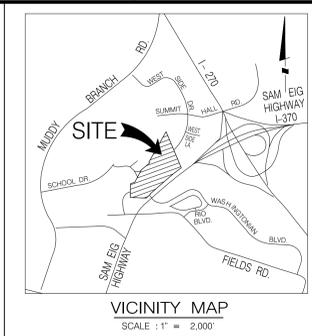


WASHINGTONIAN NORTH PRELIMINARY STORMWATER MANAGEMENT PLAN OFFSITE AND PRIVATE ROADWAY

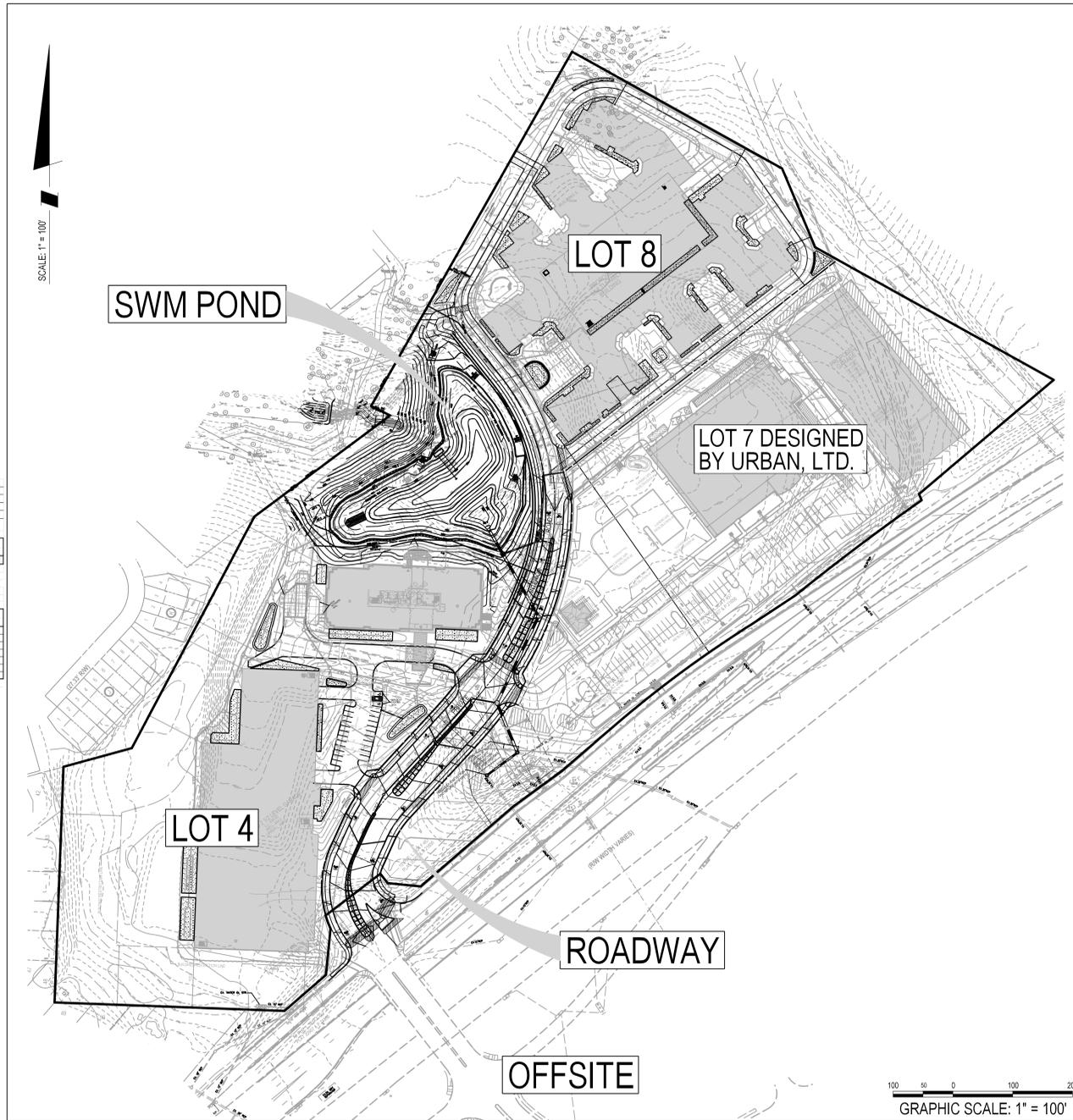


NOTES:
- SOIL TYPES INCLUDE:
16D - BRINKLOW-BLOCKTOWN CHANNERY SILT LOAMS, 15 TO 25 PERCENT SLOPES. (HSG "B")
116D - BLOCKTOWN CHANNERY SILT LOAM, 15 TO 25 PERCENT SLOPES, VERY ROCKY. (HSG "C")
54A - HATBORO SILT LOAM, 0 TO 3 PERCENT SLOPES, FREQUENTLY FLOODED. (HSG "D")
66UB - WHEATON-URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES. (HSG "B")
66UC - WHEATON-URBAN LAND COMPLEX, 8 TO 15 PERCENT SLOPES. (HSG "B")

SEE SWM COMPUTATIONS FOR THE FULL WEB SOIL SURVEY.

- CONSTRUCTION EQUIPMENT SHALL TRY TO AVOID ALL AREAS WHERE ESD FACILITIES ARE PROPOSED. IF SOILS ARE COMPACTED IN THESE AREAS, REHABILITATION MAY NEED TO BE PERFORMED VIA SCARIFICATION OR SIMILAR METHODS, PRIOR TO PLACEMENT OF THE FACILITY.

- ALL STORMWATER MANAGEMENT FACILITIES ARE TO BE DESIGNED IN ACCORDANCE WITH MCDPS LATEST STANDARD SPECIFICATIONS.



SHEET INDEX

1. COVER SHEET
2. STORMWATER MANAGEMENT DRAINAGE AREA MAP
3. PRELIMINARY STORMWATER MANAGEMENT OVERALL PLAN
4. PRELIMINARY STORMWATER MANAGEMENT PLAN
5. PRELIMINARY STORMWATER MANAGEMENT ESD #1 PLAN & PROFILE
6. PRELIMINARY STORMWATER MANAGEMENT ESD #2 PLAN & PROFILES
7. PRELIMINARY STORMWATER MANAGEMENT ESD #3 PLAN & PROFILES
8. PRELIMINARY STORMWATER MANAGEMENT ESD #4 PLAN & PROFILES
9. PRELIMINARY STORMWATER MANAGEMENT ESD #5 PLAN & PROFILES
10. PRELIMINARY STORMWATER MANAGEMENT DETAILS
11. PRELIMINARY STORMWATER MANAGEMENT RISER DETAILS
12. PRELIMINARY STORMWATER MANAGEMENT PROFILES
13. PRELIMINARY STORMWATER RISER STRUCTURAL PLAN
14. PRELIMINARY SWM - CONSTRUCTION SPECS AND STRUCTURAL NOTES
15. PRELIMINARY SWM TYPICAL DETAILS
16. PRELIMINARY SWM STORM DRAIN PROFILES
17. DRAINAGE AREA MAP FOR SEDIMENT CONTROL PLAN
18. PRELIMINARY SEDIMENT CONTROL PLAN FOR SWM POND RESTORATION
19. PRELIMINARY SEDIMENT CONTROL PLAN FOR PRIVATE INTERIOR ROAD
20. PRELIMINARY SEDIMENT CONTROL PLAN FOR THE BORROW AREA
21. PRELIMINARY SEDIMENT CONTROL PLAN BASIN PROFILE
22. SEDIMENT CONTROL DETAILS.
23. SEDIMENT CONTROL DETAILS AND NOTES.
24. PRELIMINARY SEDIMENT CONTROL SEQUENCE OF CONSTRUCTION.

Ultimate ESD Summary Table																
ESD Facility	Drainage Area sq. ft.	Imp. D.A. sq. ft.	% of Imp. Cover	A Soil	B Soil	C Soil	D Soil	Target PE (in.) Table 3.2	Provided PE (in.)	Rv	Target ESDv cu. ft.	Provided ESDv cu. ft.	Excess ESDv cu. ft.	Reduced RCN	Type of Facility	Remarks
LOD	75,118	47,519	63%	0%	88%	7%	0%	2.0	2.2	0.62	7,707	8,719	1,012	87	See ESD Practices Below	Site Compliance
Total Site Target Composite RCN for "Woods in Good Condition" = 87 Total Site Reduced Composite RCN for "Woods in Good Condition" = 87																

RELATED REQUIRED PERMITS

IT IS THE RESPONSIBILITY OF PERMITTEE/OWNER OF THIS SITE TO OBTAIN ALL REQUIRED PERMITS PRIOR TO ISSUANCE OF THE APPROVED SEDIMENT CONTROL PERMIT

TYPE OF PERMIT	REQ'D	NOT REQ'D	PERMIT NO.	EXPIRATION DATE	WORK RESTRICTION DATES
MDE WATERWAY		X			
MDE DAM SAFETY		X			
M.C.D.P.S. FLOODPLAIN RESTRICT CORP. OF ENGINEERS (WETLANDS)		X			
CO. CORPS OF ENGINEERS		X			
CO. M.D.E. NONFIDUCIARY		X			
CO. M.D.E. WATER QUALITY CERT		X			
OTHERS (PLEASE LIST)					

MAINTENANCE CERTIFICATION ON PRIVATE LANDS

I/WE HEREBY CERTIFY THAT I/WE ASSUME MAINTENANCE RESPONSIBILITIES FOR ALL STORMWATER MANAGEMENT STRUCTURES SHOWN HEREON. IF MAINTENANCE RESPONSIBILITY IS LEGALLY TRANSFERRED, I/WE AGREE TO SUPPLY THE CITY OF GAITHERSBURG WITH A COPY OF THE DOCUMENT (S) DONE BY BOTH PARTIES, TRANSFERRING SAID MAINTENANCE RESPONSIBILITY AT THAT TIME.

OWNER/DEVELOPER _____ DATE _____
PRINTED NAME _____ TITLE _____

CERTIFICATION OF THE QUANTITIES

I HEREBY CERTIFY THAT THE ESTIMATED TOTAL AMOUNT OF EXCAVATION AND FILL AS SHOWN ON THESE PLANS HAS BEEN COMPUTED TO BE XXXXXX CUBIC YARDS OF EXCAVATION AND XXXXXX CUBIC YARDS OF FILL AND THE TOTAL AREA TO BE DISTURBED AS SHOWN ON THESE PLANS HAS BEEN DETERMINED TO BE XXXXXX SQ. FT.

SIGNATURE _____ DATE _____
PRINTED NAME AND TITLE _____ REGISTRATION NUMBER _____

DESIGN CERTIFICATION AND QUANTITIES

I HEREBY CERTIFY THAT TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, INFORMATION BELIEF, THAT THIS PLAN HAS BEEN PREPARED WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, CITY OF GAITHERSBURG CHAPTER 8 AND MONTGOMERY COUNTY DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION "STORM DRAIN DESIGN CRITERIA" DATED AUGUST 1988.

SIGNATURE _____ DATE _____
PRINTED NAME AND TITLE _____ REGISTRATION NUMBER _____

OWNER/ DEVELOPER'S CERTIFICATE

I HEREBY CERTIFY THAT ALL CLEARING, GRADING, CONSTRUCTION AND/OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A STATE OF MARYLAND DEPARTMENT OF NATURAL RESOURCES APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION, BEFORE BEGINNING THE PROJECT.

SIGNATURE _____ DATE _____
PRINTED NAME AND TITLE _____ REGISTRATION NUMBER _____

THIS PLAN IS FOR THE MAINTENANCE AND CONSTRUCTION OF SEDIMENT CONTROL AND STORMWATER MANAGEMENT MEASURES ONLY.

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
LICENSE NO. 36060 EXPIRATION DATE: 06/26/2014

CITY OF GAITHERSBURG DEPARTMENT OF PUBLIC WORKS
STORMWATER MANAGEMENT
APPLICATION NO. SWM-3880-2013
CONCEPT PLAN PRELIMINARY PLAN
APPROVAL DATE _____ BY _____

CITY OF GAITHERSBURG DEPARTMENT OF PUBLIC WORKS
SEDIMENT EROSION CONTROL
APPLICATION NO. SEC-3882-2013
CONCEPT PLAN PRELIMINARY PLAN
APPROVAL DATE _____ BY _____

COVER SHEET

PRELIMINARY STORMWATER MANAGEMENT PLAN
WASHINGTONIAN NORTH
OUTLOT B AND PRIVATE ROAD, BLOCK D
WASHINGTONIAN CENTER
PLAT 21856
GAITHERSBURG (9th) ELECTION DISTRICT, MONTGOMERY COUNTY, MARYLAND

SHEET 1 OF 24
PROJECT NO. 1184-00-01
SLSAPLOT/COMMENTS

SOLTESZ
Rockville
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Rockville, MD 20850
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DATE: MARCH, 2013
DESIGNED: YMT
CAD STANDARD VERSION: V8 - 2009
TECHNICIAN: YMT
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MISS UTILITY NOTE
INFORMATION CONCERNING EXISTING UNDERGROUND UTILITIES WAS OBTAINED FROM AVAILABLE RECORDS. THE CONTRACTOR MUST DETERMINE THE EXACT LOCATION AND ELEVATION OF ALL EXISTING UTILITIES AND UTILITIES OR CROSSINGS BY EXCAVATION TEST PITS BY HAND, WELL IN ADVANCE OF THE START OF EXCAVATION. CONTACT "MISS UTILITY" AT 1-800-477-7777 48 HOURS PRIOR TO THE START OF EXCAVATION. IF CLEARANCES ARE LESS THAN SHOWN ON THIS PLAN OR TWELVE (12) INCHES, WHOEVER IS LESS, CONTACT THE ENGINEER AND THE UTILITY COMPANY BEFORE PROCEEDING WITH CONSTRUCTION. CLEARANCES LESS THAN NOTED MAY REQUIRE REVISIONS TO THIS PLAN.

OWNER/DEVELOPER/APPLICANT
WASHINGTONIAN NORTH ASSOCIATES, LP
C/O BOSTON PROPERTIES
2200 PENNSYLVANIA AVENUE NW, SUITE 200W
WASHINGTON, DC 20037
PHONE # (202) 585-0647
CONTACT: MR. JAKE STROMAN

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MAP: 5163 GRID: GH 1&2

TAX MAP	FS 342 & 343	ZONING CATEGORY:	MXD
WBCS 2007 SHEET	221NW 10		
	2220W 10		
SITE DATUM			
HORIZONTAL:	NAD 83		
VERTICAL:	NAD 83		



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- ESD #1 (PLANTER BOX)
MICRO BIORETENTION
DRAINAGE AREA = 17,598 sq.ft.
IMP. AREA = 13,794 sq.ft.
- ESD #2 (PLANTER BOX)
MICRO BIORETENTION
DRAINAGE AREA = 14,903 sq.ft.
IMP. AREA = 11,677 sq.ft.
- ESD #3 (PLANTER BOX)
ENHANCED MICRO BIORETENTION
DRAINAGE AREA = 7,554 sq.ft.
IMP. AREA = 6,113 sq.ft.
- ESD #4 (PLANTER BOX)
ENHANCED MICRO BIORETENTION
DRAINAGE AREA = 16,862 sq.ft.
IMP. AREA = 13,136 sq.ft.
- ESD #5 (PLANTER BOX)
ENHANCED MICRO BIORETENTION
DRAINAGE AREA = 9,408 sq.ft.
IMP. AREA = 4,624 sq.ft.

CITY OF GAITHERSBURG DEPARTMENT OF PUBLIC WORKS STORMWATER MANAGEMENT APPLICATION NO. SWM-3880-2013 CONCEPT PLAN <input type="checkbox"/> PRELIMINARY PLAN <input checked="" type="checkbox"/> APPROVAL DATE: _____ BY: _____	CITY OF GAITHERSBURG DEPARTMENT OF PUBLIC WORKS SEDIMENT EROSION CONTROL APPLICATION NO. SEC-3882-2013 CONCEPT PLAN <input type="checkbox"/> PRELIMINARY PLAN <input checked="" type="checkbox"/> APPROVAL DATE: _____ BY: _____
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 AND STORMWATER MANAGEMENT
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 LICENSE NO. 36060 EXPIRATION DATE: 06/26/2014



STORMWATER MANAGEMENT DRAINAGE AREA MAP

PRELIMINARY STORMWATER MANAGEMENT PLAN
WASHINGTONIAN NORTH
 OUTLOT B AND PRIVATE ROAD, BLOCK D
 WASHINGTONIAN CENTER
 PLAT 21856
 GAITHERSBURG (99) ELECTION DISTRICT, MONTGOMERY COUNTY, MARYLAND



SHEET **2**
 OF **24**
 PROJECT NO.
 1184-00-01
 SLSAPLOT001MS

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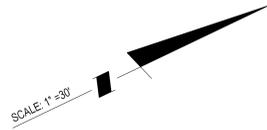
DATE: MARCH, 2013
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 CAD STANDARD VERSION: V8 - 2009
 TECHNICIAN: YMT
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MISS UTILITY NOTE
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 WAS OBTAINED FROM AVAILABLE RECORDS. THE CONTRACTOR
 MUST DETERMINE THE EXACT LOCATION AND ELEVATION OF ALL
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 PITS BY HAND, WELL IN ADVANCE OF THE START OF EXCAVATION.
 CONTACT "MISS UTILITY" AT 1-800-277-48 HOURS PRIOR TO
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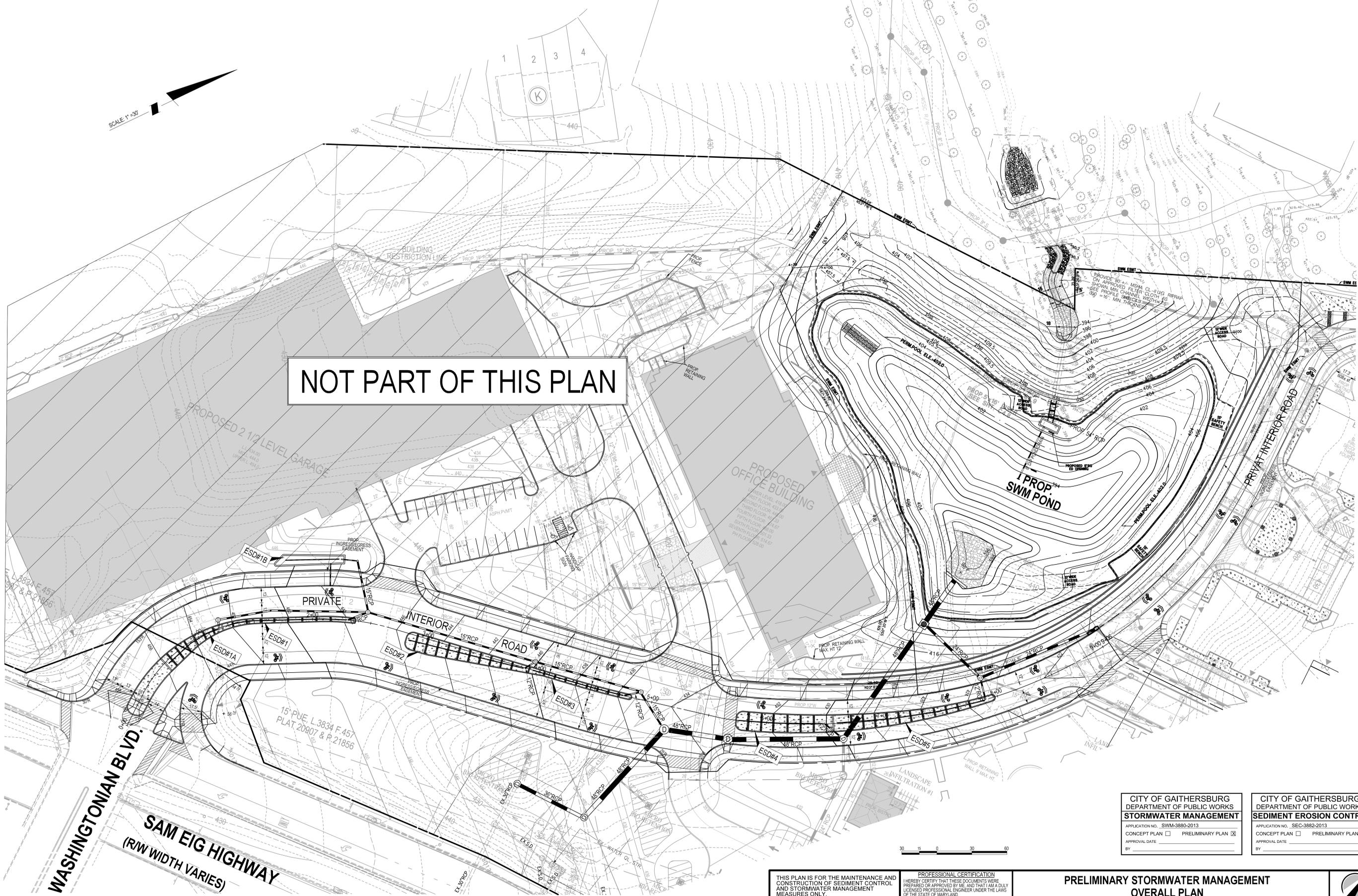
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 C/O BOSTON PROPERTIES
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WSBC 200 SHEET: 221NW 10	
2220W 10	
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VERTICAL: NAD 83	

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 LICENSE NO. 36060 EXPIRATION DATE: 06/26/2014

PRELIMINARY STORMWATER MANAGEMENT OVERALL PLAN

PRELIMINARY STORMWATER MANAGEMENT PLAN
WASHINGTON NORTH
 OUTLOT D AND PRIVATE ROAD, BLOCK D
 WASHINGTONIAN CENTER
 PLAT 21856
GAITHERSBURG (9th) ELECTION DISTRICT, MONTGOMERY COUNTY, MARYLAND



SHEET **3**
 OF **24**
 PROJECT NO. 1184-00-01
SLAPLOT001METS

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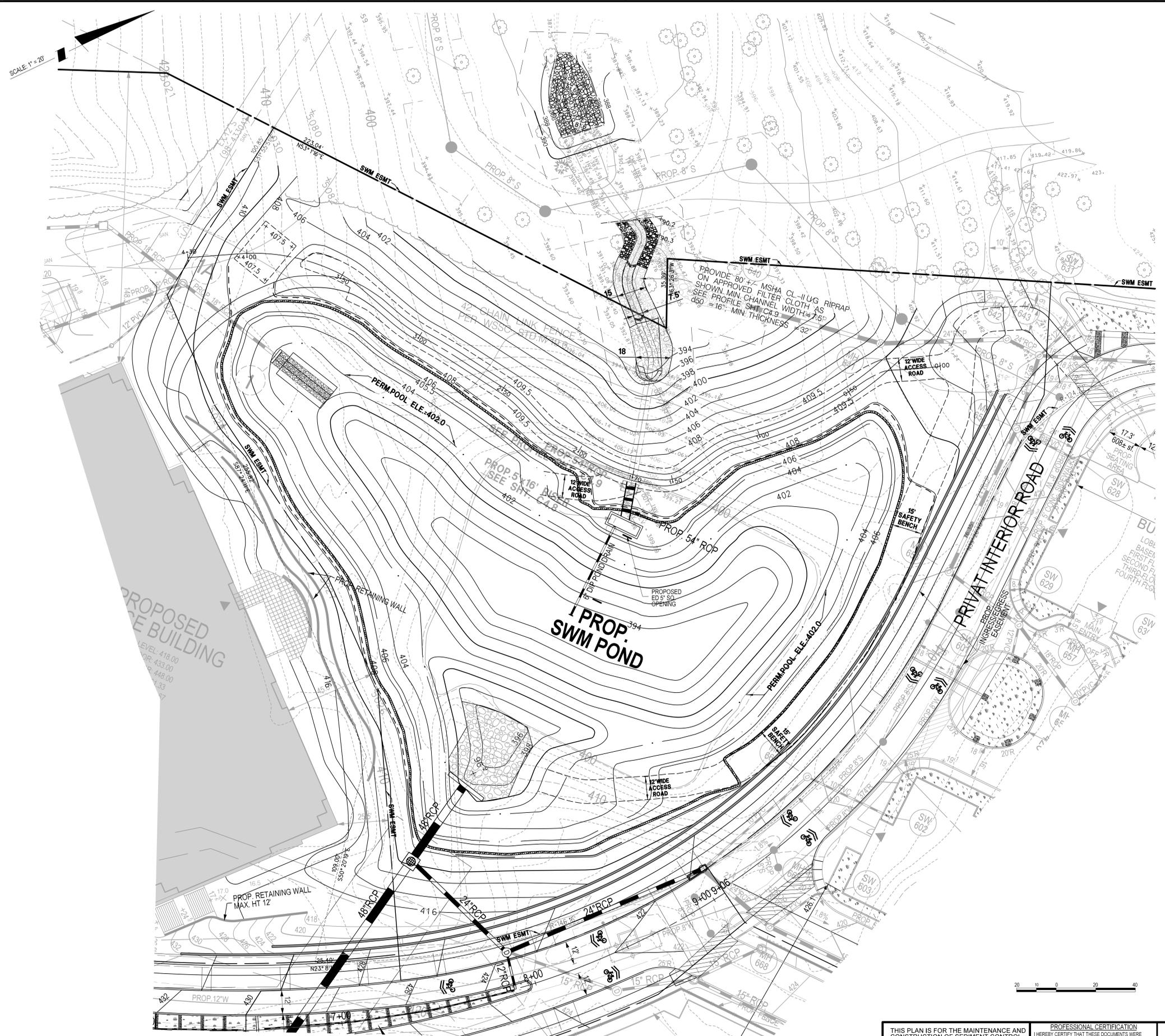
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 C/O BOSTON PROPERTIES
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 WASHINGTON, DC 20037
 PHONE # (202) 585-0647
 CONTACT: MR. JAKE STROMAN

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FS 342 & 343 WBC 200 SHEET 221NW 10 222NW 10	ZONING CATEGORY: MXD
SITE DATUM: HORIZONTAL: NAD 83 VERTICAL: NAD 83	



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SCALE: 1" = 20'



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 LICENSE NO. 36060 EXPIRATION DATE: 06/26/2014

PRELIMINARY STORMWATER MANAGEMENT PLAN

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WBCS 200 SHEET: 221NW 10	2220W 10
SITE DATUM: HORIZONTAL: NAD 83	VERTICAL: NAD 83



PRELIMINARY STORMWATER MANAGEMENT PLAN

WASHINGTONIAN NORTH
 OUTLOT D AND PRIVATE ROAD, BLOCK D
 WASHINGTONIAN CENTER
 PLAT 21856

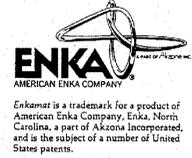
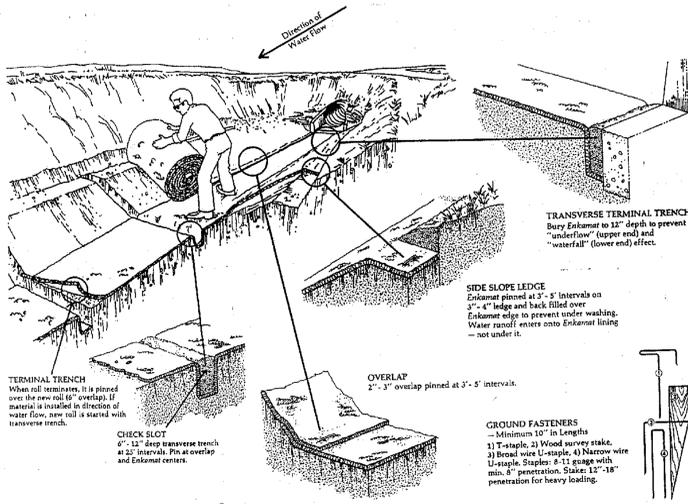
GAITHERSBURG (9th) ELECTION DISTRICT, MONTGOMERY COUNTY, MARYLAND

SHEET	4
OF	24
PROJECT NO.	1184-00-01

SLSAPLOT01MENTS

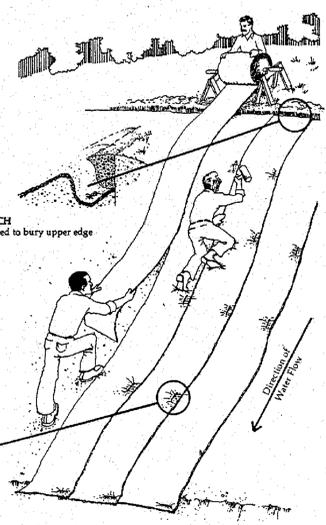
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- DITCH LINING** - Typical 8" ditch (Three widths of Enkamet with 3" overlap)
1. Cut 4" longitudinal shelves full length of the ditch for ditch liner edges to rest on.
 2. Starting at upper end, roll out center strip of Enkamet along center line of ditch. Lay Enkamet peaked side down. Pin into entry trench. Snag mat down into check slots and pin. Pin at terminal trench.
 3. Repeat with side strips, overlapping center strip by 3" and laying it up the slope onto longitudinal ledge.
 4. Pin overlaps and edges of Enkamet at 3'-5" intervals along length of ditch. Pin every 3'-5" in the remainder of the mat.
 5. Back fill over Enkamet edges to prevent upper slope water run off from undercutting.
 6. Back fill check slots and both entry and terminal trenches. Tamp soil down into these slots and trenches.
 7. Distribute seed.

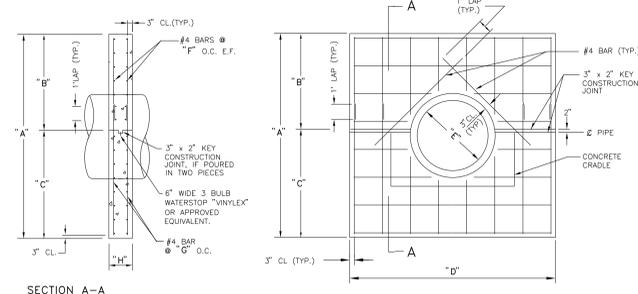


SLOPE INSTALLATION

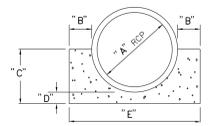
1. Adjacent strips are installed snugly with 2"-3" overlap and pinned at 3'-5" intervals. Install Enkamet peaked side down.
2. Pin Enkamet into 12" deep trenches around the entire perimeter and cover with soil.
3. Distribute seed.



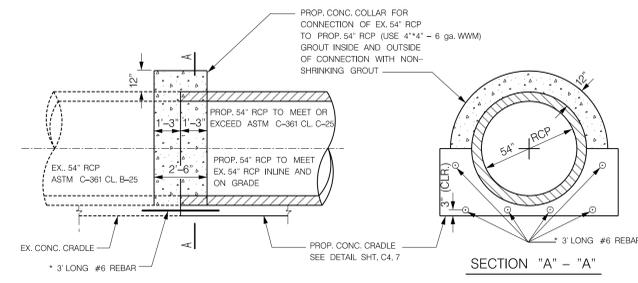
LOCATION	A	B	C	D	E	F	G	H	# OF COLLARS	REMARKS
54" BARREL	11'-6"	5'-4"	6'-2"	14'-0"	5'-4"	12"	11'-3"	1'-0"	1	
AS-BUILT										
AS-BUILT										
AS-BUILT										



LOCATION	A	B	C	D	E	NOTE
54" BARREL	5'-4"	1'-6"	3'-2 1/2"	6"	8'-5"	
AS-BUILT						
AS-BUILT						
AS-BUILT						

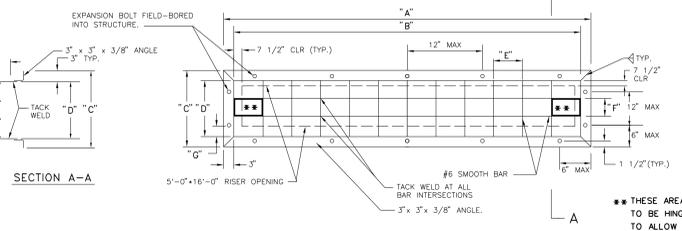
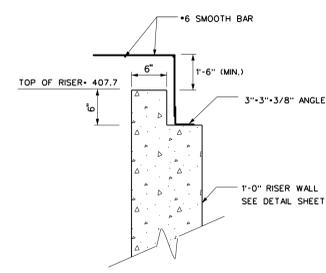


- NOTES**
1. POUR CONCRETE AGAINST UNDISTURBED EARTH.
 2. CONCRETE SHALL BE M.S.H.A. MIX NO. 3 (F_c=3,500 PSI)
 3. BARREL MAY BE PLACED ON PRECAST CONCRETE BLOCKS PRIOR TO CRADLE POUR.
 4. POURING AN ADDITIONAL 4" TO 6" THICK "MUDMATT" MAY BE ACCEPTABLE IF SUBGRADE IS WET AND WITH APPROVAL OF GEOTECHNICAL ENGINEER.
 5. IF ALL OF CONCRETE CRADLE CANNOT BE POURED AT ONE TIME, ONE VERTICAL JOINT IS ALLOWED. PLACE A MINIMUM OF THREE(3) - 6" LONG #6 REBAR DOWELS TO CONNECT JOINTS.
 6. IF A CRADLE VERTICAL JOINT IS USED, DO NOT LOCATE WITHIN 2' OF PIPE JOINT.

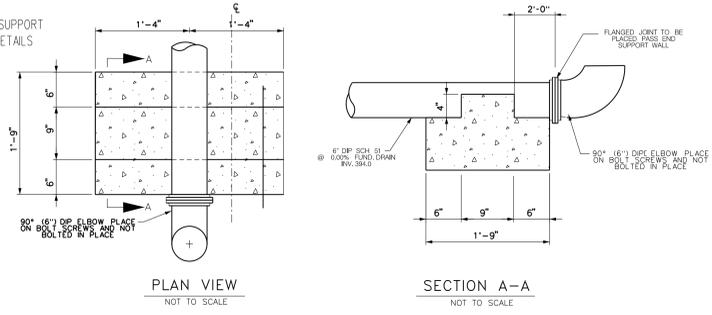


LOCATION OF TRASH RACK	QTY. RORD	A	B	C	D	E	F	G	NOTES
RISER FRONT	1	17'-9"	17'-3"	6'-9"	6'-3"	8"	7'-6"	7'-6"	ALL AROUND
AS-BUILT									
RISER SIDE									
AS-BUILT									
AS-BUILT									

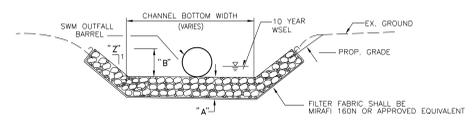
- NOTES**
1. TRASH RACK TO BE HOT-DIPPED GALVANIZED AFTER ASSEMBLY AND PRIOR TO INSTALLATION.
 2. VERTICAL BARS TO BE PLACED ON OUTSIDE OF HORIZONTAL BARS.
 3. TRASH RACK TO BE LAGGED TO THE TOP OF THE CONTROL STRUCTURE WITH 1/2"-3" LAG BOLDS AND LEAD SHIELDS.
 4. ALL TOUCH UP OF GALVANIZED SURFACE TO BE DONE WITH 2 COATS OF Z.R.C. COLD GALVANIZING COMPOUND.



SEE MSHA STD. NO. MD-350.01 END SUPPORT WALL FOR DISPOSITION OF BAR DETAILS



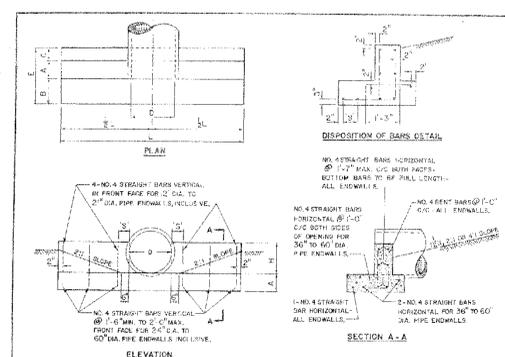
LOCATION OF OUTFALL BARREL DIAMETER	MSHA RFP CLASS	Q ₅₀	Q _{MAX}	TH _{1/4"}	SIDE SLOPE 1/2"	CHANNEL WIDTH @ BARREL	CHANNEL WIDTH @ APRON END	CHANNEL LENGTH	10 YR D (CFS)	10 YR VEL @ APRON END (FPS)	NOTES			
P1	48"	CL-1	9.5"	12"	24"	2.6'	3	7'-0"	23'-0"	26'-0"	N/A	67.1	1.7	X
AS BUILT														
11	21"	CL-1	9.5"	12"	24"	1.5'	3	3'-6"	13'-0"	19'-0"	N/A	14.6	1.2	X
AS BUILT														
36	27"	CL-1	9.5"	12"	24"	1.75'	3	4'-6"	15'-0"	20'-0"	N/A	21.8	1.3	X
AS BUILT														
SM-1	54"	CL-1	16"	24"	32"	1.75'	3	7'-6"	18'-0"	55'-7"	1.71	133.0	6.2	X
AS BUILT														



8"	0.349	9"	14"	6"	2'-5"	1'-1"	2'-9"	11'-6"	1.56	80
----	-------	----	-----	----	-------	-------	-------	--------	------	----

• INV. 1'-0" ABOVE FLOOR OF THE STRUCTURE

STR. SM-3



QUANTITIES FOR ESTIMATING PURPOSES ONLY

OPENING	QTY	DIMENSIONS	QTY	REMARKS
12	0.79	12' x 12'	0.79	4" FOR 12" DIA. TO 21" DIA. PIPES INCLUDING 4" FOR 2 1/2" DIA. TO 36" DIA. PIPES INCLUDING 8" FOR 48" DIA. TO 60" DIA. PIPES INCLUDING.
18	1.79	18' x 18'	1.79	
24	3.14	24' x 24'	3.14	
30	4.71	30' x 30'	4.71	
36	6.28	36' x 36'	6.28	
42	7.85	42' x 42'	7.85	
48	9.42	48' x 48'	9.42	
54	10.99	54' x 54'	10.99	
60	12.56	60' x 60'	12.56	

APPROVAL

Maryland Department of Transportation
 STATE HIGHWAY ADMINISTRATION
 STANDARD END SUPPORT WALL
 METAL OR CONCRETE ROUND PIPE
 STANDARD NO. MD-350.01

THIS PLAN IS FOR THE MAINTENANCE AND CONSTRUCTION OF SEDIMENT CONTROL AND STORMWATER MANAGEMENT MEASURES ONLY.

PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
 LICENSE NO. 36060 EXPIRATION DATE: 06/26/2014

CITY OF GAITHERSBURG
 DEPARTMENT OF PUBLIC WORKS
 STORMWATER MANAGEMENT

APPLICATION NO. SWM-3880-2013
 CONCEPT PLAN PRELIMINARY PLAN

CITY OF GAITHERSBURG
 DEPARTMENT OF PUBLIC WORKS
 SEDIMENT EROSION CONTROL

APPLICATION NO. SEC-3882-2013
 CONCEPT PLAN PRELIMINARY PLAN

PRELIMINARY STORMWATER MANAGEMENT DETAILS

PRELIMINARY STORMWATER MANAGEMENT PLAN
WASHINGTONIAN NORTH
 OUTLOT B AND PRIVATE ROAD, BLOCK D
 WASHINGTONIAN CENTER
 PLAT 21856

GAITHERSBURG (9th) ELECTION DISTRICT, MONTGOMERY COUNTY, MARYLAND

SOLTESZ

Rockville
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 Leonardtown

Rockville Office
 2 Research Place, Suite 100
 Rockville, MD 20850
 P. 301.948.2750 F. 301.948.9067

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NO.	DESCRIPTION	DATE	REVISIONS
1	DESCRIPTION	MARCH, 2013	XXX XXXXXX

DESIGNED: YMT
 CHECKED: AXQ

MISS UTILITY NOTE

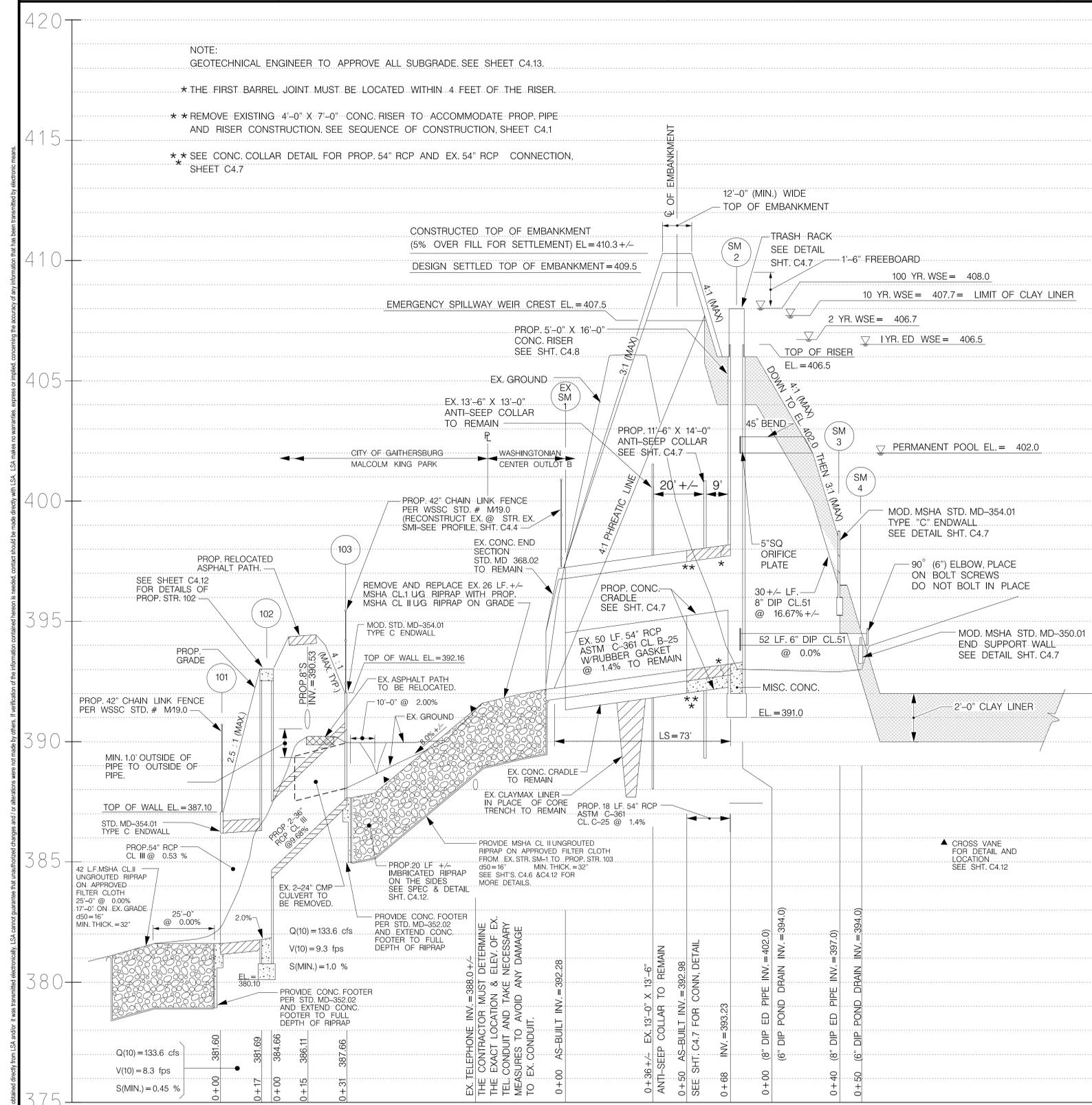
INFORMATION CONCERNING EXISTING UNDERGROUND UTILITIES WAS OBTAINED FROM AVAILABLE RECORDS. THE CONTRACTOR MUST DETERMINE THE EXACT LOCATION AND ELEVATION OF ALL EXISTING UTILITIES AND UTILITIES CROSSINGS BY DIGGING TEST PITS BY HAND, WELL IN ADVANCE OF THE START OF EXCAVATION. CONTACT MISS UTILITY AT 1-800-277-7777. 48 HOURS PRIOR TO THE START OF EXCAVATION. IF CLEARANCES ARE LESS THAN SHOWN ON THE PLAN OR TWELVE (12) INCHES, WHOEVER IS LESS, CONTACT THE ENGINEER AND THE UTILITY COMPANY BEFORE PROCEEDING WITH CONSTRUCTION. CLEARANCES LESS THAN NOTED MAY REQUIRE REVISIONS TO THIS PLAN.

OWNER/DEVELOPER/APPLICANT

WASHINGTONIAN NORTH ASSOCIATES, LP
 CO BOSTON PROPERTIES
 2200 PENNSYLVANIA AVENUE NW, SUITE 200W
 WASHINGTON, DC 20037
 PHONE # (202) 585-0047
 CONTACT: MR. JAKE STROMAN

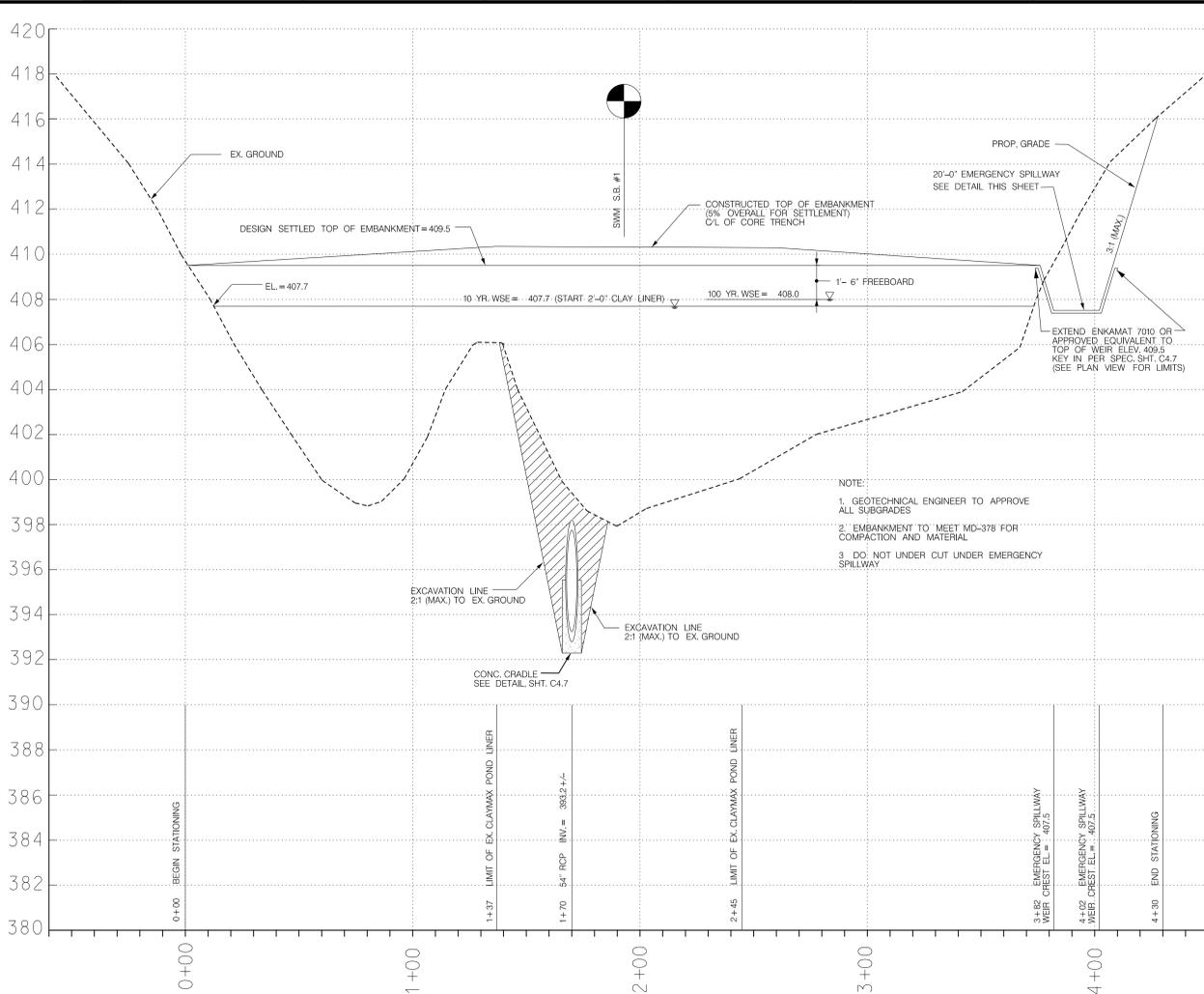
MAP: FS 342 & 343
 ZONING CATEGORY: MXD
 SHEET NO: 2211W 10
 DATE: 2/22/2013
 HORIZONTAL: NAD 83
 VERTICAL: NAD 83





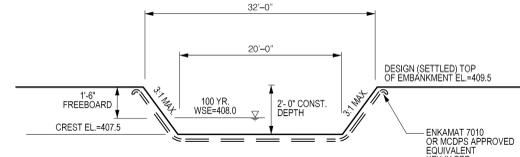
PROFILE THROUGH CL OF PRINCIPAL SPILLWAY

SCALE: 1" = 2'-0" VERT.
1" = 20'-0" HORIZ.



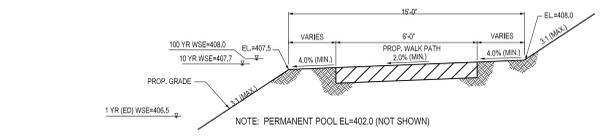
PROFILE THROUGH CL OF EMBANKMENT LOOKING UPSTREAM

SCALE: 1" = 3'-0" VERT.
1" = 30'-0" HORIZ.



TYPICAL SECTION THRU EMERGENCY SPILLWAY

NOT TO SCALE



TYPICAL WALK PATH / SAFETY BENCH GRADING ON WEST SIDE OF SWM

NOT TO SCALE

<p>CITY OF GAITHERSBURG DEPARTMENT OF PUBLIC WORKS STORMWATER MANAGEMENT</p> <p>APPLICATION NO. SWM-3880-2013 CONCEPT PLAN <input type="checkbox"/> PRELIMINARY PLAN <input checked="" type="checkbox"/></p> <p>APPROVAL DATE _____ BY _____</p>	<p>CITY OF GAITHERSBURG DEPARTMENT OF PUBLIC WORKS SEDIMENT EROSION CONTROL</p> <p>APPLICATION NO. SEC-3882-2013 CONCEPT PLAN <input type="checkbox"/> PRELIMINARY PLAN <input checked="" type="checkbox"/></p> <p>APPROVAL DATE _____ BY _____</p>
--	---

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LICENSE NO. 36060 EXPIRATION DATE: 06/26/2014



PRELIMINARY STORMWATER MANAGEMENT PROFILES

PRELIMINARY STORMWATER MANAGEMENT PLAN
WASHINGTONIAN NORTH
OUTLOT D AND PRIVATE ROAD, BLOCK D
WASHINGTONIAN CENTER
PLAT 21856
GAITHERSBURG (9th) ELECTION DISTRICT, MONTGOMERY COUNTY, MARYLAND

SHEET	12
OF	24
PROJECT NO.	1184-00-01

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P. 301.948.2750 F. 301.948.9067

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NO.	DESCRIPTION	REVISIONS	DATE	BY	DATE
1				XXX	XXXXXX

DATE: MARCH, 2013
DESIGNED: YMT
CAD STANDARDS VERSION: V8 - 2009
TECHNICIAN: YMT
CHECKED: AXQ

MISS UTILITY NOTE
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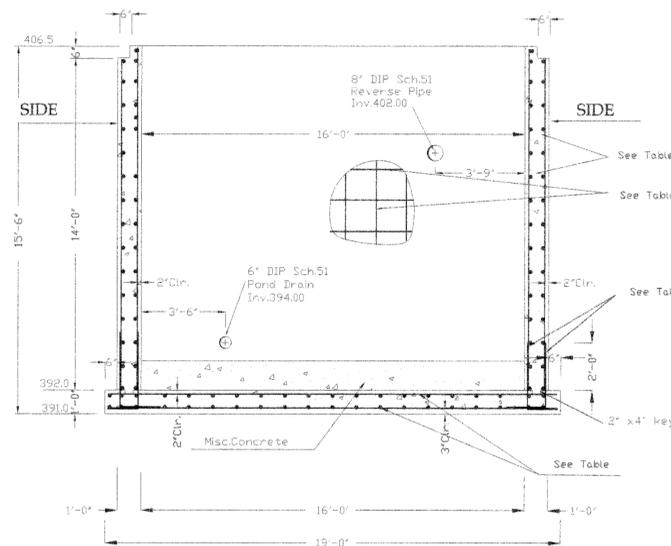
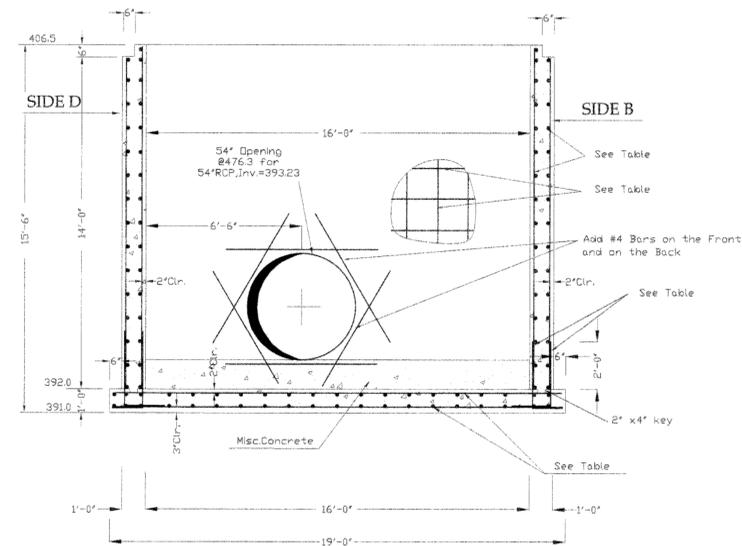
OWNER/DEVELOPER/APPLICANT
WASHINGTONIAN NORTH ASSOCIATES, LP
C/O BOSTON PROPERTIES
2200 PENNSYLVANIA AVENUE NW, SUITE 200W
WASHINGTON, DC 20037
PHONE # (202) 585-0647
CONTACT: MR. JAKE STROMAN

COPYRIGHT AND THE MAP PEOPLE PERMITTED USE NUMBER 2101200	TAX MAP	GRID	GH 1&2
FS 342 & 343	ZONING CATEGORY:	MXD	
WSSC 200' SHEET	221NW 10	222W 10	
SITE DATUM:	HORIZONTAL: NAD 83		
	VERTICAL: NAD 83		

STRUCTURAL DESIGN OF RISER STRUCTURE

STRUCTURAL NOTES

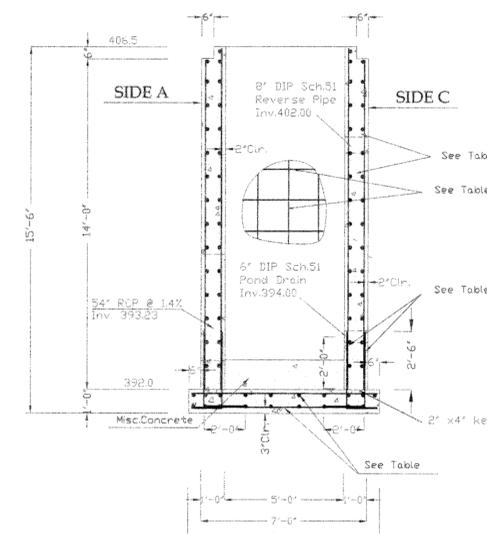
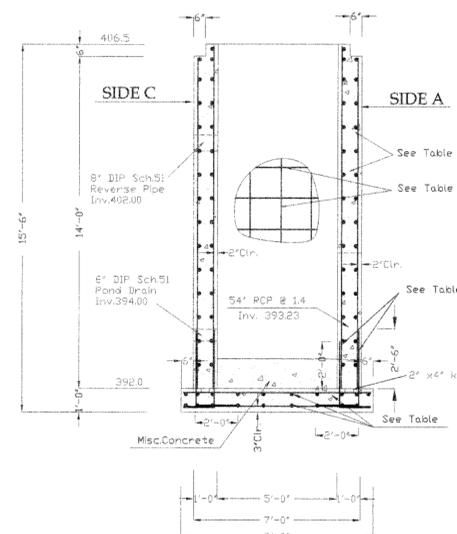
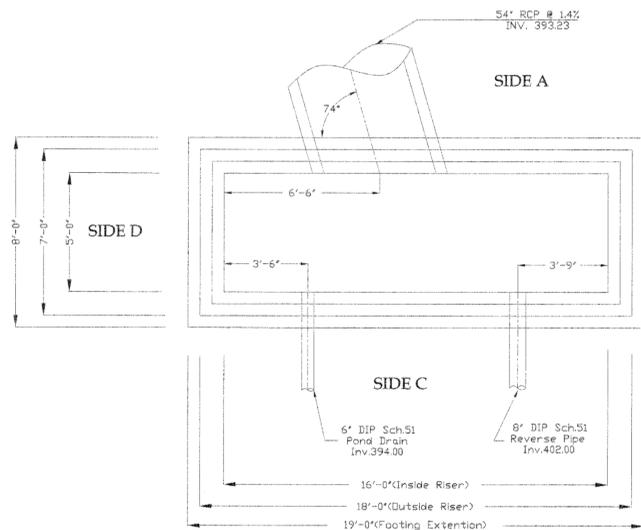
- Maximum allowable soil bearing pressure is 2000 p.s.f.
- The structure will be cast-in-place concrete.
- The soil and the backfill density will be 120 p.c.f. and angle of internal friction ($\alpha = 33$ degrees), according to the Geotechnical report.
- Preparation before concrete placement shall include the following (ACI-318 sec. 5.1.1):
 - All equipment for mixing and transporting concrete shall be clean-
 - All debris and ice shall be removed from spaces to be occupied by concrete.
 - Forms shall be properly coated
 - Reinforcement shall be thoroughly clean of ice or other deleterious coatings.
- Concrete
 - All reinforced concrete to have compressive strength (f_c') of 3000 p.s.i.
 - Requirements for (f_c') shall be based on tests of cylinders made and tested as prescribed in Section 4.7.2 (ACI-318-4.1.2)
 - A strength test shall be the average of the strengths of two cylinders made from sample of concrete, and tested at 28 days (ACI-318 Sect. 4.7.1.4)
 - Tests of materials and of the concrete shall be made in accordance with the American Society of Testing and Materials (ACI-318 Sect. 4.7.1.4)
 - Tests of materials and of the concrete shall be made in accordance with the American Society of Testing and Materials (ACI-318 Sect. 3.12)
 - Concrete shall be maintained above 50 F and in a moist condition for at least the first 7 days after placement (ACI-318 Sect. 5.5.1)
 - Forms shall be removed in such manner as not to impair safety and serviceability of the structure. All concrete to be exposed by form removal shall have sufficient strength not to be damaged thereby (ACI-318 Sect. 6.2.3)
- Details of reinforcement
 - Use steel Grade 60 (for dowel bars spicer- Grade 60)
 - Minimum bend diameters measured on the inside of the bar, shall not be less than 6d for bar size #3 through #8 (ACI-318 tab. 7.2)
 - All reinforcement shall be bent cold. (ACI-318 Section 7.3)
 - At the concrete is placed, metal reinforcement shall be free from mud, oil, or other nonmetallic coatings that adversely affect bonding capacity (ACI-318 Sect. 7.4.1)
 - Minimum overlap must be 24"



SIDE "A"
Scale 1/4"=1'-0"

SIDE "C"
Scale 1/4"=1'-0"

SHORT SIDE OUTSIDE
HORIZONTAL BARS
DETAIL - r/s



REINFORCEMENT TABLE					
	SIDE "A" and "C" From 399.00 to 406.50		SIDE "A" and "C" From 392.00 to 399.00		
	INSIDE	OUTSIDE	INSIDE	OUTSIDE	
HORIZ.	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	
VERT.	#4 @ 12"	#4 @ 8"	#4 @ 12"	#6 @ 8"	
DOWELS			#4 @ 12"	#6 @ 8"	
	SIDE "B" and "D" From 399.00 to 406.50		SIDE "B" and "D" From 392.00 to 399.00		
	INSIDE	OUTSIDE	INSIDE	OUTSIDE	
HORIZ.	#4 @ 12"	#5 @ 8"	#4 @ 12"	#5 @ 8"	
VERT.	#4 @ 12"	#4 @ 12"	#4 @ 12"	#4 @ 12"	
DOWELS			#4 @ 12"	#4 @ 12"	
BOTTOM SLAB SHORT DIRECTION			BOTTOM SLAB LONG DIRECTION		
TOP BARS	#5 @ 12"		#4 @ 12"		
BOTT. BARS	#6 @ 8"		#4 @ 12"		

STRUCTURAL CERTIFICATION

"I/We hereby certify that the structural design of this stormwater management facility is in accordance with the applicable codes and that the plan for this has been designed for specified loading(s) as indicated herein."

Design Engineer Signature: Yanaki Lefterov Date: 18616

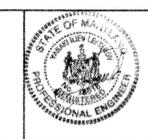
Printed Name and Title: N/A Registration Number:

Design Loading:

L R ENGINEERING
CIVIL ENGINEERING STRUCTURAL ENGINEERING
10390 Hedgeapple Bend New Market, MD 21774 (301) 798-0175

Designed	ET		
Drafted			
Checked	YL		
Proj. Eng.	YL		
OFFICE			
DATE	01-15-2001	NO.	
		REVISIONS	BY DATE

STRUCTURAL PLAN RISER STRUCTURE SM 2



WASHINGTONIAN NORTH
CITY OF GAITHERSBURG
MONTGOMERY COUNTY, MARYLAND

SCALE
AS SHOWN
SHEET
1 OF 1 SHEETS
JOB NO.
2101

CITY OF GAITHERSBURG DEPARTMENT OF PUBLIC WORKS STORMWATER MANAGEMENT	CITY OF GAITHERSBURG DEPARTMENT OF PUBLIC WORKS SEDIMENT EROSION CONTROL
APPLICATION NO. SWM-3880-2013 CONCEPT PLAN <input type="checkbox"/> PRELIMINARY PLAN <input checked="" type="checkbox"/>	APPLICATION NO. SEC-3882-2013 CONCEPT PLAN <input type="checkbox"/> PRELIMINARY PLAN <input checked="" type="checkbox"/>
APPROVAL DATE	APPROVAL DATE
BY	BY

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Lanham
Waldorf
Leontown

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2 Research Place, Suite 100
Rockville, MD 20850
P. 301.948.2750 F. 301.948.9067

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NO.	DESCRIPTION	DATE	BY	DATE
1		MARCH, 2013	YMT	

MISS UTILITY NOTE

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C/O BOSTON PROPERTIES
2200 PENNSYLVANIA AVENUE NW, SUITE 200W
WASHINGTON, DC 20037
PHONE # (202) 585-0847
CONTACT: MR. JAKE STROMAN

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LICENSE NO. 38969 EXPIRATION DATE: 08/26/2014



**PRELIMINARY STORMWATER
MANAGEMENT RISER STRUCTURAL PLAN**

**PRELIMINARY STORMWATER MANAGEMENT PLAN
WASHINGTONIAN NORTH
OUTLOT B AND PRIVATE ROAD, BLOCK D
WASHINGTONIAN CENTER
PLAT 21856**

GAITHERSBURG (9th) ELECTION DISTRICT, MONTGOMERY COUNTY, MARYLAND

SHEET 13 OF 24
PROJECT NO. 1184-00-01

STORMWATER MANAGEMENT CONSTRUCTION SPECIFICATIONS SCS MD-378 JAN 2000

THESE SPECIFICATIONS ARE APPROPRIATE TO ALL PONDS WITHIN THE SCOPE OF THE STANDARD SPECIFICATIONS FOR ASHTO AND ASHTO SPECIFICATIONS APPLY TO THE MOST RECENT VERSION... I. SITE PREPARATION AREAS DESIGNATED FOR BORROW AREAS, EMBANKMENT AND STRUCTURAL WORKS SHALL BE CLEARED GRUBBED AND STRIPPED OF TOPSOIL...

STRUCTURAL CONSTRUCTION NOTES

I. CODES AND STANDARDS A. THE FOLLOWING CODES AND STANDARDS, INCLUDING ALL SPECIFICATIONS REFERENCED WITHIN SHALL APPLY TO THE DESIGN, CONSTRUCTION, QUALITY CONTROL AND SAFETY OF ALL WORK PERFORMED ON THE PROJECT... II. MATERIALS A. THE FOLLOWING ASTM STANDARDS AND DESIGN STRESSES SHALL BE USED FOR APPROPRIATE MATERIALS USED IN THE CONSTRUCTION OF THIS PROJECT...

POND MAINTENANCE PROGRAM

- 1. GRASS MOWING BRUSH CUTTING AND REMOVAL OF WOODY VEGETATION ON THE EMBANKMENTS, EMERGENCY SPILLWAY (IF APPLICABLE), AND POND ACCESS ROADS AT LEAST ONCE A YEAR (MID TO LATE SUMMER)...

POND INSPECTION PROGRAM

- 1. OWNERS SHALL MAKE A THOROUGH VISUAL INSPECTION OF THE PONDS AT LEAST TWICE A YEAR - ONCE IN THE SUMMER AFTER MOWING AND ONCE IN THE WINTER WHEN THE VEGETATION COVER IS DORMANT...

NOTE: ALSO SEE SHEET 4.13, 'GEOTECHNICAL ENGINEER CONSTRUCTION SPECIFICATIONS'.

III. CONSTRUCTION

- A. GENERAL 1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT ALL LOCAL, STATE, AND FEDERAL CONSTRUCTION SAFETY REGULATIONS ARE FOLLOWED...

V. FOUNDATIONS AND STRUCTURAL EARTHWORK

- 1. EXISTING UTILITIES KNOWN TO BE IN THE CONSTRUCTION AREA HAVE BEEN INDICATED THE SIZE, LOCATION AND DEPTH OF THE UTILITIES MAY NOT BE KNOWN EXACTLY AND MAY VARY SIGNIFICANTLY FROM THAT INDICATED...

SOLTESZ Engineering Planning Environmental Sciences Rockville, MD 20850

Table with columns: NO., DESCRIPTION, REVISIONS, DATE, CHECKED, BY, DATE

MISS UTILITY NOTE INFORMATION CONCERNING EXISTING UNDERGROUND UTILITIES WAS OBTAINED FROM AVAILABLE RECORDS...

OWNER/DEVELOPER/APPLICANT WASHINGTONIAN NORTH ASSOCIATES, LP 2200 PENNSYLVANIA AVENUE NW, SUITE 2200W

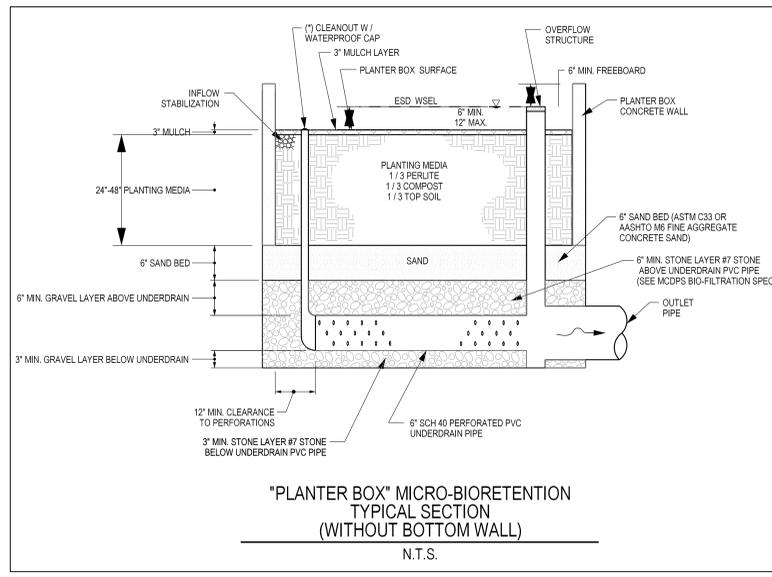
Table with columns: MAP, TAX MAP, ZONING CATEGORY, SHEET, DATE, HORIZONTAL, VERTICAL

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.

PRELIMINARY STORMWATER MANAGEMENT CONSTRUCTION SPECIFICATION & STRUCTURAL NOTES

PRELIMINARY STORMWATER MANAGEMENT PLAN WASHINGTONIAN NORTH OUTLOT B AND PRIVATE ROAD, BLOCK D WASHINGTONIAN CENTER PLAT 21856

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PRIVATE ROAD: ESD# 1, 2 & 3

SWM - ESD STRUCTURE SCHEDULE									
NO.	STANDARD	TYPE	DRAIN SIZE	LOCATION	TOP ELEVATION		UNDERDRAIN INVERT	INVERT OUT	REMARKS
					UPPER	LOWER			
SW1	NYLOPLAST DRAIN BASIN	INLET	1'-6"	SEE PLAN FOR LOCATION	447.35	442.35	442.35	441.60	STANDARD / DOME GRATE COVER
SW2	NYLOPLAST DRAIN BASIN	INLET	1'-6"	SEE PLAN FOR LOCATION	440.20	434.45	434.45	433.85	STANDARD / DOME GRATE COVER
SW3	NYLOPLAST DRAIN BASIN	INLET	1'-3"	SEE PLAN FOR LOCATION	434.90	428.70	428.70	428.20	STANDARD / DOME GRATE COVER
SW4	NYLOPLAST DRAIN BASIN	INLET	1'-6"	SEE PLAN FOR LOCATION	429.25	423.50	423.50	423.00	STANDARD / DOME GRATE COVER
SW5	NYLOPLAST DRAIN BASIN	INLET	1'-3"	SEE PLAN FOR LOCATION	422.85	418.60	418.60	418.10	STANDARD / DOME GRATE COVER

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Rockville
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NO.	DESCRIPTION	DATE	BY	DATE
1		MARCH, 2013	YMT	

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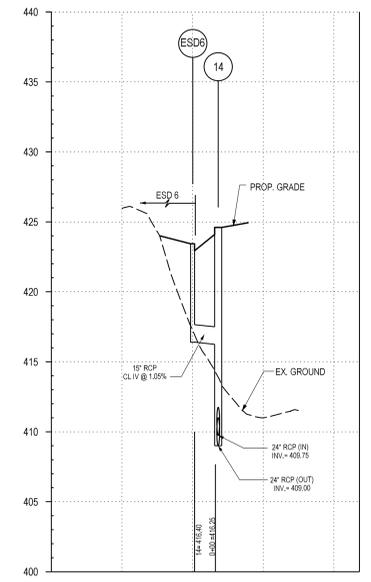
PRELIMINARY SWM TYPICAL DETAILS AND STORM DRAIN PROFILES
PRELIMINARY STORMWATER MANAGEMENT PLAN
WASHINGTONIAN NORTH
 OUTLOT B AND PRIVATE ROAD, BLOCK D
 WASHINGTONIAN CENTER
 PLAT 21856
 GAITHERSBURG (99) ELECTION DISTRICT, MONTGOMERY COUNTY, MARYLAND

CITY OF GAITHERSBURG DEPARTMENT OF PUBLIC WORKS STORMWATER MANAGEMENT APPLICATION NO. SWM-3880-2013 CONCEPT PLAN <input type="checkbox"/> PRELIMINARY PLAN <input checked="" type="checkbox"/> APPROVAL DATE: _____ BY: _____	CITY OF GAITHERSBURG DEPARTMENT OF PUBLIC WORKS SEDIMENT EROSION CONTROL APPLICATION NO. SEC-3882-2013 CONCEPT PLAN <input type="checkbox"/> PRELIMINARY PLAN <input checked="" type="checkbox"/> APPROVAL DATE: _____ BY: _____
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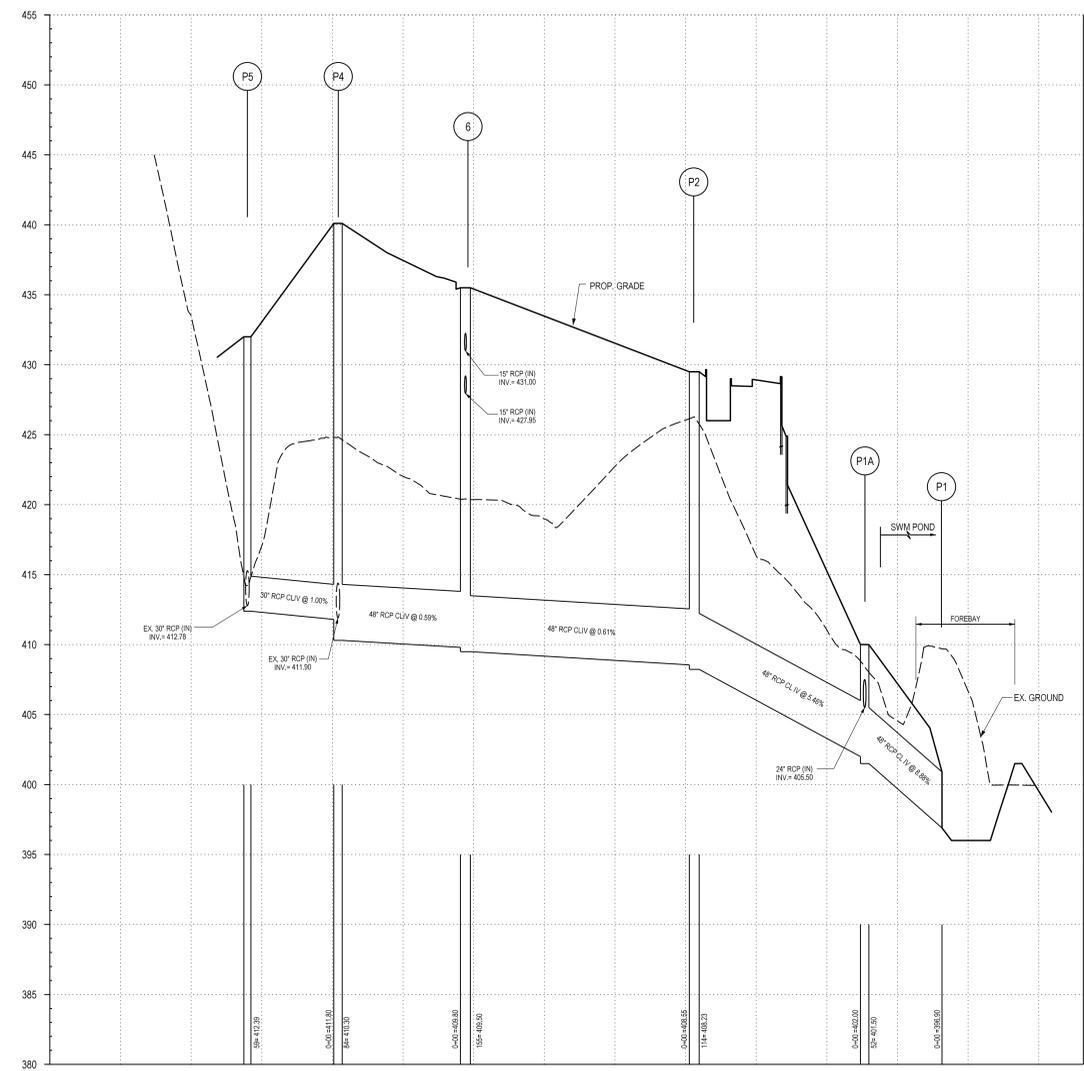
SHEET **15**
 OF **24**
 PROJECT NO.
 1184-00-01

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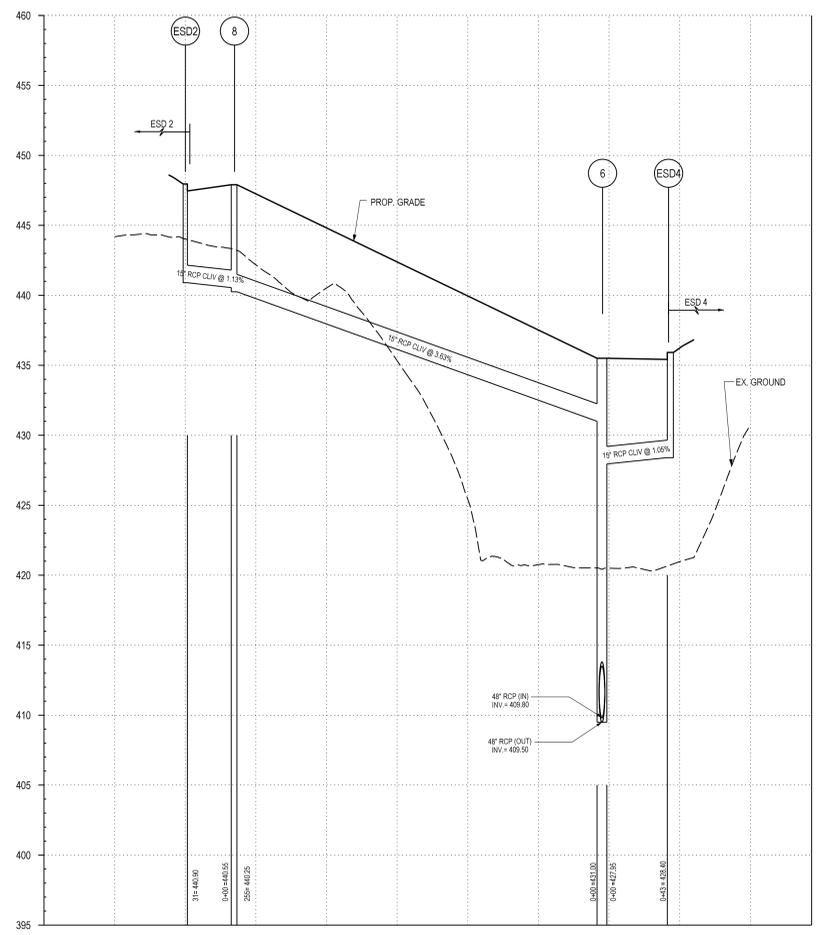
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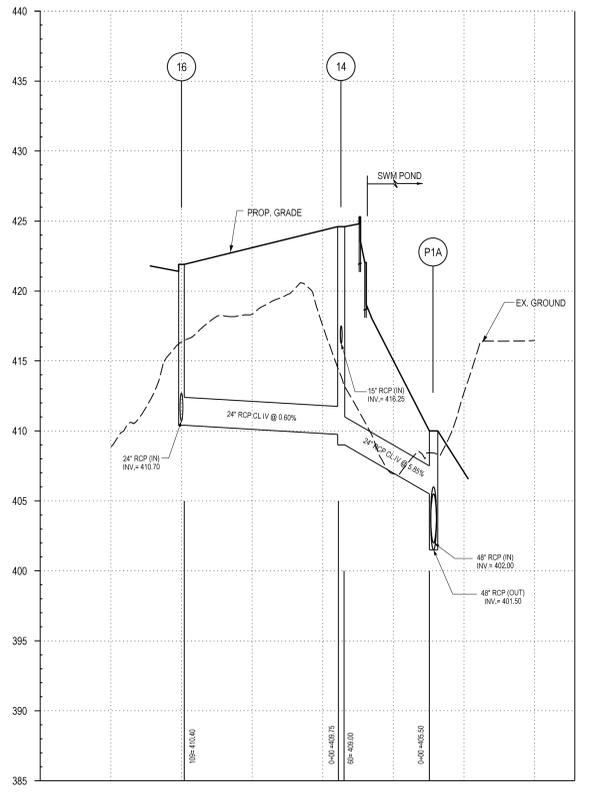
P5-P1



ESD1-ESD2



16-P1A



CITY OF GAITHERSBURG DEPARTMENT OF PUBLIC WORKS STORMWATER MANAGEMENT
 APPLICATION NO. SWM-3880-2013
 CONCEPT PLAN PRELIMINARY PLAN
 APPROVAL DATE: _____ BY: _____

CITY OF GAITHERSBURG DEPARTMENT OF PUBLIC WORKS SEDIMENT EROSION CONTROL
 APPLICATION NO. SEC-3882-2013
 CONCEPT PLAN PRELIMINARY PLAN
 APPROVAL DATE: _____ BY: _____

THIS PLAN IS FOR THE MAINTENANCE AND CONSTRUCTION OF SEDIMENT CONTROL AND STORMWATER MANAGEMENT MEASURES ONLY.

PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
 LICENSE NO. 36060 EXPIRATION DATE: 06/26/2014

PRELIMINARY SWM - STORM DRAIN PROFILES

PRELIMINARY STORMWATER MANAGEMENT PLAN
WASHINGTONIAN NORTH
 OUTLOT B AND PRIVATE ROAD, BLOCK D
 WASHINGTONIAN CENTER
 PLAT 21856
 GAITHERSBURG (9th) ELECTION DISTRICT, MONTGOMERY COUNTY, MARYLAND

SOLTESZ
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 ROCKVILLE OFFICE
 2 Research Place, Suite 100
 Rockville, MD 20850
 P. 301.948.2750 F. 301.948.9067
 www.soltesz.com

NO.	DESCRIPTION	DATE	REVISIONS	BY	DATE
1		MARCH, 2013			

DESIGNED: YMT TECHNICIAN: YMT CHECKED: AXQ

MISS UTILITY NOTE
 INFORMATION CONCERNING EXISTING UNDERGROUND UTILITIES WAS OBTAINED FROM AVAILABLE RECORDS. THE CONTRACTOR MUST DETERMINE THE EXACT LOCATION AND ELEVATION OF ALL EXISTING UTILITIES AND UTILITIES CROSSINGS BY EXCAVATING TEST PITS BY HAND, WELL IN ADVANCE OF THE START OF EXCAVATION. CONTACT "MISS UTILITY" AT 1-800-277-7777. 48 HOURS PRIOR TO THE START OF EXCAVATION. IF CLEARANCES ARE LESS THAN SHOWN ON THIS PLAN OR TWELVE (12) INCHES, WHOEVER IS LESS, CONTACT THE ENGINEER AND THE UTILITY COMPANY BEFORE PROCEEDING WITH CONSTRUCTION. CLEARANCES LESS THAN NOTED MAY REQUIRE REVISIONS TO THIS PLAN.

OWNER/DEVELOPER/APPLICANT
 WASHINGTONIAN NORTH ASSOCIATES, LP
 C/O BOSTON PROPERTIES
 2200 PENNSYLVANIA AVENUE NW, SUITE 200W
 WASHINGTON, DC 20037
 PHONE # (202) 585-0647
 CONTACT: MR. JAKE STROMAN

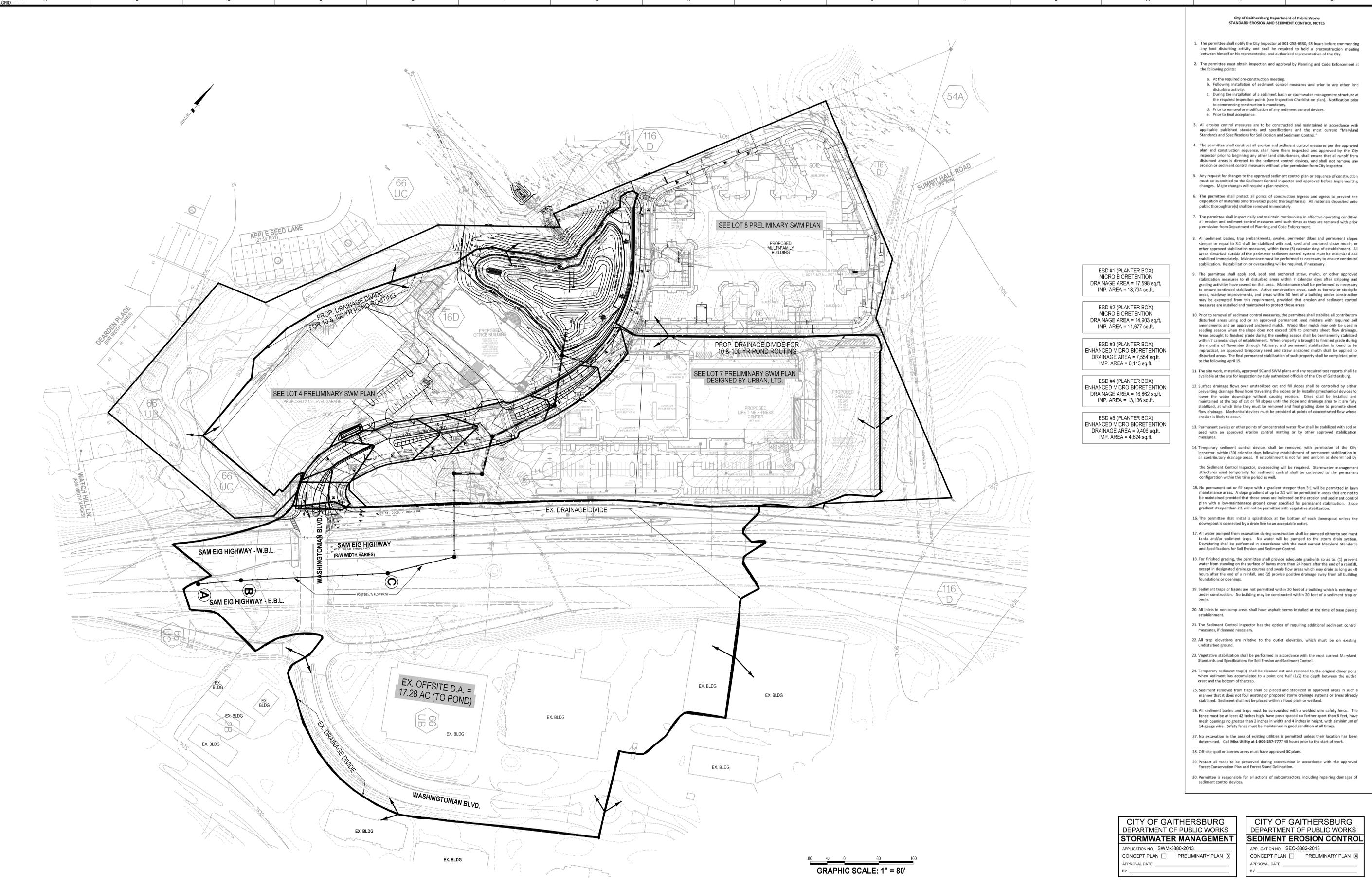
MAP: FS 342 & 343 ZONING CATEGORY: MXD
 SHEET: 221NW 10 OF 2220W 10
 SITE DATUM: HORIZONTAL: NAD 83 VERTICAL: NAD 83



1" = 50'
VERT. 1" = 5'

SHEET **16** OF **24**
 PROJECT NO. 1184-00-01

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- City of Gaithersburg Department of Public Works
STANDARD EROSION AND SEDIMENT CONTROL NOTES**
- The permittee shall notify the City Inspector at 301-258-6330, 48 hours before commencing any land disturbing activity and shall be required to hold a preconstruction meeting between himself or his representative, and authorized representatives of the City.
 - The permittee must obtain inspection and approval by Planning and Code Enforcement at the following points:
 - At the required pre-construction meeting.
 - Following installation of sediment control measures and prior to any other land disturbing activity.
 - During the installation of a sediment basin or stormwater management structure at the required inspection points (see Inspection Checklist on plan). Notification prior to commencing construction is mandatory.
 - Prior to removal or modification of any sediment control devices.
 - Prior to final acceptance.
 - All erosion control measures are to be constructed and maintained in accordance with applicable published standards and specifications and the most current "Maryland Standards and Specifications for Soil Erosion and Sediment Control".
 - The permittee shall construct all erosion and sediment control measures per the approved plan and construction sequence, shall have them inspected and approved by the City Inspector prior to beginning any other land disturbances, shall ensure that all runoff from disturbed areas is directed to the sediment control devices, and shall not remove any erosion or sediment control measures without prior permission from the City Inspector.
 - Any request for changes to the approved sediment control plan or sequence of construction must be submitted to the Sediment Control Inspector and approved before implementing changes. Major changes will require a plan revision.
 - The permittee shall protect all points of construction ingress and egress to prevent the deposition of materials onto traversed public thoroughfare(s). All materials deposited onto public thoroughfare(s) shall be removed immediately.
 - The permittee shall inspect daily and maintain continuously in effective operating condition all erosion and sediment control measures until such time as they are removed with prior permission from Department of Planning and Code Enforcement.
 - All sediment basins, trap embankments, swales, perimeter dikes and permanent slopes steeper or equal to 3:1 shall be stabilized with sod, seed and anchored straw mulch, or other approved stabilization measures, within three (3) calendar days of establishment. All areas disturbed outside of the perimeter sediment control system must be minimized and stabilized immediately. Maintenance must be performed as necessary to ensure continued stabilization. Restoration or overseeding will be required, if necessary.
 - The permittee shall apply sod, seed and anchored straw mulch, or other approved stabilization measures to all disturbed areas within 7 calendar days after stripping and grading activities have ceased on that area. Maintenance shall be performed as necessary to ensure continued stabilization. Active construction areas, such as borrow or stockpile areas, roadway improvements, and areas within 50 feet of a building under construction may be exempted from this requirement, provided that erosion and sediment control measures are installed and maintained to protect those areas.
 - Prior to removal of sediment control measures, the permittee shall stabilize all contributory disturbed areas using sod or an approved permanent seed mixture with required soil amendments and an approved anchored mulch. Wood fiber mulch may only be used in seeding season when the slope does not exceed 10% to promote sheet flow drainage. Areas brought to finished grade during the seeding season shall be permanently stabilized within 7 calendar days of establishment. When property is brought to finished grade during the months of November through February, and permanent stabilization is found to be impractical, an approved temporary seed and straw anchored mulch shall be applied to disturbed areas. The final permanent stabilization of such property shall be completed prior to the following April 15.
 - The site work, materials, approved SC and SWM plans and any required test reports shall be available at the site for inspection by duly authorized officials of the City of Gaithersburg.
 - Surface drainage flows over unestablished cut and fill slopes shall be controlled by either preventing drainage flows from traveling the slope by installing mechanical straw mulch, or lower the water downspout without causing erosion. Dikes shall be installed and maintained at the top of cut or fill slopes until the slope and drainage area to it are fully stabilized, at which time they must be removed and final grading done to promote sheet flow drainage. Mechanical devices must be provided at points of concentrated flow where erosion is likely to occur.
 - Permanent swales or other points of concentrated water flow shall be stabilized with sod or seed with an approved erosion control matting or by other approved stabilization measures.
 - Temporary sediment control devices shall be removed, with permission of the City Inspector, within (30) calendar days following establishment of permanent stabilization in all contributory drainage areas. If establishment is not full and uniform as determined by the Sediment Control Inspector, overseeding will be required. Stormwater management structures used temporarily for sediment control shall be converted to the permanent configuration within this time period as well.
 - No permanent cut or fill slope with a gradient steeper than 3:1 will be permitted in lawn maintenance areas. A slope gradient of up to 2:1 will be permitted in areas that are not to be maintained provided that those areas are indicated on the erosion and sediment control plan with a low-maintenance ground cover specified for permanent stabilization. Slope gradient steeper than 2:1 will not be permitted with vegetative stabilization.
 - The permittee shall install a splashblock at the bottom of each downspout unless the downspout is connected by a drain line to an acceptable outlet.
 - All water pumped from excavation during construction shall be pumped either to sediment basins and/or sediment traps. No water will be pumped into the storm drain system. Dewatering shall be performed in accordance with the most current Maryland Standards and Specifications for Soil Erosion and Sediment Control.
 - For finished grading, the permittee shall provide adequate gradients so as to: (1) prevent water from standing on the surface of lawns more than 24 hours after the end of a rainfall, except in designated drainage courses and swale flow areas which may drain as long as 48 hours after the end of a rainfall, and (2) provide positive drainage away from all building foundations or openings.
 - Sediment traps or basins are not permitted within 20 feet of a building which is existing or under construction. No building may be constructed within 20 feet of a sediment trap or basin.
 - All inlets in non-sump areas shall have asphalt berms installed at the time of base paving establishment.
 - The Sediment Control Inspector has the option of requiring additional sediment control measures, if deemed necessary.
 - All trap elevations are relative to the outlet elevation, which must be on existing undisturbed ground.
 - Vegetative stabilization shall be performed in accordance with the most current Maryland Standards and Specifications for Soil Erosion and Sediment Control.
 - Temporary sediment traps(s) shall be cleaned out and restored to the original dimensions when sediment has accumulated to a point one half (1/2) the depth between the outlet crest and the bottom of the trap.
 - Sediment removed from traps shall be placed and stabilized in approved areas in such a manner that it does not foul existing or proposed storm drainage systems or areas already stabilized. Sediment shall not be placed within a flood plain or wetland.
 - All sediment basins and traps must be surrounded with a welded wire safety fence. The fence must be at least 42 inches high, have posts spaced no farther apart than 8 feet, have mesh openings no greater than 2 inches in width and 4 inches in height, with a minimum of 14-gauge wire. Safety fence must be maintained in good condition at all times.
 - No excavation in the area of existing utilities is permitted unless their location has been determined. Call Miss Utility at 1-800-257-7777 48 hours prior to the start of work.
 - Off-site spoil or borrow areas must have approved SC plans.
 - Protect all trees to be preserved during construction in accordance with the approved Forest Conservation Plan and Forest Stand Delineation.
 - Permittee is responsible for all actions of subcontractors, including repairing damages of sediment control devices.

- ESD #1 (PLANTER BOX)
MICRO BIORETENTION
DRAINAGE AREA = 17,598 sq.ft.
IMP. AREA = 13,794 sq.ft.
- ESD #2 (PLANTER BOX)
MICRO BIORETENTION
DRAINAGE AREA = 14,903 sq.ft.
IMP. AREA = 11,677 sq.ft.
- ESD #3 (PLANTER BOX)
ENHANCED MICRO BIORETENTION
DRAINAGE AREA = 7,554 sq.ft.
IMP. AREA = 6,113 sq.ft.
- ESD #4 (PLANTER BOX)
ENHANCED MICRO BIORETENTION
DRAINAGE AREA = 16,862 sq.ft.
IMP. AREA = 13,136 sq.ft.
- ESD #5 (PLANTER BOX)
ENHANCED MICRO BIORETENTION
DRAINAGE AREA = 9,406 sq.ft.
IMP. AREA = 4,624 sq.ft.

80 0 80 160
GRAPHIC SCALE: 1" = 80'

CITY OF GAITHERSBURG DEPARTMENT OF PUBLIC WORKS STORMWATER MANAGEMENT APPLICATION NO. SWM-3880-2013 CONCEPT PLAN <input type="checkbox"/> PRELIMINARY PLAN <input checked="" type="checkbox"/> APPROVAL DATE _____ BY _____	CITY OF GAITHERSBURG DEPARTMENT OF PUBLIC WORKS SEDIMENT EROSION CONTROL APPLICATION NO. SEC-3882-2013 CONCEPT PLAN <input type="checkbox"/> PRELIMINARY PLAN <input checked="" type="checkbox"/> APPROVAL DATE _____ BY _____
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THIS PLAN IS FOR THE MAINTENANCE AND CONSTRUCTION OF SEDIMENT CONTROL AND STORMWATER MANAGEMENT MEASURES ONLY.

PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
 LICENSE NO. 36060 EXPIRATION DATE: 06/26/2014



SEDIMENT CONTROL DRAINAGE AREA MAP

PRELIMINARY SEDIMENT CONTROL PLAN
WASHINGTONIAN NORTH
 OUTLOT D AND PRIVATE ROAD, BLOCK D
 WASHINGTONIAN CENTER
 PLAT 21856

GAITHERSBURG (9th) ELECTION DISTRICT, MONTGOMERY COUNTY, MARYLAND

SHEET **17**
OF **24**
PROJECT NO. 1184-00-01
SLSAPLOT COMMENTS

SOLTESZ

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 2 Research Place, Suite 100
 Rockville, MD 20850
 P. 301.948.2750 F. 301.948.9067

Rockville
 Lanham
 Waldorf
 Leonardtown

www.soltesz.com

NO.	DESCRIPTION	DATE	BY	DATE
1	DESCRIPTION	MARCH 2013	YMT	XXX XXXXXX

DESIGNED: YMT
 CHECKED: AXQ

MISS UTILITY NOTE

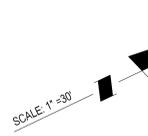
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OWNER/DEVELOPER/APPLICANT

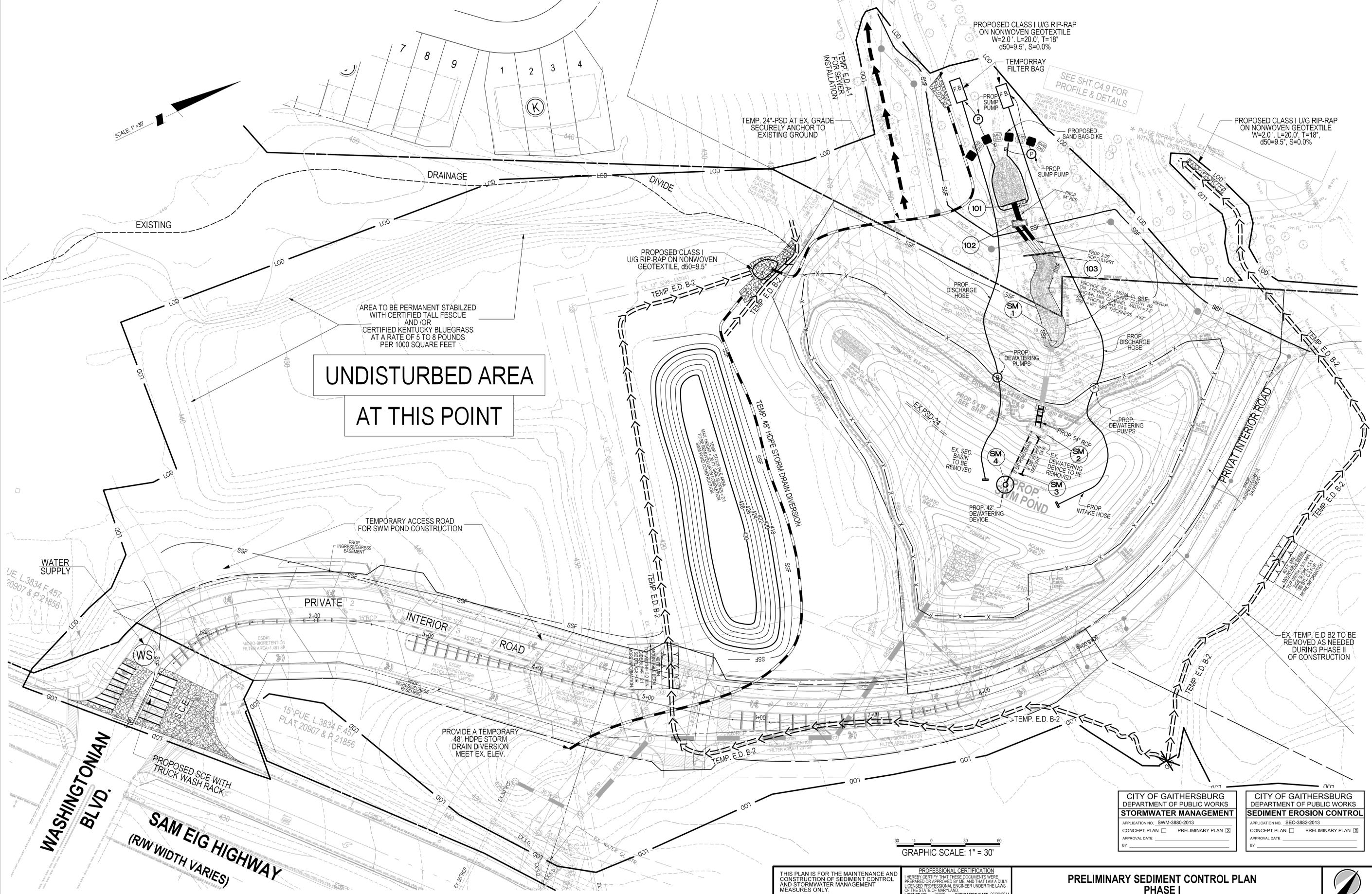
WASHINGTONIAN NORTH ASSOCIATES, LP
 C/O BOSTON PROPERTIES
 2200 PENNSYLVANIA AVENUE NW, SUITE 200W
 WASHINGTON, DC 20037
 PHONE # (202) 585-0047
 CONTACT: MR. JAKE STROMAN

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TAX MAP: FS 342 & 343	ZONING CATEGORY: MXD
WBCS 200 SHEET: 221NW 10	222NW 10
SITE DATUM: HORIZONTAL: NAD 83	VERTICAL: NAD 83

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SCALE 1" = 30'



**UNDISTURBED AREA
AT THIS POINT**

SEE SHT. C4.9 FOR
PROFILE & DETAILS

PROPOSED CLASS I U/G RIP-RAP
ON NONWOVEN GEOTEXTILE
W=2.0', L=20.0', T=18"
d50=9.5", S=0.0%

PROPOSED CLASS I
U/G RIP-RAP ON NONWOVEN
GEOTEXTILE, d50=9.5"

PROVIDE 42 LF MSHA CL. III U/G RIP-RAP
ON APPROVED FILTER FABRIC WITH 20' OF
18" X 18" U/G EX. GRADE WITH 20' OF
18" X 18" U/G SIN. THICKNESS 3/2" RIP-RAP
WITH 12" OF 18" X 18" U/G SIN. THICKNESS 3/2"

PROVIDE 80' 4" MSHA CL. III U/G RIP-RAP
ON APPROVED FILTER FABRIC WITH 20' OF
18" X 18" U/G EX. GRADE WITH 20' OF
18" X 18" U/G SIN. THICKNESS 3/2" RIP-RAP
WITH 12" OF 18" X 18" U/G SIN. THICKNESS 3/2"

PROVIDE 42 LF MSHA CL. III U/G RIP-RAP
ON APPROVED FILTER FABRIC WITH 20' OF
18" X 18" U/G EX. GRADE WITH 20' OF
18" X 18" U/G SIN. THICKNESS 3/2" RIP-RAP
WITH 12" OF 18" X 18" U/G SIN. THICKNESS 3/2"

EX. TEMP. E.D. B2 TO BE
REMOVED AS NEEDED
DURING PHASE II
OF CONSTRUCTION

GRAPHIC SCALE: 1" = 30'

CITY OF GAITHERSBURG DEPARTMENT OF PUBLIC WORKS STORMWATER MANAGEMENT APPLICATION NO. SWM-3880-2013 CONCEPT PLAN <input type="checkbox"/> PRELIMINARY PLAN <input checked="" type="checkbox"/> APPROVAL DATE: _____ BY: _____	CITY OF GAITHERSBURG DEPARTMENT OF PUBLIC WORKS SEDIMENT EROSION CONTROL APPLICATION NO. SEC-3882-2013 CONCEPT PLAN <input type="checkbox"/> PRELIMINARY PLAN <input checked="" type="checkbox"/> APPROVAL DATE: _____ BY: _____
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 LICENSE NO. 36060 EXPIRATION DATE: 08/26/2014

**PRELIMINARY SEDIMENT CONTROL PLAN
PHASE I**

SOLTESZ

Rockville Office
2 Research Place, Suite 100
Rockville, MD 20850
P. 301.948.2750 F. 301.948.9067

Rockville
Lanham
Waldorf
Leonardtown

www.soltesz.com

NO.	DESCRIPTION	DATE	BY	DATE
1	DESIGN	MARCH 2013	YMT	

DESIGNED: YMT CHECKED: AXQ

MISS UTILITY NOTE

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OWNER/DEVELOPER/APPLICANT

WASHINGTONIAN NORTH ASSOCIATES, LP
 C/O BOSTON PROPERTIES
 2200 PENNSYLVANIA AVENUE NW, SUITE 200W
 WASHINGTON, DC 20037
 PHONE # (202) 585-0047
 CONTACT: MR. JAKE STROMAN

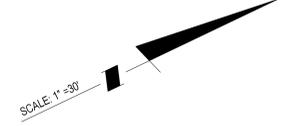
COPYRIGHT AND THE MAP PEOPLE PERMITTED USE NUMBER 2101200 MAP: 5183 GRID: GH182	TAX MAP: FS 342 & 343 ZONING CATEGORY: MXD WBCS 200 SHEET: 221NW 10 222SW 10 SITE DATUM: HORIZONTAL: NAD 83 VERTICAL: NAD 83
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**PRELIMINARY STORMWATER MANAGEMENT PLAN
WASHINGTONIAN NORTH**
 OUTLOT D AND PRIVATE ROAD, BLOCK D
 WASHINGTONIAN CENTER
 PLAT 21856
 GAITHERSBURG (9th) ELECTION DISTRICT, MONTGOMERY COUNTY, MARYLAND

SHEET **18**
 OF **24**
 PROJECT NO. 1184-00-01
 SLS.APLOT.COMMENTS

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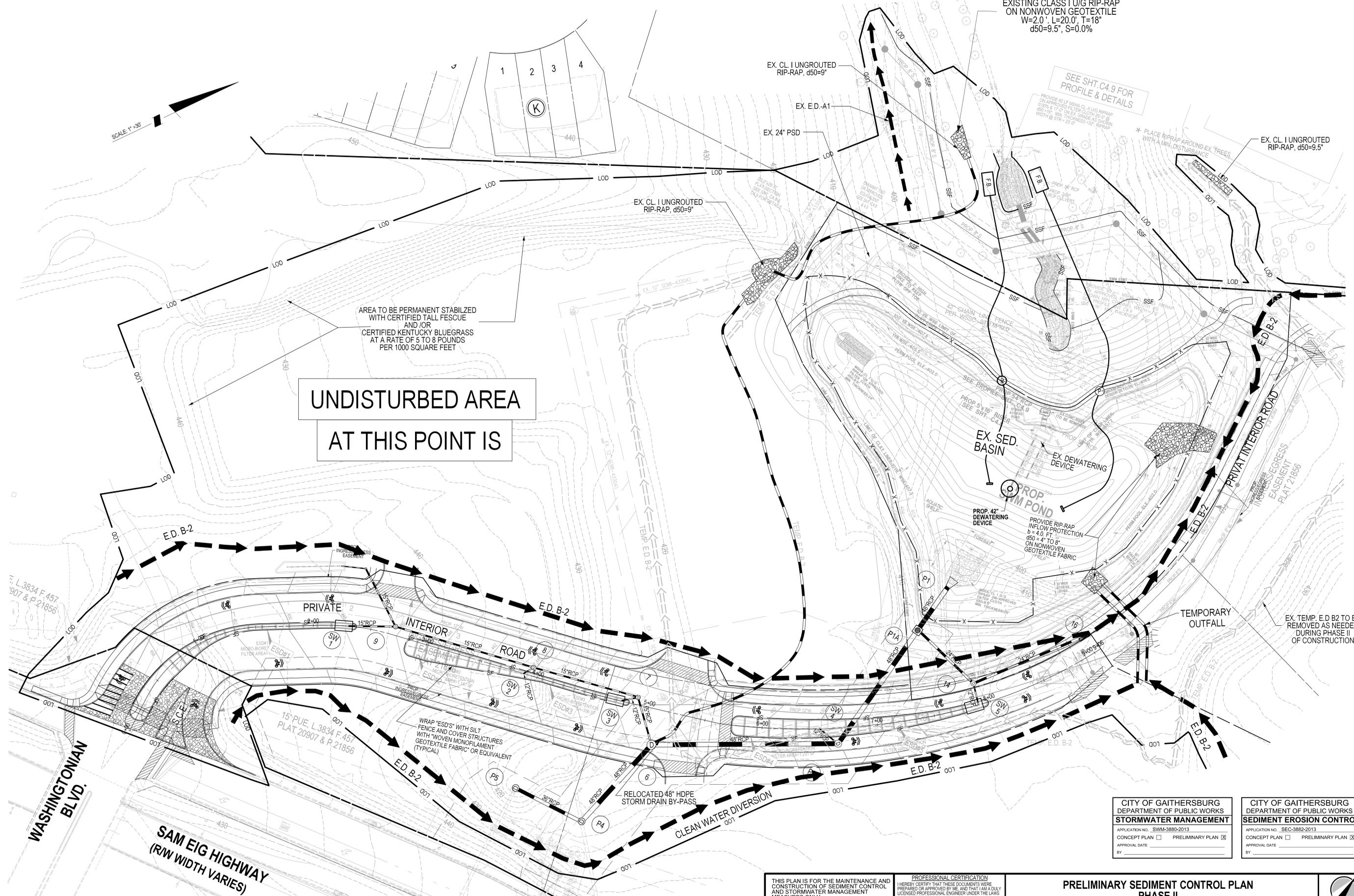


EXISTING CLASS I U/G RIP-RAP
 ON NONWOVEN GEOTEXTILE
 W=2.0' L=20.0' T=18"
 d50=9.5" S=0.0%

SEE SHT. C4.9 FOR
 PROFILE & DETAILS

AREA TO BE PERMANENT STABILIZED
 WITH CERTIFIED TALL FESCUE
 AND/OR
 CERTIFIED KENTUCKY BLUEGRASS
 AT A RATE OF 5 TO 8 POUNDS
 PER 1000 SQUARE FEET

**UNDISTURBED AREA
 AT THIS POINT IS**



CITY OF GAITHERSBURG DEPARTMENT OF PUBLIC WORKS STORMWATER MANAGEMENT APPLICATION NO. SWM-3880-2013 CONCEPT PLAN <input type="checkbox"/> PRELIMINARY PLAN <input checked="" type="checkbox"/> APPROVAL DATE: _____	CITY OF GAITHERSBURG DEPARTMENT OF PUBLIC WORKS SEDIMENT EROSION CONTROL APPLICATION NO. SEC-3882-2013 CONCEPT PLAN <input type="checkbox"/> PRELIMINARY PLAN <input checked="" type="checkbox"/> APPROVAL DATE: _____
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THIS PLAN IS FOR THE MAINTENANCE AND CONSTRUCTION OF SEDIMENT CONTROL AND STORMWATER MANAGEMENT MEASURES ONLY.

PRELIMINARY SEDIMENT CONTROL PLAN PHASE II

SOLTESZ
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 P. 301.948.2750 F. 301.948.9067
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NO.	DESCRIPTION	DATE	BY	DATE
1	DESIGN	MARCH 2013	YMT	

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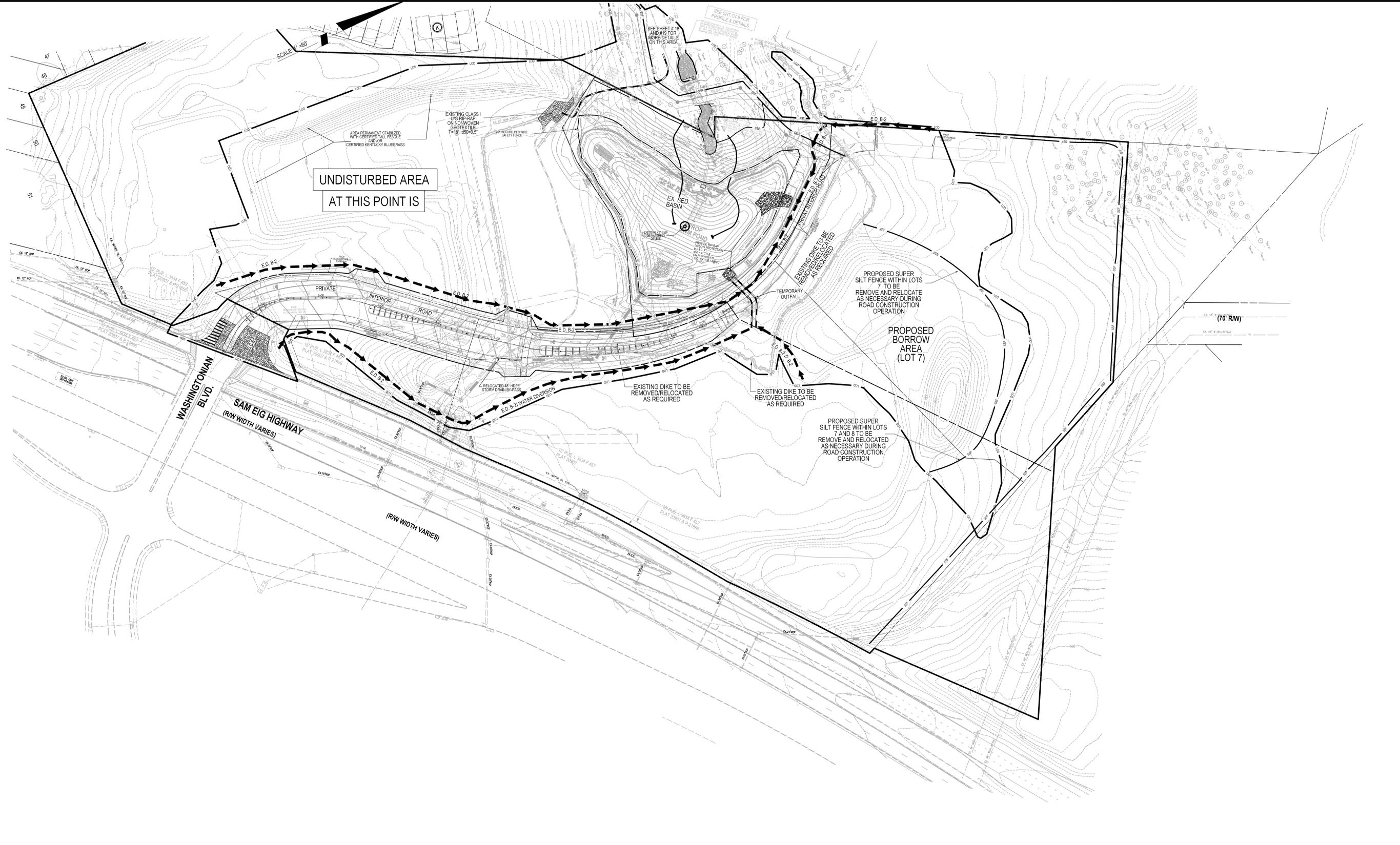
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PRELIMINARY STORMWATER MANAGEMENT PLAN
WASHINGTONIAN NORTH
 OUTLOT D AND PRIVATE ROAD, BLOCK D
 WASHINGTONIAN CENTER
 PLAT 21856
 GAITHERSBURG (99) ELECTION DISTRICT, MONTGOMERY COUNTY, MARYLAND

SHEET 19 OF 24
 PROJECT NO. 1184-00-01
 SLSAPLOT COMMENTS

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 LICENSE NO. 36060 EXPIRATION DATE: 08/26/2014

PRELIMINARY SEDIMENT CONTROL PLAN - PHASE II (PRIVATE ROAD CONSTRUCTION)

PRELIMINARY SEDIMENT CONTROL PLAN
WASHINGTONIAN NORTH
 OUTLOT D AND PRIVATE ROAD, BLOCK D
 WASHINGTONIAN CENTER
 PLAT 21856
 GAITHERSBURG (99) ELECTION DISTRICT, MONTGOMERY COUNTY, MARYLAND



SHEET	20
OF	24
PROJECT NO.	1184-00-01
DATE	8/14/2013

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 Engineering
 Planning
 Environmental Sciences

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NO.	DESCRIPTION	DATE	BY	DATE
1		MARCH 2013	YMT	

MISS UTILITY NOTE
 INFORMATION CONCERNING EXISTING UNDERGROUND UTILITIES WAS OBTAINED FROM AVAILABLE RECORDS. THE CONTRACTOR MUST DETERMINE THE EXACT LOCATION AND ELEVATION OF ALL EXISTING UTILITIES AND UTILITY ORIGINATOR'S TEST PITS BY HAND, WELL IN ADVANCE OF THE START OF EXCAVATION. CONTACT "MISS UTILITY" AT 1-800-261-7777 48 HOURS PRIOR TO THE START OF EXCAVATION. IF CLEARANCES ARE LESS THAN SHOWN ON THIS PLAN OR TWELVE (12) INCHES, WHOEVER IS LESS, CONTACT THE ENGINEER AND THE UTILITY COMPANY BEFORE PROCEEDING WITH CONSTRUCTION. CLEARANCES LESS THAN NOTED MAY REQUIRE REVISIONS TO THIS PLAN.

OWNER/DEVELOPER/APPLICANT
 WASHINGTONIAN NORTH ASSOCIATES, LP
 C/O BOSTON PROPERTIES
 2200 PENNSYLVANIA AVENUE NW, SUITE 200W
 WASHINGTON, DC 20037
 PHONE # (202) 585-0047
 CONTACT: MR. JAKE STROMAN

TAX MAP	FS 342 & 343	ZONING CATEGORY	MXD
WBCS 200 SHEET	221NW 10		
	222W 10		
SITE DATUM	HORIZONTAL: NAD 83		
	VERTICAL: NAD 83		



SLAPLOT COMMENTS

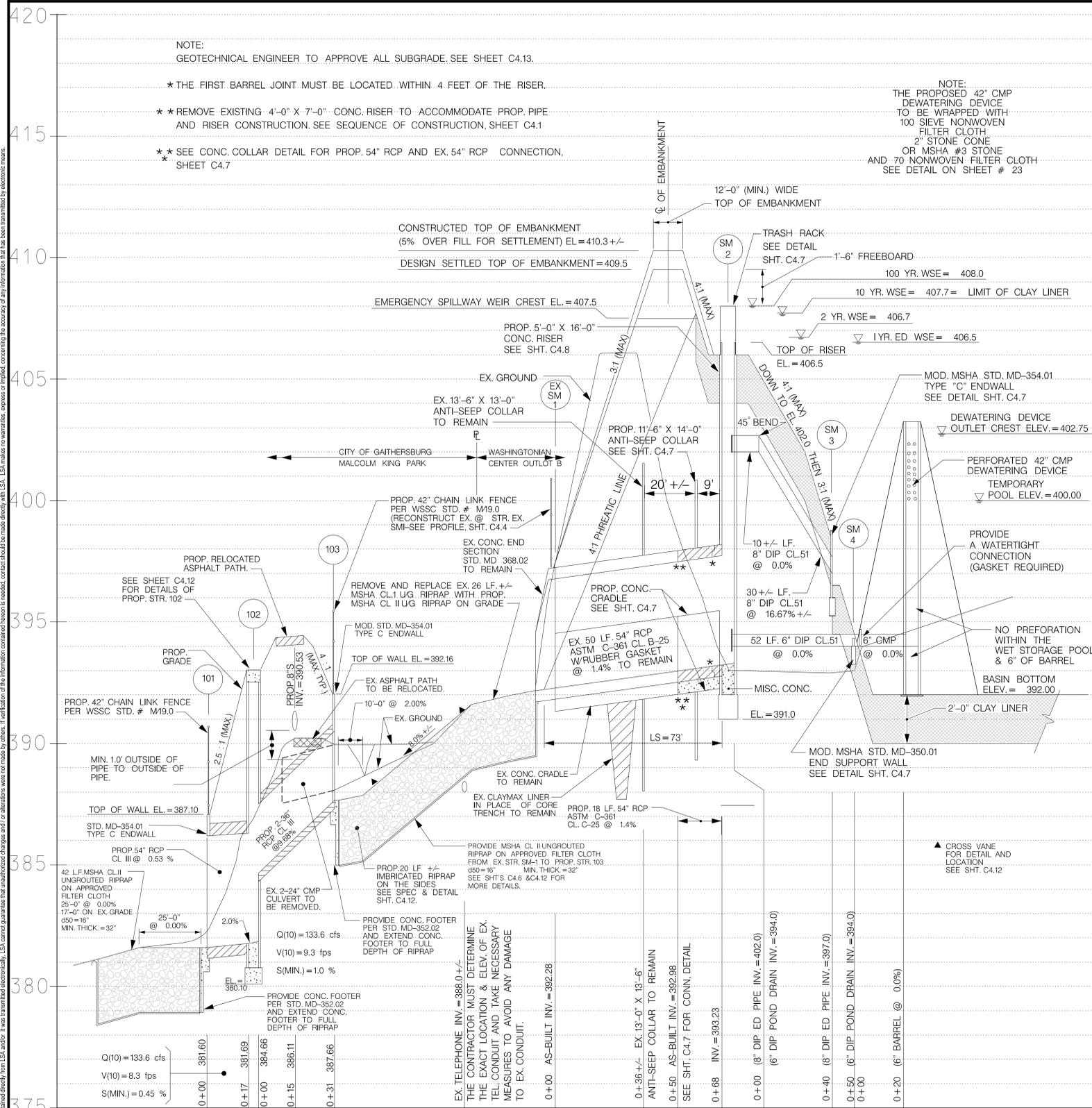
NOTE:
 GEOTECHNICAL ENGINEER TO APPROVE ALL SUBGRADE. SEE SHEET C4.13.

* THE FIRST BARREL JOINT MUST BE LOCATED WITHIN 4 FEET OF THE RISER.

** REMOVE EXISTING 4'-0" X 7'-0" CONC. RISER TO ACCOMMODATE PROP. PIPE AND RISER CONSTRUCTION. SEE SEQUENCE OF CONSTRUCTION, SHEET C4.1

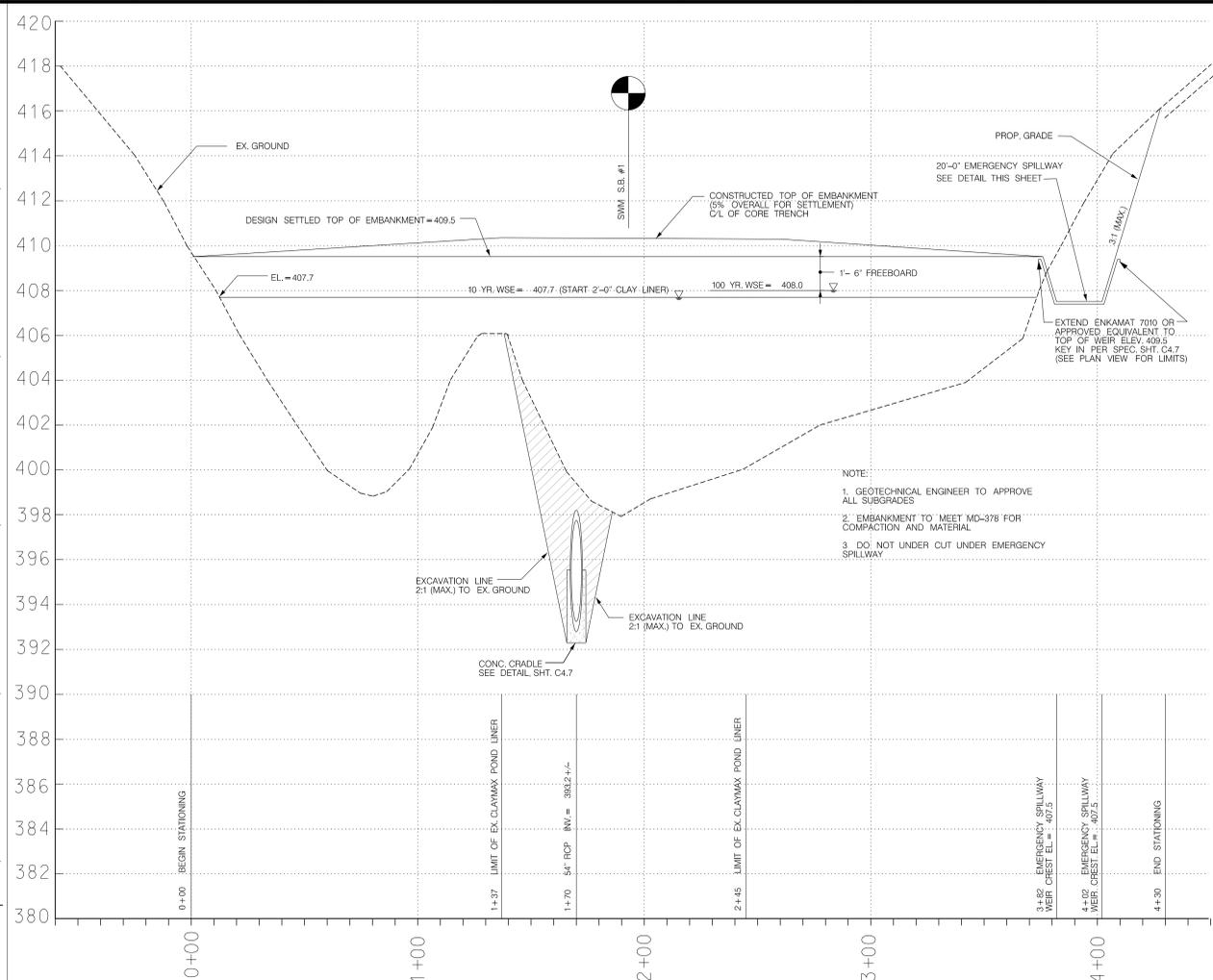
** SEE CONC. COLLAR DETAIL FOR PROP. 54" RCP AND EX. 54" RCP CONNECTION. SHEET C4.7

NOTE:
 THE PROPOSED 42" CMP DEWATERING DEVICE TO BE WRAPPED WITH 100 SIEVE NONWOVEN FILTER CLOTH 2" STONE CONE OR MSHA #3 STONE AND 70 NONWOVEN FILTER CLOTH. SEE DETAIL ON SHEET # 23



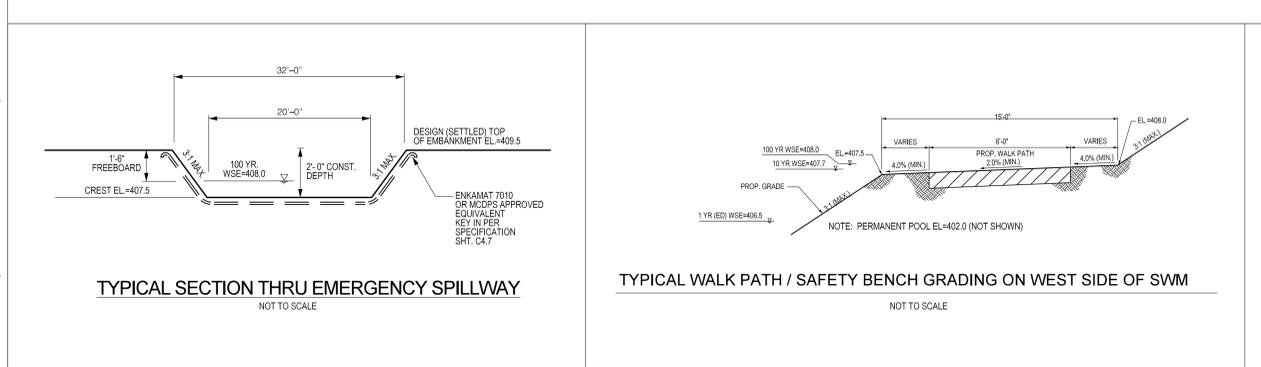
PROFILE THROUGH CL OF PRINCIPAL SPILLWAY

SCALE: 1" = 2'-0" VERT.
 1" = 20'-0" HORIZ.



PROFILE THROUGH CL OF EMBANKMENT LOOKING UPSTREAM

SCALE: 1" = 3'-0" VERT.
 1" = 30'-0" HORIZ.



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NO.	DESCRIPTION	DATE	REVISIONS	BY	DATE
1	DESCRIPTION	MARCH 2013		XXX	XXXXXX

DESIGNED: YMT
 CHECKED: AXQ

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 WASHINGTON, DC 20037
 PHONE # (202) 585-0047
 CONTACT: MR. JAKE STROMAN

THIS PLAN IS FOR THE MAINTENANCE AND CONSTRUCTION OF SEDIMENT CONTROL AND STORMWATER MANAGEMENT MEASURES ONLY.

PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
 LICENSE NO. 36060 EXPIRATION DATE: 06/26/2014

STATE OF MARYLAND
 PROFESSIONAL ENGINEER

PRELIMINARY STORMWATER MANAGEMENT PROFILES

PRELIMINARY SEDIMENT CONTROL PLAN
WASHINGTONIAN NORTH
 OUTLOT D AND PRIVATE ROAD, BLOCK D
 WASHINGTONIAN CENTER
 PLAT 21856

GATHERBURG (9th) ELECTION DISTRICT, MONTGOMERY COUNTY, MARYLAND

PROJECT NO. 1184-00-01

SHEET 21 OF 24

DETAIL B-2 WASH RACK OPTION

STANDARD SYMBOL: [Symbol]

ISOMETRIC VIEW - WASH RACK IN SCE

ISOMETRIC VIEW - WASH RACK ALONG SCE

CONSTRUCTION SPECIFICATIONS

- USE A WASH RACK DESIGNED AND CONSTRUCTED/MANUFACTURED FOR THE ANTICIPATED TRAFFIC LOADS. CONCRETE, STEEL, OR OTHER MATERIALS ARE ACCEPTABLE. PRE-FABRICATED UNITS SUCH AS CATTLE GUARDS ARE ACCEPTABLE. USE MINIMUM DIMENSION OF 6 FEET x 10 FEET. ORIENT DIRECTION OF RIBS AS SHOWN ON THE DETAIL.
- INSTALL PRIOR TO, ALONG SIDE OF, OR AS PART OF THE SCE.
- DIRECT WASH WATER TO AN APPROVED SEDIMENT TRAPPING DEVICE.
- KEEP AREA UNDER WASH RACK FREE OF ACCUMULATED SEDIMENT. IF DAMAGED, REPAIR OR REPLACE WASH RACK.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT AND WATER MANAGEMENT ADMINISTRATION

DETAIL C-1 EARTH DIKE

STANDARD SYMBOL: [Symbol]

CROSS SECTION

DIKE TYPE

	A	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 SOO.
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

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

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: [Symbol]

ELEVATION

CROSS SECTION

JOINING TWO ADJACENT SILT FENCE SECTIONS (TOP VIEW)

CONSTRUCTION SPECIFICATIONS

- USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
- EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.
- FOR TYPE A, USE NOMINAL 2 INCH X 4 INCH CONSTRUCTION GRADE 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 3/8 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 2x6 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.
- 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.
- 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
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DETAIL E-1 SILT FENCE

STANDARD SYMBOL: [Symbol]

CONSTRUCTION SPECIFICATIONS

- USE WOOD POSTS 1 1/2 X 1 1/2 INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD 1" OR 1 1/2" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
- USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
- USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
- PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
- EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
- WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
- EXTEND BOTH ENDS OF THE 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 SILT FENCE.
- REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
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DETAIL E-2 SILT FENCE ON PAVEMENT

STANDARD SYMBOL: [Symbol]

ISOMETRIC VIEW

SECTION A-A

CONSTRUCTION SPECIFICATIONS

- USE NOMINAL 2 INCH X 4 INCH LUMBER.
- USE WOVEN SLIT FILM GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
- PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
- SPACE UPRIGHT SUPPORTS NO MORE THAN 10 FEET APART.
- PROVIDE A TWO FOOT OPENING BETWEEN EVERY SET OF SUPPORTS AND PLACE STONE IN THE OPENING OVER GEOTEXTILE.
- KEEP SILT FENCE TIGHT AND SECURELY STAPLE TO THE UPSLOPE SIDE OF UPRIGHT SUPPORTS. EXTEND GEOTEXTILE UNDER 2x4.
- WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, FOLD, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL, ATTACH LATHE.
- PROVIDE A MASTIC SEAL BETWEEN PAVEMENT, GEOTEXTILE, AND 2x4 TO PREVENT SEDIMENT-LADEN WATER FROM ESCAPING BENEATH SILT FENCE INSTALLATION.
- SECURE BOARDS TO PAVEMENT WITH 40D 5 INCH MINIMUM LENGTH NAILS.
- REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. MAINTAIN WATER TIGHT SEAL ALONG BOTTOM. REPLACE STONE IF DISPLACED.

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DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL: [Symbol]

ELEVATION

CROSS SECTION

CONSTRUCTION SPECIFICATIONS

- INSTALL 2 1/2 INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
- FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2 1/2 INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
- FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
- WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
- EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
- PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
- REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

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DETAIL E-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL: [Symbol]

ISOMETRIC VIEW

SECTION FOR TYPE A AND B

CONSTRUCTION SPECIFICATIONS

- USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
- EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.
- FOR TYPE A, USE NOMINAL 2 INCH X 4 INCH CONSTRUCTION GRADE 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 3/8 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.
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DETAIL E-9-1 STANDARD INLET PROTECTION

STANDARD SYMBOL: [Symbol]

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DETAIL D-1 PIPE SLOPE DRAIN

STANDARD SYMBOL: [Symbol]

ISOMETRIC VIEW

PROFILE

CONSTRUCTION SPECIFICATIONS

- THE HEIGHT OF THE EARTH DIKE MUST BE AT LEAST 2 TIMES THE PIPE DIAMETER MEASURED FROM THE INVERT OF THE PIPE. EXTEND THE TOP ELEVATION OF DIKE AT ZERO PERCENT GRADE UNTIL IT INTERCEPTS THE TOP OF THE ADJOINING EARTH DIKE.
- FLEXIBLE PIPE IS PREFERRED. HOWEVER, CORRUGATED METAL PIPE OR EQUIVALENT PVC PIPE CAN BE USED. ALL CONNECTIONS MUST BE WATER TIGHT.
- ATTACH A FLARED END SECTION TO THE INLET END OF PIPE WITH A WATER TIGHT CONNECTION. AT THE INLET OF THE PIPE SLOPE DRAIN, INSTALL A 10 TO 12 INCH STONE OR EQUIVALENT RECYCLED CONCRETE PLACED 12 INCHES IN DEPTH ON NONWOVEN GEOTEXTILE AND EXTEND OUT 5 FEET FROM THE INLET IN ALL DIRECTIONS.
- PROVIDE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, UNDER THE BOTTOM AND ALONG SIDES OF ALL RIPRAP.
- SECURELY ANCHOR THE PIPE SLOPE DRAIN (PSD) TO THE SLOPE. SPACE THE ANCHORS EVERY 10 FEET.
- HAND TAMP THE SOIL AROUND AND UNDER THE PIPE AND END SECTION IN 4 INCH LIFTS TO THE TOP OF THE EARTH DIKE.
- UPON COMPLETING INSTALLATION OF THE PSD, STABILIZE ASSOCIATED DISTURBANCES WITH SEED, MULCH, AND TACK.
- INSTALL OUTLET PROTECTION AS SPECIFIED ON APPROVED PLAN.
- KEEP POINTS OF INFLOW AND OUTFLOW FREE OF EROSION. MAINTAIN WATER TIGHT CONNECTIONS AND POSITIVE DRAINAGE. REMOVE ACCUMULATED SEDIMENT AND DEBRIS.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT AND WATER MANAGEMENT ADMINISTRATION

DETAIL D-1 PIPE SLOPE DRAIN

STANDARD SYMBOL: [Symbol]

CONSTRUCTION SPECIFICATIONS

- THE HEIGHT OF THE EARTH DIKE MUST BE AT LEAST 2 TIMES THE PIPE DIAMETER MEASURED FROM THE INVERT OF THE PIPE. EXTEND THE TOP ELEVATION OF DIKE AT ZERO PERCENT GRADE UNTIL IT INTERCEPTS THE TOP OF THE ADJOINING EARTH DIKE.
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Leondartown

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NO.	DESCRIPTION	DATE	REVISIONS	BY	DATE
1		MARCH 2013		XXX	XXXXXX
DESIGNED:	YMT	CAO STANDARDS REVIEW:	18 - 2009	TECHNICAL:	YMT
CHECKED:	AXQ				

MISS UTILITY NOTE

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OWNER/DEVELOPER/APPLICANT

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2200 PENNSYLVANIA AVENUE NW, SUITE 200W
WASHINGTON, DC 20037
PHONE # (202) 585-0047
CONTACT: MR. JAKE STROMAN

THIS PLAN IS FOR THE MAINTENANCE AND CONSTRUCTION OF SEDIMENT CONTROL AND STORMWATER MANAGEMENT MEASURES ONLY.

PROFESSIONAL CERTIFICATION

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

LICENSE NO. 36020 EXPIRATION DATE: 06/26/2014



PRELIMINARY SEDIMENT CONTROL NOTES & DETAILS

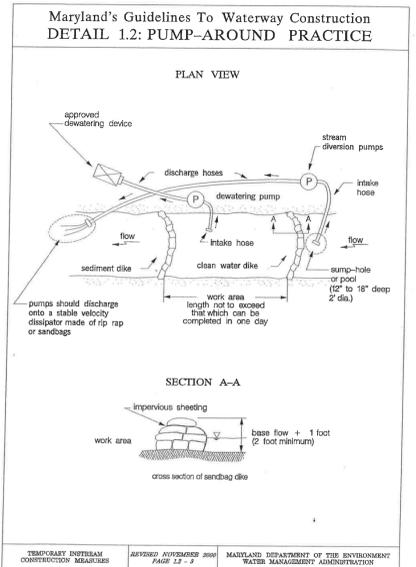
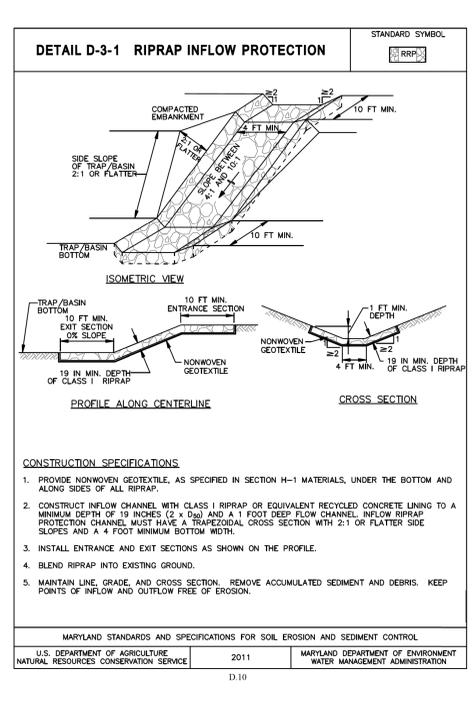
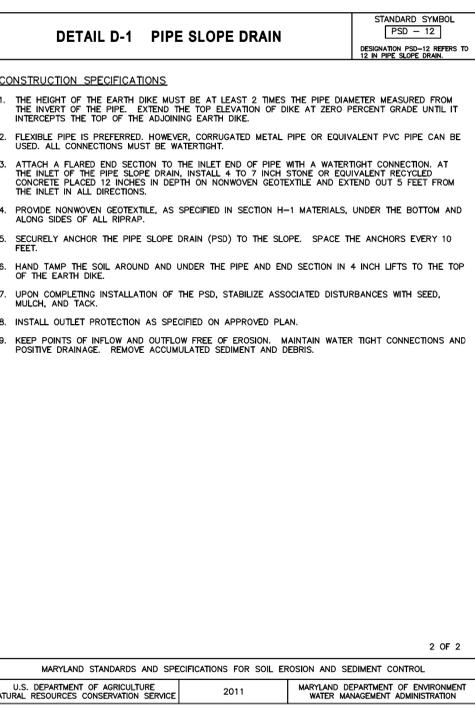
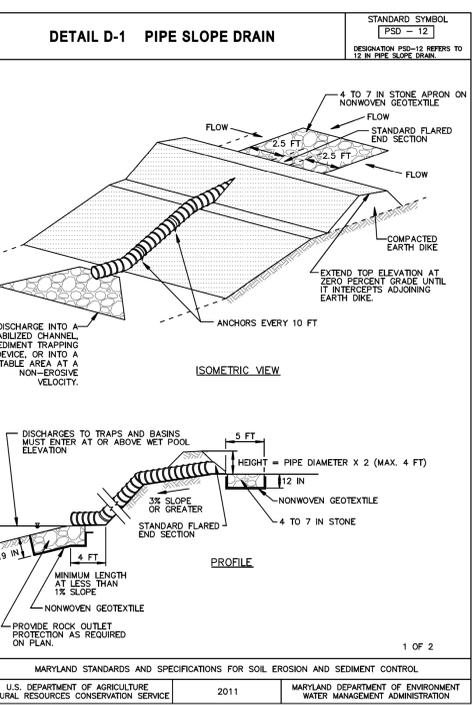
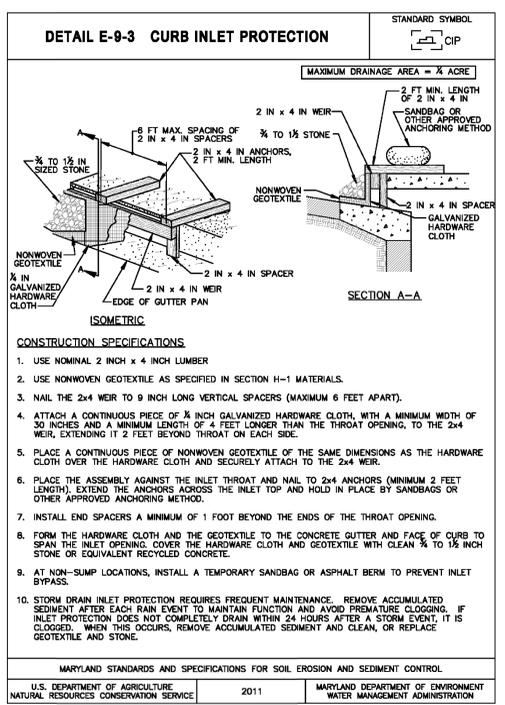
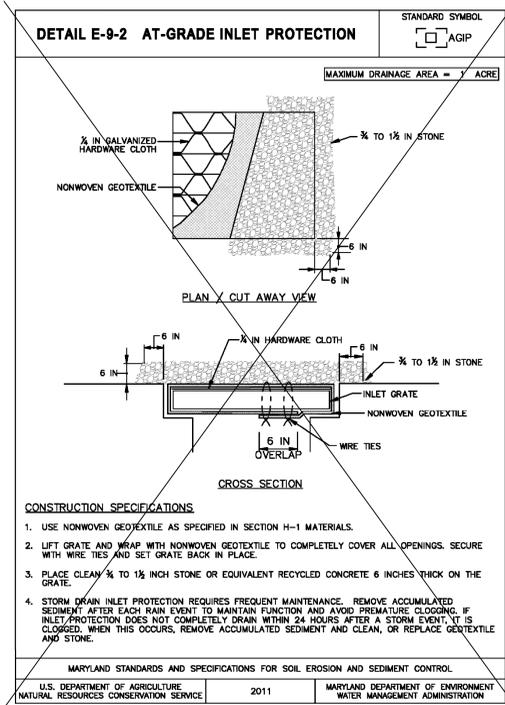
PRELIMINARY SEDIMENT CONTROL PLAN

WASHINGTONIAN NORTH
OUTLOT D AND PRIVATE ROAD, BLOCK D
WASHINGTONIAN CENTER
PLAT 21856

GATHERBURG (9th) ELECTION DISTRICT, MONTGOMERY COUNTY, MARYLAND

SHEET 22 OF 24

PROJECT NO. 1184-00-01



MGWC 1.2: PUMP-AROUND PRACTICE

Temporary measure for dewatering in-channel construction sites

DESCRIPTION

The work should consist of installing a temporary pump around and supporting measures to divert flow around in-stream construction sites.

IMPLEMENTATION SEQUENCE

Sediment control measures, pump-around practices, and associated channel and bank construction should be completed in the following sequence (refer to Detail 1.2):

- Construction activities including the installation of erosion and sediment control measures should not begin until all necessary easements and/or right-of-way have been acquired. All existing utilities should be marked in the field prior to construction. The contractor is responsible for any damage to existing utilities that may result from construction and should repair the damage at his/her own expense to the county's or utility company's satisfaction.
- The contractor should notify the Maryland Department of the Environment or WMA sediment control inspector at least 5 days before beginning construction. Additionally, the contractor should inform the local environmental protection and resource management inspection and enforcement division and the provider of local utilities a minimum of 48 hours before starting construction.
- The contractor should conduct a pre-construction meeting on site with the WMA sediment control inspector, the county project manager, and the engineer to review limits of disturbance, erosion and sediment control requirements, and the sequence of construction. The contractor should stake out all limits of disturbance prior to the pre-construction meeting if they may be required. The participants will also designate the contractor's staging areas and flag all trees within the limit of disturbance which will be removed for construction access. Trees should not be removed within the limit of disturbance without approval from the WMA or local authority.
- Construction should not begin until all sediment and erosion control measures have been installed and approved by the engineer and the sediment control inspector. The contractor should stay within the limits of the disturbance as shown on the plans and minimize disturbance within the work area whenever possible.
- Upon installation of all sediment control measures and approval by the sediment control inspector and the local environmental protection and resource management inspection and enforcement division, the contractor should begin work on the upstream section and proceed downstream beginning with the establishment of stabilized construction entrances. In some cases, work may begin downstream if appropriate. The sequence of construction must be followed unless the contractor gets written approval for deviations from the WMA or local authority. The contractor should only begin work in an area which can be completed by the end of the day including grading adjacent to the channel. At the end of each work day, the work area must be stabilized and the pump removed from the channel. Work should not be conducted in the channel during rain events.
- Sandbag dikes should be situated at the upstream and downstream ends of the work area as shown on the plans, and stream flow should be pumped around the work area. The pump should discharge onto a stable velocity dissipater made of riprap or sandbags.

TEMPORARY INSTREAM CONSTRUCTION MEASURES MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES Revised November 2011

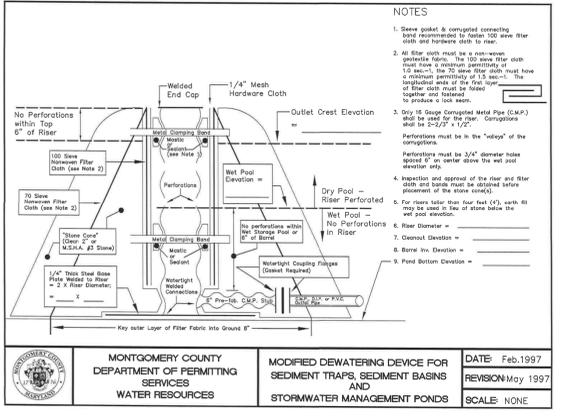
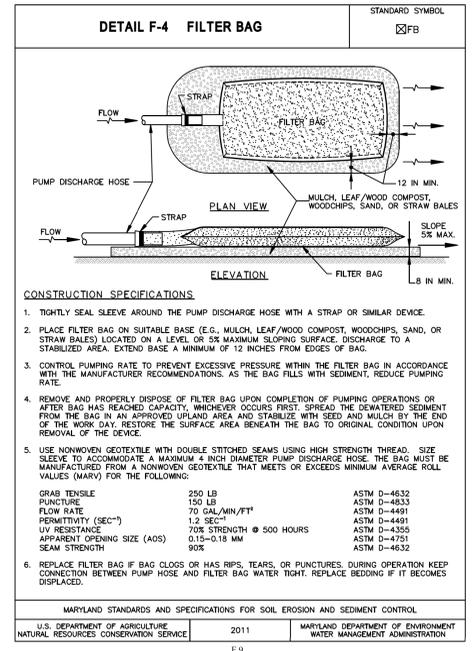
PAGE 1.2 - 1

MGWC 1.2: PUMP-AROUND PRACTICE

- Water from the work area should be pumped to a sediment filtering measure such as a dewatering basin, sediment bag, or other approved device. The measure should be located such that the water drains back into the channel below the downstream sandbag dike.
- Traversing a channel reach with equipment within the work area where no work is proposed should be avoided. If equipment has to traverse such a reach for access to another area, then timber mats or similar measures should be used to minimize disturbance to the channel. Temporary stream crossings should be used only when necessary and only where noted on the plans or specified. (See Section 4, Stream Crossings, Maryland Guidelines to Waterway Construction).
- All stream restoration measures should be installed as indicated by the plans and all banks graded in accordance with the grading plans and typical cross-sections. All grading must be stabilized at the end of each day with seed and mulch or seed and matting as specified on the plans.
- After an area is completed and stabilized, the clean water dike should be removed. After the first sediment flush, a new clean water dike should be established upstream from the old sediment dike. Finally, upon establishment of a new sediment dike below the old one, the old sediment dike should be removed.
- A pump around must be installed on any tributary or storm drain outfall which contributes flow to the work area. This should be accomplished by locating a sandbag dike at the downstream end of the tributary or storm drain outfall and pumping the stream flow around the work area. This water should discharge onto the same velocity dissipater used for the main stem pump around.
- If a tributary is to be restored, construction should take place on the tributary before work on the main stem reaches the tributary confluence. Construction in the tributary, including pump around practice, should follow the same sequence as for the main stem of the river or stream. When construction on the tributary is completed, work on the main stem should resume. Water from the tributary should continue to be pumped around the work area in the main stem.
- The contractor is responsible for providing access to and maintaining all erosion and sediment control devices until the sediment control inspector approves their removal.
- After construction, all disturbed areas should be regraded and revegetated as per the planting plan.

TEMPORARY INSTREAM CONSTRUCTION MEASURES MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES Revised November 2011

PAGE 1.2 - 2



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10	DESCRIPTION	XXX XXXXXX

DATE: MARCH 2013

DESIGNED: YMT

CAO STANDARD: YMT

REVISIONS: 18 - 2009

TECHNICIAN: YMT

CHECKED: AXQ

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LICENSE NO. 36020 EXPIRATION DATE: 06/26/2014



PRELIMINARY SEDIMENT CONTROL NOTES & DETAILS

PRELIMINARY SEDIMENT CONTROL PLAN

WASHINGTONIAN NORTH

OUTLOT D AND PRIVATE ROAD, BLOCK D
 WASHINGTONIAN CENTER
 PLAT 21856

GAITHERBURG (99) ELECTION DISTRICT, MONTGOMERY COUNTY, MARYLAND

1" = AS SHOWN

SHEET 23 OF 24

PROJECT NO. 1184-00-01

SOLTESZ

Rockville
 Lanham
 Waldorf
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Engineering
 Planning
 Environmental Sciences

DESIGNED: YMT

CAO STANDARD: YMT

REVISIONS: 18 - 2009

TECHNICIAN: YMT

CHECKED: AXQ

COPYRIGHT AND THE MAP FILE PERMITTED USE NUMBER 2101030	MAP: 5163 GRID: GH182
TAX MAP: FS 342 & 343	ZONING CATEGORY: MXD
WBC 2002 SHEET: 221W10	222W10
SITE DATUM: HORIZONTAL: NAD 83	VERTICAL: NAD 83

REFERENCE: The original of this drawing document was prepared by Lohrman, Schaefer, Associates, Inc. (LSA). If this document was not obtained directly from LSA and/or LSA cannot guarantee that unauthorized changes and/or alterations were not made by others. If verification of the information contained herein is needed, contact should be made directly with LSA. LSA makes no warranties, express or implied, concerning the accuracy of any information that has been transmitted by electronic means.

General Notes and Sequence of Construction for Preliminary Stormwater Management Pond and Private Roadway Construction - "Washingtonian North"

General Notes for Grading:

A. Obtain written approval from the City of Gaithersburg DPW Sediment Control Inspector before altering or removing any existing or proposed sediment control device.

B. The work included in this permit comprises: clearing and rough grading within the indicated limit of disturbance; the installation of primary utilities, including construction of the off-site sanitary sewer outfall; the grading and paving of the private street; the conversion of the existing sediment basin to a permanent stormwater management pond, including an extension of the existing 54 inch RCP barrel and the installation of a new concrete riser structure; and the reconstruction of the existing culvert on City of Gaithersburg park property downstream of the pond outfall.

C. The primary sediment control device to be used for the work included in this permit is the restoration of the existing sediment basin, constructed by others by MSCD MB-10-23) to a stormwater management pond except as noted on plan. The site has been rough-graded to its existing condition, some utilities installed, and stabilized by others by MSCD MB-10-42, approved 10/16/98 by MSCD/SCS, and by the City of Gaithersburg 10/22/98.

D. The Permittee and the Contractor are responsible for the implementation of this sequence and co-ordination with the City of Gaithersburg DPW Inspector of any revisions to it. It is also the responsibility of the Contractor to comply with all applicable provisions of the "Standard Erosion and Sediment Control and the "Stormwater Management Construction Specifications and Structural Construction Notes"

E. Contact Miss Utility at 1-800-257-7777 to mark the location of all existing utilities within the disturbed area before starting the work.

F. Engage a geotechnical engineer to supervise all sub-surface construction, including the proposed core trench extension/reconstruction of the existing embankment to convert the sediment basin to the proposed permanent stormwater management pond.

G. Obtain DPW approval of the shop drawings of the riser and off-site culvert structures 101, 102 and 103, and the SWM Pond structures prior to fabrication. The design engineer shall review and forward these drawings to the City of Gaithersburg DPW for approval.

H. Any items specified by brand name on this plan, including landscaping materials, are to be installed as such. Any revision to or substitution of such items must be approved by the design engineer before their delivery to the site.

I. The contractor shall maintain a record of all materials used in the construction of the stormwater management pond, including the landscaping materials. Provide this information to the design engineer at the completion of the work so that an as-built plan can be prepared.

Sequence of construction

- Prior to clearing trees, installing sediment control measures, or grading, a preconstruction meeting must be conducted on-site with the City of Gaithersburg Department of Public Works DPW (301) 258-6330 (48 hours' notice) the Owners representative, and the site Engineer.
- The permittee must obtain written approval from the City of Gaithersburg - DPW inspector, certifying that the limits of disturbance and tree protection measures are correctly marked and installed prior to commencing any clearing.

PHASE I

- Clear and grade for installation of sediment control devices.
- Install sediment control devices as shown on plans. Traps and basins shall be constructed prior to construction of any earth dikes that convey drainage to a trap and/or basin.
- Clear and grub area as necessary to install proposed Sediment Control Devices as shown on plan.
 - Install proposed stabilized construction entrance with truck wash racks as required.

- Once the sediment control devices are installed, the permittee must obtain written approval from the City of Gaithersburg - DPW

NOTE1: All sequences should call for the permittee to obtain written approval from the City of Gaithersburg DPW Inspector, prior to the removal of any sediment control device.

- Install the proposed sediment control devices to grade for the installation of the proposed outfall structures and relocation of the existing asphalt path, re-grading of the existing Sediment Basin to conform with the shape of the proposed Stormwater Management pond to follow up after completion of the outfall structures.
 - Begin with the installation of the proposed sandbag dike and additional sump pumps.
 - With the geotechnical engineer on-site, begin with the installation of the proposed structure #103
 - Replace existing twin 24" CMP with twin 36" RCP
 - Install Structure # 102
 - Install proposed structure # 101
 - Install all proposed ungrouted and imbricated rip-rap
 - Fine grade, permanent stabilize area and complete the relocation of the proposed asphalt path
 - Obtain written approval from the City of Gaithersburg DPW Inspector to remove the sandbag dike and relocate any other devices; and the approval to proceed with the SWM Pond.

- Begin with the removal of the accumulated sediment, spread material on the temporary stock pile area, and wrap stock pile area with a single row of super silt fence.
 - Seed and anchored straw mulch or other approved stabilization measures periodically to the stock pile area as needed.
 - Begin rough grading the sediment basin to 392.00 bottom elevation with the supervision of the geotechnical engineer on-site
 - Install proposed ungrouted rip-rap and 24" PSD.
 - Endwall structure SM-4 at this time
 - Install proposed 6" DIP Pond Drain and 8" DIP Extended Detention pipe
 - Install proposed 42" CMP temporary sediment basin dewatering device with a 6" CMP and connect to the 6" DIP pond drain in line and grade
 - Complete the installation of the control structure and accessories as per plan
 - Continue grading the sediment basin slopes, provide the proposed clay liner
 - Begin removal of the existing control structures and the installation of the clay liner
 - Install proposed 54" RCP and connect to the existing 54" RCP to remain
 - Grade downstream of the SWM embankment and permanent stabilize all slopes
 - Obtain written certification and reports from the geotechnical engineer
 - Complete SWM Pond construction and obtain approval from the City of Gaithersburg DPW Inspector
 - With the approval of the City of Gaithersburg DPW Inspector, contractor to remove and/or relocate sediment control devices as required for the proposed private interior road
 - Upon completion of the construction of the SWM Pond, contractor to remove the temporary stock pile area as directed by the City of Gaithersburg DPW Inspector; if excess material is going to be hauled away, the site must have an approved and active sediment control permit

9. Proceed with the construction and grading of the private interior road

PHASE II

- Clear and grade for the proposed grading and installation of the sediment control practices on the private interior road and amenities
- Clear and grade as necessary for the installation of the proposed Sediment Control devices as follows:

- Install additional stabilized construction entrance with truck wash rack at the egress point
- Install proposed Earth Dikes E.D. B-2 and twin temporary outfall into sediment basin as show on the east side of the private interior road plan
- Obtain approval from the City of Gaithersburg DPW Inspector to install proposed storm drain structure # P-5, P-4 and structure #6 and connecting 30" RCP and 48" RCP
- Relocate existing 48" HDPE storm drain by-pass to structure #6
- The existing temporary earth dike from PHASE I, TEMP. E.D. B-2 is to be removed and or relocated to access the proposed borrow area east of the private interior road
- Existing temporary access road is to be removed as deemed necessary by the contractor
- Install proposed Earth Dike E.D. B-2 on the west side of the proposed private interior road as shown on plan and outfall into the sediment basin with the use of rip-rap inflow protection
- Install proposed Earth Dike E.D. B-2 on the south side of the site as shown on plan and outfall into the sediment basin with the use of rip-rap inflow protection
- Install temporary outfall and rip-rap stabilization

12. Obtain writing approval from the City of Gaithersburg DPW inspector

Once constructed and installed, no sediment control devices/measures may be removed or eliminated without obtaining approval from the DPW City of Gaithersburg Inspector.

All sediment control devices are to be installed and maintained per the latest City of Gaithersburg Standards and Specification for Soil Erosion Sediment Control and or as directed by DPW City of Gaithersburg Inspector.

13. Begin with the rough grading of the road with the supervision of the geotechnical engineer on-site

14. Continue with the street grading and installation of the proposed storm drain system as shown on plans.

15. Construct a watertight masonry bulkhead at the 48" RCP to be connected to storm drain structure # 6, when the temporary storm drain by-pass have been removed

- Install proposed sewer system outfall and connect to the existing 12" sewer with proposed manhole to be installed over the existing 12" sewer pipe
- Install proposed water system outfall and connect to the existing 12" water system as shown on plan
- Obtain approval from the WSSC inspector.
- Install proposed storm drain structure # 642 and provide a temporary storm drain outfall into the sediment basin with a 24" HDPE leading to the rip-rap inflow protection. Construct a watertight masonry bulkhead at the end of the permanent 24" RCP
- Continue with the road grading and utility installation as necessary with the geotechnical engineer on-site
- Install all proposed ESD structures and accessories wrap the structures with regular silt fence and cover them with woven monofilament geotextile fabric or approved equivalent to prevent contamination during the on-going construction activities, with the supervision of the geotechnical engineer on-site
- Immediately stabilize all areas which are to be unpaved after they are brought to grade
- Install all proposed curb and gutter and sidewalk to grade
- Install pavement base course
- Complete road and site grading and stabilize site as required. flush all storm drain system free of sediment
- Install final coat of the proposed pavement
- Contractor to refer to the final Landscape plan for additional permanent stabilization requirements
- Contractor to ensure that the site is completed stabilized and no temporary stock pile areas have been left on-site

- Obtain written approval from the City of Gaithersburg DPW inspector for the removal of the Sediment Control devices.
- Remove all Sediment Control devices use for the completion of the interior road construction, remove the temporary watertight masonry from the storm drain structures and complete all connections to the structures at this time.
- The temporary Sediment Basin is to remain operational and as is for the proposed work on Lots 7 & 8, Camden Living.
- Obtain all the construction reports and delivery tickets from manufacturers and geotechnical engineer and send originals to Soltesz for the preparation of the SWM As-built
- Submit the SWM Pond and ESD As-Built plan to The City of Gaithersburg DPW for review and approval

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LICENSE NO. 36060 EXPIRATION DATE: 06/26/2014

STATE OF MARYLAND
 JAY X. QUINN
 PROFESSIONAL ENGINEER

CITY OF GAITHERSBURG
 DEPARTMENT OF PUBLIC WORKS
STORMWATER MANAGEMENT

APPLICATION NO. SWM-3880-2013
 CONCEPT PLAN PRELIMINARY PLAN
 APPROVAL DATE _____
 BY _____

CITY OF GAITHERSBURG
 DEPARTMENT OF PUBLIC WORKS
SEDIMENT EROSION CONTROL

APPLICATION NO. SEC-3882-2013
 CONCEPT PLAN PRELIMINARY PLAN
 APPROVAL DATE _____
 BY _____

SOLTESZ

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NO.	DESCRIPTION	DATE	BY	DATE
1	DESCRIPTION	MARCH 2013	YMT	XXX XXXXXX

DESIGNED: YMT

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 PHONE # (202) 585-0047
 CONTACT: MR. JAKE STROMAN

TAX MAP	ZONING CATEGORY:
FS 342 & 343	MXD
WBSC 200 SHEET	
221NW 10	
222RW 10	
SITE DATUM:	
HORIZONTAL: NAD 83	
VERTICAL: NAD 83	

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STATE OF MARYLAND
 JAY X. QUINN
 PROFESSIONAL ENGINEER

PRELIMINARY SEDIMENT CONTROL NOTES & SEQUENCE OF CONSTRUCTION

PRELIMINARY SEDIMENT CONTROL PLAN

WASHINGTONIAN NORTH

OUTLOT D AND PRIVATE ROAD, BLOCK D
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 PLAT 21856

GAITHERSBURG (9th) ELECTION DISTRICT, MONTGOMERY COUNTY, MARYLAND

1" = AS SHOWN

SHEET 24 OF 24

PROJECT NO. 1184-00-01

SLAPLOT COMMENTS



**WASHINGTONIAN NORTH
OUTLOT D, PRIVATE ROAD
(aka PRIVATE INTERIOR ROAD)
BLOCK "D"**

**PRELIMINARY
STORMWATER MANAGEMENT
REPORT**

Submitted: June, 2013

Prepared on Behalf of:
Washingtonian North Associates, LP
c/o Boston Properties
Contact: Jake Stroman

SDP-3878-2013
Exhibit #33

Prepared By:
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(301) 948-2750
Soltesz No.: 1184-00-01

Prepared by: Yee-Mei Tse P.E.
Checked by: Amy Quant P.E.

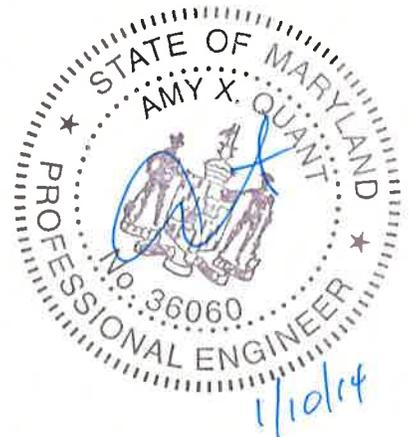


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**PRELIMINARY
STORMWATER MANAGEMENT
REPORT
Offsite Drainage and Outlot “D” (POND)
Washingtonian North**

INTRODUCTION

The project site is part of Washingtonian Center which consists Lots 4, 7 & 8, Access roadway and Outlot “D”. It is located west & northwest of the intersection of Washingtonian Boulevard and Sam Eig Highway in Gaithersburg, Maryland. The site is bounded on the east by Sam Eig Highway and on the south and west by an existing residential development. The site is currently zoned MXD and is located within the Muddy Branch Watershed, Use Class I/I-P.

The site is currently vacant. The previous approved Sediment Basin with its outfall appurtenances is still existed. Due to the SWM new regulation, and as per direction from City of Gaithersburg Public Work, Outlot “D” (previous approved SWM Pond location) should only use for control Offsite runoff and the private access road that cannot be treated by ESD practice. The runoff of all 3 lots (lots 4, 7 & 8) should be individually Controlled by using ESD to MEP.

Since the Outlot “D” (previous approved SWM Pond) Drainage Area was reduced from the approved design 39.4 Acre to 30.12 Acre, 12.84 Acres is controlled using ESD and required control Offsite runoff area for pond is 17.28 Acre; the SWM Pond will be adequate for providing the quantity & quality control for the Offsite runoff.

Currently ESD in the Private Roadway does control full required drainage, however, that may change in final design and there is capacity in SWM Pond to control any additional drainage in the Private Roadway if Road design changes later.

The following report is concentrated on Private Roadway ESD.

STORMWATER MANAGEMENT REQUIREMENTS

The Maryland Department of the Environment *2009 Stormwater Management Design* Manual and the Montgomery County Stormwater Regulations require that all new developments meet the criteria for Water Quality Volume (WQ_v), Recharge Volume (Re_v) and Channel Protection Volume (Cp_v) through ESD practices to the maximum extent practicable (MEP). Tables in the report below are referenced from the 2009 manual, unless otherwise indicated.

STORMWATER MANAGEMENT METHODOLOGY

For Private Roadway, a new SWM is provided via Environmental Site Design (ESD) facilities. 7 ESD facilities are proposed.

ESD for the Private Roadway of this project will be provided through the following practice:

- 1) ESD practice will be used to treat the full P_E target (Table 5.3), in turn satisfying all Water Quality, Quantity and Recharge Volume requirements. 100% ESDv have been achieved through the following method:
 - a. Planter Box Micro-Bioretenion are being used to provide volume via wet storage above the media and volume with the voids of the filter media below the facility.

To verify compliance with the intent of ESD design, we offer the following (please note that tables referenced are from the 2009 Maryland Stormwater Management Design Manual:

Natural Resource Protection and Enhancement

Site and resource mapping indicate minor natural resources located onsite as listed in Table 5.1.

- Please refer to the attached NRI/FSD for additional information.

Therefore, natural resources will be protected and preserved to like existing conditions to the MEP.

Soil Types Include:

- 16D – Brinklow-Blocktown channery Silt Loams, 15 to 25 percent slopes. Hydrologic Soil Group “B”
- 116D – Blocktown channery silt loam, 15 to 25 percent slopes, very rocky, Hydrologic Soil Group “C”
- 54A – Hatboro Silt loam, 0 to 3 percent slopes. Hydrologic Soil Group “D”
- 66UB – Wheaton-Urban land complex, 0 to 8 percent slopes. Hydrologic Soil Group “B”
- 66UC – Wheaton-Urban land complex, 8 to 15 percent slopes. Hydrologic Soil Group “B”

See appendix for the full web soil survey.

Implementation of ESD Planning Techniques

The following techniques in Table 5.2 were used; all others are not applicable. These items include: parking lot runoff, rooftop runoff, and clearing & grading. Parking lot

runoff will be directed to planter box bioretention or other stormwater practices within landscaped areas. Rooftop runoff shall be directed to proposed ESD facilities for treatment. Clearing and grading has been limited by the required needs for the proposed development mostly within existing developed areas. Therefore, implementation of ESD planning techniques has been explored and will be used to the MEP.

This package includes drainage area map, stormwater management preliminary plan with preliminary storm drain profiles and details, and supporting ESD computations for your review.

CONCLUSION

For Private Roadway ESD stormwater management requirements will be met or exceeded.

ESD Computations



SOLTESZ

2 Research Pl., Suite 100
 Rockville, MD 20850
 (301) 948-2750

Date 4/10/2013
 Project Name Washington North Interior Road
 Project No. 1184-00-01
 By CX / YMT
 Checked AXQ
 Revised 6/14/2013

LOD ESDv COMPUTATIONS

LOD Target

Enter Total Site Property Area = 72462 sqft
 Enter Total Impervious Area = 55345 sqft
 % of Impervious D.A., I = 76.4%
 Volumetric Runoff Coefficient, Rv = 0.737 (Rv = 0.05 + 0.009 (I))

HSG	RCN	Area (sqft)	Percentage	Target P _E	Target A _f (sqft)	Target ESD _v (ac-ft)	Target ESD _v (cu-ft)
A	38		0%	2.4 in			
B	55	62925	87%	2.2 in	9229 sqft	0.195 ac-ft	8507 cu-ft
C	70	4955	7%	2.0 in	661 sqft	0.014 ac-ft	609 cu-ft
D	77	4582 sqft	6%	1.8 in	550 sqft	0.012 ac-ft	507 cu-ft
Totals			100%	2.2 in	10440 sqft	0.221 ac-ft	9623 cu-ft

Equations

Target Design Runoff Volume, ESD_v = (PE * Rv * (A/43560)) / 12

Composite RCN for "Woods in Good Cond." = 57



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Date: 4/10/2013
 Project Name: Washingtonian North Interior Roak
 Project No.: 1184-00-01
 By: CX / YMT
 Checked: AXQ
 Revised: 12/9/2013

ESD 1
ESDv COMPUTATIONS

Planter Box

Enter Total Drainage Area to Micro Bioretention = **6763 sqft**
 Enter Total Impervious Area = **5224 sqft**
 % of Impervious D.A. I = **77.2%**
 Volumetric Runoff Coefficient, Rv = **0.745** (Rv = 0.05 + 0.009 (I))

HSG	RCN	Area (sqft)	Percentage	Target P _e	Target P _e	Target AF (sqft)	Target ESDv (ac-ft)	Target ESDv (cu-ft)	Reduced RCN's (2.35 in)	Reduced %I (RCN 55)	Effective Imp. Area
A	38		0%	2.4 in					0	0.0%	0 sqft
B	55	6763	100%	2.2 in		992 sqft	0.021 ac-ft	924 cu-ft	55	0.0%	0 sqft
C	70		0%	2.0 in					0	0.0%	0 sqft
D	77		0%	1.8 in					0	0.0%	0 sqft
Totals			100%	2.2 in		992 sqft	0.021 ac-ft	924 cu-ft	0	0.0%	0 sqft

Equations

Target Planning Surface Area of Micro Bioretention, A_r = (PE*DA) / 15"
 Target Design Runoff Volume, ESDv = (PE * Rv *(A/43560)) / 12

Composite RCN for "Woods in Good Cond." = **55**
 Max Allowable Vol. Based on 1-yr 24-hr Storm (2.6in) = **1092 cu-ft**
 Enter Filter Surface Area Provided = **430 sqft**
 Depth Provided Above Micro Bioretention = **6 in**
 Depth of Filter Media = **4.5 ft**

Surface Area of Micro Bioretention =
 Actual Volume Provided = **989 cu-ft**
 Excess Volume Provided = **989 cu-ft**
 ESD P_e Treatment Provided = **65 cu-ft**
Target ESDv is Satisfied
 (ESD P_e Treatment Provided = (ESD_{vp} * 12) / (Rv * A))

ESD P_e Treatment Provided = **2.35 in**
 Reduced Composite RCN = **55**
 Additional ESD Volume Required = **ESDv is Satisfied**
 Additional ESD Treatment Required = **ESD is Satisfied**
 Effective % Impervious (Table 5.3) = **0.0%**
 Effective Impervious Area = **0 sqft**
 If Used, Additional Structural Treatment Volume = **Treatment is Satisfied** (Use With Structural Practices Downstream Only)

Notes:

- The drainage area to any individual practice shall be 20,000sq-ft or less.
- The surface area of micro-bioretention practices shall be at least 2% of the contributing drainage area.
- A two to four foot deep layer of filter media shall be provided.
- Filter beds shall not intercept groundwater. If designed as infiltration practices, filter bed inverts shall be separated at least four feet vertically (two feet on the lower Eastern shore) from the seasonal high water table.
- A surface mulch layer (maximum 2 to 3 inches thick) should be provided to enhance plant survival and inhibit weed growth.
- The filtering media or planning soil, mulch and underdrain systems shall conform to the specifications found in Appendix B.4. of the MDE Stormwater Manual.
- See manual for addition limitations.





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Date: 4/10/2013
 Project Name: Washingtonian North Interior Road
 Project No.: 1184-00-01
 By: CX / YMT
 Checked: AXQ
 Revised: 12/9/2013

ESD 1A
ESDv COMPUTATIONS

Planter Box

Enter Total Drainage Area to Micro Bioretention = **5925 sqft**
 Enter Total Impervious Area = **4145 sqft**
 % of Impervious D.A., I = 70.0%
 Volumetric Runoff Coefficient, Rv = 0.680
 (Rv = 0.05 + 0.009 (I))

HSG	RCN	Area (sqft)	Percentage	Target P _E	Target AF (sqft)	Target ESDv (ac-ft)	Target ESDv (cu-ft)	Reduced RCN's (2.46 in)	Reduced %I (RCN 55)	Effective Imp. Area
A	38		0%	2.2 in				0	0.0%	0 sqft
B	55	5925	100%	2.2 in	869 sqft	0.017 ac-ft	738 cu-ft	55	0.0%	0 sqft
C	70		0%	2.0 in				0	0.0%	0 sqft
D	77		0%	1.8 in				0	0.0%	0 sqft
Totals			100%	2.2 in	869 sqft	0.017 ac-ft	738 cu-ft	0	0.0%	0 sqft

Equations

Target Planning Surface Area of Micro Bioretention, A_T = (PE*DA) / 15"
 Target Design Runoff Volume, ESDv = (PE * Rv *(A/43560)) / 12

Composite RCN for "Woods in Good Cond." = 55
 Max Allowable Vol. Based on 1-yr 24-hr Storm (2.6in) = 872 cu-ft

Enter Filter Surface Area Provided = **550 sqft**
 Depth Provided Above Micro Bioretention = **6 in**
 Depth of Filter Media = **2.5 ft**

Surface Area of Micro Bioretention = 550 sqft
 Actual Volume Provided = 825 cu-ft
 Volume Credited Above/Below Micro Bioretention = **872 cu-ft**
 Excess Volume Provided = 87 cu-ft

ESD P_E Treatment Provided = **2.46 in**
 Reduced Composite RCN = **55**
 Additional ESD Volume Required = **ESDv is Satisfied**
 Additional ESD Treatment Required = **ESD is Satisfied**
 Effective % Impervious (Table 5.3) = 0.0%
 Effective Impervious Area = 0 sqft

If Used, Additional Structural Treatment Volume = Treatment is Satisfied

(Use With Structural Practices Downstream Only)

Target ESDv is Satisfied
 (ESD P_E Treatment Provided = (ESD_{vp} * 12) / (Rv * A))
 (Applied to ESD Practices)

Notes:

- The drainage area to any individual practice shall be 20,000sq-ft or less.
- The surface area of micro-bioretention practices shall be at least 2% of the contributing drainage area.
- A two to four foot deep layer of filter media shall be provided.
- Filter beds shall not intercept groundwater. If designed as infiltration practices, filter bed inverts shall be separated at least four feet vertically (two feet on the lower Eastern shore) from the seasonal high water table.
- A surface mulch layer (maximum 2 to 3 inches thick) should be provided to enhance plant survival and inhibit weed growth.
- The filtering media or planting soil, mulch and underdrain systems shall conform to the specifications found in Appendix B.4. of the MDE Stormwater Manual.
- See manual for addition limitations.



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 Checked: AXQ
 Revised: 12/9/2013

ESD 1B
ESDv COMPUTATIONS

Planter Box

Enter Total Drainage Area to Micro Bioretention = **6562 sqft**
 Enter Total Impervious Area = **4316 sqft**
 % of Impervious D.A., I = 65.8%
 Volumetric Runoff Coefficient, Rv = 0.642 (Rv = 0.05 + 0.009 (I))

HSG	RCN	Area (sqft)	Percentage	Target P _E	Target A _F (sqft)	Target ESD _v (ac-ft)	Target ESD _v (cu-ft)	Reduced RCN's (2.14 in)	Reduced %I (RCN 55)	Effective Imp. Area
A	38		0%	2.2 in				0	0.0%	0 sqft
B	55	6562	100%	2.0 in	875 sqft	0.016 ac-ft	702 cu-ft	55	0.0%	0 sqft
C	70		0%	2.0 in				0	0.0%	0 sqft
D	77		0%	1.8 in				0	0.0%	0 sqft
Totals			100%	2.0 in	875 sqft	0.016 ac-ft	702 cu-ft	0	0.0%	0 sqft

Equations

Target Planning Surface Area of Micro Bioretention, A_F = (PE*DA) / 15"
 Target Design Runoff Volume, ESD_v = (PE * Rv * (A/43560)) / 12

Composite RCN for "Woods in Good Cond." = 55
 Max Allowable Vol. Based on 1-yr 24-hr Storm (2.6in) = 913 cu-ft

Enter Filter Surface Area Provided = **396 sqft**
 Depth Provided Above Micro Bioretention = **6 in**
 Depth of Filter Media = **3.5 ft**

Surface Area of Micro Bioretention = 396 sqft
 Actual Volume Provided = 752 cu-ft
 Volume Credited Above/Below Micro Bioretention = **752 cu-ft**

Excess Volume Provided = 50 cu-ft
 ESD P_E Treatment Provided = **2.14 in**
 Reduced Composite RCN = **55**

Additional ESD Volume Required = **ESD_v is Satisfied**
 Additional ESD Treatment Required = **ESD is Satisfied**
 Effective % Impervious (Table 5.3) = 0.0%
 Effective Impervious Area = 0 sqft

If Used, Additional Structural Treatment Volume = **Treatment is Satisfied**

Target ESD_v is Satisfied
 (ESD P_E Treatment Provided = (ESD_v * 12) / (Rv * A))
(Applied to ESD Practices)

Use With Structural Practices Downstream Only

Notes:
 The drainage area to any individual practice shall be 20,000-sq-ft or less.
 The surface area of micro-bioretention practices shall be at least 2% of the contributing drainage area.
 A two to four foot deep layer of filter media shall be provided.
 Filter beds shall not intercept groundwater. If designed as infiltration practices, filter bed inverts shall be separated at least four feet vertically (two feet on the lower Eastern shore) from the seasonal high water table.
 A surface mulch layer (maximum 2 to 3 inches thick) should be provided to enhance plant survival and inhibit weed growth.
 The filtering media or planting soil, mulch and underdrain systems shall conform to the specifications found in Appendix B.4. of the MDE Stormwater Manual.
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 Revised 12/9/2013

ESD 2
ESDv COMPUTATIONS

Planter Box

Enter Total Drainage Area to Planter Box = 14220 sqft
 Enter Total Impervious Area = 11279 sqft
 % of Impervious D.A., I = 79.3%
 Volumetric Runoff Coefficient, Rv = 0.764 (Rv = 0.05 + 0.009 (I))

HSG	RCN	Area (sqft)	Percentage	Target P _e	Target A _f (sqft)	Target ESD _v (ac-ft)	Target ESD _v (cu-ft)	Reduced RCN's (2.6 in)	Reduced %I (RCN 55)	Effective Imp. Area
A	38		0%	2.4 in				0	0.0%	0 sqft
B	55	14220	100%	2.2 in	2086 sqft	0.046 ac-ft	1991 cu-ft	55	0.0%	0 sqft
C	70		0%	2.0 in				0	0.0%	0 sqft
D	77		0%	1.8 in				0	0.0%	0 sqft
Totals			100%	2.2 in	2086 sqft	0.046 ac-ft	1991 cu-ft			0 sqft

Equations

Target Planning Surface Area of Planter Box, A_p = (PE*DA) / 15"
 Target Design Runoff Volume, ESD_v = (PE * Rv *(A/43560)) / 12

Composite RCN for "Woods in Good Cond." = 55
 Max Allowable Vol. Based on 1-yr 24-hr Storm (2.6in) = 2353 cu-ft
 Enter Filter Surface Area Provided = 1145 sqft
 Depth Provided Above Filter Surface = 6 in
 Depth of Filter Media = 4.00 ft

Surface Area of Planter Box = 1145 sqft
 Actual Volume Provided = 2405 cu-ft
 Volume Credited Above/Below Planter Box = 2353 cu-ft
 Excess Volume Provided = 362 cu-ft
 ESD P_e Treatment Provided = 2.60 in
 Max Allowable 1-Yr 24-Hr ESD_v Used (ESD P_e Treatment Provided = (ESD_{vp} * 12) / (Rv * A))

Reduced Composite RCN = 55
 Additional ESD Volume Required = ESD_v is Satisfied
 Additional ESD Treatment Required = ESD is Satisfied
 Effective % Impervious (Table 5.3) = 0.0%
 Effective Impervious Area = 0 sqft
 If Used, Additional Structural Treatment Volume = Treatment is Satisfied

(Use With Structural Practices Downstream Only)

Notes:
 The drainage area to any individual practice shall be 20,000sq-ft or less.
 The surface area of planter box shall be at least 2% of the contributing drainage area.
 A two to four foot deep layer of filter media shall be provided.
 Filter beds shall not intercept groundwater. If designed as infiltration practices, filter bed inverts shall be separated at least four feet vertically (two feet on the lower Eastern shore from the seasonal high water table).
 A surface mulch layer (maximum 2 to 3 inches thick) should be provided to enhance plant survival and inhibit weed growth.
 The filtering media or planting soil, mulch and underdrain systems shall conform to the specifications found in Appendix B.4. of the MDE Stormwater Manual.



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 Revised 12/9/2013

ESD 3
ESDv COMPUTATIONS

Planter Box

Enter Total Drainage Area to Planter Box = **7725 sqft**
 Enter Total Impervious Area = **6254 sqft**

% of Impervious D.A. I = **81.0%**
 Volumetric Runoff Coefficient, Rv = **0.779**

$(Rv = 0.05 + 0.009(I))$

HSG	RCN	Area (sqft)	Percentage	Target P _e	Target Af (sqft)	Target ESDv (ac-ft)	Target ESDv (cu-ft)	Reduced RCN's (1.85 in)	Reduced %I (RCN 66)	Effective Imp. Area
A	38		0%	2.4 in				0	0.0%	0 sqft
B	55	7725	100%	2.2 in	1133 sqft	0.025 ac-ft	1103 cu-ft	66	10.0%	773 sqft
C	70		0%	2.0 in				0	0.0%	0 sqft
D	77		0%	1.8 in				0	0.0%	0 sqft
Totals			100%	2.2 in	1133 sqft	0.025 ac-ft	1103 cu-ft	0	0.0%	773 sqft

Equations

Target Planning Surface Area of Planter Box, A_p = (PE*DA) / 15"
 Target Design Runoff Volume, ESDv = (PE * Rv *(A/43560)) / 12

Composite RCN for "Woods in Good Cond." = **55**
 Max Allowable Vol. Based on 1-yr. 24-hr Storm (2.6in) = **1303 cu-ft**
 Enter Filter Surface Area Provided = **332 sqft**
 Depth Provided Above Filter Surface = **12 in**
 Depth of Filter Media = **4.50 ft**

Surface Area of Planter Box = **332 sqft**
 Actual Volume Provided = **930 cu-ft**
 Volume Credited Above/Below Planter Box = **930 cu-ft**
 Excess Volume Provided = **0 cu-ft**

ESD P_e Treatment Provided = **1.85 in**
 Reduced Composite RCN = **66**
 Additional ESD Volume Required = **173 cu-ft**
 Additional ESD Treatment Required = **0.35 in**
 Effective % Impervious (Table 5.3) = **10.0%**
 Effective Impervious Area = **773 sqft**
 If Used, Additional Structural Treatment Volume = **171 cu-ft**

ESDv is not Satisfied (PE < 2.2 in.)

$(ESD P_e \text{ Treatment Provided} = (ESD_{vp} * 12) / (Rv * A))$

(Applied to ESD Practices)

(Use With Structural Practices Downstream Only)

Notes:

The drainage area to any individual practice shall be 20,000sq-ft or less.
 The surface area of planter box shall be at least 2% of the contributing drainage area.

A two to four foot deep layer of filter media shall be provided.

Filter beds shall not intercept groundwater. If designed as infiltration practices, filter bed inverts shall be separated at least four feet vertically (two feet on the lower Eastern shore) from the seasonal high water table.

A surface mulch layer (maximum 2 to 3 inches thick) should be provided to enhance plant survival and inhibit weed growth.

The filtering media or planning soil, mulch and underdrain systems shall conform to the specifications found in Appendix B.4. of the MDE Stormwater Manual.



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 Revised: 12/9/2013

ESD 4
ESDv COMPUTATIONS

Planter Box

Enter Total Drainage Area to Planter Box = **16862 sqft**
 Enter Total Impervious Area = **13136 sqft**
 % of Impervious D.A., I = 77.9%
 Volumetric Runoff Coefficient, Rv = 0.751
 (Rv = 0.05 + 0.009 (I))

HSG	RCN	Area (sqft)	Percentage	Target P _E	Target AF (sqft)	Target ESDv (ac-ft)	Target ESDv (cu-ft)	Reduced RCN's (2.45 in)	Reduced %I (RCN 55)	Effective Imp. Area
A	38		0%	2.4 in				0	0.0%	0 sqft
B	55	16862	100%	2.2 in	2473 sqft	0.053 ac-ft	2322 cu-ft	55	0.0%	0 sqft
C	70		0%	2.0 in				0	0.0%	0 sqft
D	77		0%	1.8 in				0	0.0%	0 sqft
Totals			100%	2.2 in	2473 sqft	0.053 ac-ft	2322 cu-ft	0	0.0%	0 sqft

Equations

Target Planning Surface Area of Planter Box, A_P = (PE*DA) / 15"
 Target Design Runoff Volume, ESDv = (PE * Rv *(A/43560)) / 12

Composite RCN for "Woods in Good Cond." = 55
 Max Allowable Vol. Based on 1-yr 24-hr Storm (2.6in) = 2744 cu-ft
 Enter Filter Surface Area Provided = 1231 sqft
 Depth Provided Above Filter Surface = 6 in

Depth of Filter Media = 4.00 ft
 Surface Area of Planter Box = 1231 sqft
 Actual Volume Provided = 2585 cu-ft
 Volume Credited Above/Below Planter Box = 263 cu-ft

ESD P_E Treatment Provided = 2.45 in
 Reduced Composite RCN = 55
 Additional ESD Volume Required = ESDv is Satisfied
 Additional ESD Treatment Required = ESD is Satisfied
 Effective % Impervious Area = 0.0%
 Effective Impervious Area = 0 sqft

If Used, Additional Structural Treatment Volume = Treatment is Satisfied

Target ESDv is Satisfied
 (ESD P_E Treatment Provided = (ESD_{vp} * 12) / (Rv * A))

(Applied to ESD Practices)

(Use With Structural Practices Downstream Only)

Notes:

The drainage area to any individual practice shall be 20,000sq-ft or less.
 The surface area of planter box shall be at least 2% of the contributing drainage area.

A two to four foot deep layer of filter media shall be provided.

Filter beds shall not intercept groundwater. If designed as infiltration practices, filter bed inverts shall be separated at least four feet vertically (two feet on the lower Eastern shore) from the seasonal high water table.

A surface mulch layer (maximum 2 to 3 inches thick) should be provided to enhance plant survival and inhibit weed growth.

The filtering media or planning soil, mulch and underdrain systems shall conform to the specifications found in Appendix B.4. of the MDE Stormwater Manual.



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ESD 5
ESDv COMPUTATIONS

Planter Box

Enter Total Drainage Area to Planter Box = **9479 sqft**
 Enter Total Impervious Area = **6026 sqft**
 % of Impervious D.A., I = **63.9%**

Volumetric Runoff Coefficient, Rv = **0.625** (Rv = 0.05 + 0.009 (I))

HSG	RCN	Area (sqft)	Percentage	Target P _e	Target A _f (sqft)	Target ESD _v (ac-ft)	Target ESD _v (cu-ft)	Reduced RCN's (2.6 in)	Reduced %I (RCN 63)	Effective Imp. Area
A	38		0%	2.2 in				0	0.0%	0 sqft
B	55	6031	64%	2.0 in	804 sqft	0.014 ac-ft	628 cu-ft	55	0.0%	0 sqft
C	70		0%	2.0 in				0	0.0%	0 sqft
D	77	3398 sqft	36%	1.8 in	408 sqft	0.007 ac-ft	319 cu-ft	77	0.0%	0 sqft
Totals			100%	1.9 in	1212 sqft	0.022 ac-ft	947 cu-ft			0 sqft

Equations

Target Planning Surface Area of Planter Box, A_T = (PE * DA) / 15"
 Target Design Runoff Volume, ESD_v = (PE * Rv * (A/43560)) / 12

Composite RCN for "Woods in Good Cond." = **63**

Max Allowable Vol. Based on 1-yr 24-hr Storm (2.6in) = **1277 cu-ft**

Enter Filter Surface Area Provided = **1266 sqft**

Depth Provided Above Filter Surface = **6 in**

Depth of Filter Media = **2.00 ft**

Surface Area of Planter Box = **1266 sqft**

Actual Volume Provided = **1646 cu-ft**

Volume Credited Above/Below Planter Box = **1277 cu-ft**

Excess Volume Provided = **330 cu-ft**

ESD P_e Treatment Provided = **2.60 in**

Reduced Composite RCN = **63**

Additional ESD Volume Required = **ESD_v is Satisfied**

Additional ESD Treatment Required = **ESD is Satisfied**

Effective % Impervious (Table 5.3) = **0.0%**

Effective Impervious Area = **0 sqft**

If Used, Additional Structural Treatment Volume = **Treatment is Satisfied**

(Use With Structural Practices Downstream Only)

Notes:

The drainage area to any individual practice shall be 20,000sq-ft or less.
 The surface area of planter box shall be at least 2% of the contributing drainage area.

A two to four foot deep layer of filter media shall be provided.

Filter beds shall not intercept groundwater. If designed as infiltration practices, filter bed inverts shall be separated at least four feet vertically (two feet on the lower Eastern shore) from the seasonal high water table.

A surface mulch layer (maximum 2 to 3 inches thick) should be provided to enhance plant survival and inhibit weed growth.

The filtering media or planting soil, mulch and underdrain systems shall conform to the specifications found in Appendix B.4. of the MDE Stormwater Manual.

Exceeds Max Allowable 1-Yr 24-Hr Volume!

Target ESD_v is Satisfied

Max Allowable 1-Yr 24-Hr ESD_v Used
 (ESD P_e Treatment Provided = (ESD_{vp} * 12) / (Rv * A))

(Applied to ESD Practices)



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Checked: AXQ

Ultimate ESD Summary Table

Overall Site Target

ESD Facility	Drainage Area sq. ft.	Imp. D.A. sq. ft.	% of Imp. Cover	A Soil	B Soil	C Soil	D Soil	Target PE (in.) Table 5.3	Provided P _E (in.)	Rv	Target ESDv cu. ft.	Provided ESDv cu. ft.	Excess ESDv cu. ft.	Reduced RCN	Type of Facility	Remarks
LOD	72,462	55,345	76%	0%	87%	7%	6%	2.2	2.2	0.74	9,623	9,712	89	57	See ESD Practices Below	Site Compliance

2.4 2.2 in 2.0 in 1.8 in
(Individual Target P_E)

(Provided ESDv Below)

Total Site Target Composite RCN for "Woods in Good Cond." = 57
Total Site Reduced Composite RCN for "Woods in Good Cond." = 57

Phase 1 Individual Facility Summary

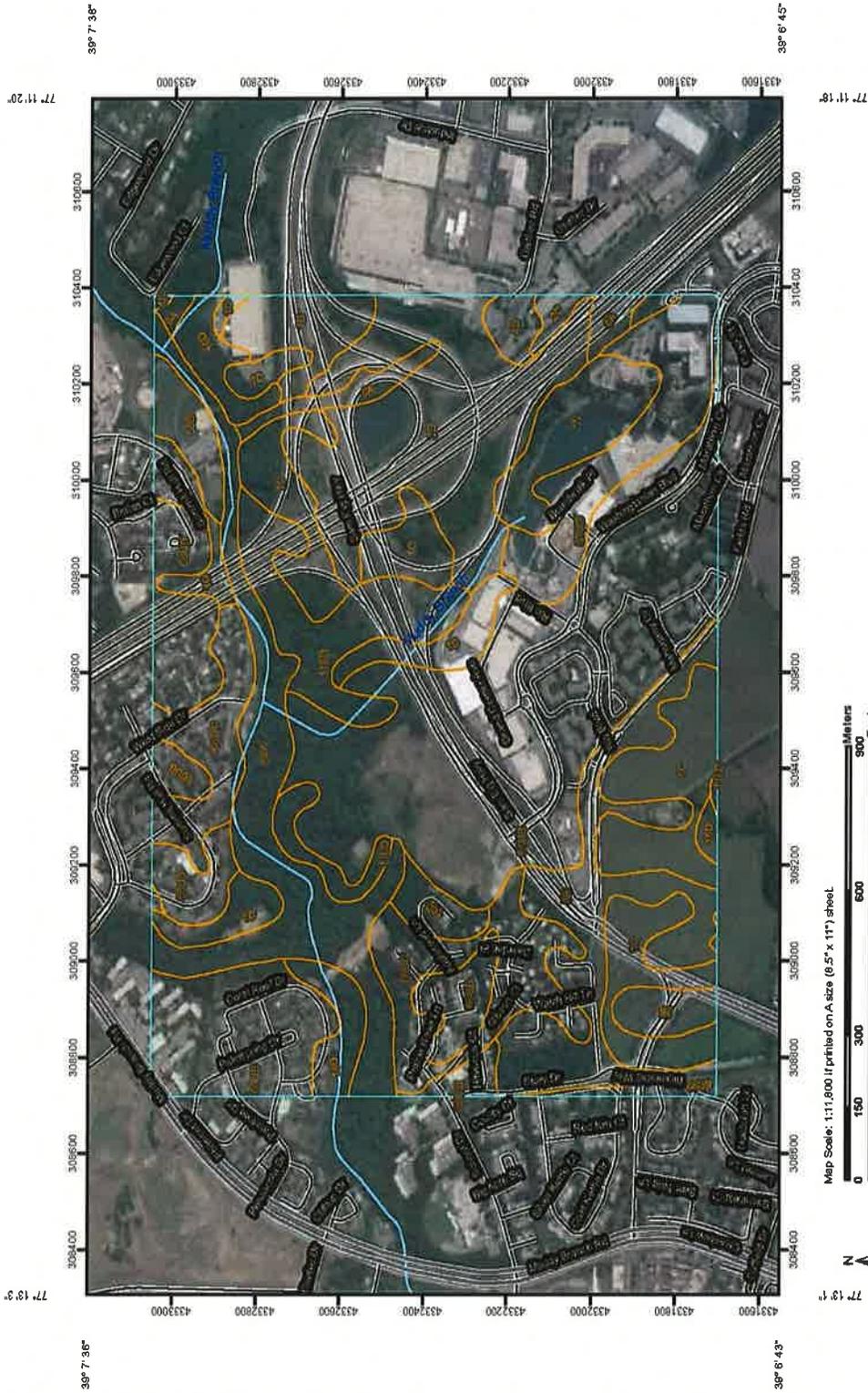
ESD Facility	Drainage Area sq. ft.	Imp. D.A. sq. ft.	% of Imp. Cover	A Soil	B Soil	C Soil	D Soil	Target PE (in.) Table 5.3	Provided P _E (in.)	Rv	Target ESDv cu. ft.	Provided ESDv cu. ft.	Excess ESDv cu. ft.	Reduced RCN	Type of Facility	Remarks
1	6,763	5,224	77%	0%	100%	0%	0%	2.2	2.4	0.75	924	989	65	55	Planter Box	
1A	5,925	4,145	70%	0%	100%	0%	0%	2.2	2.5	0.68	738	825	87	55	Planter Box	
1B	6,562	4,316	66%	0%	100%	0%	0%	2.0	2.1	0.64	702	752	50	55	Planter Box	
2	14,220	11,279	79%	0%	100%	0%	0%	2.2	2.6	0.76	1,991	2,353	362	55	Planter Box	
3	7,725	6,254	81%	0%	100%	0%	0%	2.2	1.9	0.78	1,103	930	0	66	Planter Box	
4	16,862	13,136	78%	0%	100%	0%	0%	2.2	2.4	0.75	2,322	2,585	263	55	Planter Box	
5	9,429	6,026	64%	0%	64%	0%	36%	1.9	2.6	0.63	947	1,277	330	63	Planter Box	
TOTALS	67,486 sqft	50,380 sqft										9,712 cu-ft				

Qp10 Summary

A downstream storm drain study will be prepared to show sufficient capacity or any necessary upgrades to safely convey the 10yr storm. Please refer to the downstream analysis map for additional information.

Appendix

Soil Map—Montgomery County, Maryland
(WASHINGTONIAN NORTH)



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

1/8/2013
Page 1 of 3

MAP LEGEND

- Area of Interest (AOI)
 - Area of Interest (AOI)
- Soils
 - Soils
- Soil Map Units
 - Soil Map Units
- Special Point Features
 - Blowout
 - Borrow Pit
 - Clay Spot
 - Closed Depression
 - Gravel Pit
 - Gravelly Spot
 - Landfill
 - Lava Flow
 - Marsh or swamp
 - Mine or Quarry
 - Miscellaneous Water
 - Perennial Water
 - Rock Outcrop
 - Saline Spot
 - Sandy Spot
 - Severely Eroded Spot
 - Sinkhole
 - Slide or Slip
 - Sodic Spot
 - Spill Area
 - Stony Spot
- Special Line Features
 - Gully
 - Short Steep Slope
 - Other
- Political Features
 - Cities
- Water Features
 - Streams and Canals
- Transportation
 - Rails
 - Interstate Highways
 - US Routes
 - Major Roads
 - Local Roads
- Very Stony Spot
- Wet Spot
- Other

MAP INFORMATION

Map Scale: 1:11,800 if printed on A size (8.5" x 11") sheet.
 The soil surveys that comprise your AOI were mapped at 1:15,840.
 Please rely on the bar scale on each map sheet for accurate map measurements.
 Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: UTM Zone 18N NAD83
 This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.
 Soil Survey Area: Montgomery County, Maryland
 Survey Area Data: Version 7, Feb 2, 2007
 Date(s) aerial images were photographed: 6/21/2005
 The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Montgomery County, Maryland (MD031)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1B	Gella silt loam, 3 to 8 percent slopes	11.0	2.0%
1C	Gella silt loam, 8 to 15 percent slopes	73.5	13.2%
2B	Glenelg silt loam, 3 to 8 percent slopes	102.8	18.5%
2C	Glenelg silt loam, 8 to 15 percent slopes	2.0	0.4%
4B	Elloak silt loam, 3 to 8 percent slopes	3.7	0.7%
6A	Baile silt loam, 0 to 3 percent slopes	8.3	1.5%
16D	Brinklow-Blocktown channery silt loams, 15 to 25 percent slopes	19.5	3.5%
54A	Hatboro silt loam, 0 to 3 percent slopes, frequently flooded	41.4	7.5%
65B	Wheaton silt loam, 0 to 8 percent slopes	7.0	1.3%
66UB	Wheaton-Urban land complex, 0 to 8 percent slopes	178.2	32.1%
66UC	Wheaton-Urban land complex, 8 to 15 percent slopes	38.4	6.9%
67UB	Urban land-Wheaton complex, 0 to 8 percent slopes	25.8	4.6%
116D	Blocktown channery silt loam, 15 to 25 percent slopes, very rocky	28.1	5.1%
W	Census water	15.6	2.8%
Totals for Area of Interest		555.2	100.0%

HYDROLOGY WATER QUALITY WATER QUANTITY

Table 5.2 Summary of Site Development Strategies

Better Site Design Technique	Recommendations
Using narrower, shorter streets, rights-of-way, and sidewalks	Streets may be as narrow as 22 ft. in neighborhoods serving low traffic volumes; open space designs and clustering will reduce street lengths; rights-of-way can be reduced by minimizing sidewalk width, providing sidewalks on one side of the road, and reducing the border width between the street and sidewalks.
Cul-de-sacs	Allow smaller radii for turn arounds as low as 33 ft.; use a landscaped island in the center of the cul-de-sac and design these areas to treat stormwater runoff.
Open vegetated channels	Allow grass channels or biofilters for residential street drainage and stormwater treatment.
Parking ratios, parking codes, parking lots, and structured parking	Parking ratios should be interpreted as maximum number of spaces; use shared parking arrangements; minimum parking stall width should be less than 9 ft. and stall length less than 18 ft.; parking garages are encouraged rather than surface lots.
Parking lot runoff	Parking lots are required to be landscaped and setbacks are relaxed to allow for bioretention islands or other stormwater practices in landscaped areas.
Open space	Flexible design criteria should be provided to developers who wish to use clustered development and open space designs.
Setbacks and frontages	Relax setbacks and allow narrower frontages to reduce total road length; eliminate long driveways.
Driveways	Allow for shared driveways and alternative impervious surfaces.
Rooftop runoff	Direct to pervious surfaces.
Buffer systems	Designate a minimum buffer width and provide mechanisms for long-term protection.
Clearing and grading	Clearing, grading, and earth disturbance should be limited to that required to develop the lot.
Tree conservation	Provide long-term protection of large tracts of contiguous forested areas; promote the use of native plantings.
Conservation incentives	Provide incentives for conserving natural areas through density compensation, property tax reduction, and flexibility in the design process.

(Adapted from Center for Watershed Protection, 1998)

Review of Concept Plans

Concept plans should be submitted to the appropriate review agencies and include the information discussed above along with a narrative to support the design. The narrative should describe how important natural areas will be preserved and protected, and show how ESD may be achieved for meeting on-site stormwater requirements. Review authorities may require additional information at this phase, however, at a minimum a concept plan should include the following elements:

Site and Resource Mapping

The resource mapping component will be used as a basis for all subsequent decisions during project design. During this step, the developer shall identify significant natural resources and demonstrate that these areas will be protected and preserved. Additionally, options will be evaluated to enhance important hydrologic functions. Approving authorities may require that other features be shown depending on site characteristics. This map shall be field verified by the project designer. Specific areas that should be mapped are organized by government regulatory authority in Table 5.1 below.

Table 5.1 Natural Resources and the Corresponding Regulatory Authorities:

Federal	State	Local
<ul style="list-style-type: none"> • Wetlands • Major waterways • Floodplains 	<ul style="list-style-type: none"> • Tidal and nontidal wetlands • Wetlands of Special State Concern • Wetland buffers • Stream buffers • Perennial streams • Floodplains • Forests • Forest buffers • Critical Areas 	<ul style="list-style-type: none"> • Steep slopes • Highly erodible soils • Enhanced stream buffers • Topography/slopes • Springs • Seeps • Intermittent streams • Vegetative cover • Soils • Bedrock/geology • Existing drainage areas

The mapping process will identify important natural resources as well as areas that are highly susceptible to erosion caused by construction activities. Identifying these important resources and high risk locations and protecting them from disturbance is the first step in the planning process. When steep slopes and highly erodible soils are found measures need to be taken to limit disturbance and minimize impacts. This may be done by using information developed by the local SCDs. These offices maintain lists that identify highly erodible soil map units for each county in Maryland. Additionally, steep slopes are defined as those with gradients of 20 percent or more and moderately steep slopes fall within the range of 10 to 30 percent (USDA NRCS, Soil Survey Manual, October, 1993). For the purpose of project planning, steep slopes are considered to be any mapping unit with a slope class of 15 percent or greater.

While it may not be practicable to eliminate earth disturbing activities exclusively on the basis of soil erodibility or slope alone, constraints are warranted when both steep slopes and highly erodible soils occupy the same area within the development footprint. Areas with highly erodible soils and slopes equal to or greater than 25 percent should be incorporated into adjacent buffers, remain undisturbed, protected during the construction process, and/or preserved as open space.

Table 5.3 Rainfall Targets/Runoff Curve Number Reductions used for ESD

Hydrologic Soil Group A										
%I	RCN*	P _E = 1"	1.2"	1.4"	1.6"	1.8"	2.0"	2.2"	2.4"	2.6"
0%	40									
5%	43									
10%	46									
15%	48	38								
20%	51	40	38	38						
25%	54	41	40	39						
30%	57	42	41	39	38					
35%	60	44	42	40	39					
40%	61	44	42	40	39					
45%	66	48	46	41	40					
50%	69	51	48	42	41	38				
55%	72	54	50	42	41	39				
60%	74	57	52	44	42	40	38			
65%	77	61	55	47	44	42	40			
70%	80	66	61	55	50	45	40			
75%	84	71	67	62	56	48	40	38		
80%	86	73	70	65	60	52	44	40		
85%	89	77	74	70	65	58	49	42	38	
90%	92	81	78	74	70	65	58	48	42	38
95%	95	85	82	78	75	70	65	57	50	39
100%	98	89	86	83	80	76	72	66	59	40

Hydrologic Soil Group B										
%I	RCN*	P _E = 1"	1.2"	1.4"	1.6"	1.8"	2.0"	2.2"	2.4"	2.6"
0%	61									
5%	63									
10%	65									
15%	67	55								
20%	68	60	55	55						
25%	70	64	61	58						
30%	72	65	62	59	55					
35%	74	66	63	60	56					
40%	75	66	63	60	56					
45%	78	68	66	62	58					
50%	80	70	67	64	60					
55%	81	71	68	65	61	55				
60%	83	73	70	67	63	58				
65%	85	75	72	69	65	60	55			
70%	87	77	74	71	67	62	57			
75%	89	79	76	73	69	65	59			
80%	91	81	78	75	71	66	61			
85%	92	82	79	76	72	67	62	55		
90%	94	84	81	78	74	70	65	59	55	
95%	96	87	84	81	77	73	69	63	57	
100%	98	89	86	83	80	76	72	66	59	55

Cp_v Addressed (RCN = Woods in Good Condition)

RCN Applied to Cp_v Calculations

Table 5.3 Runoff Curve Number Reductions used for Environmental Site Design (continued)

Hydrologic Soil Group C										
%I	RCN*	P _E = 1"	1.2"	1.4"	1.6"	1.8"	2.0"	2.2"	2.4"	2.6"
0%	74									
5%	75									
10%	76									
15%	78									
20%	79	70								
25%	80	72	70	70						
30%	81	73	72	71						
35%	82	74	73	72	70					
40%	84	77	75	73	71					
45%	85	78	76	74	71					
50%	86	78	76	74	71					
55%	86	78	76	74	71	70				
60%	88	80	78	76	73	71				
65%	90	82	80	77	75	72				
70%	91	82	80	78	75	72				
75%	92	83	81	79	75	72				
80%	93	84	82	79	76	72				
85%	94	85	82	79	76	72				
90%	95	86	83	80	77	73	70			
95%	97	88	85	82	79	75	71			
100%	98	89	86	83	80	76	72	70		

Hydrologic Soil Group D										
%I	RCN*	P _E = 1"	1.2"	1.4"	1.6"	1.8"	2.0"	2.2"	2.4"	2.6"
0%	80									
5%	81									
10%	82									
15%	83									
20%	84	77								
25%	85	78								
30%	85	78	77	77						
35%	86	79	78	78						
40%	87	82	81	79	77					
45%	88	82	81	79	78					
50%	89	83	82	80	78					
55%	90	84	82	80	78					
60%	91	85	83	81	78					
65%	92	85	83	81	78					
70%	93	86	84	81	78					
75%	94	86	84	81	78					
80%	94	86	84	82	79					
85%	95	86	84	82	79					
90%	96	87	84	82	79	77				
95%	97	88	85	82	80	78				
100%	98	89	86	83	80	78	77			

 Cp_v Addressed (RCN = Woods in Good Condition)

 RCN Applied to Cp_v Calculations

HYDROLOGY WATER QUALITY WATER QUANTITY

JOB: WASHINGTONIA				MTB
DRAINAGE AREA NAME: POST-COMPEN		PROP. DA. FOR RAINING		7-Mar-00
COVER DESCRIPTION	SOIL NAME	GROUP A,B,C,D?	CN from TABLE 2-2	AREA (In acres)
OFF-SITE				
COMMERCIAL		B	92	10.18 Ac.
ON-SITE				
COMMERCIAL		B	92	10.94 Ac.
COMMERCIAL		C	94	0.40 Ac.
COMMERCIAL		D	95	1.80 Ac.
SAM EIG HWY IMP.		B	98	4.80 Ac.
OPEN SPACE		B	61	2.30 Ac.
AREA SUBTOTALS:				30.12 Ac.
2-Yr 24 Hr Rainfall = 3.2 In	Surface Cover Cross Section	Manning 'n' Wetted Per	Flow Length Avg Velocity	Slope Tt (Hrs)
Sheet Flow	dense grass	n=0.24	100 Ft.	3.00% 0.20 Hrs
Shallow Flow	UNPAVED		360 Ft. 2.79 F.P.S.	3.00% 0.04 Hrs.
Channel Flow Hydraulic Radius =0.63	4.9 SqFt	n=0.013 7.9 Ft.	800 Ft. 8.38 F.P.S.	1.00% 0.03 Hrs.
Total Area in Acres =	30.12 Ac.	Total Sheet Flow =	Total Shallow Flow =	Total Channel Flow =
Weighted CN =	91	0.20 Hrs.	0.04 Hrs.	0.03 Hrs.
Time Of Concentration =	0.26 Hrs.	RAINFALL TYPE II		
Pond Factor =	1			
STORM	Precipitation (P) inches	Runoff (Q)	Qp, PEAK DISCHARGE	TOTAL STORM Volumes
1 Year	2.6 In.	1.7 In.	57.2 CFS	186,048 Cu. Ft.
2 Year	3.2 In.	2.3 In.	75.9 CFS	246,908 Cu. Ft.
5 Year	4.2 In.	3.2 In.	108 CFS	350,875 Cu. Ft.
10 Year	5.1 In.	4.1 In.	137 CFS	446,004 Cu. Ft.
25 Year	5.6 In.	4.6 In.	163 CFS	499,252 Cu. Ft.
50 Year	6.3 In.	5.3 In.	176 CFS	574,135 Cu. Ft.
100 Year	7.2 In.	6.1 In.	206 CFS	670,838 Cu. Ft.



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Date: 8-Jan-13 Revised Date: _____
 Project Name: Washingtonian North
 Project No.: 1184-00-01
 Prepared By: YMT Checked: AXQ

Sheet ___ of ___

Channel Protection Storage Volume Computations

Post-Development Drainage Area A = 17.28 AC

Time of Concentration, $t_c = 0.27$ hr.

(FROM TR-55 RUN FOR POST-DEVELOPMENT CONDITIONS)

Post-Development Curve Number, CN = 90

(FROM TR-55 RUN FOR POST-DEVELOPMENT CONDITIONS)

One-Year Post-Development Runoff Depth, $Q_p = 1.62$ in.

(FROM TR-55 RUN FOR POST-DEVELOPMENT CONDITIONS)

$$\text{Initial Abstraction, } I_a = \frac{200}{CN} - 2$$

$$\text{Initial Abstraction, } I_a = \frac{200}{90} - 2$$

$$\text{Initial Abstraction, } I_a = 0.22$$

One-Year Rainfall Depth, P = 2.60 in.

(FROM TABLE 2-2 OF 2000 MD STORMWATER DESIGN MANUAL)

$$\frac{I_a}{P} = 0.10$$

Unit Peak Factor, $q_u = 700$ cfs/sq. mi./in. runoff

(FROM FIG. D.11.1 OF 2000 MD STORMWATER DESIGN MANUAL)

Post-Development Peak Inflow Discharge, $q_1 = q_u \times A \times Q_p$

$$q_1 = 700 \times 17.28/640 \times 1.62$$

$$q_1 = 30.62 \text{ cfs}$$

12-Hour Outflow-to-Inflow Ratio, $q_o/q_1 = 0.030$

(FROM FIG. D.11.2 OF 2000 MD STORMWATER DESIGN MANUAL)

Post-Development Peak Outflow Discharge, $q_o = \left(\frac{q_o}{q_1} \right) \times q_1$

$$q_o = 0.92 \quad *$$

Post-Development Runoff Volume, $V_r = Q_p/12 \times A$

$$V_r = 2.333 \text{ acre-ft}$$

Storage-to-Runoff Volume Ratio, $V_s/V_r = 0.683 - 1.43 \left(\frac{q_o}{q_1} \right) + 1.64 \left(\frac{q_o}{q_1} \right)^2 - 0.804 \left(\frac{q_o}{q_1} \right)^3$

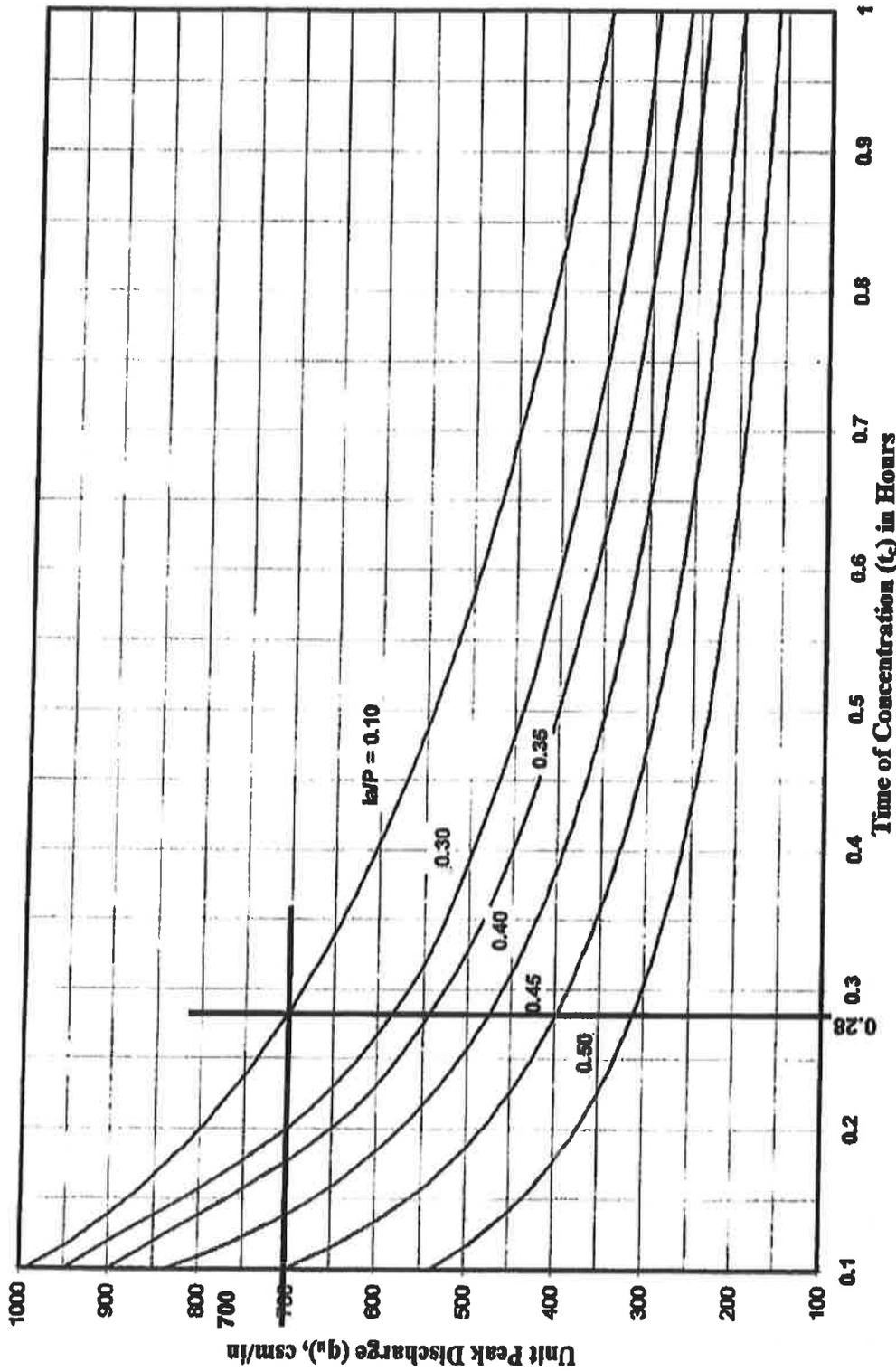
$$V_s/V_r = 0.683 - 1.43 (0.03) + 1.64 (0.03)^2 - 0.804 (0.03)^3$$

$$V_s/V_r = 0.642$$

Post-Development Storage Volume, $V_s = (V_s/V_r) \times V_r$

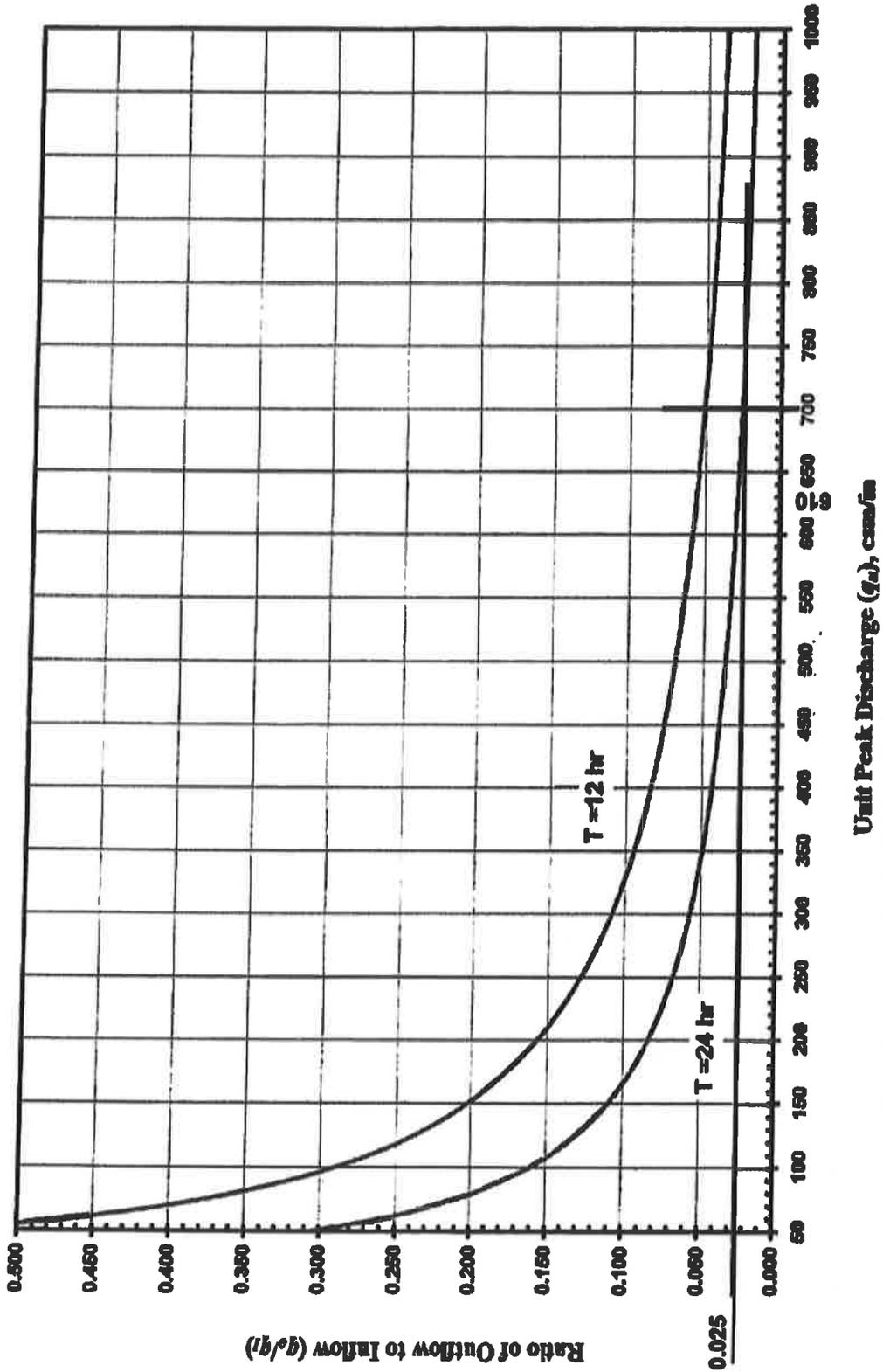
$$V_s = 1.497 \quad ** \text{ (To Work Sheet 6a - Line 9)}$$

Figure D.11.1 SCS Graphical Method of Determining Peak Discharge (q_p) in csm/in for 24-Hour Type II Storm Distribution



D.11.2

Figure D.11.2 Detention Time Versus Discharge Ratios (q_o/q_i)



D.11.3



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Date	4/3/2013
Project Name	Washingtonian North - Pond
Project No.	1184-00-01
By	YMT
Checked	AXQ

WATER QUALITY VOLUME (WQ_v) COMPUTATIONS

Inches of Rainfall, P = 1.0 in.

Drainage Area, A = 17.28 Acres

Impervious Area, A_i = 14.98 Acres

Percent Imperviousness, I = 86.7 %

Volumetric Runoff Coefficient, R_v = 0.05 + 0.009(I)

R_v = 0.05 + 0.009(86.7)

R_v = 0.83

Water Quality Volume, WQ_v = (P x R_v x A)/12

WQ_v = (1 in. x 0.83 x Ac.)/12

WQ _v =	1.20 Ac-Ft
=	(52063 Ft ³)



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Date 4/3/13
Project Name Washingtonian North-Pond
Project No. 1184-00-01
By YMT
Checked AXQ

ORIFICE CALCULATION - POND

Vs =	1.497	Ac. Ft.
Elev. (Vs) =	401.80	
Pond Bottom =	394.00	
H =	7.80	Ft.

From Channel Protection Storage Volume
Elevation corresponding to Vs=1.497 Ac. Ft.
Elevation of the bottom of the pond

Qo = 0.92 CFS

From Channel Protection Storage Volume

$$A = \frac{Q_o}{0.6 \times (2gH)^{0.5}}$$

$$g = 32.20$$

$$= 0.06841 \text{ Ft}^2$$

$$D = \left(\frac{4 \times A}{3.141} \right)^{0.5}$$

$$= 0.29514 \text{ Ft.}$$

$$= 3.54 \text{ in.}$$

Use D = 6 in pipe



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PROJECT NAME: Washingtonian North SWM Pond
LSA PROJECT NO.: 1184-00-01

Prepared By: YMT
Checked By: AXQ
Date: 01/29/13

Plan Scale:

Main Cell						
Elevation	Area	Average Area	Depth	Incremental Volume	Cumulative	
					Volume	Volume
(msl)	(sq. ft.)	(sq. ft.)	(ft.)	(cu. ft.)	(cu. ft.)	(ac. ft.)
394.0	3501.0				0.0	0.00
		5174.0	2.0	10348.0		
396.0	6847.0				10348.0	0.24
		8746.0	2.0	17492.0		
398.0	10645.0				27840.0	0.64
		12662.5	2.0	25325.0		
400.0	14680.0				53165.0	1.22
		16867.0	1.5	25300.5		
401.5	19054.0				78465.5	1.80
		23775.5	0.5	11887.8		
402.0	28497.0				90353.3	2.07
		32710.0	2.0	65420.0		
404.0	36923.0				155773.3	3.58
		40940.0	2.0	81880.0		
406.0	44957.0				237653.3	5.46
		50826.5	2.0	101653.0		
408.0	56696.0				339306.3	7.79
		58360.0	1.0	58360.0		
409.0	60024.0				397666.3	9.13
					#VALUE!	#VALUE!



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PROJECT NAME: Washingtonian North SWM Pond
LSA PROJECT NO.: 1184-00-01

Prepared By: YMT
Checked By: AXQ
Date: 01/29/13

Plan Scale:

Main Cell Above Perm. Pool						
Elevation	Area	Average Area	Depth	Incremental Volume	Cumulative	
					Volume	Volume
(msl)	(sq. ft.)	(sq. ft.)	(ft.)	(cu. ft.)	(cu. ft.)	(ac. ft.)
402.0	28497.0				0.0	0.00
		30603.5	1.0	30603.5		
403.0	32710.0				30603.5	0.70
		34816.5	1.0	34816.5		
404.0	36923.0				65420.0	1.50
		38931.5	1.0	38931.5		
405.0	40940.0				104351.5	2.40
		42948.5	1.0	42948.5		
406.0	44957.0				147300.0	3.38
		45749.5	0.5	22874.8		
406.5	46542.0				170174.8	3.91
		47341.5	0.5	23670.8		
407.0	48141.0				193845.5	4.45
		48952.0	0.5	24476.0		
407.5	49763.0				218321.5	5.01
		53229.5	0.5	26614.8		
408.0	56698.0				244936.3	5.62
		57524.5	0.5	28762.3		
408.5	58353.0				273698.5	6.28
		59188.5	0.5	29594.3		
409.0	60024.0				303292.8	6.96



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 Project Name: Washingtonian North - Pond
 Project No.: 1184-00-01
 Prepared By: YMT Checked: AXQ

Stage - Discharge Equations - SWM POND

Riser	Barrel	Emergency Spillway
<p style="text-align: center;">Low Flow Orifice</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> $Q = Cx Ax (2gh)^{1/2}$ $C = 0.6$ $D (in) = 5.75$ $Inv. = 402.0$ $Area (sf) = 0.18$ $h = WSEL - (inv. + D/2)$ </div> <div style="text-align: center;"> </div> <p style="text-align: center;">Low Weir</p> <p style="text-align: center;">Low Weir as Orifice</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> $Q = Cx Lx (H)^{3/2}$ $C = 3.1$ $L1 (ft) = 37.8$ $Inv. = 406.5$ $H = (WSEL - Inv.)$ </div> <p style="text-align: center;">High Stage Weir</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> $Q = Cx Lx (H)^{3/2}$ $C =$ $L2 + L3 (ft) =$ $Inv. =$ $H = (WSEL - Inv.)$ $L =$ </div> <p style="text-align: center;">Schematic of Low and High Weir</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> $L2$ $L = L1$ (Low Weir) $L = L2$ (High Weir) </div> <div style="text-align: center;"> $L1$ $L = L1$ (Low Weir) $L = L2 + L3$ (Total) </div> </div>	<p style="text-align: center;">Barrel</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> $D (in) = 54$ $L (ft) = 68$ </div> <p style="text-align: center;">Inlet Control</p> <p style="text-align: center;">$Q =$ Nomograph</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> $Inv. in = 383.23$ $HW = (WSEL - Inv. in)$ $HWID$ </div> <p style="text-align: center;">Outlet Control</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> $Q = A \left(\frac{2gzD}{V} + K_m + K_{pd} \right)^{1/2}$ $Inv. out = 392.28$ $Area (sf) = 15.90$ $K_m = 0.5$ $K_{pd} = 0.00421$ $h = (WSEL - Inv. out + D/2)$ </div>	<p style="text-align: center;">Emergency Spillway</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> $Width = 20$ $Inv. = 407.50$ </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> $H = (WSEL - Inv.)$ </div> <p style="text-align: center;">NOTES:</p> <p style="font-size: small;">Q shall be taken from table 14 of the Maryland Standard and Specifications for Soil Erosion and Sediment Control (page C-10-17)</p>



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Date: 4/3/2013 Revised Date: _____ Sheet _____ of _____
 Project Name: Washingtonian North - Pond
 Project No.: 1184-00-01
 Prepared By: YMT Checked: AXQ

TR-20 input

Water Surface Elevation (ft.)	Total Discharge Q (cfs)	Cumulative Volume (ac.ft.)	Remarks
402.00	0.00	0.00	
403.00	0.76	0.70	
404.00	1.15	1.50	
405.00	1.44	2.40	
406.00	1.68	3.38	
406.50	1.79	3.91	
407.00	43.27	4.45	
407.50	119.02	5.01	
408.00	231.07	5.62	
408.50	323.32	6.28	
409.00	373.68	6.96	
		0.00	
		0.00	

Muddy Branch Watershed USE I/I-P

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STORM 1 year

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow			
				Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
area 1	0.047		1.527		12.05	61.93	1317.71
Reach 1	0.047	Upstream	1.527		12.05	61.93	1317.71
Reach 1	0.047	Downstream	1.037	405.49	16.60	1.56	33.14
OUTLET	0.047		1.037		16.60	1.56	33.14

STORM 2 year

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow			
				Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
area 1	0.047		2.205		12.04	81.38	1731.41
Reach 1	0.047	Upstream	2.205		12.04	81.38	1731.41
Reach 1	0.047	Downstream	1.705	406.51	15.42	2.55	54.30
OUTLET	0.047		1.705		15.42	2.55	54.30

STORM 10 year

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow			
				Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
area 1	0.047		4.030		12.04	142.88	3040.10
Reach 1	0.047	Upstream	4.030		12.04	142.88	3040.10
Reach 1	0.047	Downstream	3.491	407.23	12.19	77.50	1648.83
OUTLET	0.047		3.491		12.19	77.50	1648.83

STORM 100 year

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Peak Flow			
				Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
area 1	0.047		6.099		12.04	210.09	4469.94
Reach 1	0.047	Upstream	6.099		12.04	210.09	4469.94
Reach 1	0.047	Downstream	5.544	407.78	12.10	182.32	3879.23
OUTLET	0.047		5.544		12.10	182.32	3879.23