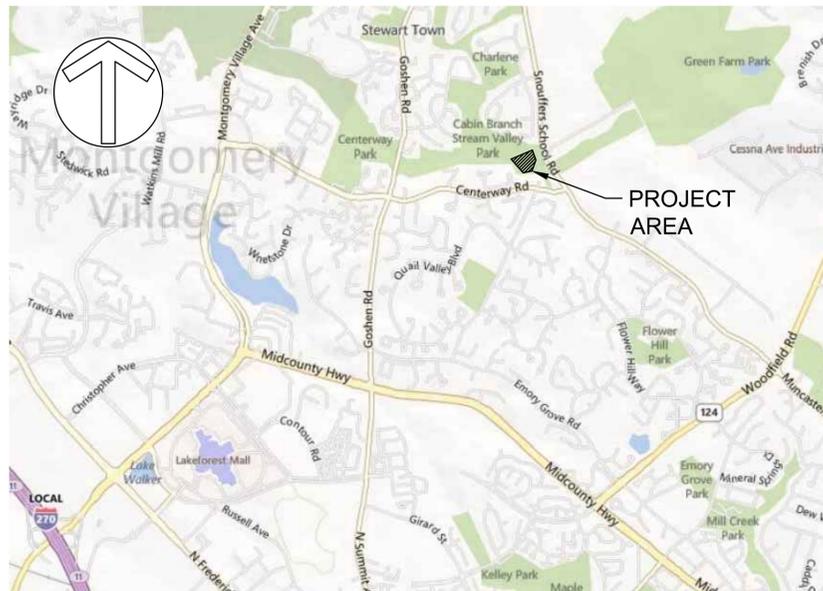


# QUAIL VALLEY #2

## STORMWATER MANAGEMENT RETROFIT

(DEP SEQ. NO. 35 - ASSET 10884)



1" = 2000' IMAGE CREDIT: BING MAPS

MS4 SUMMARY TABLE - STORMWATER RETROFIT				
FACILITY ID	DRAINAGE AREA (AC)	CREDITED IA (AC)	TARGETED WQv (AC-FT)	PROVIDED WQv (AC-FT)
10884	48.9	6.4	1.09	0.59

MS4 SUMMARY TABLE - STREAM RESTORATION		
RESTORATION LENGTH (LF)	DRAINAGE AREA (AC)	CREDITED IA (AC)
190	48.9	1.9

NOTE: STREAM RESTORATION CREDIT = 1 IMPERVIOUS ACRE (IA) PER 100 LF OF RESTORATION

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		276536		
WATERWAYS/WETLAND(S):					
a. Corps of Engineers	X		2015-60911	SEPT 30, 2016	
b. MDE	X				
c. MDE Water Quality Certification	X				
MDE Dam Safety		X			
DNR Roadside Tree Care Permit		X		Approval Date	
DPS Roadside Tree Protection Plan		X		Approval Date	
N.P.D.E.S. NOTICE OF INTENT	X				DATE FILED
OTHERS (Please List):					
MNCPPC	X				
WSSC		X			
MCDPS R.O.W.	X		339408		

### SHEET LIST TABLE

Sheet Number	Sheet Title
1	TITLE SHEET
2	GENERAL NOTES AND CERTIFICATIONS
3	EXISTING CONDITIONS PLAN
4	FOREST RESOURCES PLAN
5	EROSION AND SEDIMENT CONTROL PLAN - PHASE 1
6	EROSION AND SEDIMENT CONTROL PLAN - PHASE 2A
7	EROSION AND SEDIMENT CONTROL PLAN - PHASE 2B
8	PROPOSED CONDITIONS PLAN
9	PROPOSED UNDERDRAIN & GEOMETRY PLAN
10	PROFILES AND STREAM STRUCTURE TABLES
11	PROFILES
12	DETAILS
13	DETAILS
14	DETAILS
15	DETAILS
16	DETAILS
17	DETAILS
18	EROSION AND SEDIMENT CONTROL DETAILS
19	EROSION AND SEDIMENT CONTROL NOTES
20	SEQUENCE OF CONSTRUCTION
21	SOIL BORING LOGS
22	PLANTING PLAN
23	PLANTING DETAILS

### TREE CANOPY REQUIREMENTS TABLE

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

Exempt: Yes  No  If exempt under Section 55-5 of the Code, please check the applicable exemption category below.

Total Property Area	Total Disturbed Area
256,568 square feet	52,005 square feet
Shade Trees Required	Shade Trees Proposed to be Planted
20	4

Fee in Lieu (Trees Required - Trees Planted) x \$250	\$
	4,000

Required Number of Shade Trees		
Area (sq. ft.) of the Limits of Disturbance	FROM	TO
	1	6,000
	6,001	8,000
	8,001	12,000
	12,001	14,000
	14,001	40,000
		Number of Shade Trees Required
		3
		6
		9
		12
		15

If the square footage of the limits of disturbance is more than 40,000, then the number of shade trees required must be calculated using the following formula:

$$(\text{Number of Square Feet in Limits of Disturbance} \div 40,000) \times 15$$

EXEMPTION CATEGORIES:	
<input type="checkbox"/> 55-5(a) any activity that is subject to Article II of Chapter 22A;	<input type="checkbox"/> maintenance has obtained all required permits;
<input type="checkbox"/> 55-5(b) any commercial logging or timber harvesting operation with an approved exemption from Article II of Chapter 22A;	<input type="checkbox"/> 55-5(h) any stream restoration project if the person performing the work has obtained all necessary permits;
<input type="checkbox"/> 55-5(f) any activity conducted by the County Parks Department;	<input type="checkbox"/> 55-5(i) cutting or clearing any tree to comply with applicable provisions of any federal, state, or local law governing safety of dams;
<input checked="" type="checkbox"/> 55-5(g) routine or emergency maintenance of an existing stormwater management facility, including an existing access road, if the person performing the	<input type="checkbox"/> OTHER: Specify per Section 55-5 of the Code.

THE CONTRACTOR SHALL REFER TO THE PROJECT SPECIFICATIONS FOR ALL MATERIAL SPECIFICATIONS

THE MARYLAND -NATIONAL CAPITAL PARK AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING  
M-NCPPC RECORD FILE NO. 2015.17  
TECHNICAL REVIEW  
CONCURRENCE BY \_\_\_\_\_  
DATE: \_\_\_\_\_  
PARK FACILITY CODE \_\_\_\_\_

MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:		NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED FOR A MCDPS ACCESS PERMIT.	
M-NCPPC PERMIT NO. 2015.17	Stormwater Management: SEDIMENT CONTROL & SAFE CONVEYANCE REVIEW ONLY	Sediment Control Technical Requirements:	Administrative Requirements:
REVIEWED BY _____	Reviewed Date _____	Reviewed Date _____	Reviewed Date 276515
APPROVED BY _____	Approved Date _____	Approved Date _____	SEDIMENT CONTROL PERMIT NO. _____
DATE APPROVED _____	Approved Date 264135	Approved Date _____	MCDPS APPROVAL OF THIS PLAN WILL EXPIRE TWO YEARS FROM THE DATE OF APPROVAL IF THE PROJECT HAS NOT STARTED.
M-NCPPC PERMIT SHEET # _____ OF _____	SM FILE # _____		
THIS IS NOT A PERMIT TO BEGIN CONSTRUCTION			
This approval is for technical review only. For permit information, contact Joy Childs, Construction Supervisor at (301)495-2574.		DPS approval of a sediment control or stormwater management plan is for demonstrated compliance with minimum environmental runoff treatment standards and does not create or imply any right to divert or concentrate runoff onto any adjacent property without that property owner's permission. It does not relieve the design engineer or other responsible person of professional liability or ethical responsibility for the adequacy of the drainage design as it affects uphill or downhill properties.	

MCE:jb CN264135 Quail Valley 2.mjg.doc

cc: SM File # 264135

Mr. Doug Streaker  
July 11, 2014  
Page 2

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



Isiah Leggett  
County Executive

July 11, 2014

Diane R. Schwartz Jones  
Director

Mr. Doug Streaker  
Biohabitats, Inc.  
2081 Clipper Park Road  
Baltimore, Maryland 21211-1406

Re: Stormwater Management CONCEPT Request for Quail Valley #2 SWM Pond (Asset 10884)  
Preliminary Plan #: N/A  
SM File #: 264135  
Tract Size/Zone: 5.89 Ac. / R-90  
Total Concept Area: 1 Ac.  
Lots/Block: F  
Parcel(s): 00  
Watershed: Great Seneca Creek

Dear Mr. Streaker:

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 will 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.

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 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.

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

montgomerycountymd.gov/311 311 CALL US TO GO 240-773-3556 TTY

### CLIENT

MR. CRAIG CARSON  
MONTGOMERY COUNTY DEPARTMENT  
OF ENVIRONMENTAL PROTECTION  
255 ROCKVILLE PIKE, SUITE 120  
ROCKVILLE, MD 20850  
(240) 777-7713



DEPARTMENT OF ENVIRONMENTAL PROTECTION  
MONTGOMERY COUNTY • MARYLAND

DATE:	ISSUES / REVISIONS
3/10/2015	60% DESIGN
1/29/2016	90% DESIGN

MISS UTILITY  
CALL "MISS UTILITY" AT 1-800-257-7777, 48 HOURS PRIOR TO THE START OF WORK. THE EXCAVATOR MUST NOTIFY ALL PUBLIC UTILITY COMPANIES WITH UNDERGROUND FACILITIES LOCATED BY THE UTILITY COMPANIES PRIOR TO COMMENCING EXCAVATION. THE EXCAVATOR IS RESPONSIBLE FOR COMPLIANCE WITH REQUIREMENTS OF CHAPTER 36A OF THE MONTGOMERY COUNTY CODE.



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

LICENSE #: 45058

EXPIRATION DATE: 04/11/2016



The Stables Building 2081 Clipper Park Road  
Baltimore, MD 21211 / ph: 410.554.0156  
fx: 410.554.0168 / www.biohabitats.com

Restore the Earth & Inspire Ecological Stewardship

QUAIL VALLEY #2  
SWM RETROFIT  
MNCPPC L 6557 / F 646  
(DEP SEQ. NO. 35-ASSET 10884)  
90% DESIGN

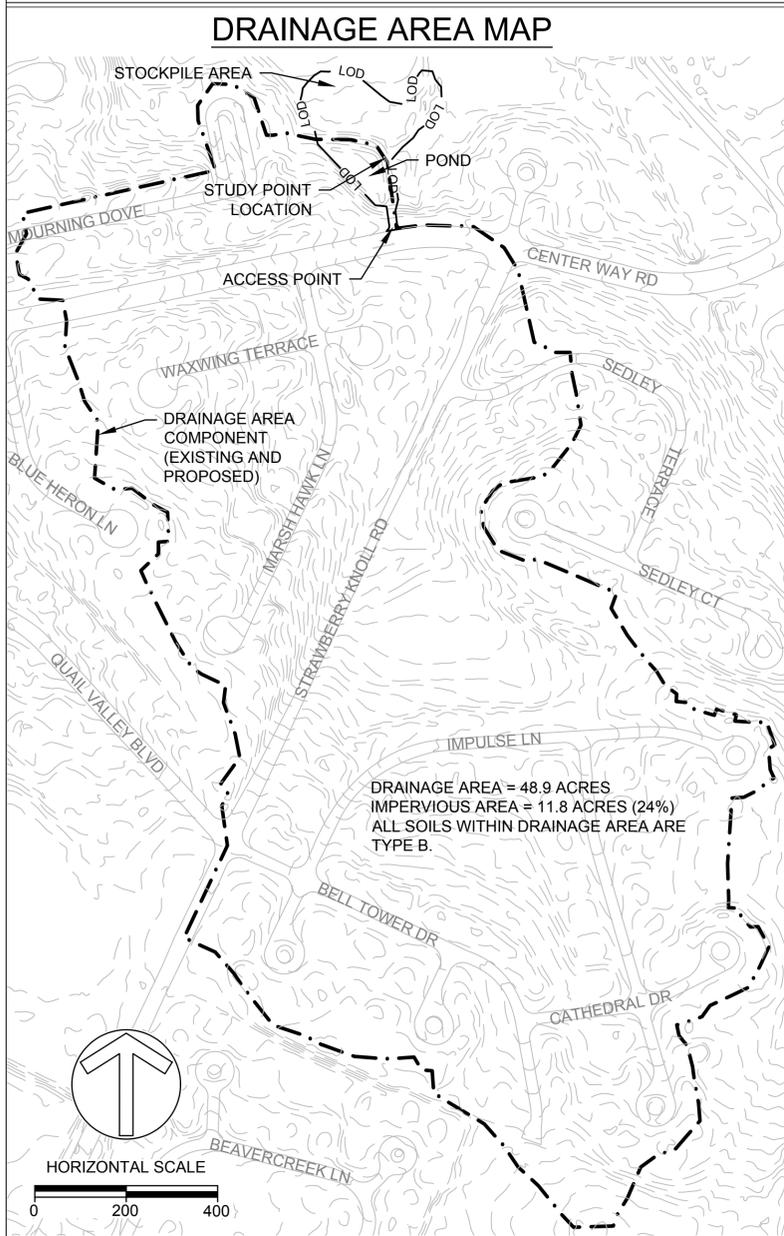
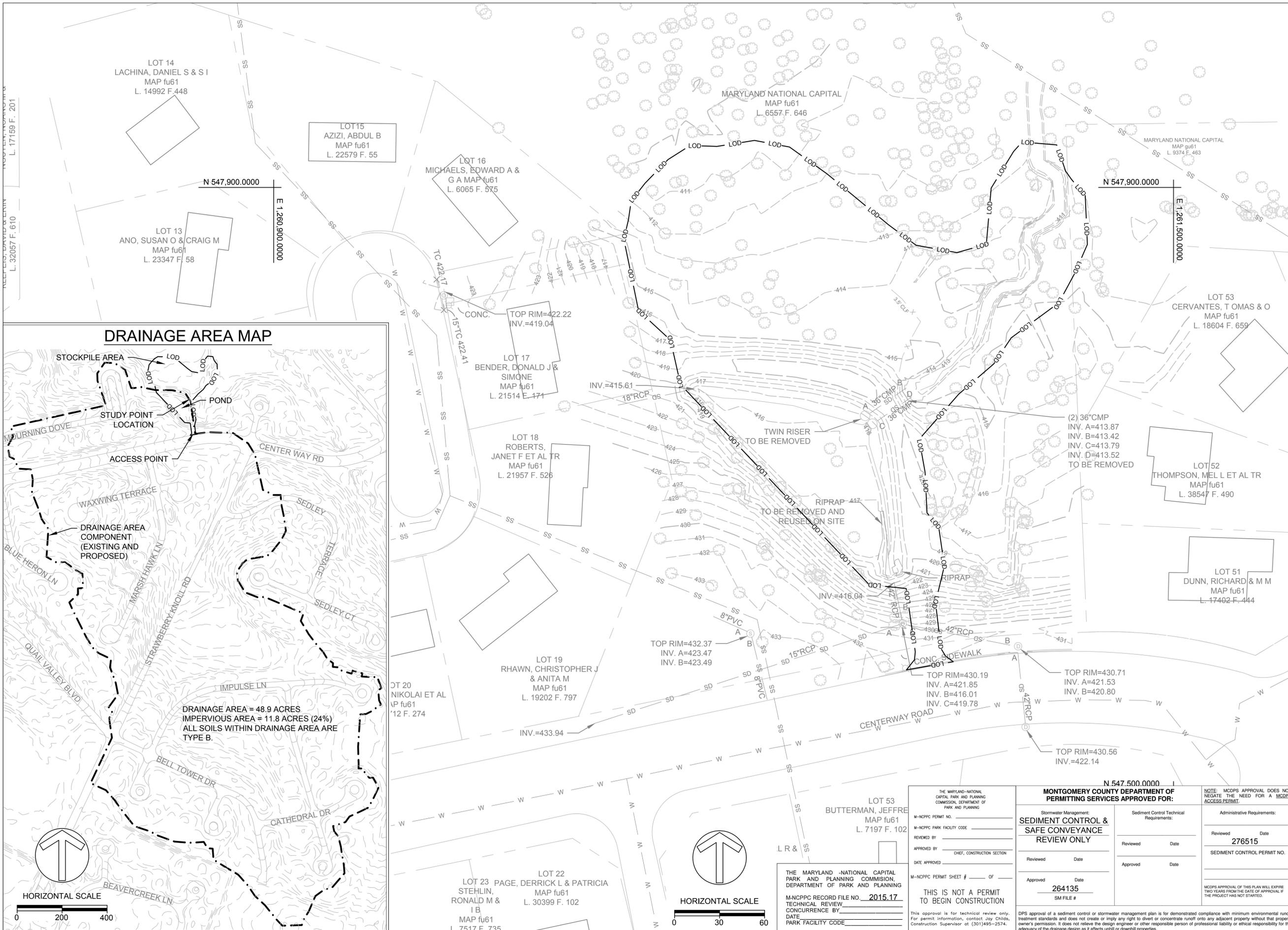
MONTGOMERY COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION - WATER RESOURCES ENGINEERING CONTRACT #8803000101BD - TASK ORDER 16

TITLE SHEET

PROJECT NO.:	SCALE:
08041.05	AS SHOWN
BY: TB,KT	CHECK: BA
DWG. NO.:	

1 OF 23





**CLIENT**

MR. CRAIG CARSON  
 MONTGOMERY COUNTY DEPARTMENT  
 OF ENVIRONMENTAL PROTECTION  
 255 ROCKVILLE PIKE, SUITE 120  
 ROCKVILLE, MD 20850  
 (240) 777-7713

**DEPARTMENT OF ENVIRONMENTAL PROTECTION**  
 MONTGOMERY COUNTY • MARYLAND

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**SEAL:**

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 fx: 410.554.0168 / www.biohabitats.com  
 Restore the Earth & Inspire Ecological Stewardship

**QUAIL VALLEY #2 SWM RETROFIT**  
 MNCPPC L 6557 / F 646  
 (DEP SEQ. NO. 35-ASSET 10884)  
**90% DESIGN**

MONTGOMERY COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION - WATER RESOURCES ENGINEERING CONTRACT #8803000101BD - TASK ORDER 16

**TITLE:**

**EXISTING CONDITIONS PLAN**

PROJECT NO.:	08041.05	SCALE:	1" = 30'
BY:	TB,KT	CHECK:	BA
DWG. NO.:	3 OF 23		

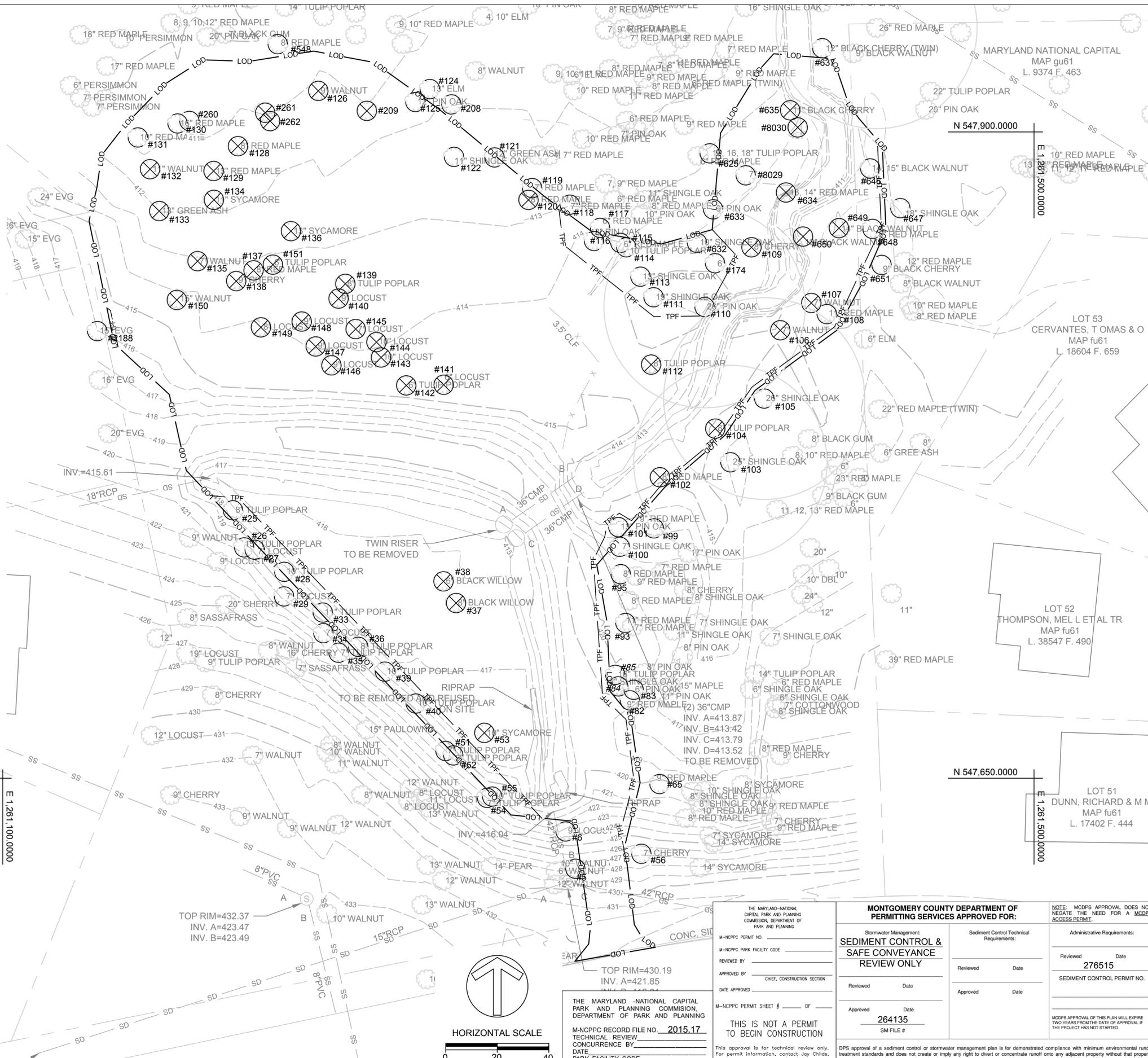
TREE REMOVAL			ID	DBH (IN)	SPECIES
37	8	BLACK WILLOW	141	6	LOCUST
38	6	BLACK WILLOW	142	6	TULIP POPLAR
53	10	SYCAMORE	143	10	LOCUST
102	8	RED MAPLE	144	10	LOCUST
104	8	TULIP POPLAR	145	7	LOCUST
106	7	WALNUT	146	9	LOCUST
107	7	WALNUT	147	9	LOCUST
109	8	CHERRY	148	9	LOCUST
112	8	TULIP POPLAR	149	8	LOCUST
120	8	RED MAPLE	150	15	WALNUT
126	9	WALNUT*	151	6	TULIP POPLAR
128	8	RED MAPLE	209	6	UNKNOWN**
129	13	RED MAPLE	261	6	UNKNOWN**
132	11	WALNUT	262	6	UNKNOWN**
133	13	GREEN ASH	634	13, 14	RED MAPLE
134	11	SYCAMORE	635	11	BLACK CHERRY
135	7	WALNUT	649	14	BLACK WALNUT
136	13	SYCAMORE	650	13	BLACK WALNUT
137	8	RED MAPLE	8030	18	UNKNOWN**
138	9	CHERRY			
139	8	TULIP POPLAR			
140	9	LOCUST			

\*FIELD DETERMINATION SHALL BE MADE BY DEP AND M-NCPPC REGARDING IF TREE SAVE IS POSSIBLE  
 \*\* NO TAG. ID IS SURVEY POINT NUMBER

TREE PROTECTION WITHIN LOD			TREE PROTECTION WITHIN 4' OF LOD		
ID	DBH (IN)	SPECIES	ID	DBH (IN)	SPECIES
25	8	TULIP POPLAR	5	10	WALNUT
28	10	TULIP POPLAR	6	9	LOCUST
33	11	TULIP POPLAR	26	15	TULIP POPLAR
36	8	TULIP POPLAR	27	7	LOCUST
39	10	TULIP POPLAR	29	7	LOCUST
40	10	TULIP POPLAR	34	7	LOCUST
84	12	SHINGLE OAK	35	7	TULIP POPLAR
85	16	TULIP POPLAR	51	7	TULIP POPLAR
101	13	PIN OAK*	52	8	TULIP POPLAR
105	26	SHINGLE OAK	54	7	TULIP POPLAR
108	11	RED MAPLE	55	10	TULIP POPLAR
110	26	PIN OAK	56	7	CHERRY
111	19	SHINGLE OAK	65	9	RED MAPLE
113	13	SHINGLE OAK	82	9	RED MAPLE
114	10	TULIP POPLAR	83	6	PIN OAK
115	6	RED MAPLE	93	11	RED MAPLE
116	13	PIN OAK	95	8	RED MAPLE
119	7	RED MAPLE	99	9	RED MAPLE
121	12	GREEN ASH	100	7	SHINGLE OAK
122	11	SHINGLE OAK	103	25	SHINGLE OAK
124	13	ELM	117	6	RED MAPLE
130	16	RED MAPLE	118	7	RED MAPLE
131	10	RED MAPLE	125	12	PIN OAK
174	6	UNKNOWN**	208	6	UNKNOWN**
260	6	UNKNOWN**	548	8	RED MAPLE
632	10	SHINGLE OAK	625	13, 16, 18	TULIP POPLAR
648	8	RED MAPLE	633	9	PIN OAK
8029	7	UNKNOWN**	637	12, 12	BLACK CHERRY (TWIN)
			646	14, 15	BLACK WALNUT
			647	18	SHINGLE OAK
			651	9	BLACK CHERRY
			2188	15	EVG**

\*FIELD DETERMINATION SHALL BE MADE BY DEP AND M-NCPPC REGARDING IF TREE SAVE IS POSSIBLE  
 \*\* NO TAG. ID IS SURVEY POINT NUMBER

NOTE:  
 1. ADDITIONAL TREE PROTECTION FENCE MAY BE ADDED AT THE DIRECTION OF MNCPPC INSPECTOR



20 KOLAI ET AL  
 fu61  
 F. 274

**CLIENT**

MR. CRAIG CARSON  
 MONTGOMERY COUNTY DEPARTMENT  
 OF ENVIRONMENTAL PROTECTION  
 255 ROCKVILLE PIKE, SUITE 120  
 ROCKVILLE, MD 20850  
 (240) 777-7713

**DEPARTMENT OF ENVIRONMENTAL PROTECTION**  
 MONTGOMERY COUNTY • MARYLAND

DATE:	ISSUES / REVISIONS
3/10/2015	60% DESIGN
1/29/2016	90% DESIGN

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SEAL:

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LICENSE #: 45038  
 EXPIRATION DATE: 04/11/2016

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 Baltimore, MD 21211 / ph: 410.554.0156  
 fx: 410.554.0168 / www.biohabitats.com  
*Restore the Earth & Inspire Ecological Stewardship*

**QUAIL VALLEY #2**  
**SWM RETROFIT**  
 MNCPPC L 6557 / F 646  
 (DEP SEQ. NO. 35-ASSET 10884)  
**90% DESIGN**

MONTGOMERY COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION - WATER RESOURCES ENGINEERING CONTRACT #880300101BD - TASK ORDER 16

**TITLE:**  
**FOREST RESOURCES PLAN**

PROJECT NO.:	08041.05	SCALE:	1" = 20'
BY:	TB,KT	CHECK:	BA
DWG. NO.:			

**4 OF 23**

THE MARYLAND NATIONAL CAPITAL PARK AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING

M-NCPPC PERMIT NO. \_\_\_\_\_  
 M-NCPPC PARK FACILITY CODE \_\_\_\_\_  
 REVIEWED BY \_\_\_\_\_  
 APPROVED BY \_\_\_\_\_  
 DATE APPROVED \_\_\_\_\_

M-NCPPC PERMIT SHEET # \_\_\_\_\_ OF \_\_\_\_\_

**THIS IS NOT A PERMIT TO BEGIN CONSTRUCTION**

This approval is for technical review only. For permit information, contact Joy Childs, Construction Supervisor at (301)495-2574.

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

Stormwater Management:  
**SEDIMENT CONTROL & SAFE CONVEYANCE REVIEW ONLY**

Reviewed	Date
Approved	Date

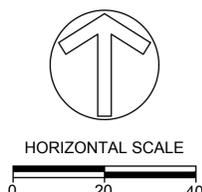
Approved Date: **264135**  
 SM FILE # \_\_\_\_\_

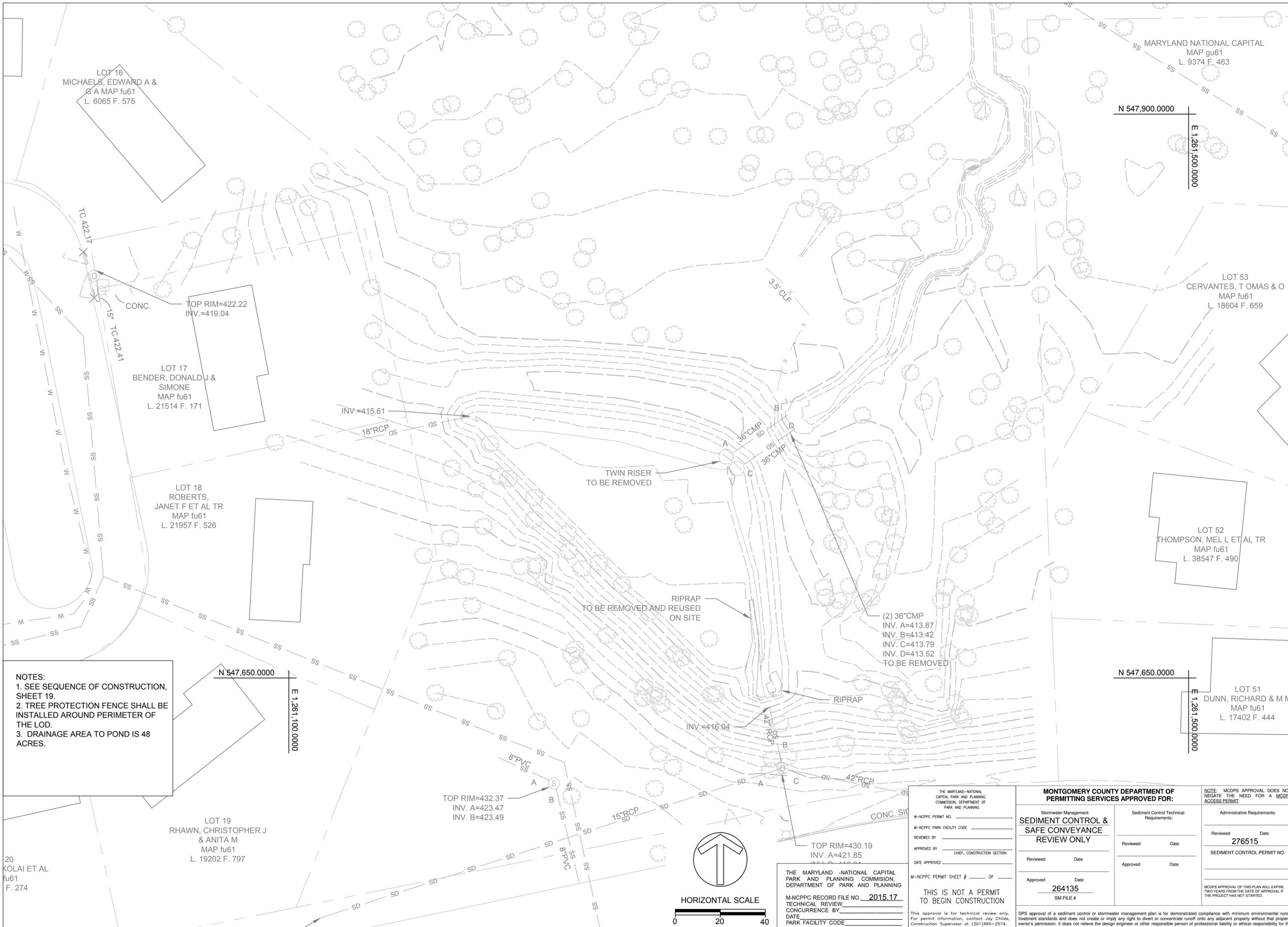
Administrative Requirements:

Reviewed Date: **276515**

SEDIMENT CONTROL PERMIT NO. \_\_\_\_\_

MCDPS APPROVAL OF THIS PLAN WILL EXPIRE TWO YEARS FROM THE DATE OF APPROVAL IF THE PROJECT HAS NOT STARTED.





**NOTES:**  
 1. SEE SEQUENCE OF CONSTRUCTION, SHEET 19.  
 2. TREE PROTECTION FENCE SHALL BE INSTALLED AROUND PERIMETER OF THE LOD.  
 3. DRAINAGE AREA TO POND IS 48 ACRES.

20  
 KOLAI ET AL  
 fu61  
 F. 274

LOT 19  
 RHAWN, CHRISTOPHER J  
 & ANITA M  
 MAP fu61  
 L. 19202 F. 797

LOT 17  
 BENDER, DONALD J &  
 SIMONE  
 MAP fu61  
 L. 21514 F. 171

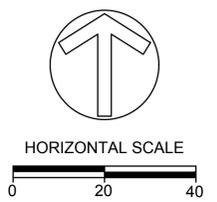
LOT 18  
 ROBERTS,  
 JANET F ET AL TR  
 MAP fu61  
 L. 21957 F. 526

LOT 16  
 MICHAELS, EDWARD A &  
 G A MAP fu61  
 L. 6065 F. 575

LOT 53  
 CERVANTES, T OMAS & O  
 MAP fu61  
 L. 18604 F. 659

LOT 52  
 THOMPSON, MEL L ET AL TR  
 MAP fu61  
 L. 38547 F. 490

LOT 51  
 DUNN, RICHARD & M M  
 MAP fu61  
 L. 17402 F. 444



THE MARYLAND NATIONAL CAPITAL PARK AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING M-NCPPC PERMIT NO. _____ M-NCPPC PARK FACILITY CODE _____ REVIEWED BY _____ APPROVED BY _____ DATE APPROVED _____		<b>MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:</b> Stormwater Management: <b>SEDIMENT CONTROL &amp; SAFE CONVEYANCE REVIEW ONLY</b> Reviewed Date _____ Approved Date _____ 264135 SM FILE #		NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED FOR A MCDPS ACCESS PERMIT. Administrative Requirements: Reviewed Date _____ 276515 SEDIMENT CONTROL PERMIT NO. _____ MCDPS APPROVAL OF THIS PLAN WILL EXPIRE TWO YEARS FROM THE DATE OF APPROVAL IF THE PROJECT HAS NOT STARTED.	
THE MARYLAND NATIONAL CAPITAL PARK AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING TECHNICAL REVIEW M-NCPPC RECORD FILE NO. <b>2015.17</b> CONCURRENCE BY _____ DATE _____ PARK FACILITY CODE _____		THIS IS NOT A PERMIT TO BEGIN CONSTRUCTION This approval is for technical review only. For permit information, contact Joy Childs, Construction Supervisor at (301)495-2574.		DPS approval of a sediment control or stormwater management plan is for demonstrated compliance with minimum environmental runoff treatment standards and does not create or imply any right to divert or concentrate runoff onto any adjacent property without that property owner's permission. It does not relieve the design engineer or other responsible person of professional liability or ethical responsibility for the adequacy of the drainage design as it affects uphill or downhill properties.	

**CLIENT**

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 MONTGOMERY COUNTY DEPARTMENT  
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 255 ROCKVILLE PIKE, SUITE 120  
 ROCKVILLE, MD 20850  
 (240) 777-7713



**DEPARTMENT OF ENVIRONMENTAL PROTECTION**  
 MONTGOMERY COUNTY • MARYLAND

DATE:	ISSUES / REVISIONS
3/10/2015	60% DESIGN
1/29/2016	90% DESIGN

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**PROFESSIONAL CERTIFICATION**  
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LICENSE #: 45058  
 EXPIRATION DATE: 04/11/2016

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 Baltimore, MD 21211 / ph: 410.554.0156  
 fx: 410.554.0168 / www.biohabitats.com  
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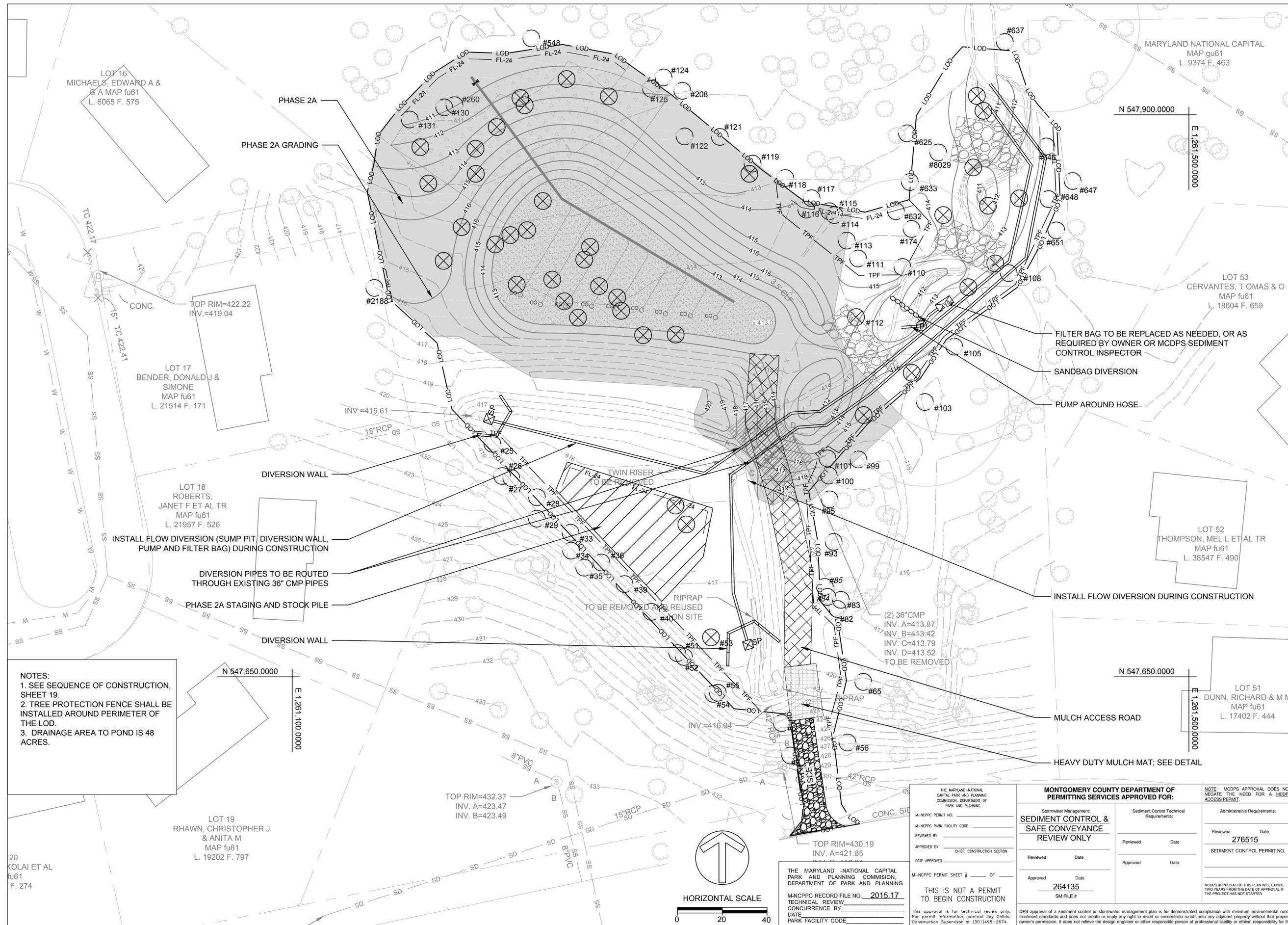
**QUAIL VALLEY #2 SWM RETROFIT**  
 MNCPPC L 6557 / F 646  
 (DEP SEQ. NO. 35-ASSET 10884)  
**90% DESIGN**

MONTGOMERY COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION - WATER RESOURCES ENGINEERING CONTRACT #8803000101BD - TASK ORDER 16

**EROSION AND SEDIMENT CONTROL PLAN - PHASE 1**

PROJECT NO.: 08041.05 SCALE: 1" = 20'  
 BY: TB,KT CHECK: BA

DWG. NO.: **5 OF 23**



**NOTES:**  
 1. SEE SEQUENCE OF CONSTRUCTION, SHEET 19.  
 2. TREE PROTECTION FENCE SHALL BE INSTALLED AROUND PERIMETER OF THE LOD.  
 3. DRAINAGE AREA TO POND IS 48 ACRES.

20  
 KOLAI ET AL  
 fu61  
 F. 274

LOT 19  
 RHAWN, CHRISTOPHER J  
 & ANITA M  
 MAP fu61  
 L. 19202 F. 797

LOT 18  
 ROBERTS,  
 JANET F ET AL TR  
 MAP fu61  
 L. 21957 F. 526

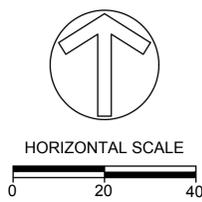
LOT 17  
 BENDER, DONALD J &  
 SIMONE  
 MAP fu61  
 L. 21514 F. 171

LOT 16  
 MICHAELS, EDWARD A &  
 G A MAP fu61  
 L. 6065 F. 575

LOT 53  
 CERVANTES, T OMAS & O  
 MAP fu61  
 L. 18604 F. 659

LOT 52  
 THOMPSON, MEL L ET AL TR  
 MAP fu61  
 L. 38547 F. 490

LOT 51  
 DUNN, RICHARD & M M  
 MAP fu61  
 L. 17402 F. 444



THE MARYLAND NATIONAL CAPITAL PARK AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING M-NCPPC PERMIT NO. _____ M-NCPPC PARK FACILITY CODE _____ REVIEWED BY _____ APPROVED BY _____ DATE APPROVED _____		<b>MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:</b> Stormwater Management: <b>SEDIMENT CONTROL &amp; SAFE CONVEYANCE REVIEW ONLY</b> Reviewed Date _____ Approved Date _____ Approved Date <b>264135</b> SM FILE # _____		NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED FOR A MCDPS ACCESS PERMIT. Administrative Requirements: Reviewed Date <b>276515</b> SEDIMENT CONTROL PERMIT NO. _____ MCDPS APPROVAL OF THIS PLAN WILL EXPIRE TWO YEARS FROM THE DATE OF APPROVAL IF THE PROJECT HAS NOT STARTED.	
THE MARYLAND NATIONAL CAPITAL PARK AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING M-NCPPC RECORD FILE NO. <b>2015.17</b> TECHNICAL REVIEW CONCURRENCE BY _____ DATE _____ PARK FACILITY CODE _____		THIS IS NOT A PERMIT TO BEGIN CONSTRUCTION This approval is for technical review only. For permit information, contact Joy Childs, Construction Supervisor at (301)495-2574.		DPS approval of a sediment control or stormwater management plan is for demonstrated compliance with minimum environmental runoff treatment standards and does not create or imply any right to divert or concentrate runoff onto any adjacent property without that property owner's permission. It does not relieve the design engineer or other responsible person of professional liability or ethical responsibility for the adequacy of the drainage design as it affects uphill or downhill properties.	

**CLIENT**

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 MONTGOMERY COUNTY DEPARTMENT  
 OF ENVIRONMENTAL PROTECTION  
 255 ROCKVILLE PIKE, SUITE 120  
 ROCKVILLE, MD 20850  
 (240) 777-7713



**DEPARTMENT OF ENVIRONMENTAL PROTECTION**  
 MONTGOMERY COUNTY • MARYLAND

DATE:	ISSUES / REVISIONS
3/10/2015	60% DESIGN
1/29/2016	90% DESIGN

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LICENSE #: 45058  
 EXPIRATION DATE: 04/11/2016

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 fx: 410.554.0168 / www.biohabitats.com  
*Restore the Earth & Inspire Ecological Stewardship*

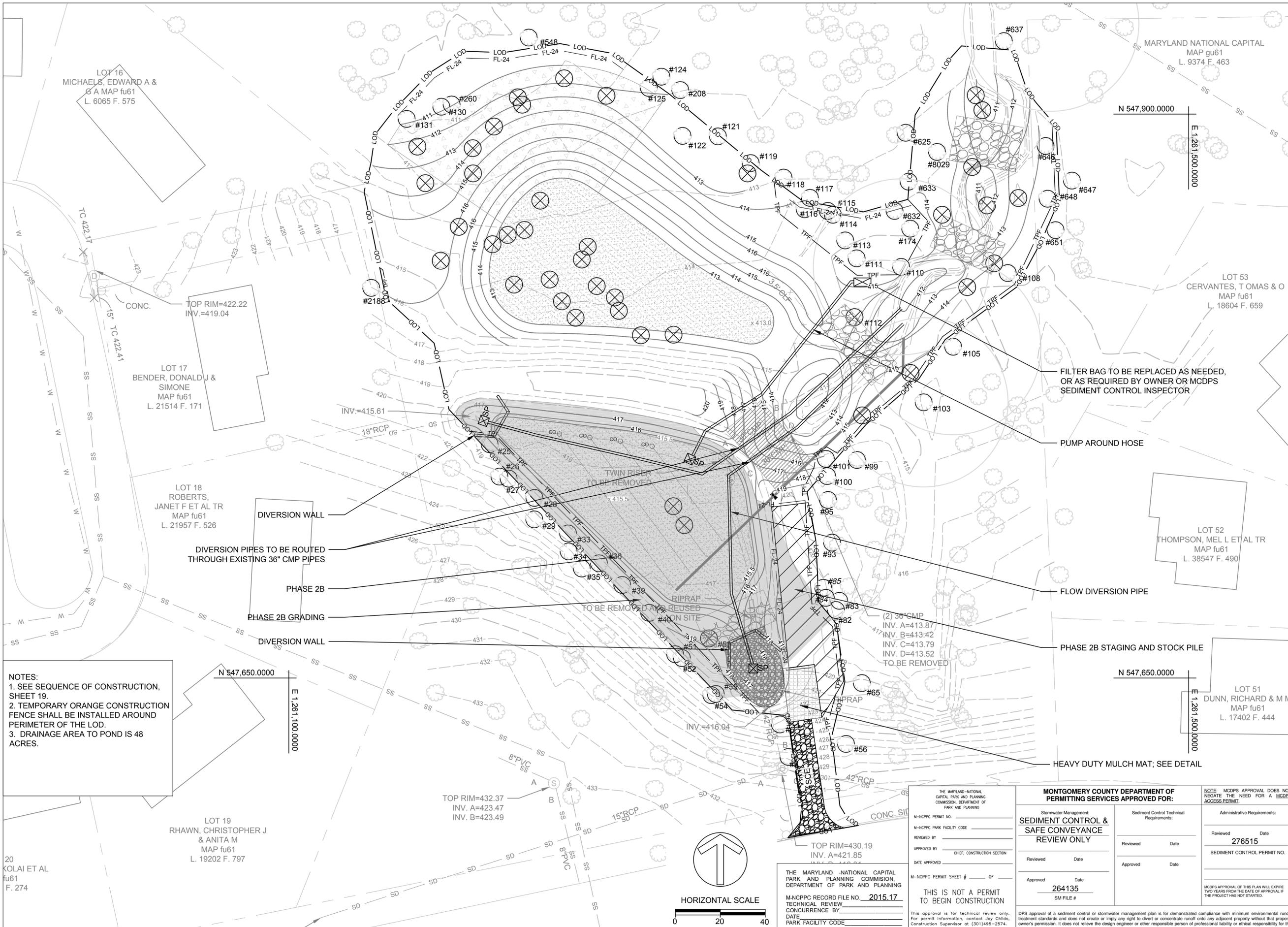
**QUAIL VALLEY #2 SWM RETROFIT**  
 MNCPPC L 6557 / F 646  
 (DEP SEQ. NO. 35-ASSET 10884)  
**90% DESIGN**

MONTGOMERY COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION - WATER RESOURCES ENGINEERING CONTRACT #8803000101BD - TASK ORDER 16

**EROSION AND SEDIMENT CONTROL PLAN - PHASE 2A**

PROJECT NO.: 08041.05 SCALE: 1" = 20'

BY: TB,KT CHECK: BA  
 DWG. NO.:



**NOTES:**  
 1. SEE SEQUENCE OF CONSTRUCTION, SHEET 19.  
 2. TEMPORARY ORANGE CONSTRUCTION FENCE SHALL BE INSTALLED AROUND PERIMETER OF THE LOD.  
 3. DRAINAGE AREA TO POND IS 48 ACRES.

20 KOLAI ET AL  
 fu61  
 F. 274

LOT 19  
 RHAWN, CHRISTOPHER J  
 & ANITA M  
 MAP fu61  
 L. 19202 F. 797

LOT 18  
 ROBERTS,  
 JANET F ET AL TR  
 MAP fu61  
 L. 21957 F. 526

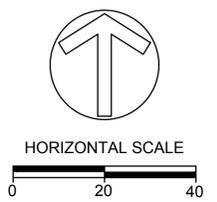
LOT 17  
 BENDER, DONALD J &  
 SIMONE  
 MAP fu61  
 L. 21514 F. 171

LOT 16  
 MICHAELS, EDWARD A &  
 G A MAP fu61  
 L. 6065 F. 575

LOT 53  
 CERVANTES, T OMAS & O  
 MAP fu61  
 L. 18604 F. 659

LOT 52  
 THOMPSON, MEL L ET AL TR  
 MAP fu61  
 L. 38547 F. 490

LOT 51  
 DUNN, RICHARD & M M  
 MAP fu61  
 L. 17402 F. 444



THE MARYLAND NATIONAL CAPITAL PARK AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING

M-NCPPC PERMIT NO. \_\_\_\_\_  
 M-NCPPC PARK FACILITY CODE \_\_\_\_\_  
 REVIEWED BY \_\_\_\_\_  
 APPROVED BY \_\_\_\_\_  
 DATE APPROVED \_\_\_\_\_

M-NCPPC PERMIT SHEET # \_\_\_\_\_ OF \_\_\_\_\_

**THIS IS NOT A PERMIT TO BEGIN CONSTRUCTION**

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

Stormwater Management:  
**SEDIMENT CONTROL & SAFE CONVEYANCE REVIEW ONLY**

Reviewed \_\_\_\_\_ Date \_\_\_\_\_  
 Approved \_\_\_\_\_ Date \_\_\_\_\_

Approved \_\_\_\_\_ Date \_\_\_\_\_  
 SM FILE # 264135

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

Administrative Requirements:  
 Reviewed \_\_\_\_\_ Date \_\_\_\_\_  
 276515  
 SEDIMENT CONTROL PERMIT NO. \_\_\_\_\_

MCDPS APPROVAL OF THIS PLAN WILL EXPIRE TWO YEARS FROM THE DATE OF APPROVAL IF THE PROJECT HAS NOT STARTED.

**CLIENT**

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 MONTGOMERY COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION  
 255 ROCKVILLE PIKE, SUITE 120  
 ROCKVILLE, MD 20850  
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 MONTGOMERY COUNTY • MARYLAND

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1/29/2016	90% DESIGN

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 fx: 410.554.0168 / www.biohabitats.com

Restore the Earth & Inspire Ecological Stewardship

**QUAIL VALLEY #2 SWM RETROFIT**  
 MNCPPC L 6557 / F 646  
 (DEP SEQ. NO. 35-ASSET 10884)  
**90% DESIGN**

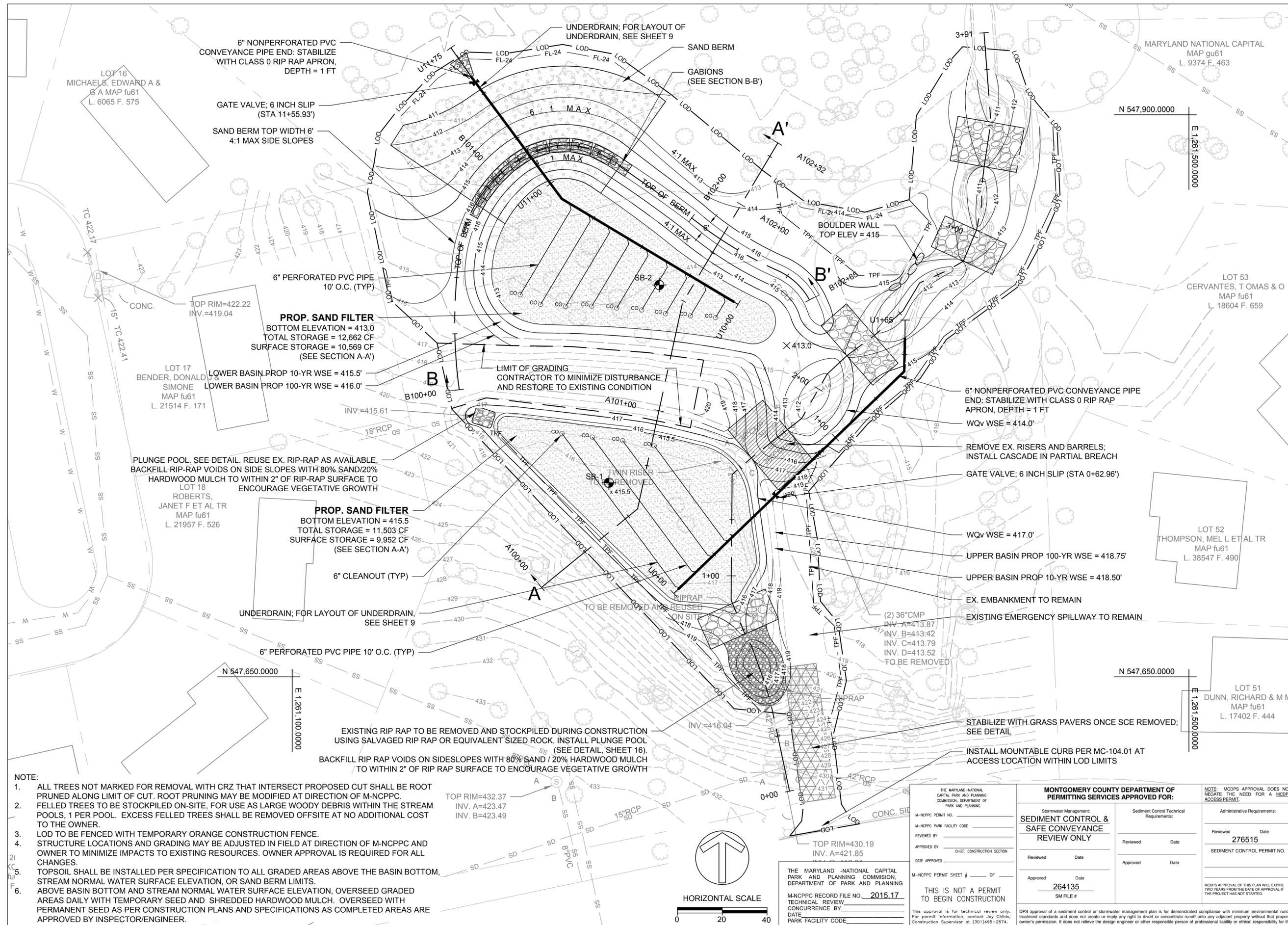
MONTGOMERY COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION - WATER RESOURCES ENGINEERING CONTRACT #8803000101BD - TASK ORDER 16

**EROSION AND SEDIMENT CONTROL PLAN - PHASE 2B**

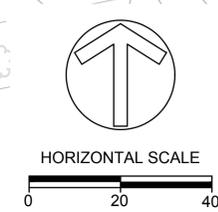
PROJECT NO.: 08041.05 SCALE: 1" = 20'

BY: TB,KT CHECK: BA

DWG. NO.: 7 OF 23



- NOTE:**
- ALL TREES NOT MARKED FOR REMOVAL WITH CRZ THAT INTERSECT PROPOSED CUT SHALL BE ROOT PRUNED ALONG LIMIT OF CUT. ROOT PRUNING MAY BE MODIFIED AT DIRECTION OF M-NCPPC.
  - FELLED TREES TO BE STOCKPILED ON-SITE, FOR USE AS LARGE WOODY DEBRIS WITHIN THE STREAM POOLS, 1 PER POOL. EXCESS FELLED TREES SHALL BE REMOVED OFFSITE AT NO ADDITIONAL COST TO THE OWNER.
  - LOD TO BE FENCED WITH TEMPORARY ORANGE CONSTRUCTION FENCE. STRUCTURE LOCATIONS AND GRADING MAY BE ADJUSTED IN FIELD AT DIRECTION OF M-NCPPC AND OWNER TO MINIMIZE IMPACTS TO EXISTING RESOURCES. OWNER APPROVAL IS REQUIRED FOR ALL CHANGES.
  - TOPSOIL SHALL BE INSTALLED PER SPECIFICATION TO ALL GRADED AREAS ABOVE THE BASIN BOTTOM, STREAM NORMAL WATER SURFACE ELEVATION, OR SAND BERM LIMITS.
  - ABOVE BASIN BOTTOM AND STREAM NORMAL WATER SURFACE ELEVATION, OVERSEED GRADED AREAS DAILY WITH TEMPORARY SEED AND SHREDDED HARDWOOD MULCH. OVERSEED WITH PERMANENT SEED AS PER CONSTRUCTION PLANS AND SPECIFICATIONS AS COMPLETED AREAS ARE APPROVED BY INSPECTOR/ENGINEER.



THE MARYLAND NATIONAL CAPITAL PARK AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING M-NCPPC PERMIT NO. _____ M-NCPPC PARK FACILITY CODE _____ REVIEWED BY _____ APPROVED BY _____ DATE APPROVED _____ M-NCPPC PERMIT SHEET # _____ OF _____		<b>MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:</b> Stormwater Management: <b>SEDIMENT CONTROL &amp; SAFE CONVEYANCE REVIEW ONLY</b> Reviewed Date _____ Approved Date _____ Approved Date <b>264135</b> SM FILE # _____		NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED FOR A MCDPS ACCESS PERMIT. Administrative Requirements: Reviewed Date <b>276515</b> SEDIMENT CONTROL PERMIT NO. _____ MCDPS APPROVAL OF THIS PLAN WILL EXPIRE TWO YEARS FROM THE DATE OF APPROVAL IF THE PROJECT HAS NOT STARTED.	
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 MONTGOMERY COUNTY • MARYLAND

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LICENSE # 45058  
 EXPIRATION DATE: 04/11/2016

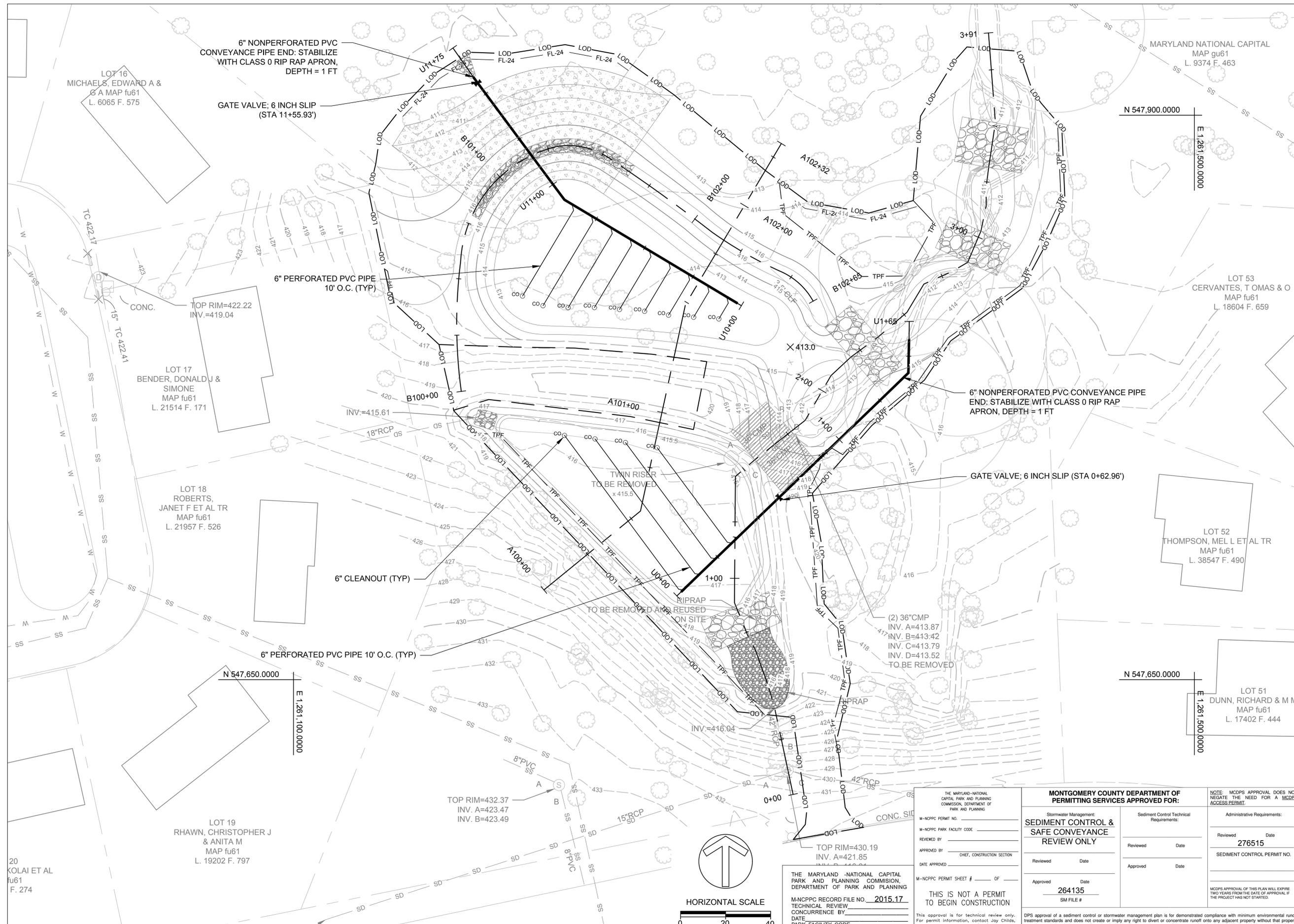
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**QUAIL VALLEY #2 SWM RETROFIT**  
 MNCPPC L 6557 / F 646  
 (DEP SEQ. NO. 35-ASSET 10884)  
**90% DESIGN**

MONTGOMERY COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION - WATER RESOURCES ENGINEERING CONTRACT #8803000101BD - TASK ORDER 16

**PROPOSED CONDITIONS PLAN**

PROJECT NO.:	08041.05	SCALE:	1" = 20'
BY:	TB,KT	CHECK:	BA
DWG. NO.:	8 OF 23		



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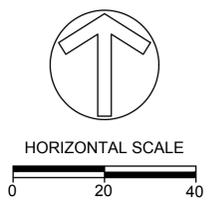
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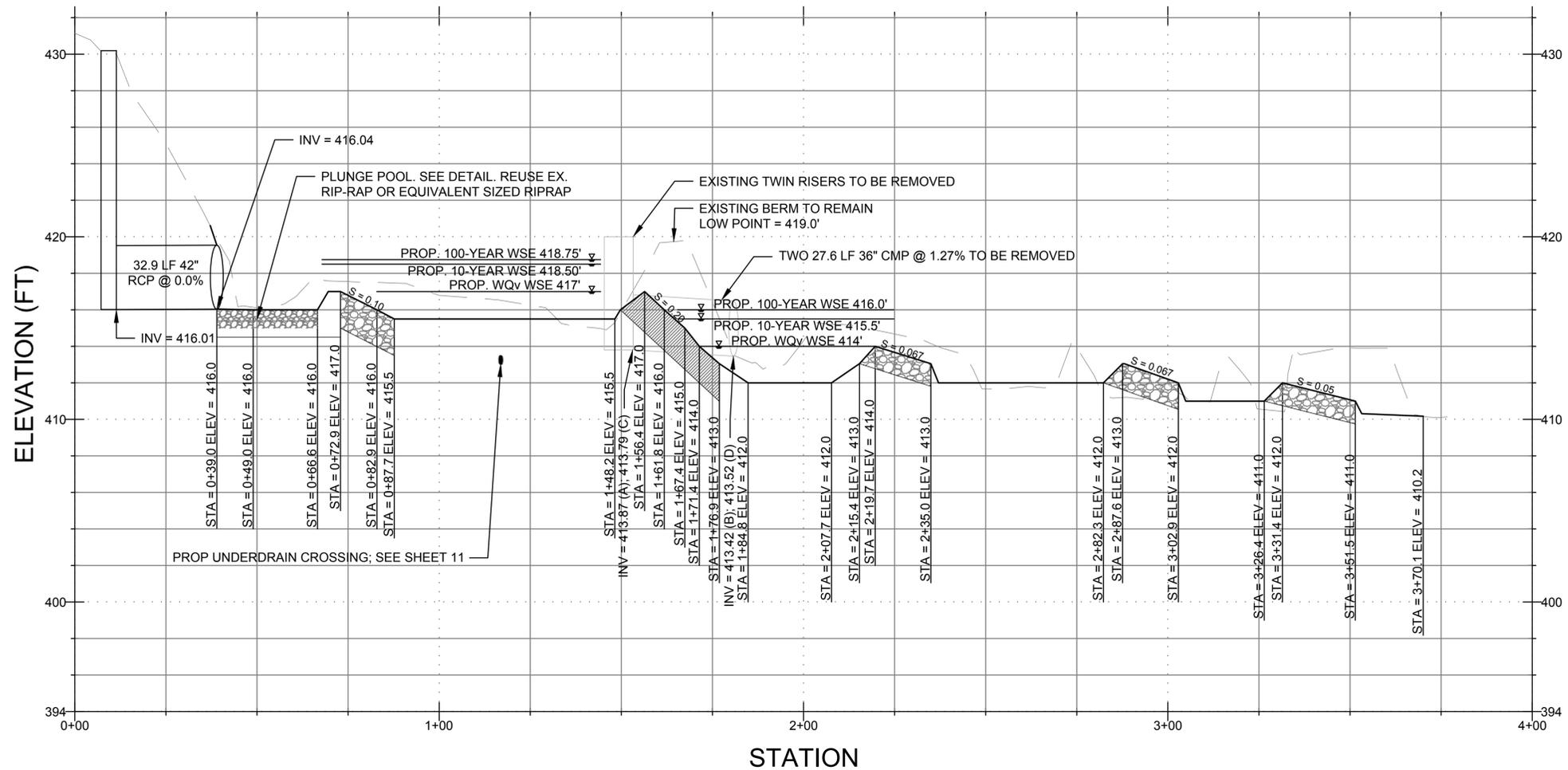
**PROPOSED UNDERDRAIN & GEOMETRY PLAN**

PROJECT NO.:	08041.05	SCALE:	1" = 20'
BY:	TB,KT	CHECK:	BA
DWG. NO.:	9 OF 23		

THE MARYLAND NATIONAL CAPITAL PARK AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING		MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:		NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED FOR A MCDPS ACCESS PERMIT.	
M-NCPPC PERMIT NO.		Stormwater Management:	Sediment Control Technical Requirements:	Administrative Requirements:	
M-NCPPC PARK FACILITY CODE		<b>SEDIMENT CONTROL &amp; SAFE CONVEYANCE REVIEW ONLY</b>	Reviewed _____ Date _____	Reviewed _____ Date _____	276515
REVIEWED BY _____		Approved _____ Date _____	Approved _____ Date _____	SEDIMENT CONTROL PERMIT NO.	
APPROVED BY _____	CHEF, CONSTRUCTION SECTION	Approved _____ Date _____	Approved _____ Date _____		
DATE APPROVED _____		Approved _____ Date _____	Approved _____ Date _____		
M-NCPPC PERMIT SHEET # _____ OF _____		Approved _____ Date _____	Approved _____ Date _____		
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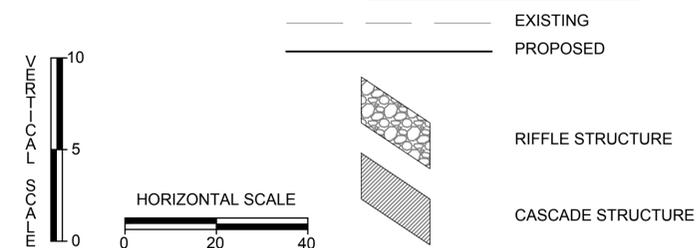


# PROFILE VIEW OF QUAIL VALLEY #2



NOTE: FOR SUBSURFACE MEDIA AND UNDERDRAIN, SEE SHEET 11

## PROFILE LEGEND



THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING M-NCPPC PERMIT NO. _____ M-NCPPC PARK FACILITY CODE _____ REVIEWED BY _____ APPROVED BY _____ CHIEF, CONSTRUCTION SECTION DATE APPROVED _____ M-NCPPC PERMIT SHEET # _____ OF _____	<b>MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:</b> Stormwater Management: <b>SEDIMENT CONTROL &amp; SAFE CONVEYANCE REVIEW ONLY</b> Reviewed Date _____ Approved Date _____ 264135 SM FILE #	NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED FOR A MCDPS ACCESS PERMIT. Administrative Requirements: Reviewed Date _____ 276515 SEDIMENT CONTROL PERMIT NO. _____ MCDPS APPROVAL OF THIS PLAN WILL EXPIRE TWO YEARS FROM THE DATE OF APPROVAL IF THE PROJECT HAS NOT STARTED.
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**DEPARTMENT OF ENVIRONMENTAL PROTECTION**  
 MONTGOMERY COUNTY • MARYLAND

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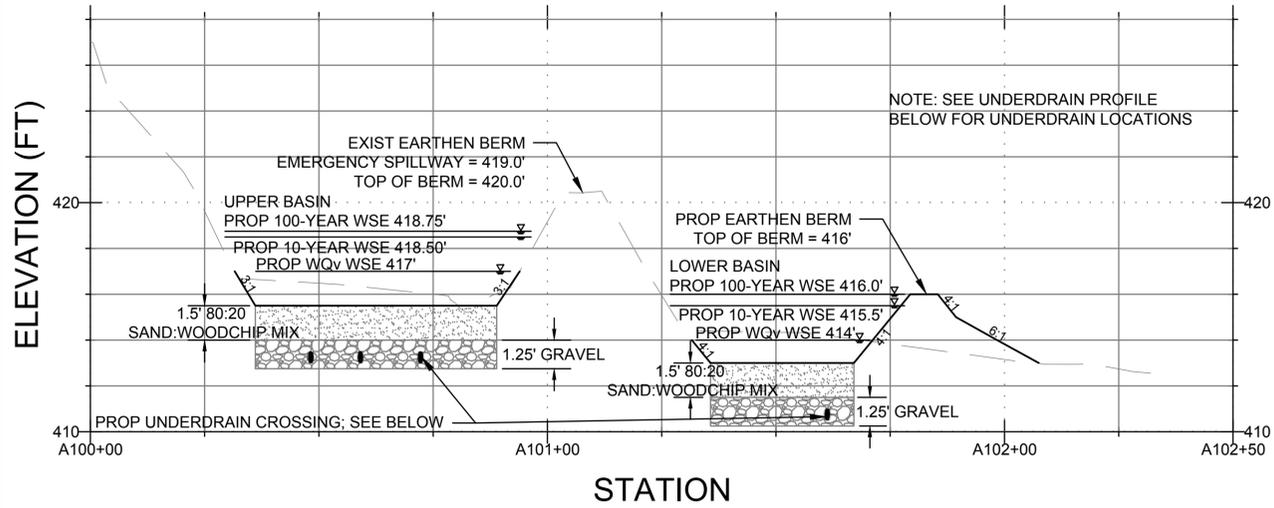
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 MNCPPC L 6557 / F 646  
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MONTGOMERY COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION - WATER RESOURCES ENGINEERING CONTRACT #8803000101BD - TASK ORDER 16

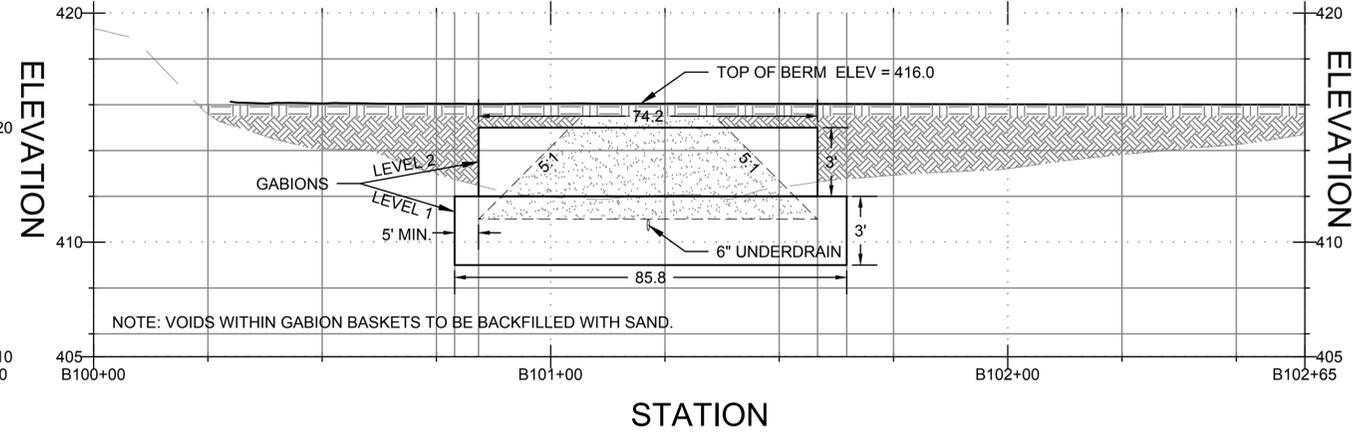
**PROFILES AND STREAM STRUCTURE TABLES**

PROJECT NO.:	08041.05	SCALE:	AS SHOWN
BY:	TB,KT	CHECK:	BA
DWG. NO.:	10 OF 23		

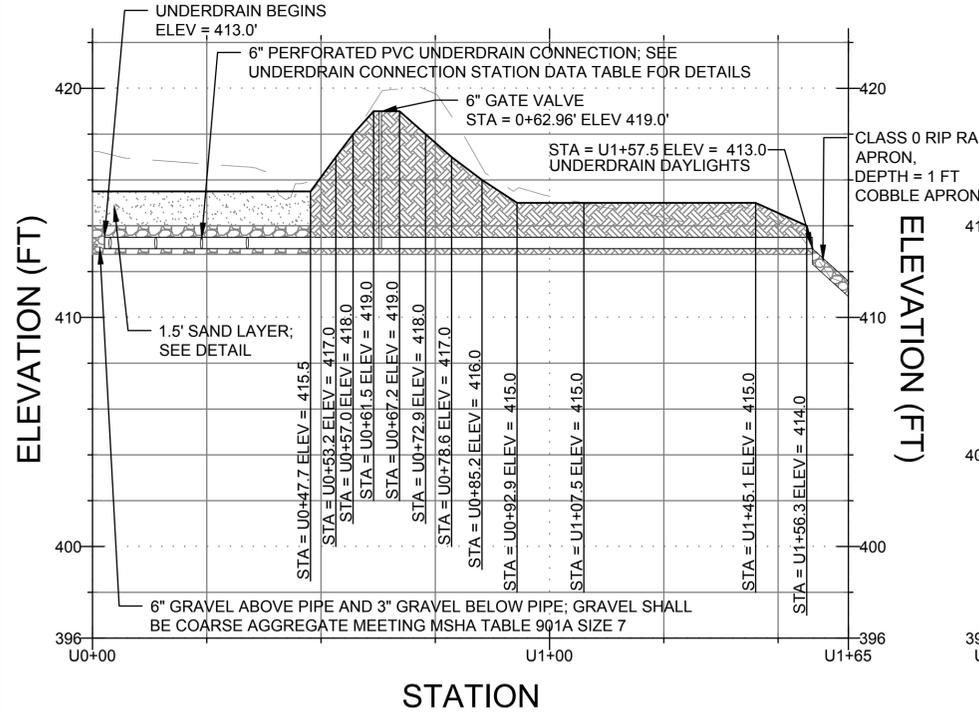
### CROSS SECTION A-A'



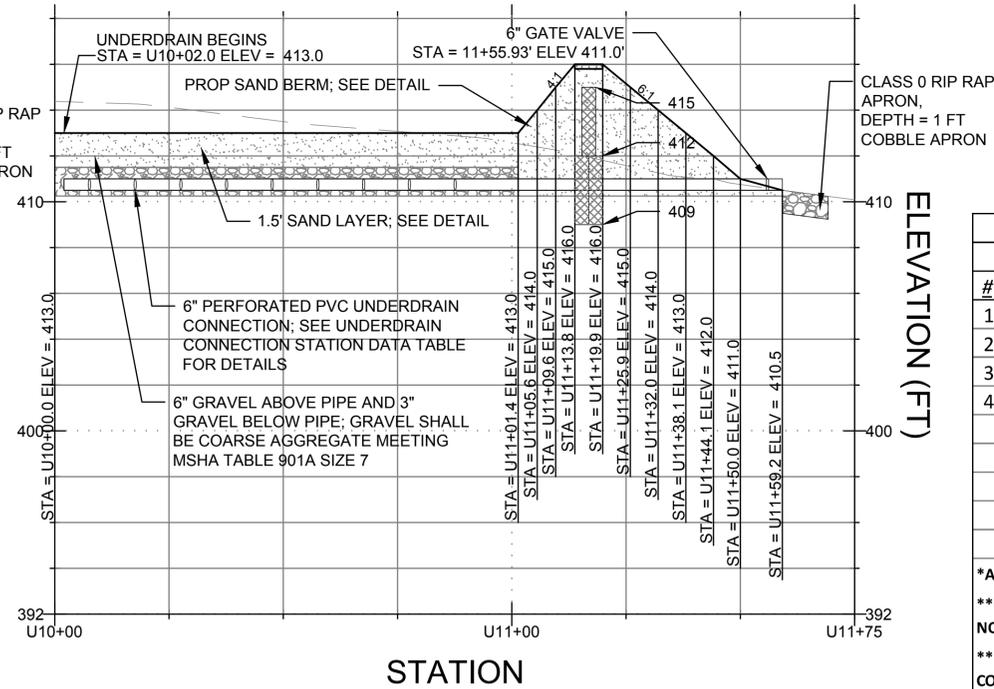
### CROSS SECTION B-B'



### UPPER BASIN UNDERDRAIN PROFILE



### LOWER BASIN UNDERDRAIN PROFILE



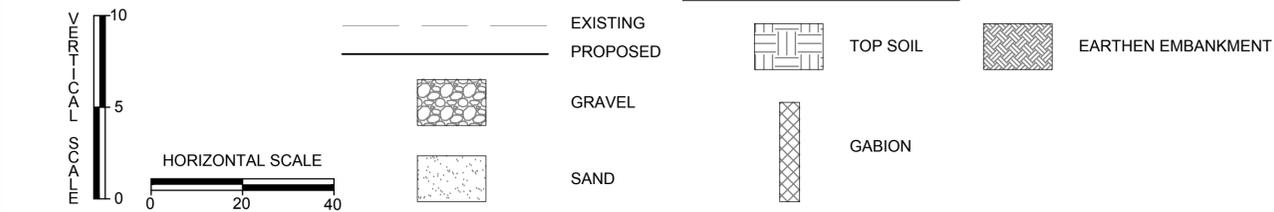
6" PERFORATED PVC UNDERDRAIN CONNECTION STATION DATA					
UPPER BASIN AREA			LOWER BASIN AREA		
#	STATION	LENGTH OF PIPE	#	STATION	LENGTH OF PIPE
1	STA = U0+03.9	85	1	STA = U10+07.6	11
2	STA = U0+13.9	74	2	STA = U10+17.6	16
3	STA = U0+23.9	64	3	STA = U10+27.6	21
4	STA = U0+33.9	52	4	STA = U10+37.6	25
			5	STA = U10+47.6	30
			6	STA = U10+57.6	35
			7	STA = U10+67.6	41
			8	STA = U10+77.6	46
			9	STA = U10+87.6	47

\*ALL 6" PERFORATED PVC UNDERDRAIN PIPES HAVE A 0.0% SLOPE

\*\*6" NONPERFORATED PVC CONVEYANCE PIPE HAS A 0.0% SLOPE UNLESS OTHERWISE NOTED ON PROFILE

\*\*\*ALL 6" PERFORATED PVC UNDERDRAIN PIPES CONNECT TO A 6" NONPERFORATED CONVEYANCE PIPE USING A 45 DEGREE ELBOW PIPE FITTING

### PROFILE LEGEND



THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING

M-NCPPC PERMIT NO. \_\_\_\_\_

M-NCPPC PARK FACILITY CODE \_\_\_\_\_

REVIEWED BY \_\_\_\_\_

APPROVED BY \_\_\_\_\_

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

M-NCPPC PERMIT SHEET # \_\_\_\_\_ OF \_\_\_\_\_

THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING

M-NCPPC RECORD FILE NO. **2015.17**

TECHNICAL REVIEW CONCURRENCE BY \_\_\_\_\_

DATE \_\_\_\_\_

PARK FACILITY CODE \_\_\_\_\_

MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:

Stormwater Management: **SEDIMENT CONTROL & SAFE CONVEYANCE REVIEW ONLY**

Sediment Control Technical Requirements:

Administrative Requirements:

Reviewed Date \_\_\_\_\_

Approved Date \_\_\_\_\_

264135

SM FILE #

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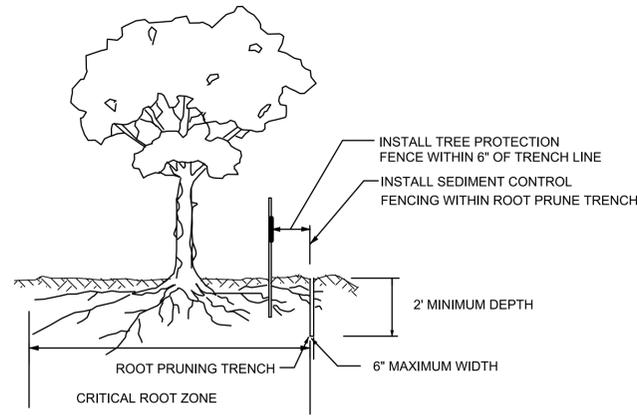
TITLE:

### PROFILES

PROJECT NO.: 08041.05 SCALE: AS SHOWN

BY: TB,KT CHECK: BA

DWG. NO.: 11 OF 23

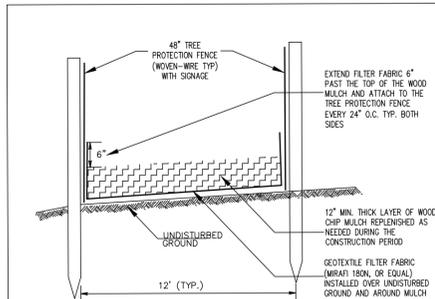


NOTES:

1. RETENTION AREAS TO BE ESTABLISHED AS PART OF THE FOREST CONSERVATION PLAN REVIEW PROCESS.
2. BOUNDARIES OF RETENTION AREAS TO BE STAKED, FLAGGED AND/OR FENCED PRIOR TO TRENCHING.
3. EXACT LOCATION OF TRENCH SHOULD BE IDENTIFIED IN FIELD WITH M-NCPPC.
4. TRENCH SHOULD BE IMMEDIATELY BACKFILLED WITH SOIL REMOVED OR ORGANIC SOIL.
5. ROOTS SHOULD BE CLEANLY CUT USING VIBRATORY KNIFE OR OTHER ACCEPTABLE EQUIPMENT.

ROOT PRUNING

NOT TO SCALE

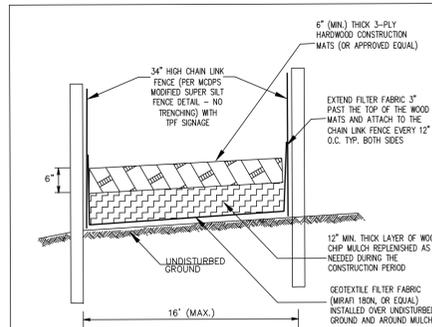


NOTES:

1. ACCESS ROUTES TO BE FIELD LOCATED WITH M-NCPPC AND MCDPS INSPECTORS AT PRE-CONSTRUCTION MEETING.
2. CONTRACTOR SHALL SEQUENCE CONSTRUCTION SUCH THAT NO EQUIPMENT IMPACTS AREA TO BE PROTECTED PRIOR TO MULCH PLACEMENT.
3. FILTER FABRIC SHALL BE A SINGLE PIECE ACROSS WIDTH. OVERLAP FABRIC BY 18" MIN. ALONG LENGTH OF ROUTE.
4. FILTER FABRIC MAY ONLY BE ELIMINATED AT DIRECTION OF M-NCPPC CONSTRUCTION MANAGER/INSPECTOR.
5. CONTRACTOR SHALL MAINTAIN MULCH MAT THROUGHOUT CONSTRUCTION PERIOD.
6. MULCH SHALL BE DISPOSED OF OFF-SITE UNLESS OTHERWISE APPROVED BY M-NCPPC. WHERE MULCH IS TO REMAIN, FILTER FABRIC SHALL BE AN APPROVED BIODEGRADABLE TYPE.

STANDARD DUTY MULCH MAT DETAIL

NOT TO SCALE

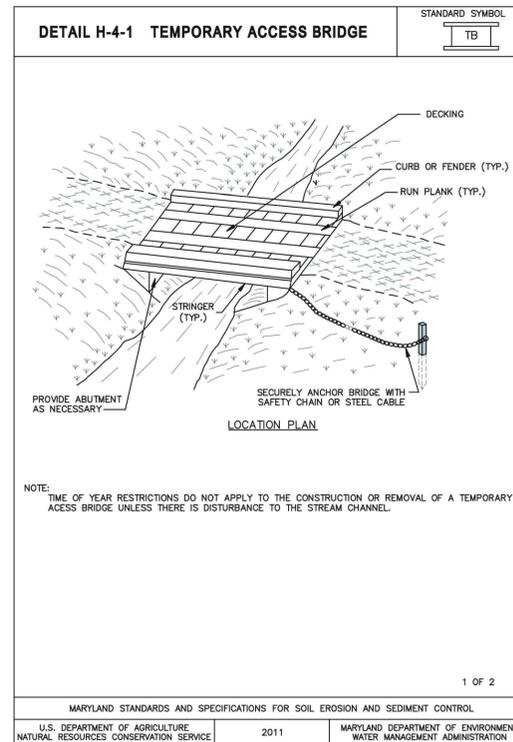


NOTES:

1. ACCESS ROUTES TO BE FIELD LOCATED WITH M-NCPPC AND MCDPS AT PRE-CONSTRUCTION MEETING.
2. CONTRACTOR SHALL SEQUENCE CONSTRUCTION SUCH THAT NO EQUIPMENT IMPACTS AREA TO BE PROTECTED PRIOR TO MULCH PLACEMENT.
3. FILTER FABRIC SHALL BE A SINGLE PIECE ACROSS WIDTH. OVERLAP FABRIC BY 18" MIN. ALONG LENGTH OF ROUTE.
4. FILTER FABRIC MAY ONLY BE ELIMINATED AT DIRECTION OF M-NCPPC ARBORIST.
5. CONTRACTOR SHALL MAINTAIN MULCH MAT THROUGHOUT CONSTRUCTION PERIOD.
6. MULCH SHALL BE DISPOSED OF OFF-SITE UNLESS OTHERWISE APPROVED BY M-NCPPC. WHERE MULCH IS TO REMAIN, FILTER FABRIC SHALL BE AN APPROVED BIODEGRADABLE TYPE.

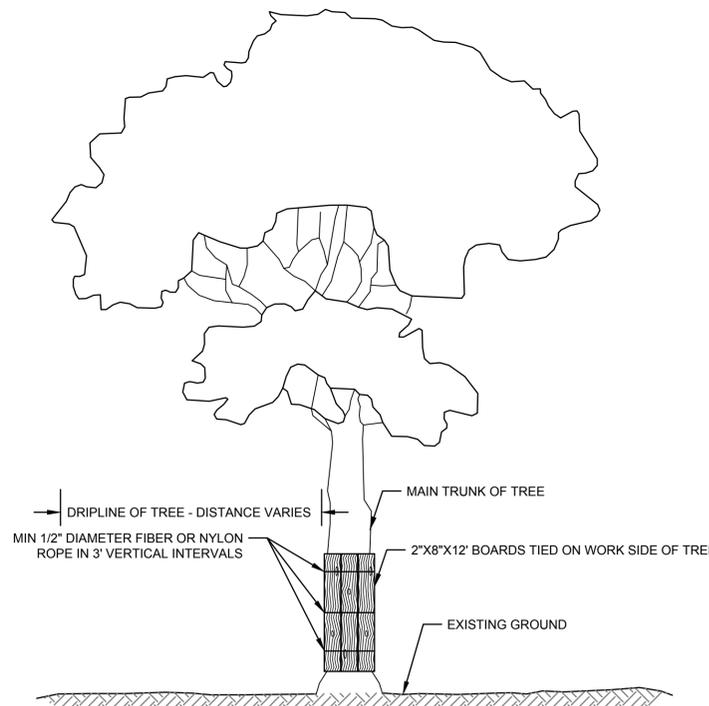
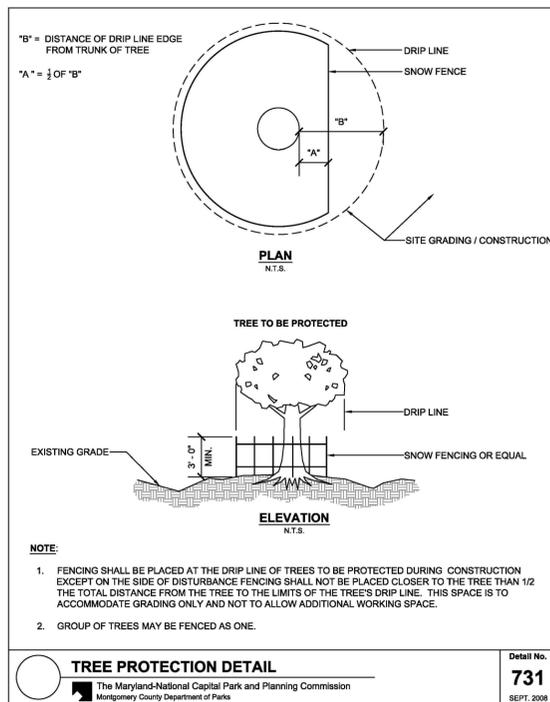
HEAVY DUTY MULCH MAT DETAIL

NOT TO SCALE



TEMPORARY ACCESS BRIDGE

NOT TO SCALE

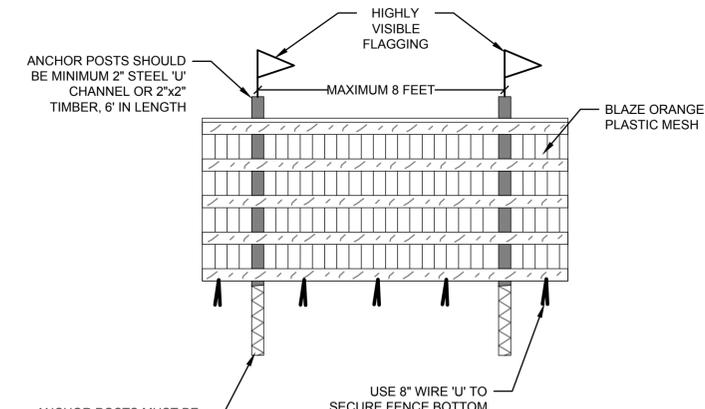


NOTES:

1. TIE SUFFICIENT 2"x8"x12" BOARDS AROUND MAIN TRUNK OF TREE WITH 1/2" DIAMETER ROPE (FIBER OR NYLON) TO PROTECT ALL AREAS EXPOSED TO CONSTRUCTION.
2. INSTALL WIRE EYEBOLTS FIRMLY IN EACH PLANK WHERE FIBER OR NYLON ROPES CROSS OVER PLANKS.
3. WHERE SIGNIFICANT TREE BRANCHES EXIST WHICH PREVENT PLANK INSTALLATION, PLANKING SHALL EXTEND TO THE ELEVATION OF THE LOWEST BRANCH.

TREE TRUNK PROTECTION

NOT TO SCALE



NOTES:

1. PROTECTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
2. BOUNDARIES OF PROTECTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICES.
3. DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION.

TEMP ORANGE CONSTRUCTION FENCE

NOT TO SCALE

THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING M-NCPPC PERMIT NO. _____ M-NCPPC PARK FACILITY CODE _____ REVIEWED BY _____ APPROVED BY _____ CHIEF, CONSTRUCTION SECTION DATE APPROVED _____ M-NCPPC PERMIT SHEET # _____ OF _____		<b>MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:</b> Stormwater Management: <b>SEDIMENT CONTROL &amp; SAFE CONVEYANCE REVIEW ONLY</b> Reviewed Date _____ Approved Date _____ 264135 SM FILE # _____		NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED FOR A MCDPS ACCESS PERMIT. Administrative Requirements: Reviewed Date _____ 276515 SEDIMENT CONTROL PERMIT NO. _____ MCDPS APPROVAL OF THIS PLAN WILL EXPIRE TWO YEARS FROM THE DATE OF APPROVAL IF THE PROJECT HAS NOT STARTED.	
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THIS IS NOT A PERMIT TO BEGIN CONSTRUCTION

This approval is for technical review only. For permit information, contact Joy Childs, Construction Supervisor, at (301)495-2574.

DPS approval of a sediment control or stormwater management plan is for demonstrated compliance with minimum environmental runoff treatment standards and does not create or imply any right to divert or concentrate runoff onto any adjacent property without that property owner's permission. It does not relieve the design engineer or other responsible person of professional liability or ethical responsibility for the adequacy of the drainage design as it affects uphill or downhill properties.

CLIENT

MR. CRAIG CARSON  
MONTGOMERY COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION  
255 ROCKVILLE PIKE, SUITE 120  
ROCKVILLE, MD 20850  
(240) 777-7713



DEPARTMENT OF ENVIRONMENTAL PROTECTION  
MONTGOMERY COUNTY • MARYLAND

DATE:	ISSUES / REVISIONS
3/10/2015	60% DESIGN
1/29/2016	90% DESIGN

MISS UTILITY  
CALL "MISS UTILITY" AT 1-800-257-7777, 48 HOURS PRIOR TO THE START OF WORK. THE EXCAVATOR MUST NOTIFY ALL PUBLIC UTILITY COMPANIES WITH UNDERGROUND FACILITIES LOCATED BY THE UTILITY COMPANIES PRIOR TO COMMENCING EXCAVATION. THE EXCAVATOR IS RESPONSIBLE FOR COMPLIANCE WITH REQUIREMENTS OF CHAPTER 36A OF THE MONTGOMERY COUNTY CODE.



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

LICENSE #: 45058  
EXPIRATION DATE: 04/11/2016

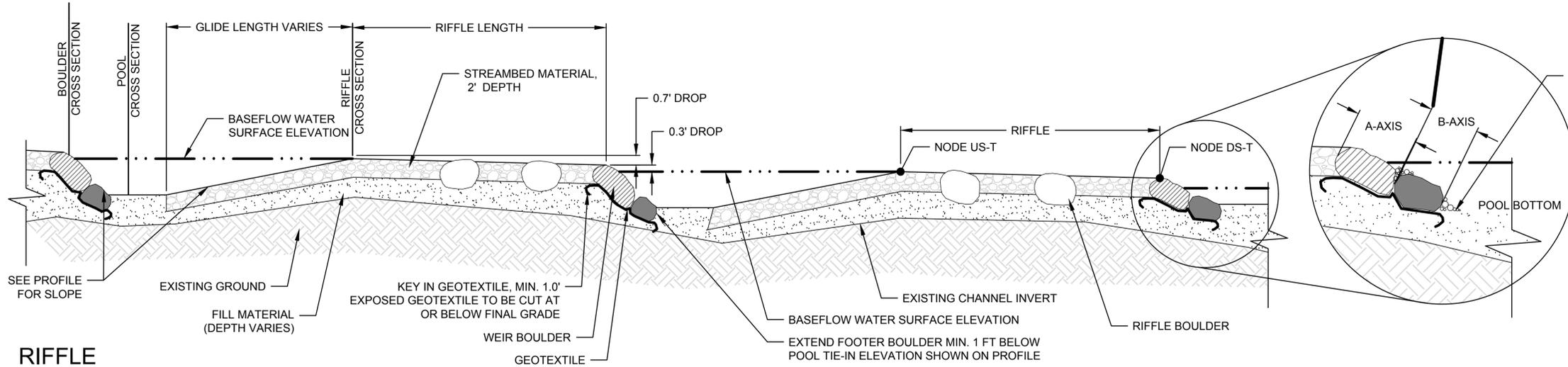
The Stables Building 2081 Clipper Park Road  
Baltimore, MD 21211 / ph: 410.554.0156  
fx: 410.554.0168 / www.biohabitats.com  
Restore the Earth & Inspire Ecological Stewardship

QUAIL VALLEY #2  
SWM RETROFIT  
MNCPPC L 6557 / F 646  
(DEP SEQ. NO. 35-ASSET 10884)  
90% DESIGN

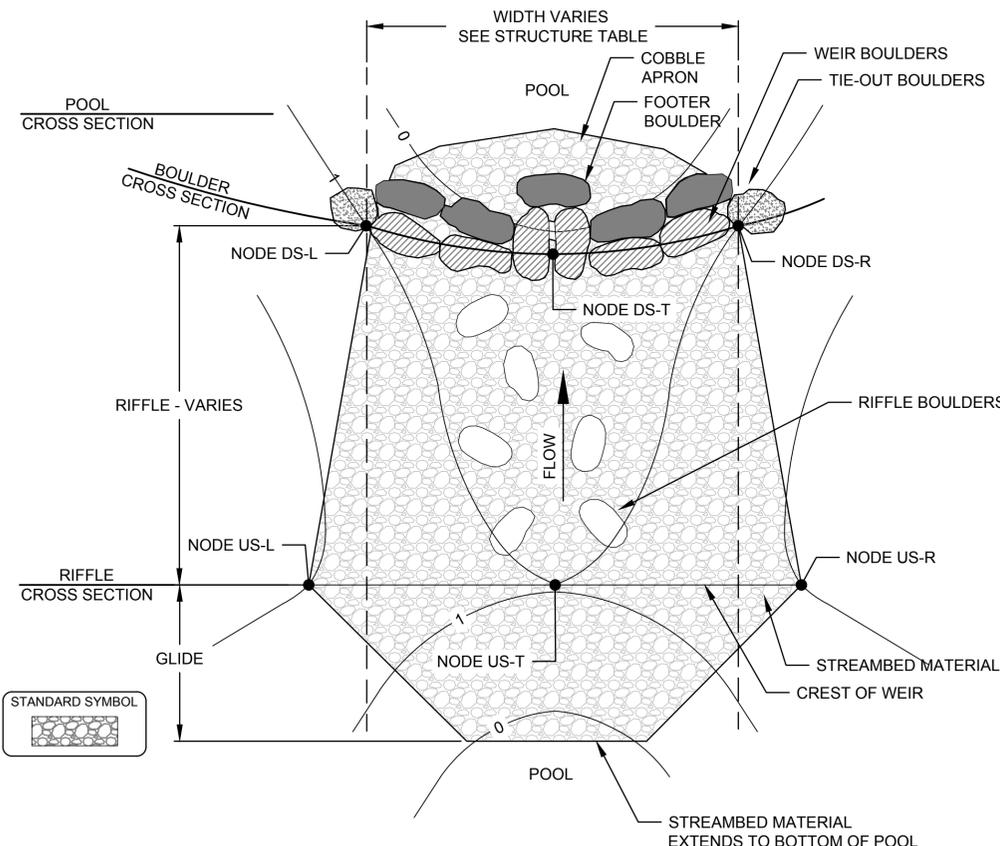
MONTGOMERY COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION - WATER RESOURCES ENGINEERING CONTRACT #8803000101BD - TASK ORDER 16

TITLE:	
PROJECT NO.:	SCALE: N.T.S.
08041.05	
BY: TB,KT	CHECK: BA
DWG. NO.:	

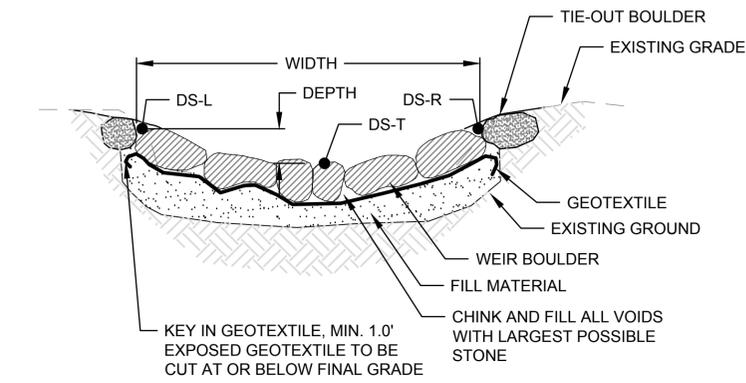
DETAILS



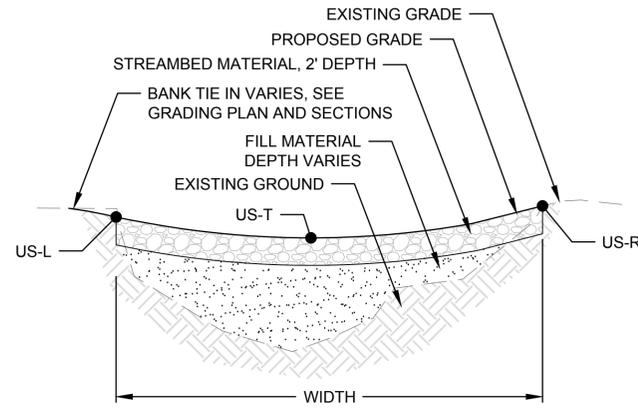
**RIFFLE PROFILE INDEX**



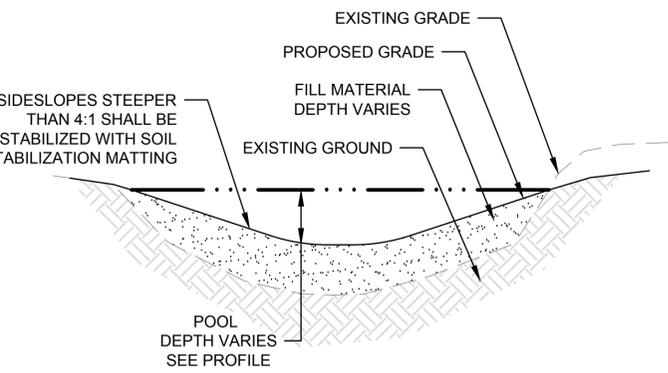
**RIFFLE PLAN VIEW** NOT TO SCALE



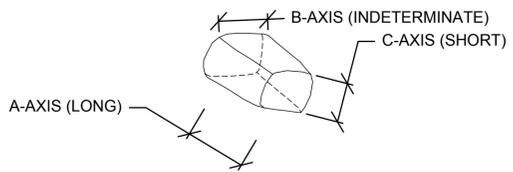
**RIFFLE BOULDER CROSS SECTION** NOT TO SCALE



**RIFFLE RIFFLE CROSS SECTION** NOT TO SCALE



**RIFFLE POOL CROSS SECTION** NOT TO SCALE



**BOULDER AXIS**

SANDSTONE BOULDER DIMENSIONS (FT)			
	A-AXIS	B-AXIS	C-AXIS
WEIR	3-4	2-3	1.5-2
FOOTER	3-4	2-3	1.5-2
TIE-OUT	3-4	2-3	1.5-2
RIFFLE	2-3	1-2	1-2

STREAMBED MATERIAL GRADATION TABLE			
GRADATION TABLE	COBBLE (50% ROUNDED/ 50% ANGULAR)	GRAVEL	
	RIFFLE 414' AT 2+20	RIFFLE 413' AT 2+88	ALL RIFFLES
	RIFFLE 412' AT 3+31		
CUMULATIVE % FINER	SIZE (IN)	SIZE (IN)	SIZE (IN)
0	1.0	1.0	1/4
16	3.0	2.0	X
35	6.0	5.0	1/2
50	9.0	7.0	1
84	12.0	10.0	2
100	18.0	14.0	3

NOTE: SALVAGED STREAMBED MATERIAL OR IMPORTED GRAVEL SHALL BE WASHED INTO COBBLE IN 6" LIFTS AT AN APPROXIMATE RATIO OF 70% COBBLE TO 25% GRAVEL

- RIFFLE NOTES:**
- SEE TYPICAL SECTIONS FOR DEPTH AND WIDTH AT BOULDER CROSS SECTION.
  - TIE-OUT BOULDER SHALL EXTEND PAST THE CORNER NODES DS-R & DS-L A MINIMUM OF ONE BOULDER LENGTH (B-AXIS) INTO EXISTING BANK. WHERE THIS CONFLICTS WITH EXISTING TREE ROOTS, BEDROCK, OR UTILITIES, TIE-OUT BOULDER MAY BE ELIMINATED OR ADJUSTED AT DIRECTION OF ENGINEER.
  - SEE GRADING PLAN AND STRUCTURE TABLES FOR NODE LOCATIONS AND ELEVATIONS DEFINING FOOTPRINT OF COBBLE RIFFLE. GLIDE LIMITS ARE SHOWN ON PROFILE.
  - COBBLE RIFFLE BOULDERS SHALL BE INCORPORATED IN A RANDOM PLACEMENT WITHIN FOOTPRINT OF RIFFLE TO COVER APPROXIMATELY 25% OF THE RIFFLE SURFACE AREA. TOP OF RIFFLE BOULDERS SHALL EXTEND A MAXIMUM OF 2" ABOVE COBBLE SURFACE.
  - LARGE WOODY DEBRIS SHALL BE INSTALLED IN POOLS AS SHOWN ON GRADING PLAN, OR AS DIRECTED BY THE ENGINEER.
  - NUMBER OF BOULDERS VARIES DEPENDING ON TYPICAL SECTIONS AND BOULDER DIMENSIONS
  - CONTRACTOR SHALL SALVAGE EXISTING STREAM MATERIAL AND INSTALL AS WASH-IN MATERIAL FOR EACH RIFFLE AT DIRECTION OF ENGINEER. FOLLOWING INSTALLATION TO FINAL GRADES, 6" OF SALVAGED STREAMBED MATERIAL SHALL BE WASHED IN ACROSS THE FACE OF THE RIFFLE.
  - BOTH OUTER THIRDS OF RIFFLE SURFACE AREA TO BE COVERED WITH 3" OF BLOWN COMPOST, INCORPORATED INTO THE VOIDS.

THE MARYLAND NATIONAL CAPITAL PARK AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING

M-NCPPC PERMIT NO. \_\_\_\_\_

M-NCPPC PARK FACILITY CODE \_\_\_\_\_

REVIEWED BY \_\_\_\_\_

APPROVED BY \_\_\_\_\_

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

M-NCPPC PERMIT SHEET # \_\_\_\_\_ OF \_\_\_\_\_

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

Stormwater Management: **SEDIMENT CONTROL & SAFE CONVEYANCE REVIEW ONLY**

Reviewed Date \_\_\_\_\_

Approved Date \_\_\_\_\_

264135  
SM FILE #

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

Administrative Requirements:

Reviewed Date **276515**

SEDIMENT CONTROL PERMIT NO. \_\_\_\_\_

MCDPS APPROVAL OF THIS PLAN WILL EXPIRE TWO YEARS FROM THE DATE OF APPROVAL IF THE PROJECT HAS NOT STARTED.

**THIS IS NOT A PERMIT TO BEGIN CONSTRUCTION**

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**CLIENT**

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MONTGOMERY COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION  
255 ROCKVILLE PIKE, SUITE 120  
ROCKVILLE, MD 20850  
(240) 777-7713

**DEPARTMENT OF ENVIRONMENTAL PROTECTION**  
MONTGOMERY COUNTY • MARYLAND

DATE:	ISSUES / REVISIONS
3/10/2015	60% DESIGN
1/29/2016	90% DESIGN

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SEAL:

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LICENSE # : 45058  
EXPIRATION DATE: 04/11/2016

**Biohabitats**

The Stables Building, 2081 Clipper Park Road  
Baltimore, MD 21211 / ph: 410.554.0156  
fx: 410.554.0168 / www.biohabitats.com  
*Restore the Earth & Inspire Ecological Stewardship*

**QUAIL VALLEY #2  
SWM RETROFIT**  
MNCPPC L 6557 / F 646  
(DEP SEQ. NO. 35-ASSET 10884)  
**90% DESIGN**

MONTGOMERY COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION - WATER RESOURCES ENGINEERING CONTRACT #8803000101BD - TASK ORDER 16

**DETAILS**

PROJECT NO.:	08041.05	SCALE:	N.T.S.
BY:	TB,KT	CHECK:	BA
DWG. NO.:	<b>13 OF 23</b>		

**CLIENT**

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**DEPARTMENT OF ENVIRONMENTAL PROTECTION**  
MONTGOMERY COUNTY • MARYLAND

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TITLE:

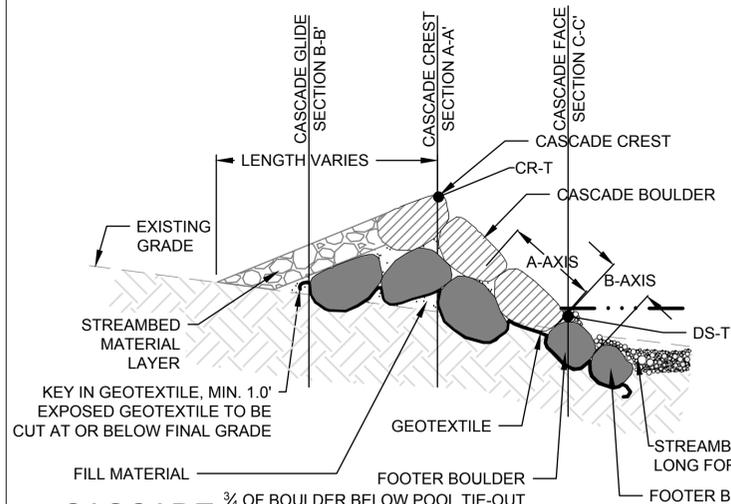
**DETAILS**

PROJECT NO.: 08041.05 SCALE: N.T.S.

BY: TB,KT CHECK: BA

DWG. NO.:

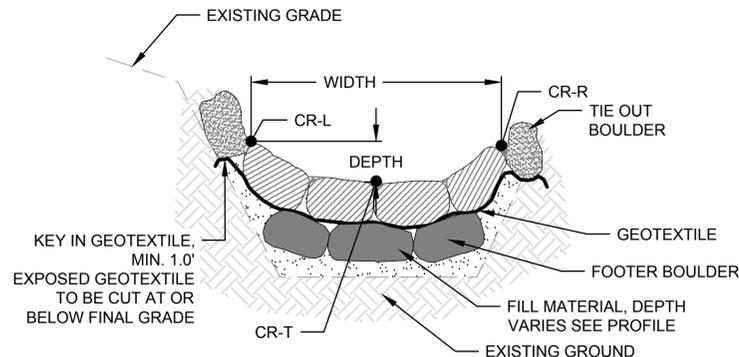
14 OF 23



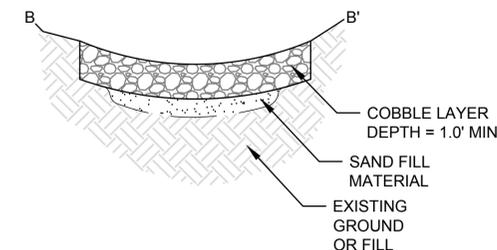
**NOTES**

- GAPS BETWEEN BOULDERS SHALL BE CHINKED WITH STREAMBED MATERIAL. TYPICALLY, CASCADe BOULDER A-AXIS WILL BE ORIENTED IN DIRECTION OF FLOW; FOOTER BOULDERS A-AXIS WILL BE ORIENTED PERPENDICULAR TO FLOW.
- SEE SPECIFICATIONS FOR STREAMBED MATERIAL SIZE AND DEPTH.
- PARABOLIC CROSS SECTION SHAPE SHALL BE MAINTAINED ACROSS ENTIRE CASCADe LENGTH.

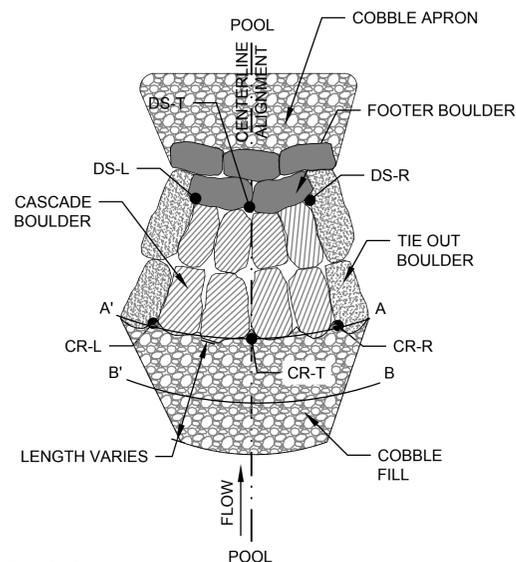
**CASCADe CENTERLINE PROFILE**  
3/4 OF BOULDER BELOW POOL TIE-OUT ELEVATION SHOWN ON PROFILE  
NOT TO SCALE



**CASCADe CREST SECTION A-A'**  
NOT TO SCALE



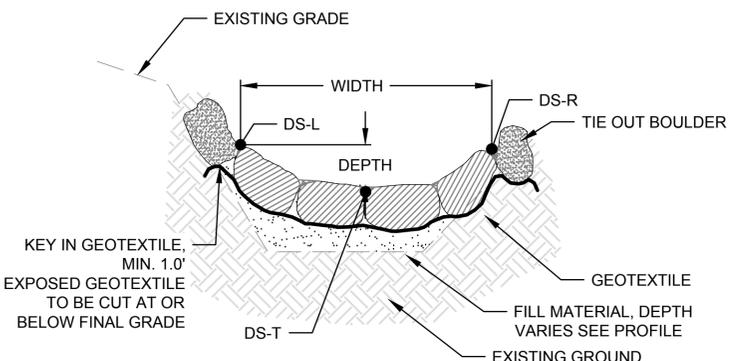
**COBBLE GLIDE SECTION B-B'**  
NOT TO SCALE



**NOTES**

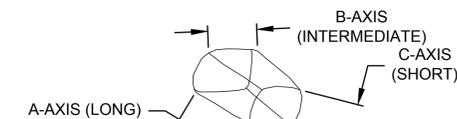
- GAPS BETWEEN BOULDERS SHALL BE CHINKED WITH COBBLE.
- TYPICALLY, CASCADe BOULDER A-AXIS WILL BE ORIENTED IN DIRECTION OF FLOW AND FOOTER BOULDER A-AXIS WILL BE ORIENTED PERPENDICULAR TO FLOW.
- COBBLE D<sub>50</sub> = 6"
- DEPTH OF COBBLE = 1.0'
- SEE TYPICAL SECTION FOR DEPTH AND WIDTH AT CASCADe CREST.
- FILL MATERIAL SHALL BE SAND/MULCH MIX, 80% SAND AND 20% WOOD CHIPS.
- TYPICAL SECTION TO BE APPLIED THROUGHOUT LENGTH OF CASCADe.

**CASCADe PLAN VIEW**  
NOT TO SCALE

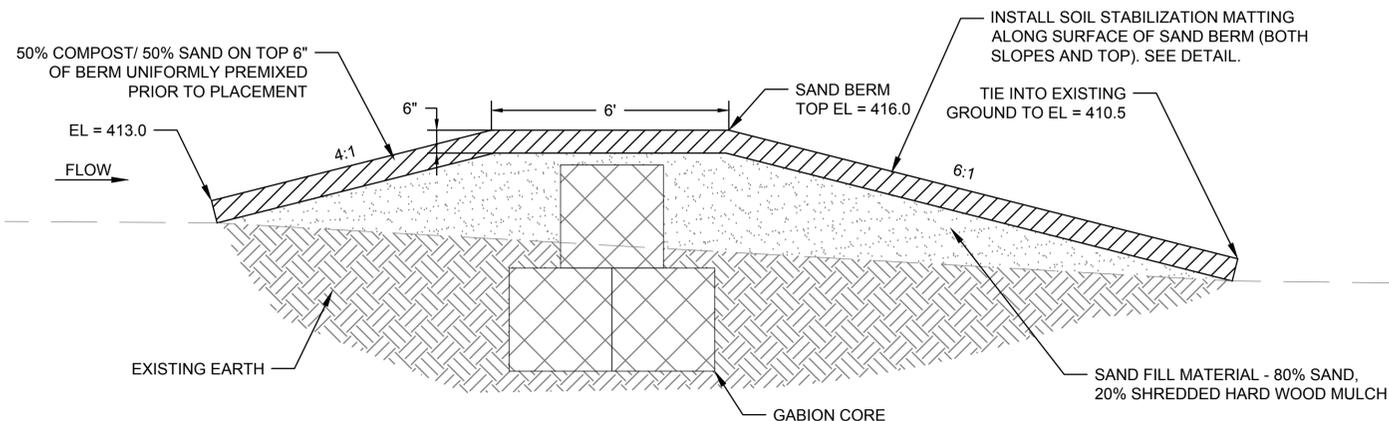


**CASCADe FACE SECTION C-C'**  
NOT TO SCALE

BOULDER DIMENSIONS (FT)			
	A-AXIS	B-AXIS	C-AXIS
CASCADe	3-4'	2-3'	1.5-2'
FOOTER	3-4'	2-3'	1.5-2'
TIE-OUT	3-4'	2-3'	1.5-2'



**BOULDER AXIS**  
NOT TO SCALE



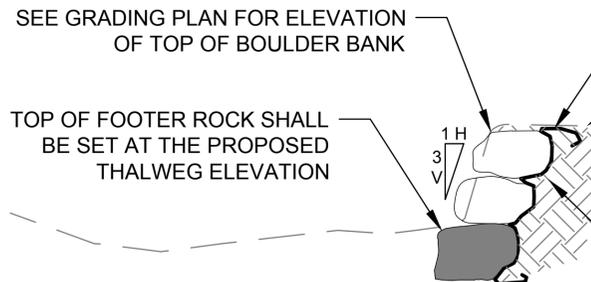
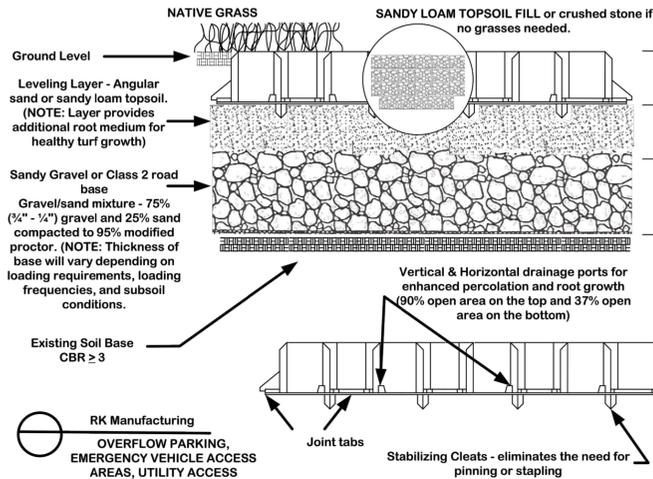
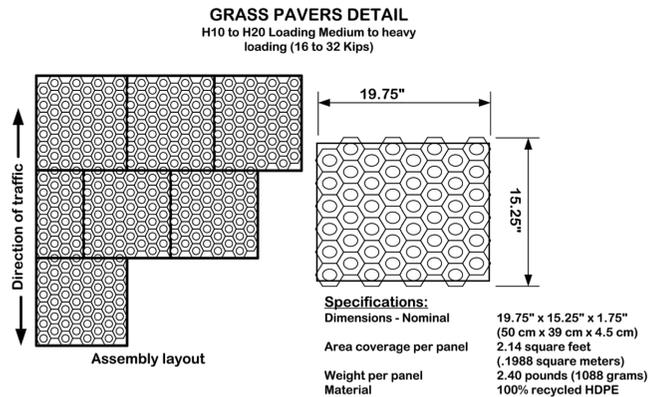
**SAND SEEPAGE BERM CROSS SECTION**  
NOT TO SCALE

MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:		NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED FOR A MCDPS ACCESS PERMIT.	
M-NCPCC PERMIT NO. _____	Stormwater Management: <b>SEDIMENT CONTROL &amp; SAFE CONVEYANCE REVIEW ONLY</b>	Sediment Control Technical Requirements:	Administrative Requirements:
M-NCPCC PARK FACILITY CODE _____	Reviewed: _____ Date _____	Reviewed: _____ Date _____	Reviewed: _____ Date _____
REVIEWED BY: _____	APPROVED BY: _____	Approved: _____ Date _____	Approved: _____ Date _____
DATE APPROVED: _____	DATE: _____	Approved: _____ Date _____	Approved: _____ Date _____
M-NCPCC PERMIT SHEET # _____ OF _____	Approved: _____ Date _____	Approved: _____ Date _____	Approved: _____ Date _____
THIS IS NOT A PERMIT TO BEGIN CONSTRUCTION	264135	Approved: _____ Date _____	Approved: _____ Date _____
SM FILE # _____	SM FILE # _____	Approved: _____ Date _____	Approved: _____ Date _____

THE MARYLAND -NATIONAL CAPITAL PARK AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING  
M-NCPCC RECORD FILE NO. **2015.17**  
TECHNICAL REVIEW  
CONCURRENCE BY: \_\_\_\_\_  
DATE: \_\_\_\_\_  
PARK FACILITY CODE: \_\_\_\_\_

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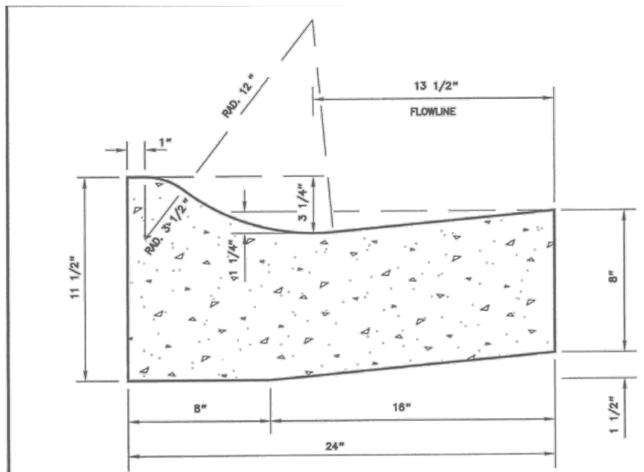
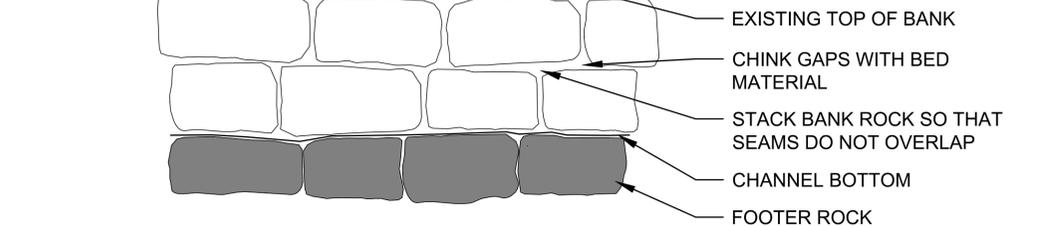


## IMBRICATED BOULDER WALL PROFILE - TYPICAL

NOT TO SCALE

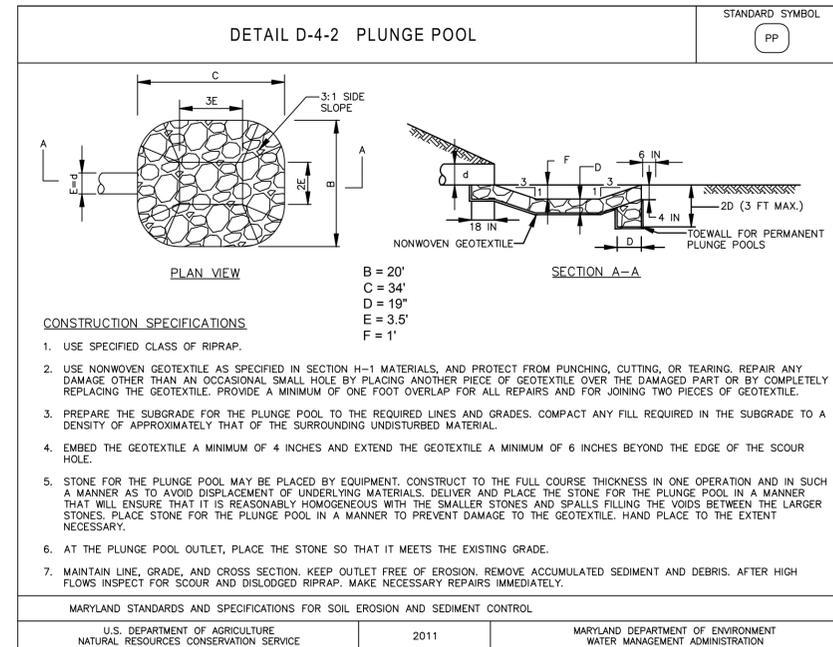
## IMBRICATED BOULDER WALL CROSS SECTION - TYPICAL

NOT TO SCALE



- ### GENERAL NOTES
- REFER TO MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION SPECIFICATIONS FOR MATERIALS, METHODS OF CONSTRUCTION, AND EXPANSION JOINT LOCATIONS.
  - MOUNTABLE CURB SHALL ONLY BE USED ON TERTIARY STREETS OR ON SECONDARY RESIDENTIAL CUL-DE-SACS 500 FEET OR LESS IN LENGTH, MEASURED FROM THE LAST INTERSECTING STREET.
  - WHENEVER STANDARD MC-100.01 IS USED IN CONJUNCTION WITH THIS STANDARD, A TEN FOOT TRANSITION SHALL BE PROVIDED FROM STANDARD MC-104.01 TO STANDARD MC-100.01 FOR CURB RETURNS AND CURB SECTIONS WHICH INCLUDE INLETS.
  - TRANSITION BETWEEN STANDARD MC-104.01 AND MC-100.01 OR MC-101.01 SHALL BE ACCOMPLISHED HOLDING THE FLOW LINE SLOPE CONSTANT.
  - THE STANDARD DISTANCE BETWEEN JOINTS SHALL BE TEN FEET (MAXIMUM AND MINIMUM DISTANCES SHALL BE THIRTEEN FEET AND FIVE FEET RESPECTIVELY).
  - EXPANSION JOINT MATERIAL SHALL BE 1/2 INCH PREFORMED CORK, TRIMMED AND SEALED WITH NON-STAINING TWO-COMPONENT POLYSULFIDE OR POLYURETHANE ELASTOMERIC TYPE SEALANT COMPLYING WITH ASTM-C920.

APPROVED	14 APR 06	DATE	REVISD	ASTM-C920	4/2006	MONTGOMERY COUNTY DEPARTMENT OF PUBLIC WORKS & TRANSPORTATION
 DIRECTOR, DEPT. OF PUBLIC WORKS & TRANSPORTATION						STANDARD NO. MC-104.01

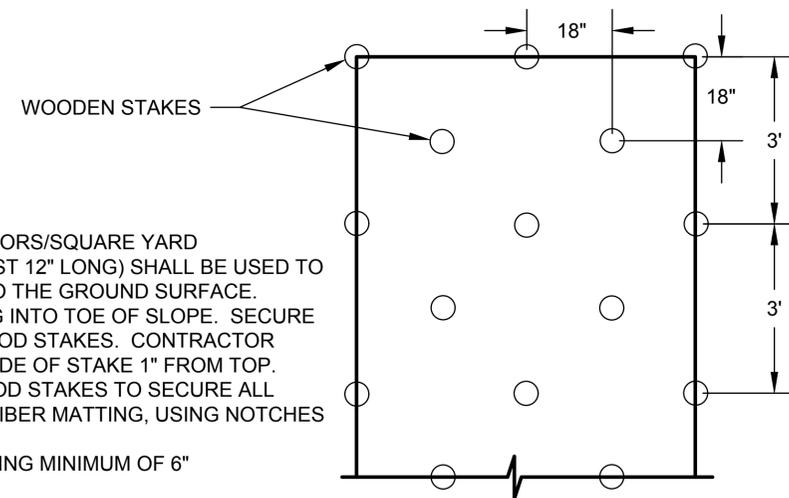


### NOTES:

- ANCHOR PATTERN 2 ANCHORS/SQUARE YARD
- WOODEN STAKES (AT LEAST 12" LONG) SHALL BE USED TO ANCHOR COIR MATTING TO THE GROUND SURFACE.
- KEY WOOD FIBER MATTING INTO TOE OF SLOPE. SECURE WITH 2" X 2" X 12" HARDWOOD STAKES. CONTRACTOR SHALL CUT NOTCH INTO SIDE OF STAKE 1" FROM TOP.
- USE 2" X 2" X 12" HARDWOOD STAKES TO SECURE ALL OTHER AREAS OF WOOD FIBER MATTING, USING NOTCHES AS IN #3
- OVERLAP EDGES OF MATTING MINIMUM OF 6"

## SOIL STABILIZATION MATTING PLAN VIEW-TYPICAL

NOT TO SCALE



## CLIENT

MR. CRAIG CARSON  
 MONTGOMERY COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION  
 255 ROCKVILLE PIKE, SUITE 120  
 ROCKVILLE, MD 20850  
 (240) 777-7713

## DEPARTMENT OF ENVIRONMENTAL PROTECTION

MONTGOMERY COUNTY • MARYLAND

DATE:	ISSUES / REVISIONS
3/10/2015	60% DESIGN
1/29/2016	90% DESIGN

### MISS UTILITY

CALL "MISS UTILITY" AT 1-800-257-7777, 48 HOURS PRIOR TO THE START OF WORK. THE EXCAVATOR MUST NOTIFY ALL PUBLIC UTILITY COMPANIES WITH UNDERGROUND FACILITIES LOCATED BY THE UTILITY COMPANIES PRIOR TO COMMENCING EXCAVATION. THE EXCAVATOR IS RESPONSIBLE FOR COMPLIANCE WITH REQUIREMENTS OF CHAPTER 36A OF THE MONTGOMERY COUNTY CODE.

SEAL:

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

LICENSE #: 45058  
 EXPIRATION DATE: 04/11/2016

The Stables Building, 2081 Clipper Park Road  
 Baltimore, MD 21211 / ph: 410.554.0156  
 fx: 410.554.0168 / www.biohabitats.com  
 Restore the Earth & Inspire Ecological Stewardship

## QUAIL VALLEY #2 SWM RETROFIT

MNCPPC L 6557 / F 646  
 (DEP SEQ. NO. 35-ASSET 10884)  
 90% DESIGN

MONTGOMERY COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION - WATER RESOURCES ENGINEERING CONTRACT #8803000101BD - TASK ORDER 16

TITLE:

## DETAILS

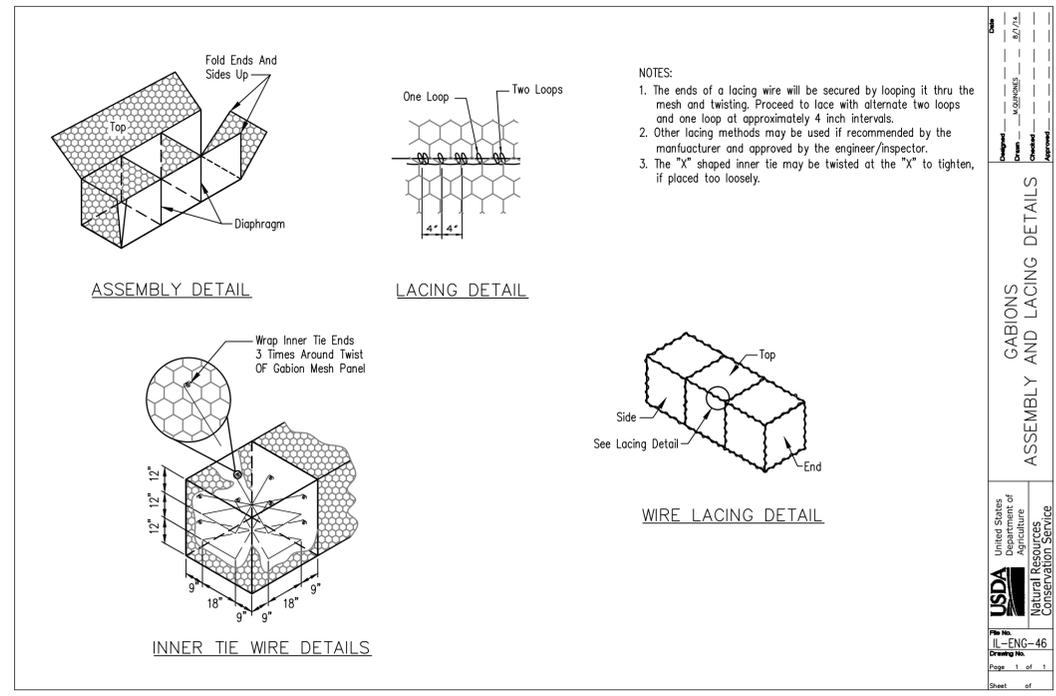
PROJECT NO.:	08041.05	SCALE:	N.T.S.
BY:	TB,KT	CHECK:	BA
DWG. NO.:			

THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING M-NCPPC PERMIT NO. _____ M-NCPPC PARK FACILITY CODE _____ REVIEWED BY _____ APPROVED BY _____ CHIEF, CONSTRUCTION SECTION DATE APPROVED _____ M-NCPPC PERMIT SHEET # _____ OF _____	<b>MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:</b> Stormwater Management: <b>SEDIMENT CONTROL &amp; SAFE CONVEYANCE REVIEW ONLY</b> Reviewed Date _____ Approved Date _____ 264135 SM FILE # _____	NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED FOR A MCDPS ACCESS PERMIT. Administrative Requirements: Reviewed Date _____ 276515 SEDIMENT CONTROL PERMIT NO. _____ MCDPS APPROVAL OF THIS PLAN WILL EXPIRE TWO YEARS FROM THE DATE OF APPROVAL IF THE PROJECT HAS NOT STARTED.
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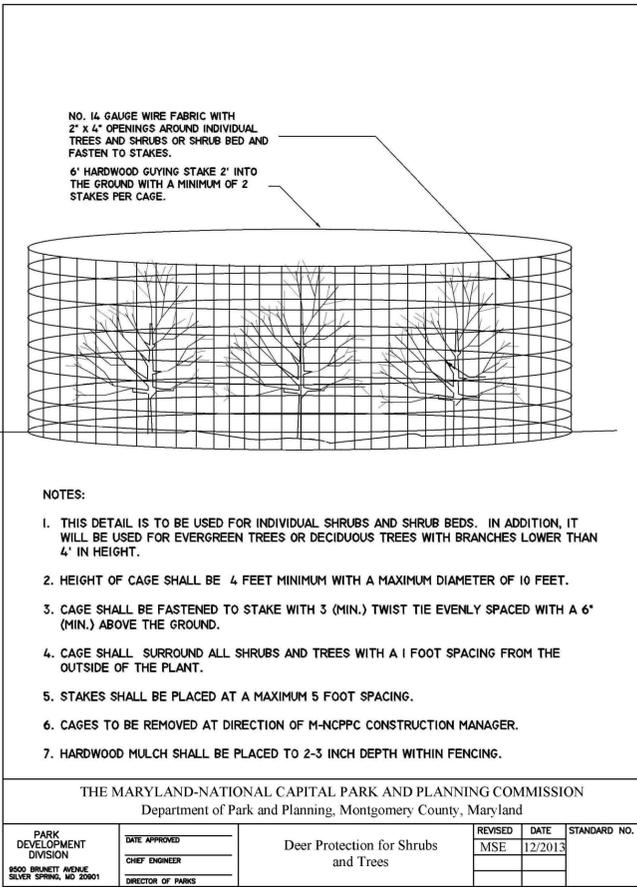
THIS IS NOT A PERMIT TO BEGIN CONSTRUCTION

This approval is for technical review only. For permit information, contact Joy Childs, Construction Supervisor at (301)495-2574.

DPS approval of a sediment control or stormwater management plan is for demonstrated compliance with minimum environmental runoff treatment standards and does not create or imply any right to divert or concentrate runoff onto any adjacent property without that property owner's permission. It does not relieve the design engineer or other responsible person of professional liability or ethical responsibility for the adequacy of the drainage design as it affects uphill or downhill properties.

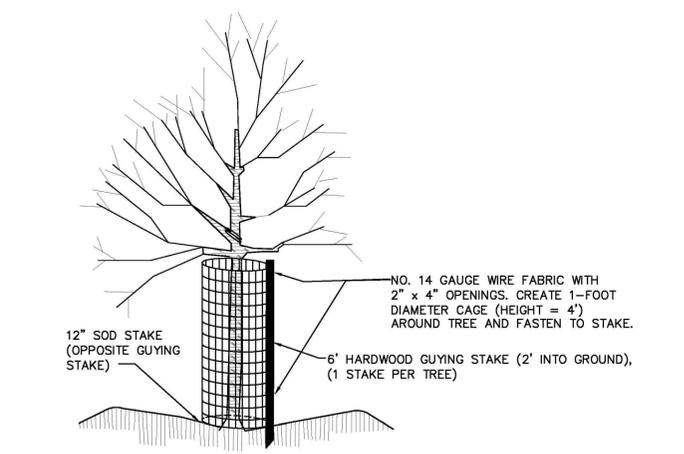


United States Department of Agriculture  
 Natural Resources Conservation Service  
 IL-ENG-46  
 Page 1 of 1  
 Sheet of



THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION  
 Department of Park and Planning, Montgomery County, Maryland

PARK DEVELOPMENT DIVISION 9500 BRANETT AVENUE SILVER SPRING, MD 20901	DATE APPROVED CHEF ENGINEER DIRECTOR OF PARKS	Deer Protection for Shrubs and Trees	REVISED MSE	DATE 12/2013	STANDARD NO.
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THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION  
 Department of Park and Planning, Montgomery County, Maryland

PARK PLANNING & DEVELOPMENT DIVISION 9500 BRANETT AVENUE SILVER SPRING, MD 20901	DATE APPROVED CHEF ENGINEER DIRECTOR OF PARKS	DEER PROTECTION CAGE	REVISED	DATE	STANDARD NO.
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THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION,  
 DEPARTMENT OF PARK AND PLANNING  
 M-NCPPC RECORD FILE NO. 2015.17  
 TECHNICAL REVIEW  
 CONCURRENCE BY \_\_\_\_\_  
 DATE \_\_\_\_\_  
 PARK FACILITY CODE \_\_\_\_\_

THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING M-NCPPC PERMIT NO. _____ M-NCPPC PARK FACILITY CODE _____ REVIEWED BY _____ APPROVED BY _____ DATE APPROVED _____ M-NCPPC PERMIT SHEET # _____ OF _____	<b>MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:</b> Stormwater Management: <b>SEDIMENT CONTROL &amp; SAFE CONVEYANCE REVIEW ONLY</b> Reviewed Date _____ Approved Date _____ Approved Date <u>264135</u> SM FILE # _____	NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED FOR A MCDPS ACCESS PERMIT. Administrative Requirements: Reviewed Date <u>276515</u> SEDIMENT CONTROL PERMIT NO. _____ MCDPS APPROVAL OF THIS PLAN WILL EXPIRE TWO YEARS FROM THE DATE OF APPROVAL IF THE PROJECT HAS NOT STARTED.
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 255 ROCKVILLE PIKE, SUITE 120  
 ROCKVILLE, MD 20850  
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**DEPARTMENT OF ENVIRONMENTAL PROTECTION**  
 MONTGOMERY COUNTY • MARYLAND

DATE:	ISSUES / REVISIONS
3/10/2015	60% DESIGN
1/29/2016	90% DESIGN

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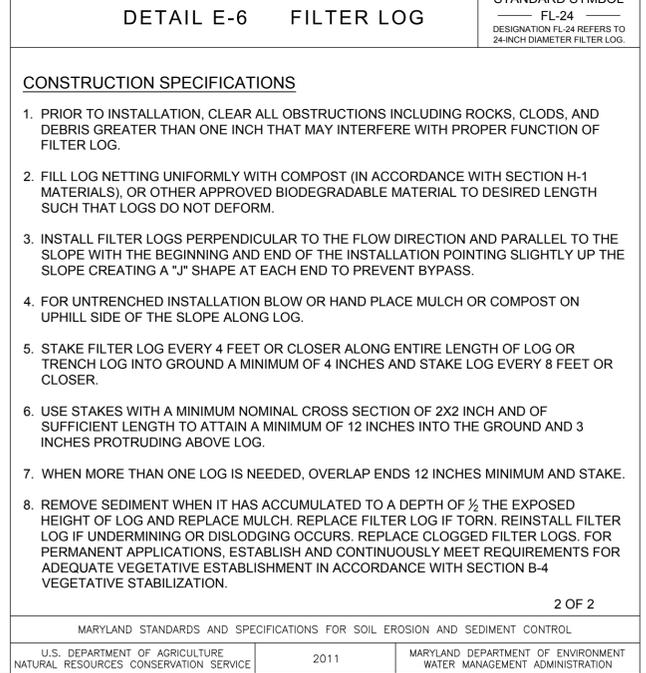
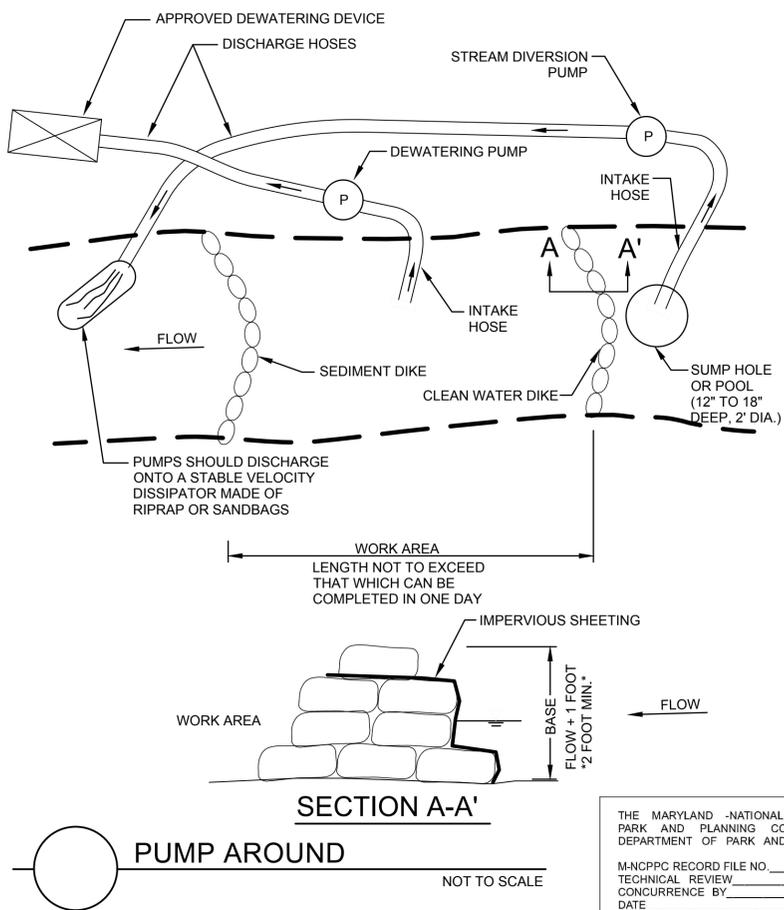
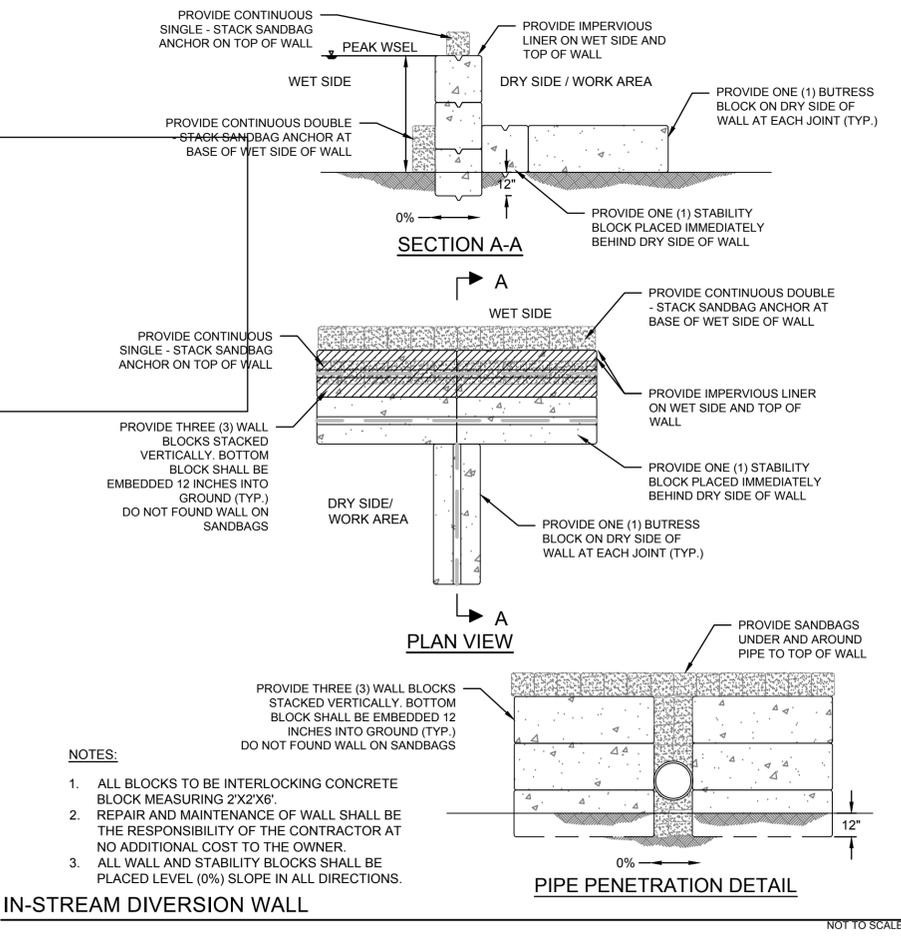
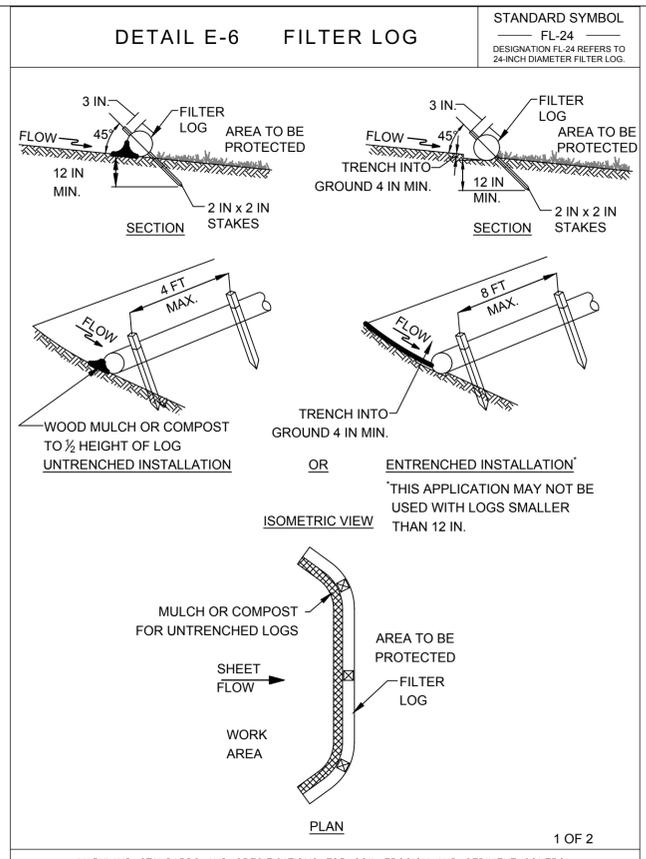
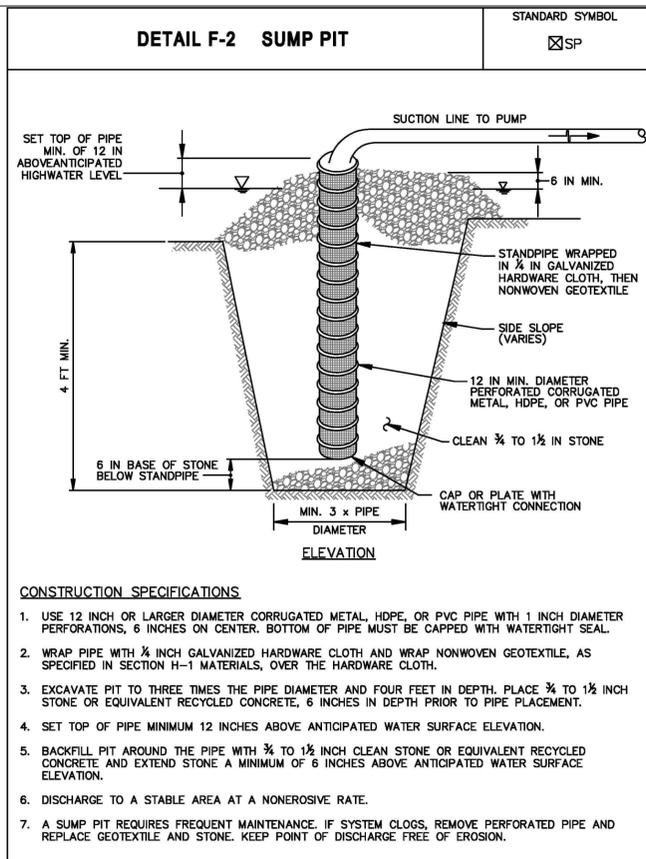
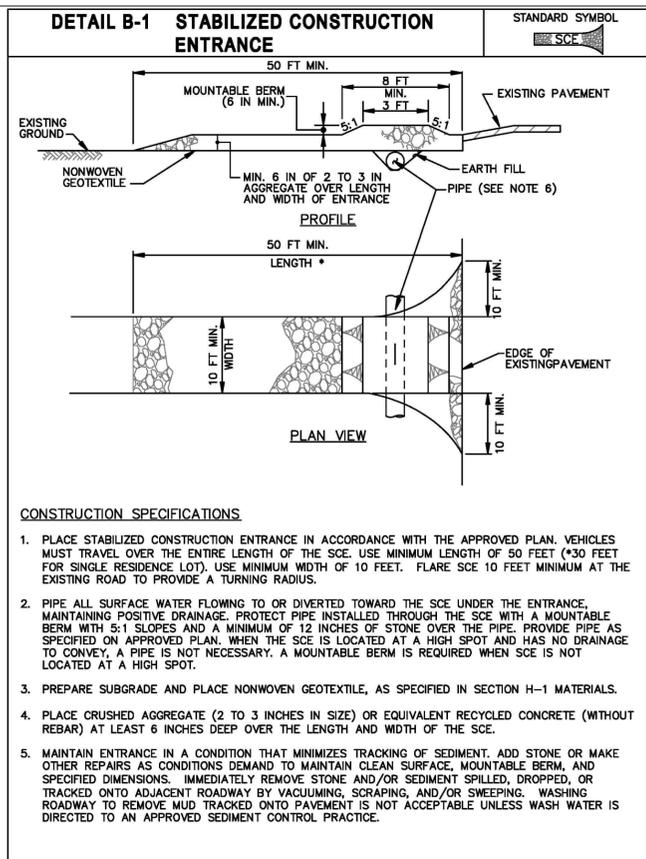
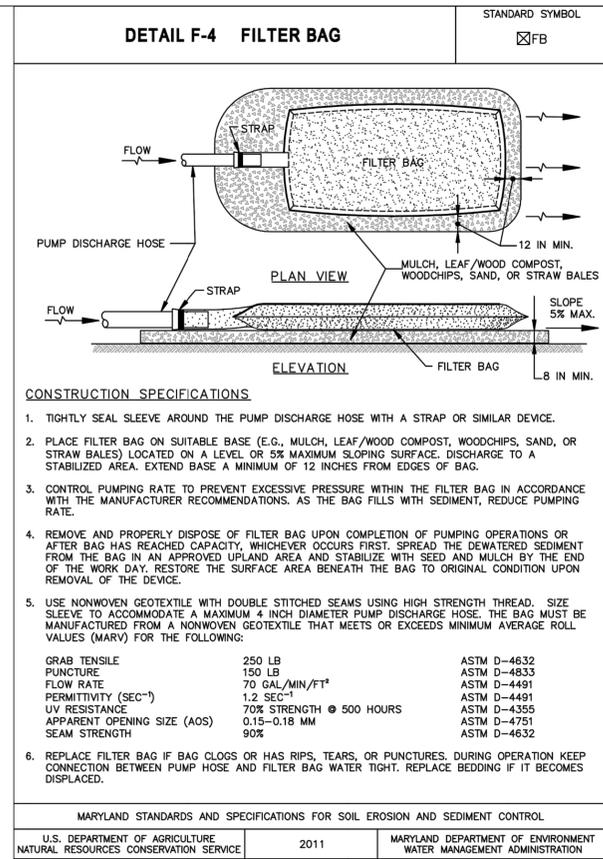
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**QUAIL VALLEY #2 SWM RETROFIT**  
 MNCPPC L 6557 / F 646  
 (DEP SEQ. NO. 35-ASSET 10884)  
**90% DESIGN**

MONTGOMERY COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION - WATER RESOURCES ENGINEERING CONTRACT #8803000101BD - TASK ORDER 16

**DETAILS**

PROJECT NO.:	08041.05	SCALE:	N.T.S.
BY:	TB,KT	CHECK:	BA
DWG. NO.:	17 OF 23		



THE MARYLAND NATIONAL CAPITAL PARK AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING

M-NCPPC PERMIT NO. \_\_\_\_\_

M-NCPPC PARK FACILITY CODE \_\_\_\_\_

REVIEWED BY \_\_\_\_\_

APPROVED BY \_\_\_\_\_

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

M-NCPPC PERMIT SHEET # \_\_\_\_\_ OF \_\_\_\_\_

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

Stormwater Management: **SEDIMENT CONTROL & SAFE CONVEYANCE REVIEW ONLY**

Sediment Control Technical Requirements:

Administrative Requirements:

Reviewed Date: 276515

Approved Date: \_\_\_\_\_

Approved Date: 264135

SM FILE # \_\_\_\_\_

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

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**DEPARTMENT OF ENVIRONMENTAL PROTECTION**  
MONTGOMERY COUNTY • MARYLAND

DATE: 3/10/2015  
ISSUES / REVISIONS: 60% DESIGN

1/29/2016 90% DESIGN

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MNCPPC L 6557 / F 646  
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**90% DESIGN**

MONTGOMERY COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION - WATER RESOURCES ENGINEERING CONTRACT #880300101BD - TASK ORDER 16

## EROSION AND SEDIMENT CONTROL DETAILS

PROJECT NO.: 08041.05 SCALE: N.T.S.

BY: TB,KT CHECK: BA

DWG. NO.: 18 OF 23

**STANDARD EROSION AND SEDIMENT CONTROL NOTES**

- 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.
- The permittee must obtain inspection and approval by DPS at the following points:
  - At the required pre-construction meeting.
  - Following installation of sediment control measures and prior to any other land disturbing activity.
  - During the installation of a sediment basin or stormwater management structure at the required inspection points (see Inspection Checklist on plan). Notification prior to commencing construction is mandatory.
  - Prior to removal or modification of any sediment control structure(s).
  - Prior to final acceptance.
- 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.
- The permittee shall protect all points of construction ingress and egress to prevent the deposition of materials onto traversed public thoroughfare(s). All materials deposited onto public thoroughfare(s) shall be removed immediately.
- The permittee shall inspect 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.
  - Following initial soil disturbance or re-disturbance, permanent or temporary stabilization must be completed within:
    - 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
    - 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.
- 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.
- 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.
- The site permit, work, materials, approved SC/SM plans, and test reports shall be available at the site for inspection by duly authorized officials of Montgomery County.
 

Where vegetative stabilization is to be established.
- 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.
- 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.
- 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.
- 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.
- 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.

- 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.
- Sediment traps or basins are not permitted within 20 feet of a building which is existing or under construction. No building may be constructed within 20 feet of a sediment trap or basin.
- All inlets in non-sump areas shall have asphalt berms installed at the time of base paving establishment.
- The sediment control inspector has the option of requiring additional sediment control measures, as deemed necessary.
- All trap elevations are relative to the outlet elevation, which must be on existing undisturbed ground.
- Vegetative stabilization shall be performed in accordance with the Standards and Specifications for Soil Erosion and Sediment Control.
- 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.
- Sediment removed from traps/basins shall be placed and stabilized in approved areas, but not within a floodplain.
- 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.
- 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.
- Off-site spoil or borrow areas must have prior approval by DPS.
- 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:
  - 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
  - the pump intake may utilize a Removable Pumping Station and must discharge into an undisturbed area through a non-erosive outlet; or
  - 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.

- The permittee must notify the Department of all utility construction activities within the permitted limits of disturbance prior to the commencement of those activities.
- Topsoil must be applied to all pervious areas within the limits of disturbance prior to permanent stabilization in accordance with MDE "Standards and Specifications for Soil Preparation, Topsoiling, and Soil Amendments".

**B-4-2 STANDARDS AND SPECIFICATIONS**

**FOR**

**SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS**

**Definition**

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

**Purpose**

To provide a suitable soil medium for vegetative growth.

**Conditions Where Practice Applies**

**Criteria**

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

- Topsoiling
  - Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.
  - Topsoil salvaged from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.
  - Topsoiling is limited to areas having 2:1 or flatter slopes where:
    - The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
    - The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplies of moisture and plant nutrients.
    - The original soil to be vegetated contains material toxic to plant growth.
    - The soil is so acidic that treatment with limestone is not feasible.
  - Areas having slopes steeper than 2:1 require special consideration and design.
  - Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:
    - Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1½ inches in diameter.
    - Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.
    - Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.
  - Topsoil Application
    - Erosion and sediment control practices must be maintained when applying topsoil.
    - Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
    - Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

- Soil Amendments (Fertilizer and Lime Specifications)
  - Soil tests must be performed to determine the exact ratios and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
  - Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.
  - Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydroseeding) which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 98 to 100 percent will pass through a #20 mesh sieve.
  - Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

- Fertilizer shall be 10-10-10 or equivalent and applied at the rate of 12 to 18 lbs. Per 1,000 sq. Ft.
- Seeding preparation
 

The top layer of soil shall be loosened by disking or raking (shall be done on contour) at a depth of at least 3", before seeding occurs.
- Seeding
 

LIME: 50 lbs. Of dolomitic limestone per 1,000 sq. Ft.  
 FERTILIZER: 15 lbs. Of 10-10-10 per 1,000 sq. Ft.  
 SEED: italian rye or perennial rye at 0.92 Lbs. Per 1,000 sq. Ft.  
 (Notes: february 1st-april 30th, or august 15-november 1st)  
 millet – same rate as above (date: november 2-january 31, mulch only)  
 MULCH: same rate as above (date: november 2-january 31, mulch only)  
 planting depth: 1" to 2" for all of the above.

**PERMANENT SEEDING AND SODDING SPECIFICATIONS**

- All disturbed areas shall be seeded and mulched.
- Seeded preparation – apply 2 tons per acre of lime and 100 lb. Per acre of 10-10-10 fertilizer or equivalent. Thoroughly mix into soil to a minimum of 3".
- Seeding – use 40" kentucky bluegrass, 10% annual rye and 25% red fescue at the rate of 250 lb. Per acre.
- Mulching – use clean, unweathered, unchopping small grain straw at the rate of 1 1/2 to 2 tons per acre anchored down with cutback asphalt at the rate of 5-8 gallons per 1000 sq. Ft.
- Disking and harrowing shall be done on contour.
- 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.) Kentucky 31 tall fescue and 40% (min.) Kentucky bluegrass.
- 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.
- 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 disking. 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.
- Sodding, seeding and mulching – may be done immediately after final grading, provided that 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.
- Seed shall be worked into the top 1/4" 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.

Permanent seeding: shall be done february 1 through 30, and may 1 through october 31. Irrigation for permanent seeding shall be done between may 1 and august 14.

Temporary seeding: shall be done between february 1 through april 30 and august 15 through november 30. All other disturbed areas requiring stabilization not within the seeding dates shall be mulched.

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.

Temporary Seeding Specifications

- All temporary seeded areas shall be mulched immediately after seeding. Mulch materials should be unweathered, unchopped, small grain straw spread at a rate of 1 1/2 to 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.
- Lime and fertilizer shall be required for temporary seeding in accordance with the following procedures:
  - Pulverized dolomitic limestone is to be applied at the rate of 46 lbs. Per 1,000 sq. Ft.
  - Fertilizer shall be 10-10-10 or equivalent and applied at the rate of 12 to 18 lbs. Per 1,000 sq. Ft.

Seeding preparation

The top layer of soil shall be loosened by disking or raking (shall be done on contour) at a depth of at least 3", before seeding occurs.

Seeding

LIME: 50 lbs. Of dolomitic limestone per 1,000 sq. Ft.  
 FERTILIZER: 15 lbs. Of 10-10-10 per 1,000 sq. Ft.  
 SEED: italian rye or perennial rye at 0.92 Lbs. Per 1,000 sq. Ft.  
 (Notes: february 1st-april 30th, or august 15-november 1st)  
 millet – same rate as above (date: november 2-january 31, mulch only)  
 MULCH: same rate as above (date: november 2-january 31, mulch only)  
 planting depth: 1" to 2" for all of the above.

THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING  M-NCPPC PERMIT NO. _____ M-NCPPC PARK FACILITY CODE _____ REVIEWED BY _____ APPROVED BY _____ DATE APPROVED _____ M-NCPPC PERMIT SHEET # _____ OF _____	<b>MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:</b>  Stormwater Management: <b>SEDIMENT CONTROL &amp; SAFE CONVEYANCE REVIEW ONLY</b>  Reviewed Date _____ Approved Date _____ 264135 SM FILE # _____	NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED FOR A MCDPS ACCESS PERMIT.  Administrative Requirements:  Reviewed Date _____ 276515 SEDIMENT CONTROL PERMIT NO. _____  MCDPS APPROVAL OF THIS PLAN WILL EXPIRE TWO YEARS FROM THE DATE OF APPROVAL IF THE PROJECT HAS NOT STARTED.
---	--	---

DPS approval of a sediment control or stormwater management plan is for demonstrated compliance with minimum environmental runoff treatment standards and does not create or imply any right to divert or concentrate runoff onto any adjacent property without that property owner's permission. It does not relieve the design engineer or other responsible person of professional liability or ethical responsibility for the adequacy of the drainage design as it affects uphill or downhill properties.

**CLIENT**

MR. CRAIG CARSON  
 MONTGOMERY COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION  
 255 ROCKVILLE PIKE, SUITE 120  
 ROCKVILLE, MD 20850  
 (240) 777-7713



**DEPARTMENT OF ENVIRONMENTAL PROTECTION**  
 MONTGOMERY COUNTY • MARYLAND

DATE:	ISSUES / REVISIONS
3/10/2015	60% DESIGN
1/29/2016	90% DESIGN

**MISS UTILITY**  
 CALL "MISS UTILITY" AT 1-800-257-7777, 48 HOURS PRIOR TO THE START OF WORK. THE EXCAVATOR MUST NOTIFY ALL PUBLIC UTILITY COMPANIES WITH UNDERGROUND FACILITIES LOCATED BY THE UTILITY COMPANIES PRIOR TO COMMENCING EXCAVATION. THE EXCAVATOR IS RESPONSIBLE FOR COMPLIANCE WITH REQUIREMENTS OF CHAPTER 36A OF THE MONTGOMERY COUNTY CODE.

SEAL:



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

LICENSE # 45058  
 EXPIRATION DATE: 04/11/2016



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**QUAIL VALLEY #2 SWM RETROFIT**  
 MNCPPC L 6557 / F 646  
 (DEP SEQ. NO. 35-ASSET 10884)  
**90% DESIGN**

MONTGOMERY COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION - WATER RESOURCES ENGINEERING CONTRACT #880300101BD - TASK ORDER 16

TITLE:

**EROSION AND SEDIMENT CONTROL NOTES**

PROJECT NO.:	08041.05	SCALE:	N/A
BY:	TB,KT	CHECK:	BA
DWG. NO.:	19 OF 23		

**SEQUENCE OF CONSTRUCTION**

**PRE-CONSTRUCTION AND SITE PREPARATION**

1. PRIOR TO CLEARING TREES, INSTALLING SEDIMENT CONTROL MEASURES, OR GRADING, A PRE-CONSTRUCTION MEETING MUST BE CONDUCTED ON-SITE WITH THE MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES (MCDPS) SEDIMENT CONTROL INSPECTOR (240) 777-0311 (48 HOUR NOTICE), AND THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION (M-NCPPC) PLANNING DEPARTMENT PLANS ENFORCEMENT INSPECTOR (301) 495-4521 (48 HOUR NOTICE), THE OWNER'S REPRESENTATIVE, AND THE SITE ENGINEER.
2. SEDIMENT SHALL NOT BE RELEASED INTO THE STREAM. CLEAN WATER ONLY IS TO BE DISCHARGED INTO THE STREAM. NO WORK SHALL BE CONDUCTED DURING STORM EVENTS.
3. THE LIMITS OF DISTURBANCE MUST BE FIELD MARKED AND TREE PROTECTION FENCE INSTALLED PRIOR TO CLEARING OF TREES, INSTALLATION OF SEDIMENT CONTROL MEASURES, CONSTRUCTION, OR OTHER LAND DISTURBING ACTIVITIES. FLAG ALL TREES TO BE SAVED. HARDWOOD MATS SHALL BE PLACED BY THE CONTRACTOR TO PROTECT CRITICAL ROOT ZONES, SANITARY SEWER LINES AND OTHER SENSITIVE AREAS AS SHOWN ON THE PLANS AND AT THE DIRECTION OF THE ENGINEER. THE CONTRACTOR SHALL EMPLOY LOW IMPACT CONSTRUCTION TECHNIQUES FOR ALL AREAS WITHIN THE LOD.
4. THE PERMITTEE MUST OBTAIN WRITTEN APPROVAL FROM THE M-NCPPC INSPECTOR, CERTIFYING THAT THE LIMITS OF DISTURBANCE AND TREE PROTECTION MEASURES ARE CORRECTLY MARKED AND INSTALLED PRIOR TO CLEARING. THE CONTRACTOR SHALL STAY WITHIN THE LIMIT OF DISTURBANCE AS SHOWN THE PLANS AND MINIMIZE DISTURBANCE WITHIN THE WORKING AREA WHERE EVER POSSIBLE. NO TREES SHALL BE REMOVED WITHIN THE LIMIT OF DISTURBANCE WITHOUT APPROVAL FROM THE MNCPPC.
5. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES THAT MAY OCCUR AS A RESULT OF THIS OPERATION. DAMAGED UTILITIES ARE TO BE IMMEDIATELY REPORTED TO BOTH THE COUNTY AND UTILITY OWNER. ANY DAMAGE TO EXISTING STRUCTURES INCLUDING: SEWER PIPES/MANHOLES, STORM DRAIN PIPES/STRUCTURES SHALL BE REPAIRED TO THE COUNTY'S AND UTILITY OWNER'S SATISFACTION BY THE CONTRACTOR AT HIS/HER OWN EXPENSE.
6. THE CONTRACTOR SHALL CALL MISS UTILITY AT 1-800-277-7777 A MINIMUM OF FORTY-EIGHT (48) HOURS BEFORE BEGINNING CONSTRUCTION. ALL EXISTING UTILITIES MUST BE MARKED IN THE FIELD PRIOR TO CONSTRUCTION.
7. CLEAR AND GRADE FOR INSTALLATION OF CONSTRUCTION ACCESS SEDIMENT CONTROL DEVICES. INSTALL STABILIZED CONSTRUCTION ENTRANCE, CONSTRUCTION ACCESS ROAD, AND FILTER LOGS AS SHOWN ON PLAN. STABILIZE THE PORTION OF THE ACCESS ROAD > 10% SLOPE WITH A HEAVY DUTY MULCH MAT SYSTEM. STABILIZE THE REMAINING PORTIONS OF THE ACCESS ROAD WITH STANDARD DUTY MULCH MAT.

**PHASE 1 - CHANNEL RESTORATION**

8. NOTIFY MONTGOMERY COUNTY DEP UPON COMPLETION OF SITE PREPARATION WORK.
9. THE CONTRACTOR SHALL ESTABLISH THE STAGING AND STOCKPILE AREA FOR PHASE 1 AND INSTALL FILTER LOGS AROUND IT AS SHOWN ON PLANS.
10. THE CONTRACTOR SHALL SETUP STREAM PUMP-AROUND (PUMPS, SUMP HOLES, SEDIMENT DIKES, HOSES, FILTER BAGS) AS NECESSARY TO DEWATER THE WORK AREA.
11. 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.
12. INSTALL IMPORTED CLEAN SAND FILL, CHANNEL STRUCTURES AND PERFORM GRADING AS DETAILED ON PLAN SET, WORKING DOWNSTREAM TO UPSTREAM. ONLY INSTALL AS MANY STRUCTURES AS CAN BE COMPLETED AND STABILIZED IN ONE DAY. REMOVE ALL FLEXIBLE PIPE UNDER COMPLETED WORK AS EACH STRUCTURE IS COMPLETED.
13. RIFFLE INSTALLATION: EXCAVATE THE OUTLET POOL DOWNSTREAM OF STRUCTURE. INSTALL THE DOWNSTREAM MOST RIFFLE ABOVE THE POOL, LAYING A CONTINUOUS SHEET OF GEOTEXTILE UNDER THE WEIR AND FOOTER BOULDERS. THE FACE OF THE BOULDERS SHOULD BE TILTED DOWNSTREAM TO OCCUPY A PORTION OF THE OVERALL DROP ACROSS THE LENGTH OF THE STRUCTURE (SEE RIFFLE DETAIL). ONCE BOULDERS AND FILL MATERIAL HAS BEEN PLACED TO GRADES SHOWN, PLACE RIFFLE BOULDERS AS SPECIFIED ON DETAIL. FILL BETWEEN BOULDERS WITH SPECIFIED COBBLE AND GRAVEL TO FORM THE RIFFLE AND GLIDE. COMPRESS COBBLE, GRAVEL AND RIFFLE BOULDERS TO ARMOR SURFACE AND SHAPE TO FINAL GRADES ON PLANS. A COBBLE APRON SHALL BE PLACED WHERE THE BOULDERS MEET THE POOL ON THE DOWNSTREAM SIDE. EXCAVATE NEXT UPSTREAM POOL, USING THIS EXCAVATED FILL MATERIAL TO BLEND EDGES OF DOWNSTREAM STRUCTURE INTO SURROUNDING GRADE. ONCE A RIFFLE-POOL COMBINATION IS COMPLETED, STABILIZE SURFACE WITH WOOD CHIPS AND TEMPORARY SEED. CUT AND REMOVE THE SECTION OF FLEXIBLE PIPE BELOW THE COMBINATION COMPLETED, THUS RELOCATING THE FLEXIBLE PIPE OUTLET TO THE POOL UPSTREAM OF COMPLETED STRUCTURE.
14. UPON COMPLETION OF INSTALLATION, STABILIZE REMAINING DISTURBED AREAS AND SECURE PUMP AROUND DEVICES AT THE END OF EACH DAY.
15. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ACCESS TO AND MAINTAINING ALL EROSION AND SEDIMENT CONTROL DEVICES UNTIL THE DEVICES ARE REMOVED. UPON WRITTEN APPROVAL FROM THE MCDPS INSPECTOR, REMOVE ALL SEDIMENT CONTROL DEVICES NOT NEEDED IN SUBSEQUENT PHASES. THE CONTRACTOR SHALL REPAIR AND STABILIZE ALL AREAS DISTURBED BY THIS OPERATION.

**PHASE 2A - LOWER BASIN CONSTRUCTION**

16. NOTIFY MONTGOMERY COUNTY DEP UPON COMPLETION OF PHASE 1.
17. THE CONTRACTOR SHALL INSTALL TEMPORARY DIVERSION WALLS AT THE 42" AND 18" INFLOW PIPES AND DIVERSION PIPES AS NECESSARY TO DIVERT FLOW AROUND THE SITE. THE CONTRACTOR SHALL INSTALL A SUMP PIT, PUMP, AND FILTERING BAG AS NECESSARY TO DEWATER THE WORK AREA DURING CONSTRUCTION. ROUTE DIVERSION PIPES THROUGH EXISTING SPILLWAY PIPES.
18. THE CONTRACTOR SHALL REMOVE EXISTING CHAIN LINK FENCE AND ESTABLISH THE STAGING AND STOCKPILE AREA FOR PHASE 2A AND INSTALL FILTER LOGS AS SHOWN ON THE PLANS. DECOMMISSION THE STAGING AND STOCKPILE AREA FOR PHASE 1.
19. 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.
20. COMPLETE GRADING OPERATION FOR UNDERDRAIN SYSTEM AND SAND FILTER BOTTOM. INSTALL UNDERDRAIN FROM STA U10+59.2 TO STA U10+02 AND CAP END. CONSTRUCT GABION CORE, UNDERDRAIN FROM STA 11+75 TO 10+59.2, AND THE EARTH AND SAND BERM. STABILIZE AS SHOWN ON PLANS AND SPECIFICATIONS.
21. PLACE SAND TO FINAL GRADE. CONTRACTOR SHALL PERFORM WORK IN SUCH A MANNER THAT COMPACTION OF PLACED SAND IS LIMITED.
22. UPON COMPLETION OF INSTALLATION, STABILIZE REMAINING DISTURBED AREAS.
23. REMOVE EXISTING POND RISERS AND OUTFALL PIPES.
24. CONSTRUCT CASCADE STRUCTURE AND COMPLETE DOWNSTREAM POOL IN ACCORDANCE WITH PLAN AND SPECIFICATIONS. UPON COMPLETION OF STRUCTURE INSTALLATION, STABILIZE ADJACENT DISTURBED AREAS IMMEDIATELY.
25. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ACCESS TO AND MAINTAINING ALL EROSION AND SEDIMENT CONTROL DEVICES UNTIL THE DEVICES ARE REMOVED. UPON WRITTEN APPROVAL FROM THE MCDPS INSPECTOR, REMOVE ALL SEDIMENT CONTROL DEVICES NOT NEEDED IN SUBSEQUENT PHASES. THE CONTRACTOR SHALL REPAIR AND STABILIZE ALL AREAS DISTURBED BY THIS OPERATION.

**PHASE 2B - UPPER BASIN CONSTRUCTION**

26. NOTIFY MONTGOMERY COUNTY DEP UPON COMPLETION OF PHASE 2A.
27. DECOMMISSION THE STAGING AND STOCKPILE AREA FOR PHASE 2A. TEMPORARY DIVERSION WALLS AND PIPES TO REMAIN. THE CONTRACTOR SHALL INSTALL A SUMP PIT, PUMP, AND PORTABLE SEDIMENT TANK AS NECESSARY TO DEWATER THE WORK AREA DURING CONSTRUCTION.
28. 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.
29. DURING A THREE-DAY DRY PERIOD, EXCAVATE EXISTING POND BOTTOM. ALL EXCAVATED MATERIAL SHALL BE HAULED OFFSITE.
30. INSTALL UNDERDRAIN FROM STA U1+57.5 TO STA U0+02.6, BORING THROUGH EXISTING EMBANKMENT.
31. REMOVE TEMPORARY DIVERSION WALL AND DIVERSION PIPE AT 18" INFLOW PIPE. INSTALL STORM DRAIN APRON AS SHOWN ON PLANS.
32. PLACE SAND TO FINAL GRADE. CONTRACTOR SHALL PERFORM WORK IN SUCH A MANNER THAT COMPACTION OF PLACED SAND IS LIMITED.
33. DURING A THREE-DAY DRY PERIOD, REMOVE TEMPORARY DIVERSION WALL AND DIVERSION PIPE AT 42" INFLOW PIPE AND CONSTRUCT COBBLE RIFFLE, PLUNGE POOL AND STORM DRAIN APRON. DEWATER WORK AREA USING THE SUMP PIT, PUMP, AND PUMP HOSES ARE NECESSARY.
34. UPON COMPLETION OF CONSTRUCTION, STABILIZE REMAINING DISTURBED AREAS. INSTALL EROSION CONTROL MATTING AND TEMPORARY SEEDING ON DISTURBED AREAS ABOVE THE PERMANENT POOL WITH SLOPES OF 3:1 OR GREATER, AND ON ALL DISTURBED PORTIONS OF THE EMBANKMENT. PROVIDE TEMPORARY SEEDING AND STRAW MULCH IN ALL OTHER DISTURBED AREAS ABOVE THE PERMANENT POOL.
35. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ACCESS TO AND MAINTAINING ALL EROSION AND SEDIMENT CONTROL DEVICES UNTIL THE DEVICES ARE REMOVED. UPON WRITTEN APPROVAL FROM THE MCDPS INSPECTOR, REMOVE ALL SEDIMENT CONTROL DEVICES NOT NEEDED IN SUBSEQUENT PHASES. THE CONTRACTOR SHALL REPAIR AND STABILIZE ALL AREAS DISTURBED BY THIS OPERATION.

**PHASE 3 - INVASIVE SPECIES MANAGEMENT AND LANDSCAPING**

36. PERFORM INVASIVE SPECIES MANAGEMENT PLAN TREATMENTS PER PROJECT SPECIFICATIONS.
37. INSTALL PLANT MATERIAL PER PLAN.
38. PREPARE AS-BUILT DRAWINGS FOR DPS REVIEW AND APPROVAL.

**CLIENT**

MR. CRAIG CARSON  
MONTGOMERY COUNTY DEPARTMENT  
OF ENVIRONMENTAL PROTECTION  
255 ROCKVILLE PIKE, SUITE 120  
ROCKVILLE, MD 20850  
(240) 777-7713



**DEPARTMENT OF ENVIRONMENTAL PROTECTION**

MONTGOMERY COUNTY • MARYLAND

DATE:	ISSUES / REVISIONS
3/10/2015	60% DESIGN
1/29/2016	90% DESIGN

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LICENSE #: 45058  
EXPIRATION DATE: 04/11/2016



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**QUAIL VALLEY #2 SWM RETROFIT**  
MNCPPC L 6557 / F 646  
(DEP SEQ. NO. 35-ASSET 10884)  
**90% DESIGN**

MONTGOMERY COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION - WATER RESOURCES ENGINEERING CONTRACT #8803000101BD - TASK ORDER 16

**SEQUENCE OF CONSTRUCTION**

PROJECT NO.:	08041.05	SCALE:	N/A
BY:	TB,KT	CHECK:	BA

DWG. NO.:

**20 OF 23**

<p>THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING</p> <p>M-NCPPC PERMIT NO. _____</p> <p>M-NCPPC PARK FACILITY CODE _____</p> <p>REVIEWED BY _____</p> <p>APPROVED BY _____ CHIEF, CONSTRUCTION SECTION</p> <p>DATE APPROVED _____</p> <p>M-NCPPC PERMIT SHEET # _____ OF _____</p> <p>THE MARYLAND -NATIONAL CAPITAL PARK AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING</p> <p>M-NCPPC RECORD FILE NO. <u>2015.17</u></p> <p>TECHNICAL REVIEW _____</p> <p>CONCURRENCE BY _____</p> <p>DATE _____</p> <p>PARK FACILITY CODE _____</p>	<p><b>MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:</b></p> <p>Stormwater Management: <b>SEDIMENT CONTROL &amp; SAFE CONVEYANCE REVIEW ONLY</b></p> <p>Reviewed _____ Date _____</p> <p>Approved _____ Date <u>264135</u></p> <p>SM FILE # _____</p> <p>NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED FOR A MCDPS ACCESS PERMIT.</p> <p>Administrative Requirements:</p> <p>Reviewed _____ Date <u>276515</u></p> <p>SEDIMENT CONTROL PERMIT NO. _____</p> <p>MCDPS APPROVAL OF THIS PLAN WILL EXPIRE TWO YEARS FROM THE DATE OF APPROVAL IF THE PROJECT HAS NOT STARTED.</p> <p>DPS approval of a sediment control or stormwater management plan is for demonstrated compliance with minimum environmental runoff treatment standards and does not create or imply any right to divert or concentrate runoff onto any adjacent property without that property owner's permission. It does not relieve the design engineer or other responsible person of professional liability or ethical responsibility for the adequacy of the drainage design as it affects uphill or downhill properties.</p>
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Findling, Inc.				BORING LOG					
PROJECT		Quail Valley #2 SWM Retrofit		PROJECT NO.		09-1016-16.4			
LOCATION		See Boring Location Plan		BORING NO.		SB-1			
COORDINATES		E: 1,261,241.2, N: 547,736.3		HOLE SIZE		416.5			
DRILLER		D. Fincham		DEPTH WATER ENC.		09/19/14			
TYPE OF DRILL RIG & METHOD		CME-450 ATV, Track		AT END DRILL		09/19/14			
				AT 24 HRS		416.5			
				CAVED DEPTH		8.1'			
				BORING DEPTH (FT)		10			
				PAGE NO.		1			
				LOGGED BY:		G.G. Woldetsadik			
DEPTH (ft)	STRATA ELE./DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH (ft)	N-VALUE/ROD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY (%)	REMARKS
0	416.5		4" Topsoil	S-1	24"	WOH/12"-4-11	DS	20"	
	416.0		Brown moist SILT with little Clay, fine Sand, trace Mica	S-2	24"	18-16-19-20	DS	20"	
	415.5		Brown, Green moist Micaceous Silty SAND, little to some weathered Rock fragments	S-3	24"	8-16-18-24	DS	24"	
5				S-4	24"	17-21-28-47	DS	20"	
				S-5	24"	15-19-26-20	DS	20"	
10	406.5		Bottom of Boring @ 10.0'						Boring backfilled upon completion of the 24 hrs water level reading
15									
20									
25									
30									

Findling, Inc.				BORING LOG					
PROJECT		Quail Valley #2 SWM Retrofit		PROJECT NO.		09-1016-16.4			
LOCATION		See Boring Location Plan		BORING NO.		SB-2			
COORDINATES		E: 1,261,263.7, N: 547,824.2		HOLE SIZE		414.0			
DRILLER		D. Fincham		DEPTH WATER ENC.		09/19/14			
TYPE OF DRILL RIG & METHOD		CME-450 ATV, Track		AT END DRILL		09/19/14			
				AT 24 HRS		414.0			
				CAVED DEPTH		8.2'			
				BORING DEPTH (FT)		10			
				PAGE NO.		1			
				LOGGED BY:		G.G. Woldetsadik			
DEPTH (ft)	STRATA ELE./DEPTH	GRAPHIC LOG	DESCRIPTION	SAMPLE NO.	SAMPLE LENGTH (ft)	N-VALUE/ROD (%)	SAMPLE TYPE AND DIAMETER	SAMPLE RECOVERY (%)	REMARKS
0	414		4" Topsoil	S-1	24"	WOH-2-2-2	DS	18"	
	413.7		Brown with Red, Green moist SILT, little to some Clay, trace fine Sand, trace Mica, Rock fragments	S-2	24"	3-5-6-9	DS	20"	
	410			S-3	24"	8-11-14-10	DS	18"	
5			Brown with Orange, Green micaceous Silty SAND, some weathered Rock (Quartz) fragments	S-4	24"	8-12-21-20	DS	16"	
				S-5	24"	18-11-12-12	DS	14"	
10	404		Bottom of Boring @ 10.0'						Boring backfilled upon completion of the 24 hrs water level reading
15									
20									
25									
30									

**CLIENT**

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MONTGOMERY COUNTY • MARYLAND

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**QUAIL VALLEY #2 SWM RETROFIT**  
MNCPPC L 6557 / F 646  
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**90% DESIGN**

MONTGOMERY COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION - WATER RESOURCES ENGINEERING CONTRACT #8803000101BD - TASK ORDER 16

**SOIL BORING LOGS**

PROJECT NO.: 08041.05 SCALE: N/A

BY: TB,KT CHECK: BA

DWG. NO.: 21 OF 23

THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING

M-NCPPC PERMIT NO. \_\_\_\_\_

M-NCPPC PARK FACILITY CODE \_\_\_\_\_

REVIEWED BY \_\_\_\_\_

APPROVED BY \_\_\_\_\_ CHIEF, CONSTRUCTION SECTION

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

M-NCPPC PERMIT SHEET # \_\_\_\_\_ OF \_\_\_\_\_

**THIS IS NOT A PERMIT TO BEGIN CONSTRUCTION**

DPS approval of a sediment control or stormwater management plan is for demonstrated compliance with minimum environmental runoff treatment standards and does not create or imply any right to divert or concentrate runoff onto any adjacent property without that property owner's permission. It does not relieve the design engineer or other responsible person of professional liability or ethical responsibility for the adequacy of the drainage design as it affects uphill or downhill properties.

THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING

M-NCPPC RECORD FILE NO. 2015.17

TECHNICAL REVIEW

CONCURRENCE BY \_\_\_\_\_

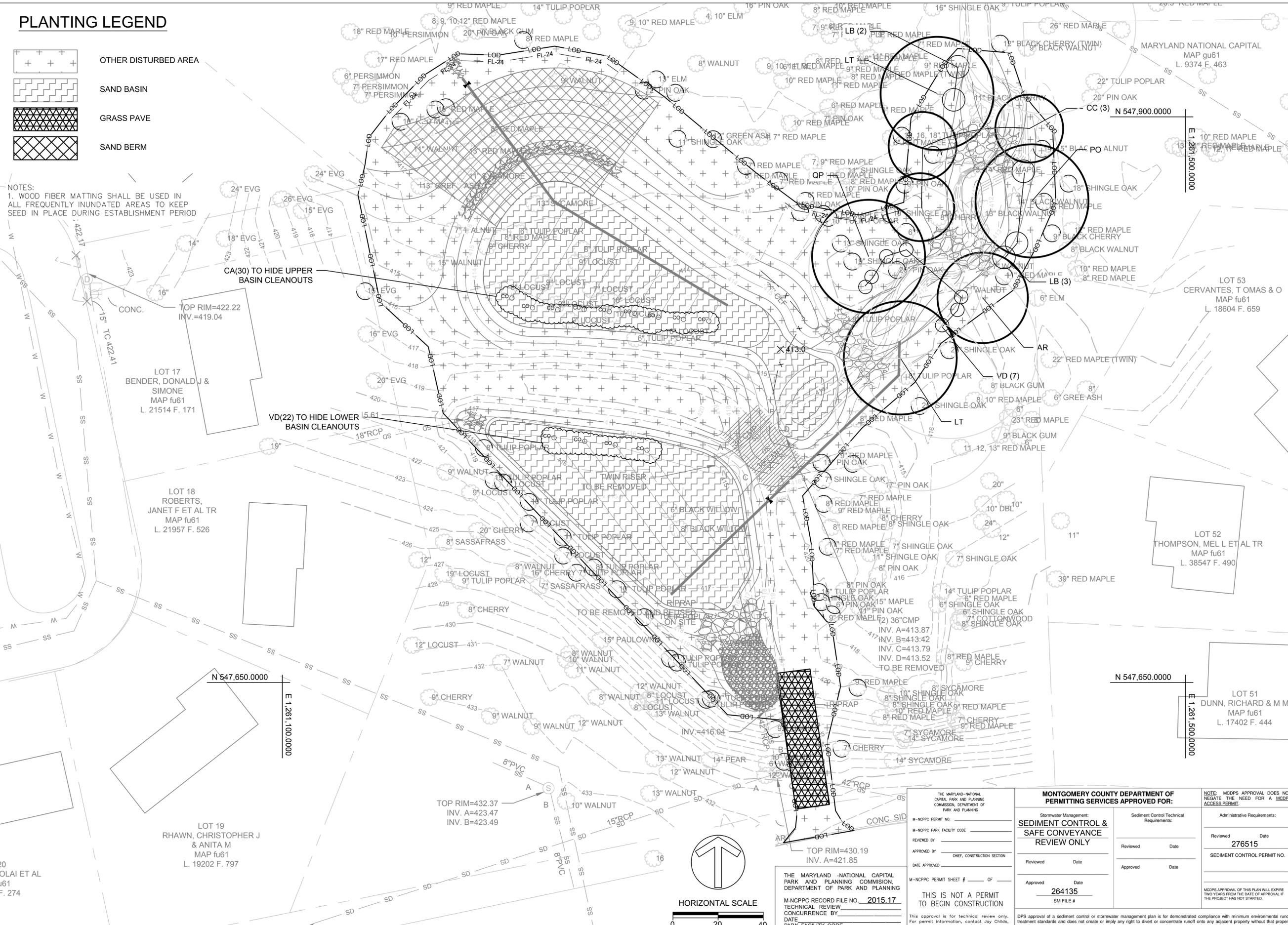
DATE \_\_\_\_\_

PARK FACILITY CODE \_\_\_\_\_

# PLANTING LEGEND

-  OTHER DISTURBED AREA
-  SAND BASIN
-  GRASS PAVE
-  SAND BERM

NOTES:  
1. WOOD FIBER MATTING SHALL BE USED IN ALL FREQUENTLY INUNDATED AREAS TO KEEP SEED IN PLACE DURING ESTABLISHMENT PERIOD



# CLIENT

MR. CRAIG CARSON  
MONTGOMERY COUNTY DEPARTMENT  
OF ENVIRONMENTAL PROTECTION  
255 ROCKVILLE PIKE, SUITE 120  
ROCKVILLE, MD 20850  
(240) 777-7713



DEPARTMENT OF  
**ENVIRONMENTAL  
PROTECTION**  
MONTGOMERY COUNTY • MARYLAND

DATE: ISSUES / REVISIONS  
3/10/2015 60% DESIGN  
1/29/2016 90% DESIGN

**MISS UTILITY**  
CALL "MISS UTILITY" AT 1-800-257-7777, 48 HOURS PRIOR TO THE START OF WORK. THE EXCAVATOR MUST NOTIFY ALL PUBLIC UTILITY COMPANIES WITH UNDERGROUND FACILITIES LOCATED BY THE UTILITY COMPANIES PRIOR TO COMMENCING EXCAVATION. THE EXCAVATOR IS RESPONSIBLE FOR COMPLIANCE WITH REQUIREMENTS OF CHAPTER 36A OF THE MONTGOMERY COUNTY CODE.

SEAL:



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

LICENSE #: 45058  
EXPIRATION DATE: 04/11/2016



The Stables Building, 2081 Clipper Park Road  
Baltimore, MD 21211 / ph: 410.554.0156  
fx: 410.554.0168 / www.biohabitats.com

Restore the Earth & Inspire Ecological Stewardship

**QUAIL VALLEY #2  
SWM RETROFIT**  
MNCPPC L 6557 / F 646  
(DEP SEQ. NO. 35-ASSET 10884)  
**90% DESIGN**

MONTGOMERY COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION - WATER RESOURCES ENGINEERING CONTRACT #8803000101BD - TASK ORDER 16

# PLANTING PLAN

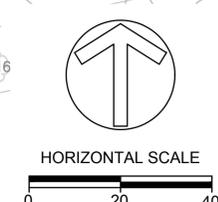
PROJECT NO.: 08041.05 SCALE: 1" = 20'

BY: TB,KT CHECK: BA

DWG. NO.:



THE MARYLAND NATIONAL CAPITAL PARKS AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING M-NCPPC PERMIT NO. _____ M-NCPPC PARK FACILITY CODE _____ REVIEWED BY _____ APPROVED BY _____ CHIEF, CONSTRUCTION SECTION DATE APPROVED _____ M-NCPPC PERMIT SHEET # _____ OF _____		<b>MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:</b> Stormwater Management: <b>SEDIMENT CONTROL &amp; SAFE CONVEYANCE REVIEW ONLY</b> Reviewed Date _____ Approved Date _____ 264135 SM FILE # _____		NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED FOR A MCDPS ACCESS PERMIT. Administrative Requirements: Reviewed Date _____ 276515 SEDIMENT CONTROL PERMIT NO. _____ MCDPS APPROVAL OF THIS PLAN WILL EXPIRE TWO YEARS FROM THE DATE OF APPROVAL, IF THE PROJECT HAS NOT STARTED.	
THE MARYLAND NATIONAL CAPITAL PARKS AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING M-NCPPC RECORD FILE NO. <b>2015.17</b> TECHNICAL REVIEW CONCURRENCE BY _____ DATE _____ PARK FACILITY CODE _____		THIS IS NOT A PERMIT TO BEGIN CONSTRUCTION This approval is for technical review only. For permit information, contact Joy Childs, Construction Supervisor at (301)493-2574.		DPS approval of a sediment control or stormwater management plan is for demonstrated compliance with minimum environmental runoff treatment standards and does not create or imply any right to divert or concentrate runoff onto any adjacent property without that property owner's permission. It does not relieve the design engineer or other responsible person of professional liability or other responsibility for the adequacy of the drainage design as it affects uphill or downhill properties.	



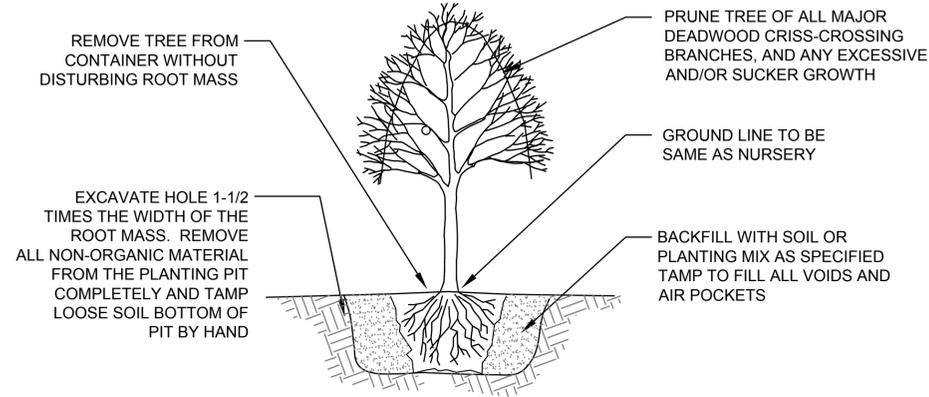
PLANT COMPOSITION SCHEDULE											
TREES & SHRUBS										Size (acres):	N/A
Overall Minimum Spacing (ft.)	Quantity per acre (Con)	Frequency (%)	Species Quantity (Con)	ID	Vegetation Strata/ Species Name	Common Name	Unit	Spacing Type	Size (Cal)	Size (hgt)	Individual Minimum Spacing (ft.)
40	N/A				<b>TREES</b>						
		N/A	1	AR	<i>Acer rubrum</i>	Red maple	CON	Random	1.5 - 2 in.	6 ft. min	40
		N/A	1	PO	<i>Platanus occidentalis</i>	American sycamore	CON	Random	1.5 - 2 in.	6 ft. min	50
		N/A	1	QP	<i>Quercus pallustris</i>	Pin oak	CON	Random	1.5 - 2 in.	6 ft. min	40
		N/A	2	LT	<i>Liriodendron tulipifera</i>	Tulip poplar	CON	Random	1.5 - 2 in.	6 ft. min	50
			5		<b>= total</b>						
25	N/A				<b>MIDSTORY TREES</b>						
		N/A	3	CC	<i>Carpinus caroliniana</i>	Ironwood	CON	Random	1 - 1.5 in.	3 - 4 ft.	25
		N/A	3		<b>= total</b>						
10	N/A				<b>SHRUBS &amp; VINES</b>						
		N/A	30	CA	<i>Cornus amomum</i>	Silky dogwood	CON	Random		2 - 3 ft.	4
		N/A	5	LB	<i>Lindera benzoin</i>	Common spicebush	CON	Random		2 - 3 ft.	10
		N/A	29	VD	<i>Viburnum dentatum</i>	Southern arrowwood	CON	Random		2 - 3 ft.	8
		N/A	64		<b>= total</b>						

CON=container

PLANT COMPOSITION SCHEDULE											
Other Disturbed Areas										Size (acres):	0.66
Overall Minimum Spacing (ft.)	Quantity per acre (lbs)	Frequency (%)	Species Quantity (lbs)	Vegetation Strata/ Species Name	Common Name	Unit	Size	Spacing Type	Individual Minimum Spacing (ft.)		
N/A	50			<b>Graminoids</b>							
		16	5.3	<i>Andropogon virginicus</i>	Broomsedge	SEED	N/A	LB of P.L.S. 100 %	N/A		
		16	5.3	<i>Dichanthelium clandestinum</i>	Deertongue	SEED	N/A	LB of P.L.S. 100 %	N/A		
		16	5.3	<i>Elmyrus virginicus</i>	Virginia wild rye	SEED	N/A	LB of P.L.S. 100 %	N/A		
		16	5.3	<i>Tridens flavus</i>	Purpletop tridens	SEED	N/A	LB of P.L.S. 100 %	N/A		
N/A	50			<b>Forbs</b>							
		12	4	<i>Eupatorium coelestinum</i>	Blue mistflower	SEED	N/A	LB of P.L.S. 100 %	N/A		
		12	4	<i>Pycnanthemum muticum</i>	Clustered mountainmint	SEED	N/A	LB of P.L.S. 100 %	N/A		
		12	4	<i>Rudbeckia hirta</i>	Black-eyed susan	SEED	N/A	LB of P.L.S. 100 %	N/A		
		<b>100</b>	<b>33.2</b>	<b>= Total</b>							

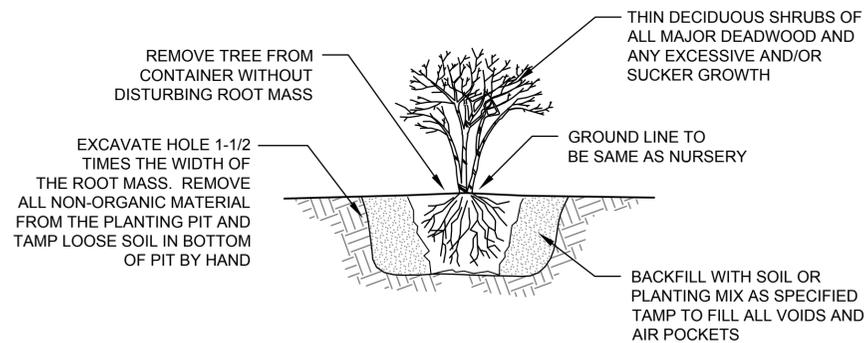
PLANT COMPOSITION SCHEDULE											
Sand Basins										Size (acres):	0.28
Overall Minimum Spacing (ft.)	Quantity per acre (lbs)	Frequency (%)	Species Quantity (lbs)	Vegetation Strata/ Species Name	Common Name	Unit	Size	Spacing Type	Individual Minimum Spacing (ft.)		
N/A	37			<b>Graminoids</b>							
		15	1.5	<i>Andropogon virginicus</i>	Broomsedge	SEED	N/A	LB of P.L.S. 100 %	N/A		
		15	1.5	<i>Dichanthelium clandestinum</i>	Deertongue	SEED	N/A	LB of P.L.S. 100 %	N/A		
		15	1.5	<i>Elmyrus virginicus</i>	Virginia wild rye	SEED	N/A	LB of P.L.S. 100 %	N/A		
		5	0.5	<i>Panicum virgatum</i>	Switchgrass	SEED	N/A	LB of P.L.S. 100 %	N/A		
		10	1	<i>Festuca rubra</i>	Chewing's fescue	SEED	N/A	LB of P.L.S. 100 %	N/A		
N/A	37			<b>Forbs</b>							
		8	0.8	<i>Eupatorium coelestinum</i>	Blue mistflower	SEED	N/A	LB of P.L.S. 100 %	N/A		
		8	0.8	<i>Euthamia graminifolia</i>	Flattop goldenrod	SEED	N/A	LB of P.L.S. 100 %	N/A		
		8	0.8	<i>Polygonum pensylvanicum</i>	Pennsylvania smartweed	SEED	N/A	LB of P.L.S. 100 %	N/A		
		6	0.6	<i>Pycnanthemum muticum</i>	Clustered mountainmint	SEED	N/A	LB of P.L.S. 100 %	N/A		
		10	1	<i>Symphotrichum pilosum</i>	Hairy aster	SEED	N/A	LB of P.L.S. 100 %	N/A		
		<b>100</b>	<b>10.0</b>	<b>= Total</b>							

PLANT COMPOSITION SCHEDULE											
Sand Berm										Size (acres):	0.11
Overall Minimum Spacing (ft.)	Quantity per acre (lbs)	Frequency (%)	Species Quantity (lbs)	Vegetation Strata/ Species Name	Common Name	Unit	Size	Spacing Type	Individual Minimum Spacing (ft.)		
N/A	37			<b>Graminoids</b>							
		15	0.6	<i>Andropogon virginicus</i>	Broomsedge	SEED	N/A	LB of P.L.S. 100 %	N/A		
		15	0.6	<i>Danthonia spicata</i>	Poverty grass	SEED	N/A	LB of P.L.S. 100 %	N/A		
		15	0.6	<i>Eragrostis spectabilis</i>	Purple lovegrass	SEED	N/A	LB of P.L.S. 100 %	N/A		
		15	0.6	<i>Schizachyrium scoparium</i>	Little bluestem	SEED	N/A	LB of P.L.S. 100 %	N/A		
N/A	37			<b>Forbs</b>							
		10	0.4	<i>Asclepias tuberosa</i>	Butterfly milkweed	SEED	N/A	LB of P.L.S. 100 %	N/A		
		8	0.3	<i>Chamaecrista fasciculata</i>	Partridge pea	SEED	N/A	LB of P.L.S. 100 %	N/A		
		8	0.3	<i>Pycnanthemum muticum</i>	Clustered mountainmint	SEED	N/A	LB of P.L.S. 100 %	N/A		
		8	0.3	<i>Rudbeckia hirta</i>	Black-eyed susan	SEED	N/A	LB of P.L.S. 100 %	N/A		
		6	0.2	<i>Symphotrichum pilosum</i>	Hairy aster	SEED	N/A	LB of P.L.S. 100 %	N/A		
		<b>100</b>	<b>3.9</b>	<b>= Total</b>							



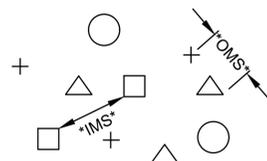
### TREE PLANTING - CONTAINER GROWN

NOT TO SCALE



### SHRUB PLANTING - CONTAINER GROWN

NOT TO SCALE



OMS- AN OVERALL MINIMUM SPACING DISTANCE \*OMS\* IS ASSIGNED TO THE PLANTING CONFIGURATION \*SEE PLANT SCHEDULE\*  
IMS- AN INDIVIDUAL MINIMUM SPACING DISTANCES \*IMS\* IS ASSIGNED TO EACH INDIVIDUAL SPECIES \*SEE PLANT SCHEDULE\*

NOTE: EACH SYMBOL INDICATES A DIFFERENT SPECIES

### PLANT SPACING - RANDOM

### PLAN VIEW

NOT TO SCALE

GRASS PAVERS = 1136 SF

THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION, DEPARTMENT OF PARK AND PLANNING M-NCPPC PERMIT NO. _____ M-NCPPC PARK FACILITY CODE _____ REVIEWED BY _____ APPROVED BY _____ CHIEF, CONSTRUCTION SECTION DATE APPROVED _____ M-NCPPC PERMIT SHEET # _____ OF _____		<b>MONTGOMERY COUNTY DEPARTMENT OF PERMITTING SERVICES APPROVED FOR:</b> Stormwater Management: <b>SEDIMENT CONTROL &amp; SAFE CONVEYANCE REVIEW ONLY</b> Reviewed Date _____ Approved Date _____ Approved Date _____ 264135 SM FILE # _____		NOTE: MCDPS APPROVAL DOES NOT NEGATE THE NEED FOR A MCDPS ACCESS PERMIT. Administrative Requirements: Reviewed Date _____ 276515 SEDIMENT CONTROL PERMIT NO. _____ MCDPS APPROVAL OF THIS PLAN WILL EXPIRE TWO YEARS FROM THE DATE OF APPROVAL, IF THE PROJECT HAS NOT STARTED.	
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### DEPARTMENT OF ENVIRONMENTAL PROTECTION

MONTGOMERY COUNTY • MARYLAND

DATE: ISSUES / REVISIONS

3/10/2015 60% DESIGN

1/29/2016 90% DESIGN

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Restore the Earth & Inspire Ecological Stewardship

### QUAIL VALLEY #2 SWM RETROFIT

MNCPPC L 6557 / F 646  
(DEP SEQ. NO. 35-ASSET 10884)  
90% DESIGN

MONTGOMERY COUNTY DEPARTMENT OF ENVIRONMENTAL PROTECTION - WATER RESOURCES ENGINEERING CONTRACT #8803000101BD - TASK ORDER 16

TITLE:

### PLANTING DETAILS

PROJECT NO.: 08041.05 SCALE: N.T.S.

BY: TB,KT CHECK: BA

DWG. NO.:



23 OF 23