

Catherine and Isiah Leggett Math and Science Building

7600 Takoma Avenue Takoma Park, MD 20912

**USING AGENCY APPROVAL** 

DATE

DATE

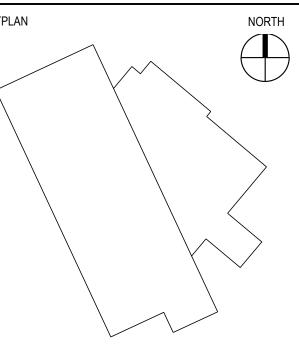
DATE

1700 NEW YORK AVENUE NW

REV DATE

17 JAN 2020 27 SEP 2019 23 JAN 2019

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



STORMWATER

AS-BUILT DATA FOR STORMWATER MANAGEMENT	T FACILITIES TO BE COMPLETEI	D BY THE CERTIFYING DESIGN ENGINEER

TYPE OF FACILITY: MICRO-BIORETENTION	SWM #1		SWM #4		SWM #5	
THE OF THORETT. MIGHE BIGHE PERMISH	DESIGN	*AS-BUILT	DESIGN	*AS-BUILT	DESIGN	*AS-BUILT
FILTER BED AREA (LxW)/ SURFACE AREA (SF)	23'x7' / 150 SF		38'x22'x9'/ 594 SF		33'x25' / 715 SF	
PLANTING MEDIA TOP ELEVATION	316.00		316.00		313.50	
OUTLET PIPE SIZE / ELEVATION	12" HDPE / 311.25		12" HDPE / 310.75		12" HDPE / 308.75	
UNDERDRAIN PIPE SIZE / ELEVATION	6" PVC / 312.00		6" PVC / 312.00		6" PVC / 309.50	
MICRO-BIORETENTION VOLUME	638 CF		2,525 CF		3,039 CF	
MULCH THICKNESS	3"		3"		3"	
PLANTING MEDIA THICKNESS	30"		30"		30"	
SAND THICKNESS	6"		6"		6"	
UNDERDRAIN GRAVEL THICKNESS	15"		15"		15"	
OVERFLOW INLET DIAMETER/TOP ELEVATION	24"/ 316.50		24" / 317.00		24" / 314.50	
UNDERDRAIN LENGTH	18'±		42'±		56'±	

6" SOLID PVC-12" MIN. APPROVED NO. 57 STONE

CLEAR TO

PERF.'S

CLEAR TO

PERF.'S

BIOFILT:table:05/13

Modified from DPS

6" DIA. PERF.

└PVC UNDERDRAIN

TOTAL LENGTH="J" LF

MICRO-BIORETENTION - TYPICAL SECTION

MNCPPC Inspection Telephone: (301)495-4571

ELEV. C = PONDING DEPTH/ESD WATER SURFACE ELEVATION ELEV. D = 10-YR WATER SURFACE ELEVATION

ELEV. E = TOP OF SAND LAYERELEV. F = TOP OF STONE LAYER

ELEV. G = BOTTOM OF UNDERDRAIN

ELEV. H = BOTTOM OF FILTER

J = TOTAL LENGTH OF UNDERDRAIN

ELEV. I = OUTLET PIPE ELEVATION

CONSTRUCTION INSPECTION CHECK-OFF LIST FOR BIOFILTRATION FACILITY (BF) City Designated INSPECTOR DESIGN ENGINEER (DE) GEOTECHNICAL ENGINEER (GEO) OTHER **IIANDATORY NOTIFICATION:** Inspection and approval by the party indicated is required at these points prior to proceeding with construction. The permittee is required to give the required inspection parties twenty-four (24) hours notice. The Designated Inspector (DI) may waive an inspection, provided the design engineer (DE) and/or geotechnical engineer (GEO) make the required inspection per a prior scheduled arrangement which has been confirmed with the Designated Inspector. Work completed without the necessary party's approval may result in the permittee having to remove and reconstruct the unapproved work. The permittee must maintain a "record set" SWM #1 | SWM #4 | SWM #5 | SWM #1 | SWM #4 | SWM #5 | SWM #1 | SWM #4 | SWM #5 | SWM #1 | SWM #4 | SWM #5 of approved SC/SM plans on-site. Pre-construction meeting & field review of tree save flagging (DE) and (M-NCP&PC Sediment control installation Grade and stabilize drainage area to biofiltration facility Excavate biofiltration facility (DE) or (GEO) Install sand, gravel, observation wells, and any other required pipe (DE) or (GEO) Install planting soil and mulch layer (DE) or (GEO) Install perimeter stabilization and placement of final cover. Place silt fence around bioretention facility. Install permanent landscaping/vegetative stabilization (DE) or (GEO). Submit record drawing and documentation to CTP - City Engineer including a completed check-off list and all delivery tickets (DE). Unblock any storm drain draining to facility with DPS inspector's written approval. Install any necessary trash racks on flow splitter structures. Final inspection (DE) and (GEO) Permittee to supply Design Engineer with delivery tickets for all materials used in bioretention facility construction. See construction specifications on this plan for detailed requirements. A copy of this completed checklist must be submitted as part of the stormwater management as-built package.

SUBGRADE

MISS UTILITY 48 HOURS BEFORE YOU DIG CALL "MISS UTILITY" AT 811 OR LOG ON TO www.missutility.net Call before you dig.

TPPW SWM SHEET 3 OF 7

Catherine and Isiah Leggett Math and Science Building

> Montgomery College Takoma Park / Silver Spring Campus 7600 Takoma Avenue Takoma Park, MD 20912

Montgomery College Project #: FP16-077 Montgomery College Building #319

MHEC Project # CC-01-MC16-458

**USING AGENCY APPROVAL** 

DATE

DATE

TITLE

**DGS APPROVAL** 

PROJECT MANAGER

CHIEF OF PM&D DATE

**SMITHGROUP** 

1700 NEW YORK AVENUE NW SUITE 100 WASHINGTON, DC 20006 202.842.2100

www.smithgroup.com

AMT Engineering CIVIL ENGINEERS 800 King Farm Boulevard, 4th Floor Rockville, MD 20850 301-881-2545

Cagley & Associates STRUCTURAL ENGINEERS 6141 Executive Boulevard Rockville, MD 20852 301-881-9050

Mahan Rykiel LANDSCAPÉ ARCHITECTS 3300 Clipper Mill Road, Suite 200 Baltimore, MD 21211

410-235-6001 AV, IT, SECURITY 7257 Parkway Drive, Suite 260

Hanover, MD 21076 410-712-0390

DWG FILE:

DRAWN BY:

CHECKED BY:

ISSUED FOR

REV DATE

23 JAN 2019

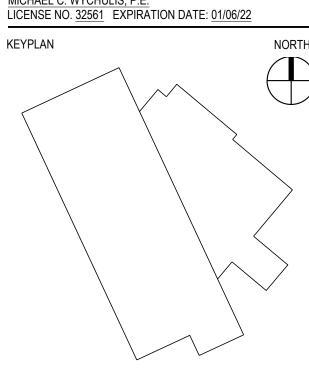
GMP4 - 100% CD & BID SET 20 MAY 2020 GMP4 - 95% CD & PERMIT SET 13 MAR 2020 GMP4 - 50% CD 17 JAN 2020 27 SEP 2019 DESIGN DEVELOPMENT

SEALS AND SIGNATURES

SCHEMATIC DESIGN SUBMISSION

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.

MICHAEL C. WYCHULIS, P.E.

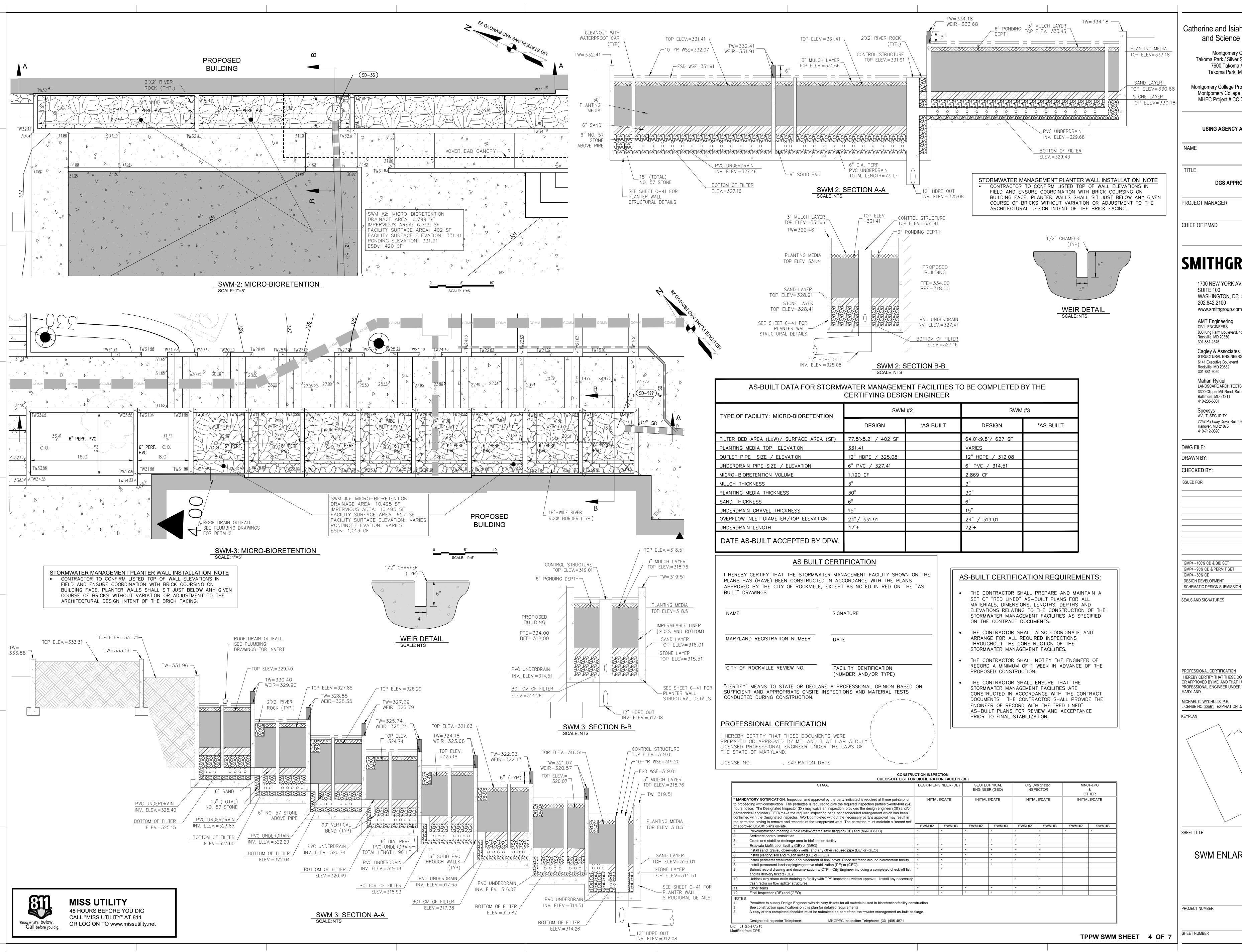


SWM ENLARGEMENT

PROJECT NUMBER

SHEET TITLE

SHEET NUMBER



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DATE CHIEF OF PM&D

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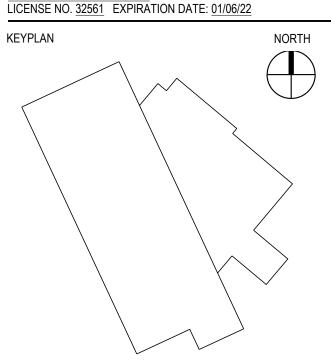
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GMP4 - 100% CD & BID SET GMP4 - 95% CD & PERMIT SET GMP4 - 50% CD DESIGN DEVELOPMENT

SEALS AND SIGNATURES

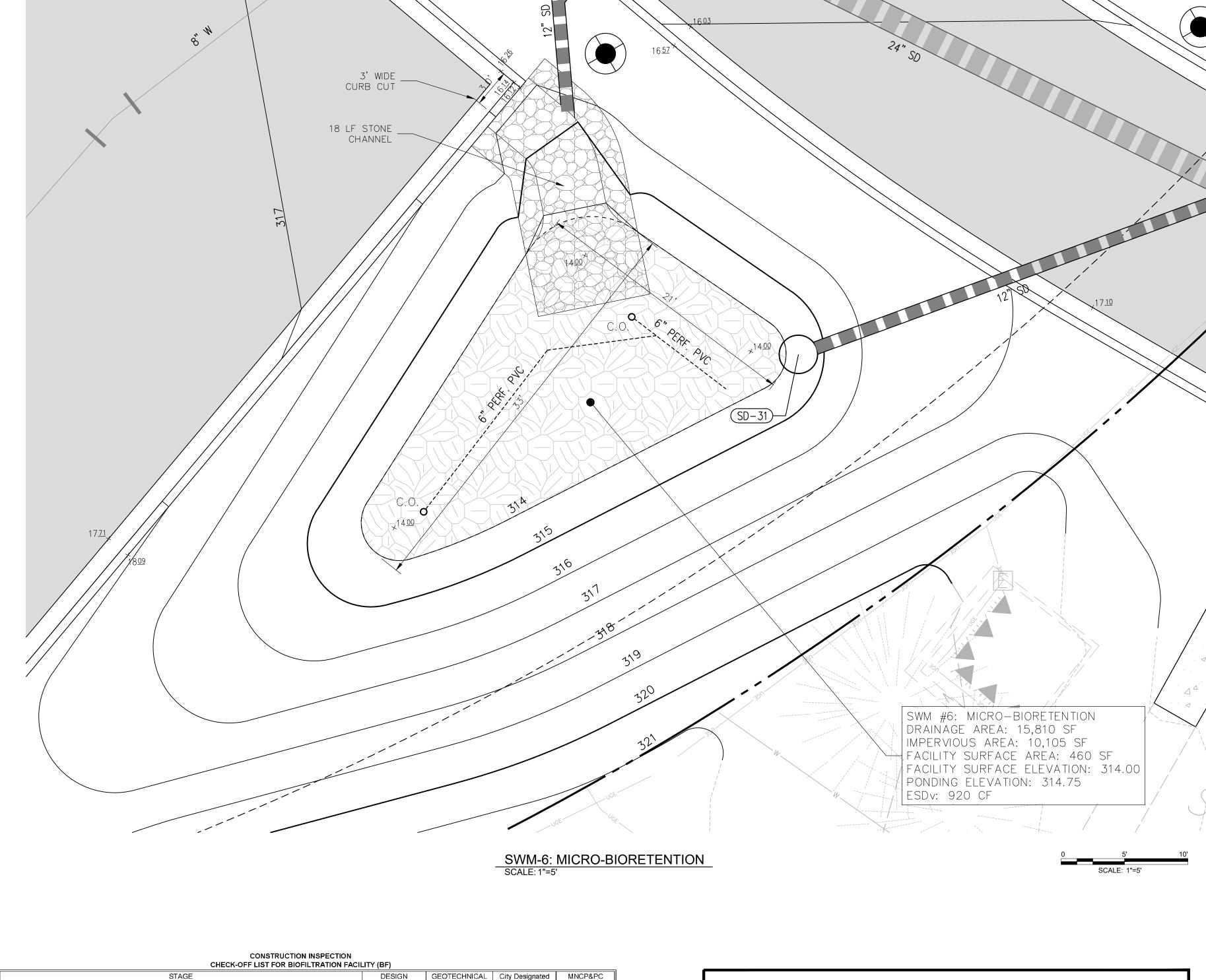
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MICHAEL C. WYCHULIS, P.E.



SWM ENLARGEMENT

PROJECT NUMBER



-10-YR WSE=314.94FILTER SURFACE \_ = TOP OF MULCH PROPOSED GRADE -CONTROL STRUCTURE -ESD WSE = 314.75CLEANOUT WITH TOP ELEV.=314.75 MINIMUM 6" WATERPROOF CAP FREE BOARD 3" MULCH LAYER\_ \_\_\_12" PONDING TOP ELEV.=314.00 DEPTH TOP ELEV=313.75 FILTER FABRIC - MIRAFI 140-N -(OR APPROVED EQUIVALENT) ON THE SIDES ONLY 30" PLANTING MEDIA — 6" SAND — TOP ELEV=311.25 STONE LAYER
TOP ELEV=310.75 6" NO. 57 STONE ABOVE PIPE 0 0 0 0 0 0 0 0 PVC UNDERDRAIN INV. ELEV.=309.75 BOTTOM OF FILTER
ELEV.=309.50 12" HDPE OUT \_ INV. ELEV.=309.25 \_15" (TOTAL) NO. 57 STONE 6" SOLID PVC-12" MIN. APPROVED SUBGRADE CLEAR TO CLEAR TO PERF.'S PERF.'S 6" DIA. PERF. └PVC UNDERDRAIN TOTAL LENGTH=32 LF MICRO-BIORETENTION - TYPICAL SECTION NOT TO SCALE --- INFLOW FROM SITE 6"-TALL CURB — PROPOSED GRADE TAPER -

CLASS SE

ORNAMENTAL STONE SHALL CONSIST OF SMOOTH "RIVER

ROCK", 2½"-4" IN DIAMETER. 12" DEEP STONE SHALL

BE PLACED AS SHOWN ABOVE.

GEOTEXTILE

STONE CHANNEL - TYPICAL SECTION NOT TO SCALE



PLAN VIEW

ISOMETRIC VIEW

TO SWM FACILITY

DEPRESSED/FLUSH CURB —

DEPRESSED/FLUSH CURB —

CHECK-OFF LIST FOR BIOFILTRATION FAC	ILITY (BF)			
STAGE	DESIGN ENGINEER (DE)	GEOTECHNICAL ENGINEER (GEO)	City Designated INSPECTOR	MNCP&PC & OTHER
* MANDATORY NOTIFICATION: Inspection and approval by the party indicated is required at these points prior to proceeding with construction. The permittee is required to give the required inspection parties twenty-four (24) hours notice. The Designated Inspector (DI) may waive an inspection, provided the design engineer (DE) and/or geotechnical engineer (GEO) make the required inspection per a prior scheduled arrangement which has been confirmed with the Designated Inspector. Work completed without the necessary party's approval may result in the permittee having to remove and reconstruct the unapproved work. The permittee must maintain a "record set"	INITIALS/DATE	INITIALS/DATE	INITIALS/DATE	INITIALS/DATE
of approved SC/SM plans on-site.	SWM #6	SWM #6	SWM #6	SWM #6
1. Pre-construction meeting & field review of tree save flagging (DE) and (M-NCP&PC)	*	*	*	*
2. Sediment control installation			*	
Grade and stabilize drainage area to biofiltration facility		*	*	
4. Excavate biofiltration facility (DE) or (GEO)	*	*	*	
5. Install sand, gravel, observation wells, and any other required pipe (DE) or (GEO)	*	*	*	
6. Install planting soil and mulch layer (DE) or (GEO)	*	*	*	
7. Install perimeter stabilization and placement of final cover. Place silt fence around bioretention facility.	*	*	*	
8. Install permanent landscaping/vegetative stabilization (DE) or (GEO).	*	*		
<ol> <li>Submit record drawing and documentation to CTP – City Engineer including a completed check-off list and all delivery tickets (DE).</li> </ol>	*			
<ol> <li>Unblock any storm drain draining to facility with DPS inspector's written approval. Install any necessary trash racks on flow splitter structures.</li> </ol>			*	
11. Other items	*	*	*	
12. Final inspection (DE) and (GEO)	*	*	*	
NOTES:  1 Permittee to supply Design Engineer with delivery tickets for all materials used in bioretention facility co	nstruction			

Permittee to supply Design Engineer with delivery tickets for all materials used in bioretention facility construction. See construction specifications on this plan for detailed requirements.

BIOFILT:table:05/13 Modified from DPS

A copy of this completed checklist must be submitted as part of the stormwater management as-built package. MNCPPC Inspection Telephone: (301)495-4571

### AS-BUILT DATA FOR STORMWATER MANAGEMENT FACILITIES TO BE COMPLETED BY THE CERTIFYING DESIGN ENGINEER

TYPE OF FACILITY: MICRO-BIORETENTION	SWM #6			
THE OF TROILITE MIGHE BIONE PERMIT	DESIGN	*AS-BUILT		
FILTER BED AREA (LxW)/ SURFACE AREA (SF)	33'x21' / 460 SF			
FILTER BED SURFACE ELEVATION	314.00			
OUTLET PIPE SIZE / ELEVATION	12" HDPE / 309.25			
UNDERDRAIN PIPE SIZE / ELEVATION	6" PVC / 309.50			
MICRO-BIORETENTION VOLUME	1,955 CF			
MULCH THICKNESS	3"			
PLANTING MEDIA THICKNESS	30"			
SAND THICKNESS	6"			
UNDERDRAIN GRAVEL THICKNESS	15"			
OVERFLOW INLET DIAMETER/TOP ELEVATION	24"/ 314.75			
UNDERDRAIN LENGTH	32'±			
UNDERDRAIN LENGTH  DATE AS-BUILT ACCEPTED BY DPW:	<i>'</i>			

### AS BUILT CERTIFICATION

I HEREBY CERTIFY THAT THE STORMWATER MANAGEMENT FACILITY SHOWN ON THE PLANS HAS (HAVE) BEEN CONSTRUCTED IN ACCORDANCE WITH THE PLANS APPROVED BY THE CITY OF ROCKVILLE, EXCEPT AS NOTED IN RED ON THE "AS BUILT" DRAWINGS.

SIGNATURE MARYLAND REGISTRATION NUMBER

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

FACILITY IDENTIFICATION

(NUMBER AND/OR TYPE)

### PROFESSIONAL CERTIFICATION

CITY OF ROCKVILLE REVIEW NO.

ORNAMENTAL LANDSCAPE STONE

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

LICENSE NO. \_\_\_\_\_\_, EXPIRATION DATE

## AS-BUILT CERTIFICATION REQUIREMENTS:

- THE CONTRACTOR SHALL PREPARE AND MAINTAIN A SET OF "RED LINED" AS-BUILT PLANS FOR ALL MATERIALS, DIMENSIONS, LENGTHS, DEPTHS AND ELEVATIONS RELATING TO THE CONSTRUCTION OF THE STORMWATER MANAGEMENT FACILITIES AS SPECIFIED ON THE CONTRACT DOCUMENTS.
- THE CONTRACTOR SHALL ALSO COORDINATE AND ARRANGE FOR ALL REQUIRED INSPECTIONS THROUGHOUT THE CONSTRUCTION OF THE STORMWATER MANAGEMENT FACILITIES.
- THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD A MINIMUM OF 1 WEEK IN ADVANCE OF THE PROPOSED CONSTRUCTION.
- THE CONTRACTOR SHALL ENSURE THAT THE STORMWATER MANAGEMENT FACILITIES ARE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL PROVIDE THE ENGINEER OF RECORD WITH THE "RED LINED" AS-BUILT PLANS FOR REVIEW AND ACCEPTANCE PRIOR TO FINAL STABILIZATION.

MISS UTILITY 48 HOURS BEFORE YOU DIG CALL "MISS UTILITY" AT 811 OR LOG ON TO www.missutility.net

OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MICHAEL C. WYCHULIS, P.E. LICENSE NO. 32561 EXPIRATION DATE: 01/06/22

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED

Catherine and Isiah Leggett Math

and Science Building

Montgomery College Takoma Park / Silver Spring Campus

7600 Takoma Avenue Takoma Park, MD 20912

Montgomery College Project #: FP16-077

Montgomery College Building #319 MHEC Project # CC-01-MC16-458

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410-712-0390

GMP4 - 100% CD & BID SET

DESIGN DEVELOPMENT

SEALS AND SIGNATURES

PROFESSIONAL CERTIFICATION

GMP4 - 50% CD

GMP4 - 95% CD & PERMIT SET

SCHEMATIC DESIGN SUBMISSION

DWG FILE:

DRAWN BY:

CHECKED BY:

ISSUED FOR

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SUITE 100

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CHIEF OF PM&D

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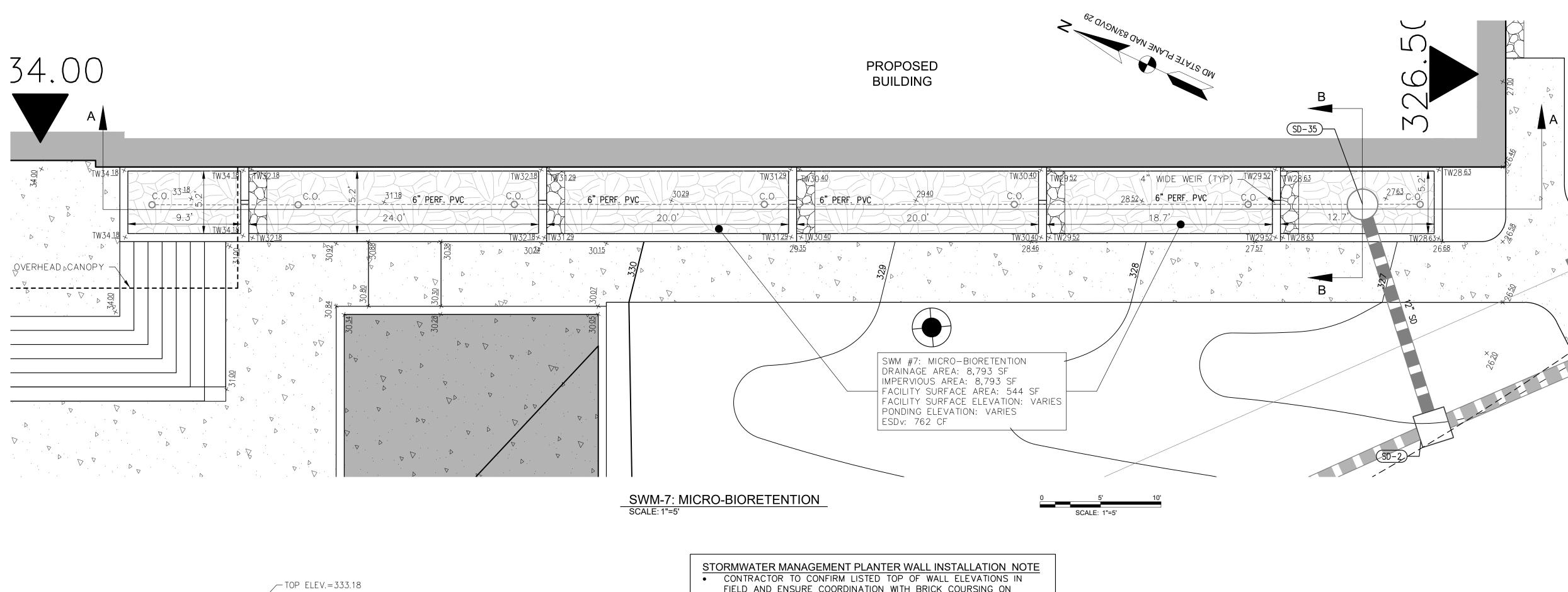
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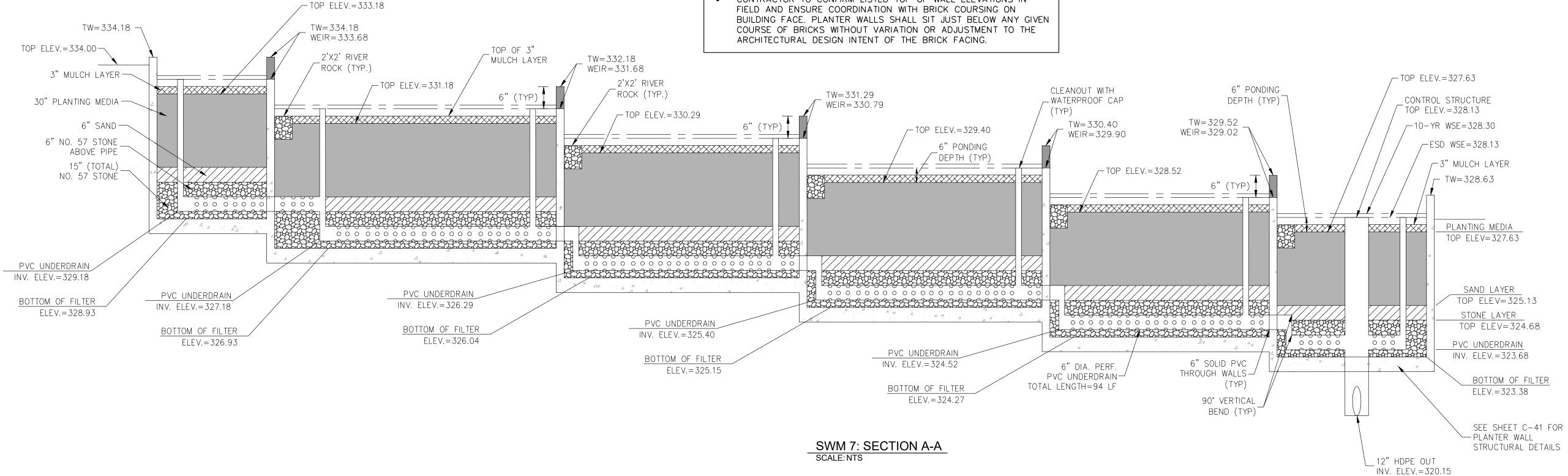
SWM ENLARGEMENT

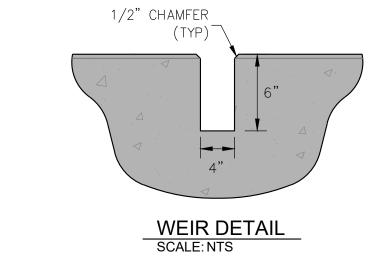
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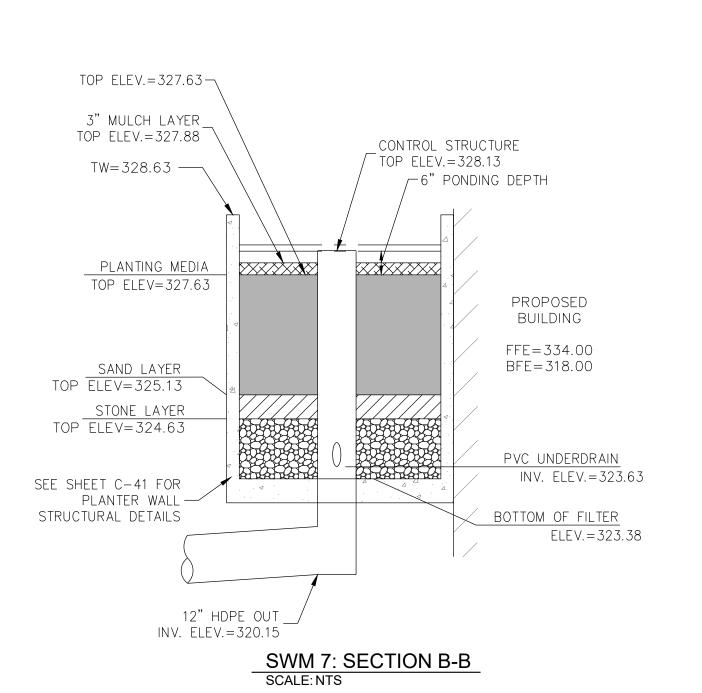
SHEET TITLE

TPPW SWM SHEET 5 OF 7









	STAGE	DESIGN ENGINEER (DE)	GEOTECHNICAL ENGINEER (GEO)	City Designated INSPECTOR	MNCP&PC & OTHER
to proce hours r geotect confirm	DATORY NOTIFICATION: Inspection and approval by the party indicated is required at these points prior peding with construction. The permittee is required to give the required inspection parties twenty-four (24) office. The Designated Inspector (DI) may waive an inspection, provided the design engineer (DE) and/or inical engineer (GEO) make the required inspection per a prior scheduled arrangement which has been ed with the Designated Inspector. Work completed without the necessary party's approval may result in mittee having to remove and reconstruct the unapproved work. The permittee must maintain a "record set"	INITIALS/DATE	INITIALS/DATE	INITIALS/DATE	INITIALS/DATE
of appr	oved SC/SM plans on-site.	SWM #7	SWM #7	SWM #7	SWM #7
1.	Pre-construction meeting & field review of tree save flagging (DE) and (M-NCP&PC)	*	*	*	*
2.	Sediment control installation			*	
3.	Grade and stabilize drainage area to biofiltration facility		*	*	
4.	Excavate biofiltration facility (DE) or (GEO)	*	*	*	
5.	Install sand, gravel, observation wells, and any other required pipe (DE) or (GEO)	*	*	*	
6.	Install planting soil and mulch layer (DE) or (GEO)	*	*	*	
7.	Install perimeter stabilization and placement of final cover. Place silt fence around bioretention facility.	*	*	*	
8.	Install permanent landscaping/vegetative stabilization (DE) or (GEO).	*	*		
9.	Submit record drawing and documentation to CTP – City Engineer including a completed check-off list and all delivery tickets (DE).	*			
10.	Unblock any storm drain draining to facility with DPS inspector's written approval. Install any necessary trash racks on flow splitter structures.			*	
11.	Other items	*	*	*	
12.	Final inspection (DE) and (GEO)	*	*	*	
NOTES 1. 2. 3.	Permittee to supply Design Engineer with delivery tickets for all materials used in bioretention facility consiste construction specifications on this plan for detailed requirements.  A copy of this completed checklist must be submitted as part of the stormwater management as-built pactors as part of the stormwater management as-built pactors.  MNCPPC Inspection Telephone: (301)495-4571				

AS-BUILT DATA FOR STORMWATER MANAGEMENT FACILITIES TO BE COMPLETED BY THE CERTIFYING DESIGN ENGINEER				
TYPE OF FACILITY: MICRO-BIORETENTION	SWM #7			
THE STANGETT MISTORE BISINETERMIST	DESIGN	*AS-BUILT		
FILTER BED AREA (LxW)/ SURFACE AREA (SF)	104.6'x5.2' / 544 SF			
PLANTING MEDIA TOP ELEVATION	327.63			
OUTLET PIPE SIZE / ELEVATION	12" HDPE / 320.15			
UNDERDRAIN PIPE SIZE / ELEVATION	6" PVC / 323.63			
MICRO-BIORETENTION VOLUME	2,125 CF			
MULCH THICKNESS	3"			
PLANTING MEDIA THICKNESS	30"			
SAND THICKNESS	6"			
UNDERDRAIN GRAVEL THICKNESS	15"			
OVERFLOW INLET DIAMETER/TOP ELEVATION	24"/ 328.13			
UNDERDRAIN LENGTH	94'±			
DATE AS-BUILT ACCEPTED BY DPW:				

NAME		SIGNATURE
MARYLAND REGISTRA	ATION NUMBER	DATE
CITY OF ROCKVILLE	REVIEW NO.	FACILITY IDENTIFICATION (NUMBER AND/OR TYPE)
	ROPRIATE ONSITE	RE A PROFESSIONAL OPINION BASED ON INSPECTIONS AND MATERIAL TESTS
	CERTIFICATIO	NI /

AS BUILT CERTIFICATION

# AS-BUILT CERTIFICATION REQUIREMENTS:

- THE CONTRACTOR SHALL PREPARE AND MAINTAIN A SET OF "RED LINED" AS-BUILT PLANS FOR ALL MATERIALS, DIMENSIONS, LENGTHS, DEPTHS AND ELEVATIONS RELATING TO THE CONSTRUCTION OF THE STORMWATER MANAGEMENT FACILITIES AS SPECIFIED ON THE CONTRACT DOCUMENTS.
- THE CONTRACTOR SHALL ALSO COORDINATE AND ARRANGE FOR ALL REQUIRED INSPECTIONS THROUGHOUT THE CONSTRUCTION OF THE

PROPOSED CONSTRUCTION.

- STORMWATER MANAGEMENT FACILITIES. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD A MINIMUM OF 1 WEEK IN ADVANCE OF THE
- THE CONTRACTOR SHALL ENSURE THAT THE STORMWATER MANAGEMENT FACILITIES ARE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL PROVIDE THE ENGINEER OF RECORD WITH THE "RED LINED" AS-BUILT PLANS FOR REVIEW AND ACCEPTANCE PRIOR TO FINAL STABILIZATION.



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GMP4 - 100% CD & BID SET

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MICHAEL C. WYCHULIS, P.E. LICENSE NO. <u>32561</u> EXPIRATION DATE: <u>01/06/22</u>

GMP4 - 50% CD

GMP4 - 95% CD & PERMIT SET

SCHEMATIC DESIGN SUBMISSION

DWG FILE:

DRAWN BY:

CHECKED BY:

ISSUED FOR

410-235-6001

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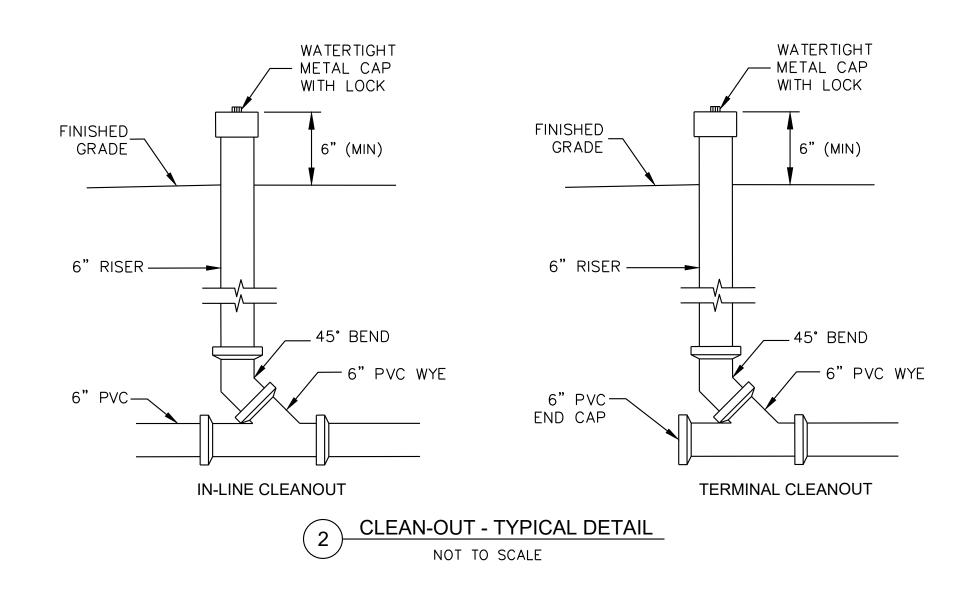
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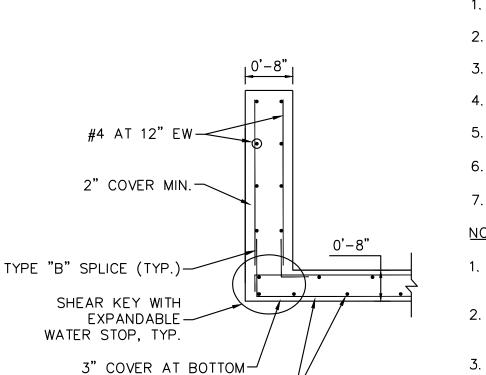
SHEET NUMBER

TPPW SWM SHEET 6 OF 7

SWM ENLARGEMENT



STORMWATER MANAGEMENT PLANTER WALL INSTALLATION NOTE CONTRACTOR TO CONFIRM LISTED TOP OF WALL ELEVATIONS IN FIELD AND ENSURE COORDINATION WITH BRICK COURSING ON BUILDING FACE. PLANTER WALLS SHALL SIT JUST BELOW ANY GIVEN COURSE OF BRICKS WITHOUT VARIATION OR ADJUSTMENT TO THE ARCHITECTURAL DESIGN INTENT OF THE BRICK FACING.



#4 AT 12" EW-

PLANTER WALL STRUCTURAL MATERIAL NOTES:

1. ALL CONCRETE SHALL BE 4,500 PSI.

2. ALLOWABLE BEARING PRESSURE IS 3,000 PSF.

3. WALL FRICTION ANGLE IS 30 DEGREES.

4. FRICTION COEFFICIENT IS 0.30.

5. REBAR Fy IS 60,000 PSI.

6. CONCRETE UNIT WEIGHT IS 150 LB/CF.

7. BACKFILL UNIT WEIGHT = 120 LB/CF.

1. PROVIDE CONTROL JOINTS AT 15' O.C. AND AT EVERY WALL

2. AT ALL CONTROL JOINTS INTERRUPT EVERY OTHER HORIZONTAL BAR AND PROVIDE CHAMFER WITH JOINT SEALANT FILL.

3. AT ALL CONSTRUCTION JOINTS (WALL AND FOOTING) PROVIDE SHEAR KEY, EXPANDABLE WATERSTOP, AND WRAPPED HORIZONTAL BARS.

BIORETENTION PLANTER WALL - STRUCTURAL DETAIL NOT TO SCALE

### PLASTIC DRAIN BASIN w/ DOMED GRATE NOT TO SCALE

MAINTENANCE SCHEDULE FOR MICRO-BIORETENTION					
DESCRIPTION	METHOD	FREQUENCY	TIME OF YEAR		
OIL					
INSPECT AND REPAIR EROSION	VISUAL	MONTHLY	MONTHLY		
RGANIC LAYER					
REMULCH ANY VOID AREAS	BY HAND	WHENEVER NEEDED	WHENEVER NEEDED		
REMOVE PREVIOUS MULCH LAYER BEFORE APPLYING NEW LAYER (OPTIONAL)	BY HAND	ONCE EVERY TWO TO THREE YEARS	SPRING		
ANY ADDITIONAL MULCH ADDED (OPTIONAL)	BY HAND	ONCE A YEAR	SPRING		
ANTS	•	•			
REMOVAL AND REPLACEMENT OF ALL DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT	SEE PLANTING SPECIFICATIONS	TWICE A YEAR	3/15 TO 4/30 AND 10/1 TO 11/30		
TREAT ALL DISEASED TREES AND SHRUBS	MECHANICAL OR BY HAND	N/A	VARIES, DEPENDS ON INSECT OR DISEASE INFESTATION		
WATERING OF PLANT MATERIAL SHALL TAKE PLACE AT THE END OF EACH DAY FOR FOURTEEN CONSECUTIVE DAYS AFTER PLANTING HAS BEEN COMPLETED	BY HAND	IMMEDIATELY AFTER PROJECT COMPLETION	N/A		
REPLACE STAKES AFTER ONE YEAR	BY HAND	ONCE A YEAR	ONLY REMOVE STAKES IN THE SPRING		
REPLACE ANY DEFICIENT STAKES OR WIRES	BY HAND	N/A	WHENEVER NEEDED		

# AS-BUILT CERTIFICATION REQUIREMENTS

- THE CONTRACTOR SHALL PREPARE AND MAINTAIN A SET OF "RED LINED" AS-BUILT PLANS FOR THE CONSTRUCTION OF THE SWM
- THE CONTRACTOR SHALL ALSO COORDINATE AND ARRANGE FOR ALL REQUIRED INSPECTIONS THROUGHOUT THE CONSTRUCTION OF THE SWM FACILITY(S).
- THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF RECORD A MINIMUM OF 1 WEEK IN ADVANCE OF THE PROPOSED CONSTRUCTION.
- THE CONTRACTOR SHALL ENSURE THAT THE SWM FACILITY(S) ARE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL PROVIDE THE ENGINEER OF RECORD WITH THE "RED LINED" AS-BUILT PLANS FOR REVIEW AND ACCEPTANCE PRIOR TO FINAL STABILIZATION.

### MC DPS MICRO-BIORETENTION SPECIFICATIONS

- 1. THE UNDERDRAIN CONSISTS OF 6-INCH DIAMETER SCHEDULE 40 OR STRONGER PERFORATED PVC PIPE AT 0.00% SLOPE. THE UNDERDRAIN PIPE WILL BE PLACED WITHIN THE GRAVEL LAYER. A MINIMUM OF 3-INCHES OF GRAVEL MUST BE PLACED UNDER THE PIPE, WITH A MINIMUM OF 6-INCHES OF GRAVEL OVER THE PIPE. PERFORATIONS MUST BE 3/8 INCH IN DIAMETER AND MUST BE LOCATED 4 INCHES ON CENTER, EVERY 90 DEGREES AROUND THE PIPE. PERFORATED PIPE MUST BEGIN AT LEAST 12-INCHES INSIDE THE FILTER MEDIA. FILTER FABRIC MUST NOT BE WRAPPED AROUND THE UNDERDRAIN PIPE. AN ACCEPTABLE ALTERNATIVE TO PERFORATED PIPE IS 6-INCH DIAMETER SCHEDULE 40 SLOTTED PVC PIPE WITH 0.125-INCH SLOTS. SLOTS SHALL BE 0.125-INCHES WIDE AND A MINIMUM OF 1.9-INCHES IN LENGTH, WITH A MINIMUM OF 4 SLOTS PER ROW AND 4 ROWS PER LINEAR FOOT OF PIPE.
- 2. ACCESS FOR CLEANING ALL UNDERDRAIN PIPING IS NEEDED. WATERTIGHT CLEAN-OUTS FOR EACH PIPE SHALL BE LEVEL WITH THE TOP OF THE MULCH. ALL CLEAN-OUTS SHOULD BE 6" IN DIAMETER AND HAVE A REMOVABLE WATERPROOF CAP. CLEANOUTS MUST BE CAPPED IMMEDIATELY AFTER FILTER MEDIA IS IN PLACE.
- 3. THE GRAVEL LAYER SURROUNDING THE UNDERDRAIN PIPE(S) MUST MEET MSHA SIZE #7 (TABLE 901A), AND MUST PROVIDE A MINIMUM OF 6-INCHES COVER OVER THE PIPE(S), AND MINIMUM 3-INCHES UNDER THE PIPE. NO GEOTEXTILE OR FILTER FABRIC IS ALLOWED TO BE PLACED HORIZONTALLY ANYWHERE WITHIN THE FILTER
- 4. A MINIMUM 6-INCH FINE AGGREGATE SAND LAYER SHALL BE PROVIDED BELOW THE PLANTING MEDIA. ASTM C33 OR AASHTO M6 FINE AGGREGATE CONCRETE SAND IS REQUIRED PER MONTGOMERY COUNTY SAND SPECIFICATIONS.
- 5. THE PLANTING MEDIA SHALL BE 24"-48" THICK AND SHALL CONSIST OF 1/3 PERLITE OR SOLITE, 1/3 COMPOST AND 1/3 TOPSOIL. THE PERLITE SHALL BE COARSE GRADE HORTICULTURAL PERLITE. THE COMPOST SHALL BE HIGH GRADE COMPOST FREE OF STONES AND PARTIALLY COMPOSTED WOODY MATERIAL. THE SOIL SHALL MEET THE FOLLOWING MINIMUM CRITERIA: CONTAIN NO MORE THAN 10% CLAY, 30-55% SILTS AND 35-60% SAND. THE SOIL SHALL BE FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN 2-INCHES. THE FIRST LAYER OF THE PLANTING MEDIA SHALL BE LIGHTLY TILLED TO MIX IT INTO THE SAND LAYER, SO AS NOT TO CREATE A DEFINITIVE BOUNDARY. THE PLANTING MATERIAL SHALL BE FLOODED AFTER PLACEMENT. ANY SETTLEMENT THAT OCCURS SHALL BE FILLED BACK TO THE DESIGN ELEVATION.
- 6. THE MULCH LAYER IS AN IMPORTANT PART OF THE MICRO-BIORETENTION DEVICE. MUCH OF THE POLLUTANT REMOVAL CAPACITY OF THE MICRO-BIORETENTION SYSTEM IS WITHIN THE MULCH LAYER. THE SURFACE MULCH LAYER WILL CONSIST OF STANDARD DOUBLE SHREDDED AGED HARDWOOD MULCH. THE MULCH SHOULD BE APPLIED UNIFORMLY TO A DEPTH OF 3 INCHES. YEARLY REPLENISHING MAY BE NECESSARY. PINE BARK IS NOT ACCEPTABLE.
- 7. PLANTS, THROUGH THEIR POLLUTANT UPTAKE AND EVAPO-TRANSPIRATION OF STORMWATER RUNOFF, PLAY A KEY ROLE IN THE OVERALL EFFECTIVENESS OF THE MICRO-BIORETENTION DEVICE. BOTH THE NUMBER AND TYPE OF TREE AND SHRUB PLANTINGS FOR THE SYSTEM MAY VARY, ESPECIALLY WHERE AESTHETICS OR OTHER CONSIDERATIONS ARE CRITICAL TO SITE DEVELOPMENT. WHILE NATIVE PLANTS ARE ENCOURAGED, THEY ARE NOT ALWAYS APPROPRIATE IN ALL SITUATIONS. WHILE NO HARD PLANTING RULE EXISTS, THE PLANTS SHOULD BE A MIX OF TREES, SHRUBS AND HERBACEOUS MATERIALS. HOWEVER, THERE SHOULD BE 2 TO 3 SHRUBS PLANTED PER TREE AND HERBACEOUS PLANTINGS SHALL MAKE UP 40% OF THE TOTAL NUMBER OF PLANTS. TREES SHALL BE A MINIMUM OF 1 ½ IN. CALIPER, SHRUBS SHALL BE MINIMUM 2 GAL. SIZE AND HERBACEOUS PLANTS SHALL BE A MINIMUM 1 GAL SIZE, MATURE PLANT CANOPY SHOULD COVER 85% OF THE MICRO-BIORETENTION DEVICE. ALTERNATIVE PLANTING SCHEMES, INCLUDING USE OF GRASSES, MAY BE CONSIDERED IN SOME SITUATIONS, SO LONG AS THE PLANTING PLAN IS DESIGNED BY A REGISTERED LANDSCAPE ARCHITECT REGISTERED IN THE STATE OF MARYLAND, HOWEVER LAWN GRASSES ARE NOT APPROPRIATE FOR THESE FACILITIES. ALL PLANTINGS SHALL BE IN ACCORDANCE WITH THE MONTGOMERY COUNTY LANDSCAPE GUIDELINES. ALL LANDSCAPE PLANS MUST BE SEALED BY A REGISTERED LANDSCAPE ARCHITECT. SINCE THE PLANTS ARE AN INTEGRAL PART OF THE MICRO-BIORETENTION SYSTEM, NO CHANGES TO THE APPROVED LANDSCAPE PLAN WILL BE ALLOWED UNLESS AN ALTERNATE PLANT LIST, PREPARED BY A REGISTERED LANDSCAPE ARCHITECT, HAS BEEN APPROVED BY DPS PRIOR TO INSTALLATION. SINCE PLANT AVAILABILITY CAN CHANGE, DPS SUGGESTS INCLUDING AN ALTERNATE PLANT LIST ON THE LANDSCAPING PLANS.
- 8. PROVIDE APPROVED FILTER CLOTH (MIRAFI 140N OR APPROVED EQUIVALENT) ON THE SIDES OF THE TRENCH ONLY. DO NOT PLACE ANY GEOTEXTILE OR FILTER FÁBRIC ON THE BOTTOM OF THE TRENCH, OR HORIZONTALLY ANYWHERE WITHIN THE FACILITY.

### MONTGOMERY COUNTY SAND SPECIFICATIONS

WASHED ASTM C33 FINE AGGREGATE CONCRETE SAND IS UTILIZED FOR STORMWATER MANAGEMENT APPLICATIONS IN MONTGOMERY COUNTY. IN ADDITION TO THE ASTM C33 SPECIFICATION, SAND MUST MEET ALL OF THE FOLLOWING CONDITIONS:

- 1. SAND MUST MEET GRADATION REQUIREMENTS FOR ASTM C-33 FINE AGGREGATE CONCRETE SAND. AASHTO M-6 GRADATION IS ALSO ACCEPTABLE.
- 2. SAND MUST BE SILICA BASED. NO LIMESTONE BASED PRODUCTS MAY BE USED. IF THE MATERIAL IS WHITE OR GRAY IN COLOR, IT IS PROBABLY NOT ACCEPTABLE.
- 3. SAND MUST BE CLEAN, NATURAL, UNWASHED SAND DEPOSITS MAY NOT BE USED. LIKEWISE, SAND THAT HAS BECOME CONTAMINATED BY IMPROPER STORAGE OR INSTALLATION PRACTICES WILL BE REJECTED.
- 4. MANUFACTURED SAND OR STONE DUST IS NOT ACCEPTABLE UNDER ANY CIRCUMSTANCE.

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NAME	DATE
TITLE	
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PROJECT MANAGER	DATE
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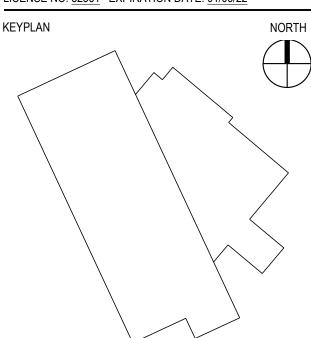
SCHEMATIC DESIGN SUBMISSION

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

MICHAEL C. WYCHULIS, P.E. LICENSE NO. 32561 EXPIRATION DATE: 01/06/22

MARYLAND.



SWM SPECIFICATIONS NOTES AND DETAILS

PROJECT NUMBER