



TECHNO-GRAM 003-2025



SUBJECT: Department of Public Works and Transportation (DPW&T)'s Standard Bioswale and Micro-Bioretenention Details

PURPOSE: The purpose of this techno-gram is to publish the County's Standard Micro-Bioretenention Details issued by DPW&T

SCOPE: This applies to the Department of Permitting, Inspections and Enforcement (DPIE)'s Site/Road Plan Review Division (S/RPRD)'s Street Construction, Site Development Fine Grading, and Utility Permits

This techno-gram publishes the new Standard Micro-Bioretenention Details developed and issued by DPW&T dated July 2, 2025. These details will be included in the Prince George's County DPW&T *Specifications and Standards for Roadways and Bridges* manual.

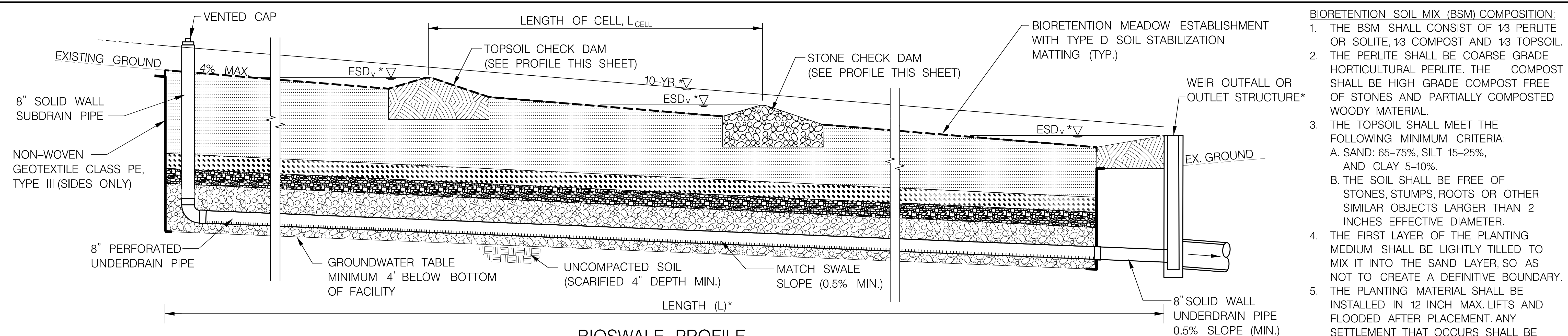
The attached Bioswale and Micro-Bioretenention Standard Details shall be utilized to construct stormwater management micro-bioretenention devices. Effective immediately, these details shall be included on permit plans that include micro-bioretenention.

APPROVED BY:


Dawit Abraham (Aug 4, 2025 09:56:22 EDT)

Dawit Abraham, P.E.
Director

August 1, 2025



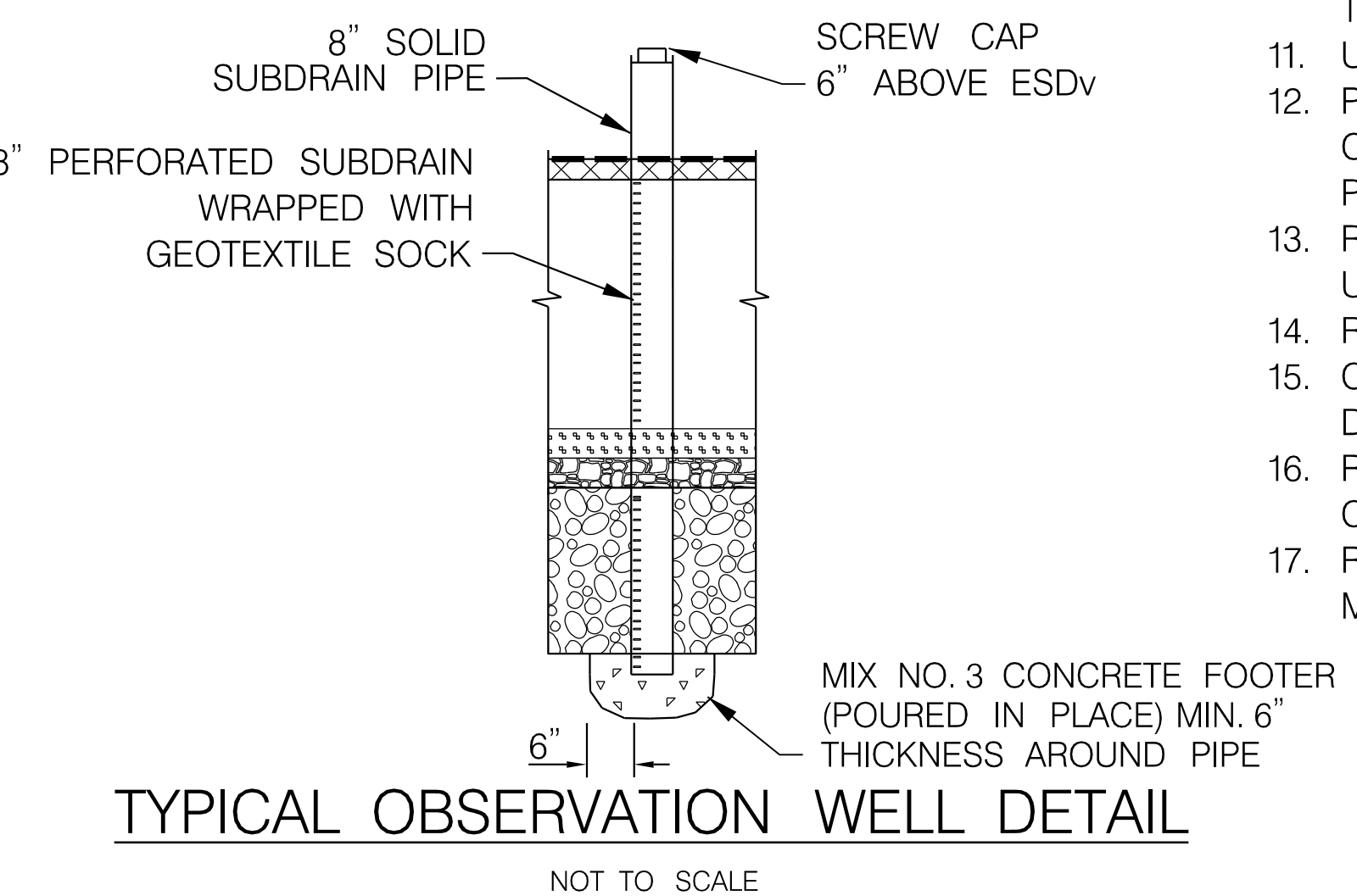
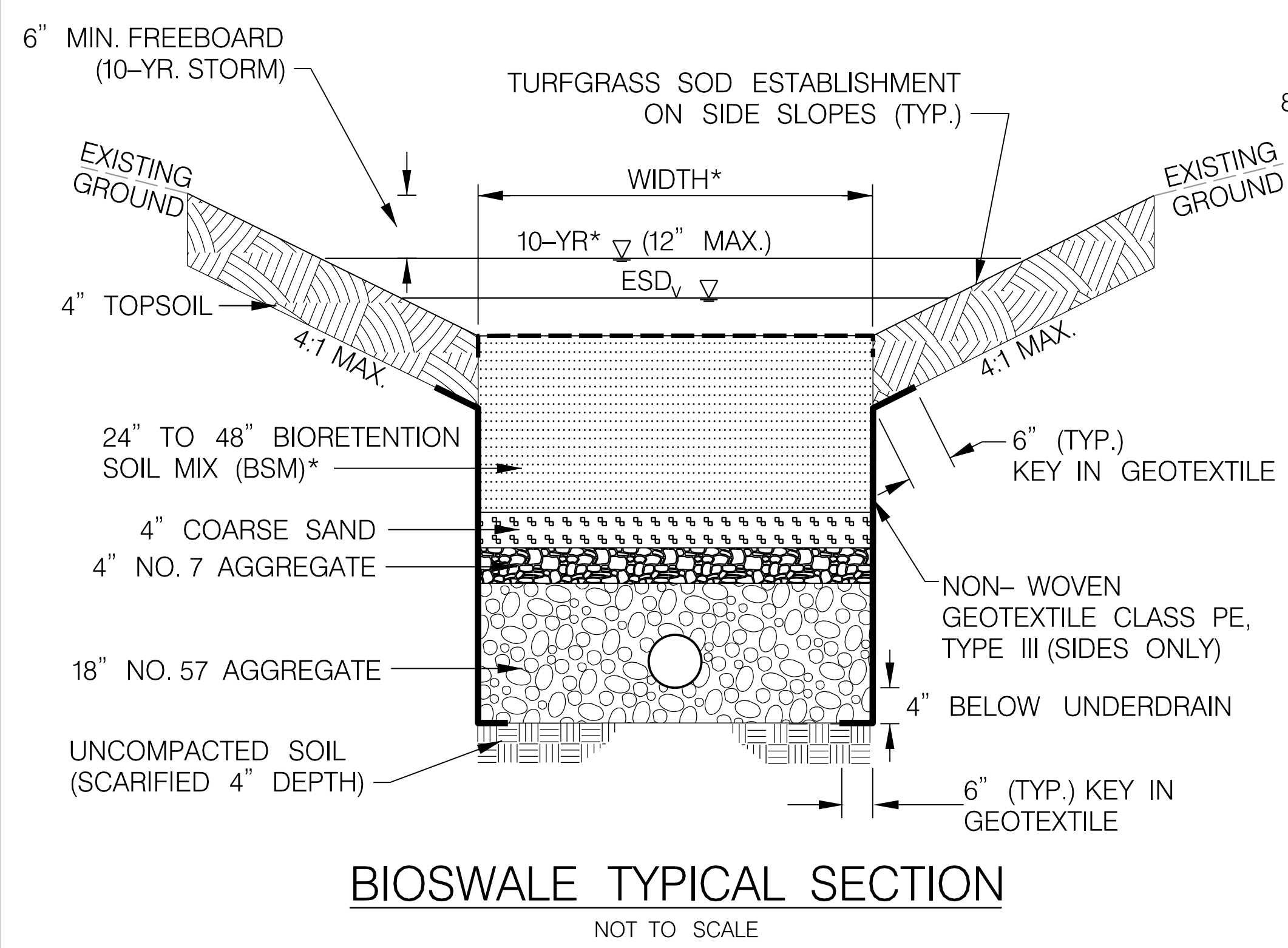
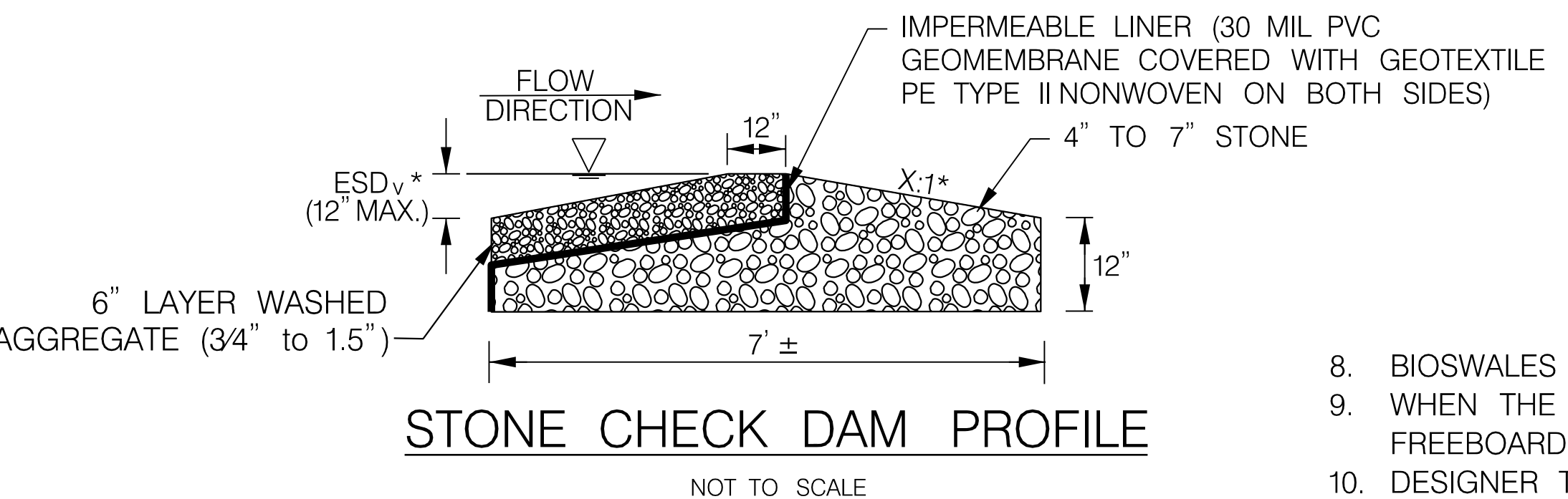
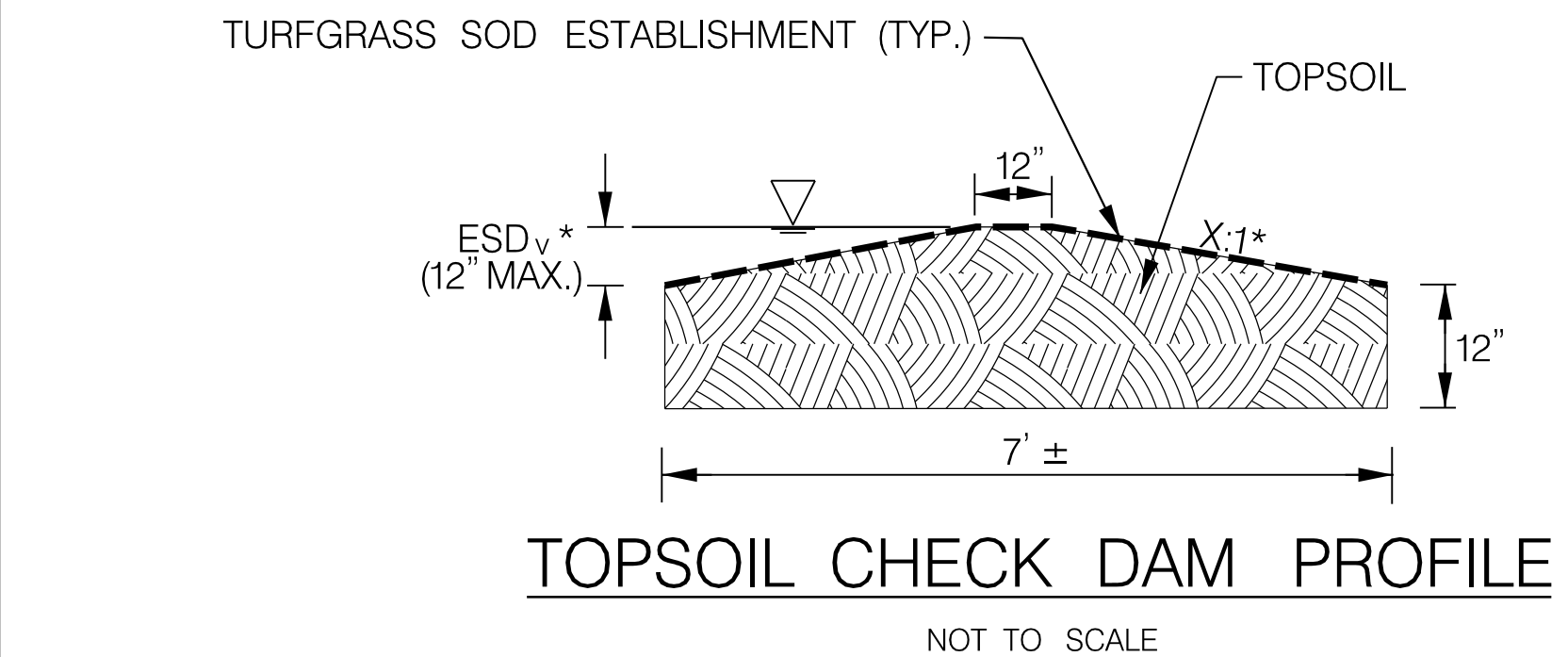
BIOSWALE PROFILE


NOT TO SCALE
SHOW ENTIRE PROFILE AS DESIGNED

NOTES:

1. REFER TO PRINCE GEORGE'S COUNTY STORMWATER MANAGEMENT DESIGN MANUAL SECTION 10.8.8 FOR MORE INFORMATION.
2. INCLUDE SWM FACILITY NUMBER ON SWM SHEETS.
3. DESIGN SWALES TO CONVEY ESD_v AND/OR 1-YEAR STORM AT NON-EROSIVE VELOCITIES (<1 FPS).
4. SIDE SLOPES NO STEEPER THAN 4:1, REFER TO AASHTO WHEN ADJACENT TO ROADWAY.
5. BOTTOM WIDTH SHALL BE 2 FT. TO 8 FT.
6. PLACE CHECK DAMS NO CLOSER THAN 50 FT. APART.
7. CONNECT UNDERDRAIN TO OUTLET STRUCTURE OR OUTFALL. PROVIDE RODENT CONTROL SCREEN WHEN UNDERDRAIN DAYLIGHTS TO OUTFALL.
8. BIOSWALES SHALL NOT BE LOCATED ABOVE OR ON A MARLBORO CLAY OR CHRISTIANA SOIL TYPE.
9. WHEN THE FACILITY WILL BE MAINTAINED BY THE DPW&T, THE FOLLOWING APPLIES: MIN. 6 INCHES OF FREEBOARD SHALL BE PROVIDED FROM 10-YEAR WSEL TO EDGE OF PAVING OR CURB FLOWLINE.
10. DESIGNER TO SPECIFY TOPSOIL OR STONE CHECK DAMS. ADDITIONAL MATERIALS REQUIRE APPROVAL FROM THE DPIE DISTRICT ENGINEER.
11. UNDERDRAIN IS REQUIRED FOR ALL SOIL TYPES.
12. POLYVINYL CHLORIDE PIPE (PVC) SHALL CONFORM TO ASTM M-278. PERFORATED OR SOLID-WALL POLYVINYL CHLORIDE PROFILE WALL DRAIN PIPE (PPWP) SHALL MEET ASTM M-304. CORRUGATED POLYETHYLENE DRAINAGE PIPE (CPP) SHALL MEET ASTM M-294.
13. REFER TO THE AASHTO ROADSIDE DESIGN GUIDE TO EVALUATE TRAFFIC BARRIER REQUIREMENTS BASED UPON CHECK DAM DESIGN.
14. REFER TO DPW&T SPECIFICATIONS SECTION 316 FOR BSM COMPOSITION.
15. CONTRACTOR TO PROVIDE AN APPROVED AS-BUILT INSPECTOR ON-SITE DURING CONSTRUCTION TO DOCUMENT AND CERTIFY PROPER INSTALLATION.
16. REFER TO PRINCE GEORGE'S COUNTY DETAILS FOR REQUIRED INSTALLATION CHECKLIST AND AS-BUILT CERTIFICATION TABLES.
17. REFER TO THE DPW&T BEST MANAGEMENT PRACTICE (BMP) MAINTENANCE MANUAL FOR REQUIRED MAINTENANCE ACTIVITIES AND SCHEDULE.

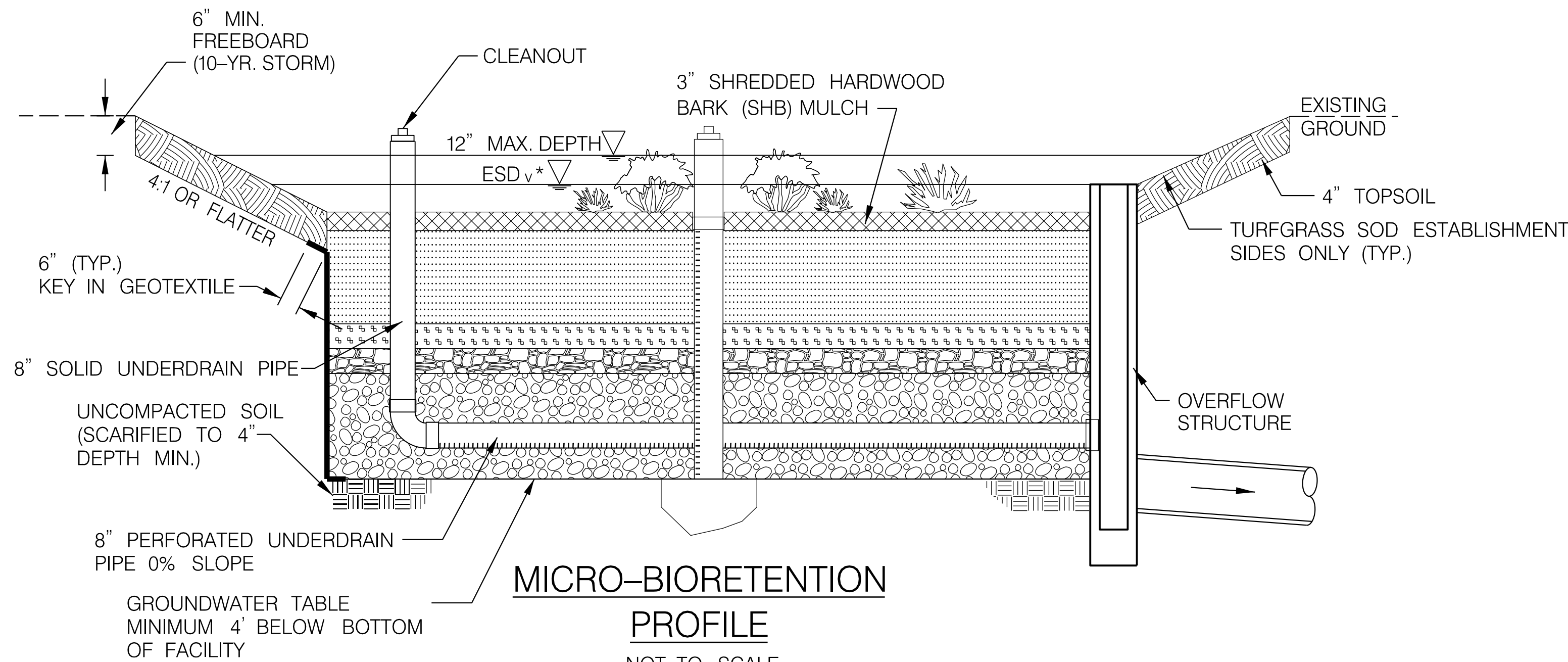
- BIORETENTION SOIL MIX (BSM) COMPOSITION:**
1. THE BSM SHALL CONSIST OF 1/3 PERLITE OR SOLITE, 1/3 COMPOST AND 1/3 TOPSOIL.
 2. THE PERLITE SHALL BE COARSE GRADE HORTICULTURAL PERLITE. THE COMPOST SHALL BE HIGH GRADE COMPOST FREE OF STONES AND PARTIALLY COMPOSTED WOODY MATERIAL.
 3. THE TOPSOIL SHALL MEET THE FOLLOWING MINIMUM CRITERIA:
A. SAND: 65-75%, SILT 15-25%, AND CLAY 5-10%.
B. THE SOIL SHALL BE FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN 2 INCHES EFFECTIVE DIAMETER.
 4. THE FIRST LAYER OF THE PLANTING MEDIUM SHALL BE LIGHTLY TILLED TO MIX IT INTO THE SAND LAYER, SO AS NOT TO CREATE A DEFINITIVE BOUNDARY.
 5. THE PLANTING MATERIAL SHALL BE INSTALLED IN 12 INCH MAX. LIFTS AND FLOODED AFTER PLACEMENT. ANY SETTLEMENT THAT OCCURS SHALL BE FILLED BACK TO THE DESIGN ELEVATION.



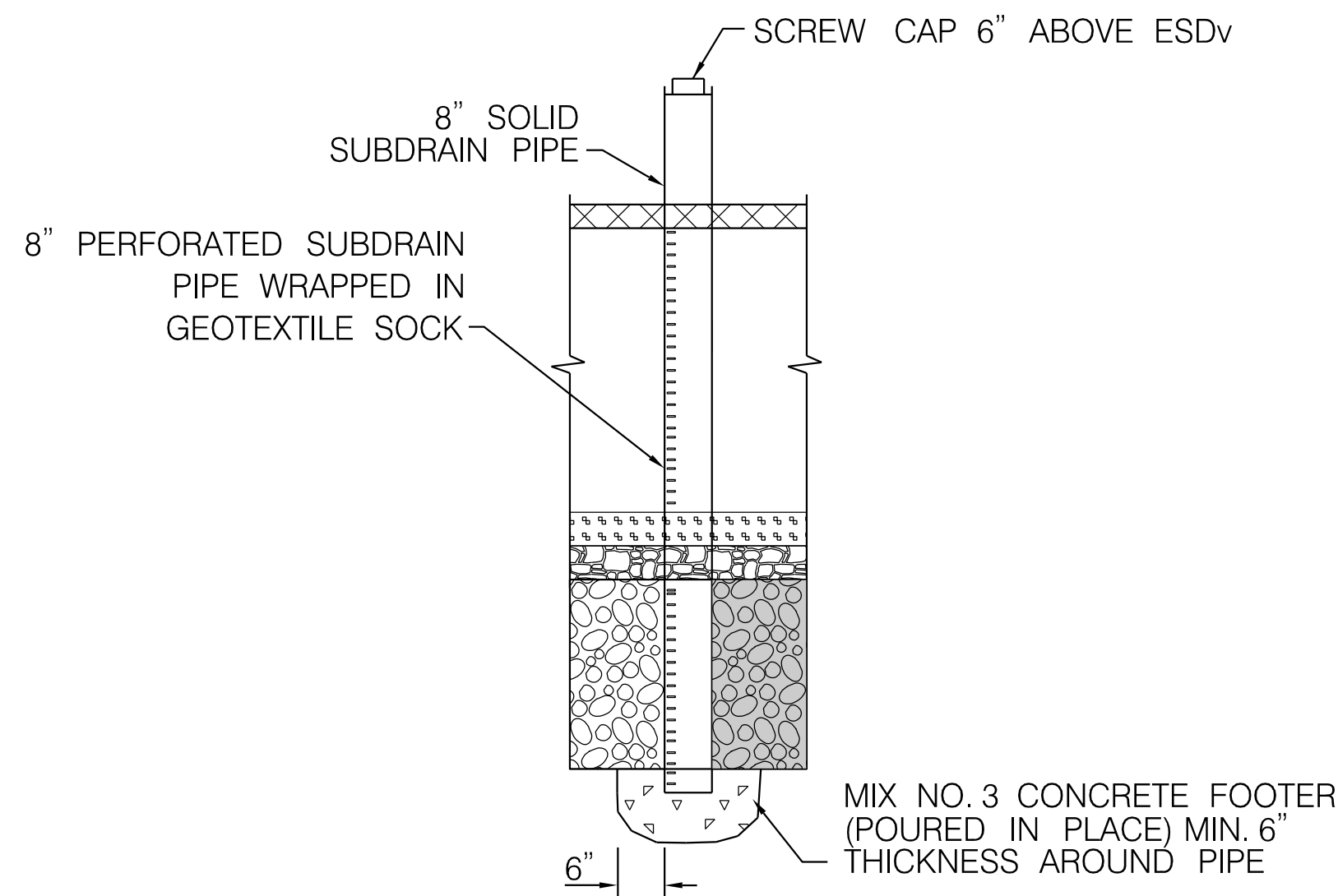


**DEPARTMENT OF PUBLIC WORKS
AND TRANSPORTATION**
PRINCE GEORGE'S COUNTY, MARYLAND

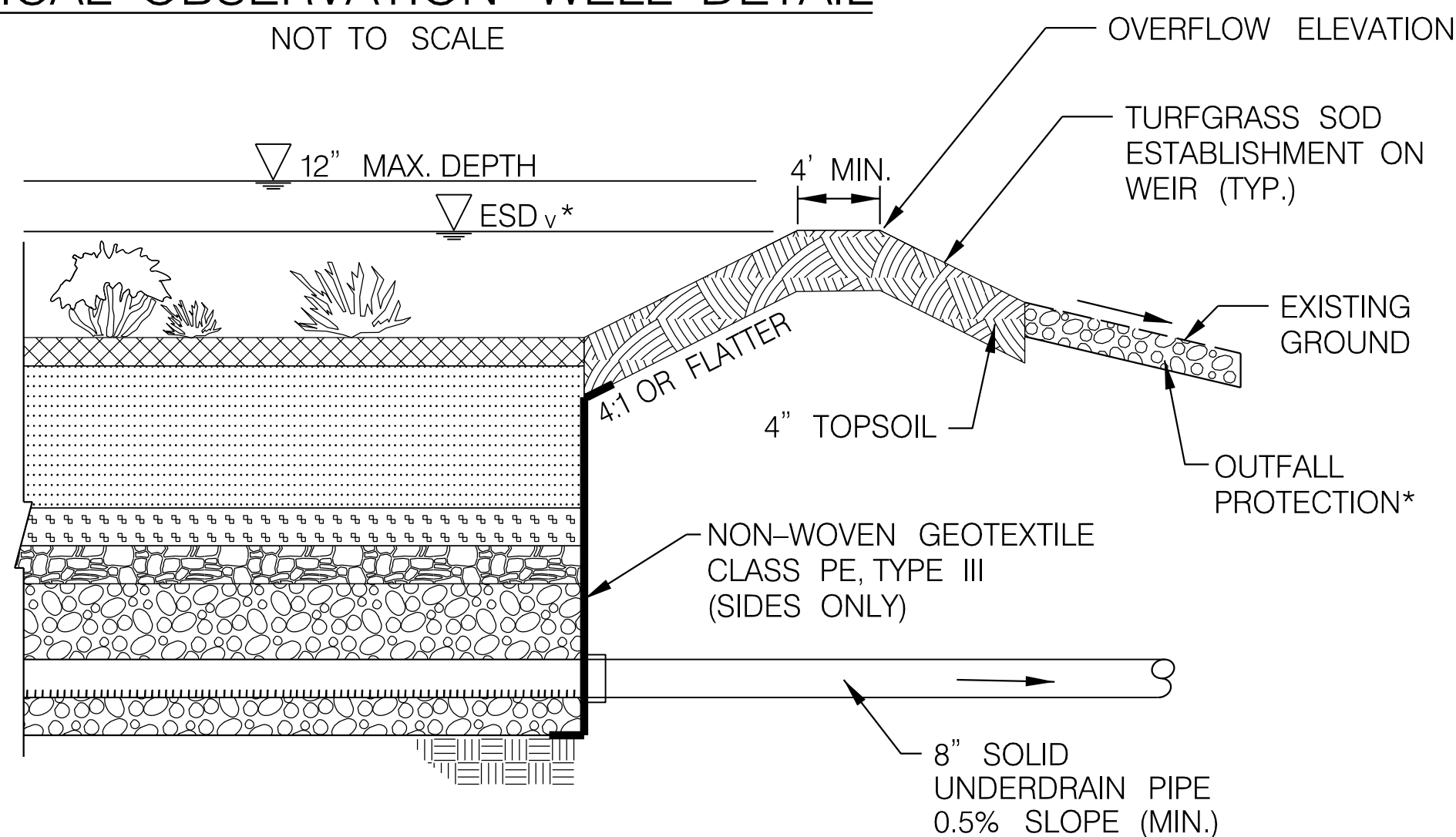
BIOSWALE STANDARD DETAIL			
FOR DEVELOPMENT AND UTILITY PROJECTS TO BE CONSTRUCTED UNDER PERMIT WITH DPIE			
SCALE: NOT TO SCALE		DWG.	OF 1
APPROVED <i>Michael D. Johnson</i>		JULY 2, 2025 DATE	
MICHAEL D. JOHNSON, P.E., DIRECTOR			
DESIGNED: T.M.R.	CONTRACT NO.		
DRAWN: T.M.R.			
CHECKED: E.T.B.			
APPROVED: <i>E</i>			
ERV T. BECKERT, P.E., CHIEF, HIGHWAY AND BRIDGE DESIGN DIVISION		JULY 2, 2025 DATE	FILE NO.



**MICRO-BIORETENTION
PROFILE**
NOT TO SCALE

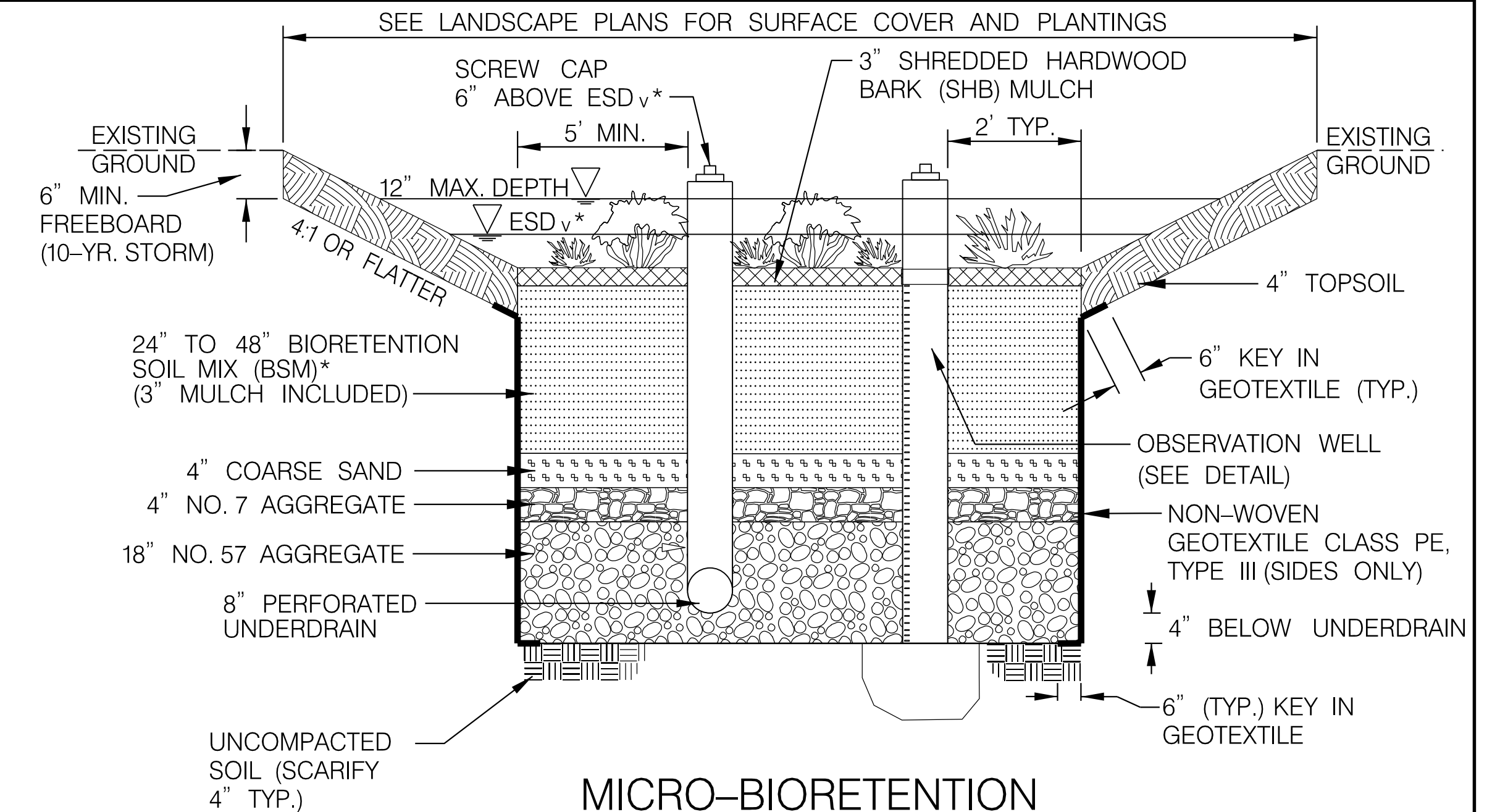


TYPICAL OBSERVATION WELL DETAIL
NOT TO SCALE



WEIR OUTFALL
NOT TO SCALE

* DETERMINE BY DESIGN



**MICRO-BIORETENTION
TYPICAL SECTION**
NOT TO SCALE

NOTES:

1. REFER TO PRINCE GEORGE'S COUNTY STORMWATER MANAGEMENT DESIGN MANUAL SECTION 10.8.6 FOR MORE INFORMATION INCLUDING DESIGN SETBACKS AND UTILITY CLEARANCES.
2. FACILITY SHOULD BE DESIGNED OFFLINE WHENEVER POSSIBLE.
3. CONNECT UNDERDRAIN TO OUTLET STRUCTURE OR OUTFALL. PROVIDE RODENT CONTROL SCREEN WHEN UNDERDRAIN DAYLIGHTS TO OUTFALL.
4. MICRO-BIORETENTIONS SHALL NOT BE LOCATED ABOVE OR ON A MARLBORO CLAY OR CHRISTIANA SOIL TYPE.
5. WHEN THE FACILITY WILL BE MAINTAINED BY THE DPW&T, THE FOLLOWING APPLIES: MIN. 6 INCHES OF FREEBOARD SHALL BE PROVIDED FROM 10-YEAR WSEL TO EDGE OF PAVING OR CURB FLOWLINE.
6. RUNOFF PRE-TREATMENT IS REQUIRED TO EVENLY SPREAD INFLOW AND REDUCE TO NON-EROSIVE VELOCITIES
7. MAXIMUM FACILITY SURFACE STORAGE DEPTH OF 12 INCHES.
8. POLYVINYL CHLORIDE PIPE (PVC) SHALL CONFORM TO ASTM M-278. PERFORATED OR SOLID-WALL POLYVINYL CHLORIDE PROFILE WALL DRAIN PIPE (PPWP) SHALL MEET ASTM M-304. CORRUGATED POLYETHYLENE DRAINAGE PIPE (CPP) SHALL MEET ASTM M-294.
9. REFER TO THE AASHTO ROADSIDE DESIGN GUIDE TO EVALUATE TRAFFIC BARRIER REQUIREMENTS BASED UPON OUTLET WEIR AND/OR RISER STRUCTURE DESIGN.
10. REFER TO DPW&T SPECIFICATIONS SECTION 316 FOR BSM COMPOSITION.
11. INCLUDE SWM FACILITY NUMBER ON SWM SHEETS.
12. MAXIMUM CONTRIBUTING DRAINAGE AREA OF 20,000 SF, EXCLUSIVE OF THE FACILITY FOOTPRINT.
13. SIDE SLOPES NO STEEPER THAN 4:1 REFER TO AASHTO WHEN ADJACENT TO ROADWAY.
14. SEE LANDSCAPE PLAN FOR PLANTINGS.
15. UNDERDRAIN IS REQUIRED FOR ALL SOIL TYPES.
16. CONTRACTOR TO PROVIDE AN APPROVED AS-BUILT INSPECTOR ON-SITE DURING CONSTRUCTION TO DOCUMENT AND CERTIFY PROPER INSTALLATION.
17. REFER TO PRINCE GEORGE'S COUNTY DETAILS FOR REQUIRED INSTALLATION CHECKLIST AND AS-BUILT CERTIFICATION TABLES.
18. REFER TO THE DPW&T BEST MANAGEMENT PRACTICE (BMP) MAINTENANCE MANUAL FOR REQUIRED MAINTENANCE ACTIVITIES AND SCHEDULE.

BIORETENTION SOIL MIX (BSM) COMPOSITION:

1. THE BSM SHALL CONSIST OF 1/3 PERLITE OR SOLITE, 1/3 COMPOST AND 1/3 TOPSOIL.
2. THE PERLITE SHALL BE COARSE GRADE HORTICULTURAL PERLITE. THE COMPOST SHALL BE HIGH GRADE COMPOST FREE OF STONES AND PARTIALLY COMPOSTED WOODY MATERIAL.
3. THE TOPSOIL SHALL MEET THE FOLLOWING MINIMUM CRITERIA:
 - A. SAND 65-75%, SILT 15-25%, AND CLAY 5-10%.
 - B. THE SOIL SHALL BE FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN 2 INCHES EFFECTIVE DIAMETER.
4. THE FIRST LAYER OF THE PLANTING MEDIUM SHALL BE LIGHTLY TILLED TO MIX IT INTO THE SAND LAYER, SO AS NOT TO CREATE A DEFINITIVE BOUNDARY.
5. THE PLANTING MATERIAL SHALL BE FLOODED AFTER PLACEMENT. ANY SETTLEMENT THAT OCCURS SHALL BE FILLED BACK TO THE DESIGN ELEVATION.



DEPARTMENT OF PUBLIC WORKS
AND TRANSPORTATION
PRINCE GEORGE'S COUNTY, MARYLAND

MICRO-BIORETENTION STANDARD DETAIL

FOR DEVELOPMENT AND UTILITY PROJECTS TO
BE CONSTRUCTED UNDER PERMIT WITH DPIE

SCALE: NOT TO SCALE		DWG.	OF	1
APPROVED <u>Michael D. Johnson</u>		JULY 2, 2025		
MICHAEL D. JOHNSON, P.E., DIRECTOR		DATE		
DESIGNED: T.M.R.			CONTRACT NO.	
DRAWN: T.M.R.				
CHECKED: E.T.B.				
APPROVED: <u>Erv T. Beckert</u>	JULY 2, 2025			
ERV T. BECKERT, P.E., CHIEF, HIGHWAY AND BRIDGE DESIGN DIVISION		DATE		FILE NO.

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

Accepted by DPIE:

Name

Date

MICRO-BIORETENTION TABULATIONS

ACTIVITY	DESIGNED	AS-BUILT	DIFFERENCE	INSPECTOR INITIALS	ACCEPTANCE DATE
As-Built Survey	N/A	N/A	N/A		
Filter Bed Area					
Filter Bed Surface Elevation					
Side Slopes					
Overflow / Outfall Weir Elevation					
ESDv Elevation					
Max. Ponding Depth					
Freeboard (10-yr Storm)					
Mulch Layer Thickness					
BSM Layer Thickness					
Sand Layer Thickness					
No. 7 Stone Layer Thickness					
No. 57 Stone Layer Thickness					
Inlet Pipe Size (if applicable)					
Inlet Pipe Elevation (if applicable)					
Underdrain Diameter					
Underdrain Elevation					
Underdrain Slope					
Underdrain Outlet Elevation					
Underdrain Cleanout Cap Elevation					
Observation Well Cap Elevation					
Total ESDv Provided					

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

Accepted by DPIE:

Name

Date

BIOSWALE TABULATIONS

ACTIVITY	DESIGNED	AS-BUILT	DIFFERENCE	INSPECTOR INITIALS	ACCEPTANCE DATE
As-Built Survey	N/A	N/A	N/A		
Swale Length					
Swale Width					
Swale Longitudinal Slope					
Filter Bed Area					
Side Slopes					
Overflow / Outfall Weir Elevation					
ESDv Depth					
10-yr Storm Depth					
Max. Check Dam Height					
Freeboard (10-yr Storm)					
BSM Layer Thickness					
Sand Layer Thickness					
No. 7 Stone Layer Thickness					
No. 57 Stone Layer Thickness					
Inlet Pipe Size (if applicable)					
Inlet Pipe Elevation (if applicable)					
Underdrain Diameter					
Underdrain Elevation					
Underdrain Slope					
Underdrain Outlet Elevation					
Underdrain Cleanout Cap Height					
Observation Well Cap Height					
Total ESDv Provided					

BIOSWALE AND MICRO-BIORETENTION
AS-BUILT TABLES

FOR DEVELOPMENT AND UTILITY PROJECTS TO
BE CONSTRUCTED UNDER PERMIT WITH DPIE

SCALE: NOT TO SCALE

DWG. OF I

APPROVED *Michael D. Johnson*

MICHAEL D. JOHNSON, P.E., DIRECTOR

JULY 2, 2025

DATE

DESIGNED: T.M.R.

DRAWN: T.M.R.

CHECKED: E.T.B.

APPROVED: *[Signature]*

CONTRACT NO.

ROAD NO. JOB NO.

FILE NO.

ERV T. BECKERT, P.E., CHIEF,
HIGHWAY AND BRIDGE DESIGN DIVISION

JULY 2, 2025
DATE



DEPARTMENT OF PUBLIC WORKS
AND TRANSPORTATION
PRINCE GEORGE'S COUNTY, MARYLAND

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

Accepted by DPIE:

Name

Date

MICRO-BIORETENTION AND BIOSWALE CONSTRUCTION CHECKLIST

ACTIVITY	ON SITE INSPECTION DATE	INSPECTOR INITIALS	ACCEPTANCE DATE
Runoff Diverted			
Drainage area stabilized prior to allowing runoff to enter			
Facility area cleared			
Facility location staked out			
Excavated to proper size and location*			
Stable side slopes			
Lateral slopes finished according to plans			
Subsoils scarified to a 4” minimum depth*			
Subsoils not compacted during construction*			
Underdrain system and observation well installed according to plans*			
BSM tested and approved according to specifications			
BSM placed according to plans*			
Placement of geotextile according to plans*			
Placement of sand layer*			
Placement of No. 7 stone layer*			
Plantings installed according to plans (if applicable)*			
Mulch Layer installed according to plans (if applicable)*			
Maintenance access installed according to plan and details (if applicable)*			
Final grading and permanent stabilization completed			

* As-Built Inspector required to perform inspection on site for these steps as required by COMAR 26.17.02.10

STORMWATER MANAGEMENT AS-BUILT CERTIFICATION

I hereby certify to the best of my knowledge and belief that this As-Built truly represents existing field conditions including but not limited to sizes, diameters, line and grade, elevations, and volumes. The stormwater management facility (facilities) shown on the plans and individually identified below has (have) been constructed in accordance with the plans included under the Prince George’s County Department of Permitting, Inspections and Enforcement (DPIE) Permit No. _____ except as noted in green on the “AS BUILT” drawings. Furthermore, the green-noted exceptions do not adversely affect the design and/or the intended performance of the facility (facilities).

Facility Identification (Identify Each Facility Individually by BMP Number)

Name (Printed)

Signature

Maryland Registration Number

Date

(SEAL)

“Certify” means to state or declare a professional opinion based on sufficient and appropriate onsite inspections and material tests conducted during construction

NOTE: AS-BUILT CHECKLISTS CONTAINED IN THE CONTRACT DRAWINGS SHALL BE COMPLETED BY THE AS-BUILT INSPECTOR AND SUBMITTED TO DPIE ALONG WITH THIS CERTIFICATION AND IT IS UNDERSTOOD THAT THEY MUST BE APPROVED PRIOR TO “FINAL INSPECTION.”

BIOSWALE AND MICRO-BIORETENTION
INSTALLATION CHECKLIST

FOR DEVELOPMENT AND UTILITY PROJECTS TO
BE CONSTRUCTED UNDER PERMIT WITH DPIE

SCALE: NOT TO SCALE DWG. OF I

APPROVED

Michael D. Johnson

MICHAEL D. JOHNSON, P.E., DIRECTOR

JULY 2, 2025
DATE

DESIGNED: T.M.R.	CONTRACT NO.
DRAWN: T.M.R.	
CHECKED: E.T.B.	
APPROVED: <div>ERV T. BECKERT, P.E., CHIEF, HIGHWAY AND BRIDGE DESIGN DIVISION</div> <div>JULY 2, 2025 DATE</div>	ROAD NO. JOB NO.
FILE NO.	



DEPARTMENT OF PUBLIC WORKS
AND TRANSPORTATION
PRINCE GEORGE’S COUNTY, MARYLAND

**STORMWATER
MANAGEMENT
AREA**

DO NOT DISTURB

**NO MOTORIZED
VEHICLES OR
EQUIPMENT**

**PRINCE GEORGE'S COUNTY
PERMITTING, INSPECTIONS AND
ENFORCEMENT
301-636-2020**