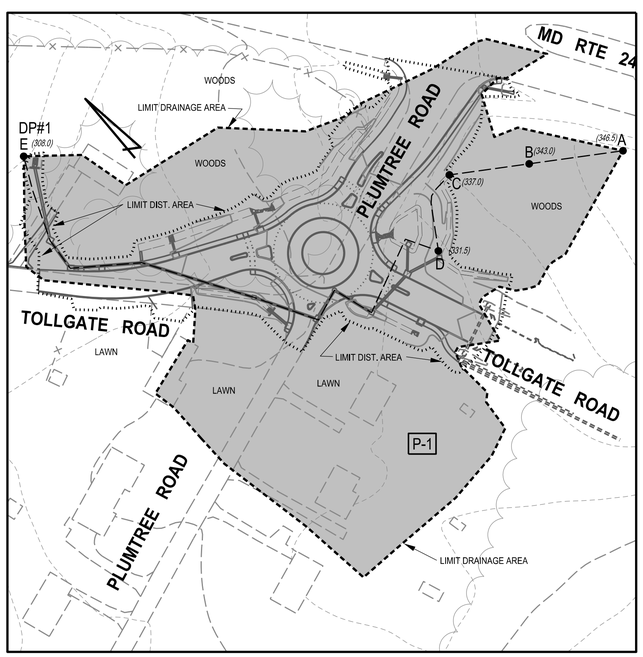
SILT CLAY LOAM SOIL WITH SOME ROCKS 6" - 4'

MOSTLY FRAGMENTED ROCK WITH SOME SILT CLAY LOAM SOIL 4' - 14'

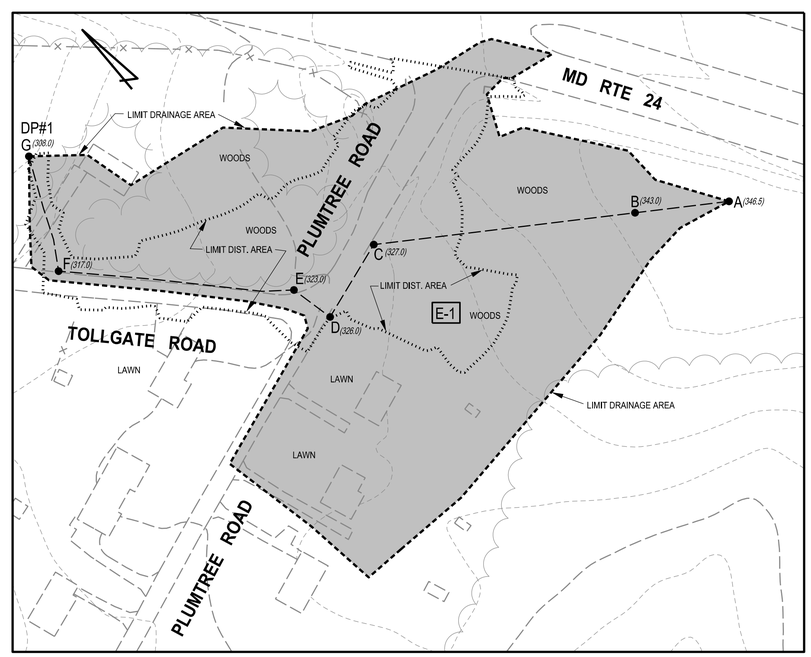
NO WATER ENCOUNTERED DURING TEST PIT EXCAVATION

DEPTH OF TEST PIT = 14.0'

TEST PREFORMED BY
HARFORD COUNTY DPW



PROPOSED DA MAP FOR
10 YR. MANAGEMENT COMPUTATIONS
SCALE = 1" = 80'



EXISTING DA MAP FOR
10 YR. MANAGEMENT COMPUTATIONS
SCALE = 1" = 80'

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 Number 20840
Expiration Date: 5-21-17

SEDIMENT CONTROL PLAN # 59820
SWM PLAN # 99957
SHA BMP TRACKING # 122214
SHA BMP TRACKING # 122215

Revisions

HARFORD COUNTY, MARYLAND

PLUMTREE AT TOLLGATE ROUNDABOUT

STORMWATER MANAGEMENT AND SEDIMENT CONTROL DA MAPS

Drawn By : SRB
Designed By : SRB
Reviewed By :

Contract No :
Scale : AS SHOWN
Sheet 10 Of 15
Date : 1-28-16

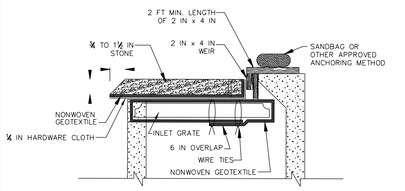
10-SWM DA MAPS.DGN

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE 1 inch

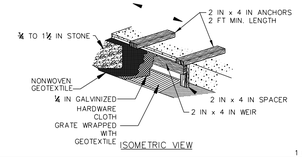
DETAIL E-9-6 COMBINATION INLET PROTECTION

STANDARD SYMBOL: COIP

MAXIMUM DRAINAGE AREA = ¼ ACRE



SECTION



ISOMETRIC VIEW

1 OF 2

CONSTRUCTION SPECIFICATIONS

1. USE NOMINAL 2 INCH x 4 INCH LUMBER.
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
3. LIFT GRATE, AND WRAP WITH NONWOVEN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS, THEN SET GRATE BACK IN PLACE.
4. ATTACH A CONTINUOUS PIECE OF ½ 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 WEIR, EXTENDING 2 FEET BEYOND THROAT ON EACH SIDE.
5. PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH IT TO THE WEIR.
6. NAIL THE 2X4 WEIR TO THE TOP OF A 9 INCH LONG VERTICAL SPACER TO BE LOCATED BETWEEN THE WEIR AND THE INLET FACE (MAXIMUM 4 FEET APART).
7. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2X4 ANCHORS (MINIMUM 2 FOOT LENGTHS OF 2x4 INCH TO THE TOP OF THE WEIR AT SPACER LOCATIONS). EXTEND 2X4 ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
8. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND BOTH ENDS OF THE THROAT OPENING.
9. FORM THE ¼ INCH HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND AGAINST THE FACE OF THE CURB ON BOTH SIDES OF THE INLET. PLACE CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE OVER THE HARDWARE CLOTH AND GEOTEXTILE IN SUCH A MANNER TO PREVENT WATER FROM ENTERING THE INLET UNDER OR AROUND THE GEOTEXTILE.
10. AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
11. 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.

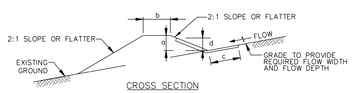
2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL C-1 EARTH DIKE

STANDARD SYMBOL: A-1 — PLATE DESIGNATION (e.g. A-1) ON FLOW CHANNEL SIDE OF DIKE



CROSS SECTION

CONTINUOUS GRADE 0.5% MIN. TO 10% MAX. SLOPE

PLAN VIEW

	DIKE TYPE A	DIKE TYPE B
a – DIKE HEIGHT	18 IN MIN.	30 IN MIN.
b – DIKE WIDTH	24 IN MIN.	36 IN MIN.
c – FLOW WIDTH	4 FT MIN.	6 FT MIN.
d – FLOW DEPTH	12 IN MIN.	24 IN MIN.

FLOW CHANNEL STABILIZATION

A-1 SEED WITH STRAW MULCH AND TACK. (NOT ALLOWED FOR CLEAR WATER DIVERSION.)

A-2/B-2 SEED WITH SOIL STABILIZATION MATTING OR LINE WITH SOD.

A-3/B-3 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO SOIL A MINIMUM OF 7 INCHES AND FLUSH WITH GROUND.

CONSTRUCTION SPECIFICATIONS

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

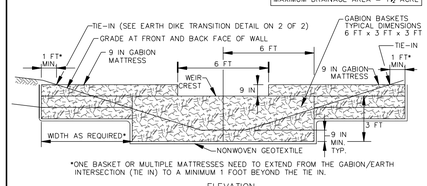
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-8 TEMPORARY GABION OUTLET STRUCTURE

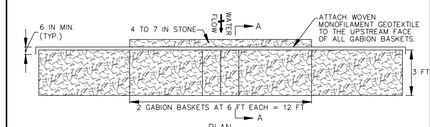
STANDARD SYMBOL: TGOS

MAXIMUM DRAINAGE AREA = 1½ ACRE

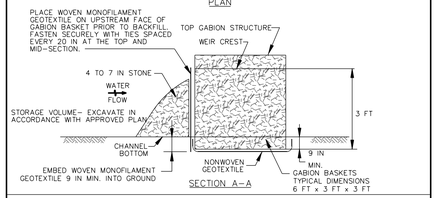


*ONE BASKET OR MULTIPLE MATTRESSES NEED TO EXTEND FROM THE GABION/EARTH INTERSECTION (TIE IN) TO A MINIMUM 1 FOOT BEYOND THE TIE IN.

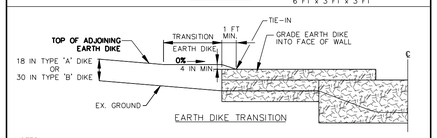
ELEVATION



PLAN



SECTION A–A



EARTH DIKE TRANSITION

NOTES:

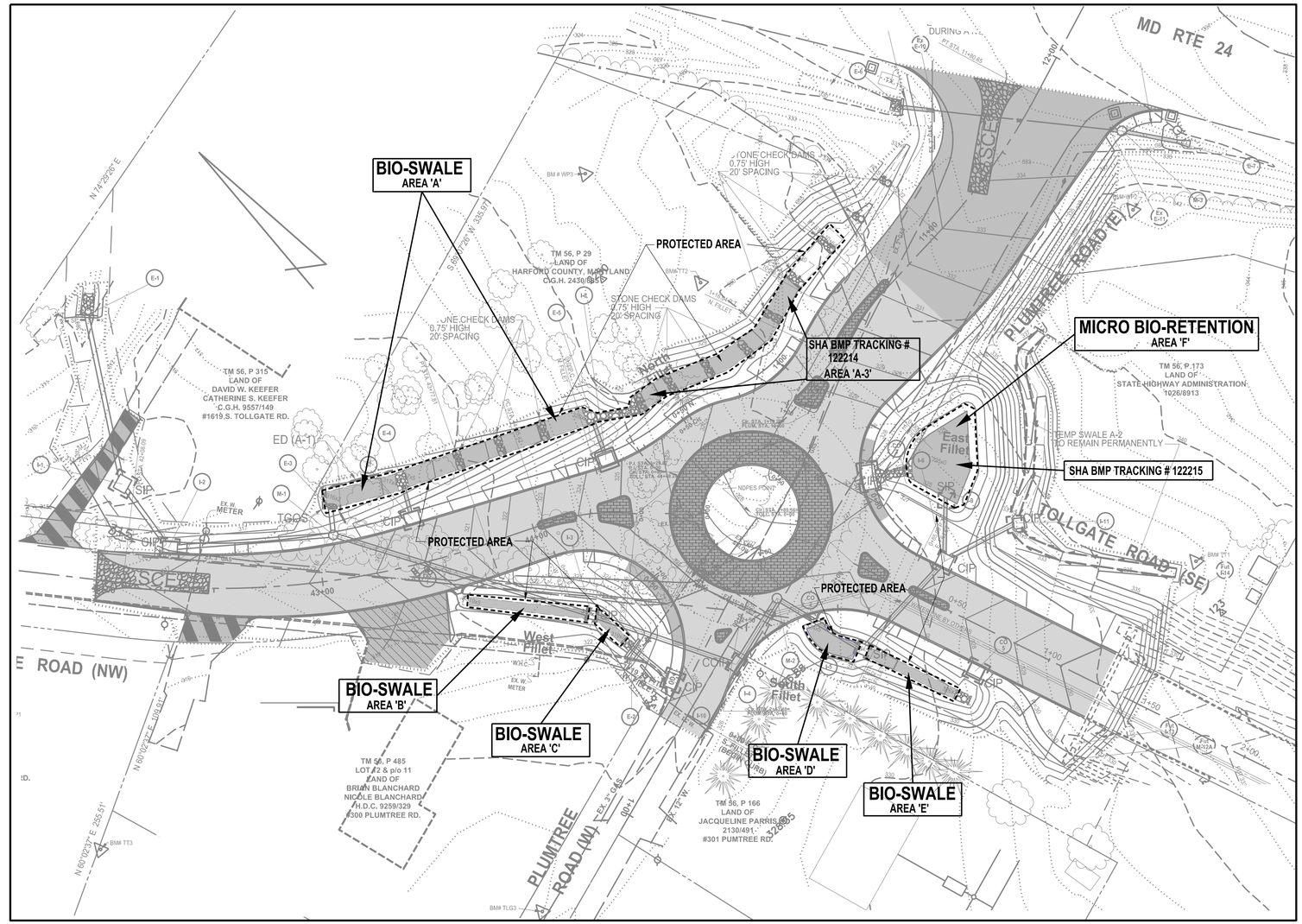
1. PROVIDE TRANSITION LENGTH AND HEIGHT AS SPECIFIED ON PLAN. HEIGHT OF TRANSITION EARTH DIKE MUST EXCEED 4 INCH MINIMUM FREEBOARD ABOVE TOP OF GABION AND EXTEND AT THIS ELEVATION UNTIL IT INTERCEPTS THE TOP OF ADJOINING EARTH DIKE.
2. PROVIDE POSITIVE DRAINAGE ALONG EARTH DIKE TO GABION OUTLET STRUCTURE.
3. COMPACT FILL.
4. SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED ON PLAN. BANK PROJECTIONS OR IRREGULARITIES ARE NOT ALLOWED.

CONSTRUCTION SPECIFICATIONS

1. PROVIDE STORAGE VOLUME AS SPECIFIED ON APPROVED PLANS.
2. USE BASKETS MADE OF 11 GAUGE WIRE OR HEAVIER.
3. USE NONWOVEN AND WOVEN MONOFILAMENT GEOTEXTILES AS SPECIFIED IN SECTION H-1 MATERIALS.
4. INSTALL GABIONS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
5. EMBED THE GABION OUTLET STRUCTURE INTO THE SOIL A MINIMUM OF 9 INCHES. PROVIDE NONWOVEN GEOTEXTILE UNDER ALL GABIONS.
6. FILL GABION BASKETS WITH CLEAN 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE WITHOUT REBAR OR WIRE MESH.
7. MAKE THE WEIR CREST OF THE GABION OUTLET STRUCTURE 9 INCHES LOWER THAN THE TOP OF THE ADJACENT GABIONS.
8. PROVIDE A MINIMUM WEIR CREST OF 6 FEET.
9. ATTACH WOVEN MONOFILAMENT GEOTEXTILE TO THE UPSTREAM FACE OF GABION BASKETS AND COVER WITH 4 TO 7 INCH STONE.
10. REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO WITHIN 12 INCHES OF THE WEIR CREST. REPLACE GEOTEXTILE AND STONE FACING WHEN STRUCTURE CEASES TO FUNCTION. MAINTAIN LINE, GRADE, AND CROSS SECTION.
11. UPON REMOVAL OF GABION OUTLET STRUCTURE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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



STORMWATER MANAGEMENT, EROSION AND SEDIMENT CONTROL OVERLAY PLAN

SCALE : 1"=30'

SHA BMP TRACKING # 122214
SHA BMP TRACKING # 122215

SEDIMENT CONTROL PLAN # 59820	SWM PLAN # 99957

STATE OF MARYLAND — JEFFREY M. STRAWDERMAN — No. 20840 — PROFESSIONAL ENGINEER

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 Number 20840
Expiration Date: 5-21-17

Revisions

HARFORD COUNTY, MARYLAND

PLUMTREE AT TOLLGATE ROUNDABOUT

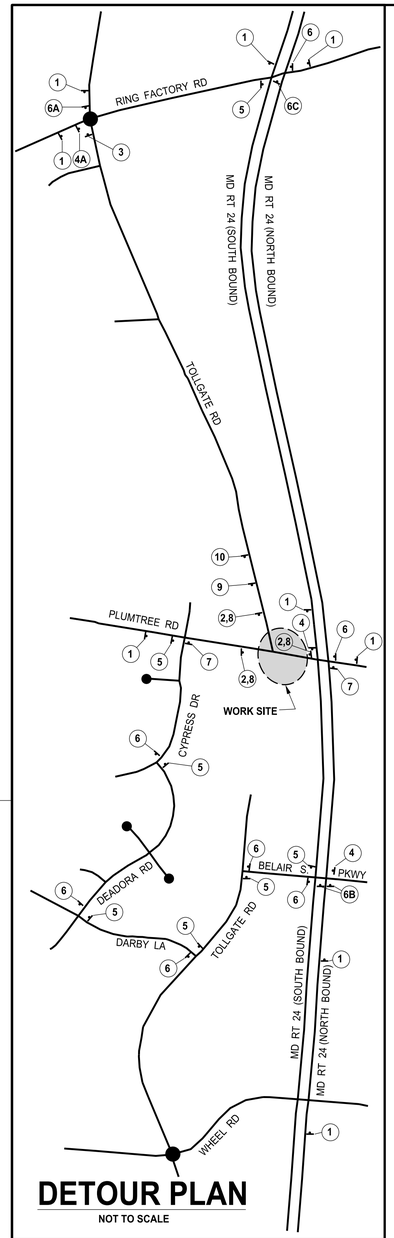
SWM, EROSION AND SEDIMENT CONTROL OVERLAY PLAN (AND SEDIMENT DETAILS)

Drawn By : SRB
Designed By : SRB
Reviewed By :

Contract No :
Scale : AS SHOWN
Sheet 11 Of 15
Date : 12-10-15

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:

11-OVERLAY PLAN.DGN



DETOUR PLAN

NOT TO SCALE

SIGN # (1)

NOTICE

PLUMTREE ROAD
CLOSED AT
TOLLGATE ROAD
FOLLOW DETOUR

SIGN # (2)

NOTICE

PLUMTREE ROAD
TO BE CLOSED
AT TOLLGATE ROAD
ON OR ABOUT_____
FOR APPROX._____

SIGN # (3)

NOTICE

ROAD CLOSED
__MILES AHEAD
NO THRU TRAFFIC
NO TURN AROUND

SIGN # (4)

PLUMTREE ROAD
DETOUR

SIGN # (4A)

PLUMTREE ROAD
DETOUR

SIGN # (5)

PLUMTREE ROAD
DETOUR

SIGN # (6)

PLUMTREE ROAD
DETOUR

SIGN # (6A)

PLUMTREE ROAD
DETOUR

SIGN # (6B)

PLUMTREE ROAD
DETOUR

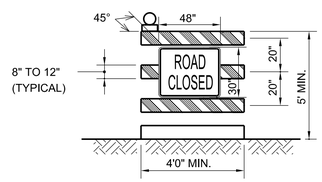
TO BE POSTED TO THE RIGHT AND IN THE MEDIAN

SIGN # (6C)

PLUMTREE ROAD
DETOUR

SIGN # (7)

PLUMTREE ROAD
END DETOUR



SIGN # (8)

TYPE III BARRICADE WITH "ROAD CLOSED"

BARRICADE DETAIL

(R11-2)
NOT TO SCALE

NOTE: 6 TYPE III BARRICADE ARE REQUIRED TO BE INSTALLED TO COMPLETELY BLOCK THE ROADWAY AND SHALL BE FASTENED TOGETHER

ROAD CLOSED 500 FT — SIGN # (9)

ROAD CLOSED 1000 FT — SIGN # (10)

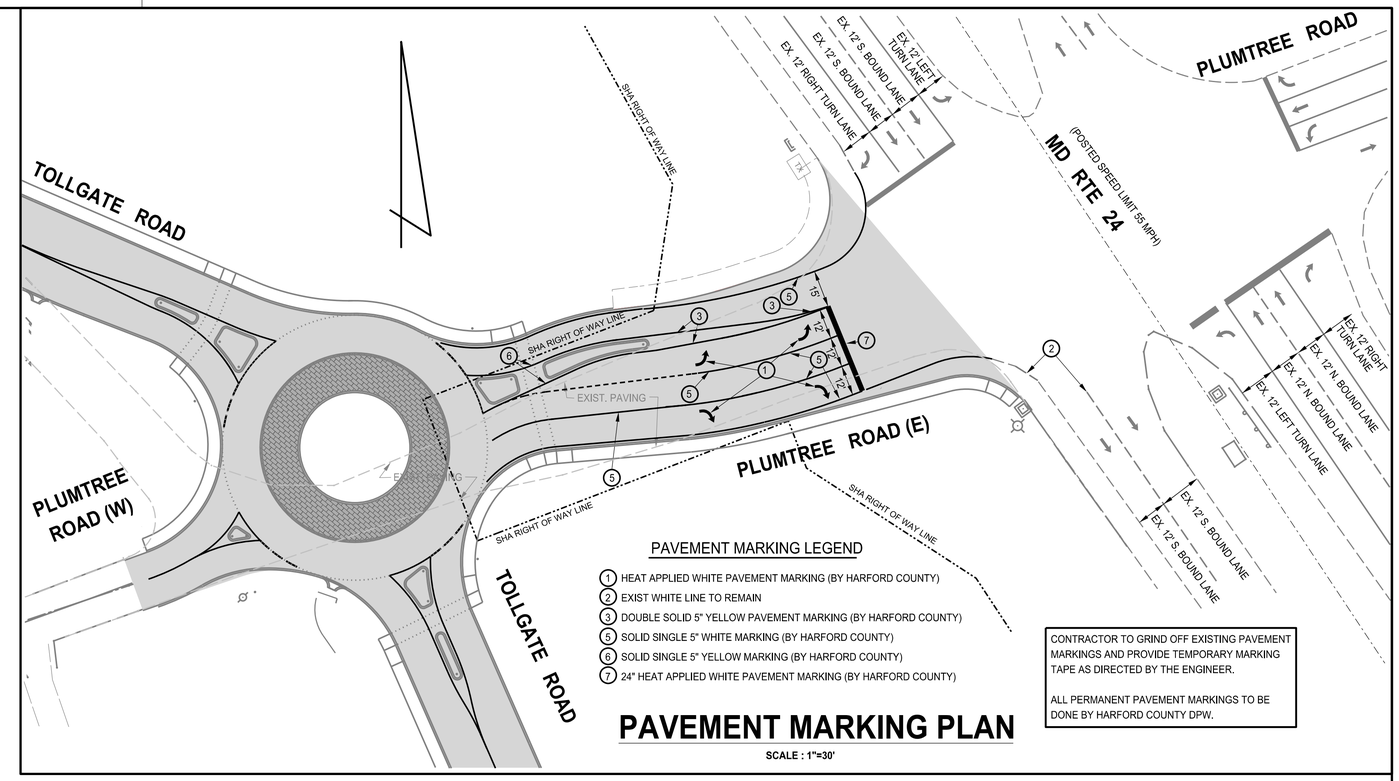
* BLACK ON WHITE
HARFORD CO. ROADS (30"x10")
SHA ROADS (48"x12")

** BLACK ON FLUORESCENT ORANGE
HARFORD CO. ROADS (30"x24")
SHA ROADS (48"x36")

*** BLACK ON FLUORESCENT ORANGE (36"x36")

\# BLACK ON WHITE (4" LETTERS)

BLACK ON FLUORESCENT ORANGE (6" LETTERS)



PAVEMENT MARKING LEGEND

1. HEAT APPLIED WHITE PAVEMENT MARKING (BY HARFORD COUNTY)
2. EXIST WHITE LINE TO REMAIN
3. DOUBLE SOLID 5" YELLOW PAVEMENT MARKING (BY HARFORD COUNTY)
5. SOLID SINGLE 5" WHITE MARKING (BY HARFORD COUNTY)
6. SOLID SINGLE 5" YELLOW MARKING (BY HARFORD COUNTY)
7. 24" HEAT APPLIED WHITE PAVEMENT MARKING (BY HARFORD COUNTY)

CONTRACTOR TO GRIND OFF EXISTING PAVEMENT MARKINGS AND PROVIDE TEMPORARY MARKING TAPE AS DIRECTED BY THE ENGINEER.

ALL PERMANENT PAVEMENT MARKINGS TO BE DONE BY HARFORD COUNTY DPW.

PAVEMENT MARKING PLAN

SCALE : 1"=30'

ADC MAP :

TAX MAP :

GENERAL NOTES

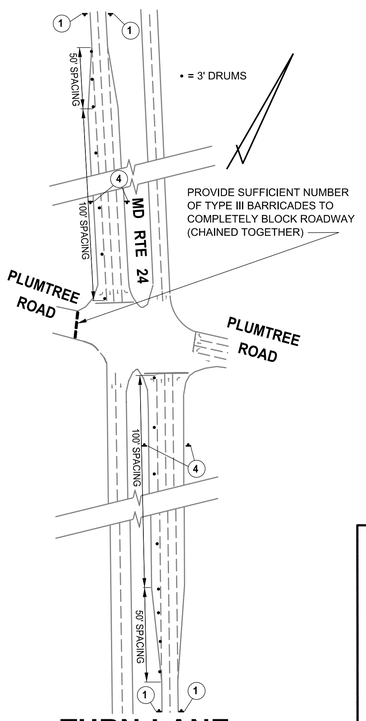
1. ALL SIGNS, BARRICADES, LIGHTS AND MOUNTING SUPPORTS AS DESIGNATED ON THE PLAN SHALL BE IN ACCORDANCE WITH CURRENT ADDITION OF THE MUTCD (MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES) AND THE MARYLAND SUPPLEMENT TO THE MUTCD.

2. CONTRACTOR MUST PROVIDE LOCAL ACCESS TO PROPERTIES WITHIN CONSTRUCTION AREA AT ALL TIMES.

3. NOTICE SIGNS # 1,2,3 SHALL BE 48"X36" ON HARFORD COUNTY ROADS AND 60"X48" ON STATE ROADS.

4. NOTICE SIGN #2 SHALL BE INSTALLED (2) WEEKS PRIOR TO THE CLOSURE.

5. SPECIAL CARE SHALL BE TAKEN TO ENSURE THAT THE REQUIRED SIGNS DO NOT OBSTRUCT INSTERSECTION SIGHT DISTANCE OR THE VIEW OF ANY EXISTING TRAFFIC CONTROL SIGN.

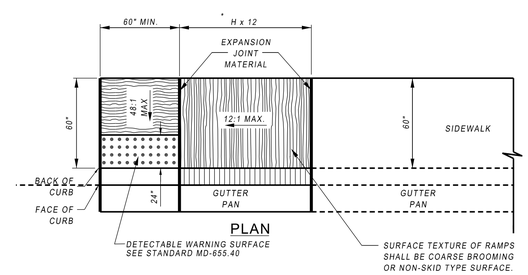


• = 3' DRUMS

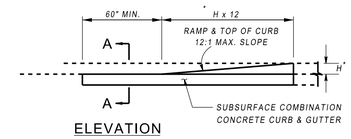
PROVIDE SUFFICIENT NUMBER OF TYPE III BARRICADES TO COMPLETELY BLOCK ROADWAY (CHAINED TOGETHER)

TURN-LANE CLOSURE DETAIL

NOT TO SCALE

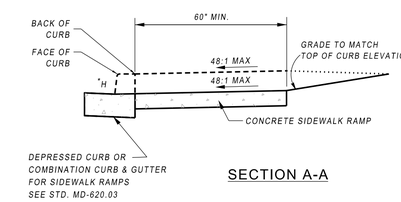


PLAN



ELEVATION

* - H = HEIGHT OF CURB
ALL MEASUREMENTS IN INCHES



SECTION A-A

NOTES

1. TO BE USED WHERE SIDEWALK IS ADJACENT TO THE CURB. THIS STANDARD MAY BE MODIFIED TO SUIT A PARTICULAR LOCATION.
2. NO TRAVERSABLE SLOPE ON THE RAMP OR SIDEWALK SHALL EXCEED 12:1 IN THE DIRECTION OF PEDESTRIAN TRAVEL, OR 48:1 PERPENDICULAR TO THE DIRECTION OF PEDESTRIAN TRAVEL. THE CROSS-SLOPE OF THE LANDING AREA CANNOT EXCEED GRADE OF ROADWAY
3. TRANSITION PANELS TO TIE INTO EXISTING SIDEWALK MUST BE A MINIMUM OF 5' IN LENGTH
4. EXPANSION JOINT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH STD. MD-655.01.
5. SIDEWALK RAMPS TO BE SHOWN ON PLANS SYMBOLICALLY AND REFERENCED WITH THE CENTER OF THE RAMP ALIGNED TO A STATION ON THE CONSTRUCTION CENTERLINE. SEPARATE DETAILS SHALL BE SHOWN WHERE PROPOSED RAMP VARIES FROM STANDARD CASES.

SIDEWALK RAMPS - PARALLEL MD 655.12 (MODIFIED)

NOT TO SCALE

STATE OF MARYLAND — JOHN M. STRUSSER — No. 20840 — PROFESSIONAL ENGINEER

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 Number 20840
Expiration Date: 5-21-17

Revisions	HARFORD COUNTY, MARYLAND
	PLUMTREE AT TOLLGATE ROUNDABOUT
	DETAILS - PAVEMENT MARKING - TRAFFIC CONTROL PLAN
	Drawn By : SRB — Contract No :
	Designed By : SRB — Scale : AS SHOWN
	Reviewed By : — Sheet 12 Of 15
	Date : 3-11-16

HCG BILLING ID No.:

HCG DWG ID No.:

SCALE 1:100

12-PAVE MARKING PLAN.DGN

PLANTING SCHEDULE

KEY	QUANTITY	BOTANICAL NAME / COMMON NAME	SIZE	ROOT	COMMENTS
SHADE TREES FOR ROADSIDE TREE PERMIT (ALL ON SHA PROPERTY)					
AR	7	ACER RUBRUM/ RED MAPLE	1.5" CAL.	B&B	STRONG CENTRAL LEADER; MATCHED SPECIMENS
PC	6	PRUNUS X CISTENA/ PURPLELEAF SAND CHERRY	1.5" CAL.	B&B	STRONG CENTRAL LEADER; PURPLE FOLIAGE
CC	7	CERCIS CANADENSIS / NORTHERN REDBUD	1.5" CAL.	B&B	STRONG CENTRAL LEADER; SPRING FLOWERING
CF	9	CORNUS FLORIDA/ FLOWERING DOGWOOD	1.5" CAL.	B&B	STRONG CENTRAL LEADER; SPRING FLOWERING
QA	5	QUERCUS ALBA/ WHITE OAK	1.5" CAL.	B&B	STRONG CENTRAL LEADER; MATCHED SPECIMENS
LT	5	LIRIODENDRON TULIPIFERA/ YELLOW POPLAR	1.5" CAL.	B&B	STRONG CENTRAL LEADER; MATCHED SPECIMENS
LANDSCAPE PLANTS FOR OTHER LANDSCAPE REQUIREMENTS (SOME ON SHA PROPERTY)					
GB	13 (1 ON SHA)	GAYLUSSACIA BRACHYCERA/ BOX HUCKLEBERRY	12"-18" HT.	B&B	SEMI-EVERGREEN SHRUB
PC	10 (0 ON SHA)	CELASTRACEAE/ MOUNTAIN LOVER	6"-18" HT.	B&B	EVERGREEN SHRUB
CC	9 (9 ON SHA)	CERCIS CANADENSIS / NORTHERN REDBUD	5' HT.	B&B	STRONG CENTRAL LEADER; SPRING FLOWERING
QA	16 (5 ON SHA)	QUERCUS ALBA/ WHITE OAK	1.5" CAL.	B&B	STRONG CENTRAL LEADER; MATCHED SPECIMENS
TC	15 (0 ON SHA)	TSUGA CANADENSIS/ HEMLOCK	6' HT.	B&B	STRONG CENTRAL LEADER

LEGEND

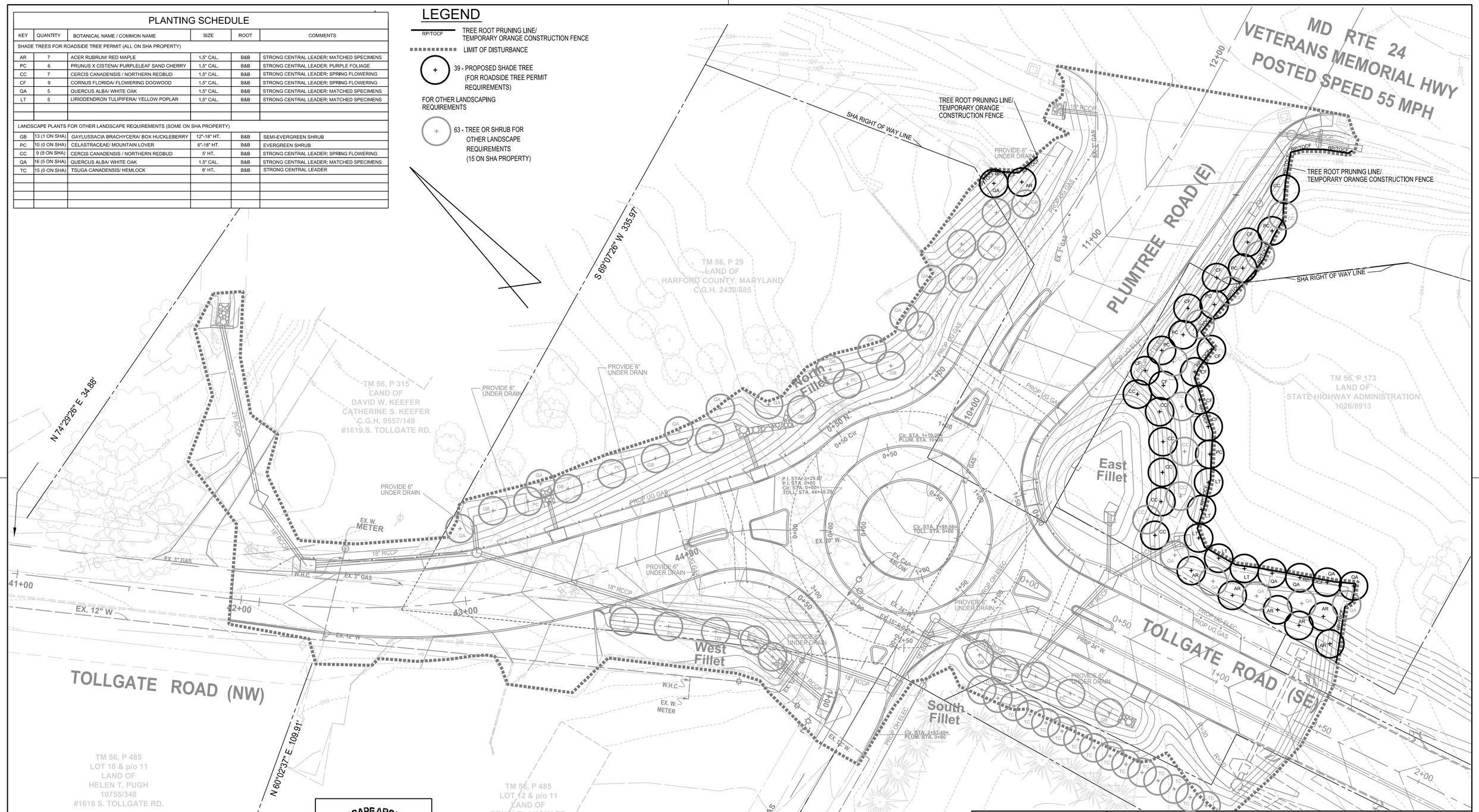
RP/TOCF — TREE ROOT PRUNING LINE/ TEMPORARY ORANGE CONSTRUCTION FENCE

LIMIT OF DISTURBANCE

39 - PROPOSED SHADE TREE (FOR ROADSIDE TREE PERMIT REQUIREMENTS)

FOR OTHER LANDSCAPING REQUIREMENTS

63 - TREE OR SHRUB FOR OTHER LANDSCAPE REQUIREMENTS (15 ON SHA PROPERTY)



ROADSIDE TREE PROJECT PERMIT

Revisions

HARFORD COUNTY, MARYLAND

PLUMTREE AT TOLLGATE ROUNDABOUT ROADSIDE TREE PROJECT LANDSCAPE PLAN

Drawn By :	GP	Contract No :	
Designed By :	GP	Scale :	AS SHOWN
Reviewed By :	AEL	Sheet 13	Of 15
		Date :	3/24/16

2-PLAN.DGN

ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.:

SHA LANDSCAPE NOTES

7.1. SHA LANDSCAPE NOTES. Landscape construction within the right of way of the Maryland State Highway Administration (SHA) shall conform to these Notes. For guidance regarding plan adjustments, refer to SHA Landscape Design Guide and SHA Landscape Estimating Manual at http://www.roads.maryland.gov/index.aspx?PageId=25

7.2. SHA Standard Specifications. Landscape construction shall conform to Sections 701 through 716, and landscape materials shall conform to Section 920 of the SHA 2008 Standard Specifications for Construction and Materials, including all revisions and supplements, and as specified in these notes. These requirements shall supersede all other specifications for work within the SHA right of way.
All SHA specifications for landscaping and landscape materials published in 2008 have been replaced. Current Specifications are at http://www.roads.maryland.gov/Index.aspx?PageId=44

7.3. Erosion and Sediment Control Manager (ESCM). Soil disturbance such as grading, excavation, soil placement or other activities that involve soil disturbance within the SHA right of way shall be supervised by an ESCM with a valid SHA "Yellow Card" in conformance with SHA 2008 Specifications for Construction and Materials and any applicable Erosion and Sediment Control Permit.

7.4. SHA Standard Details for Trees, Shrubs and Planting Beds. The installation of trees, shrubs, planting beds and other landscape construction in the SHA right of way related to Section 710 of the SHA Standard Specifications shall conform to the "SHA Book of Standards for Highway & Incidental Structures - Category 7." Current SHA Standard Details are at http://apps.roads.maryland.gov/BusinessWithSHA/bizStdsSpecs/desManualStdPub/publicationsonline/ohd/bookstd/toccat7.asp .

7.5. Temporary Stabilization shall be installed in conformance with Section 704 to ensure that areas of soil disturbance are protected from wind, rainfall and flowing water until permanent stabilization is installed.

1. Temporary Mulch, either as temporary straw mulch or temporary matting mulch, shall be installed at the end of each working day to provide "same day stabilization" unless other approved stabilization is installed.
2. Temporary straw mulch shall be installed on areas and slopes flatter than 4:1; temporary matting mulch shall be applied on slopes 4:1 and steeper, and to areas within channels.
3. Temporary Seed shall be installed in lieu of Temporary Mulch when soil redisturbance is expected more than 30 days after soil disturbance. The required application rate of 15-30-15 fertilizer shall be reduced to 150 lbs per acre.

7.6. Roadway Pavement Removal. Areas of roadway pavement removal shall be excavated to remove pavements, aggregate base, and compacted soil to a minimum depth of 10 inches below the pavement surface, or as necessary to remove all unsuitable materials for landscaping. The excavated areas shall be restored with subsoil and topsoil as part of Soil Restoration.

7.7. Excavation and Debris Removal. Debris related to the demolition of sidewalks, driveways, curbs, trees, stumps, roots, fencing, pipes, and other materials that may interfere with landscape installation or future maintenance within the SHA right of way shall be excavated as necessary for their complete removal and disposal.

7.8. Soil Restoration. Areas of pavement removal, excavation or drilling in landscaped areas shall remove excavated debris and restore the subgrade with approved subsoil and topsoil placed in conformance with Section 701 of the SHA Standard Specifications.

1. A layer of approved topsoil at least 4 inch depth shall be placed on all disturbed areas flatter than 2:1 and in all channels prior to seeding, sodding or other landscaping, unless otherwise specified.
2. A layer of approved topsoil at least 2 inch depth shall be placed on all disturbed areas 2:1 and steeper prior to seeding, sodding or other landscaping, unless otherwise specified.
3. Bioretention Soil Mix (BSM) and other materials installed in conjunction with SPI 316 - Stormwater Filtration Facilities shall be installed in conformance with the SHA Landscape Notes, plans, and pertinent specifications.

7.10. Turfgrass Establishment shall be performed in all disturbed areas of the SHA right of way, or within the areas indicated in the plans, in conformance with Section 705 of the SHA Standard Specifications. The required application rate of 20-16-12 fertilizer shall be reduced to 200 lbs per acre, and no fertilizer shall be applied from Nov. 15 to Mar. 1.

7.11. Soil Stabilization Matting shall be installed in conformance with Section 709 of the SHA Standard Specifications, in conjunction with Turfgrass Establishment per Section 705 or Meadow Establishment as follows:

1. Areas Flatter than 6:1. Type A or Type E matting may be installed in lieu of straw mulch and hydromulch binder in conjunction with Turfgrass Establishment
2. Areas Steeper than 6:1 and Flatter than 4:1. Type A or Type E matting shall be installed in lieu of straw mulch and hydromulch binder in conjunction with Turfgrass Establishment, unless delineated and noted otherwise on the plans.
3. Channels, Stormwater Management Facilities, and Slopes 4:1 and Steeper. Type A soil stabilization matting shall be installed in lieu of straw mulch and hydromulch binder in conjunction with Turfgrass Establishment, unless delineated and noted otherwise on the plans.
4. In areas of Meadow Establishment with Type D Soil Stabilization Matting, the matting shall be installed in lieu of straw mulch and hydromulch binder within the delineated areas.
5. In high velocity channels with Turfgrass Establishment, Type B Soil Stabilization Matting shall be installed in lieu of straw mulch and hydromulch binder within the delineated areas.

7.13. Tree Preservation Areas. Temporary Orange Construction Fence (TOCF) shall be installed in locations delineated on the plans in conformance with Section 120 of the SHA Standard Specification to protect existing trees and other vegetation during construction. Areas of SHA right of way within TOCF shall be protected from all prohibited and restricted activities, as specified in Section 120.

LANDSCAPE ARCHITECT
License #3657
ANDREA E. LAKE
STATE OF MARYLAND
3-25-16

7.14. Roadside Tree Permit. Tree removal, tree installation, tree root and branch pruning, and other regulated impacts to trees in the SHA right of way shall conform to the requirements of the Roadside Tree Permit (RTP) of the Maryland Department of Natural Resources, or the Forest Conservation Act (FCA) approval of the local authority.
1. A copy of the RTP or FCA Approval shall be submitted to the SHA Office of Environmental Design before work is performed, and a copy of the RTP or FCA Approval shall be reproduced in the plans or be in possession of the applicant at the project site when the permitted work is performed.
2. A Maryland Licensed Tree Expert shall perform the specified tree operations in conformance with the SHA Standard Specifications and ANSI A300 Standards for Tree Care Operations

7.15. Trees and Other Plant Material Installation. Trees, shrubs, perennials, annuals, bulbs, landscape beds and similar materials installed in the SHA right of way shall be installed in conformance with Section 710 and 711 of the SHA Standard Specifications. Tree and shrubs shall be pruned at the time of installation to ensure sidewalk clearance for pedestrians is maintained to a height of 8 feet.

7.21. Tree Branch Pruning within the SHA right of way shall be performed or directly supervised by a Maryland Licensed Tree Expert in conformance with ANSI A300 standards per Section 712 as necessary for any of the following: To install Temporary Orange Construction Fence (TOCF) along delineations on plans; to perform Tree Root Pruning along delineations on plans; to provide 8 foot clearance above sidewalk pavements and 16 foot clearance above roadway pavements; to repair tree wounds; and to perform other recommended cleaning, thinning, reducing, and pruning necessary to accommodate utilities. All debris shall be removed from SHA property.

7.22. Tree Root Pruning in the SHA right of way shall be performed along the line shown on the plans in conformance with Section 715. Tree Root Pruning shall be completed before beginning excavation or other construction adjacent to trees to be preserved.

7.23. Tree Fertilizing in the SHA right of way shall be performed in conformance with Operation 1 - Broadcast Fertilizing per Section 716. 20-16-12 fertilizer shall be applied to the soil surface under the dripline of trees at the rate of 200 lbs. per acre.

7.25. Future Maintenance. Additional maintenance that may be required after hardscape, street furniture or plant materials are installed and accepted by SHA such as replacement, watering, weeding, mulching or pest control may be provided by the applicant when a permit for the proposed work is issued by the SHA District Office.

CATEGORY 300
DRAINAGE

STORMWATER MANAGEMENT (SWM) FACILITY
AS-BUILT (AB) CERTIFICATION

DESCRIPTION. Inspect stormwater management facilities during specified stages of construction, and furnish a completed (SWM) Facility AB Certification Package to the Administration certifying that the SWM facilities have been constructed as specified in the Contract Documents.

As-Built (AB) Inspector. Furnish an approved AB Inspector to complete the AB Certification. AB Inspectors require licensure in the State of Maryland as a Professional Engineer or Professional Land Surveyor, experienced in SWM design and construction.

To request approval, furnish a one-page resume for the AB Inspector at least two weeks prior to the start of construction of any SWM facility. Include the AB Inspector's name, contact information, relevant professional license(s), employer's name, and relevant work history. Failure to receive approval for the AB Inspector or to monitor the specified construction stages will be grounds for replacement.

SWM Facility As-Built Certification Package. The SWM Facility AB Certification Package certifies that the SWM Facilities have been constructed as specified. Include with the submitted package, photographs with written descriptions of specified stages of construction, completed tabulations and checklists, completed certification forms, material testing reports, turf/vegetation establishment report, and green-line revision plans for each facility.

MATERIALS. Not applicable.

CONSTRUCTION. Inspect and complete the appropriate MDE Tabulations and Construction Checklist for each facility to ensure that facility features are constructed as designed.

Stages of Construction for AB Inspections by the AB Inspector. Perform minimum inspections for the following SWM Facilities as applicable:

(a) Ponds.

(1) Upon completion of excavation to sub-foundation and when required, installation of structural supports or reinforcement for structures, including, but not limited to:

(a) Core trenches for structural embankments.

(b) Inlet and outlet structures, anti-seep collars or diaphragms, and watertight connections on pipes.

(c) Trenches for enclosed storm drainage facilities.

(2) During placement of structural fill, concrete, and installation of piping and catch basins.

05-01-14

(a) During backfill of foundations and trenches.

(b) During embankment construction.

(c) Upon completion of final grading and establishment of permanent stabilization.

(b) Wetlands. Refer to stages specified for pond construction. Additional inspections include:

(1) During and after wetland area planting.

(2) During the second growing season to verify a vegetation survival rate of no less than 50 percent.

(c) Infiltration Trenches.

(1) During excavation to subgrade.

(2) During placement and backfill of sudrain systems and observations wells.

(3) During placement of geotextile and all filter media.

(4) During construction of appurtenant conveyance systems such as diversion structures, pre-filters and filters, inlets, outlets, and flow distribution structures.

(5) Upon completion of final grading and establishment of permanent stabilization.

(d) Infiltration Basins. Refer to stages specified for pond construction and add:

(1) During placement and backfill of subdrain systems.

(e) Filtering Systems. Filtering systems include bioretention, micro- bioretention, sand filters, organic filters, bio-filters, and dry swales.

(1) During excavation to subgrade.

(2) During placement and backfill of subdrain systems.

(3) During placement of geotextile and all filter media.

(4) During construction of appurtenant conveyance systems such as flow diversion structures, pre-filters and filters, inlets, outlets, orifices, and flow distribution structures.

(5) Upon completion of final grading and establishment of permanent stabilization.

(f) Open Channel Systems. Open channel systems include wet swales and grass channels.

05-01-14

(1) During excavation to subgrade.

(2) During installation of diaphragms, check dams, or weirs.

(3) Upon completion of final grading and establishment of permanent stabilization.

(g) Non-Structural Practices. Upon completion of final grading and after establishment of permanent stabilization.

(a) Surveys, Computations, and Green-Line Revision Requirements. Upon completion of each SWM facility, survey and provide green-line revisions. Adhere to CAD Standards established by the Administration. MicroStation CAD files will be provided for use as references to the green-line revisions. Include the following items in the survey and green-line revisions: Core trench location, dimensions, material and compaction.

(b) Contours. Indicate grading of the SWM facility using one foot contour intervals.

(c) Inflow and outflow ditches.

(d) Riprap. Indicate the locations dimensions of riprap within SWM facilities and immediately outside of SWM footprints.

(e) Emergency spillways. Indicate locations of emergency spillways for SWM facilities.

(f) Outfall structures. Indicate locations of outfall structures, such as risers and weirs, and include all relevant information such as elevations, dimensions at top, orifice elevations, weir lengths and elevations, and openings.

(g) Miscellaneous Features. Include all other pertinent features in and around the SWM facility, such as freeboard, water surface elevations, and setbacks.

Tolerances. Tolerance limits for green-line as-built information is as follows:

(a) Earthwork Tolerance. Elevations must be within 3 in. of elevations specified in the Contract Documents.

(b) Structures. Elevations must be within 1.2 in. (0.1 ft) for spillways, pipe inverts, orifices, and weirs.

(c) Freeboard. Freeboard must be no less than specified in the Contract Documents.

When tolerances are exceeded, furnish computations for the storage volumes, discharge rates, detention times, and other applicable documentation to demonstrate that the SWM facilities meet all of the designed parameters. An approved SWM Report including design computations will be provided to facilitate the requirements of the AB Inspector.

05-01-14

When SWM facilities do not meet the designed parameters, reconstruct, re-inspect, resurvey and resubmit the SWM Facility AB Certification Package.

Submission Requirements. Furnish two hard-copies and one digital copy in PDF format of the SWM Facility AB Certification Package. Incomplete SWM Facility ABCertification Packages will not be accepted. Upon acceptance of the SWM AB Certification Package as complete, one copy will be submitted to Maryland Department of the Environment (MDE) for review and approval.

MEASUREMENT AND PAYMENT. Stormwater Management (SWM) Facility AB Certification will not be measured but will be paid for at the Contract lump sum price. The payment will be full compensation for inspection, photographs, documentation, surveys, computations, green-line revisions, completion and submission of the SWM Facility As-Built Certification Package, and for all material, labor, equipment, tools, and incidentals necessary to complete the work therein. Modifications to unacceptable SWM Facility AB Certification Packages including any associated corrective construction, reconstruction, grading, inspection, planting, stabilization, surveying, engineering analysis and services, and resubmittals will be at no additional cost to the Administration.

Payment Schedule. Payments will be made according to the following schedule when requirements are met:

STORMWATER MANAGEMENT (SWM) FACILITY AS-BUILT CERTIFICATION PAYMENT SCHEDULE		
REQUIREMENTS	**PERCENT OF TOTAL CONTRACT PRICE**	**PAYMENT FOR COMPLETED WORK**
Furnish completed SWM Facility As-Built Certification Package	50	Upon submission
Receive approval from the Maryland Department of the Environment (MDE)	50	At project close-out

ROADSIDE TREE PROJECT PERMIT

Maryland Department of Transportation
State Highway Administration

CATEGORY 300
DRAINAGE

SECTION 316 – STORMWATER
FILTRATION FACILITIES

316.01 DESCRIPTION. Construct stormwater filtration facilities including bioretention, micro-bioretention, organic filters, surface sand filters, submerged gravel wetlands, landscape infiltration, rain gardens, infiltration berms, wet swales, dry swales, and bio-swales.

Stormwater Filtration Facilities use vegetation, specific soil mixtures, and aggregate layers to filter stormwater and are highly susceptible to contamination by sediment. Therefore installation of vegetation immediately following the construction of each facility is essential.

316.02 MATERIALS.

No. 57 Aggregate	901.01
No. 7 Aggregate	901.01
No. 2 Aggregate	M-43, No. 2
Topsoil	920.01.01 or .02
Bioretention Soil Mix (BSM)	920.01.05
Coarse Sand	920.01.05(a)(1)
Shredded Hardwood Bark (SHB) Mulch	920.04.03
Soil Stabilization Matting	920.05
Turfgrass	920.06
Turfgrass Sod	920.06
Plant Materials	920.07
Water	920.09.01
Geotextile, Class PE, Type III	921.09

Subdrain Pipe, Fittings and Geotextile Sock. 6 in. diameter thermoplastic pipe. Polyvinyl chloride Profile Wall Drain Pipe (PPWP) meeting F 949 or Corrugated Polyethylene Drainage Pipe (CPP-S) meeting M 252, Type S and Type SP. Perforated pipe shall have slotted perforations with an opening area of 1 in^2/ft to 1.5 in^2/ft. Pipe used for observation wells requires an appropriate geotextile sock as recommended and supplied by the pipe manufacturer.

316.03 CONSTRUCTION. Construct stormwater filtration facilities only after all contributing drainage areas are permanently stabilized and vegetation including turfgrass and turfgrass sod are established according to Sections 705 and 708. Do not construct stormwater filtration facilities in areas previously used as erosion and sediment control facilities. Do not stockpile materials nor store equipment in these areas.

Use methods of excavation that minimize the compaction of the underlying soil. Use excavators and backhoes operating on the adjacent ground. If the bottom width of the excavated

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Maryland Department of Transportation
State Highway Administration

area is greater than 15 ft, wide-track or marsh-track equipment, or light equipment with turf-type tires may be used to excavate, grade, and place fill materials. Do not use equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high-pressure tires.

Rototill the excavation pit bottom to a minimum depth of 6 in. to alleviate compaction from excavation activities. Remove any standing water from the excavation pit prior to rototilling. Only rototill soil that is friable. Do not rototill soil while in a muddy or frozen condition.

Geotextile. Place tightly against the vertical sides of the excavation pit, pull tight to eliminate wrinkles and folds, and pin securely. Eliminate any voids between the geotextile and the soil and avoid wrinkling and folding the geotextile. Maintain a minimum 6 in. overlap at the geotextile joint ends or breaks and pin joints and overlaps securely. Do not place geotextile on the bottom of the excavation pit.

Aggregate. Use aggregate that is clean and free of soil and fines. Prevent soil, fines, and other debris from intermixing with the aggregate. If aggregate become contaminated with soil or fines, remove and replace it with uncontaminated aggregate.

Subdrain. Cap the ends of all pipes not terminating in a cleanout, vent, or drainage structure unless otherwise specified.

Cleanouts. Install solid-wall pipe vertically and connect to horizontal subdrain with the appropriate manufactured connections. Provide a screw cap on the exposed ends.

Vents. Install solid wall pipe vertically and connect to the horizontal subdrain with the appropriate manufactured connections. Provide a ventilated screw cap on the exposed ends. Ventilation holes or slots shall be no larger than 1/4 in. in diameter or width. The sum total area of the openings shall be no less than 1 in^2. Ensure that the ventilation openings are above the maximum specified water surface elevation.

Observation Wells. Place vertically using perforated and solid-wall pipe. Place an appropriate geotextile sock over the perforated pipe portion and secure on both ends. Provide a screw cap on the exposed end extending 2 in. above the surface. If a concrete collar is specified, trim the top of the well flush with the surface.

Coarse Sand. Place coarse sand in horizontal layers not to exceed 12 in. in thickness. After each lift, apply water by spraying or sprinkling to saturate the entire area of coarse sand until water flows from the subdrain. Use an appropriate sediment control device to capture any discharged sediment-laden water. Prevent soil, fines and other debris from intermixing with the coarse sand. Remove and replace any contaminated coarse sand.

Bioretention Soil Mixture (BSM). Place BSM in horizontal layers not to exceed 12 in. in thickness. After each lift, apply water by spraying or sprinkling to saturate the entire area of BSM until water flows from the subdrain.

01-04-11

Maryland Department of Transportation
State Highway Administration

Use an appropriate sediment control device to capture any discharged. Prevent soil, fines, and other debris from intermixing with the BSM. Remove and replace any contaminated BSM.

Plant Materials. Install plant materials immediately after final grading according to Sections 710 and 711.

Shredded Hardwood Bark (SHB) Mulch. Place immediately after BSM placement according to 710.03.13.

Soil Stabilization Matting. Place according to Section 709.

Topsoil. Place according to Section 701.

Turfgrass. Install and maintain according to Section 705. Mow by hand cutting only.

Turfgrass Sod. Install and maintain according to Section 708. Prevent damage to check dams, observations wells, vents and other features.

Check Dams. Construct check dams using No. 7 aggregate.

Final Acceptance. Complete and submit a Stormwater Management (SWM) Facility As-Built Certification Package for each stormwater filtration facility. Approval of the SWM As-Built Certification Package will be included in the Punch List requirements for the project.

316.04 MEASUREMENT AND PAYMENT. The payment will be full compensation for all applicable excavation, sheeting, shoring, dewatering, hauling, storing, rehandling of material, removal and disposal of excess and unsuitable material, rototilling, grading and slope adjustments, and for all material, labor, equipment, tools, and incidentals necessary to complete the work.

Excavation. Excavation will be measured and paid for at the Contact unit price per cubic yard for the pertinent Class of Excavation.

Aggregate. Aggregate, including aggregate for check dams, will be measured and paid for at the Contract unit price for one or more of the following.

(a) No. 2 Aggregate for Stormwater Management Facilities per cubic yard.

(b) No. 7 Aggregate for Stormwater Management Facilities per cubic yard.

(c) No. 57 Aggregate for Stormwater Management Facilities per cubic yard.

Removal of contaminated aggregate and replacement with uncontaminated aggregate will be at no additional cost to the Administration.

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Maryland Department of Transportation
State Highway Administration

Geotextile. Geotextile, Class PE, Type III will not be measured but the cost will be incidental to the Excavation.

Subdrain, Cleanouts, Vents, and Observation Wells. Slotted-perforated and solid-wall pipe will be measured and paid for at the Contract unit price per linear foot for 6 Inch Subdrain Pipe. Fittings, caps, geotextile sock, and other incidentals will not be measured, but the cost will be incidental to the Subdrain Pipe.

Coarse Sand. Coarse Sand will be measured and paid for at the Contract unit price per cubic yard for Coarse Sand for Stormwater Management Facilities.

Removal of contaminated coarse sand and replacement with uncontaminated coarse sand will be at no additional cost to the Administration.

Bioretention Soil Mixture (BSM). BSM will be measured and paid for at the Contract unit price per cubic yard for Bioretention Soil Mixture.

Removal of contaminated BSM and replacement with uncontaminated BSM will be at no additional cost to the Administration.

Water. Water used for saturation of course sand and BSM will not be measured but the cost will be incidental to the pertinent item.

Shredded Hardwood Bark (SHB) Mulch. SHB Mulch will be measured and paid for at the Contract unit price per square yard for Shredded Hardwood Bark Mulching, 3 in. Depth.

Discharge from Subdrain. Capture and treatment of any sediment laden water discharged from the subdrain will not be measured but will be incidental to the pertinent Erosion and Sediment Control items specified in the Contract Documents.

Plant Materials. Refer to 710.04 and 711.04.

Soil Stabilization Matting. Refer to 709.04.

Turfgrass. Refer to 705.04.

Turfgrass Sod. Refer to 708.04.

Topsoil. Refer to 701.04.

Revisions

HARFORD COUNTY, MARYLAND

PLUMTREE AT TOLLGATE ROUNDABOUT ROADSIDE TREE PROJECT LANDSCAPE NOTES

Drawn By : GP
Designed By : GP
Reviewed By : AEL
Contract No :
Scale : AS SHOWN
Sheet 14 Of 15
Date : 3/24/16

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE: 1 inch

2-PLAN.DGN

TREE DATA

ID #	DBH	COMMON NAME/ SCIENTIFIC NAME	EXISTING CONDITION	PROPOSED CONDITION/ COMMENTS
1	15"	EASTERN WHITE PINE/ Pinus strobus	FAIR	TO BE RETAINED, ROOT PRUNING NECESSARY
2	17"	EASTERN WHITE PINE/ Pinus strobus	FAIR	TO BE RETAINED, ROOT PRUNING NECESSARY
3	6"	EASTERN WHITE PINE/ Pinus strobus	FAIR	TO BE REMOVED
4	4"	PIGNUT HICKORY/ Carya glabra	GOOD	TO BE REMOVED
5	2"	PIGNUT HICKORY/ Carya glabra	FAIR	TO BE REMOVED
6	19"	SAWTOOTH OAK/ Quercus acutissima	FAIR	TO BE REMOVED
7	6"	PIGNUT HICKORY/ Carya glabra	GOOD	TO BE REMOVED
8	3"	PIGNUT HICKORY/ Carya glabra	GOOD	TO BE REMOVED
9	5"	PIGNUT HICKORY/ Carya glabra	GOOD	TO BE REMOVED
10	5"	PIGNUT HICKORY/ Carya glabra	POOR	TO BE REMOVED
11	15"	YELLOW POPLAR/ Liriodendron tulipifera	FAIR	TO BE REMOVED
12	9"	EASTERN REDCEDAR/ Juniperus virginiana	GOOD	TO BE REMOVED
13	7"	RED OAK/ Quercus rubra	GOOD	TO BE REMOVED
14	7"	AMERICAN BEECH/ Fagus grandifolia	GOOD	TO BE RETAINED, ROOT PRUNING NECESSARY
15	14"	YELLOW POPLAR/ Liriodendron tulipifera	FAIR	TO BE RETAINED, ROOT PRUNING NECESSARY
16	29"	RED MAPLE/ Acer rubrum	GOOD	TO BE RETAINED, ROOT PRUNING NECESSARY
17	31"	YELLOW POPLAR/ Liriodendron tulipifera	GOOD	TO BE RETAINED, ROOT PRUNING NECESSARY
18	2"	MIMOSA/ Albizia julibrissin	GOOD	TO BE RETAINED, ROOT PRUNING NECESSARY
19	14"	SAWTOOTH OAK/ Quercus acutissima	GOOD	TO BE RETAINED, ROOT PRUNING NECESSARY
20	2"	BRADFORD PEAR/ Pyrus calleryana	GOOD	TO BE REMOVED
21	4"	FLOWERING DOGWOOD/ Cornus florida	GOOD	TO BE REMOVED
22	3"	FLOWERING DOGWOOD/ Cornus florida	GOOD	TO BE REMOVED
23	4"	FLOWERING DOGWOOD/ Cornus florida	GOOD	TO BE REMOVED
24	2"	FLOWERING DOGWOOD/ Cornus florida	GOOD	TO BE REMOVED
25	2"	FLOWERING DOGWOOD/ Cornus florida	GOOD	TO BE REMOVED
26	4"	EASTERN REDCEDAR/ Juniperus virginiana	FAIR	TO BE REMOVED
27	6"	EASTERN REDCEDAR/ Juniperus virginiana	FAIR	TO BE REMOVED
28	18"	PIN OAK/ Quercus palustris	GOOD	TO BE RETAINED, ROOT PRUNING NECESSARY
29	3"	EASTERN REDCEDAR/ Juniperus virginiana	GOOD	TO BE REMOVED
30	3"	COMMON PERSIMMON/ Diospyros virginiana L.	GOOD	TO BE REMOVED
31	5"	COMMON PERSIMMON/ Diospyros virginiana L.	FAIR	TO BE RETAINED, ROOT PRUNING NECESSARY
32	3"	COMMON PERSIMMON/ Diospyros virginiana L.	GOOD	TO BE RETAINED, ROOT PRUNING NECESSARY
33	11"	YELLOW POPLAR/ Liriodendron tulipifera	GOOD	TO BE REMOVED
34	18"	YELLOW POPLAR/ Liriodendron tulipifera	GOOD	TO BE REMOVED
35	10"	YELLOW POPLAR/ Liriodendron tulipifera	GOOD	TO BE REMOVED
36	11"	YELLOW POPLAR/ Liriodendron tulipifera	GOOD	TO BE REMOVED
37	12"	YELLOW POPLAR/ Liriodendron tulipifera	GOOD	TO BE REMOVED
38	10"	YELLOW POPLAR/ Liriodendron tulipifera	GOOD	TO BE REMOVED
39	10"	YELLOW POPLAR/ Liriodendron tulipifera	GOOD	TO BE REMOVED
40	12"	YELLOW POPLAR/ Liriodendron tulipifera	GOOD	TO BE REMOVED
41	8"	YELLOW POPLAR/ Liriodendron tulipifera	GOOD	TO BE REMOVED
42	10"	YELLOW POPLAR/ Liriodendron tulipifera	GOOD	TO BE REMOVED
43	9"	YELLOW POPLAR/ Liriodendron tulipifera	GOOD	TO BE REMOVED
44	9"	YELLOW POPLAR/ Liriodendron tulipifera	GOOD	TO BE REMOVED
45	9"	YELLOW POPLAR/ Liriodendron tulipifera	GOOD	TO BE REMOVED
46	8"	YELLOW POPLAR/ Liriodendron tulipifera	GOOD	TO BE REMOVED
47	12"	YELLOW POPLAR/ Liriodendron tulipifera	GOOD	TO BE REMOVED
48	10"	YELLOW POPLAR/ Liriodendron tulipifera	GOOD	TO BE REMOVED
49	9"	CHERRY/ Prunus spp.	GOOD	TO BE REMOVED
50	9"	SYCAMORE/ Platanus occidentalis	GOOD	TO BE REMOVED

LEGEND

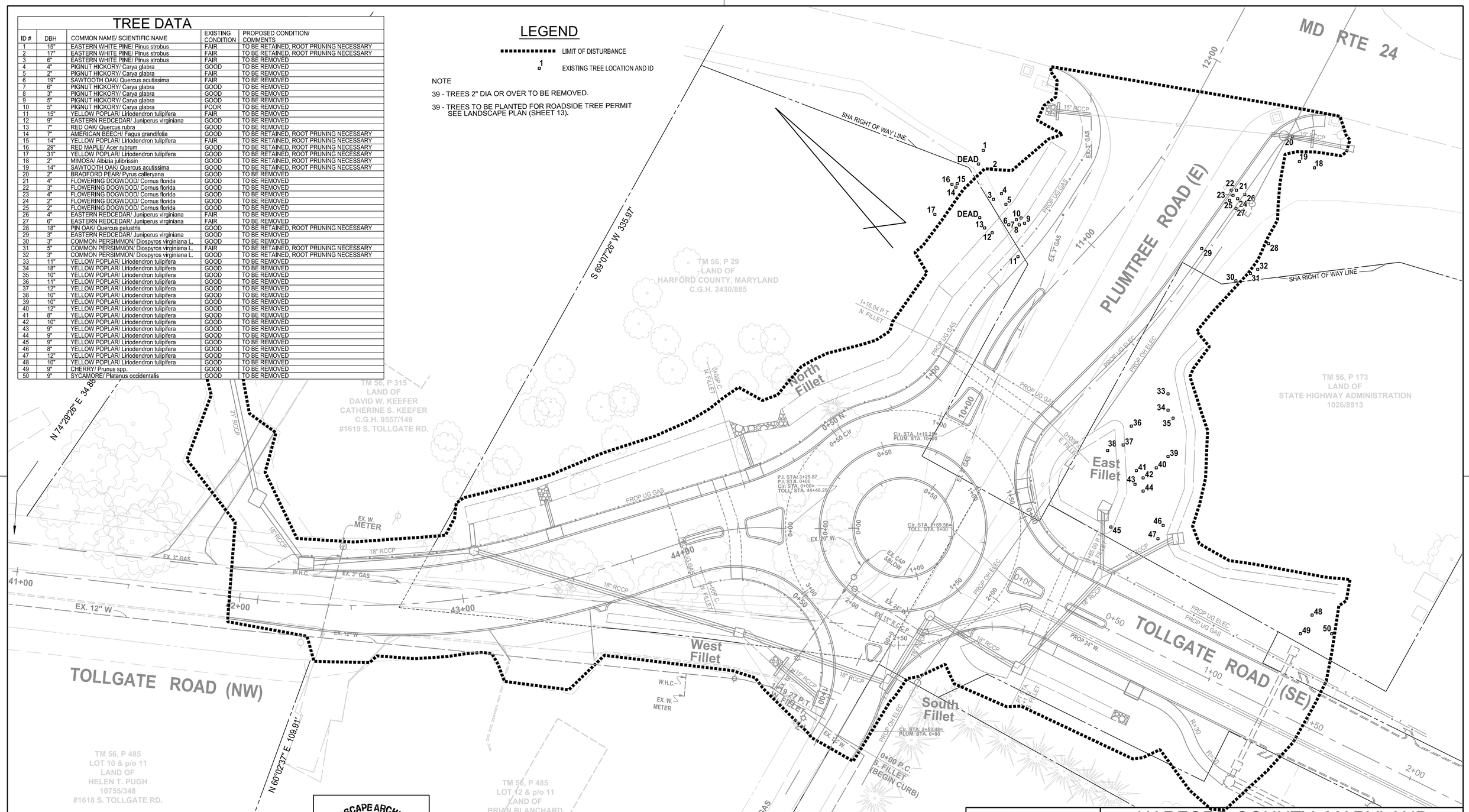
LIMIT OF DISTURBANCE

1 EXISTING TREE LOCATION AND ID

NOTE

39 - TREES 2" DIA OR OVER TO BE REMOVED.

39 - TREES TO BE PLANTED FOR ROADSIDE TREE PERMIT SEE LANDSCAPE PLAN (SHEET 13).



LANDSCAPE ARCHITECT
License #3857
ANDREA E. LAKE
STATE OF MARYLAND

PLAN
SCALE : 1"=20'

ROADSIDE TREE LOCATION PLAN

Revisions

HARFORD COUNTY, MARYLAND

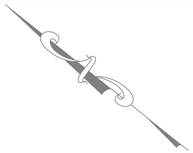
PLUMTREE AT TOLLGATE ROUNDABOUT PLAN

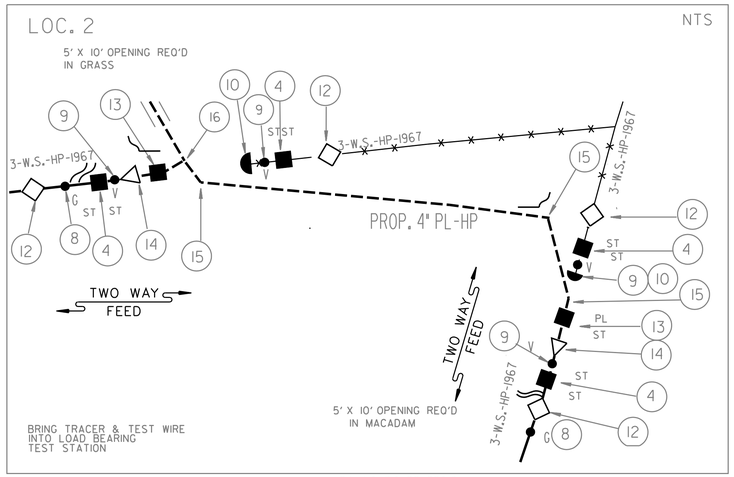
Drawn By : GP
Designed By : GP
Reviewed By : AEL

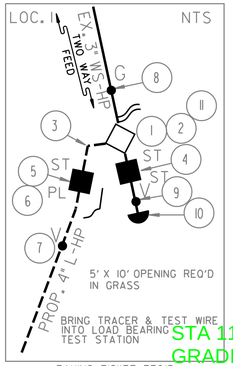
Contract No :
Scale : AS SHOWN
Sheet 15 Of 15
Date : 3/24/16

2-PLAN.DGN

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:







NOTE: MAINTAIN 5 FT. HORIZONTAL AND 1 FT. VERTICAL CLEARANCE FROM ALL WATER, SEWER, FIRE HYDRANTS, AND STORM DRAINS.

ATTENTION CONSTRUCTION FOREMAN!

IN THE EVENT OF A GAS EMERGENCY, PLEASE CONTACT GAS CONTROL @ 410-470-9410 OR 9412 AS SOON AS POSSIBLE.

GENERAL NOTES:
1. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS OF EXISTING UNDERGROUND UTILITIES.
2. CONTRACTOR SHALL MAINTAIN 5 FEET MINIMUM HORIZONTAL CLEARANCE BETWEEN WATER MAINS, SANITARY SEWERS, AND DUCTBANKS.
3. ALL EXCAVATED MATERIAL SHALL BE PLACED ON THE HIGH SIDE OF TRENCH AND KEPT OUT OF SWALE, DITCHES AND OTHER AREAS OF CONCENTRATED FLOW AND PROTECTED IN A MANNER IN WHICH WILL PREVENT EROSION.
4. ALL AREAS DISTURBED DURING CONSTRUCTION MUST BE STABILIZED PRIOR TO LEAVING JOB SITE EACH DAY.
5. SERVICES ARE SHOWN FOR PERMITTING PURPOSES ONLY.

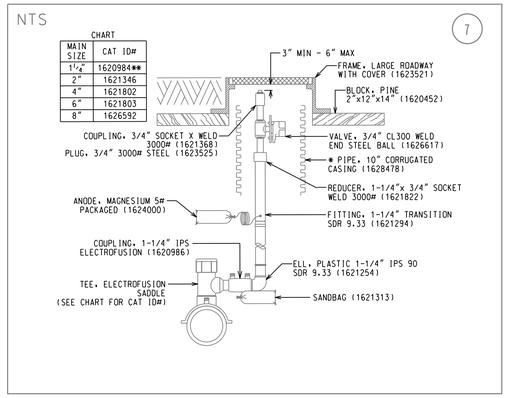
GAS SPECIFIC NOTES
1. CONTRACTOR SHALL NOTIFY GAS SYSTEM OPERATIONS, SPRING GARDENS 48 HRS. PRIOR TO CONSTRUCTION 410-470-6427 OR 410-470-6421
2. MINIMUM COVER OF PROPOSED GAS MAIN SHALL BE 3.0 FEET MINIMUM EXCEPT WHERE OTHERWISE SPECIFIED.
3. TRACER WIRE AND WARNING TAPE TO BE INSTALLED WITH ALL PLASTIC MAIN.
4. BRING TRACER WIRE AND WARNING TAPE TO SURFACE IN TEST STATION.
5. CONSTRUCTION/CONTRACTOR SHALL NOTIFY CORROSION CONTROL, SPRING GARDENS 48 HRS. PRIOR TO CONSTRUCTION. 410-470-6337.

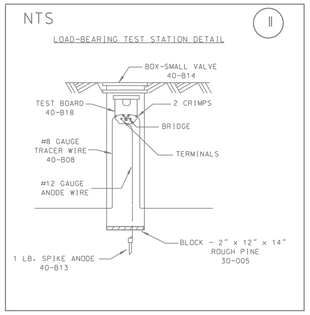
ITEM	SIZE	DESCRIPTION	CATEGORY IDENTIFICATION NUMBER	INSTALL	ABANDON
1	3"	FITTING, LINE STOP (BOT OUT) ST SPLIT WELD, CL 300	1621864	1	
2	4"	ELL, 90° - LONG RADIUS, STEEL, STD WELD (.237" WALL)	1623459	1	
3	4"	ELL, 45° - STEEL, STANDARD WELDING (.237" WALL)	1621705	1	
4	3"	COUPLING, BOLTED COMPRESSION FOR STEEL PIPE	1621314	5	
5	4"	COUPLING, BOLTED COMPRESSION	1620979	3	
6	4"	INSERT, FOR IPS PLASTIC PIPE (SDR 11)	1623546	4	
7		TEST PIPE	SEE DETAIL	1	
8	3/4"	x 2" NIPPLE, MUELLER - SAVE -A-VALVE	1621707	3	
9	1-1/4"	x 3" NIPPLE, MUELLER - SAVE-A-VALVE	1621820	4	
10	3"	CAP, STEEL, STANDARD WELD (.216 WALL)	1621764	3	
11	-	LOAD BEARING TEST STATION	SEE DETAIL	3	
12	3"	x 3" FITTING, STOPPER, WELD	1621009	4	
13	4"	FITTING, TRANSITION - PLASTIC (SDR 11) TO STEEL	1626523	1	
14	4"	x 3" REDUCER, WELD, CONCENTRIC, STANDARD WEIGHT	1620921	2	
15	4"	ELL, IPS PLASTIC - 45° - BUTT FUSION	1626522	3	
16	4"	x 4" x 4" TEE, IPS PLASTIC, BUTT FUSION	1626525	3	
17	4"	ELL, IPS PLASTIC - 90° - BUTT FUSION	1620912		
	4"	PIPE, PLASTIC, S.D.R. 11 (.409" WALL)	1621725	555'	

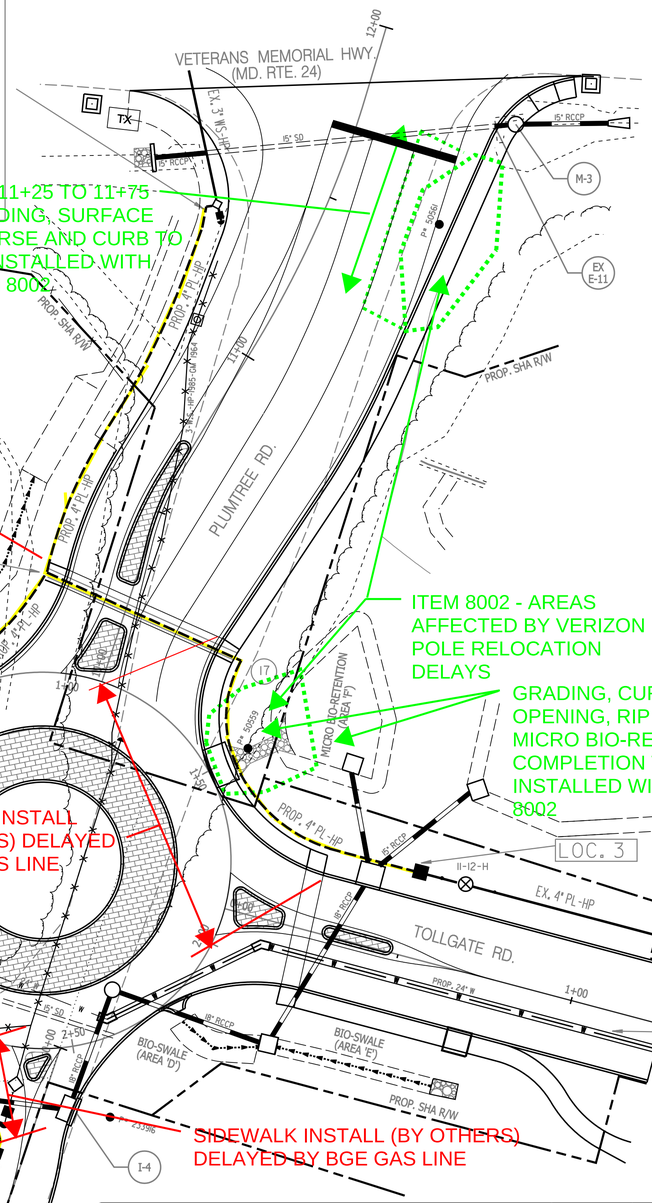
HARFORD COUNTY - UTILITY CONSTRUCTION REQUIREMENTS

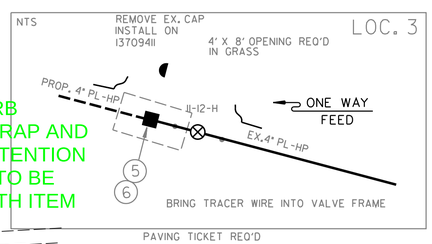
- R/W TO BE RETURNED TO CONDITION EXISTING (COMPACTED & STABILIZED) PRIOR TO CONSTRUCTION. ALL CONSTRUCTION, INCLUDING LIFT SIZE, COMPACTION, AND MATERIALS USED SHALL BE IN ACCORDANCE WITH HARFORD COUNTY CODE RULES AND REGULATIONS.(OPEN CUTS, DETAILS R4 AND R5). ALL ROADS ARE BORED UNLESS SPECIAL APPROVAL IS GRANTED.
- WORK ZONE TRAFFIC CONTROL TO BE IN ACCORDANCE WITH THE M.U.T.C.D., (DOES NOT ADDRESS SPECIFIC PLAN APPROVAL). WORK ON HARFORD COUNTY COLLECTOR ROADS BE PERFORMED ONLY BETWEEN THE HOURS OF 9 AM AND 3PM, UNLESS SPECIFICALLY APPROVED IN ADVANCE WITH APPROPRIATE NOTIFICATIONS AND SIGNAGE.
- UTILITY COMPANY RESPONSIBLE FOR CONTACTING "MISS UTILITY" (1-800-257-7777 OR 811) PRIOR TO ANY WORK, AS REQUIRED BY LAW.
- SEDIMENT CONTROLS/STORM WATER CONTROLS (I.E.: GRADING PERMIT) APPROVALS ARE NOT INCLUDED UNDER THE HARFORD COUNTY PERMIT.
- ALL WORK MUST MAINTAIN 1' VERTICAL AND 5' HORIZONTAL CLEARANCE FROM ALL WATER, SEWER, OR STORM DRAIN UTILITIES AND STRUCTURES.
- NOTIFICATIONS OF ALL WORK MUST BE PROVIDED 24 HOURS IN ADVANCE OF CONSTRUCTION. THIS NOTICE SHALL BE PROVIDED VIA FAX TO 410-676-3582. NOTIFICATION OF COMPLETION OF WORK SHALL BE FAXED TO THIS NUMBER AS WELL.
- EMERGENCY SITUATIONS WHICH ARISE AND REQUIRE APPROVAL BY HARFORD COUNTY SHALL BE CALLED INTO THE MAIN OFFICE NUMBER 410-638-3545 OR 410-638-3509.
- FIBER OPTIC MARKERS ARE REQUIRED EVERY 500' ON BOTH SIDES OF ANY ROAD CROSSINGS AND AT TERMINUS.

HARFORD CO. CONTACT:
RICK BATES
410.683.3509/X 1298









3 Way Communication

Follow Procedures

JOB NO. ____ ED. NO. ____
WORK STARTED ____ COMP. ____
WORK DONE ____ PROPOSED YES ____ NO ____
WERE CHANGES MADE AS DIRECTED BY FOREMAN ____ SKETCHER ____
INSPECTOR ____ G&E CONT ____
FOREMAN ____
INST. VALVE ____ P.P. ____
CORR. CONTROL ____ CODE NO. ____
CORR. OVERLAY ____ VALVE OVERLAY ____
DIST. MAP ____ ON RECORDS ____

JOB OWNER - PROJ. / PROG. MGR: THOMAS MITCHELL — OFFICE # 410.[illegible]863
DESIGNER: THOMAS RAIBER — OFFICE # 410.470.8[illegible]
UNIT PRINCIPAL DESIGNER: RICHARD BURNHAM — OFFICE # 410.[illegible]
DESIGN REVIEWED BY (NAME): ____ OFFICE # ____
POTENTIALLY CONTAMINATED AREA: SITE # ____ IF YES, SEE SECTION 2E1 OF DESIGNERS GUIDE
ENVIRONMENTAL DOCUMENTATION ____ GRADING PLAN ____ FOREST CONSERV. ____
AGREEMENT ____
R/W NO. ____ DATE ____

JOB DESCRIPTION: TOLLGATE RD. - CAMELOT TO PLUMTREE RUN
TOLLGATE RD. - 21015
CITY / TOWN: BEL-AIR — COUNTY: HARFORD
DEVELOPMENT LOCALITY ____
BRIEF DESCRIPTION OF WORK: RELOCATE GAS MAIN AT ROUNDABOUT
CUSTOMER ____
LOCATION OF GAS & ELECTRIC FACILITIES APPROVED BY ____
PRINT NAME: ____ SIGNATURE: ____
PHONE ____ DATE ____

CUSTOMER CONTACT: ____ CUSTOMER CONTACT: ____
PHONE NUMBER: ____ PHONE NUMBER: ____

REV. NO.	REVISION DESCRIPTION	BY	DATE

PERMITS	REQ.
CITY	
HARFORD CO.	X
STATE	
FORESTRY	
BLANKET	
TRANSMISSION	
LAND USE	
NONE REQUIRED	

	BY	
CHECKS		
DESIGNER	TFR	
CONTRACTOR QA CK		
BGE QA CHECK		
ENGINEERING CK		
RIGHT-OF-WAY CK		
CORROSION CTRL/ GAS CHK		
PRESSURE CTRL		
DRAFTER	ACD	3/21/16

CALL 48 HRS. PRIOR TO 48 HRS. BEFORE STARTING WORK 800-257-7777 OR 811
PIPE TYPE: HP
SVCM TYPE: ____
MAIN TYPE: STEEL ____ PLASTIC X — 150 PSIG, 1 HOURS, ____ MINUTES
MAIN TYPE: STEEL ____ PLASTIC ____ — ____ PSIG, ____ HOURS, ____ MINUTES
HYDROSTATIC TEST: ____ PSIG, ____ HOURS, ____ MINUTES
RADIOGRAPHIC REQUIRED: ____ %

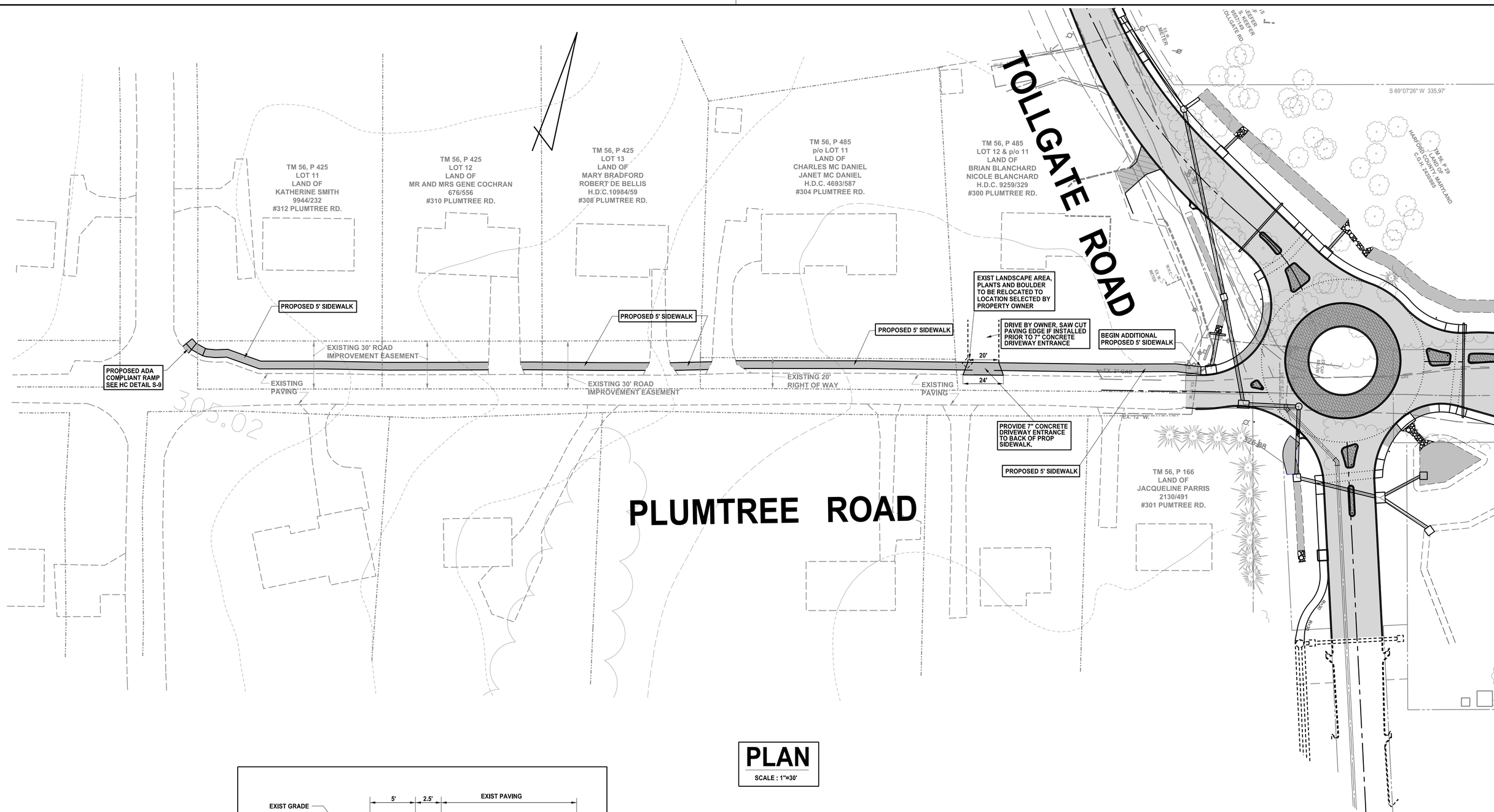
WORK ORDER NO.: 13968415
SVC REQUEST NO.: ____ DESIGN NO.: 04581396000014323I
ADC MAP COUNTY: HARFORD
MAP NO. 49 GRID(S) F-2
DESIGN SERVICES UNIT ____
CONSTRUCTION DISCIPLINE: GAS X

PRINT: A | NO. PRINTS: 1 | REVISION: 00 | BASED ON WORK WITH: N/A
GROUP: GPUR | TYPE: FR
ELECTRIC GRID: 2 15 16 30 | GAS PLATE: 11G-2-22
SCALE: 0 20 40

BGE DESIGN SERVICES

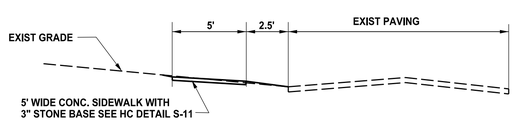
PLAN FOR ITEM 8002 AFFECTED AREAS (5-18-16)

T:\DesignServices\AssetSuite\WO 00000000-14000000\13968415\10681281.dgn 4/5/2016



PLAN

SCALE : 1"=30'



TYPICAL SECTION

NOT TO SCALE

Revisions	HARFORD COUNTY, MARYLAND
	PLUMTREE ROAD ADDITIONAL SIDEWALK PLAN
	Drawn By : SRB — Contract No :
	Designed By : SRB — Scale : AS SHOWN
	Reviewed By : — Sheet S-1 Of 1
	Date : 5-2-16

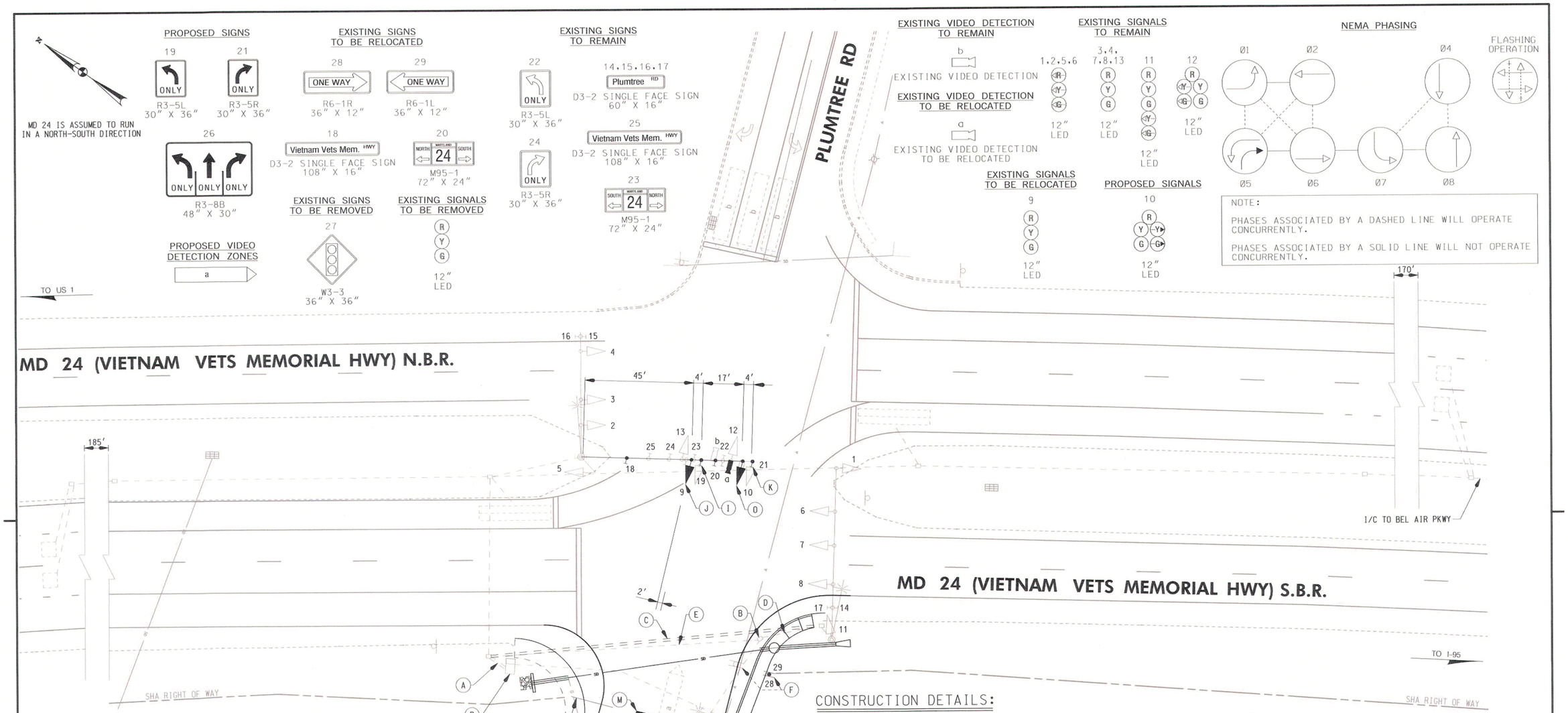
ADC MAP :

TAX MAP :

HCG BILLING ID No.:

HCG DWG ID No.:

2-plan-temp-extra sidewalk.dgn



GENERAL NOTES:

1. VIDEO CAMERA LOCATION / ALIGNING SHALL BE COORDINATED WITH THE SHA ENGINEER.
2. ALL PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH MSHA STANDARDS.
3. ALL EXISTING TRAFFIC SIGNAL EQUIPMENT REMOVED SHALL BECOME THE PROPERTY OF THE SIGNAL CONTRACTOR UPON COMPLETION OF THE NEW SIGNAL.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TERMINATING ALL SIGNAL CABLE TO THE APPROPRIATE TERMINALS AND PROPERLY LABEL EACH CABLE.
5. THE CONTRACTOR SHALL VERIFY ALL UNDERGROUND UTILITIES PRIOR TO INSTALLING PROPOSED SIGNAL EQUIPMENT. IF ANY UTILITIY CONFLICTS SHOULD ARISE THE CONTRACTOR SHALL CONTACT THE PROJECT ENGINEER.

CONSTRUCTION DETAILS:

(A) USE EXISTING CONDUIT.

(B) REMOVE EXISTING HANDHOLE.

(C) INSTALL 4" SCHEDULE 80 RIGID PVC ELECTRICAL CONDUIT - TRENCHED. NOTE: ASSUME FULL-DEPTH RECONSTRUCTION UP TO MD 24.

(D) REMOVE EXISTING CONDUIT.

(E) ABANDON EXISTING CONDUIT.

(F) RELOCATE EXISTING R6-1 'ONE WAY' SIGNS.

(G) REMOVAL AND REPLACEMENT OF EXISTING LUMINAIRE, BRACKET ARM, POWER SOURCE AND UTILITY POLE TO BE DONE BY OTHERS.

(H) REMOVE EXISTING W3-3 'SIGNAL AHEAD' SIGN AND NEW INSTALL R3-8B 'LANE CONTROL' SIGN.

(I) INSTALL NEW R3-5L 'LANE CONTROL' SIGN.

(J) RELOCATE EXISTING SIGNAL HEADS TO ACCOMODATE INSTALLATION OF R3-5R 'LANE CONTROL' SIGN. MAINTAIN EXISTING SPACING.

(K) INSTALL NEW R3-5R 'LANE CONTROL' SIGN.

(L) REMOVE EXISTING MICROLOOP DETECTOR.

(M) TO BE INSTALLED BY OTHERS.

(N) VIDEO DETECTION ZONE.

(O) REPLACE EXISTING SIGNAL HEAD WITH PROPOSED SIGNAL HEAD. POSITION TO ACCOMODATE THE INSTALLATION OF R3-5R 'LANE CONTROL' SIGN. MAINTAIN EXISTING SPACING.

(P) REPROGRAM EXISTING TRAFFIC SIGNAL CONTROLLER TO PROVIDE AN EASTBOUND RIGHT-TURN OVERLAP PHASE.

GEOMETRIC LEGEND

EXISTING
PROPOSED

UTILITY LEGEND

SD	STORM DRAIN
G	GAS MAIN
W	WATER MAIN
S	SEWER MAIN
E	ELECTRIC CABLES
A	AERIAL CABLES
T	TELEPHONE CABLES
F	FIBER-OPTIC

STATE OF MARYLAND JOHN UNDON BELL No. 12116 PROFESSIONAL ENGINEER

SHA TRACKING NO. 12APHA006XX

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
OFFICE OF TRAFFIC & SAFETY
TRAFFIC ENGINEERING DESIGN DIVISION

MD 24 AND PLUMTREE RD

BEL AIR, MD

REVISION 'B' CONSULTANT

WALLACE MONTGOMERY
ENGINEERS·PLANNERS·SURVEYORS·CONSTRUCTION MANAGERS
10150 York Road, Suite 200
Hunt Valley, Maryland 21030
410.494.9093 Tel / 410.667.0925 Fax
www.WallaceMontgomery.com
A Limited Liability Partnership

APPROVALS

TEAM LEADER
ASST. DIV. CHIEF
DIVISION CHIEF
OFFICE DIRECTOR

ORIGINAL ON FILE

REVISIONS

(B) MODIFIED SIGNAL HEAD PLACEMENT ON EASTBOUND PLUMTREE ROAD APPROACH
03-14-16 TMIS #N829 SHA NO. BW-996MB2
JLR BB KWK DT 9GB

(A) ADD E APPORT TURN PHASE FOR WESTBOUND PLUMTREE ROAD
3-20-09 TMIS #J667 SHA NO. BW-996MB2

PLOTTED: Monday, April 25, 2016 AT 07:07 AM
FILE: M:\PROJ\21005.0002\Traffic_Cadd\pSG-P000_MD24.dgn

TRAFFIC SIGNAL PLAN

SCALE 1" = 20' DATE JUNE 1998 CONTRACT NO. AW272785185

DESIGNED BY KIM WINKLER
DRAWN BY
CHECKED BY
F.A.P. NO. N/A

COUNTY HARFORD
LOGMILE 12024011.87
T.I.M.S. NO. C 820
TOD NO.

TS NO. 3797B | DRAWING NO. SG - 01 OF 02 | SHEET NO. T-1 OF 2

PROJECT DESCRIPTION

I. GENERAL

THIS PROJECT INVOLVES THE CONSTRUCTION OF A ROUNDABOUT AT THE INTERSECTION PLUMTREE ROAD AND SOUTH TOLLGATE ROAD. AS SUCH, PLUMTREE ROAD WILL BE WIDENED AND REALIGNED WITH THE SIGNALIZED INTERSECTION OF MD 24. TRAFFIC SIGNAL FEATURES ALONG THE MASTARM WILL BE SHIFTED TO ACCOMMODATE THE REALIGNED AND WIDENED PLUMTREE ROAD APPROACH.

MD 24 IS ASSUMED TO RUN IN A NORTH-SOUTH DIRECTION.

II. INTERSECTION OPERATION

THE INTERSECTION IS TO CONTINUE TO OPERATE IN A NEMA SIX-PHASE, FULL-ACTUATED MODE. THE MD 24 APPROACHES OPERATE CONCURRENTLY AS WILL THE PLUMTREE ROAD APPROACHES. EXCLUSIVE LEFT TURN PHASES ARE PROVIDED FOR THE MD 24 APPROACHES ALONG WITH A EASTBOUND RIGHT-TURN OVERLAP. THE WESTBOUND PLUMTREE ROAD APPROACH WILL CONTINUE TO OPERATE WITH AN EXCLUSIVE LEFT-TURN PHASE.

NO PEDESTRIAN PHASES ARE PROVIDED.

III. CONTROLLER REQUIREMENTS

NONE.

NOTES

1. FOR FINAL PAVEMENT MARKINGS, REFER TO THE PAVEMENT MARKING PLANS, AS APPLICABLE; OTHER THAN THOSE DETAILED ON THE PLAN. ALL PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH ADMINISTRATION STANDARDS.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TERMINATING ALL SIGNAL CABLE TO THE APPROPRIATE TERMINALS AND PROPERLY LABEL EACH CABLE.

3. ALL UNDERGROUND AND OVERHEAD UTILITIES SHOWN ON THESE PLANS ARE SCHEMATIC ONLY AND MAY NOT BE COMPLETE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING MISS UTILITY PRIOR TO CONSTRUCTION SO THAT ALL UTILITIES MAY BE LOCATED IN THE FIELD. IF THE CONTRACTOR PERCEIVES THAT A CONFLICT BETWEEN THE UTILITIES AND THE TRAFFIC SIGNAL WILL OCCUR, THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER IMMEDIATELY SO THAT THE CONFLICT MAY BE RESOLVED.

4. THE CONTRACTOR SHALL MAINTAIN THE CONTINUOUS OPERATION OF ALL INTERCONNECT, VEHICULAR, PEDESTRIAN DETECTORS, AND LIGHTING DEVICES. IF ANY DEVICE IS DAMAGED BY THE CONTRACTOR, IT SHALL BE REPAIRED WITHIN 72 HOURS BY THE CONTRACTOR AT NO COST TO THE ADMINISTRATION AFTER NOTIFICATION BY THE ENGINEER.

CONTACTS

DISTRICT 4

DAVID PEAKE
DISTRICT ENGINEER
410-229-2310

ERIN KUHN
ASSISTANT DISTRICT ENGINEER - TRAFFIC
410-229-2381

MICHAEL PASQUARIELLO
ASSISTANT DISTRICT ENGINEER - UTILITIES
410-229-2341

JESSE FREE
ASSISTANT DISTRICT ENGINEER - CONSTRUCTION
410-229-2421

ANDRE FUTRELL
ASSISTANT DISTRICT ENGINEER - MAINTENANCE
410-229-2361

OFFICE OF TRAFFIC AND SAFETY

MS. CORREN JOHNSON
DIVISION CHIEF, TRAFFIC OPERATIONS
410-787-7630

MS. KELLY CALDWELL-HARPER
ASSISTANT DIVISION CHIEF, TRAFFIC OPERATIONS
410-787-7630

MR. ED RODENHIZER
CHIEF, SIGNAL OPERATIONS
410-787-7650

MR. EUGENE BAILEY
CHIEF, SIGN OPERATIONS
410-787-7670

MR. MIKE BOYLE
SUPPLY OFFICER IV (SIGNAL SHOP WAREHOUSE)
410-787-7668

EQUIPMENT LIST "A"

A. EQUIPMENT TO BE SUPPLIED BY THE SHA
NONE

EQUIPMENT LIST "B"

B. EQUIPMENT TO BE FURNISHED AND/OR INSTALLED BY THE CONTRACTOR (SHA CONTRACT NO. XX1285233)

CATEGORY CODE NO.	SPECIFICATION NUMBER	QUANTITY	DESCRIPTION
805140	805	140 LF	4 INCH SCHEDULE 80 RIGID PVC CONDUIT-TRENCHED
811002	811	1 EA	REMOVE ELECTRICAL HANDHOLE
813007	813	24 SF	RELOCATE OVERHEAD SIGN
813014	813	10 SF	INSTALL GROUND MOUNTED SIGN
813015	813	15 SF	INSTALL OVERHEAD SIGN
813022	822	9 SF	REMOVE EXISTING GROUND MOUNTED SIGNS
813023	822	6 SF	RELOCATE EXISTING GROUND MOUNTED SIGNS
822510	810	1325 LF	DISCONNECT, PULL-BACK AND REROUTE CABLES
860265	814	1 EA	RELOCATE EXISTING SIGNAL HEAD
860272	814	5 EA	12 INCH VEHICULAR TRAFFIC SIGNAL HEAD SECTION
861108	810	440 LF	ELECTRICAL CABLE - 7 CONDUCTOR (NO. 14 AWG)
800000		1 EA	RELOCATE VIDEO DETECTOR (SETUP ZONES)
800000		1 EA	PROGRAM TRAFFIC SIGNAL CONTROLLER

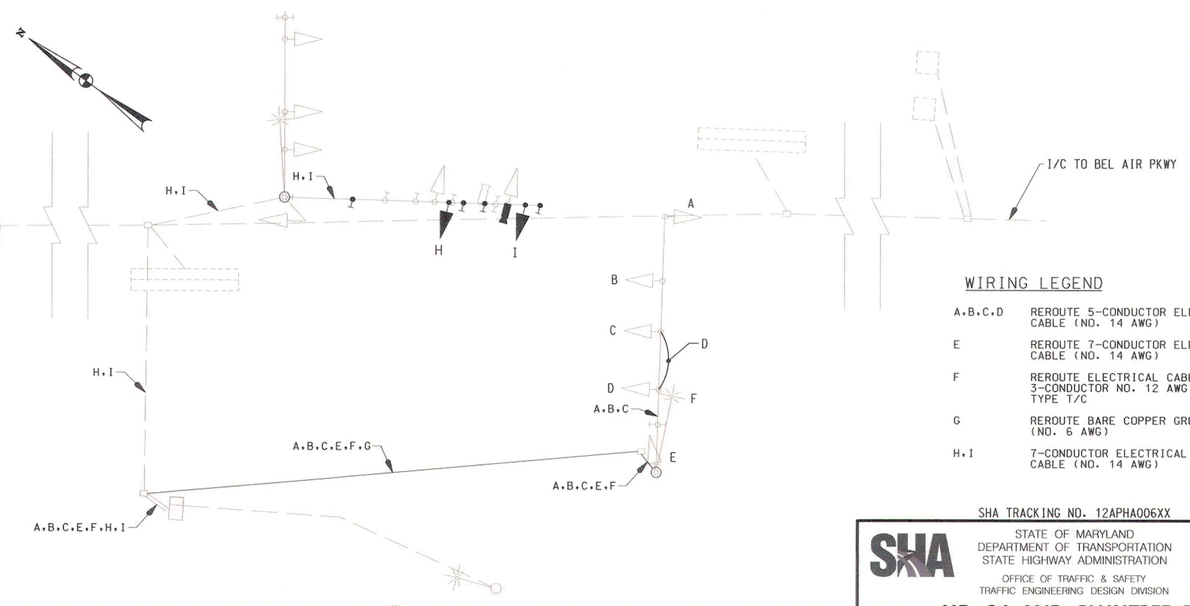
EQUIPMENT LIST "C"

C. EQUIPMENT TO BE RETURNED TO SHA
NONE

PHASE CHART

	1	2	3	4	5	6	7	8	9	10	11	12	13
PHASE 1 AND 5	◄G–	◄G–	R	R	◄G–	◄G–	R	R	R	R/G►	R	R	R
1 AND 5 CHANGE TO 1 AND 6, 2 AND 5, OR 2 AND 6													
PHASE 1 AND 6	◄R–	◄R–	R	R	◄G–	◄G–	G	G	R	R	R	R	R
1 AND 6 CHANGE	◄R–	◄R–	R	R	◄Y–	◄Y–	Y	Y	R	R	R	R	R
PHASE 2 AND 5	◄G–	◄G–	G	G	◄R–	◄R–	R	R	R	R/G►	R	R	R
2 AND 5 CHANGE	◄Y–	◄Y–	Y	Y	◄R–	◄R–	R	R	R	R/Y►	R	R	R
PHASE 2 AND 6	◄R–	◄R–	G	G	◄R–	◄R–	G	G	R	R	R	R	R
2 AND 6 CHANGE	◄R–	◄R–	Y	Y	◄R–	◄R–	Y	Y	R	R	R	R	R
PHASE 4 AND 7	◄R–	◄R–	R	R	◄R–	◄R–	R	R	R	R	◄G/G	◄G/G	G
4 AND 7 CHANGE	◄R–	◄R–	R	R	◄R–	◄R–	R	R	R	R	◄Y/G	◄Y/G	G
PHASE 4 AND 8	◄R–	◄R–	R	R	◄R–	◄R–	R	R	R	G	G	G	G
4 AND 8 CHANGE	◄R–	◄R–	R	R	◄R–	◄R–	R	R	R	Y	Y	Y	Y
FLASHING OPERATION	FL/R	FL/R	FL/Y	FL/Y	FL/R	FL/R	FL/Y	FL/R	FL/Y	FL/R	FL/R	FL/R	FL/R

WIRING DIAGRAM



WIRING LEGEND

A.B.C.D	REROUTE 5-CONDUCTOR ELECTRICAL CABLE (NO. 14 AWG)
E	REROUTE 7-CONDUCTOR ELECTRICAL CABLE (NO. 14 AWG)
F	REROUTE ELECTRICAL CABLE 3-CONDUCTOR NO. 12 AWG COPPER TYPE T/C
G	REROUTE BARE COPPER GROUND WIRE (NO. 6 AWG)
H.I	7-CONDUCTOR ELECTRICAL CABLE (NO. 14 AWG)

SHA TRACKING NO. 12APHA006XX

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

OFFICE OF TRAFFIC & SAFETY
TRAFFIC ENGINEERING DESIGN DIVISION

MD 24 AND PLUMTREE RD
BEL AIR, MD

STATE OF MARYLAND
JOHN LANDON REEVES
No. 25216
PROFESSIONAL ENGINEER
10/5/2016

REVISION 'B' CONSULTANT

WALLACE MONTGOMERY
ENGINEERS·PLANNERS·SURVEYORS·CONSTRUCTION MANAGERS
10150 York Road, Suite 200
Hunt Valley, Maryland 21030
410.494.9093 Tel / 410.667.0925 Fax
www.WallaceMontgomery.com
A Limited Liability Partnership

GENERAL INFORMATION SHEET

SCALE 1" = 20' DATE MARCH 2016 CONTRACT NO. BW-996M82

DESIGNED BY RWE COUNTY HARFORD
DRAWN BY JAW LOGMILE 12024011.87
CHECKED BY JLR T.I.M.S. NO. N 429
F.A.P. NO. N/A TOD NO.

TS NO. 3797B | DRAWING NO. SG - 02 OF 02 | SHEET NO. T-2 OF 2

PLOTTED: Friday, April 22, 2016 AT 02:08 PM
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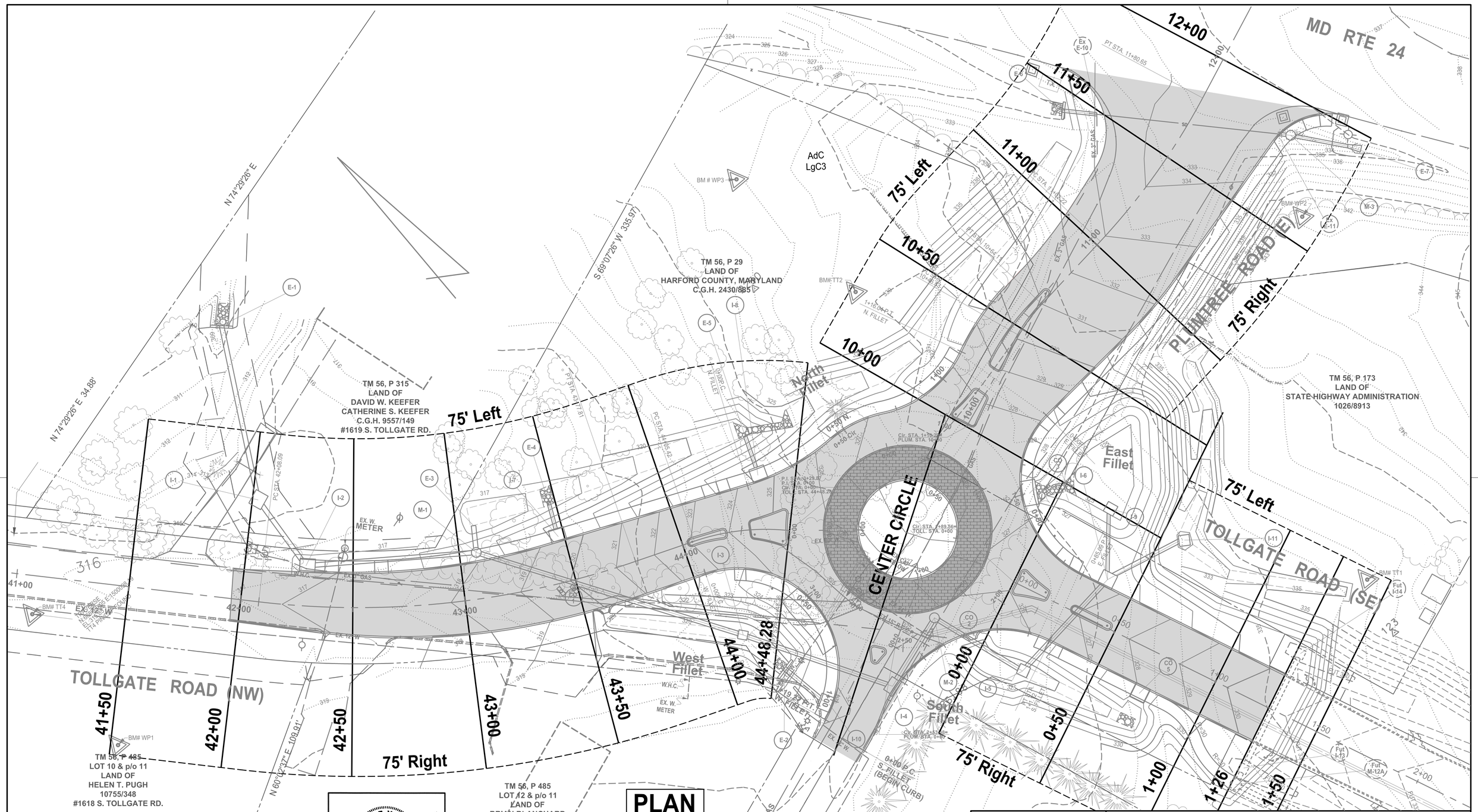
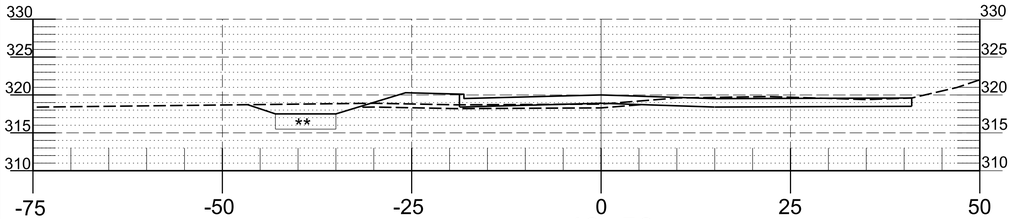

MD RTE 24
12+00
11+50
11+00
10+50
10+00
75' Left
75' Right
PLUMTREE ROAD (E)
TM 56, P 173
LAND OF
STATE HIGHWAY ADMINISTRATION
1026/8913
TM 56, P 29
LAND OF
HARFORD COUNTY, MARYLAND
C.G.H. 2430/885
AdC
LgC3
N 74°29'26" E
N 74°29'26" E 34.88'
S 69°01'26" W 335.97'
TM 56, P 315
LAND OF
DAVID W. KEEFER
CATHERINE S. KEEFER
C.G.H. 9557/149
#1619 S. TOLLGATE RD.
North Fillet
East Fillet
CENTER CIRCLE
West Fillet
South Fillet
TOLLGATE ROAD (NE)
TOLLGATE ROAD (SE)
TOLLGATE ROAD (NW)
PLUMTREE ROAD (W)
41+50
42+00
42+50
43+00
43+50
44+00
44+48.28
0+00
0+50
1+00
1+26
1+50
TM 56, P 485
LOT 10 & p/o 11
LAND OF
HELEN T. PUGH
10755/348
#1618 S. TOLLGATE RD.
N 60°02'37" E 109.91'
N 60°02'37" E 255.51'
TM 56, P 485
LOT 12 & p/o 11
LAND OF
BRIAN BLANCHARD
NICOLE BLANCHARD
H.D.C. 9259/329
#300 PLUMTREE RD.
TM 56, P 166
LAND OF
JACQUELINE PARRIS
2130/491
#301 PUMTREE RD.
TRAVERSE
N 668712.50 E 1500092.35
EL 320.60
T73 PIN/CAP FOUND
TRAVERSE
N 668560.64 E 1500229.29 EL 325.86
G3 PIN/CAP FOUND
BM# WP1
BM# WP2
BM# WP3
BM# TT1
BM# TT2
BM# TT3
BM# TT4
BM# TLG3
EX. W. METER
EX. 3" GAS
EX. 12" W.
PLAN
SCALE : 1"=20'
STATE OF MARYLAND
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 Number 20840
Expiration Date: 5-21-17
Revisions
HARFORD COUNTY, MARYLAND
PLUMTREE AT TOLLGATE ROUNDABOUT
CROSS SECTION PLAN
Drawn By : SRB
Designed By : SRB
Reviewed By :
Contract No :
Scale : AS SHOWN
Sheet 1 Of 3
Date : 11-20-15
ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE: 1 inch
0-1 x-section PLAN.DGN



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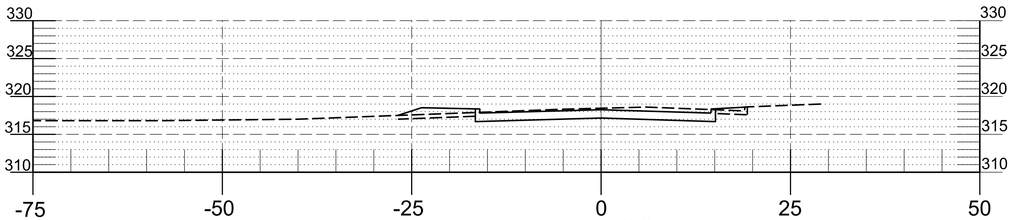

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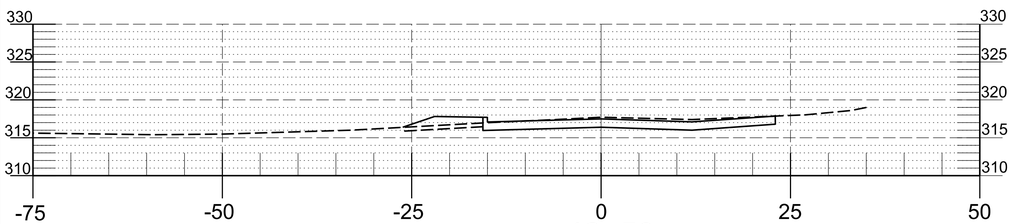

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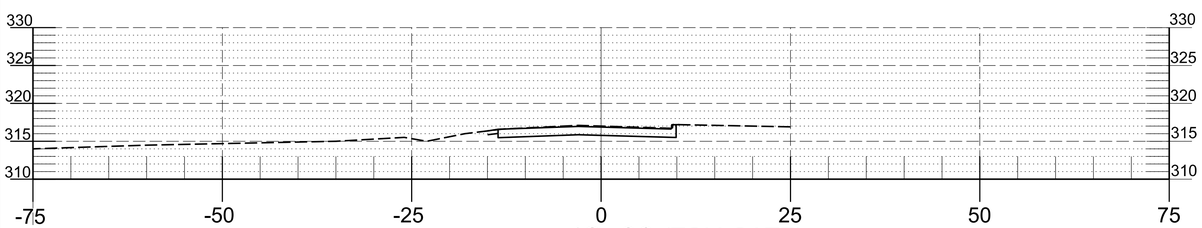

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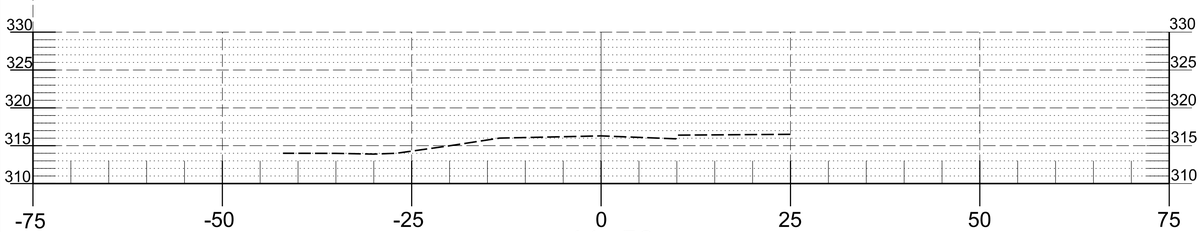

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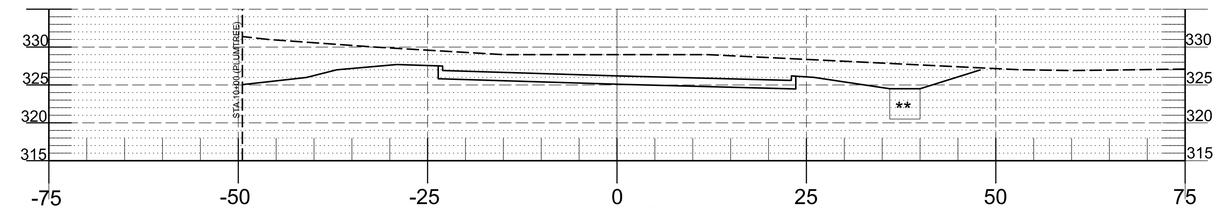

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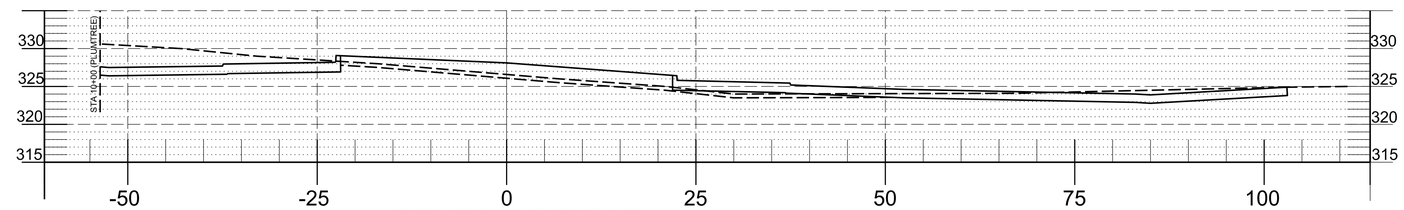
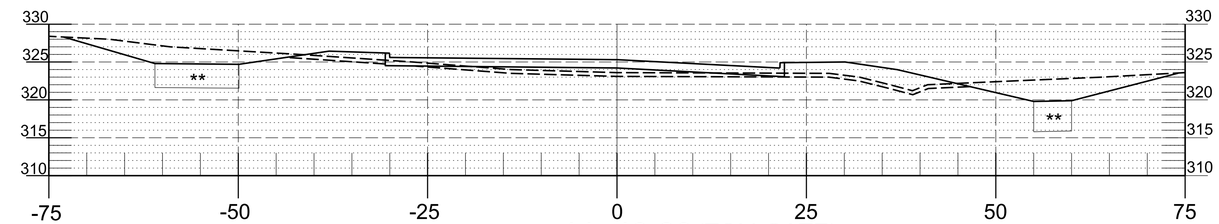


CENTER CIRCLE



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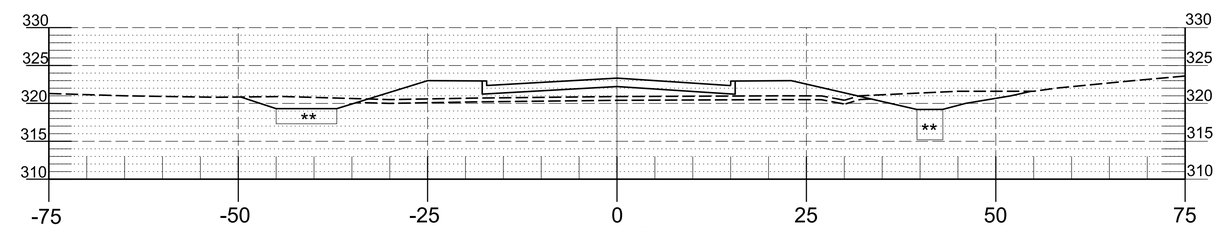


44+00 (TOLLGATE)

** PLANTING SOIL EXCAVATION AND BACKFILL
NOT INCLUDED IN VOLUMES

STATE OF MARYLAND
HENRY W. BRUCKNER
No. 20840
PROFESSIONAL ENGINEER

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 Number 20840
Expiration Date: 5-21-17

Revisions

HARFORD COUNTY, MARYLAND

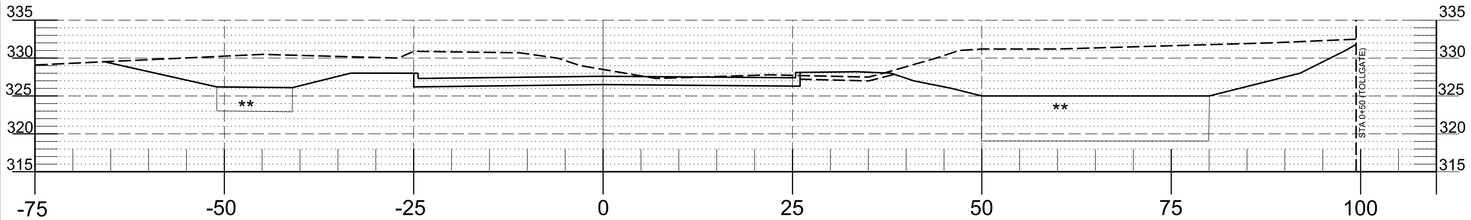
PLUMTREE AT TOLLGATE ROUNDABOUT CROSS SECTIONS

Drawn By : SRB
Designed By : SRB
Reviewed By :

Contract No :
Scale : 1" = 10'
Sheet 2 Of 3
Date : 11-20-15

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE: 1 inch

0-1 x-section PLAN.DGN



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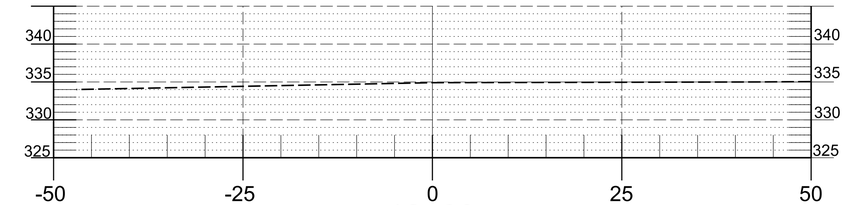

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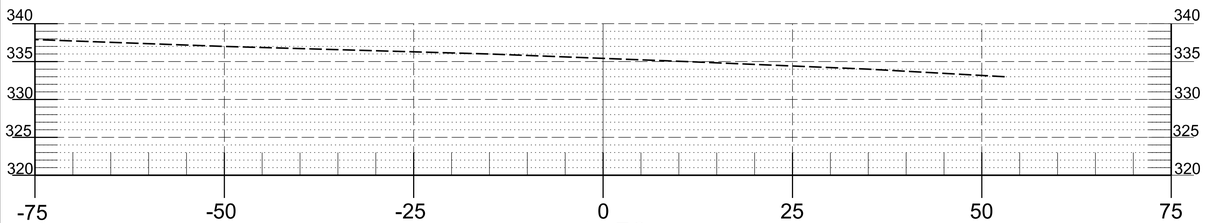

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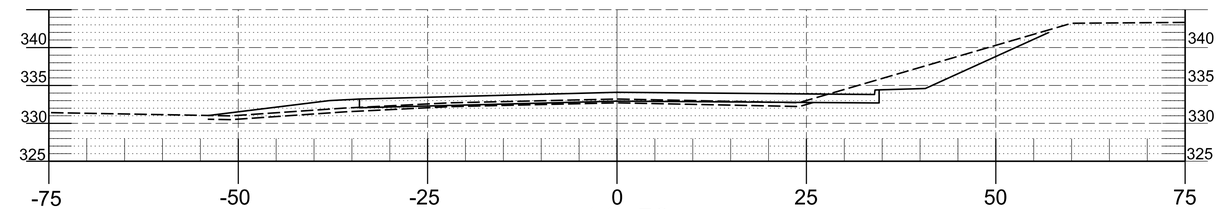

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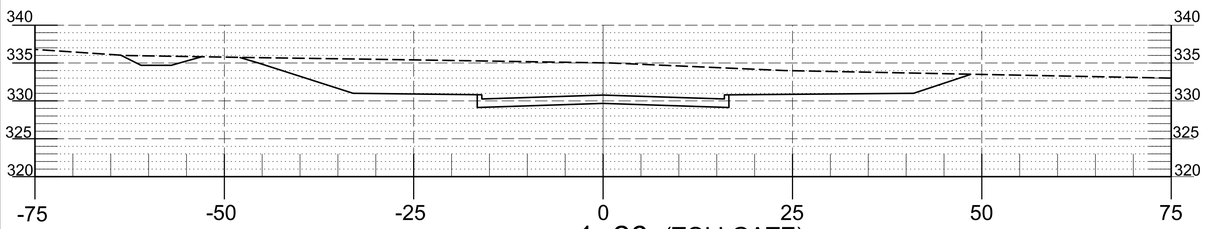

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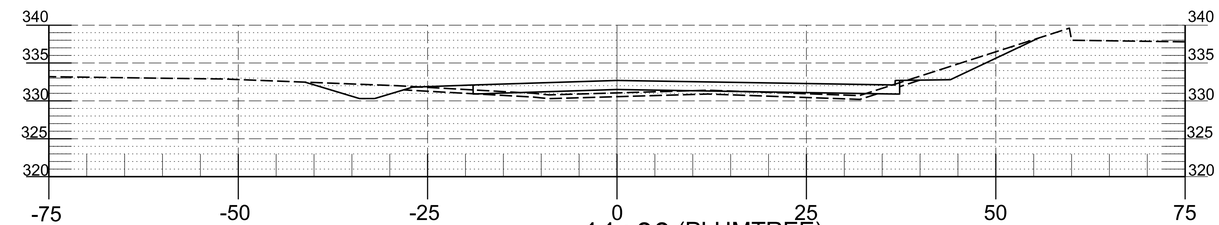

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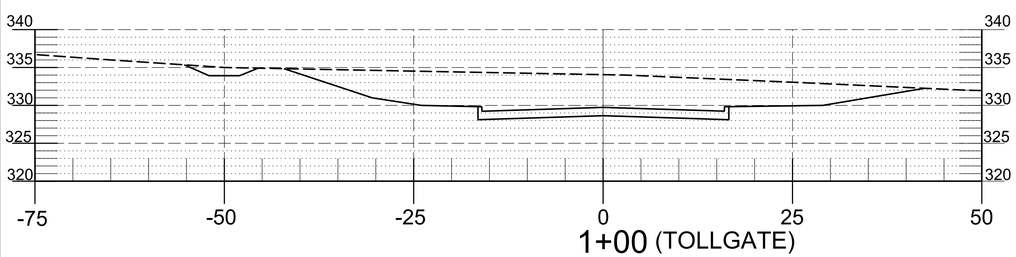

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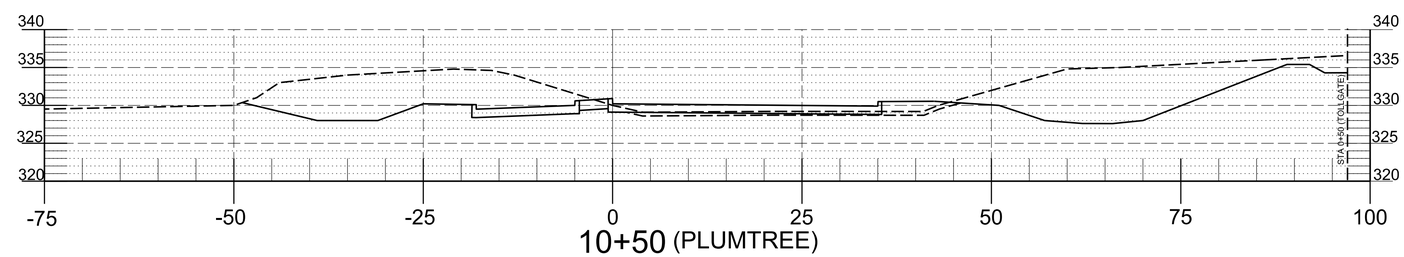

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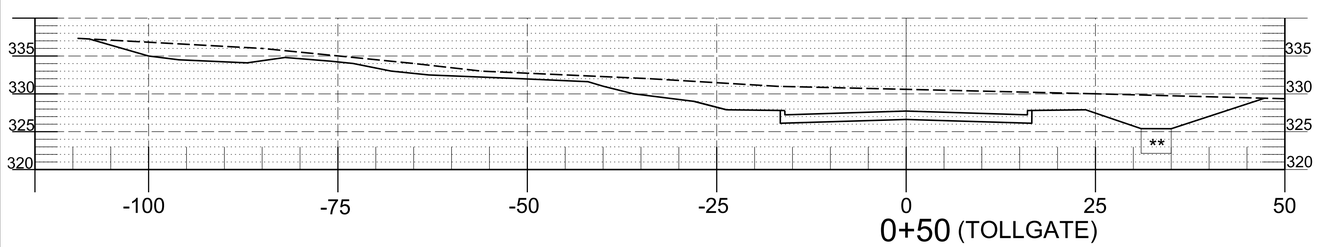

0+50 (TOLLGATE)

** PLANTING SOIL EXCAVATION AND BACKFILL
NOT INCLUDED IN VOLUMES

STATE OF MARYLAND
CYRUS M. SINAI
No. 20840
REGISTERED
PROFESSIONAL ENGINEER

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 Number 20840
Expiration Date: 5-21-17

Revisions

HARFORD COUNTY, MARYLAND

PLUMTREE AT TOLLGATE ROUNDABOUT CROSS SECTIONS

Drawn By : SRB
Designed By : SRB
Reviewed By :

Contract No :
Scale : 1" = 10'
Sheet 3 Of 3
Date : 11-20-15

0-1 x-section PLAN.DGN

ADC MAP :
TAX MAP :
HCG BILLING ID No.:
HCG DWG ID No.: