

## INDEX OF SHEETS

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MCDPS REVIEW IS FOR SEDIMENT CONTROL AND SAFE CONVEYANCE OF FLOW ONLY.

THE LOCATION OF THE UNDERGROUND AND SURFACE UTILITIES SHOWN ON THE PLANS ARE FOR INFORMATION AND GUIDANCE ONLY. NO GUARANTEE IS MADE AS TO THE ACCURACY OF SAID LOCATIONS. CONTRACTOR SHALL CALL "MISS UTILITY" AT 1-800-257-7777, 48 HOURS PRIOR TO START OF WORK. THE EXCAVATOR MUST NOTIFY ALL PUBLIC UTILITY COMPANIES WITH UNDERGROUND FACILITIES IN THE AREA OF PROPOSED EXCAVATION. THE EXCAVATOR IS RESPONSIBLE FOR COMPLIANCE WITH REQUIREMENTS OF CHAPTER 36A OF THE MONTGOMERY COUNTY CODE.

### CONVENTIONAL SYMBOLS EXISTING CONSTRUCTION

100 YEAR FLOODPLAIN	
RIGHT OF WAY LINE	
PROPERTY LINE	
CONCRETE CURB AND GUTTER	
EDGE OF WOODED AREAS	
TREE (FREE STANDING)	
SIGN	
FIRE HYDRANT	
LIGHT POLE	
UTILITY POLE	
STORM DRAIN	
SANITARY	
WATER	
GAS	
ELECTRICAL HAND BOX - SIGNALS	
ELECTRIC (UNDERGROUND)	

### PROPOSED CONSTRUCTION

CONSTRUCTION	
CURB & GUTTER	
TRAVERSE POINT	
LIMIT OF DISTURBANCE	
STORM DRAIN PIPE	

### RELATED REQUIRED PERMITS

To be completed by the consultant and placed on the first sheet of the Sediment Control / Stormwater Management plan set for all projects.

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	REQD	NOT REQD	PERMIT #	EXPIRATION DATE	WORK RESTRICTION DATES
MCDPS Floodplain District	X				
WATERWAYS/WETLAND(S)					
a. Corps of Engineers		X			
b. MDE		X			
c. MDE Water Quality Certification	X				
MDE Dam Safety		X			
N.P.D.E.S. NOTICE OF INTENT		X	N/A	N/A	DATE FILED
OTHERS (Please List):					

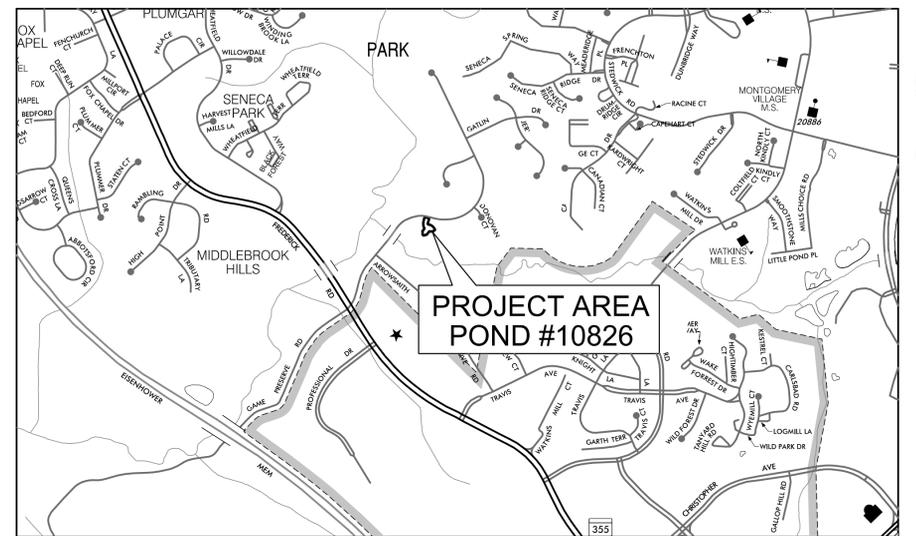
# MONTGOMERY COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION

## GAME PRESERVE

### POND RETROFIT PROJECT

CONTRACT NO. 8803000101-CD

Task Order 18



VICINITY MAP

SCALE: 1" = 1,000'

### DESIGN CERTIFICATION

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE "1994 MARYLAND STANDARDS AND SPECIFICATION FOR SOIL EROSION AND SEDIMENT CONTROL," MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES EXECUTIVE REGULATIONS 5-90, 7-02AM AND 36-90.

I FURTHER CERTIFY THAT THE ESTIMATED TOTAL AMOUNTS OF EXCAVATION AND FILL AS SHOWN ON THESE PLANS HAVE BEEN COMPUTED TO BE 279 CUBIC YARDS OF EXCAVATION AND 974 CUBIC YARDS OF FILL AND THE TOTAL AREA TO BE DISTURBED AS SHOWN ON THESE PLANS HAS BEEN DETERMINED TO BE A MAXIMUM OF 23,825 SQUARE FEET OR 0.55 ACRES.

AMY L HRIBAR, P.E.  
P.E. # 32013

DATE

### OWNER'S/DEVELOPER'S CERTIFICATION

I/WE HEREBY CERTIFY THAT ALL CLEARING, GRADING, 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 DEPARTMENT OF NATURAL RESOURCES APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT.

DATE

OWNER

OWNER/CONTACT/ADDRESS:

MR. PHILIP JONES, P.E.  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
255 ROCKVILLE PIKE, STE 120  
ROCKVILLE MD 20850-4166  
240-777-7738

## GENERAL NOTES

- THE CONTRACTOR WILL IMMEDIATELY INFORM THE COUNTY OF ANY DISCREPANCIES FOUND BETWEEN THE PROJECT PLANS AND CONTRACT SPECIFICATIONS.
- FOR CONSTRUCTION, ALL HORIZONTAL SHALL BE BASED ON NAD 83/91, NAVD 88 DATUM.
- TYPES OF STORM DRAIN STRUCTURES REFER TO THE "DESIGN STANDARDS" OF MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION, UNLESS OTHERWISE NOTED.
- THE CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS TO STORM DRAIN STRUCTURES, WHEN NECESSARY, TO MEET EXISTING CONDITIONS, AS APPROVED BY MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES RIGHT OF WAY INSPECTOR.
- INFORMATION CONCERNING UNDERGROUND UTILITIES WAS OBTAINED FROM AVAILABLE RECORDS, BUT THE CONTRACTOR MUST DETERMINE THE EXACT LOCATIONS AND ELEVATIONS OF THE LINES BY DIGGING TEST PITS BY HAND AT ALL UTILITY CROSSINGS, WELL IN ADVANCE OF TRENCHING, IF CLEARANCES ARE LESS THAN SHOWN OR SIX (6) INCHES, WHICHEVER IS LESS, THE CONTRACTOR SHALL CONTACT THE COUNTY.
- REPAIRS TO UTILITIES OR PROPERTY DAMAGE AS A RESULT OF THE CONTRACTOR'S NEGLIGENCE OR METHOD OF OPERATION MUST BE MADE AT THE CONTRACTOR'S EXPENSE BEFORE PROCEEDING WITH CONSTRUCTION.
- CALL "MISS UTILITY" AT 1-800-257-7777 FORTY-EIGHT (48) HOURS PRIOR TO BEGINNING EXCAVATION TO DETERMINE THE EXACT LOCATION OF EXISTING UTILITIES.
- CLEARING IS TO BE LIMITED TO THE "LIMIT OF WORK" AS SHOWN ON THE PLANS.
- THE CONTRACTOR SHALL OBTAIN A ROADSIDE TREE PERMIT FOR ANY MAINTENANCE, TREATMENT, PERMIT REQUIREMENTS MAY BE OBTAINED FROM THE DEPARTMENT OF NATURAL RESOURCES, PLANTING, REMOVAL, OR ROOT CUTTING ON TREES WITHIN THE PUBLIC RIGHT OF WAY. MARYLAND FOREST, PARK AND WILDLIFE SERVICE, TELEPHONE 301-854-6060.
- CONTACT THE WASHINGTON SUBURBAN SANITARY COMMISSION SYSTEM MAINTENANCE ENGINEER BEFORE EXCAVATING BENEATH OR IN THE VICINITY OF EXISTING WATER OR SEWER LINES. BACKFILL TO BE DONE UNDER SUPERVISION OF W.S.S.C. CALL 301-699-4420.
- CONTACT WASHINGTON GAS DISPATCH OFFICER AT (703)750-4831 BEFORE EXCAVATING BENEATH OR IN THE VICINITY OF EXISTING GAS MAIN AND SERVICE LATERALS.

60% SEMI-FINAL DESIGN

MONTGOMERY CO. DEPARTMENT OF ENVIRONMENTAL PROTECTION APPROVED FOR:		THIS APPROVAL DOES NOT NEGATE THE NEED OF A MCDPS ACCESS PERMIT
Stormwater Management:	Sediment Control Technical Requirements:	Administrative Requirements:
Reviewed _____ Date _____	Reviewed _____ Date _____	Reviewed _____ Date _____
Approved _____ Date _____	Approved _____ Date _____	SEDEMENT CONTROL PERMIT NO. _____
APPROVED	APPROVED	APPROVED
DATE	DATE	DATE

SAMPLE NO.

NEEDY APPROVAL OF THIS PLAN WILL EXPIRE ONE YEAR FROM THE DATE OF APPROVAL IF THE PROJECT HAS NOT STARTED UNLESS THE PERMIT HAS BEEN EXTENDED



MONTGOMERY COUNTY  
 EOB 101 MONROE ST  
 PAR C1 GRT SEN CRK E  
 MAP FU21  
 ROCKVILLE, MD 20850  
 Liber: 4901  
 Folio: 184

WHIPPLE, CLAUDE D & G E  
 10849 GAME PRESERVE ROAD  
 GAITHERSBURG, MD 20879  
 Liber: 6270  
 Folio: 284

WONG, EMILY & P L  
 23606 WHITE PEACH CT  
 GAITHERSBURG, MD 20882  
 Liber: 9380  
 Folio: 246

PEYROUSE, SEBASTIEN &  
 MARLENE LARUELLE  
 10841 GAME PRESERVE RD  
 GAITHERSBURG, MD 20879  
 Liber: 39383  
 Folio: 456

N 546800

E 1248550

# GAME PRESERVE RD

N 546550

E 1248550

MONTGOMERY COUNTY  
 EOB 101 MONROE ST  
 ROCKVILLE, MD 20850  
 Liber: 4901  
 Folio: 184

RAMOS, ALVARO F & A M  
 10848 GAME PRESERVE ROAD  
 GAITHERSBURG, MD 20879  
 Liber: 9368  
 Folio: 846

HASKINS, CHARLES R  
 & RACHEL J  
 10852 GAME PRESERVE RD  
 GAITHERSBURG, MD 20879  
 Liber: 0  
 Folio: 0

## LEGEND

- 330 --- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- 100 YEAR FLOOD PLAIN
- WETLAND BOUNDARY
- WETLAND LINE
- EXISTING STORM DRAIN
- PROPERTY LINE
- LIMIT OF DISTURBANCE



MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:		NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED OF A MCDPS ACCESS PERMIT.
STORMWATER MANAGEMENT:	SEDIMENT CONTROL TECHNICAL REQUIREMENTS:	ADMINISTRATIVE REQUIREMENTS:
REVIEWED _____ DATE _____	REVIEWED _____ DATE _____	REVIEWED _____ DATE _____
APPROVED _____ DATE _____	APPROVED _____ DATE _____	APPROVED _____ DATE _____
S.M. FILE NO. _____		

DESIGN	HAS	HAS	HAS	HAS	HAS	SCALE	1"=20'
DRAFT							
APPROVED							
DATE	FEB 16'						
SHEET	2		15				
OF							

CLIENT: MONTGOMERY COUNTY DEPT OF ENVIRONMENTAL PROTECTION  
 255 ROCKVILLE PIKE, RM. 120  
 ROCKVILLE, MD 20850-4166  
 MR. PHILIP JONES, P.E.  
 (240) 777-7738

EXISTING CONDITIONS PLAN  
**GAME PRESERVE SWM RETROFITS**  
 GAITHERSBURG (9TH) ELECTION DISTRICT  
 MONTGOMERY COUNTY PARCEL C-1, GREAT SENECA EXT STREAM VALLEY PARK.  
 LIBER 4901 FOLIO 184  
 MONTGOMERY COUNTY, MARYLAND

**MCCORMICK TAYLOR**  
 509 South Exeter Street  
 4th Floor  
 Baltimore, Maryland 21202  
 (410) 662-7400

FILE: D:\18218 - Cabin Branch SWM Retrofit\Design\Engineering\Plan\Set\10826\MC-P000\_CabinBranch\_Aset\10826.dgn  
 PLOTTED: Wednesday, February 10, 2016 AT 03:42 PM

CLASS I RIPRAP DITCH	
27.5 SY	EMBANKMENT - STA 6+04, 65 LT (AT EX-EW-1)
31.5 SY	EMBANKMENT - STA 6+07, 41 RT (AT EW-1)
12 INCH SOLID PVC PIPE	
4.5 LF	EMBANKMENT - STA 6+00, 32 LT TO STA 6+00, 37 LT (RS PIPE)
12 INCH PERFORATED PVC PIPE	
1.5 LF	EMBANKMENT - STA 6+00, 37 LT TO STA 5+99, 38 LT (RS PIPE)
GEOSYNTHETIC CLAY LINER (BENTOMAT CL GCL)	
300 SY	EMBANKMENT - STA 5+50, LT TO STA 7+13, LT (TO ELEV 320)
REMOVAL OF EXISTING RISER	
1 EA	EMBANKMENT - STA 6+00, 32 LT

CLASS I EXCAVATION	
279 CY	EMBANKMENT - STA 5+50, LT TO STA 7+13, LT (POND GRADING)

12 PVC PIPE CONNECTION	
1 EA	EMBANKMENT - STA 6+00, 37 LT

TRASH RACK	
1 EA	EMBANKMENT - STA 6+01, 30 LT

CONCRETE RISER (SEE DETAIL SHEET X)	
1 EA	EMBANKMENT - STA 6+01, 30 LT

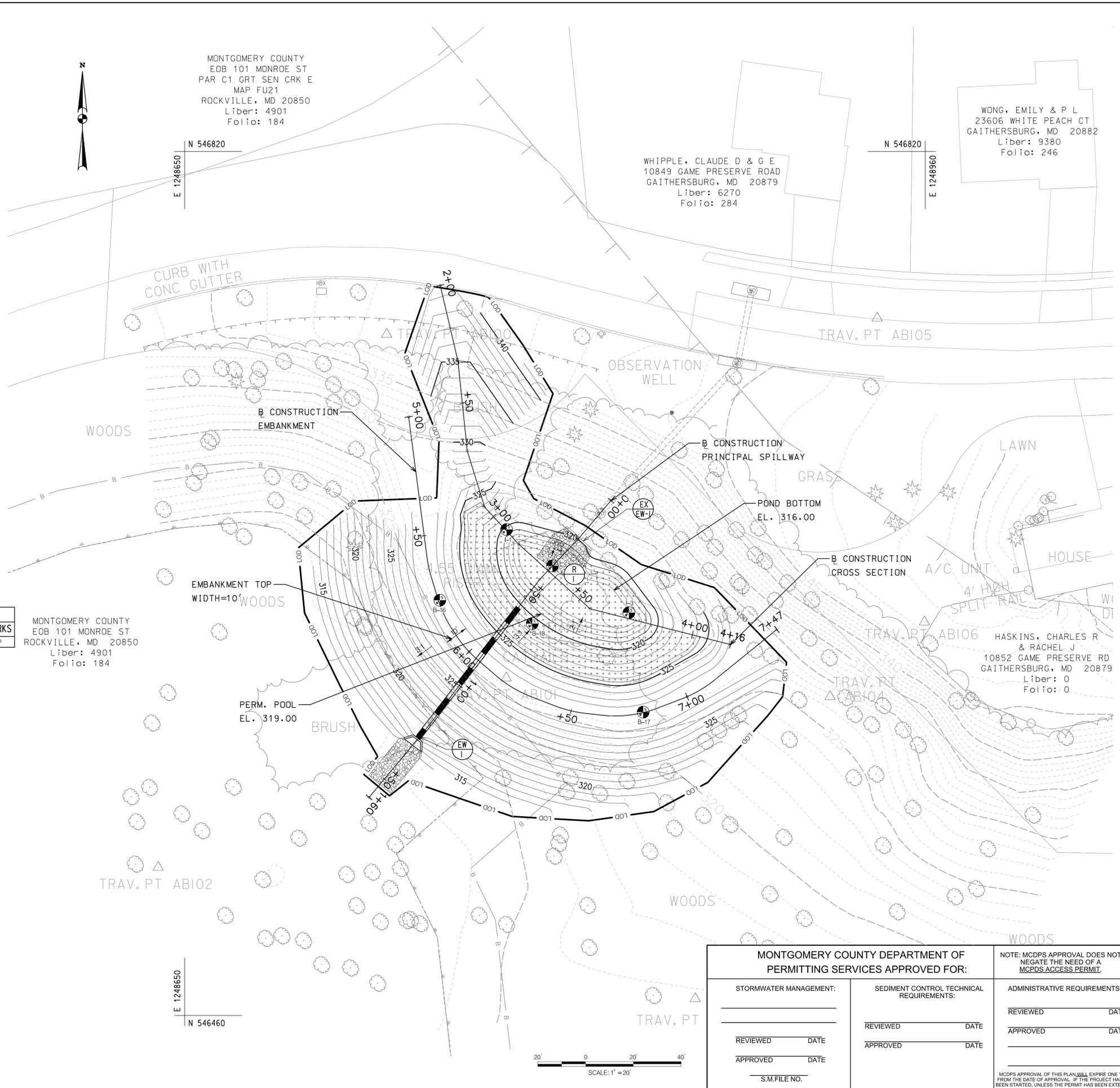
GALVANIZED STEEL ORIFICE PLATE	
1 EA	EMBANKMENT - STA 6+01, 30 LT

GATE VALVE	
1 EA	EMBANKMENT - STA 6+01, 30 LT

PIPE SCHEDULE						
FROM	TO	SIZE	LENGTH	INV. UP	INV. DOWN	TYPE
R-1	EW-1	27 INCH	69 FT	314.50	313.85	ASTM C-361, B-25

DRAINAGE STRUCTURE SCHEDULE						
ID	STATION	OFFSET	BASELINE	TYPE	STD. NO.	REMARKS
EW-1	6+07	41 RT	EMBANKMENT	TYPE A ENDWALL	CUSTOM DETAIL	27" RCP

LEGEND	
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR
	100 YEAR FLOOD PLAIN
	PROPERTY LINE
	LIMIT OF DISTURBANCE
	EXISTING STORM DRAIN
	27" RCP
	CLASS I RIPRAP
	SOIL BORING LOCATION
	GEOSYNTHETIC CLAY LINER



MONTGOMERY COUNTY  
 EOB 101 MONROE ST  
 ROCKVILLE, MD 20850  
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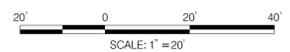
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HASKINS, CHARLES R  
 & RACHEL J  
 10852 GAME PRESERVE RD  
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MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:			NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED OF A MCDPS ACCESS PERMIT.		
STORMWATER MANAGEMENT:	SEDIMENT CONTROL TECHNICAL REQUIREMENTS:	ADMINISTRATIVE REQUIREMENTS:	HAS	HAS	HAS
REVIEWED _____ DATE _____	REVIEWED _____ DATE _____	REVIEWED _____ DATE _____	DRAFT	APPROVED	ALH
APPROVED _____ DATE _____	APPROVED _____ DATE _____	APPROVED _____ DATE _____	DATE	FEB 16'	SCALE
S.M. FILE NO. _____					1"=20'



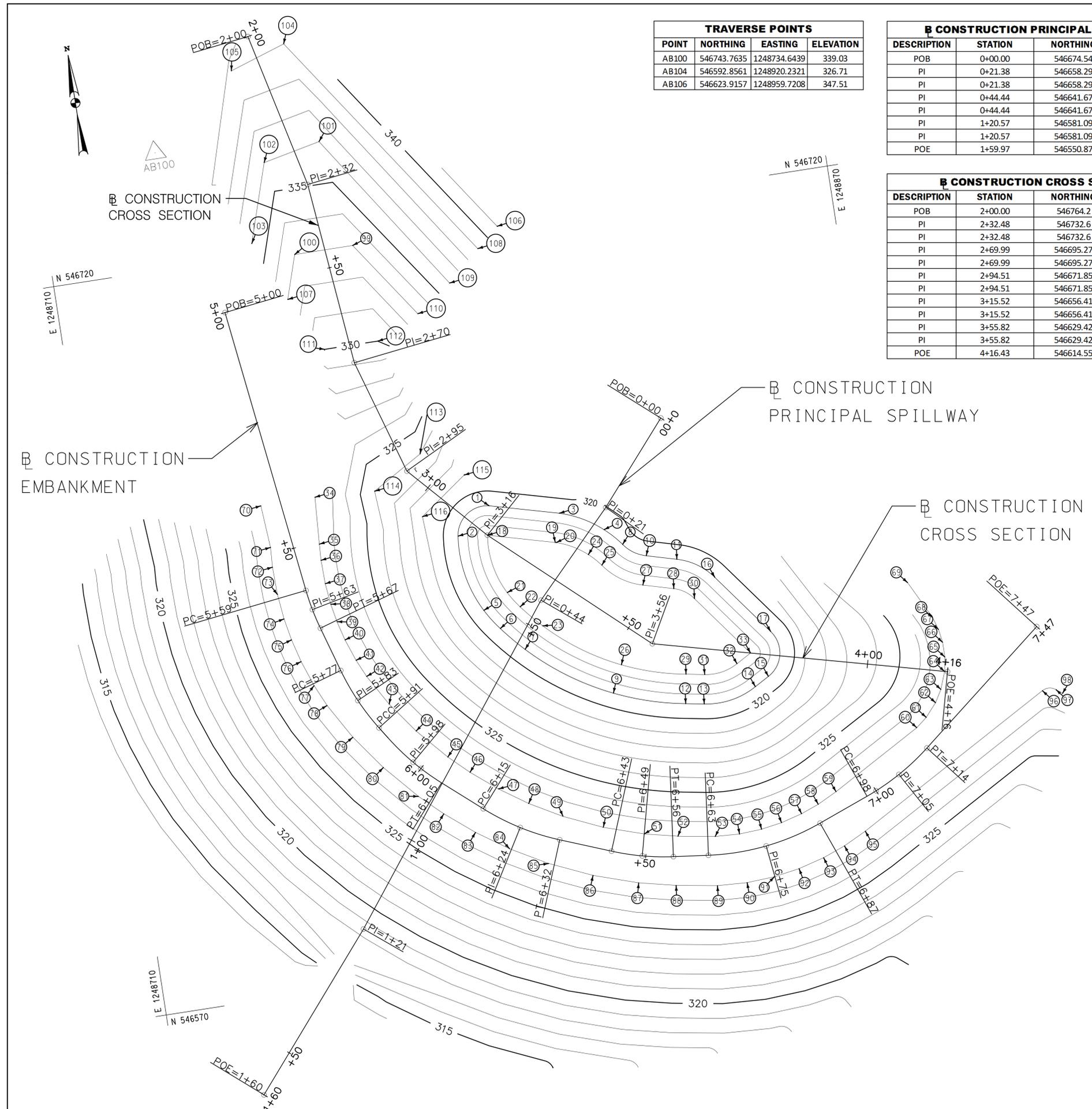
**MCCORMICK TAYLOR**  
 509 South Exeter Street  
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 Baltimore, Maryland 21202  
 (410) 662-7400

OVERALL SITE PLAN SHEET  
**GAME PRESERVE SWM RETROFITS**  
 GAITHERSBURG (9TH) ELECTION DISTRICT  
 MONTGOMERY COUNTY PARCEL C-1, GREAT SENECA EXT STREAM VALLEY PARK.  
 LIBER 4901 FOLIO 184  
 MONTGOMERY COUNTY, MARYLAND

CLIENT: MONTGOMERY COUNTY DEPT OF ENVIRONMENTAL PROTECTION  
 255 ROCKVILLE PIKE, RM. 120  
 ROCKVILLE, MD 20850-4166  
 MR. PHILIP JONES, P.E.  
 (240) 777-7738

DESIGN	HAS	HAS	HAS	1"=20'
DRAFT				
APPROVED	ALH			
DATE	FEB 16'			
SHEET	3		15	
OF				

MCDPS APPROVAL OF THIS PLAN WILL EXPIRE ONE YEAR FROM THE DATE OF APPROVAL. IF THE PROJECT HAS NOT BEEN STARTED, UNLESS THE PERMIT HAS BEEN EXTENDED.  
 FILE: D:\18218 - Cabin Branch SWM Retrofit\Design\Engineering\PlanSet\10826\958-P001\_Cabin Branch pond 10826.dgn  
 PLOTTED: Wednesday, February 10, 2016 AT 03:42 PM

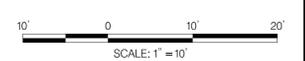
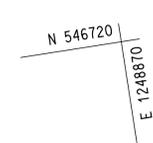
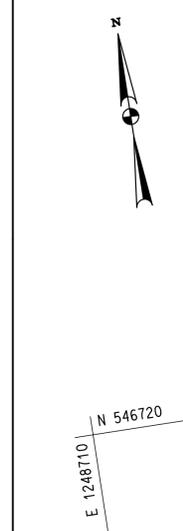


TRAVERSE POINTS			
POINT	NORTHING	EASTING	ELEVATION
AB100	546743.7635	1248734.6439	339.03
AB104	546592.8561	1248920.2321	326.71
AB106	546623.9157	1248959.7208	347.51

B CONSTRUCTION PRINCIPAL SPILLWAY			
DESCRIPTION	STATION	NORTHING	EASTING
POB	0+00.00	546674.54	1248828.51
PI	0+21.38	546658.29	1248814.61
PI	0+21.38	546658.29	1248814.61
PI	0+44.44	546641.67	1248798.64
PI	0+44.44	546641.67	1248798.64
PI	1+20.57	546581.09	1248752.52
PI	1+20.57	546581.09	1248752.52
POE	1+59.97	546550.87	1248727.24

B CONSTRUCTION EMBANKMENT			
DESCRIPTION	STATION	NORTHING	EASTING
POB	5+00.00	546709.42	1248743.79
PC	5+58.92	546651.01	1248751.46
PC	5+58.92	546651.01	1248751.46
PI	5+63.06	546646.9	1248752
PT	5+67.17	546642.95	1248753.2
PT	5+67.17	546642.95	1248753.2
PC	5+76.72	546633.81	1248755.99
PC	5+76.72	546633.81	1248755.99
PI	5+83.82	546627.02	1248758.05
PCC	5+90.82	546621.08	1248761.93
PCC	5+90.82	546621.08	1248761.93
PI	5+98.01	546612.73	1248767.37
PT	6+05.11	546608.06	1248772.83
PT	6+05.11	546608.06	1248772.83
PC	6+15.16	546601.52	1248780.47
PC	6+15.16	546601.52	1248780.47
PI	6+23.70	546595.97	1248786.96
PT	6+32.08	546592.89	1248794.93
PT	6+32.08	546592.89	1248794.93
PC	6+42.92	546588.98	1248805.04
PC	6+42.92	546588.98	1248805.04
PI	6+49.32	546586.67	1248811.01
PT	6+55.65	546585.93	1248817.36
PT	6+55.65	546585.93	1248817.36
PC	6+62.82	546585.11	1248824.49
PC	6+62.82	546585.11	1248824.49
PI	6+75.04	546583.72	1248836.62
PT	6+86.78	546588.07	1248848.04
PT	6+86.78	546588.07	1248848.04
PC	6+97.83	546592.01	1248858.36
PC	6+97.83	546592.01	1248858.36
PI	7+05.77	546594.84	1248865.78
PT	7+13.59	546599.83	1248871.96
PT	7+13.59	546599.83	1248871.96
POE	7+46.98	546620.82	1248897.93

B CONSTRUCTION CROSS SECTION			
DESCRIPTION	STATION	NORTHING	EASTING
POB	2+00.00	546764.2	1248757.04
PI	2+32.48	546732.6	1248764.49
PI	2+32.48	546732.6	1248764.49
PI	2+69.99	546695.27	1248768.34
PI	2+69.99	546695.27	1248768.34
PI	2+94.51	546671.85	1248775.58
PI	2+94.51	546671.85	1248775.58
PI	3+15.52	546656.41	1248789.84
PI	3+15.52	546656.41	1248789.84
PI	3+55.82	546629.42	1248819.76
PI	3+55.82	546629.42	1248819.76
POE	4+16.43	546614.55	1248878.51



<b>MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:</b>		NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED OF A MCDPS ACCESS PERMIT.
STORMWATER MANAGEMENT:	SEDIMENT CONTROL TECHNICAL REQUIREMENTS:	
REVIEWED _____ DATE _____	REVIEWED _____ DATE _____	ADMINISTRATIVE REQUIREMENTS:
APPROVED _____ DATE _____	APPROVED _____ DATE _____	REVIEWED _____ DATE _____
S.M. FILE NO. _____		APPROVED _____ DATE _____

509 South Exeter Street  
4th Floor  
Baltimore, Maryland 21202  
(410) 662-7400

**MCCORMICK  
TAYLOR**

GEOMETRIC LAYOUT SHEETS  
GAME PRESERVE SWM RETROFITS  
GAITHERSBURG (9TH) ELECTION DISTRICT  
MONTGOMERY COUNTY PARCEL C-1, GREAT SENECA EXT STREAM VALLEY PARK,  
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255 ROCKVILLE PIKE, RM. 120  
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DESIGN HAS  
DRAFT HAS  
APPROVED ALH  
DATE FEB '16  
SCALE 1"=10'

SHEET **4** OF **15**

FILE: D:\18218 - Cabin Branch SWM Retrofit\Design\Engineering\PlanSet\10826p05.dwg; Cabin Branch.pend; 10826.dgn  
PLOTED: Wednesday, February 10, 2016 AT 03:42 PM

POND GEOMETRY						
POINT	BASELINE	STATION	OFFSET	NORTHING	EASTING	ELEVATION
1	EMBANKMENT	5+52.90	40.77 LT	546662.2827	1248791.0973	319.00
2	EMBANKMENT	5+57.04	32.94 LT	546657.151	1248783.8800	319.00
3	EMBANKMENT	5+58.38	54.10 LT	546658.5762	1248805.0323	319.00
4	EMBANKMENT	5+74.30	60.93 LT	546653.8727	1248813.5675	319.00
5	EMBANKMENT	5+81.31	31.57 LT	546641.4161	1248786.7577	319.00
6	EMBANKMENT	5+92.35	31.95 LT	546637.2422	1248789.5321	319.00
7	EMBANKMENT	6+08.14	32.08 LT	546632.2642	1248793.8873	319.00
8	EMBANKMENT	6+13.86	60.74 LT	546650.3244	1248816.8588	319.00
9	EMBANKMENT	6+39.21	31.50 LT	546620.696	1248810.3608	319.00
10	EMBANKMENT	6+39.79	60.25 LT	546647.2979	1248821.2797	319.00
11	EMBANKMENT	6+61.51	60.44 LT	546645.6221	1248827.3489	319.00
12	EMBANKMENT	6+62.16	31.01 LT	546616.3154	1248824.6263	319.00
13	EMBANKMENT	6+66.51	30.80 LT	546615.6732	1248828.3656	319.00
14	EMBANKMENT	6+91.83	30.68 LT	546617.5479	1248839.2243	319.00
15	EMBANKMENT	6+95.18	31.18 LT	546619.2112	1248842.1839	319.00
16	EMBANKMENT	6+95.66	54.12 LT	546640.8076	1248834.4518	319.00
17	EMBANKMENT	7+00.11	38.88 LT	546628.1593	1248844.0441	319.00
18	EMBANKMENT	5+58.55	38.75 LT	546656.41	1248789.834	316.00
19	EMBANKMENT	5+72.32	50.82 LT	546652.8271	1248803.316	316.00
20	EMBANKMENT	5+72.41	50.97 LT	546652.7778	1248803.49	316.00
21	EMBANKMENT	5+78.76	37.52 LT	546644.2588	1248792.042	316.00
22	EMBANKMENT	5+91.77	37.92 LT	546640.99	1248794.218	316.00
23	EMBANKMENT	6+08.67	38.06 LT	546636.4648	1248798.172	316.00
24	EMBANKMENT	6+09.00	55.29 LT	546649.3523	1248809.622	316.00
25	EMBANKMENT	6+12.47	54.90 LT	546646.7941	1248812.007	316.00
26	EMBANKMENT	6+39.58	37.49 LT	546626.146	1248812.87	316.00
27	EMBANKMENT	6+40.39	54.28 LT	546641.5143	1248819.683	316.00
28	EMBANKMENT	6+60.64	54.50 LT	546639.8227	1248825.81	316.00
29	EMBANKMENT	6+62.46	37.00 LT	546622.2334	1248825.615	316.00
30	EMBANKMENT	6+64.78	52.32 LT	546637.182	1248829.671	316.00
31	EMBANKMENT	6+68.18	36.78 LT	546621.5866	1248829.381	316.00
32	EMBANKMENT	6+90.88	36.61 LT	546622.7473	1248836.23	316.00
33	EMBANKMENT	6+94.37	37.13 LT	546624.4768	1248839.307	316.00
34	EMBANKMENT	5+41.24	7.08 LT	546669.4555	1248756.18	328.00
35	EMBANKMENT	5+50.65	5.27 LT	546659.8876	1248755.616	328.00
36	EMBANKMENT	5+53.90	4.67 LT	546656.5855	1248755.444	328.00
37	EMBANKMENT	5+58.72	4.17 LT	546651.7506	1248755.569	328.00
38	EMBANKMENT	5+63.40	3.90 LT	546647.448	1248756.046	328.00
39	EMBANKMENT	5+67.44	3.63 LT	546643.7442	1248756.755	328.00
40	EMBANKMENT	5+71.50	3.49 LT	546639.8228	1248757.808	328.00
41	EMBANKMENT	5+76.22	3.73 LT	546635.3749	1248759.407	328.00
42	EMBANKMENT	5+80.42	4.11 LT	546631.807	1248761.029	328.00
43	EMBANKMENT	5+88.40	4.71 LT	546625.511	1248764.722	328.00
44	EMBANKMENT	5+96.69	5.12 LT	546619.2699	1248769.319	328.00
45	EMBANKMENT	6+06.03	5.11 LT	546613.0442	1248774.914	328.00
46	EMBANKMENT	6+11.71	4.88 LT	546609.277	1248778.916	328.00
47	EMBANKMENT	6+18.48	5.05 LT	546605.043	1248784.132	328.00
48	EMBANKMENT	6+26.15	5.19 LT	546601.1623	1248789.809	328.00
49	EMBANKMENT	6+34.40	4.79 LT	546597.5097	1248796.282	328.00
50	EMBANKMENT	6+43.01	4.39 LT	546594.0353	1248804.124	328.00
51	EMBANKMENT	6+52.06	4.48 LT	546591.4155	1248812.188	328.00
52	EMBANKMENT	6+59.51	4.12 LT	546589.9011	1248818.923	328.00
53	EMBANKMENT	6+67.24	3.74 LT	546588.6806	1248826.434	328.00
54	EMBANKMENT	6+72.64	3.61 LT	546588.4113	1248831.427	328.00
55	EMBANKMENT	6+77.60	3.53 LT	546588.6794	1248836.03	328.00
56	EMBANKMENT	6+82.22	3.49 LT	546589.3687	1248840.263	328.00
57	EMBANKMENT	6+87.04	3.48 LT	546590.538	1248844.593	328.00
58	EMBANKMENT	6+91.13	3.52 LT	546591.9222	1248848.257	328.00
59	EMBANKMENT	6+95.55	3.94 LT	546593.8914	1248852.24	328.00
60	EMBANKMENT	7+18.02	4.32 LT	546604.2365	1248870.541	328.00
61	EMBANKMENT	7+20.88	4.29 LT	546606.0144	1248872.779	328.00
62	EMBANKMENT	7+24.37	4.89 LT	546608.6749	1248875.117	328.00
63	EMBANKMENT	7+27.11	5.90 LT	546611.1776	1248876.62	328.00
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66	EMBANKMENT	7+34.45	12.10 LT	546620.61	1248878.429	328.00
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68	EMBANKMENT	7+36.81	17.01 LT	546625.9132	1248877.177	328.00
69	EMBANKMENT	7+38.62	25.54 LT	546633.6912	1248873.225	328.00
70	EMBANKMENT	5+39.82	4.00 RT	546669.4219	1248745.007	328.00
71	EMBANKMENT	5+48.49	4.50 RT	546660.76	1248745.647	328.00
72	EMBANKMENT	5+52.47	5.23 RT	546656.7163	1248745.437	328.00
73	EMBANKMENT	5+58.09	5.82 RT	546651.0692	1248745.583	328.00
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78	EMBANKMENT	5+81.39	5.85 RT	546627.1957	1248752.14	328.00
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95	EMBANKMENT	6+96.78	5.99 RT	546585.0499	1248856.92	328.00
96	EMBANKMENT	7+40.86	9.63 RT	546607.7474	1248897.073	328.00
97	EMBANKMENT	7+42.90	11.57 RT	546607.5151	1248899.875	328.00
98	EMBANKMENT	7+43.22	13.05 RT	546606.5613	1248901.055	328.00
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100	EMBANKMENT	5+00.00	18.49 LT	546718.9078	1248759.665	333.00
101	EMBANKMENT	5+00.00	39.75 LT	546740.8589	1248768.117	336.00
102	EMBANKMENT	5+00.00	31.55 LT	546738.3517	1248756.382	336.00
103	EMBANKMENT	5+00.00	15.06 LT	546722.4541	1248751.348	336.00
104	EMBANKMENT	5+00.00	55.97 LT	546761.6155	1248764.018	339.00
105	EMBANKMENT	5+00.00	49.22 LT	546757.8431	1248752.626	339.00
106	EMBANKMENT	5+00.00	58.31 LT	546718.2354	1248801.438	341.00
107	EMBANKMENT	5+01.04	13.06 LT	546710.0937	1248756.874	333.00
108	EMBANKMENT	5+02.01	53.23 LT	546714.3526	1248796.829	339.00
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110	EMBANKMENT	5+11.28	37.74 LT	546703.1506	1248782.684	333.00
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112	EMBANKMENT	5+14.33	28.32 LT	546698.8978	1248773.735	330.00
113	EMBANKMENT	5+38.81	30.19 LT	546674.8741	1248778.777	324.00
114	EMBANKMENT	5+43.48	19.14 LT	546668.7999	1248768.428	324.00
115	EMBANKMENT	5+45.46	37.61 LT	546669.2439	1248786.999	321.00
116	EMBANKMENT	5+51.20	27.07 LT	546662.1826	1248777.297	321.00

<b>MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:</b>		NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED OF A MCDPS ACCESS PERMIT.
STORMWATER MANAGEMENT:	SEDIMENT CONTROL TECHNICAL REQUIREMENTS:	ADMINISTRATIVE REQUIREMENTS:
REVIEWED _____ DATE _____	REVIEWED _____ DATE _____	REVIEWED _____ DATE _____
APPROVED _____ DATE _____	APPROVED _____ DATE _____	APPROVED _____ DATE _____
S.M. FILE NO. _____		MCDPS APPROVAL OF THIS PLAN WILL EXPIRE ONE YEAR FROM THE DATE OF APPROVAL. IF THE PROJECT HAS NOT BEEN STARTED, UNLESS THE PERMIT HAS BEEN EXTENDED.

**MCCORMICK TAYLOR**  
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Baltimore, Maryland 21202  
(410) 662-7400

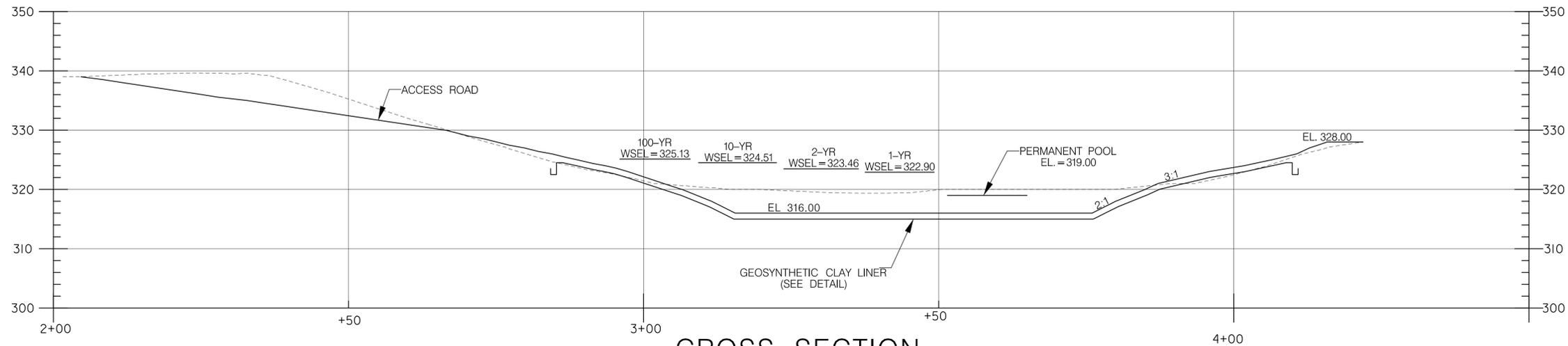
GEOMETRIC LAYOUT SHEETS  
**GAME PRESERVE SWM RETROFITS**  
GAITHERSBURG (9TH) ELECTION DISTRICT  
MONTGOMERY COUNTY PARCEL C-1, GREAT SENECA EXT STREAM VALLEY PARK,  
LIBER 490.1 FOLIO 184  
MONTGOMERY COUNTY, MARYLAND

CLIENT: MONTGOMERY COUNTY DEPT OF ENVIRONMENTAL PROTECTION  
255 ROCKVILLE PIKE, RM. 120  
ROCKVILLE, MD 20850-4166  
MR. PHILIP JONES, P.E.  
(240) 777-7738

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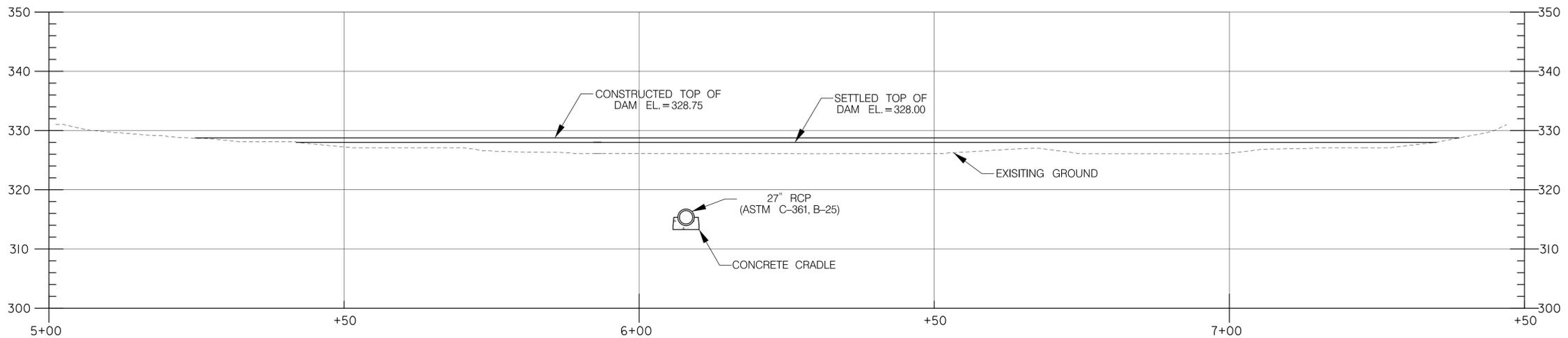
SHEET **5** OF **15**

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PLOTTED: Wednesday, February 10, 2016 AT 03:42 PM



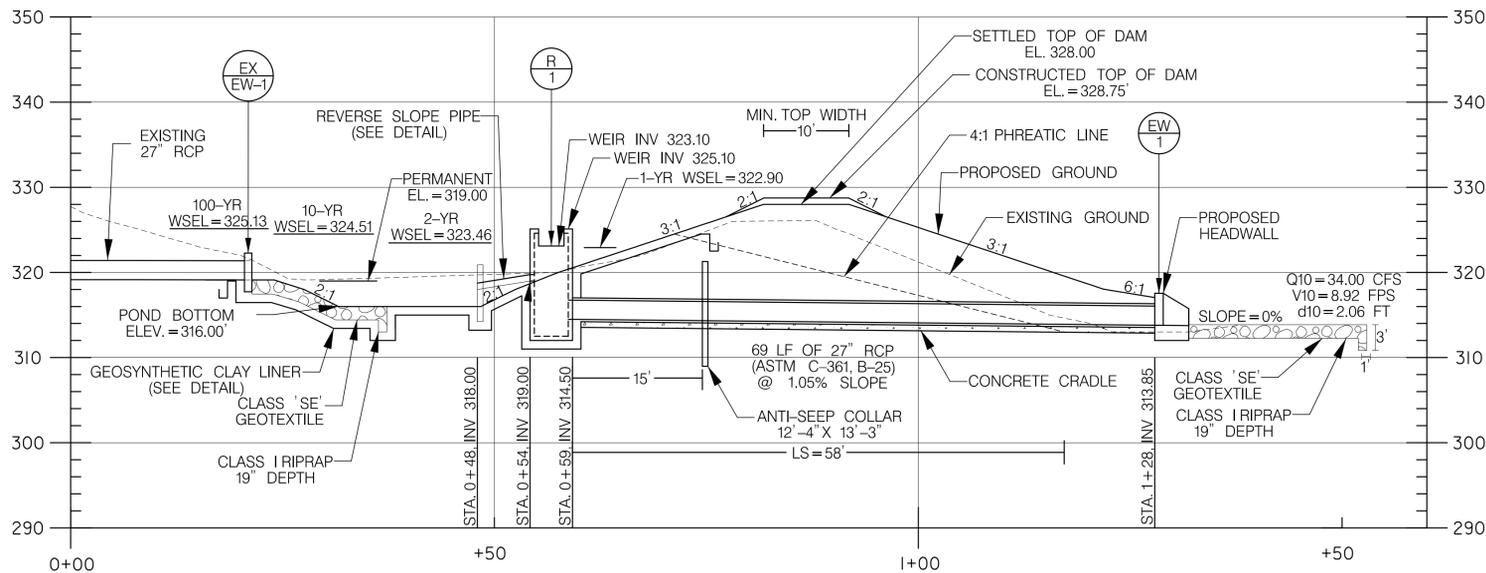
**CROSS SECTION**

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



**EMBANKMENT PROFILE**

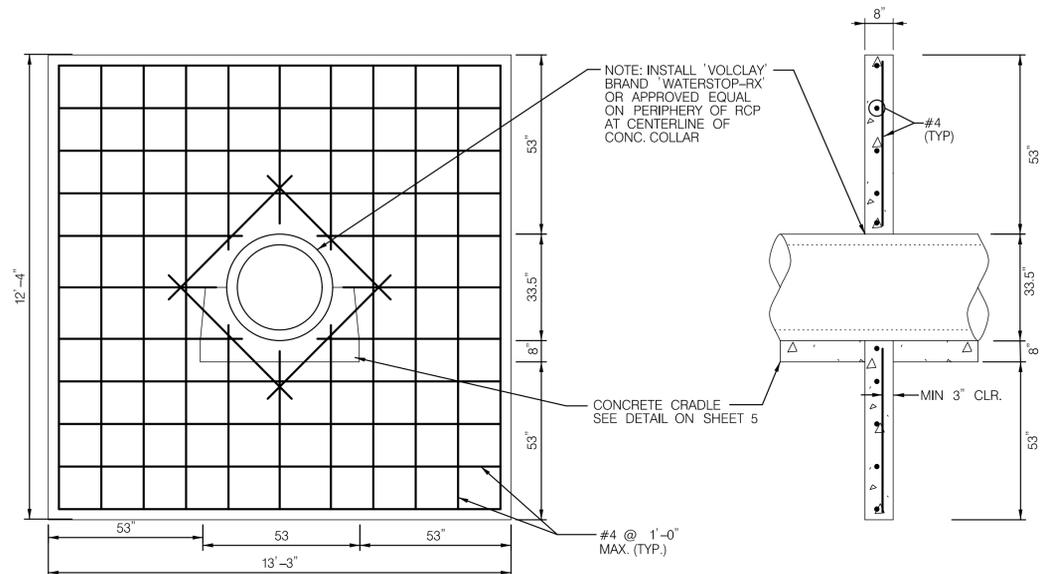
HORIZONTAL SCALE: 1" = 10'  
VERTICAL SCALE: 1" = 10'



**PRINCIPAL SPILLWAY**

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

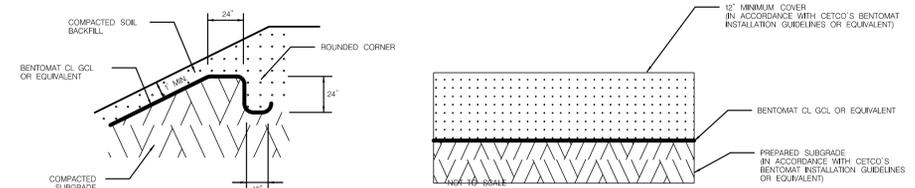
MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:			NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED OF A MCDPS ACCESS PERMIT.		
STORMWATER MANAGEMENT:	SEDIMENT CONTROL TECHNICAL REQUIREMENTS:	ADMINISTRATIVE REQUIREMENTS:	DESIGN	HAS	ALH
REVIEWED _____ DATE _____	REVIEWED _____ DATE _____	REVIEWED _____ DATE _____	DRAFT	APPROVED	DATE
APPROVED _____ DATE _____	APPROVED _____ DATE _____	APPROVED _____ DATE _____	DATE	DATE	SCALE
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**CONCRETE ANTI-SEEP COLLAR**  
NOT TO SCALE

**ANTI-SEEP COLLAR CONSTRUCTION NOTES:**

1. PROVIDE MINIMUM 3" CLEAR COVER FOR ALL REINFORCEMENT, EXCEPT AS NOTED.
2. USE MIX NO. 6 CEMENT CONCRETE (f'c = 4500 psi) FOR ANTI-SEEP COLLAR AND CONCRETE CRADLE.
3. USE GRADE 60 REINFORCING STEEL BARS THAT MEET THE REQUIREMENTS OF ASTM A615/A615M, A616/A616M, A617/A617M AND A706/A706M. DO NOT WELD REINFORCING STEEL BARS UNLESS SPECIFIED.
4. BARREL JOINTS SHALL BE LOCATED A MINIMUM OF 2' FROM THE CONCRETE ANTI-SEEP COLLAR.



**GEOSYNTHETIC CLAY LINER ANCHOR DETAIL**  
NOT TO SCALE

**GEOSYNTHETIC CLAY LINER DETAIL**  
NOT TO SCALE

**GEOSYNTHETIC CLAY LINER SPECIFICATIONS**

THE GEOSYNTHETIC CLAY LINER (GCL) SHALL BE BENTOMAT CL OR EQUIVALENT AND SHALL FOLLOW THE DETAILED GUIDELINES AND REQUIREMENTS SPECIFIED BY THE MANUFACTURER.

THE GCL SHALL HAVE THE FOLLOWING MINIMUM STRUCTURAL VALUES WHEN TESTED IN ACCORDANCE WITH THE NOTED METHODS.

MATERIAL PROPERTY	REQUIRED VALUES	TEST METHOD
BENTONITE SWELL INDEX	24mL/2 g min.	ASTM D 5890
BENTONITE FLUID LOSS	18mL max.	ASTM D 5891
BENTONITE MASSAREA	40,000 ft <sup>2</sup>	ASTM D 5993
GCL TENSILE STRENGTH	45 lbs/ft	ASTM D 6768
GCL PEEL STRENGTH	3.5 lbs/ft	ASTM D 6496
GCL HYDRAULIC CONDUCTIVITY	5 x 10 <sup>-10</sup>	ASTM D 5887
GCL HYDRATED INTERNAL SHEAR STRENGTH	500 psf	ASTM D 5321/6243

**MATERIALS:**

BENTONITE SHALL BE HIGH SWELLING WITH A MINIMUM SWELL INDEX OF 24 mL/g AND A MAXIMUM FLUID LOSS OF 18 mL. BENTONITE SHALL BE CG-50 GRANULAR BENTONITE, MINE AND PROCESSED BY AMERICAN COLLOID COMPANY.

BENTONITE SHALL HAVE A GRANULAR CONSISTENCY OF (1 PERCENT MAX. PASSING A NO. 200 SIEVE) TO ENSURE UNIFORM DISTRIBUTION THROUGHOUT THE GCL.

**STRUCTURAL REQUIREMENTS:**

THE PRODUCT SHALL CONSIST OF A LAYER OF GRANULAR SODIUM BENTONITE BETWEEN TWO GEOTEXTILES NEEDLE-PUNCHED TOGETHER. PRODUCT IS LAMINATED TO A THIN FLEXIBLE MEMBRANE LINER.

**INSTALLATION:**

THE EARTHEN SURFACE UPON WHICH THE GCL IS INSTALLED SHALL BE PREPARED AND COMPACTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND DRAWINGS. THE SURFACE SHALL BE SMOOTH, FIRM, UNYIELDING AND FREE FROM VEGETATION, SHARP ROCKS, VOID SPACES, STANDING WATER, ABRUPT ELEVATION CHANGES, AND CRACKS LARGER THAN ONE INCH.

IMMEDIATELY PRIOR TO GCL DEPLOYMENT, SUBGRADE SHALL BE FINAL-GRADED AND SMOOTH-ROLLED TO PROVIDE BEST PRACTICABLE SURFACE FOR INSTALLATION. NO WHEEL RUTS, FOOTPRINTS, OR OTHER IRREGULARITIES SHALL BE PRESENT. ALL PROTRUSIONS EXTENDING MORE THAN ONE-HALF INCH FROM THE SURFACE SHALL BE REMOVED OR PUNCHED IN THE SURFACE.

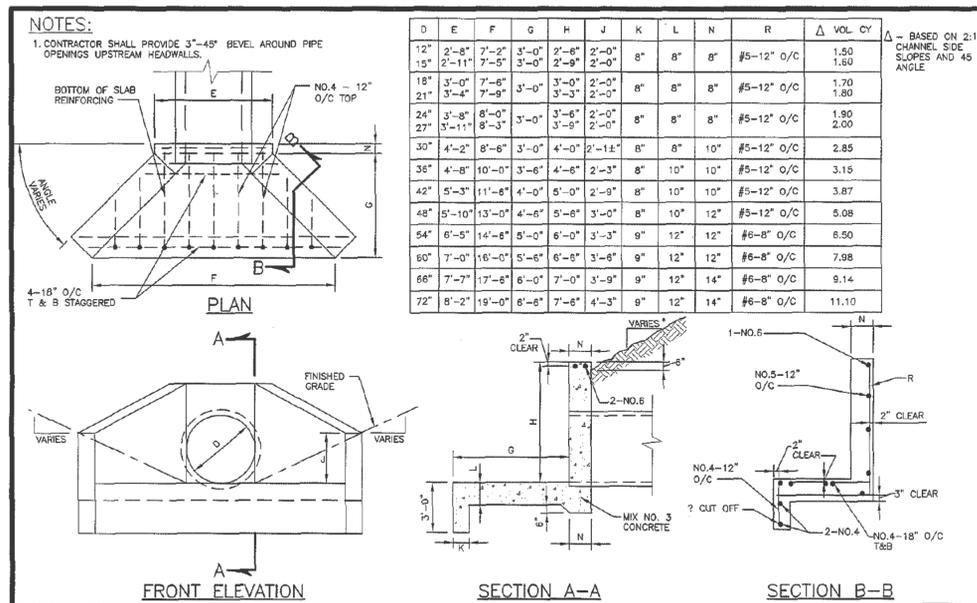
AT THE TOP OF THE SLOPED AREAS, AN ANCHOR TRENCH FOR THE GCL SHALL BE EXCAVATED OR AN EQUIVALENT RUNOUT SHALL BE UTILIZED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

MINIMIZE THE EXTENT TO WHICH THE GCL IS DRAGGED ACROSS THE SUBGRADE. A SLIP SHEET MAY BE USED TO REDUCE DAMAGE DURING PLACEMENT.

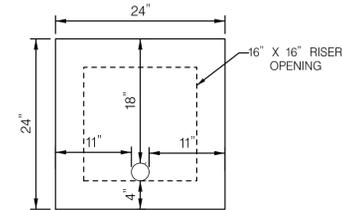
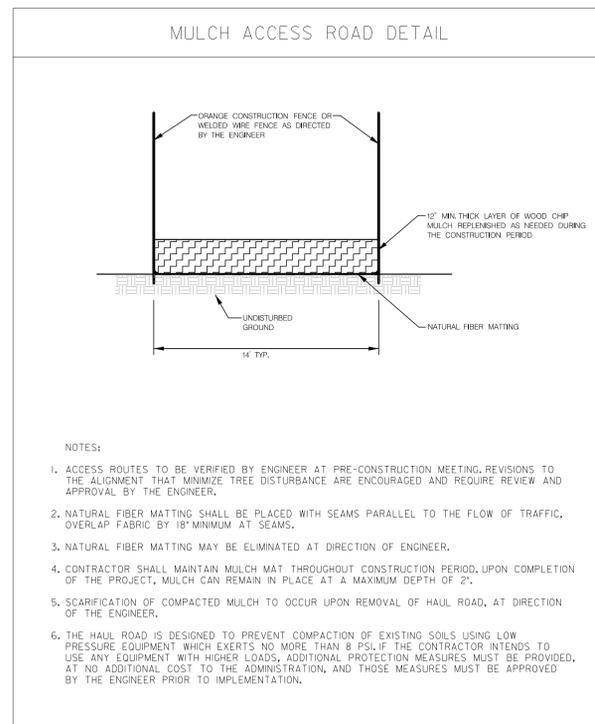
GCL PANELS SHALL BE PLACED PARALLEL TO THE DIRECTION OF THE SLOPE AND SHOULD LIE FLAT WITH NO WRINKLES OR FOLDS.

GCL SHALL NOT BE LEFT UNCOVERED OVERNIGHT.

COVER SOIL SHALL BE FREE OF ANGULAR STONES OR OTHER DAMAGING FOREIGN MATTER. SOIL SHALL BE PLACED A MINIMUM OF 1 FOOT THICKNESS OVER THE GCL AND SHALL BE PUSHED UP SLOPES TO MINIMIZE TENSILE FORCE ON THE GCL.



**TYPE 'A' HEADWALL MODIFIED DETAIL**  
NOT TO SCALE

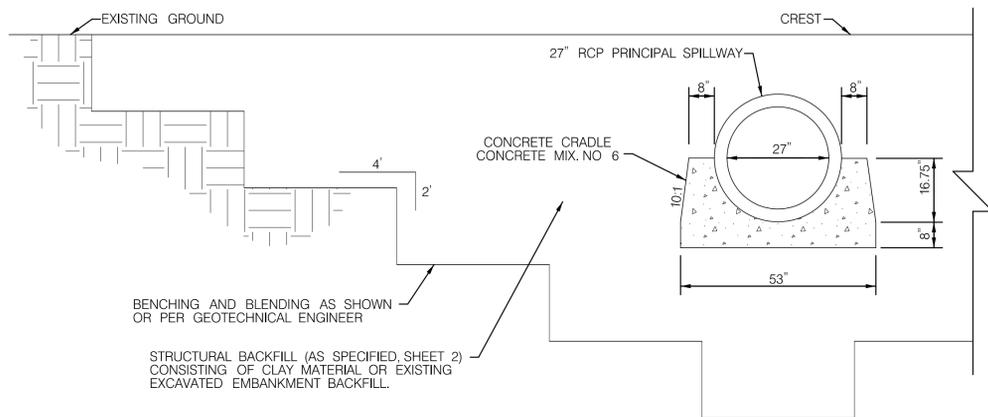


**ORIFICE PLATE NOTES:**

1. 24" X 24" X 1/2" GALVANIZED STEEL ORIFICE PLATE.
2. 2" DIA. ORIFICE PLATE TO BE BOLTED TO THE INSIDE DOWN STREAM FACE OF CONCRETE RISER USING 1/2" STAINLESS STEEL CONCRETE ANCHORS.

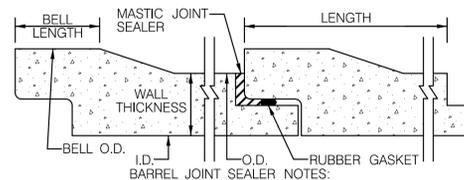
**ORIFICE PLATE**  
NOT TO SCALE

MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:		NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED OF A MCDPS ACCESS PERMIT.
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**PIPE TRENCH AND CONCRETE CRADLE DETAIL**

NOT TO SCALE



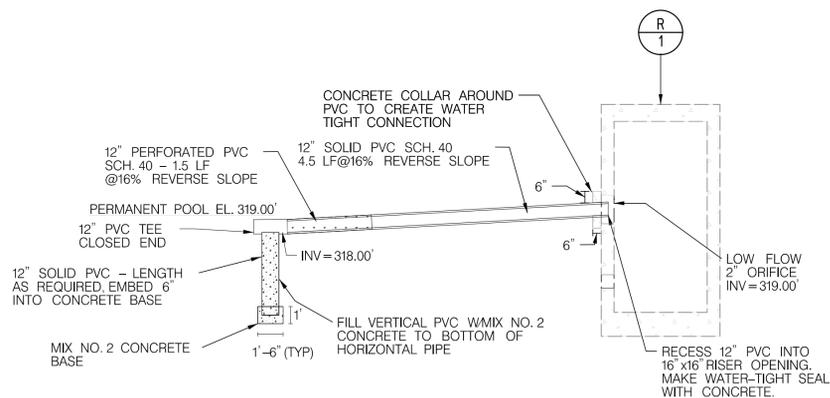
- BARREL JOINT SEALER NOTES:**
1. MASTIC JOINT SEALER TO BE APPLIED ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
  2. JOINT SEALER SHOULD HAVE WATERTIGHT CONNECTION.
  3. THE SEALER SHALL BE A MIXTURE OF ASPHALT, MINERAL FILLER AND PETROLEUM SOLVENTS AND SHALL HAVE ADHESIVE AND COHESIVE PROPERTIES.

THE SEALER SHALL CONFORM TO THE FOLLOWING:

TEST AND METHOD	SPECIFICATION LIMITS
RESIDUES BY EVAPORATION, NONVOLATILE MATTER, D 2939, % MIN.	70
INORGANIC FILLER ON IGNITION, ASH CONTENT, D 2939, %	15-45

**BARREL JOINT SEALER DETAIL**

NOT TO SCALE



**REVERSE SLOPE PIPE DETAIL**

NOT TO SCALE

**REVERSE SLOPE PIPE NOTES:**

1. PIPE SHALL BE SCHEDULE 40 PVC.
2. PERFORATED PIPE SECTION SHALL HAVE 12" DIAMETER PERFORATIONS AT 6" ON CENTER 4 HOLES PER ROW.
3. PVC SHALL BE CONNECTED TO RISER WITH A WATERTIGHT CONCRETE COLLAR. CONCRETE COLLAR SHALL BE MIX 2 CONCRETE AND EXTEND A MINIMUM OF 6" BEYOND PIPE RADIALLY AND EXTEND A MINIMUM OF 6" OUT FROM RISER.

MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:		NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED OF A MCDPS ACCESS PERMIT.
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SHEET	8	OF	15		

**MCCORMICK TAYLOR**  
509 South Exeter Street  
4th Floor  
Baltimore, Maryland 21202  
(410) 662-7400

DRAINAGE DETAIL SHEET  
**GAME PRESERVE SWM RETROFITS**  
GAITHERSBURG (9TH) ELECTION DISTRICT  
MONTGOMERY COUNTY PARCEL C-1, GREAT SENECA EXT STREAM VALLEY PARK,  
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MONTGOMERY COUNTY, MARYLAND

CLIENT: MONTGOMERY COUNTY DEPT OF ENVIRONMENTAL PROTECTION  
255 ROCKVILLE PIKE, RM. 120  
ROCKVILLE, MD 20850-4166  
MR. PHILIP JONES, P.E.  
(240) 777-7738

FILE: R518218 - Cabin Branch SWM Retrofit Design Engineering Plan Set 108269000002\_Cabin Branch.pxd 108269000002.dgn  
PLOTTED: Wednesday, February 10, 2016 AT 03:42 PM

THESE SPECIFICATIONS ARE APPROPRIATE TO ALL PONDS WITHIN THE SCOPE OF THE STANDARD FOR PRACTICE MD-378. ALL REFERENCES TO ASTM, MSHA, AND AASHTO SPECIFICATIONS APPLY TO THE MOST RECENT VERSION.

**A. CONSTRUCTION INSPECTION BY DESIGNATED ENGINEER**

THE CONSTRUCTION OF THE POND AND EMBANKMENT SHALL BE UNDER THE SUPERVISION OF A REGISTERED PROFESSIONAL ENGINEER. THE ENGINEER MUST SUBMIT WRITTEN CERTIFICATION THAT THE POND AND EMBANKMENT HAVE BEEN BUILT IN ACCORDANCE WITH THE APPROVED PLANS TO THE DEPARTMENT OF PERMITTING SERVICES (DPS) ALONG WITH A RECORD DRAWING, SOIL COMPACTION TESTS, CONCRETE TESTS, AND OTHER REQUIRED CONSTRUCTION DOCUMENTATION. THIS SHOULD BE DONE IMMEDIATELY FOLLOWING THE COMPLETION OF THE PROJECT, UNLESS OTHERWISE DESIGNATED ON THE PLANS. THE ENGINEER SHALL HAVE THE RESPONSIBILITY AND AUTHORITY TO MAKE MINOR CHANGES IN THE PLANS IN ORDER TO COMPENSATE FOR UNUSUAL SOIL CONDITIONS ENCOUNTERED DURING CONSTRUCTION AS LONG AS CHANGES DO NOT ADVERSELY AFFECT THE INTEGRITY OF THE DAM. MAJOR CHANGES TO THE DESIGN, WHICH MAY RESULT FROM SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION, MUST BE REVIEWED AND APPROVED BY THE DESIGN ENGINEER, DPS, AND THE MONTGOMERY SOIL CONSERVATION DISTRICT PRIOR TO INITIATION OF CONSTRUCTION.

**B. SITE PREPARATION**

AREAS DESIGNATED FOR BORROW AREAS, EMBANKMENT, AND STRUCTURAL WORKS SHALL BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL. ALL TREES, VEGETATION, ROOTS, AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED. CHANNEL BANKS AND SHARP BREAKS SHALL BE SLOPED TO NO STEEPER THAN 1:1. ALL TREES SHALL BE CLEARED AND GRUBBED WITHIN 15 FEET OF THE TOE OF THE EMBANKMENT.

AREAS TO BE COVERED BY THE RESERVOIR WILL BE CLEARED OF ALL TREES, BRUSH, LOGS, FENCES, RUBBISH, AND OTHER OBJECTIONABLE MATERIAL UNLESS OTHERWISE DESIGNATED ON THE PLANS. TREES, BRUSH, AND STUMPS SHALL BE CUT APPROXIMATELY LEVEL WITH THE GROUND SURFACE. FOR DRY STORMWATER MANAGEMENT PONDS, A MINIMUM OF A 25-FOOT RADIUS AROUND THE INLET STRUCTURE SHALL BE CLEARED.

ALL CLEARED AND GRUBBED MATERIAL SHALL BE DISPOSED OF OUTSIDE AND BELOW THE LIMITS OF THE DAM AND RESERVOIR AS DIRECTED BY THE OWNER OR HIS REPRESENTATIVE. A SUFFICIENT QUANTITY OF TOPSOIL WILL BE STOCKPILED IN A SUITABLE LOCATION FOR USE ON THE EMBANKMENT AND OTHER DESIGNATED AREAS.

**C. EARTH FILL**

MATERIAL – THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED DESIGNATED BORROW AREAS. IT SHALL BE FREE OF ROOTS, STUMPS, WOOD, RUBBISH, STONES GREATER THAN 4 INCHES, FROZEN OR OTHER OBJECTIONABLE MATERIALS. FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT, AND CUT OFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL AND MUST HAVE AT LEAST 30% PASSING THE #200 SIEVE. CONSIDERATION MAY BE GIVEN TO THE USE OF OTHER MATERIALS IN THE EMBANKMENT IF DESIGNED BY A GEOTECHNICAL ENGINEER. SUCH SPECIAL DESIGNS MUST HAVE CONSTRUCTION SUPERVISED BY A GEOTECHNICAL ENGINEER. MATERIALS USED IN THE OUTER SHELL OF THE EMBANKMENT MUST HAVE THE ABILITY TO SUPPORT VEGETATION OF THE QUALITY REQUIRED TO PREVENT EROSION OF THE EMBANKMENT. 2

PLACEMENT – AREAS ON WHICH FILL IS TO BE PLACED SHALL BE SCARIFIED PRIOR TO PLACEMENT OF FILL. FILL MATERIALS SHALL BE PLACED IN MAXIMUM 8 INCH THICK (BEFORE COMPACTION) LAYERS WHICH ARE TO BE CONTINUOUS OVER THE ENTIRE LENGTH OF THE FILL. THE MOST PERMEABLE BORROW MATERIAL SHALL BE PLACED IN THE DOWNSTREAM PORTION OF THE EMBANKMENT. THE PRINCIPAL SPILLWAY MUST BE INSTALLED CONCURRENTLY WITH FILL PLACEMENT AND NOT EXCAVATED INTO THE EMBANKMENT.

COMPACTION – THE MOVEMENT OF THE HAULING AND SPREADING EQUIPMENT OVER THE FILL SHALL BE CONTROLLED SO THAT THE ENTIRE SURFACE OF EACH LIFT SHALL BE TRAVERSED BY NOT LESS THAN ONE TREAD TRACK OF THE EQUIPMENT OR COMPACTION SHALL BE ACHIEVED BY A MINIMUM OF FOUR COMPLETE PASSES OF A SHEEPSFOOT, RUBBER TIRED OR VIBRATORY ROLLER. FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SUCH THAT THE REQUIRED DEGREE OF COMPACTION WILL BE OBTAINED WITH THE EQUIPMENT USED. THE FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SO THAT IF FORMED INTO A BALL, IT WILL NOT CRUMBLE; YET, NOT BE SO WET THAT WATER CAN BE SQUEEZED OUT.

THE DENSITY OF EACH LIFT SHALL NOT BE LESS THAN 95% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN +2% OF THE OPTIMUM. EACH LAYER OF FILL SHALL BE COMPACTED AS NECESSARY TO OBTAIN THAT DENSITY, AND IS TO BE CERTIFIED BY THE ENGINEER AT THE TIME OF CONSTRUCTION. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T-99 (STANDARD PROCTOR).

CUT OFF TRENCH – THE CUTOFF TRENCH SHALL BE EXCAVATED INTO IMPERVIOUS MATERIAL ALONG OR PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE BOTTOM WIDTH OF THE TRENCH SHALL BE GOVERNED BY THE EQUIPMENT USED FOR EXCAVATION WITH THE MINIMUM WIDTH BEING FOUR FEET. THE DEPTH SHALL BE AT LEAST FOUR FEET BELOW EXISTING GRADE OR AS SHOWN ON THE PLANS. THE SIDE SLOPES OF THE TRENCH SHALL BE ONE TO ONE OR FLATTER. THE BACKFILL SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY.

**EMBANKMENT CORE**

THE CORE SHALL BE PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE TOP WIDTH OF THE CORE SHALL BE MINIMUM OF FOUR FEET. THE HEIGHT SHALL EXTEND UP TO AT LEAST THE 10-YEAR WATER ELEVATION OR AS SHOWN ON THE PLANS. THE SIDE SLOPES SHALL BE 1 TO 1 OR FLATTER. THE CORE SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY. IN ADDITION, THE CORE SHALL BE PLACED CONCURRENTLY WITH THE OUTER SHALL OF THE EMBANKMENT.

**D. STRUCTURE BACKFILL**

BACKFILL ADJACENT TO PIPES OR STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL MATERIAL. THE FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL MUST FILL COMPLETELY ALL SPACES UNDER AND ADJACENT TO THE PIPE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A CONCRETE STRUCTURE OR PIPE, UNLESS THERE IS A COMPACTED FILL OF 24 INCHES OR GREATER OVER THE STRUCTURE OR PIPE.

STRUCTURE BACKFILL MAY BE FLOWABLE FILL MEETING THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 313 AS MODIFIED. THE MIXTURE SHALL HAVE A 100-200 PSI; 28 DAY UNCONFINED COMPRESSIVE STRENGTH. THE FLOWABLE FILL SHALL HAVE A MINIMUM PH OF 4.0 AND A MINIMUM RESISTIVITY OF 2,000 OHM-CM. MATERIAL SHALL BE PLACED SUCH THAT A MINIMUM OF SIX INCHES (MEASURED PERPENDICULAR TO THE OUTSIDE OF THE PIPE) OF FLOWABLE FILL SHALL BE UNDER (BEDDING), OVER AND, ON THE SIDES OF THE PIPE. IT ONLY NEEDS TO EXTEND UP TO THE SPRING LINE FOR RIGID CONDUITS. AVERAGE SLUMP 3 OF THE FILL SHALL BE 7 INCHES TO ASSURE FLOWABILITY OF THE MATERIAL. ADEQUATE MEASURES SHALL BE TAKEN (SAND BAGS, ETC.) TO PREVENT FLOATING THE PIPE. WHEN USING FLOWABLE FILL, ALL METAL PIPE SHALL BE BITUMINOUS COATED. ANY ADJOINING SOIL FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL SHALL COMPLETELY FILL ALL VOIDS ADJACENT TO THE FLOWABLE FILL ZONE. AT NO TIME DURING THE BACK FILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A STRUCTURE OR PIPE, UNLESS THERE IS A COMPACTED FILL OF 24 INCHES OR GREATER OVER THE STRUCTURE OR PIPE. BACKFILL MATERIAL OUTSIDE THE STRUCTURAL BACKFILL (FLOWABLE FILL) ZONE SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE CORE OF THE EMBANKMENT OR OTHER EMBANKMENT MATERIALS.

**E. PIPE CONDUITS**

ALL PIPES SHALL BE CIRCULAR IN CROSS SECTION.

CORRUGATED METAL PIPE – ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR CORRUGATED METAL PIPE:

1. MATERIALS \* (POLYMER COATED STEEL PIPE) \* STEEL PIPES WITH POLYMERIC COATINGS SHALL HAVE A MINIMUM COATING THICKNESS OF 0.01 INCH (10 MIL) ON BOTH SIDES OF THE PIPE. THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-245 & M-246 WITH WATERTIGHT COUPLING BANDS OR FLANGES.

MATERIALS \* (ALUMINUM COATED STEEL PIPE) \* THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-274 WITH WATERTIGHT COUPLING BANDS OR FLANGES. ALUMINUM COATED STEEL PIPE, WHEN USED WITH FLOWABLE FILL OR WHEN SOIL AND/OR WATER CONDITIONS WARRANT THE NEED FOR INCREASED DURABILITY, SHALL BE FULLY BITUMINOUS COATED PER REQUIREMENTS OF AASHTO SPECIFICATION M-190 TYPE A. ANY ALUMINUM COATING DAMAGED OR OTHERWISE REMOVED SHALL BE REPLACED WITH COLD APPLIED BITUMINOUS COATING COMPOUND. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER OR TWO COATS OF ASPHALT.

MATERIALS \* (ALUMINUM PIPE) \* THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-196 OR M-211 WITH WATERTIGHT COUPLING BANDS OR FLANGES. ALUMINUM PIPE, WHEN USED WITH FLOWABLE FILL OR WHEN SOIL AND/OR WATER CONDITIONS WARRANT FOR INCREASED DURABILITY, SHALL BE FULLY BITUMINOUS COATED PER REQUIREMENTS OF AASHTO SPECIFICATION M-190 TYPE A. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER OR TWO COATS OF ASPHALT. HOT DIP GALVANIZED BOLTS MAY BE USED FOR CONNECTIONS. THE PH OF THE SURROUNDING SOILS SHALL BE BETWEEN 4 AND 9.

2. COUPLING BANDS, ANTI-SEEP COLLARS, END SECTIONS, ETC., MUST BE COMPOSED OF THE SAME MATERIAL AS THE PIPE. METALS MUST BE INSULATED FROM DISSIMILAR MATERIALS WITH USE OF RUBBER OR PLASTIC INSULATING MATERIALS AT LEAST 24 MILS IN THICKNESS.

3. CONNECTIONS – ALL CONNECTIONS WITH PIPES MUST BE COMPLETELY WATERTIGHT. THE DRAIN PIPE OR BARREL CONNECTIONS TO THE RISER SHALL BE WELDED ALL AROUND WHEN THE PIPE AND RISER ARE METAL. ANTI-SEEP COLLARS SHALL BE CONNECTED TO THE PIPE IN SUCH A MANNER AS TO BE COMPLETELY WATERTIGHT. DIMPLE BANDS ARE NOT CONSIDERED TO BE WATERTIGHT.

ALL CONNECTIONS SHALL USE A RUBBER OR NEOPRENE GASKET WHEN JOINING PIPE SECTIONS. THE END OF EACH PIPE SHALL BE RE-ROLLED AN ADEQUATE NUMBER OF CORRUGATIONS TO ACCOMMODATE 4 THE BAND WIDTH. PIPE ENDS MUST BE MATCHED AND NUMBERED BY THE MANUFACTURER. THE FOLLOWING TYPE CONNECTIONS ARE ACCEPTABLE FOR PIPES LESS THAN 24 INCHES IN DIAMETER: FLANGES ON BOTH ENDS OF THE PIPE WITH A CIRCULAR 3/8 INCH CLOSED CELL NEOPRENE GASKET, PREPUNCHED TO THE FLANGE BOLT CIRCLE, SANDWICHED BETWEEN ADJACENT FLANGES; A 12-INCH WIDE STANDARD LAP TYPE BAND WITH 12-INCH WIDE BY 3/8 INCH THICK, CLOSED CELL NEOPRENE GASKET; AND A 12-INCH WIDE HUGGER TYPE BAND WITH O-RING GASKETS HAVING A MINIMUM DIAMETER OF \*1-INCH GREATER THAN THE CORRUGATION DEPTH. PIPES 24 INCHES IN DIAMETER AND LARGER SHALL BE CONNECTED BY A 24-INCH LONG ANNULAR CORRUGATED BAND USING A MINIMUM OF 4 (FOUR) RODS AND LUGS, 2 ON EACH CONNECTING PIPE END, PER CURRENT DPS BAND DETAIL. A 24-INCH WIDE BY 3/8-INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET WILL BE INSTALLED WITH 12 INCHES ON THE END OF EACH PIPE. FLANGED JOINTS WITH 3/8-INCH CLOSED CELL GASKETS THE FULL WIDTH OF THE FLANGE IS ALSO ACCEPTABLE.

HELICALLY CORRUGATED PIPE SHALL HAVE EITHER CONTINUOUSLY WELDED SEAMS OR HAVE LOCK SEAMS WITH INTERNAL CAULKING OR A NEOPRENE BEAD.

4. BEDDING – THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.

5. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL."

6. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

REINFORCED CONCRETE PIPE – ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR REINFORCED CONCRETE PIPE:

1. MATERIALS – RCP SHALL HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS AND SHALL MEET ASTM DESIGNATION C-361. PIPES MUST BE LABELED IN FULL ACCORDANCE WITH ASTM C-361, INCLUDING THE ASTM C-361 DESIGNATION ON THE INSIDE OF EACH SECTION OF PIPE, AND ALL PIPES MUST BE CLEARLY MARKED BY THE MANUFACTURER PRIOR TO DELIVERY TO THE JOB SITE. PIPES WITH MULTIPLE DESIGNATIONS WILL BE REJECTED.

2. BEDDING – REINFORCED CONCRETE PIPE CONDUITS SHALL BE LAID IN A CONCRETE BEDDING/CRADLE FOR THEIR ENTIRE LENGTH. THIS BEDDING/CRADLE SHALL CONSIST OF HIGH SLUMP CONCRETE PLACED UNDER THE PIPE AND UP THE SIDES OF THE PIPE AT LEAST 50% OF ITS OUTSIDE DIAMETER WITH A MINIMUM THICKNESS OF 6-INCHES. WHERE A CONCRETE CRADLE IS NOT NEEDED FOR STRUCTURAL REASONS, FLOWABLE FILL MAY BE USED AS DESCRIBED IN THE "STRUCTURE BACKFILL" SECTION OF THIS STANDARD. GRAVEL BEDDING IS NOT PERMITTED.

3. LAYING PIPE – BELL AND SPIGOT PIPE SHALL BE PLACED WITH THE BELL END UPSTREAM. JOINTS SHALL BE MADE IN ACCORDANCE WITH RECOMMENDATIONS OF THE MANUFACTURER OF THE MATERIAL. AFTER THE JOINTS ARE SEALED FOR THE ENTIRE LINE, THE BEDDING SHALL BE PLACED SO THAT ALL SPACES UNDER THE PIPE ARE FILLED. CARE SHALL BE EXERCISED TO PREVENT ANY DEVIATION FROM THE ORIGINAL LINE AND GRADE OF THE PIPE. THE FIRST JOINT MUST BE LOCATED WITHIN FOUR FEET FROM THE RISER.

4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL."

5. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

PLASTIC PIPE – THE FOLLOWING CRITERIA SHALL APPLY FOR PLASTIC PIPE:

1. MATERIALS – PVC PIPE SHALL BE PVC-1120 OR PVC-1220 CONFORMING TO ASTM D-1785 OR ASTM D-2241. CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) PIPE, COUPLINGS AND FITTINGS SHALL CONFORM TO THE FOLLOWING: 4 \* 10 INCH PIPE SHALL MEET THE REQUIREMENT OF AASHTO M252 TYPE S, AND 12 THROUGH 24 INCH SHALL MEET THE REQUIREMENTS OF AASHTO M294 TYPE S.

2. JOINTS AND CONNECTIONS TO ANTI-SEEP COLLARS SHALL BE COMPLETELY WATERTIGHT.

3. BEDDING – THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.

4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL."

5. OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

**F. DRAINAGE DIAPHRAGMS**

WHEN A DRAINAGE DIAPHRAGM IS USED, A REGISTERED PROFESSIONAL ENGINEER WILL SUPERVISE THE DESIGN AND CONSTRUCTION INSPECTION.

**G. CONCRETE**

CONCRETE DESIGN SHALL MEET THE REQUIREMENTS OF ACI 350, ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES, WITH FREEZING AND THAWING EXPOSURES. CONCRETE SHALL BE A TYPE II OR III CEMENT, WITH A 28 DAY COMPRESSIVE STRENGTH OF 4500 PSI FOR CAST IN PLACE AND 5000 PSI FOR PRE-CAST STRUCTURES. CONCRETE SHALL ALSO MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 420, MIX NO. 6.

**H. ROCK RIP-RAP**

ROCK RIP-RAP SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATION FOR CONSTRUCTION AND MATERIALS, SECTION 311.

GEOTEXTILE SHALL BE PLACED UNDER ALL RIP-RAP AND SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 921.09, CLASS C.

**I. CARE OF WATER DURING CONSTRUCTION**

ALL WORK ON PERMANENT STRUCTURES SHALL BE CARRIED OUT IN AREAS FREE FROM WATER. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN ALL TEMPORARY DIKES, LEVEES, COFFERDAMS, DRAINAGE CHANNELS, AND STREAM DIVERSIONS NECESSARY TO PROTECT THE AREAS TO BE OCCUPIED BY THE PERMANENT WORKS. THE CONTRACTOR SHALL ALSO FURNISH, INSTALL, OPERATE, AND MAINTAIN ALL NECESSARY PUMPING AND OTHER EQUIPMENT REQUIRED FOR REMOVAL OF WATER FROM THE VARIOUS PARTS OF THE WORK AND FOR MAINTAINING THE EXCAVATIONS, FOUNDATION, AND OTHER PARTS OF THE WORK FREE FROM WATER AS REQUIRED OR DIRECTED BY THE ENGINEER FOR CONSTRUCTING EACH PART OF THE WORK. AFTER HAVING SERVED THEIR PURPOSE, ALL TEMPORARY PROTECTIVE WORKS SHALL BE REMOVED OR LEVELED, AND GRADED TO THE EXTENT REQUIRED TO 6 PREVENT OBSTRUCTION IN ANY DEGREE WHATSOEVER OF THE FLOW OF WATER TO THE SPILLWAY OR OUTLET WORKS, AND SO AS NOT TO INTERFERE IN ANY WAY WITH THE OPERATION OR MAINTENANCE OF THE STRUCTURE. STREAM DIVERSIONS SHALL BE MAINTAINED UNTIL THE FULL FLOW CAN BE PASSED THROUGH THE PERMANENT WORKS. THE REMOVAL OF WATER FROM THE REQUIRED EXCAVATION AND THE FOUNDATION SHALL BE ACCOMPLISHED IN A MANNER AND TO THE EXTENT THAT WILL MAINTAIN STABILITY OF THE EXCAVATED SLOPES AND BOTTOM OF REQUIRED EXCAVATIONS AND WILL ALLOW SATISFACTORY PERFORMANCE OF ALL CONSTRUCTION OPERATIONS. DURING THE PLACING AND COMPACTING OF MATERIAL IN REQUIRED EXCAVATIONS THE WATER LEVEL AT THE LOCATIONS BEING REFILLED SHALL BE MAINTAINED BELOW THE BOTTOM OF THE EXCAVATION AT SUCH LOCATIONS WHICH MAY REQUIRE DRAINING THE WATER TO SUMPS FROM WHICH THE WATER SHALL BE PUMPED.

**J. STABILIZATION**

ALL BORROW AREAS SHALL BE GRADED TO PROVIDE PROPER DRAINAGE AND LEFT IN A SLIGHTLY CONDITION. ALL EXPOSED SURFACES OF THE EMBANKMENT, SPILLWAY, SPOIL AND BORROW AREAS, AND BERMS SHALL BE STABILIZED BY SEEDING, LIMING, FERTILIZING AND MULCHING IN ACCORDANCE WITH THE MARYLAND SOIL CONSERVATION SERVICE STANDARDS AND SPECIFICATIONS FOR CRITICAL AREA PLANTING (MD-342) OR AS SHOWN ON THE ACCOMPANYING DRAWINGS.

**K. EROSION AND SEDIMENT CONTROL**

CONSTRUCTION OPERATIONS WILL BE CARRIED OUT IN SUCH A MANNER THAT EROSION WILL BE CONTROLLED AND WATER AND AIR POLLUTION MINIMIZED. STATE AND LOCAL LAWS CONCERNING POLLUTION ABATEMENT WILL BE FOLLOWED. CONSTRUCTION PLANS SHALL DETAIL EROSION AND SEDIMENT CONTROL MEASURES TO BE EMPLOYED DURING THE CONSTRUCTION PROCESS.

MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:		NOTE: MCPDS APPROVAL DOES NOT NEGATE THE NEED OF A MCPDS ACCESS PERMIT.
STORMWATER MANAGEMENT:	SEDIMENT CONTROL TECHNICAL REQUIREMENTS:	ADMINISTRATIVE REQUIREMENTS:
_____	REVIEWED _____ DATE _____	REVIEWED _____ DATE _____
REVIEWED _____ DATE _____	APPROVED _____ DATE _____	APPROVED _____ DATE _____
APPROVED _____ DATE _____	_____	_____
S.M.FILE NO. _____		MCPDS APPROVAL OF THIS PLAN WILL EXPIRE ONE YEAR FROM THE DATE OF APPROVAL. IF THE PROJECT HAS NOT BEEN STARTED, UNLESS THE PERMIT HAS BEEN EXTENDED.

**CONSTRUCTION INSPECTION  
CHECK-OFF LIST FOR STORMWATER MANAGEMENT PONDS**

STAGE	DESIGN ENGINEER (DE)	GEOTECHNICAL ENGINEER (GEO)	COUNTY INSPECTOR	MNCPPC & OTHER
<b>* MANDATORY NOTIFICATION:</b> Inspection and approval by the parties indicated is required at these points prior to proceeding with construction. The permittee is required to give the required inspection parties twenty-four (24) hours notice (DPS telephone 240/777-6210). The DPS inspector may waive an inspection, provided the design engineer and/or geotechnical engineer makes the required inspection per a prior scheduled arrangement which has been confirmed with the DPS inspector. Work completed without the necessary party's approval may result in the permittee having to remove and reconstruct the unapproved work. The permittee must maintain a "record set" of approved SC/SM plans on-site.				
1. Pre-construction meeting & field review of tree save flagging/tree protection	*	*	*	*
2. Sediment control installation	*	*	*	*
3. Dewatering (GEO) and stream diversion (DE)	*	*	*	*
4. Clearing, grubbing, subgrade preparation	*	*	*	*
5. Core trench excavation and dewatering, if required (GEO)	*	*	*	*
6. Core trench dimensions, location (DE) or (GEO), backfill and compaction tests (GEO)	*	*	*	*
7. Construction of principal spillway and riser:	*	*	*	*
7a. - Barrel class. (ASTM C361) (DE) - Pipe certification from supplier (DE) - Pipe assembled in place on acceptable subgrade (GEO) - Watertight joints (DE) - Articulated joint 4 feet from riser (DE) - Lifts, compaction, soil material (GEO) - Location, dimensions (DE)	*	*	*	*
7b. - Concrete cradle dimensions (DE) - Concrete strength tests (GEO)	*	*	*	*
7c. - Anti-seep collars (location, collar dimensions and re-bar size) (DE) - Concrete strength tests (GEO)	*	*	*	*
7d. - Filter diaphragm gradation and dimensions (if applicable) (GEO)	*	*	*	*
7e. - Riser footing subgrade (GEO), dimensions, re-bar (DE) - Concrete strength tests (GEO)	*	*	*	*

7f. Precast Riser: - Shop drawings approved by DE, accepted by County - Visual inspection of riser (no cracks, spaulding, exposed steel, incorrect dimensions, honeycombing) (DE) - Certification from supplier (DE) - Watertight joints (DE) - Wall and opening dimensions per plan (DE)	*	*	*	*
7g. Cast-In-Place Riser: - Wall and opening dimensions per plan (DE) - Re-bar size, number, spacing acceptable (DE) - Concrete testing and certification (GEO) - Watertight joints (DE) - Extreme weather provisions (DE)	*	*	*	*
7h. Valve/orifice plate installation (DE). Note: may be delayed for SC purposes.	*	*	*	*
8. Backfilling of principal spillway (GEO)	*	*	*	*
9. Underdrain (if applicable) location (DE), pipe size (DE), filter cloth (DE), gravel (DE), field adjustments (GEO)	*	*	*	*
10. Channelization work and pond outfall protection (DE) or (GEO)	*	*	*	*
11. Diversion of stream through principal spillway (DE)	*	*	*	*
12. Construction of embankment - Lifts, compaction, soil material (GEO) - Location, dimension (DE)	*	*	*	*
13. Construction of emergency spillway in cut (DE)	*	*	*	*
14. Field verification of constructed contours (DE)	*	*	*	*
15. Permanent vegetative stabilization, delivery tickets from supplier	*	*	*	*
16. Submit record drawing and documentation (DE) and (GEO)	*	*	*	*
17. Other items. (Set valve(s) to design opening values, if required) (DE)	*	*	*	*
18. Final inspection (DE) and (GEO)	*	*	*	*

NOTES:  
1. Permittee to supply Design Engineer with delivery tickets for all materials used in Pond construction, for submission with the as-built package. DPS Inspection Telephone: (240) 777-6210  
2. See construction specifications this plan for detailed requirements.  
3. A copy of this completed checklist must be submitted as part of the stormwater management as-built package. MNCP&PC Inspection Telephone: (301) 495-4571

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**SEQUENCE OF CONSTRUCTION**

- PRIOR TO CLEARING, INSTALLING SEDIMENT CONTROL MEASURES, OR GRADING, A PRECONSTRUCTION MEETING MUST BE CONDUCTED ON-SITE WITH THE MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES (MCDPS) SEDIMENT CONTROL INSPECTOR (240) 777-6300 (48 HOURS NOTICE), THE MCDPS RIGHT OF WAY INSPECTOR (301) 370-3686 (48 HOURS NOTICE), THE OWNER'S REPRESENTATIVE, THE CONTRACTOR AND THE SITE ENGINEER.
- THE LIMITS OF DISTURBANCE MUST BE FIELD MARKED PRIOR TO CLEARING, INSTALLATION OF SEDIMENT CONTROL MEASURES, CONSTRUCTION, OR OTHER LAND DISTURBING ACTIVITIES.
- CONTRACTOR SHALL CONTACT MISS UTILITY AT 1-800-257-7777, FORTY-EIGHT (48) HOURS PRIOR TO BEGINNING EXCAVATION TO DETERMINE EXACT LOCATION OF EXISTING UTILITIES.
- MOBILIZE EQUIPMENT, CLEAR AND GRADE FOR INSTALLATION OF SEDIMENT CONTROL DEVICES, ONLY DISTURBING THE AREA NEEDED FOR INSTALLATION OF THE SEDIMENT CONTROL DEVICES. INSTALL STABILIZED CONSTRUCTION ENTRANCE, MULCH ACCESS ROAD, SAND BAG DAMS, SUPER SILT FENCE, 24" CLEAR WATER DIVERSION PIPE, AND REMOVABLE PUMPING STATION (RPS). CLEAR VEGETATION WITHIN THE LOD AS NECESSARY TO COMPLETE GRADING AND INSTALL EROSION AND SEDIMENT CONTROLS.
- ONCE THE SEDIMENT CONTROL DEVICES ARE INSTALLED, THE PERMITTEE MUST OBTAIN WRITTEN APPROVAL FROM THE MCDPS INSPECTOR BEFORE PROCEEDING WITH ANY ADDITIONAL CLEARING, GRUBBING, OR GRADING.
- EXCAVATE TO REMOVE EXISTING RISER STRUCTURE, PRINCIPAL SPILLWAY PIPE, AND ENDWALL. CLEAR WATER DIVERSION SHALL BE PLACED THROUGH EXISTING PRINCIPAL SPILLWAY TRENCH. ADJUST SUPER SILT FENCE, SBD-2 AND CLEAR WATER DIVERSION PIPE AS NECESSARY TO MAINTAIN CLEAR WATER DIVERSION AT THE END OF EACH WORK DAY. DEWATER TO RPS AS NECESSARY. BEGIN CONSTRUCTION WITH INSTALLATION OF CLASS I RIPRAP APRON AT PRINCIPAL SPILLWAY OUTFALL WORKING FROM DOWNSTREAM TO UPSTREAM. UTILIZE SAME-DAY STABILIZATION PRACTICES DURING INSTALLATION OF RIPRAP APRON.
- INSTALL MODIFIED TYPE 'A' ENDWALL, PRINCIPAL SPILLWAY PIPE, ANTI-SEEP COLLAR, AND RISER, WORKING FROM DOWNSTREAM TO UPSTREAM. AT THE END OF EACH WORK DAY, ADJUST CLEAR WATER DIVERSION PIPE TO JOIN THE MOST RECENTLY INSTALLED SECTION OF SPILLWAY PIPE. DEWATER TO RPS AS NECESSARY.
- ESTABLISH EMBANKMENT AND GRADE THE POND AS SHOWN ON THE PLANS. INSTALL CLASS I RIPRAP INFLOW AND GEOSYNTHETIC CLAY LINER AS SHOWN ON THE PLANS. DEWATER TO RPS AS NECESSARY. ADJUST RPS AND CLEAR WATER DIVERSION PIPE AS NECESSARY TO INSTALL CLAY LINER AND CONDUCT FINAL GRADING. CLEAR WATER DIVERSION MUST BE IN PLACE AT THE END OF EACH WORK DAY.
- INSTALL ORIFICE PLATE, TRASH RACK, DEWATERING VALVE AND REVERSE SLOPE LOW-FLOW PIPE AS SHOWN ON THE PLANS.
- PERMANENTLY STABILIZE ALL DISTURBED AREAS AS SHOWN ON THE LANDSCAPE PLANS.
- THE CONTRACTOR MUST OBTAIN WRITTEN APPROVAL FROM MCDPS INSPECTOR, PRIOR TO THE REMOVAL OF ANY SEDIMENT CONTROL DEVICES. REMOVE SEDIMENT CONTROL DEVICES AND ANY AREAS DISTURBED DURING THE REMOVAL OF EROSION AND SEDIMENT CONTROLS SHALL BE IMMEDIATELY STABILIZED.
- PERFORM SWM AS-BUILT SURVEY (WHICH INCLUDES ALL STORM DRAIN PIPE INFORMATION) AND SUBMIT REDLINED AS-BUILT PLANS, AND COPIES OF ALL MATERIAL AND DELIVERY TICKETS TO MCDPS AND MNCPPC FOR APPROVAL. OBTAIN AS-BUILT PERMIT FROM MCDPS, AND HAVE REQUIRED ONSITE INSPECTION WITH MCDPS SEDIMENT CONTROL INSPECTOR AND MNCPPC INSPECTOR. OBTAIN FINAL PUNCHLIST AND CORRECT ALL PUNCHLIST ITEMS. AFTER PUNCHLIST ITEMS ARE COMPLETED, OBTAIN FINAL APPROVAL OF PROJECT COMPLETION FROM MCDPS SEDIMENT CONTROL INSPECTOR AND MNCPPC INSPECTOR.



DEPARTMENT OF PERMITTING SERVICES

Isiah Leggett  
County Executive

April 23, 2014

Diane R. Schwartz Jones  
Director

Ms. Amy Hribar, P.E.  
McCormick Taylor, Inc.  
509 S. Exeter Street, 4<sup>th</sup> floor  
Baltimore, Maryland 21202

Re: Stormwater Management **CONCEPT** Request for Game Preserve SWM Retrofit - Asset #10826  
SM File #: 262397  
Tract Size/Zone: 43 Ac./ R-90  
Total Concept Area: 43 Ac.  
Watershed: Great Seneca Creek

Dear Ms. Hribar:

Based on a review by the Department of Permitting Services (DPS) Review Staff, the stormwater management concept for the above mentioned site is **acceptable**. The stormwater management concept consists of retrofitting an existing stormwater management structure to achieve what the Montgomery County Department of Environmental Protection (MCDEP) believes will be an additional environmental benefit. This project is not associated with new development; therefore it is not subject to minimum stormwater management treatment criteria. DPS will not review it for conformance with any such standards. Safe conveyance through the facility must be demonstrated.

The following items need to be addressed during the detailed sediment control/stormwater management plan stage:

- A detailed review of the conveyance computations will occur at the time of detailed plan review.
- An engineered sediment control plan must be submitted for this project.
- The retrofit design of the pond must meet current MD-378 criteria and be designed as a Class "a" structure. MCDEP and DPS have agreed not to allow construction of ponds that are considered to be moderate or high hazard facilities.
- A geotechnical evaluation and report with any specific design or construction recommendations should be submitted with the detailed SC/SWM plans.

This list may not be all-inclusive and may change based on available information at the time.

Payment of a stormwater management contribution in accordance with Section 2 of the Stormwater Management Regulation 4-90 is **not required**.

This letter must appear on the sediment control/stormwater management plan at its initial submittal. The concept approval is based on all stormwater management structures being located outside of the Public Utility Easement, the Public Improvement Easement, and the Public Right of Way

255 Rockville Pike, 2nd Floor • Rockville, Maryland 20850 • 240-777-6300 • 240-777-6256 TTY  
www.montgomerycountymd.gov

montgomerycountymd.gov/311 240-773-3556 TTY

Ms. Amy Hribar, P.E.  
April 23, 2014  
Page 2

unless specifically approved on the concept plan. Any divergence from the information provided to this office; or additional information received during the development process; or a change in an applicable Executive Regulation may constitute grounds to rescind or amend any approval actions taken, and to reevaluate the site for additional or amended stormwater management requirements. If there are subsequent additions or modifications to the development, a separate concept request shall be required.

If you have any questions regarding these actions, please feel free to contact Mike Geier at 240-777-6342.

Sincerely,

Mark C. Etheridge, Manager  
Water Resources Section  
Division of Land Development Services

MCE: CN262397 Game Preserve Retro 10826.doc

cc: SM File # 262397

ESD Acres: n/a  
STRUCTURAL Acres: n/a  
WAIVED Acres: n/a

MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:		NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED OF A MCDPS ACCESS PERMIT.
STORMWATER MANAGEMENT:	SEDIMENT CONTROL TECHNICAL REQUIREMENTS:	ADMINISTRATIVE REQUIREMENTS:
REVIEWED _____ DATE _____	REVIEWED _____ DATE _____	REVIEWED _____ DATE _____
APPROVED _____ DATE _____	APPROVED _____ DATE _____	APPROVED _____ DATE _____
S.M. FILE NO. _____		MCDPS APPROVAL OF THIS PLAN WILL EXPIRE ONE YEAR FROM THE DATE OF APPROVAL. IF THE PROJECT HAS NOT BEEN STARTED, UNLESS THE PERMIT HAS BEEN EXTENDED.

STORMWATER MANAGEMENT NOTES  
**GAME PRESERVE SWM RETROFITS**  
GAITHERSBURG (9TH) ELECTION DISTRICT  
MONTGOMERY COUNTY PARCEL C-1, GREAT SENECA EXT STREAM VALLEY PARK,  
LIBER 490.1 FOLIO 184  
MONTGOMERY COUNTY, MARYLAND

CLIENT: MONTGOMERY COUNTY DEPT OF ENVIRONMENTAL PROTECTION  
255 ROCKVILLE PIKE, RM. 120  
ROCKVILLE, MD 20850-4166  
MR. PHILIP JONES, P.E.  
(240) 777-7738

DESIGN SHEET 10 OF 15  
DRAFT HAS APPROVED ALH DATE FEB 16 SCALE NONE

**MCCORMICK & TAYLOR**  
509 South Exeter Street  
4th Floor  
Baltimore, Maryland 21202  
(410) 662-7400

**MONTGOMERY COUNTY GOVERNMENT  
STANDARD EROSION AND SEDIMENT CONTROL NOTES (REV. MAY 2013)**

1. The permittee shall notify the Department of Permitting Services (DPS) forty-eight (48) hours before commencing any land disturbing activity and, unless waived by the Department, shall be required to hold a pre-construction meeting between them or their representative, their engineer and an authorized representative of the Department.

2. The permittee must obtain inspection and approval by DPS at the following points:  
 A. At the required pre-construction meeting.  
 B. Following installation of sediment control measures and prior to any other land disturbing activity.  
 C. 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.  
 D. Prior to removal or modification of any sediment control structure(s).  
 E. Prior to final acceptance.

3. 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 Department 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 measure without prior permission from the Department.

4. 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.

5. The permittee shall inspect periodically and maintain continuously in effective operating condition, all erosion and sediment control measures until such time as they are removed with prior permission from the Department. The permittee is responsible for immediately repairing or replacing any sediment control measures which have been damaged or removed by the permittee or any other person.

6. Following initial soil disturbance or re-disturbance, permanent or temporary stabilization must be completed within:  
 a) Three (3) calendar days as to the surface of all perimeter dikes, swales, ditches, perimeter slopes and all slopes steeper than 3 horizontal to 1 vertical (3:1); and  
 b) Seven (7) calendar days as to all other disturbed or graded areas on the project site not under active grading. 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.

7. The permittee shall apply sod, seed, and anchored straw mulch, or other approved stabilization measures to all disturbed areas within seven (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 fifty (50) feet of a building under construction may be exempt from this requirement, provided that erosion and sediment control measures are installed and maintained to protect those areas.

8. Prior to removal of sediment control measures, the permittee shall stabilize all contributory disturbed areas with required soil amendments and topsoil, using sod or an approved permanent seed mixture and an approved anchored mulch. Wood fiber mulch may only be used in seeding season when the slope does not exceed 10% and grading has been done to promote sheet flow drainage. Areas brought to finished grade during the seeding season shall be permanently stabilized within seven (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.

9. The site permit, work, materials, approved SCSM plans, and test reports shall be available at the site for inspection by duly authorized officials of Montgomery County.

10. Surface drainage flows over unstabilized cut and fill slopes shall be controlled by either preventing drainage flows from traversing the slopes or by installing mechanical devices to lower the water down slope 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.

11. Permanent swales or other points of concentrated water flow shall be stabilized within 3 calendar days of establishment with sod or seed with an approved erosion control matting or by other approved stabilization measures.

12. Sediment control devices shall be removed, with permission of the Department, within thirty (30) calendar days following establishment of permanent stabilization in all contributory drainage areas. Stormwater management structures used temporarily for sediment control shall be converted to the permanent configuration within this time period as well.

13. No permanent cut or fill slope with a gradient steeper than 3:1 will be permitted in lawn maintenance areas or on residential lots. A slope gradient of up to 2:1 will be permitted in non-maintenance areas 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.

14. 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.

15. For finished grading, the permittee shall provide adequate gradients so as to prevent water from standing on the surface of lawns more than twenty-four (24) hours after the end of a rainfall, except in designated drainage courses and swale flow areas, which may drain as long as forty-eight (48) hours after the end of a rainfall.

16. 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.

17. All inlets in non-sump areas shall have asphalt berms installed at the time of base paving establishment.

18. The sediment control inspector has the option of requiring additional sediment control measures, as deemed necessary.

19. All trap elevations are relative to the outlet elevation, which must be on existing undisturbed ground.

20. Vegetative stabilization shall be performed in accordance with the Standards and Specifications for Soil Erosion and Sediment Control.

21. Sediment trap(s)/basin(s) shall be cleaned out and restored to the original dimensions when sediment has accumulated to the point of one-half (1/2) the wet storage depth of the trap/basin (1/4 the wet storage depth for ST-III) or when required by the sediment control inspector.

22. Sediment removed from traps/basins shall be placed and stabilized in approved areas, but not within a floodplain.

23. 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 two inches in width and four inches in height, with a minimum of 14 gauge wire. Safety fence must be maintained in good condition at all times.

24. No excavation in the areas 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.

25. Off-site spoil or borrow areas must have prior approval by DPS.

26. Sediment trap/basin dewatering for cleanout or repair may only be done with the DPS inspector's permission. The inspector must approve the dewatering method for each application. The following methods may be considered:

A. Pump discharge may be directed to another on-site sediment trap or basin, provided it is of sufficient volume and the pump intake is floated to prevent agitation or suction of deposited sediments; or

B. The pump intake may utilize a Removable Pumping Station and must discharge into an undisturbed area through a non-erosive outlet; or

C. The pump intake may be floated and discharge into a Dirt Bag (12 oz. non-woven fabric), or approved equivalent, located in an undisturbed buffer area.

Remember: Dewatering operation and method must have prior approval by the DPS inspector.

27. The permittee must notify the Department of all utility construction activities within the permitted limits of disturbance prior to the commencement of those activities.

28. Topsoil must be applied to all previous areas within the limits of disturbance prior to permanent stabilization in accordance with MDE "Standards and Specifications for Soil Preparation, Topsoiling, and Soil Amendments".

**TEMPORARY SEEDING SPECIFICATIONS**

1. TEMPORARY SEEDING: SHALL BE DONE BETWEEN MARCH 1 – MAY 15 AND AUGUST 15 – OCTOBER 15. ALL OTHER DISTURBED AREAS REQUIRING STABILIZATION NOT WITHIN THE SEEDING DATES SHALL BE MULCHED.

2. ALL TEMPORARY SEEDED AREAS SHALL BE MULCHED IMMEDIATELY AFTER SEEDING. MULCH MATERIALS SHOULD BE UNWEATHERED, UNCHOPPED, SMALL GRAIN STRAW SPREAD AT A RATE OF 2 TONS PER ACRE. THE MULCH SHALL BE ANCHORED IMMEDIATELY AFTER PLACEMENT WITH ASPHALT, PEG AND TWINE, PLASTIC NETTINGS OR BY A MULCH ANCHORING TOOL.

3. LIME AND FERTILIZER SHALL BE REQUIRED FOR TEMPORARY SEEDING IN ACCORDANCE WITH THE FOLLOWING PROCEDURES:  
 1. PULVERIZED DOLOMITIC LIMESTONE IS TO BE APPLIED AT THE RATE OF 100 LBS. PER 1,000 SQ. FT.  
 2. FERTILIZER SHALL BE 10-10-10 OR EQUIVALENT AND APPLIED AT THE RATE OF 15 LBS. PER 1,000 SQ. FT.

**PERMANENT SEEDING AND SODDING SPECIFICATIONS**

1. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED.

2. SOIL PREPARATION: WEEDS AND UNDESIRABLE GRASSES GROWING ON EXISTING GRADE THAT IS TO BE SEEDED AND/OR SODDED MUST BE CUT AND REMOVED BEFORE SOIL PREPARATION BEGINS. BEFORE SEEDING OR SODDING ALL SOILS SHALL BE LOOSENED BY MEANS OF FILLING AND/OR DISCING. ALL TRASH, DEBRIS, ROOTS, BRUSH, WIRE, ROCKS, STONE AND OTHER FOREIGN DEBRIS OVER ONE INCH IN DIAMETER SHALL BE REMOVED PRIOR TO SEEDING AND/OR SODDING, TO A DEPTH OF FOUR (4) INCHES.

3. TOPSOIL: THE MINIMUM ORGANIC CONTENT IN THE MSHA SPECIFICATION REFERENCED SHALL BE INCREASED TO 10% ORGANIC MATTER SHALL BE ADDED USING COMPOST MATERIAL MEETING THE STANDARD REQUIREMENTS IN THE SPECS.

4. SEEDED PREPARATION: THE TOP LAYER OF SOIL SHALL BE LOOSENED BY DISCLING OR RAKING (SHALL BE DONE ON CONTOUR) AT A DEPTH OF AT LEAST 3", BEFORE SEEDING OCCURS. APPLY 100LBS PER 1,000 SQ.FT. OF LIME AND 15 LB. PER 1,000 SQ.FT. OF 10-10-10 FERTILIZER OR EQUIVALENT. THOROUGHLY MIX INTO SOIL TO A MINIMUM OF 3".

5. SEEDING: USE 40% KENTUCKY BLUEGRASS, 10% ANNUAL RYE AND 25% RED FESCUE AT THE RATE OF 250 LB. PER ACRE.

6. MULCHING: USE CLEAN, UNWEATHERED, UNCHOPPING SMALL GRAIN STRAW AT THE RATE OF 1.5 TO 2 TONS PER ACRE ANCHORED DOWN WITH CUTBACK ASPHALT AT THE RATE OF 5-8 GALLONS PER 1000 SQ. FT.

7. DISCING AND HARROWING SHALL BE DONE ON CONTOUR.

8. SOD SHALL BE STATE APPROVED SOD INSPECTED AND APPROVED BY MD. DEPT. OF AGRICULTURE. ALL SOD SHALL BE LAID ON SITE NO MORE THAN 36 HOURS AFTER HARVEST, AND SHALL BE A MIXTURE OF 60% (MIN.) TALL FESCUE AND 40% (MIN.) KENTUCKY BLUEGRASS.

9. SOD PEGS OR STAKES BE UNTREATED WOOD PEGS DRIVEN THROUGH, AND FLUSH WITH SOD. ALL SLOPES WITH A GRADE 3 TO 1 OR STEEPER SHALL BE PEGGED AT A MINIMUM OF 4 PEGS PER SQUARE YARD OF SOD.

10. SODDING, SEEDING AND MULCHING MAY BE DONE IMMEDIATELY AFTER FINAL GRADING, PROVIDED THAT THE BED HAS REMAINED IN GOOD, FRIABLE CONDITION AND HAS NOT BECOME MUDDY OR HARD. IF IT HAS BECOME HARD, IT SHALL BE FILLED TO FRIABLE CONDITION AGAIN.

11. SEED SHALL BE WORKED INTO THE TOP 3" OF SOIL BY MEANS OF RAKING, WIRE DRAG OR OTHER APPROVED EQUIPMENT. DURING PERIODS OF HIGH TEMPERATURE AND/OR DROUGHT, THE SOIL SHALL BE WATERED IMMEDIATELY PRIOR TO LAYING THE SOD. ALL SOD SHALL BE LAID AT RIGHT ANGLES TO SLOPES. NO SOD SHALL BE APPLIED TO FROZEN GROUND AND NO FROZEN SOD IS TO BE LAID. WATERING SHALL COMMENCE IMMEDIATELY DURING OR AFTER THE LAYING OPERATION, AND SHALL BE SUFFICIENT TO THOROUGHLY WET THE SOD ROOTS AND THE SOIL BELOW.

12. PERMANENT SEEDING: SHALL BE DONE MARCH 1 – MAY 15 AND AUGUST 15 – OCTOBER 15. IRRIGATION FOR PERMANENT SEEDING SHALL BE DONE BETWEEN MAY 15 AND AUGUST 14.

13. SEDIMENT CONTROL DEVICES (DITCHES, DIKES, TRAPS, ETC.) ARE TO REMAIN IN PLACE UNTIL CONTRIBUTING WATERSHED HAS BEEN STABILIZED. MAINTENANCE TO SEDIMENT CONTROL DEVICES DURING THE UNDER GOING GRADING, CONSTRUCTION AND DEVELOPMENT SHOULD BE DONE AS NECESSARY. REMOVAL OF THESE DEVICES SHALL BE WITH THE APPROVAL OF THE MONTGOMERY COUNTY SEDIMENT CONTROL INSPECTOR.

**STANDARDS AND SPECIFICATIONS  
FOR TOPSOIL**

**DEFINITION**  
 PLACEMENT OF TOPSOIL OVER A PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION.

**PURPOSE**  
 TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.

**CONDITIONS WHERE PRACTICE APPLIES**  
 THIS PRACTICE IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES.

FOR THE PURPOSE OF THESE STANDARDS AND SPECIFICATIONS, AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN FOR ADEQUATE STABILIZATION. AREAS HAVING SLOPES STEEPER THAN 2:1 SHALL HAVE THE APPROPRIATE STABILIZATION SHOWN ON THE PLANS.

**CONSTRUCTION AND MATERIAL SPECIFICATIONS**  
 TOPSOIL SALVAGED FROM THE EXISTING SITE MAY BE USED PROVIDED THAT IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS.

TOPSOIL SPECIFICATIONS – SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING:

1. TOPSOIL SHALL BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY DPS. REGARDLESS, TOPSOIL SHALL NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS, AND SHALL CONTAIN LESS THAN 5 % BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1 1/2" IN DIAMETER. THE SUBSOIL SHALL BE TILLED TO A MINIMUM DEPTH OF 6 INCHES BEFORE PLACEMENT OF TOPSOIL.

**CONSTRUCTION AND MATERIAL SPECIFICATIONS**

WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, GROUND LIMESTONE SHALL BE SPREAD AT THE RATE OF 4-8 TONS/ACRE (200-400 LBS PER 1000 SQ FT) PRIOR TO THE PLACEMENT OF TOPSOIL. LIME SHALL BE DISTRIBUTED UNIFORMLY OVER DESIGNATED AREAS AND WORKED INTO THE SOIL.

TOPSOIL SHALL BE TESTED AND AMENDED AS PER SOIL TEST RECOMMENDATIONS.

TOPSOIL APPLICATION.

1. WHEN TOPSOILING, MAINTAIN NEEDED EROSION AND SEDIMENT CONTROL PRACTICES.  
 2. TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED IN A 4-8 INCH LAYER AND LIGHTLY COMPACTED TO A MINIMUM THICKNESS OF 4 INCHES. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS SHALL BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.  
 3. TOPSOIL SHALL NOT BE PLACED WHILE THE TOPSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.

**EARTH FILL FOR FACILITY EMBANKMENTS**

**MATERIAL**  
 THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED DESIGNATED BORROW AREAS. IT SHALL BE FREE OF ROOTS, STUMPS, WOOD, RUBBISH, STONES GREATER THAN SIX INCHES, FROZEN OR OTHER OBJECTIONABLE MATERIALS. CONSIDERATION MAY BE GIVEN TO THE USE OF OTHER MATERIALS IN THE EMBANKMENT IF DESIGN AND CONSTRUCTION ARE SUPERVISED BY A GEOTECHNICAL ENGINEER AND APPROVED BY MCPDS.

**PLACEMENT**  
 AREAS ON WHICH FILL IS TO BE PLACED SHALL BE SCARIFIED PRIOR TO PLACEMENT OF FILL. FILL MATERIALS SHALL BE PLACED IN MAXIMUM EIGHT INCH HEIGHT (BEFORE COMPACTION) LAYERS, WHICH ARE TO BE CONTINUOUS OVER THE ENTIRE LENGTH OF THE FILL. THE MOST PERMEABLE BORROW MATERIAL SHALL BE PLACED IN THE DOWNSTREAM PORTIONS OF THE EMBANKMENT. PIPES OR UNDERDRAINS MUST BE INSTALLED CONCURRENT WITH EMBANKMENT CONSTRUCTION TO AVOID EXCAVATION INTO THE COMPLETED EMBANKMENT AT A LATER TIME.

**COMPACTION**  
 THE MOVEMENT OF THE HAULING AND SPREADING EQUIPMENT OVER THE FILL SHALL BE CONTROLLED SO THAT THE ENTIRE SURFACE OF EACH LIFT SHALL BE TRAVERSED BY NOT LESS THAN ONE TREAD TRACK OF THE EQUIPMENT OR COMPACTION SHALL BE ACHIEVED BY A MIN. OF FOUR COMPLETE PASSES OF A SHEEPSFOOT, RUBBER TIRED OR VIBRATORY ROLLER. FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SUCH THAT THE REQUIRED DEGREE OF COMPACTION WILL BE OBTAINED WITH THE EQUIPMENT USED. THE FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SO THAT IF FORMED INTO A BALL IT WILL NOT CRUMBLE, YET NOT SO WET THAT WATER CAN BE SQUEEZED OUT.

THE DENSITY OF EACH LIFT SHALL NOT BE LESS THAN 95% OF MAX. DRY DENSITY WITH A MOISTURE CONTENT WITHIN ±2% OF THE OPTIMUM. EACH LAYER OF FILL SHALL BE COMPACTED AS NECESSARY TO OBTAIN THAT DENSITY, AND IS TO BE CERTIFIED BY THE ENGINEER AT THE TIME OF CONSTRUCTION. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T-99 (STANDARD PROCTOR).

**SITE INFORMATION** \* (NOT FOR BIDDING PURPOSES)

TOTAL AREA OF SITE	0.55	ACRES
AREA DISTURBED	0.55	ACRES
AREA TO BE ROOFED		
OR PAVED	0.00	ACRES
TOTAL CUT	279	CU. YDS.
TOTAL FILL	974	CU. YDS.
OFFSITE WASTE/BORROW		
AREA LOCATION (IF KNOWN)		ACRES

**MCCORMICK  
TAYLOR**

**EROSION AND SEDIMENT CONTROL NOTES  
GAME PRESERVE SWM RETROFITS  
GAITHERSBURG (9TH) ELECTION DISTRICT  
MONTGOMERY COUNTY PARCEL C-1, GREAT SENECA EXT STREAM VALLEY PARK,  
LIBER 490.1 FOLIO 184  
MONTGOMERY COUNTY, MARYLAND**

**CLIENT: MONTGOMERY COUNTY DEPT OF  
ENVIRONMENTAL PROTECTION  
255 ROCKVILLE PIKE, RM. 120  
ROCKVILLE, MD 20850-4166  
MR. PHILIP JONES, P. E.  
(240) 777-7738**

<b>MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:</b>		NOTE: MCPDS APPROVAL DOES NOT NEGATE THE NEED OF A MCPDS ACCESS PERMIT.
STORMWATER MANAGEMENT:  <hr/> <hr/>	SEDIMENT CONTROL TECHNICAL REQUIREMENTS:  REVIEWED _____ DATE _____  APPROVED _____ DATE _____	ADMINISTRATIVE REQUIREMENTS:  REVIEWED _____ DATE _____  APPROVED _____ DATE _____
REVIEWED _____ DATE _____  APPROVED _____ DATE _____  S.M.FILE NO. _____		MCPDS APPROVAL OF THIS PLAN WILL EXPIRE ONE YEAR FROM THE DATE OF APPROVAL. IF THE PROJECT HAS NOT BEEN STARTED, UNLESS THE PERMIT HAS BEEN EXTENDED.

DESIGN	HAS	HAS	APPROVED	DATE	SCALE	NONE
DRAFT			ALH	FEB 16'		
SHEET	<b>11</b>		<b>15</b>			
OF						

**DETAIL G-2-9 PROJECTION COLLAR** STANDARD SYMBOL

**CONSTRUCTION SPECIFICATIONS**

- CAST 1 FOOT THICK CONCRETE COLLAR TO OUTLET STRUCTURE WITH FOUR #4 U-SHAPED REBARS.

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 B-4-6-D PERMANENT SOIL STABILIZATION MATTING SLOPE APPLICATION** STANDARD SYMBOL

**CONSTRUCTION SPECIFICATIONS**

- USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
- USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-HARMFUL TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SURFICENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
- SECURE MATTING USING STEEL STAPLES OR WOOD STAPLES. STAPLES MUST BE U OR T-SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. U-SHAPED STAPLES MUST AVERAGE 1 TO 1/2 INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. T-SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 1 INCH HEAD. WOOD STAPLES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1/2 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
- PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDING PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
- UNROLL MATTING DOWN SLOPE. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDING SURFACE. AVOID STRETCHING THE MATTING.
- OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES MINIMUM, WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE DOWN-SLOPE MAT.
- KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
- STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
- IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOL/MAT CONTACT WITHOUT CRUSHING MAT.
- ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

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 B-1 STABILIZED CONSTRUCTION ENTRANCE** STANDARD SYMBOL

**CONSTRUCTION SPECIFICATIONS**

- PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (1+30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
- PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
- PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
- PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
- MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE. MOUNTABLE BERM, AND SPECIFIED DIMENSIONS, IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

**DETAIL D-4-1-B ROCK OUTLET PROTECTION II** STANDARD SYMBOL

**CONSTRUCTION SPECIFICATIONS**

- RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
- USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
- PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER 1/2 TO 1/2 INCH STONE FOR 6 INCH MINIMUM DEPTH AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
- EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPRAP.
- CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENEOUS WITH THE SMALLER STONES AND SPALLS. FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE STONE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
- WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.
- CONSTRUCT APRON WITH 0:2 SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
- MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

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-3 SUPER SILT FENCE** STANDARD SYMBOL

**CONSTRUCTION SPECIFICATIONS**

- INSTALL 2 3/8 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 HUD 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.

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-4 CLEAR WATER PIPE THROUGH SILT FENCE OR SUPER SILT FENCE** STANDARD SYMBOL

**CONSTRUCTION SPECIFICATIONS**

- INSTALL SILT FENCE OR SUPER SILT FENCE IN ACCORDANCE WITH DETAIL E-1 OR DETAIL E-2.
- AT THE PIPE LOCATION, CUT AND PULL BACK THE WOVEN SLIT FILM GEOTEXTILE AND CHAIN LINK FENCING SECURE GEOTEXTILE TO PIPE WITH GASKET. INSTALL ADDITIONAL STAKES OR POSTS IF NECESSARY TO ACCOMMODATE THE INSTALLATION OF THE BAFFLE BOARD.
- ENTRENCH 1/2 INCH PLYWOOD BAFFLE A MINIMUM OF 8 INCHES AND SECURE TO THE UPSLOPE SIDE OF THE FENCE STAKES OR POSTS. BAFFLE SHOULD BE AT LEAST THE HEIGHT OF THE FENCE.
- PLACE 3/4 TO 1 1/2 INCH STONE OR EQUIVALENT RECYCLED CONCRETE BEHIND THE PLYWOOD BAFFLE ON NONWOVEN GEOTEXTILE AND EXTEND 12 INCH MIN. ALONG TOP OF PIPE AND TO A HEIGHT OF 4 INCHES ABOVE THE TOP OF PIPE.
- USE NONWOVEN AND WOVEN SLIT FILM GEOTEXTILES AS SPECIFIED IN SECTION H-1 MATERIALS.
- REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN SEDIMENT REACHES 6 INCHES IN HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL BAFFLE, CHAIN LINK, AND GEOTEXTILE. REPLACE STONE IF DISPLACED. KEEP POINT OF DISCHARGE FREE OF EROSION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

**DETAIL F-1 REMOVABLE PUMPING STATION** STANDARD SYMBOL

**CONSTRUCTION SPECIFICATIONS**

- USE CORRUGATED METAL OR PLASTIC PIPE WITH 1 INCH DIAMETER PERFORATIONS 6 INCHES ON CENTER.
- USE A MINIMUM 12 INCH DIAMETER INNER PIPE WITH AN OUTER PIPE A MINIMUM 6 INCHES LARGER IN DIAMETER. BOTTOM OF EACH PIPE MUST BE CAPPED WITH WATERTIGHT SEAL.
- WRAP EACH PIPE WITH 3/8 INCH GALVANIZED HARDWARE CLOTH. ON INNER PIPE WRAP NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE HARDWARE CLOTH.
- EXCAVATE 8 FEET X 8 FEET X 4 FEET DEEP PIT FOR PIPE PLACEMENT. PLACE CLEAN 3/4 TO 1 1/2 INCH STONE OR EQUIVALENT RECYCLED CONCRETE 6 INCHES IN DEPTH PRIOR TO PIPE PLACEMENT.
- SET TOP OF INNER AND OUTER PIPES MINIMUM 12 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION (OR RISER CREST ELEVATION WHEN DEWATERING A BASIN).
- BACKFILL PIT AROUND THE OUTER PIPE WITH 3/4 TO 1 1/2 INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE AND EXTEND STONE A MINIMUM OF 6 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
- DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.
- A REMOVABLE PUMPING STATION REQUIRES FREQUENT MAINTENANCE. IF SYSTEM CLOGS, PULL OUT INNER PIPE AND REPLACE GEOTEXTILE. KEEP POINT OF DISCHARGE FREE OF EROSION.

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-6 CLEAR WATER DIVERSION PIPE** STANDARD SYMBOL

**CONSTRUCTION SPECIFICATIONS**

- FLEXIBLE PIPE IS PREFERRED. HOWEVER, CORRUGATED METAL PIPE OR EQUIVALENT PVC PIPE CAN BE USED. MAKE ALL JOINTS WATERTIGHT.
- FOR SANDBAGS USE MATERIALS THAT ARE RESISTANT TO ULTRA-VIOLET RADIATION, TEARING, AND PUNCTURE AND WOVEN TIGHTLY ENOUGH TO PREVENT LEAKAGE OF FILL MATERIAL.
- USE 10 MIL OR THICKER, UV RESISTANT, IMPERMEABLE SHEETING OR OTHER APPROVED MATERIAL THAT IS IMPERMEABLE AND RESISTANT TO PUNCTURING AND TEARING.
- PLACE IMPERMEABLE SHEETING SUCH THAT UPGRADE PORTION OVERLAPS DOWNGRADE PORTION BY A MINIMUM OF 18 INCHES.
- SET HEIGHT OF SANDBAG DIKE AT TWICE THE PIPE DIAMETER. MAINTAIN HEIGHT ALONG LENGTH OF SANDBAG DIKE. PLACE DOUBLE ROW OF SANDBAGS.
- AT A MINIMUM, SECURELY ANCHOR DIVERSION PIPE AT EACH DOWNGRADE JOINT.
- SET OUTLET END OF DIVERSION PIPE LOWER THAN INLET END.
- PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
- DEWATER WORK AREA USING AN APPROVED EROSION AND SEDIMENT CONTROL PRACTICE AS SPECIFIED ON APPROVED PLAN.
- KEEP POINT OF DISCHARGE FREE OF EROSION. MAINTAIN WATER TIGHT CONNECTIONS AND POSITIVE DRAINAGE. REPLACE SANDBAGS AND IMPERMEABLE SHEETING IF TORN.

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

**MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:**

STORMWATER MANAGEMENT:	SEDIMENT CONTROL TECHNICAL REQUIREMENTS:	ADMINISTRATIVE REQUIREMENTS:
REVIEWED _____ DATE _____	REVIEWED _____ DATE _____	REVIEWED _____ DATE _____
APPROVED _____ DATE _____	APPROVED _____ DATE _____	APPROVED _____ DATE _____
S.M. FILE NO. _____		

NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED OF A MCDPS ACCESS PERMIT.

EROSION AND SEDIMENT CONTROL DETAILS  
**GAME PRESERVE SWM RETROFITS**  
 GAITHERSBURG (9TH) ELECTION DISTRICT  
 MONTGOMERY COUNTY PARCEL C-1, GREAT SENECA EXT STREAM VALLEY PARK,  
 LIBER 490.1 FOLIO 184  
 MONTGOMERY COUNTY, MARYLAND

CLIENT: MONTGOMERY COUNTY DEPT OF ENVIRONMENTAL PROTECTION  
 255 ROCKVILLE PIKE, RM. 120  
 ROCKVILLE, MD 20850-4166  
 MR. PHILIP JONES, P.E.  
 (240) 777-7738

DESIGN HAS DRAFT HAS APPROVED ALL DATE FEB 16 SCALE NONE SHEET 12 OF 15

FILE: D:\18218 - Cabin Branch SWM Retrofit\Design\Engineering\Plan\Set\10826294E5-0001\_Cabin Branch.pwd 1/28/2016 PLOTTED: Wednesday, February 10, 2016 AT 03:42 PM

**MCCORMICK TAYLOR**  
 509 South Exeter Street  
 4th Floor  
 Baltimore, Maryland 21202  
 (410) 662-7400

24 INCH CLEAR WATER DIVERSION PIPE	
99 LF	PROFILE- STA 0+55, TO STA 1+54, (CWD-1)
34 LF	PROFILE- STA 0+21, TO STA 0+55, (CWD-2)

REMOVABLE PUMPING STATION	
1 EA	EMBANKMENT - STA 6+09, 44 LT

SUPER SILT FENCE	
105 LF	EMBANKMENT - STA 5+44, 5 RT TO STA 6+04, 7 RT
27 LF	EMBANKMENT - STA 5+99, 6 RT TO STA 6+17, 7 RT
64 LF	EMBANKMENT - STA 6+15, 5 RT TO STA 6+51, 7 RT
37 LF	EMBANKMENT - STA 6+51, 5 RT TO STA 6+72, 9 RT
49 LF	EMBANKMENT - STA 6+71, 6 RT TO STA 7+02, 6 RT
25 LF	EMBANKMENT - STA 7+01, 6 RT TO STA 7+14, 5 RT
24 LF	EMBANKMENT - STA 7+13, 4 RT TO STA 7+31, 11 RT

STABILIZED CONSTRUCTION ENTRANCE	
20 TON	CROSS SECTION - STA 2+01, TO STA 2+48

TYPE E SOIL STABILIZATION MATTING	
2459 SY	EMBANKMENT - STA 5+00, LT TO STA 7+40, RT

TEMPORARY ORANGE CONSTRUCTION FENCE	
697 LF	CROSS SECTION - STA 2+02, 5 RT TO STA 2+05, 7 LT

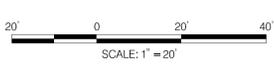
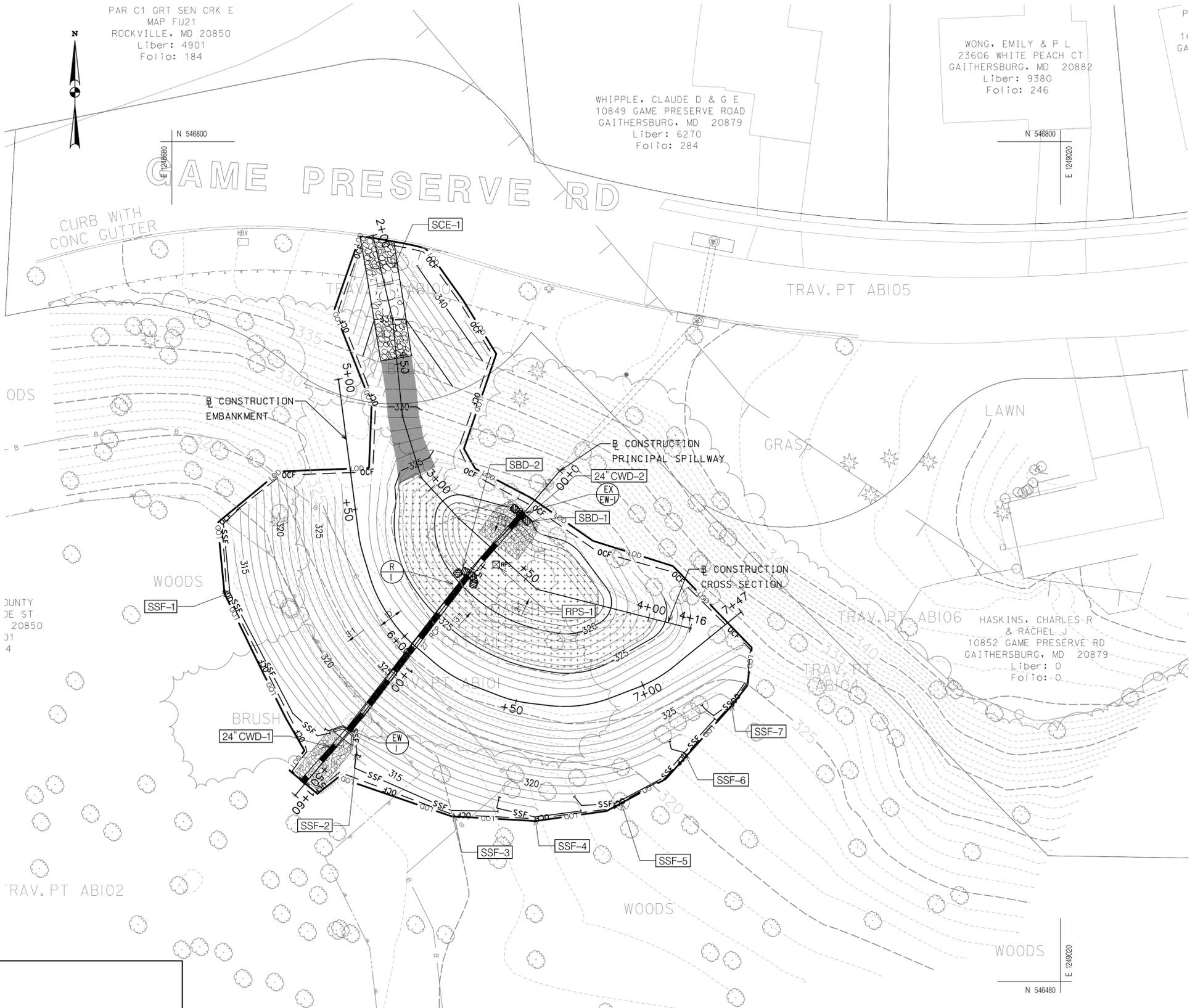
MULCH ACCESS ROAD	
55 LF	CROSS SECTION - STA 2+48, TO STA 3+03

PLACING FURNISHED TOPSOIL 4 INCH DEPTH	
2459 SY	EMBANKMENT - STA 5+00, LT TO STA 7+40, RT

PLACING FURNISHED TOPSOIL 2 INCH DEPTH	
188 SY	EMBANKMENT - STA 5+53, LT TO STA 6+96, LT

SANDBAGS FOR EROSION AND SEDIMENT CONTROL	
20 EA	EMBANKMENT - STA 5+66, 60 LT TO STA 6+12, 64 LT
20 EA	EMBANKMENT - STA 5+94, 29 LT TO STA 6+11, 30 LT

LEGEND				
	330	EXISTING MAJOR CONTOUR		EXISTING STORM DRAIN
		EXISTING MINOR CONTOUR		PROPERTY LINE
		100 YEAR FLOOD PLAIN		LIMIT OF DISTURBANCE
		WETLAND BOUNDARY		27" RCP
		WETLAND LINE		CLASS I RIPRAP
		GEOSYNTHETIC CLAY LINER		



MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:		
STORMWATER MANAGEMENT:	SEDIMENT CONTROL TECHNICAL REQUIREMENTS:	ADMINISTRATIVE REQUIREMENTS:
REVIEWED _____ DATE _____	REVIEWED _____ DATE _____	REVIEWED _____ DATE _____
APPROVED _____ DATE _____	APPROVED _____ DATE _____	APPROVED _____ DATE _____
S.M. FILE NO. _____		NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED OF A MCDPS ACCESS PERMIT.

**MCCORMICK TAYLOR**

509 South Exeter Street  
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EROSION AND SEDIMENT CONTROL PLAN  
**GAME PRESERVE SWM RETROFITS**  
GAITHERSBURG (9TH) ELECTION DISTRICT  
MONTGOMERY COUNTY PARCEL C-1, GREAT SENECA EXT STREAM VALLEY PARK,  
LIBER 490.1 FOLIO 184  
MONTGOMERY COUNTY, MARYLAND

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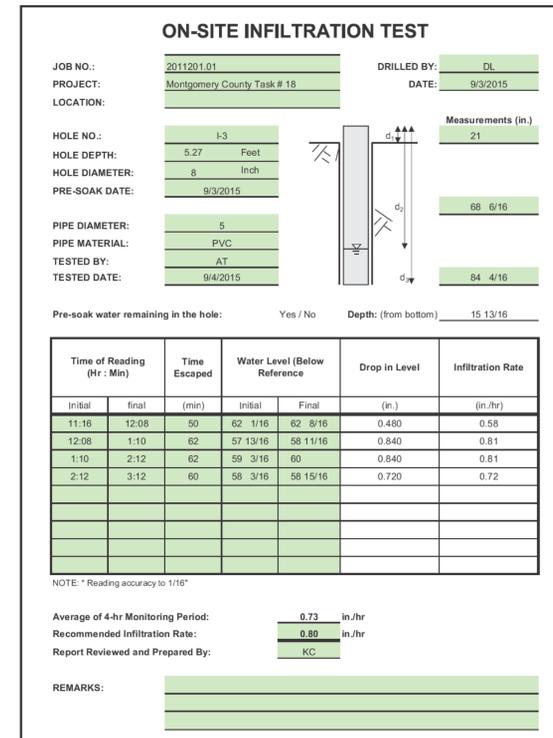
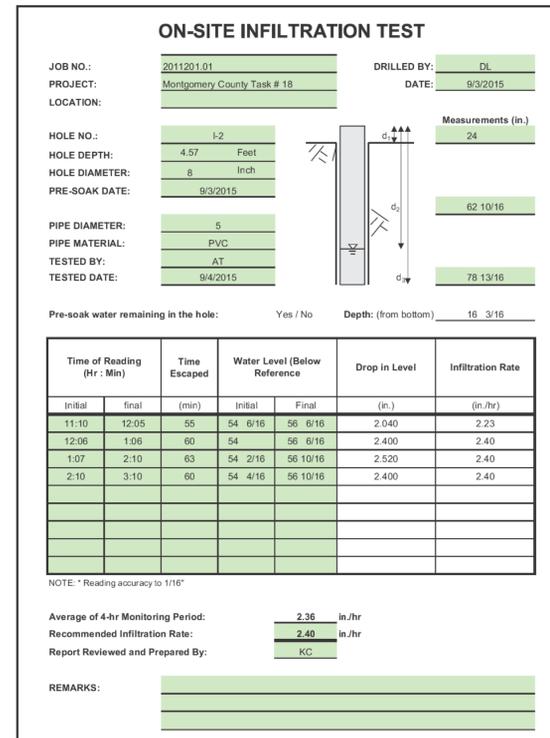
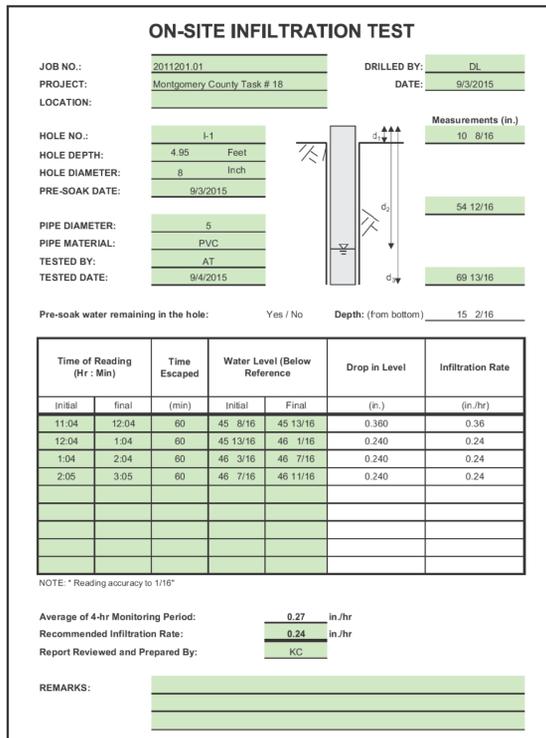
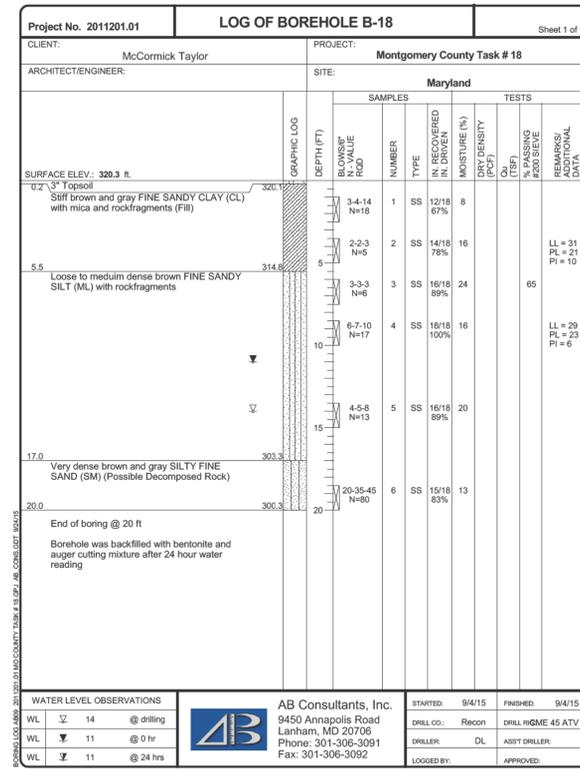
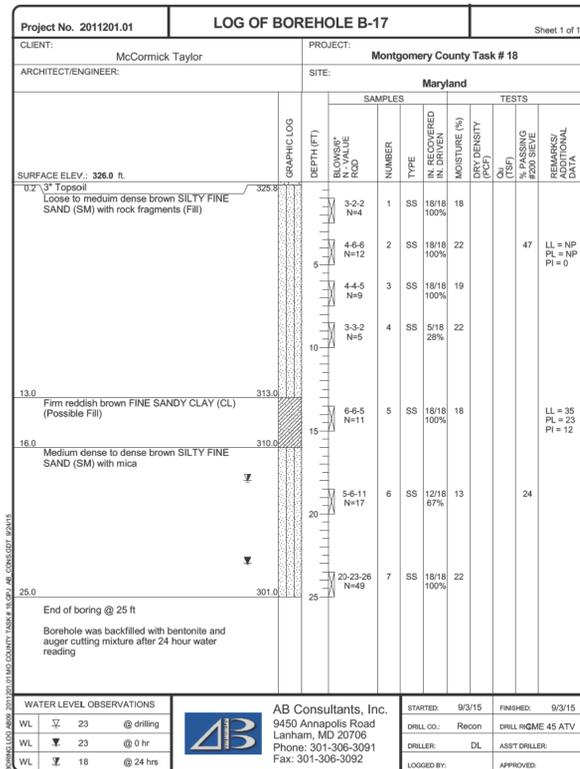
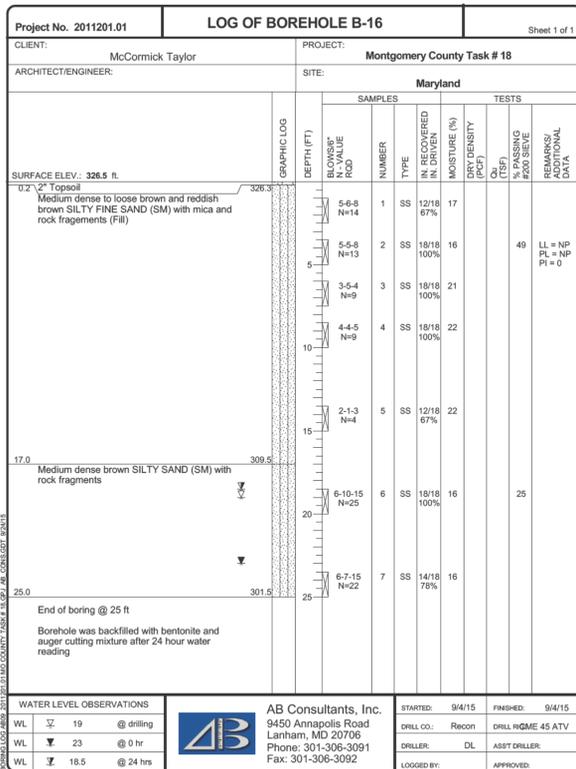
CLIENT: MONTGOMERY COUNTY DEPT OF ENVIRONMENTAL PROTECTION  
255 ROCKVILLE PIKE, RM. 120  
ROCKVILLE, MD 20850-4166  
MR. PHILIP JONES, P.E.  
(240) 777-7738

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DESIGN HAS  
DRAFT HAS  
APPROVED ALH  
DATE FEB 16'  
SCALE 1"=20'

SHEET **13** OF **15**

FILE: 0518218 - Cabin Branch SWM Retrofit/Design/Engineering/PlanSet/08262016/ES-F001\_Cabin Branch.pwd 10826.dgn  
PLOTTED: Wednesday, February 10, 2016 AT 03:53 PM



AB Consultants, Inc. Rev. 02/01/12

AB Consultants, Inc. Rev. 02/01/12

AB Consultants, Inc. Rev. 02/01/12

**MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:**

STORMWATER MANAGEMENT: \_\_\_\_\_  
 SEDIMENT CONTROL TECHNICAL REQUIREMENTS: \_\_\_\_\_  
 ADMINISTRATIVE REQUIREMENTS: \_\_\_\_\_

REVIEWED \_\_\_\_\_ DATE \_\_\_\_\_  
 APPROVED \_\_\_\_\_ DATE \_\_\_\_\_

SCALE: 1" = 10'-0"

S.M. FILE NO. \_\_\_\_\_

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 DRAFT: \_\_\_\_\_  
 APPROVED: \_\_\_\_\_  
 DATE: \_\_\_\_\_  
 SCALE: \_\_\_\_\_

SHEET 14 OF 15

NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED OF A MCDPS ACCESS PERMIT.

MCDPS APPROVAL OF THIS PLAN WILL EXPIRE ONE YEAR FROM THE DATE OF APPROVAL. IF THE PROJECT HAS NOT BEEN STARTED, UNLESS THE PERMIT HAS BEEN EXTENDED.

CLIENT: MONTGOMERY COUNTY DEPT OF ENVIRONMENTAL PROTECTION  
 255 ROCKVILLE PIKE, RM. 120  
 ROCKVILLE, MD 20850-4166  
 MR. PHILIP JONES, P.E.  
 (240) 777-7738

SOIL BORING AND INFILTRATION LOGS  
 GAME PRESERVE SWM RETROFITS  
 GAITHERSBURG (9TH) ELECTION DISTRICT  
 MONTGOMERY COUNTY PARCEL C-1, GREAT SENECA EXT STREAM VALLEY PARK,  
 LIBER 490.1 FOLIO 184  
 MONTGOMERY COUNTY, MARYLAND

509 South Exeter Street  
 4th Floor  
 Baltimore, Maryland 21202  
 (410) 662-7400

**MCCORMICK TAYLOR**

**LEGEND**

- 330 EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- 100 YEAR FLOOD PLAIN
- EXISTING STORM DRAIN
- PROPERTY LINE
- LOD LIMIT OF DISTURBANCE
- MEADOW SEED
- FREQUENTLY FLUCTUATING ZONE PLUG PLANTINGS
- SHALLOW WATER PLUG PLANTINGS
- SUBMERGED AQUATIC PLUG PLANTINGS



FREQUENTLY FLUCTUATING ZONE PLUG PLANTINGS	
% FREQUENCY	SPECIES
50	Loebelia cardinalis / Cardinal Flower
25	Panicum virgatum / Switchgrass
25	Verbena hastata / Blue Vervain

NOTES: 1. SPACE 12" ON CENTER.  
2. RANDOMLY MIX GROUPINGS OF 10 TO 50 SPECIES TOGETHER.

SHALLOW WATER PLUG PLANTINGS (0 TO 6" DEPTH)	
% FREQUENCY	SPECIES
30	Andropogon virginicus/ Broom Sedge
40	Caltha palustris/ Marsh Marigold
30	Peltandra virginica / Arrow Arrum

NOTES: 1. SPACE 12" ON CENTER.  
2. RANDOMLY MIX GROUPINGS OF 5 TO 15 SPECIES TOGETHER.

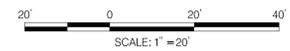
SUBMERGED AQUATIC PLUG PLANTINGS (6" TO 12" DEPTH)	
% FREQUENCY	SPECIES
40	Juncus effusus / Soft Rush
40	Saurus cernus / Lizaed Tail
20	Sagitaria latifolia / Duck Potato

NOTE: SPACE 12" ON CENTER IN STAGGERED ROWS.

MEADOW SEEDING	
% FREQUENCY	SPECIES
10	Andropogon gerardii / Big Bluestem
10	Calamagrostis canadensis / Reed Grass
10	Elymus canadensis / Wild Rye
10	Festuca rubra / Red Fescue
10	Lolium multiflorum / Annual Rye
10	Monarda fistulosa / Wild Bergamot
10	Panicum virgatum / Switchgrass
10	Senna hebecarpa / Wild Senna
10	Solidago juncea / Early Goldenrod
10	Tridens flavus / Purpletop

TYPE C MATTING WITH PLUGS (SWALE AREA)  
NOTE: APPLY 40 LBS. PER ACRE (TOTAL 10,555 SF)

MASTER PLANTING SCHEDULE		
SYMBOL	AREA (SF)	DESCRIPTION (PER SQUARE YARD)
	21,718	MEADOW SEED (UPLAND AREAS)
	258	FREQUENTLY FLUCTUATING ZONE PLUG PLANTINGS (ELEVATIONS 319 TO 319.5)
	164	SHALLOW WATER PLUG PLANTINGS (ELEVATIONS 318.5 TO 319)
	156	SUBMERGED AQUATIC PLUG PLANTINGS (ELEVATIONS 318 TO 318.5)



<b>MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:</b>			NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED OF A MCDPS ACCESS PERMIT.		
STORMWATER MANAGEMENT:		SEDIMENT CONTROL TECHNICAL REQUIREMENTS:		ADMINISTRATIVE REQUIREMENTS:	
REVIEWED _____	DATE _____	REVIEWED _____	DATE _____	REVIEWED _____	DATE _____
APPROVED _____	DATE _____	APPROVED _____	DATE _____	APPROVED _____	DATE _____
S.M. FILE NO. _____					

**MCCORMICK TAYLOR**  
 509 South Exeter Street  
 4th Floor  
 Baltimore, Maryland 21202  
 (410) 662-7400

LANDSCAPING SHEET  
**GAME PRESERVE SWM RETROFITS**  
 GAITHERSBURG (9TH) ELECTION DISTRICT  
 MONTGOMERY COUNTY PARCEL C-1, GREAT SENECA EXT STREAM VALLEY PARK,  
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 (240) 777-7738

DESIGN HAS HAS ALH  
 DRAFT APPROVED  
 DATE FEB 16  
 SCALE 1"=20'  
 SHEET 15 OF 15

FILE: D:\18218 - Cabin Branch SWM Retrofits\Design\Engineering\PlanSet\10826.dwg  
 PLOTTED: Wednesday, February 10, 2016 AT 03:53 PM