



Request for Proposals (RFP)

Website: <https://bluewaterbaltimore.org/green-stormwater-infrastructure/>

Saint Luke's Youth Center
217 N Carey St, Baltimore, MD 21223
Watershed Public Charter School Voluntary Stormwater Restoration Site Plan

Owner: c/o Amanda Talbot
amanda@bmoreslyc.org

Owner's Representative: Patrick McMahon, Blue Water Baltimore,
(410) 662-2459
pmcmahon@bluewaterbaltimore.org

Project Engineer: Luke A. Groom, KCW Engineering Technologies, Inc
lgroom@kcw-et.com

Key Dates:

RFP Issuance: July 18th, 2025
Optional Pre-Bid Meeting: July 24th, 2025 @ 1pm
Final Date for RFI Questions: August 1st, 2025
Final Bid Submission Date: August 8th, 2025
Grant Submission Due Date: August 21st, 2025
Notice of Grant Award: August 22nd, 2025
Grant Award Notification: November 2025
Expected Project Start Date: Winter 2026

Goal:

The purpose of this project is to further the mission of Blue Water Baltimore (BWB) to restore the quality of Baltimore's rivers, streams, and harbor to foster a healthy environment, a strong economy, and thriving communities.

These projects will also support the mission Saint Luke Youth Center (SLYC) by improving their facility/community and implementing features for the center's Green Infrastructure Master Plan. Saint Luke's Youth Center will be applying for the Chesapeake Bay Trust's Outreach and Restoration Grant Program (CBT O&R) to construct 1) SAINT LUKE'S YOUTH CENTER VOLUNTARY SWM FACILITIES. *Bids shall be prepared based on the Bid Set CDs (provided herein). The Owner's Representative will coordinate with the selected Contractor to finalize the construction price based on any revisions/updates to approved Final CDs.*

Saint Luke's Youth Center Mission Statement

SLYC is a collaborative of West Baltimore families working together to provide youth with critical resources, life-enriching experiences, and a safety net of support. Vision: Empowering Youth Through the Strength of a Loving and Bold Community. Values: Together, we are a

BLUE WATER BALTIMORE
CLEAN WATER. STRONG COMMUNITIES.

1801 Oliver Street • Baltimore, MD 21213 • 410.254.1577 • www.bluewaterbaltimore.org

loving family-committed, connected, supportive, dedicated, and strong. We are a purposeful community of leaders. The key to our work is the relationships of a community that crosses geographic, economic, religious, racial, and all other boundaries. We are a community that coordinates our efforts, shares our resources, and develops strategies to meet our goals.

Project Overview:

SLYC is seeking to construct one rain garden and one microbioretention facilities. The goal is to reduce stormwater runoff from a drainage area (DA) of 0.38 acres (ac), of which 0.06 ac are impervious, through the construction of a two facilities, totaling 498. BWB is requesting proposals for the project, landscaping for the infrastructures is not required as these systems will be planted by center and BWB volunteers.

Scope of Work:

All work shall be performed in accordance with the SAINT LUKE'S YOUTH CENTER VOLUNTARY SWM FACILITIES PLAN, hereby referred to as the Construction Drawings (CDs), which include: *Grading Plan, SWM Plan, and Erosion & Sediment Control Plan*. The contract shall include all materials and installation for construction of the project components: bioretention(s), drainage utilities, and required demolition and hauling in compliance with Baltimore City/County rules and regulations. The Contractor is responsible for delivering as-built information as a set of redlines of all the elevations and specifications shown in the CDs, as well as field-run topographic survey of the final, as-built SWM Retrofits to be delivered to the Project Engineer within 30 days of approval of final site stabilization. The contractor will be liable and under contract until (a) *the as-built survey has been delivered to the Project Engineer*, (b) *proof of performance has been adequately shown for the SWM facilities: the full area of drainage is delivered to the facilities and the facilities adequately drain within 24 to 48-hours after rain events*. Contractor will be expected to sign a one year Partnership Contract indicating:

- Proof of performance has been adequately shown for the SWM facilities: the full area of drainage is delivered to the facilities and the facilities adequately drain within 24 to 48-hours after rain events
 - Proof will be in-field verified by both BWB and the design engineer
 - Contractor agrees to rectify the SWM facilities to reach the performance standards.

Project Bid Instructions:

All Contractor's bid proposals must include, at a minimum:

1. Contact information

- a. Organizational Name
- b. Mailing address
- c. Point of Contact and Title
- d. Contact email and phone number
- e. Certificate of Commercial Insurance
 - i. Commercial Liability at a limit of not less than \$1,000,000
 - ii. Automobile Liability
 - iii. Umbrella / Excess Liability

- iv. Workers Compensation, exceeding or equal to the minimum as required by state law
- v. Leased/Rented Equipment
- 2. **Total lump sum price: itemized breakdown with materials and quantities** associated with the necessary **grading, soil preparation, landscaping establishment, erosion and sediment control, structural installations, and as-built survey** as shown in the CDs and per this Contract;
 - a. **Rain Gardens and Microbioretention**
 - i. Material
 - ii. ESC
 - iii. Grading
 - iv. Soil Removal
 - v. Piping and Nyoplast Structure
 - vi. Bioretention Mix
 - vii. Structural installations / modifications
 - viii. As-Built Survey
 - ix. ETC.
- 3. **A written schedule, including:**
 - a. Calendar Date when contractor intends to begin construction,
 - b. When contractor intends to install stormwater management utilities, and
 - c. Calendar Date of Contractor's tentative closing date
 - i. Contractor will be expected to adhere to schedule determined between owners representative and contractor or liquidated damages will be deducted from final payment for each day after deadline
- 4. **Portfolio of three (3) examples:** similar work the organization has done while in a similar capacity as a Prime Contractor. Project examples should include client name and contact information, location, and approximate construction cost.

List of Qualified Assumptions and Corrections to the CDs:

1. This is a Lump Sum project to construct the design parameters, and the Contractor assumes all risk for price and cost control. The Contractor will be responsible for facilitating compliance inspections once the project begins. Any questions about the scope of work should be clarified before a bid is submitted.
2. The Project Engineer will produce a set of as-built drawings for reporting to the County. The Contractor shall provide an independently certified post-construction topographic survey as a certified as-built drawing for the Owner's use.
3. The Contractor shall attend a pre-construction meeting with Saint Luke's Youth Center Church with the Owner, Owners Rep., Project Engineer, and Regulating Agency prior to the start of construction.
4. The Contractor must assign and employ a Responsible Personnel with an active green card for ESC for the duration of the project. The Contractor's Responsible Personnel must attend the pre-construction meeting.
5. Contractor shall provide material tickets and cut sheets in accordance with the specifications included in the CDs, including:

- a. **Material Submittals (all incoming materials)**
 - b. Delivery tickets
 - c. Photo documentation
 - d. Lab reports
6. It is the Contractor's responsibility to contact miss utility at 1-800-257-7777 at least 5 days prior to beginning excavation to determine the location of existing utilities.
7. Contractor shall mark and notify the Project Engineer and Owner's Representative at least 24-hours prior to removing any trees.
8. The contractor will give regular progress reports, via email to the Project Engineer and Owners Representative after the notice to proceed (NTP) is issued. Special notification of anticipated completion of all milestones and/or inspections requiring the Project Engineer or Owners Representative, and/or government regulatory agency staff sign off must be submitted within 72 hours of the event.
9. Milestones requiring Owner's Representative's Inspection:
 - a. **BMP Layout**
 - b. **ESC Installation**
 - c. **Excavation to Subgrade**
 - d. **Drainage Aggregate and Underdrain placement**
 - e. **Structural Work**
 - f. **Bioretention/Raingarden Soil Media Placement**
 - g. **Mulch Placement**
10. Prior to project completion, the contractor shall contact the Owner, Owner's Representative, and Project Engineer to perform a pre-final site inspection to develop a punch-list. A Final walkthrough and approval of mutually agreed-upon punch-list items is required before project completion is achieved.
11. The selected contractor shall warranty the SWM Retrofits for one (1) year after substantial completion of the project, excluding any volunteer-installed landscaping.
12. The Contractor shall engage a Geotechnical Engineer for questions and onsite inspections during construction.
13. Contractor will provide a draft Maintenance of Traffic Plan (if needed) to the owner's representative and project engineer for approval prior to starting any work within the county right-of-way.
14. It is the Contractor's responsibility to hold all necessary building and right-of-way permits for construction prior to the start date.

Bid Process:

Pre-bid Meeting and Questions:

A voluntary Pre-bid site meeting will be held on **THURSDAY July 24th at 1pm**; we will meet out front of the SLYC (217 N Carey St, Baltimore, MD 21223). Pre-bid questions should be sent to the Owner's Representative below. **If additional site visits are required, please contact pmcmahon@bluewaterbaltimore.org**

Any questions or requests for information (RFIs) during the RFP process can be directed to Patrick McMahon. All RFIs must be submitted by 08/01/25.

Email: pmcmahon@bluewaterbaltimore.org

Questions will be addressed sufficiently prior to the Bid Submission due date, as determined by Owner's Representative. Responses will be communicated either privately or publicly, at the Owner's Representative's discretion.

Bid Selection:

Bids are due no later than **5 PM on August 8th 2025**. Please reach out if you are in need of additional days to complete the bidding.

Email bids to: Patrick McMahon, pmcmahon@bluewaterbaltimore.org

Blue Water Baltimore understands that to create meaningful and impactful change, we must do this work together: as a community, a city, and an organization. This belief is woven into our programs, projects, and initiatives; in turn, BWB is committed towards upholding Justice, Equity, Diversity, and Inclusion in the contractor selection process. Although there is no required MBE (sub)contractor participation goal, proposal submissions will be ranked according to best-value-cost and total percentage of MBE participation percentage. Please submit documentation indicating: an overall MBE (sub)contractor participation of (MBE goal percentage)% of the total contract dollar amount. Only qualified bids from demonstrably capable bidders will be considered. Please see *ATTACHMENT A* to indicate the percentage of MBE/WBE involved in the construction process.

NOTE: If your company/organization is a MBE/WBE please complete the form indicating: 100% commitment.

SLYC reserves the right to set and revise their timeline to meet its needs during the RFP process, as well as to withdraw and re-issue this RFP at any time, with notice to registered and qualified respondents.

Contractual Awards:

Award of the contract will be announced to the successful bidder on **August 22nd 2025**. All other bidders will be notified of their non-selection by **August 29th**.

The successful bidder is expected to enter into a formal contract with the Owner's Representative once and *if* grant funding is awarded.

Bids shall remain fixed for a period of 8 months following the receipt of bids.

END

Attachment A
BLUE WATER BALTIMORE MBE/WBE (SUB)CONTRACTOR COMMITMENT FORM

DUE DATE:

TOTAL BID AMOUNT:

<input type="checkbox"/> MBE Firm <input type="checkbox"/> WBE Firm			
Company Name:	Contact Person:		
Address:	E-mail:		
(Sub)-Contract Amount (for percentage validation purposes):	<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%;">Telephone Number: ()</td><td style="width: 50%;">Fax Number: ()</td></tr></table>	Telephone Number: ()	Fax Number: ()
Telephone Number: ()	Fax Number: ()		
(Sub)-Contract Percentage of Total Bid	<u>Describe service/product to be provided and <u>how this is a Valuable Scope Contribution of the Contract:</u></u>		
Provide approximate dates when Sub-Contractor will perform on this project:			

<input type="checkbox"/> MBE Firm <input type="checkbox"/> WBE Firm			
Company Name:	Contact Person:		
Address:	E-mail:		
(Sub)-Contract Amount (for percentage validation purposes):	<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 50%;">Telephone Number: ()</td><td style="width: 50%;">Fax Number: ()</td></tr></table>	Telephone Number: ()	Fax Number: ()
Telephone Number: ()	Fax Number: ()		
(Sub)-Contract Percentage of Total Bid	<u>Describe service/product to be provided and <u>how this is a Valuable Scope Contribution of the Contract:</u></u>		
Provide approximate dates when Sub-Contractor will perform on this project:			

Respondent Firm

Address

City/State/Zip Code

Representative

Date

Telephone Number

Fax Number

Email Address

Authorizing Signature

Printed Name and Title

OWNER'S CERTIFICATION
FOR SEDIMENT CONTROL

I/WE DO HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, AND/OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED PLAN AND ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE CERTIFICATION OF ATTENDANCE AT AN APPROVED MARYLAND DEPARTMENT OF THE ENVIRONMENT SEDIMENT AND EROSION CONTROL TRAINING PROGRAM PRIOR TO THE BEGINNING OF WORK. THE CITY'S DPW AND DHCD AND MDE WILL BE ALLOWED RIGHT OF ENTRY FOR PERIODIC ON-SITE EVALUATION.

EPISCOPAL HOUSING CORPORATION
DIALO FLUCAS

PRINT NAME

3986 ROLAND AVENUE
BALTIMORE, MD 21211

ADDRESS

SIGNATURE

OWNER/DEVELOPER

04-18-2025

DATE

410-366-6200

TELEPHONE

ENGINEER'S CERTIFICATION
FOR SEDIMENT CONTROL

I DO HEREBY CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED UPON PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE BALTIMORE CITY OFFICE OF COMPLIANCE AND LABORATORIES.

LUKE A. GROOM, P.E.

PRINT NAME

808 LANDMARK DRIVE, SUITE 217
GLEN BURNIE, MD 21061

ADDRESS

SIGNATURE

ENGINEER

02-04-2025

DATE

410-768-7700

TELEPHONE

OWNER'S / DEVELOPER'S CERTIFICATION
FOR STORMWATER MANAGEMENT

WE CERTIFY THAT ALL PROPOSED WORK SHOWN ON THESE STORMWATER MANAGEMENT DRAWINGS AND ON THE APPROVED SEDIMENT CONTROL DRAWINGS WILL BE ACCOMPLISHED PURSUANT TO THESE PLANS. WE ALSO UNDERSTAND THAT IT IS OUR RESPONSIBILITY TO HAVE THE CONSTRUCTION SUPERVISED AND CERTIFIED, INCLUDING THE SUBMITTAL OF "AS-BUILT" PLANS WITHIN THIRTY (30) DAYS OF COMPLETION, BY A REGISTERED PROFESSIONAL ENGINEER.

EPISCOPAL HOUSING CORPORATION
DIALO FLUCAS

3986 ROLAND AVENUE
BALTIMORE, MD 21211

ADDRESS

410-366-6200

TELEPHONE

OWNER / DEVELOPER

SIGNATURE

OWNER/DEVELOPER

04-18-2025

DATE

MAINTENANCE AND LIABILITY CERTIFICATION
FOR STORMWATER MANAGEMENT

MAINTENANCE OF THE STORMWATER MANAGEMENT FACILITY AND APPURTENANT DRAINAGE STRUCTURES SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER. THE PROPERTY OWNER SHALL ALSO BE FULLY LIABLE FOR ALL DAMAGES OR INJURIES THAT MAY BE SUSTAINED BY ANY PERSON OR PROPERTY AS A RESULT OF ANY FAILURE OR MALFUNCTION OF THE STORMWATER MANAGEMENT FACILITY AND APPURTENANCES.

EPISCOPAL HOUSING CORPORATION
DIALO FLUCAS

3986 ROLAND AVENUE
BALTIMORE, MD 21211

ADDRESS

410-366-6200

TELEPHONE

OWNER / DEVELOPER

SIGNATURE

OWNER/DEVELOPER

04-18-2025

DATE

ENGINEER'S CERTIFICATION
FOR STORMWATER MANAGEMENT

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED BY ME OR UNDER MY SUPERVISION AND MEETS THE MINIMUM STANDARDS OF THE BALTIMORE CITY DEPARTMENT OF PUBLIC WORKS REQUIREMENTS AND SPECIFICATIONS.

KCW ENGINEERING TECHNOLOGIES, Inc.
LUKE A. GROOM, P.E.

808 LANDMARK DRIVE, SUITE 217
GLEN BURNIE, MD 21061

ADDRESS

410-768-7700

PHONE NUMBER

ENGINEER

SIGNATURE

ENGINEER

04-18-2025

DATE

P.E. #27016

LICENSE

AS-BUILT CERTIFICATION
STORMWATER MANAGEMENT

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS.

ENGINEER

ADDRESS

TELEPHONE

SIGNATURE

DATE

Professional Certification.
I hereby certify that these documents
were prepared or approved by me, and
that I am a duly licensed professional
engineer under the laws of the State
of Maryland.
License No. _____
Expiration Date _____

CONTRACTOR'S AS-BUILT SURVEY

UPON THE COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL FURNISH THE OWNER WITH ONE SET OF "AS-BUILT" DRAWINGS, SHOWING THE ACTUAL AMOUNT OF IMPERVIOUS AREA REDUCTION ACHIEVED, WITH ANY CHANGES OR MODIFICATIONS NOTED IN RED ON THE PRINTS. THE "AS-BUILT" SHALL BE ACCOMPANIED BY A FIELD RUN SURVEY WORKSHEET, PREPARED AND SEALED BY A SURVEYOR REGISTERED IN THE STATE OF MARYLAND, SHOWING THE LOCATION OF ALL PIPE AND STRUCTURES COMPRISING THE STORMWATER MANAGEMENT SYSTEM. IF DEFICIENCIES ARE NOTED IN THE AS-BUILT FACILITIES WHICH REQUIRE REMEDIAL CONSTRUCTION, THE CONTRACTOR SHALL TAKE CORRECTIVE ACTION AS REQUIRED AND SHALL SUBMIT REVISED "AS-BUILT" DRAWINGS AND SURVEY AT NO ADDITIONAL COST TO THE OWNER.

VICINITY MAP

SCALE 1"=1000' ADC MAP: 34-J5

SURVEY CONTROL

COORDINATES, ELEVATIONS, AND BEARINGS SHOWN HEREON ARE BALTIMORE CITY SURVEY CONTROL SYSTEM AND BASED ON THE FOLLOWING CONTROL POINTS:

BC # 36032: E -5,157.693 N -1,820.682 ELEV: 100.50
PK IN CONCRETE WALK ON NORTHEAST CORNER OF N. SCHROEDER STREET AND W. SARATOGA STREET

BC # 36034: E -5,783.80 N -2,377.79 ELEV: 91.25
PK IN CONCRETE WALK ON SOUTHEAST CORNER OF CARLTON STREET AND W. LEXINGTON STREET

ST. LUKE'S YOUTH CENTER

VOLUNTARY SWM FACILITIES

FINAL EROSION AND SEDIMENT CONTROL

AND STORMWATER MANAGEMENT

ESC SEQUENCE OF CONSTRUCTION

1. OBTAIN PROPER PERMITS.

2. SUBMIT WRITTEN NOTIFICATION PRIOR TO ANY CONSTRUCTION ACTIVITY TO: THE DEPARTMENT OF PUBLIC WORKS, OFFICE OF RESEARCH AND ENVIRONMENTAL PROTECTION: 3001 DRUID PARK DRIVE, ROOM 228, BALTIMORE, MD 21215, Tele. 410-396-0732, Fax 410-523-9047, E-mail DPW.ESCinspections@baltimorecity.gov, AT LEAST 72 HOURS PRIOR TO START OF CONSTRUCTION STATING:

a. A REQUEST FOR A PRE-CONSTRUCTION MEETING.

b. WHEN CONTRACTOR INTENDS TO BEGIN CONSTRUCTION.

c. WHEN CONTRACTOR INTENDS TO INSTALL STORMWATER MANAGEMENT FACILITIES.

d. SOURCE OF BORROW MATERIAL.

e. LOCATION OF DISPOSAL AREA OF SITE MATERIAL.

f. CONTRACTOR'S TENTATIVE CLOSING DATE.

3. OBTAIN WRITTEN PERMISSION FROM THE ESC INSPECTOR TO PROCEED WITH THE SITE WORK AFTER PRE-CONSTRUCTION MEETING.

4. DESIGNATE STOCKPILE AREA FOR TOPSOIL. DESIGNATE CONTRACTOR'S RELATED STAGING AREA.

5. REMOVE EXISTING CURB, INLET, AND PAVING. INSTALL DRAINAGE RISER STRUCTURES WITH FLEXSTORM CATCH-IT INLET FILTERS AND SILT FENCE.

6. COMPLETE N. CARROLLTON AVENUE SIDEWALK REPAIR AND ON-SITE NOSE DOWN CURB INSTALLATION.

7. ALL INACTIVE AREAS ON THE PROJECT SITE MUST HAVE EITHER PERMANENT OR TEMPORARY STABILIZATION WITHIN SEVEN (7) DAYS OF BEING DISTURBED.

8. FINE GRADE SWM FACILITIES. STABILIZE DISTURBED AREA AS PROPOSED ON STABILIZATION SCHEDULE ON THIS ESC PLAN.

9. UPON STABILIZATION OF ALL CONTRIBUTING DISTURBED AREAS TO SWM FACILITIES, CONTINUE CONSTRUCTION OF SWM FACILITIES PER SEQUENCE ON APPROVED SWM PLANS.

10. REMOVE SEDIMENT CONTROLS WITH PRIOR WRITTEN APPROVAL FROM THE BALTIMORE CITY SEDIMENT INSPECTOR WHEN STABILIZATION IS EVIDENT AT PROJECT SITE, AND IMMEDIATELY STABILIZE ANY AREAS DISTURBED BY THIS PROCESS.

LIST OF SWM-ESC DRAWINGS

C-100 FINAL ESC & SWM COVER SHEET

C-101 EXISTING CONDITION SEDIMENT CONTROL PLAN

C-102 LOCATION PLAN

C-103 PROPOSED CONDITIONS SEDIMENT CONTROL PLAN

C-104 EROSION & SEDIMENT CONTROL - NOTES 1

C-105 EROSION & SEDIMENT CONTROL - NOTES 2

C-106 EROSION & SEDIMENT CONTROL - DETAILS

C-107 SWM DRAINAGE AREA MAP

C-108 SWM RAINGARDEN RG-1 PLAN, PROFILE, AND SECTIONS

C-109 SWM MICRO-BIORETENTION MBR-1 PLAN, PROFILE, AND SECTIONS

C-110 SWM DETAIL & SPECIFICATIONS

C-111 SWM PLANTING PLAN & SOIL BORING LOGS

1. OWNER:

2. DEVELOPER:

3. PROPERTY LOCATION:

4. DEEDS:

5. ZONING:

6. COUNCIL DISTRICT:

7. NEIGHBORHOOD:

8. AREA MASTER PLAN:

9. URBAN RENEWAL:

10. HISTORIC DISTRICT:

11. EXISTING LAND USE:

12. PROPOSED LAND USE:

13. WATERSHED:

14. DATA SOURCE:

15. EXISTING UTILITIES:

ST. LUKE'S YOUTH CENTER

217 N CAREY ST

BALTIMORE, MD 21223

ST. LUKE'S YOUTH CENTER

217 N CAREY ST

BALTIMORE, 21223

Ward 18, Section 03, Block 0169, Lots 033

217 N Carey St, Baltimore, MD 21223

MB/ 26740/ 00304 (Lot 33)

Total Area = 44,547 sf = 1.022 ac.

R-8 (TRANSFORM BALTIMORE 2017)

9

Poppleton

None

None

Poppleton Historic District

COMMUNITY CENTER

COMMUNITY CENTER

GWYNN'S FALLS (02130905)

Topography shown is based on a topographic survey performed by Colbert Matz Rosenfelt, LLC in February 2024 and refer to the Baltimore City Vertical Datum. Coordinates shown hereon refer to the Baltimore City Survey Control System.

Existing utilities shown hereon are based on surface locations by CMR, LLC in or about 2024 and supplemented with Baltimore City GIS.

Federal Regulated			State Regulated			Local Regulated		
Present? (Y/N)	Feature	Legend Symbolology	Present? (Y/N)	Feature	Legend Symbolology	Present? (Y/N)	Feature	Legend Symbolology
N	Wetlands		N	Tidal and Nontidal Wetlands		N	Steep Slopes	
N	Major Waterways		N	Wetlands of Special State Concern		N	Highly Erodible Soils	See Soils Table
N	Floodplains		N	Wetland Buffers		N	Enhanced Stream Buffers	
			N	Stream Buffers		Y	Topography / Slopes	SEE LEGEND
			N	Perennial Streams		N	Springs	
			N	Floodplains		N	Seeps	
			N	Forests		N	Intermittent Streams	
			N	Forest Buffers		Y	Vegetative Cover	SEE LEGEND
			N	Critical Areas		Y	Soils	See Soils Table
						N	Bedrock/Geology	
						Y	Existing Drainage Area	SEE LEGEND
						N	Existing SWM Facilities	

SEDIMENT CONTROL DATA

SITE AREA = 1.023 ac. / 44,547 sf

DISTURBED AREA = 0.08 ac. / 5,650 sf

Estimated Excavation Quantities:

Cut = 90 cy

Fill = 30 cy

60 cy surplus

Cut/Fill Ratio = 3 / 1

* ALL IMPORTED FILL SHALL COME FROM A SITE WITH AN APPROVED SEDIMENT CONTROL PLAN.

* ALL SURPLUS EXCAVATION SHALL BE REMOVED FROM THIS SITE TO A LOCATION WITHIN APPROVED SEDIMENT CONTROL PLAN.

* QUANTITIES ARE FOR SEDIMENT CONTROL APPROVAL USE ONLY. CONTRACTOR SHALL DETERMINE EXACT QUANTITIES TO HIS OWN SATISFACTION.

OUTFALL STATEMENT

OUTFALL FROM THE PROJECT SITE IS THE EXISTING CURB LINE ON THE WEST SIDE OF N CARROLLTON AVENUE TO THE EXISTING STORM DRAIN SYSTEM THROUGH THE INLET AT THE INTERSECTION OF N. CARROLLTON AVENUE AND W. SARATOGA STREET. POST DEVELOPMENT PEAK RUNOFF IS LESS THAN EXISTING THROUGH REDUCTION OF IMPERVIOUS, THEREFORE, THE OUTFALLS ARE ADEQUATE.

SOILS TABLE

MAP UNIT SYMBOL	MAP UNIT NAME	SLOPE	HYDRO. SOIL GROUP (HSG)
44UC	Urban Land	0 - 15%	D

BCNR #11811

FINAL ESC & SWM COVER SHEET

KCW

ENGINEERING TECHNOLOGIES

KCW Engineering Technologies, Inc.

808 Landmark Drive, Suite 217

Glen Burnie, MD 21061

Phone: 410.768.7700

Fax: 410.768.0200

www.kcw-et.com

STATE OF MARYLAND

LUKE A. GROOM

PROFESSIONAL ENGINEER

46091

8-4-2025

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 46091, EXPIRATION DATE: 05/14/2027.

OWNER:

CONVENTION OF THE PROTESTANT EPISCOPAL CHURCH OF THE DIOCESE 4 EAST UNIVERSITY PARKWAY BALTIMORE, MD 21288

DEVELOPER / APPLICANT:

ST. LUKE'S YOUTH CENTER 217 N CAREY ST BALTIMORE, MD 21223 ATTN: DIALO FLUCAS TELE: 443-721-1275 EMAIL: DIALO@EPISCOPALHOUSING.COM

REVISIONS		KCW J.O.: 2240858	
DATE	DESCRIPTION	SCALE:	AS SHOWN
		DESIGNED:	NMA
		DRAWN:	NMA
		CHECKED:	LAG
		DATE:	AUGUST 4, 2025
		DWG NO.:	C-100

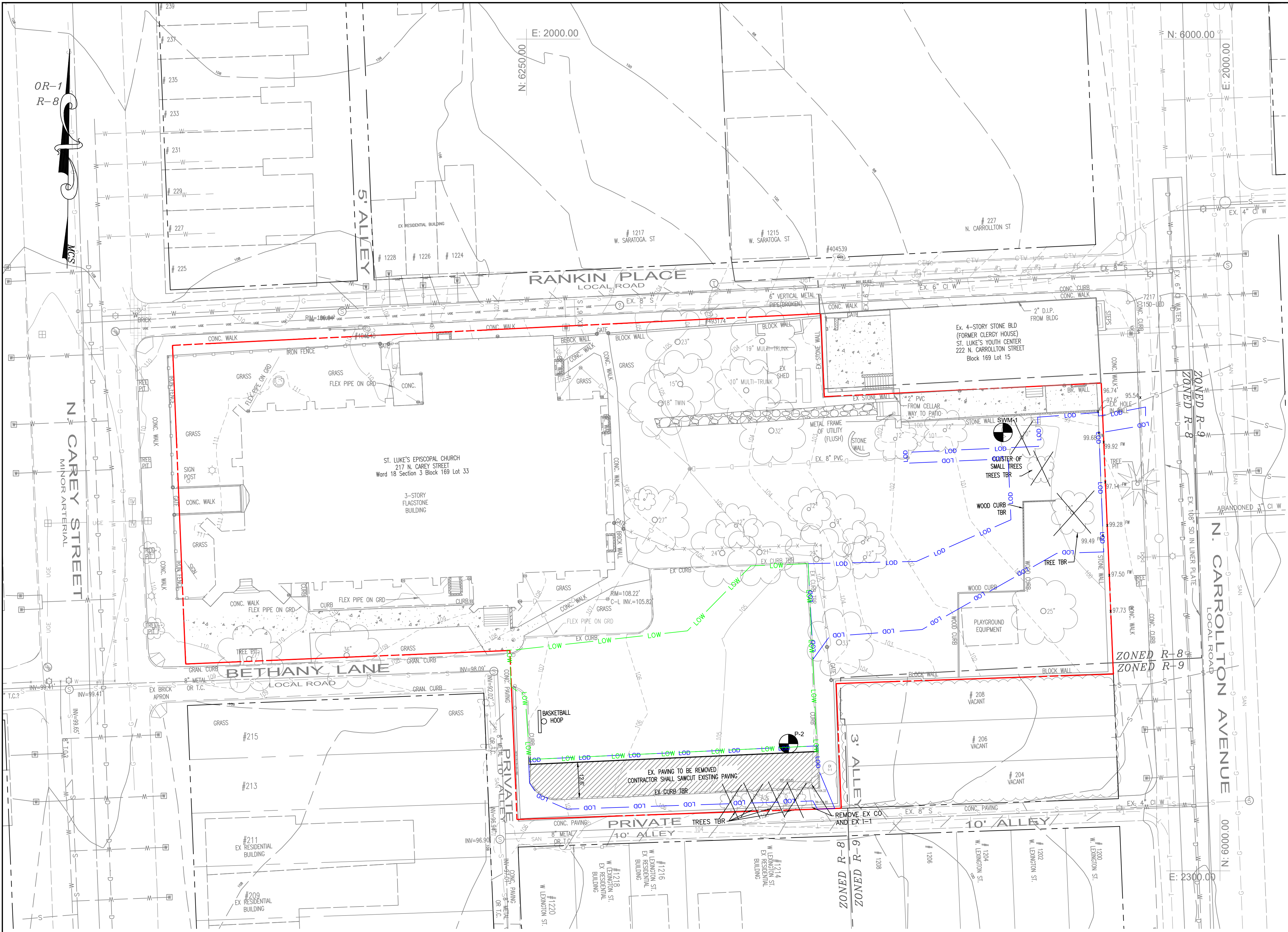
ST. LUKE'S YOUTH CENTER

VOLUNTARY SWM FACILITIES

217 NORTH CAREY STREET

Ward 18 Section 03 Block 0169 Lot 033

CITY OF BALTIMORE, MARYLAND



ST LUKES YOUTH CENTER
LIMITS OF DISTURBANCE = 3,460 sf

STABILIZATION SCHEDULE			
AREA	S.F.	STABILIZATION	SEQUENCE
PERVIOUS AREAS	490	SEED/SOD/LANDSCAPING (PERMANENT)	9

ALL SEDIMENT CONTROLS AND CRITICAL SLOPES MUST BE STABILIZED WITHIN THREE CALENDAR DAYS. ALL OTHER INACTIVE DISTURBED AREAS ON THE PROJECT SITE MUST BE STABILIZED WITHIN SEVEN DAYS.

STABILIZED CONSTRUCTION ENTRANCE NOTE

CONTRACTOR TO COORDINATE ALL EROSION AND SEDIMENT CONTROL DEVICES WITH INSPECTOR AND OBTAIN APPROVAL PRIOR TO INSTALLATION AND/OR RELOCATION

STANDARD STABILIZATION NOTE

FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION MUST BE COMPLETED WITHIN:

- A.) THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND
- B.) SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.

UTILITY CONSTRUCTION NOTES

- CONTRACTOR SHOULD OPEN ONLY THAT SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED EACH DAY.
- PLACE ALL EXCAVATED MATERIAL ON UPHILL SIDE OF TRENCH.
- ANY SEDIMENT CONTROLS DISTURBED BY UTILITY CONSTRUCTION ARE TO BE REPAIRED IMMEDIATELY.

MAINTENANCE OF SEDIMENT CONTROL

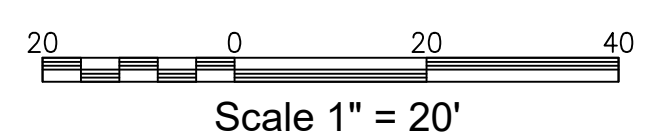
CONTRACTOR SHALL, WITHOUT EXTRA COST TO THE PROJECT, REPAIR AND MAINTAIN EXISTING SEDIMENT CONTROL DEVICES UNTIL ALL AREAS WITHIN LIMITS OF CONSTRUCTION ARE STABILIZED. ALL SEDIMENT CONTROL MEASURES REFERRED TO ON THESE PLANS SHALL BE IN ACCORDANCE WITH THE PUBLICATION ENTITLED "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL".

SEDIMENT CONTROL LEGEND

LIMIT OF DISTURBANCE		LOD
SILT FENCE		SF
SILT FENCE ON PAVEMENT		SFOP
STABILIZED CONSTRUCTION ENTRANCE		SCE
STOCKPILE AREA		
CONTRACTOR'S STAGING AREA		
AT GRADE INLET PROTECTION		AGIP
CURB INLET PROTECTION		CIP
COMBINATION INLET PROTECTION		COIP
SUMP PIT		SP
PORTABLE SEDIMENT TANK		PST
MOUNTABLE BERM		
STABILIZATION LABEL (TYP.)		

LEGEND	
	LIMIT OF DISTURBANCE
	LIMIT OF WORK
	EXISTING CURB
	R/W LINE
	PROPERTY LOT LINE
	EXISTING FENCE
	EXISTING BUILDING
	EXISTING SANITARY SEWER
	EXISTING STORM DRAIN
	EXISTING TELEPHONE DUCT
	EXISTING WATER
	EXISTING GAS
	EXISTING ELECTRIC
	EXISTING FIRE HYDRANT
	EXISTING WATER METER
	EXISTING STORM DRAIN INLETS
	EXISTING STORM DRAIN MANHOLE
	EXISTING SANITARY MANHOLE
	PROPOSED CURB & GUTTER
	PROPOSED FIRE HYDRANT
	PROPOSED WATER
	PROPOSED SANITARY SEWER
	PROPOSED STORM DRAIN
	PROPOSED STORM DRAIN MANHOLE
	PROPOSED BUILDING
	PROPOSED SANITARY MANHOLE
	PROPOSED SANITARY WYE CONN.
	PROPOSED SANITARY CLEAN-OUT
	PROPOSED WATER METER
	PROPOSED WATER VALVE
	TRAFFIC SIGNAL POLE
	EXISTING STREET LIGHT - COBRA
	EXISTING STREET LIGHT - SHOEBOX
	GAS VALVE
	DOWN SPOUT
	FLOW ARROW

	STORM DRAIN
	DRAINAGE AREA LINE
	ESD PRACTICE MICRO-BIORETENTMENT
	EXISTING TREE TO BE REMOVED



BCNR # 11811
ESC 1 of 5

EXISTING CONDITIONS
SEDIMENT CONTROL PLAN

**ST. LUKE'S YOUTH CENTER
VOLUNTARY SWM FACILITIES**

217 NORTH CAREY STREET
Ward 18 Section 03 Block 0169 Lot 033
CITY OF BALTIMORE, MARYLAND



KCW Engineering Technologies, Inc.
808 Landmark Drive, Suite 217
Glen Burnie, MD 21061
Phone: 410.768.7700
Fax: 410.768.0200
www.kcw-et.com



PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 46091, EXPIRATION DATE: 05/14/2027.

OWNER:

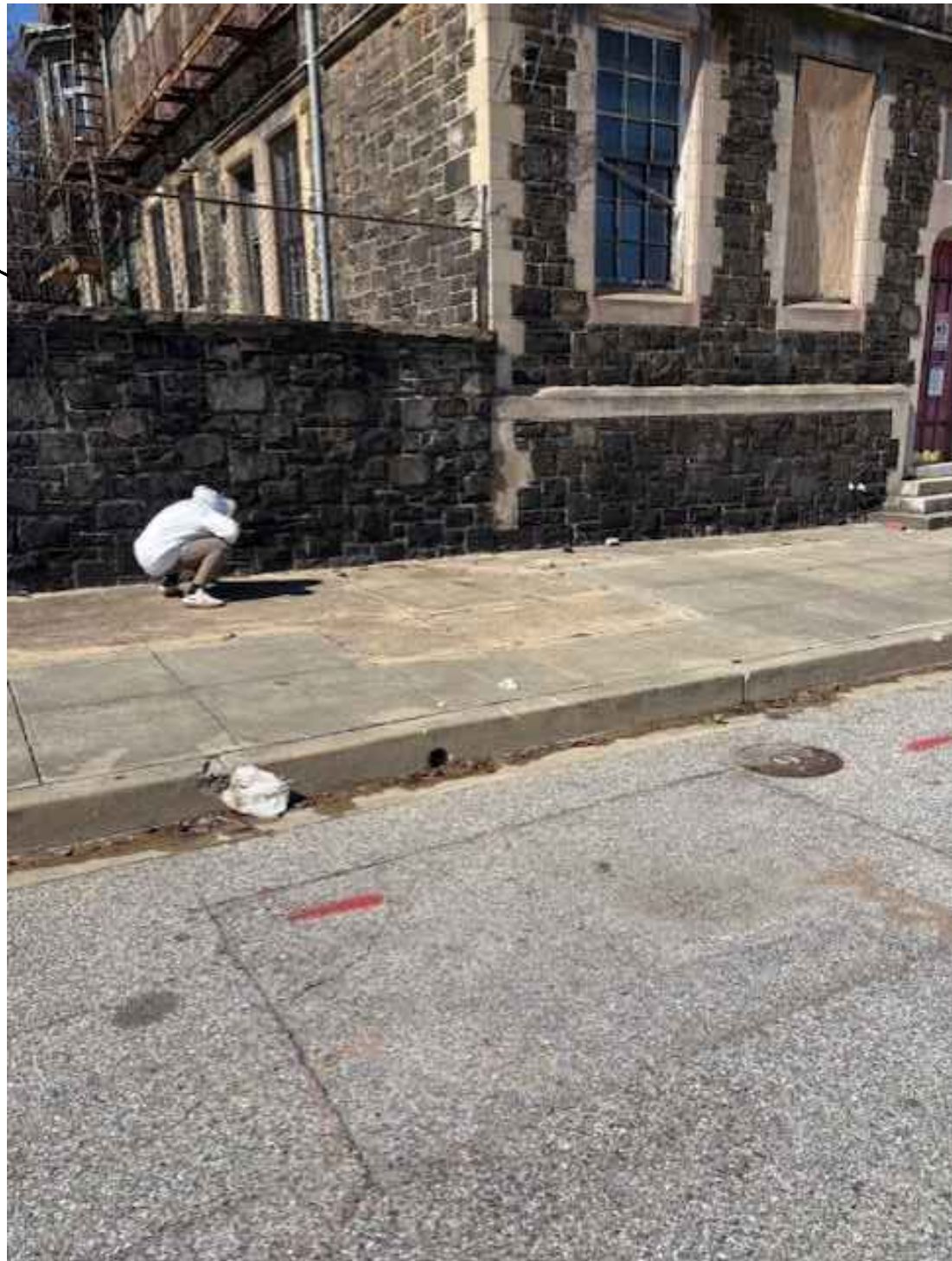
CONVENTION OF THE PROTESTANT
EPISCOPAL CHURCH OF THE DIOCESE
4 EAST UNIVERSITY PARKWAY
BALTIMORE, MD 21288

DEVELOPER / APPLICANT:

ST. LUKE'S YOUTH CENTER
217 N CAREY ST
BALTIMORE, MD 21223
ATTN: DIALO FLUCAS
TELE: 443-721-1275
EMAIL: DIALO@EPISCOPALHOUSING.COM

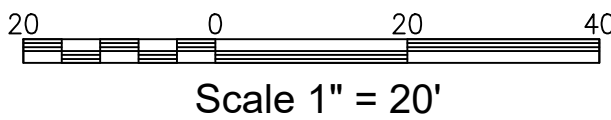
REVISIONS	
DATE	DESCRIPTION

KCW J.O.:	2240858
SCALE:	1" = 20'
DESIGNED:	NMA
DRAWN:	NMA
CHECKED:	LAG
DATE:	AUGUST 4, 2025
DWG NO.:	C-101



REFERENCE NOTE

1. FOR EXISTING CONDITIONS LEGEND SEE SHEET C-101.



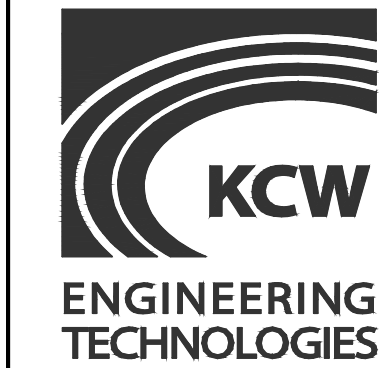
LOCATION PLAN

ST. LUKE'S YOUTH CENTER
VOLUNTARY SWM FACILITIES

217 NORTH CAREY STREET

Ward 18 Section 03 Block 0169 Lot 033
CITY OF BALTIMORE, MARYLAND

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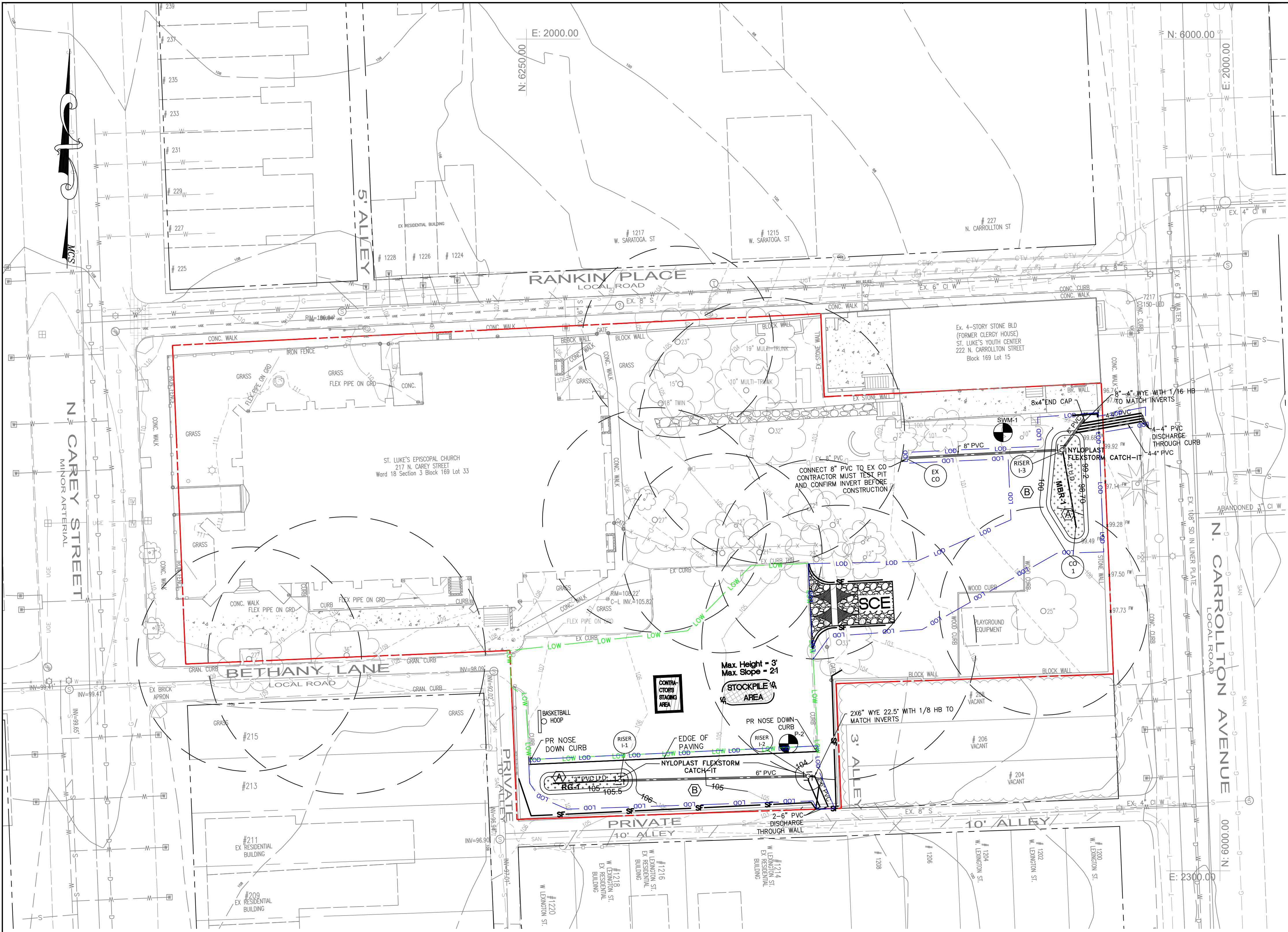
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DATE	DESCRIPTION

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DESIGNED:	NMA
DRAWN:	NMA
CHECKED:	LAG
DATE:	AUGUST 4, 2025
DWG NO.:	C-102



SEDIMENT CONTROL LEGEND

- SILT FENCE
- SILT FENCE ON PAVEMENT
- STABILIZED CONSTRUCTION ENTRANCE
- STOCKPILE AREA
- CONTRACTOR'S STAGING AREA
- AT GRADE INLET PROTECTION
- CURB INLET PROTECTION
- COMBINATION INLET PROTECTION
- SUMP PIT
- PORTABLE SEDIMENT TANK
- MOUNTABLE BERM
- STABILIZATION LABEL (TYP.)

LEGEND

- LOO
- LOW
- EXISTING CURB
- R/W LINE
- PROPERTY LOT LINE
- EXISTING FENCE
- EXISTING BUILDING
- EXISTING SANITARY SEWER
- EXISTING STORM DRAIN
- EXISTING TELEPHONE DUCT
- EXISTING WATER
- EXISTING GAS
- EXISTING ELECTRIC
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING STORM DRAIN INLETS
- EXISTING STORM DRAIN MANHOLE
- EXISTING SANITARY MANHOLE
- PROPOSED STORM DRAIN
- SILT FENCE
- ESD PRACTICE MICRO-BIORETENTION
- CRITICAL ROOT ZONE 1.5' FOR EACH 1" TREE DIAMETER

LIMITS OF DISTURBANCE = 5,650 sf

STABILIZATION SCHEDULE

AREA	S.F.	STABILIZATION	SEQUENCE
A SWM FACILITIES	2,963	EXCAVATED AREA (TEMPORARY) COMPLETED FACILITY (PERMANENT)	9, 10
B PERVIOUS AREAS	497	TEMPORARY SEEDING (TEMPORARY) SEED/SOD/LANDSCAPING (PERMANENT)	7, 8

ALL SEDIMENT CONTROLS AND CRITICAL SLOPES MUST BE STABILIZED WITHIN THREE CALENDAR DAYS. ALL OTHER INACTIVE DISTURBED AREAS ON THE PROJECT SITE MUST BE STABILIZED WITHIN SEVEN DAYS.

STABILIZED CONSTRUCTION ENTRANCE NOTE

CONTRACTOR TO COORDINATE ALL EROSION AND SEDIMENT CONTROL DEVICE WITH INSPECTOR AND OBTAIN APPROVAL PRIOR TO INSTALLATION AND/OR RELOCATION

Scale 1" = 20'

BCNR # 11811
ESC 2 of 5

PROPOSED CONDITIONS
SEDIMENT CONTROL PLAN

ST. LUKE'S YOUTH CENTER
VOLUNTARY SWM FACILITIES

217 NORTH CAREY STREET

Ward 18 Section 03 Block 0169 Lot 033

CITY OF BALTIMORE, MARYLAND



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REVISIONS

DATE	DESCRIPTION

KCW J.O.: 2240858

SCALE: 1" = 20'

DESIGNED: NMA

DRAWN: NMA

CHECKED: LAG

DATE: AUGUST 4, 2025

DWG NO.: C-103

EROSION AND SEDIMENT CONTROL – STANDARD SPECIFICATIONS FOR BALTIMORE CITY PART 1 OF 2

SHEET REVISION DATE: JANUARY 19, 2018

B-4 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

DEFINITION USING VEGETATION AS COVER TO PROTECT EXPOSED SOIL FROM EROSION.

PURPOSE TO PROMOTE THE ESTABLISHMENT OF VEGETATION ON EXPOSED SOIL.

CONDITIONS WHERE PRACTICE APPLIES ON ALL DISTURBED AREAS NOT STABILIZED BY OTHER METHODS. THIS SPECIFICATION IS DIVIDED INTO SECTIONS ON INCREMENTAL STABILIZATION, SOIL PREPARATION, SOIL AMENDMENTS AND TOPSOILING, SEEDING AND MULCHING, TEMPORARY STABILIZATION, AND PERMANENT STABILIZATION.

EFFECTS ON WATER QUALITY AND QUANTITY STABILIZATION PRACTICES ARE USED TO PROMOTE THE ESTABLISHMENT OF VEGETATION ON EXPOSED SOIL. WHEN SOIL IS STABILIZED WITH VEGETATION, THE SOIL IS LESS LIKELY TO ERODE AND MORE LIKELY TO ALLOW INFILTRATION OF RAINFALL, THEREBY REDUCING SEDIMENT LOADS AND RUNOFF TO DOWNSTREAM AREAS. PLANTING VEGETATION IN DISTURBED AREAS WILL HAVE AN EFFECT ON THE WATER BUDGET, ESPECIALLY ON VOLUMES AND RATES OF RUNOFF, INFILTRATION, EVAPORATION, TRANSPIRATION, PERCOLATION, AND GROUNDWATER RECHARGE. OVER TIME, VEGETATION WILL INCREASE ORGANIC MATTER CONTENT AND IMPROVE THE WATER HOLDING CAPACITY OF THE SOIL AND SUBSEQUENT PLANT GROWTH. VEGETATION WILL HELP REDUCE THE MOVEMENT OF SEDIMENT, NUTRIENTS, AND OTHER CHEMICALS CARRIED BY RUNOFF TO RECEIVING WATERS. PLANTS WILL ALSO HELP PROTECT GROUNDWATER SUPPLIES BY ASSIMILATING THOSE SUBSTANCES PRESENT WITHIN THE ROOT ZONE. SEDIMENT CONTROL PRACTICES MUST REMAIN IN PLACE DURING GRADING, SEEDBED PREPARATION, SEEDING, MULCHING, AND VEGETATIVE ESTABLISHMENT.

ADEQUATE VEGETATIVE ESTABLISHMENT INSPECT SEEDED AREAS FOR VEGETATIVE ESTABLISHMENT AND MAKE NECESSARY REPAIRS, REPLACEMENTS, AND RESEEDINGS WITHIN THE PLANTING SEASON.

- 1. ADEQUATE VEGETATIVE STABILIZATION REQUIRES 95 PERCENT GROUND COVER.
- 2. IF AN AREA HAS LESS THAN 40 PERCENT GROUND COVER, REESTABLISH FOLLOWING THE ORIGINAL RECOMMENDATIONS FOR LIME, FERTILIZER, SEEDBED PREPARATION, AND SEEDING.
- 3. IF AN AREA HAS BETWEEN 40 AND 94 PERCENT GROUND COVER, OVER-SEED AND FERTILIZE USING HALF OF THE RATES ORIGINALLY SPECIFIED.
- 4. MAINTENANCE FERTILIZER RATES FOR PERMANENT SEEDING ARE SHOWN IN TABLE B.6.

B-4-1 STANDARDS AND SPECIFICATIONS FOR INCREMENTAL STABILIZATION

DEFINITION ESTABLISHMENT OF VEGETATIVE COVER ON CUT AND FILL SLOPES.

PURPOSE TO PROVIDE TIMELY VEGETATIVE COVER ON CUT AND FILL SLOPES AS WORK PROGRESSES.

CONDITIONS WHERE PRACTICE APPLIES ANY CUT OR FILL SLOPE GREATER THAN 15 FEET IN HEIGHT. THIS PRACTICE ALSO APPLIES TO STOCKPILES.

CRITERIA

- A. INCREMENTAL STABILIZATION - CUT SLOPES
 - 1. EXCAVATE AND STABILIZE CUT SLOPES IN INCREMENTS NOT TO EXCEED 15 FEET IN HEIGHT. PREPARE SEEDBED AND APPLY SEED AND MULCH ON ALL CUT SLOPES AS THE WORK PROGRESSES.
 - 2. CONSTRUCTION SEQUENCE EXAMPLE (REFER TO FIGURE B.1):
 - a. CONSTRUCT AND STABILIZE ALL TEMPORARY SVALES OR DIKES THAT WILL BE USED TO CONVEY RUNOFF AROUND THE EXCAVATION.
 - b. PERFORM PHASE 1 EXCAVATION, PREPARE SEEDBED, AND STABILIZE.
 - c. PERFORM PHASE 2 EXCAVATION, PREPARE SEEDBED, AND STABILIZE. OVERSEED PHASE 1 AREAS AS NECESSARY.
 - d. PERFORM FINAL PHASE EXCAVATION, PREPARE SEEDBED, AND STABILIZE. OVERSEED PREVIOUSLY SEEDED AREAS AS NECESSARY.

NOTE: ONCE EXCAVATION HAS BEGUN THE OPERATION SHOULD BE CONTINUOUS FROM GRUBBING THROUGH THE COMPLETION OF GRADING AND PLACEMENT OF TOPSOIL (IF REQUIRED) AND PERMANENT SEED AND MULCH. ANY INTERRUPTIONS IN THE OPERATION OR COMPLETING THE OPERATION OUT OF THE SEEDING SEASON WILL NECESSITATE THE APPLICATION OF TEMPORARY STABILIZATION.

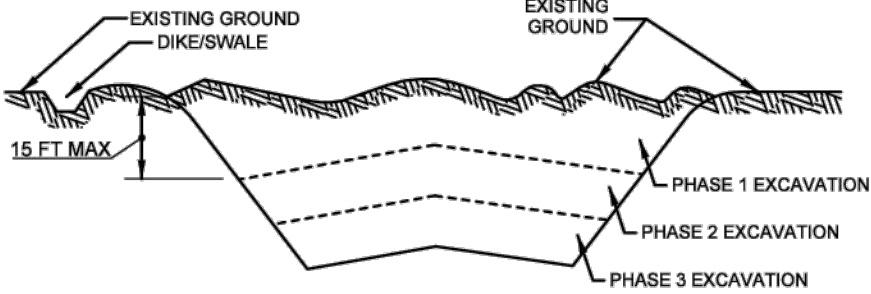


FIGURE B.1: INCREMENTAL STABILIZATION - CUT

- B. INCREMENTAL STABILIZATION - FILL SLOPES
 - 1. CONSTRUCT AND STABILIZE FILL SLOPES IN INCREMENTS NOT TO EXCEED 15 FEET IN HEIGHT. PREPARE SEEDBED AND APPLY SEED AND MULCH ON ALL SLOPES AS THE WORK PROGRESSES.
 - 2. STABILIZE SLOPES IMMEDIATELY WHEN THE VERTICAL HEIGHT OF A LIFT REACHES 15 FEET, OR WHEN THE GRADING OPERATION CEASES AS PRESCRIBED IN THE PLANS.
 - 3. AT THE END OF EACH DAY, INSTALL TEMPORARY WATER CONVEYANCE PRACTICE(S), AS NECESSARY, TO INTERCEPT SURFACE RUNOFF AND CONVEY IT DOWN THE SLOPE IN A NON-EROSIVE MANNER.
 - 4. CONSTRUCTION SEQUENCE EXAMPLE (REFER TO FIGURE B.2):
 - a. CONSTRUCT AND STABILIZE ALL TEMPORARY SVALES OR DIKES THAT WILL BE USED TO DIVERT RUNOFF AROUND THE FILL. CONSTRUCT SILT FENCE ON LOW SIDE OF FILL UNLESS OTHER METHODS SHOWN ON THE PLANS ADDRESS THIS AREA.
 - b. AT THE END OF EACH DAY, INSTALL TEMPORARY WATER CONVEYANCE PRACTICE(S), AS NECESSARY, TO INTERCEPT SURFACE RUNOFF AND CONVEY IT DOWN THE SLOPE IN A NON-EROSIVE MANNER.
 - c. PLACE PHASE 1 FILL, PREPARE SEEDBED, AND STABILIZE.
 - d. PLACE PHASE 2 FILL, PREPARE SEEDBED, AND STABILIZE.
 - e. PLACE FINAL PHASE FILL, PREPARE SEEDBED, AND STABILIZE. OVERSEED PREVIOUSLY SEEDED AREAS AS NECESSARY.

NOTE: ONCE THE PLACEMENT OF FILL HAS BEGUN THE OPERATION SHOULD BE CONTINUOUS FROM GRUBBING THROUGH THE COMPLETION OF GRADING AND PLACEMENT OF TOPSOIL (IF REQUIRED) AND PERMANENT SEED AND MULCH. ANY INTERRUPTIONS IN THE OPERATION OR COMPLETING THE OPERATION OUT OF THE SEEDING SEASON WILL NECESSITATE THE APPLICATION OF TEMPORARY STABILIZATION - INCREMENTAL STABILIZATION - FILL SLOPES

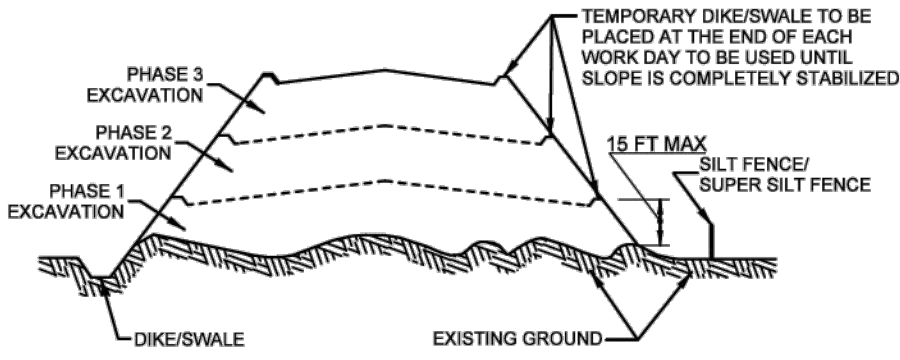


FIGURE B.2: INCREMENTAL STABILIZATION - FILL

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 WHERE VEGETATIVE STABILIZATION IS TO BE ESTABLISHED.

CRITERIA

- A. SOIL PREPARATION
 - 1. TEMPORARY STABILIZATION
 - a. 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 RIPPER 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.
 - b. APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS.
 - c. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.
 - 2. PERMANENT STABILIZATION
 - a. A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:
 - i. SOIL PH BETWEEN 6.0 AND 7.0.
 - ii. SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM).
 - iii. 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.
 - iv. SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT.
 - v. SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.
 - b. APPLICATION OF AMENDMENTS OR TOPSOIL IS REQUIRED IF ON-SITE SOILS DO NOT MEET THE ABOVE CONDITIONS.
 - c. 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.
 - d. APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST.
 - e. MIX SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. RAKE LAWN AREAS TO SMOOTH THE SURFACE, REMOVE LARGE OBJECTS LIKE STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. LOOSEN SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT TO ROUGHEN THE SURFACE WHERE SITE CONDITIONS WILL NOT PERMIT NORMAL SEEDBED PREPARATION. TRACK SLOPES 3:1 OR FLATTER WITH TRACKED EQUIPMENT LEAVING THE SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. LEAVE THE TOP 1 TO 3 INCHES OF SOIL LOOSE AND FRABLE. SEEDBED LOOSENING MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.

- B. TOPSOILING
 - 1. 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.
 - 2. 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.
 - 3. TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:
 - a. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PROVIDE VEGETATIVE GROWTH.
 - b. 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.
 - c. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
 - d. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.
 - 4. AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN.
 - 5. TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:
 - a. 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 1.5 INCHES IN DIAMETER.
 - b. 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.
 - c. 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.
 - 6. TOPSOIL APPLICATION
 - a. EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING TOPSOIL.
 - b. 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.
 - c. 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.

C. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)

- 1. 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.
- 2. 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.
- 3. 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.
- 4. LIME AND FERTILIZER ARE TO BE EVENLY DISTRIBUTED AND INCORPORATED INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.
- 5. 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.

B-4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

DEFINITION THE APPLICATION OF SEED AND MULCH TO ESTABLISH VEGETATIVE COVER.

PURPOSE TO PROTECT DISTURBED SOILS FROM EROSION DURING AND AT THE END OF CONSTRUCTION.

CONDITIONS WHERE PRACTICE APPLIES TO THE SURFACE OF ALL PERIMETER CONTROLS, SLOPES, AND ANY DISTURBED AREA NOT UNDER ACTIVE GRADING.

CRITERIA

- A. SEEDING
 - 1. SPECIFICATIONS
 - a. ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED USED MUST HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON ANY PROJECT. REFER TO TABLE B.4 REGARDING THE QUALITY OF SEED. SEED TAGS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY TYPE OF SEED AND SEEDING RATE.
 - b. MULCH ALONE MAY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES ONLY IF THE GROUND IS FROZEN. THE APPROPRIATE SEEDING MIXTURE MUST BE APPLIED WHEN THE GROUND THAWS.
 - c. INOCULANTS: THE INOCULANT FOR TREATING LEGUME SEED IN THE SEED MIXTURES MUST BE A PURE CULTURE OF NITROGEN FIXING BACTERIA PREPARED SPECIFICALLY FOR THE SPECIES. INOCULANTS MUST NOT BE USED LATER THAN THE DATE INDICATED ON THE CONTAINER. ADD FRESH INOCULANTS AS DIRECTED ON THE PACKAGE. USE FOUR TIMES THE RECOMMENDED RATE WHEN HYDROSEEDING. NOTE: IT IS VERY IMPORTANT TO KEEP INOCULANT AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75 TO 80 DEGREES FAHRENHEIT CAN WEAKEN BACTERIA AND MAKE THE INOCULANT LESS EFFECTIVE.
 - d. SOD OR SEED MUST NOT BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.
 - 2. APPLICATION
 - a. DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS.
 - i. INCORPORATE SEED INTO THE SUBSOIL AT THE RATES PRESCRIBED ON TEMPORARY SEEDING TABLE B.1, PERMANENT SEEDING TABLE B.3, OR SITE-SPECIFIC SEEDING SUMMARIES.
 - ii. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION. ROLL THE SEEDED AREA WITH A WEIGHTED ROLLER TO PROVIDE GOOD SEED TO SOIL CONTACT.
 - b. DRILL OR CULTIPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL.
 - i. CULTIPACKER SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 1/4 INCH OF SOIL COVERING. SEEDBED MUST BE FIRM AFTER PLANTING.
 - ii. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION.
 - c. HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER).
 - i. IF FERTILIZER IS BEING APPLIED AT THE TIME OF SEEDING, THE APPLICATION RATES SHOULD NOT EXCEED THE FOLLOWING: NITROGEN, 100 POUNDS PER ACRE TOTAL OF SOLUBLE NITROGEN; P₂O₅ (PHOSPHOROUS), 200 POUNDS PER ACRE; K₂O (POTASSIUM), 200 POUNDS PER ACRE.
 - ii. LIME: USE ONLY GROUND AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE MAY BE APPLIED BY HYDROSEEDING). NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME WHEN HYDROSEEDING.
 - iii. MIX SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION.
 - iv. WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.

B. MULCHING

- 1. MULCH MATERIALS (IN ORDER OF PREFERENCE)
 - a. STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, RYE, OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR. STRAW IS TO BE FREE OF NOXIOUS WEED SEEDS AS SPECIFIED IN THE MARYLAND SEED LAW AND NOT MUSTY, MOLDY, CAKED, DECAYED, OR EXCESSIVELY DUSTY. NOTE: USE ONLY STERILE STRAW MULCH IN AREAS WHERE ONE SPECIES OF GRASS IS DESIRED.
 - b. WOOD CELLULOSE FIBER MULCH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE.
 - i. WCFM IS TO BE DYED GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORMITY SPREAD SLURRY.
 - ii. WCFM, INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS.
 - iii. WCFM MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED, FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL MUST FORM A BLOTTER-LIKE GROUND COVER, ON APPLICATION, HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND MUST COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS.
 - iv. WCFM MATERIAL MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE PHYTO-TOXIC.
 - v. WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH OF APPROXIMATELY 10 MILLIMETERS, DIAMETER APPROXIMATELY 1 MILLIMETER, PH RANGE OF 4.0 TO 8.5, ASH CONTENT OF 1.6 PERCENT MAXIMUM AND WATER HOLDING CAPACITY OF 90 PERCENT MINIMUM.
- 2. APPLICATION
 - a. APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.
 - b. WHEN STRAW MULCH IS USED, SPREAD IT OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE TO A UNIFORM LOOSE DEPTH OF 1 TO 2 INCHES. APPLY MULCH TO ACHIEVE A UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED. WHEN USING A MULCH ANCHORING TOOL, INCREASE THE APPLICATION RATE TO 2.5 TONS PER ACRE.
 - c. WOOD CELLULOSE FIBER USED AS MULCH MUST BE APPLIED AT A NET DRY WEIGHT OF 1500 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER TO ATTAIN A MIXTURE WITH A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.

3. ANCHORING

- a. PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS (LISTED BY PREFERENCE), DEPENDING UPON THE SIZE OF THE AREA AND EROSION HAZARD:
 - i. A MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE A MINIMUM OF 2 INCHES. THIS PRACTICE IS MOST EFFECTIVE ON LARGE AREAS, BUT IS LIMITED TO FLATTER SLOPES WHERE EQUIPMENT CAN OPERATE SAFELY. IF USED ON SLOPING LAND, THIS PRACTICE SHOULD FOLLOW THE CONTOUR.
 - ii. WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER AT A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
 - iii. SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRO-TACK), DCA-70, PETROSET, TERRA TAX II, TERRA TACK AR OR OTHER APPROVED EQUAL MAY BE USED. FOLLOW APPLICATION RATES AS SPECIFIED BY THE MANUFACTURER. APPLICATION OF LIQUID BINDERS NEEDS TO BE HEAVIER AT THE EDGES WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF BANKS. USE OF ASPHALT BINDERS IS STRICTLY PROHIBITED.
 - iv. LIGHTWEIGHT PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER RECOMMENDATIONS. NETTING IS USUALLY AVAILABLE IN ROLLS 4 TO 15 FEET WIDE AND 300 TO 3,000 FEET LONG.

B-4-4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION

DEFINITION TO STABILIZE DISTURBED SOILS WITH VEGETATION FOR UP TO 6 MONTHS.

PURPOSE TO USE FAST GROWING VEGETATION THAT PROVIDES COVER ON DISTURBED SOILS.

CONDITIONS WHERE PRACTICE APPLIES EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR A PERIOD OF 6 MONTHS OR LESS. FOR LONGER DURATION OF TIME, PERMANENT STABILIZATION PRACTICES ARE REQUIRED.

CRITERIA

- 1. SELECT ONE OR MORE OF THE SPECIES OR SEED MIXTURES LISTED IN TABLE B.1 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3), AND ENTER THEM IN THE TEMPORARY SEEDING SUMMARY BELOW ALONG WITH APPLICATION RATES, SEEDING DATES AND SEEDING DEPTHS. IF THIS SUMMARY IS NOT PUT ON THE PLAN AND COMPLETED, THEN TABLE B.1 PLUS FERTILIZER AND LIME RATES MUST BE PUT ON THE PLAN.
- 2. FOR SITES HAVING SOIL TESTS PERFORMED, USE AND SHOW THE RECOMMENDED RATES BY THE TESTING AGENCY. SOIL TESTS ARE NOT REQUIRED FOR TEMPORARY SEEDING.
- 3. WHEN STABILIZATION IS REQUIRED OUTSIDE A OF A SEEDING SEASON, APPLY SEED AND MULCH OR STRAW MULCH ALONE AS PRESCRIBED IN SECTION B-4-3 A.1.B AND MAINTAIN UNTIL THE NEXT SEEDING SEASON.

TEMPORARY SEEDING SUMMARY

HARDINESS ZONE (FROM FIGURE B.3): <u>7A</u> SEED MIXTURE (FROM TABLE B.1): <u>SEE BELOW</u>					FERTILIZER RATE (10-20-20)	LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS		
N/A	ANNUAL RYEGRASS	40	2/15-4/30 8/15-11/30	½ IN.		
N/A	FOXTAIL MILLET (WARM SEASON)	30	5/1-8/14	½ IN.	436 LB/AC (10 LB/1000 SF)	2 TONS/AC (80 LB/1000 SF)
N/A	PEARL MILLET (WARM SEASON)	20	5/1-8/14	½ IN.		

FOR MATERIALS

Table H1: Geotextile Fabrics

		WOVEN SLIT FILM GEOTEXTILE		WOVEN MONOFILAMENT GEOTEXTILE		NONWOVEN GEOTEXTILE	
		MINIMUM AVERAGE ROLL VALUE ^a					
PROPERTY	TEST METHOD	MD	CD	MD	CD	MD	CD
Grab Tensile Strength	ASTM D-4632	200 lb	200 lb	370 lb	250 lb	200 lb	200 lb
Grab Tensile Elongation	ASTM D-4632	13%	10%	13%	13%	50%	50%
Trapezoidal Tear Strength	ASTM D-4533	75 lb	75 lb	100 lb	60 lb	80 lb	80 lb
Puncture Strength	ASTM D-6241	450 lb		900 lb		450 lb	
Apparent Opening Size ^b	ASTM D-4751	U.S. Sieve 30 (0.59 mm)		U.S. Sieve 70 (0.21 mm)		U.S. Sieve 70 (0.21 mm)	
Permittivity	ASTM D-4491	0.05 sec ⁻¹		0.28 sec ⁻¹		1.1 sec ⁻¹	
Ultraviolet Resistance Retained at 500 hours	ASTM D-4355	70% strength		70% strength		70% strength	

¹ All numeric values except apparent opening size (AOS) represent minimum average roll values (MARV). MARV is calculated as the typical minus two standard deviations. MD is machine direction; CD is cross direction.

² Values for AOS represent the average maximum opening.

Geotextiles must be evaluated by the National Transportation Product Evaluation Program (NTPPEP) and conform to the values in Table H.1.

The geotextile must be inert to commonly encountered chemicals and hydrocarbons and must be rot and mildew resistant. The geotextile must be manufactured from fibers consisting of long chain synthetic polymers and composed of a minimum of 95 percent by weight of polyolefins or polyesters, and formed into a stable network so the filaments or yarns retain their dimensional stability relative to each other, including selvages.

When more than one section of geotextile is necessary, overlap the sections by at least one foot. The geotextile must be pulled taut over the applied surface. Equipment must not run over exposed fabric. When placing riprap on geotextile, do not exceed a one foot drop height.

COMPACTED FILL

- 1. All fill materials shall be inspected, tested and approved by the Geotechnical Engineer prior to use. Material considered suitable for controlled fill should consist of predominately sandy or mixed sandy low-plastic soil (USCS: SW, SP, or SM) or better. Soils that are imported from an offsite source may require some moisture adjustment to facilitate their use as structural or controlled fill, depending upon weather conditions at the time of construction. Fill should be free of organic materials, trash, muck, roots, frost and other deleterious materials.
- 2. Primarily silty or clayey (non-plastic to low or moderately plastic, USCS: ML/CL) soils and clayey SAND (USCS: SC) may also be used as controlled fill in non-structural areas ("green areas"), however, these materials are inherently more moisture-sensitive than predominately sandy materials. Control of moisture with primarily fine-grained fill soils is imperative for achieving the required placement and compaction. High plastic clay (USCS: CH) and elastic silt (USCS: MH) soils are not recommended for use as fill for this project.
- 3. Prior to placing fill, the ground surface should be cleared of all refuse, brush, grass, roots, ice and frozen material. All organic matter and otherwise unsuitable soils shall be removed from the surface to be filled.
- 4. Fill placement should be in relatively level layers, eight to nine inches in loose thickness and compacted uniformly with heavy duty equipment.
- 5. Fill required to support shallow footing elements and the building pad should be compacted to 95 percent of its maximum dry density as established by ASTM D-1557 / AASHTO T-180 (Modified Proctor) specifications. Fill areas within the parking lot should be compacted to 97 percent of its maximum dry density as established by ASTM D-1557 / AASHTO T-180 (Modified Proctor).
- 6. Additionally, for best placement and compaction results, controlled fill should have a moisture content within +/- 2 percentage points of its optimum moisture content.
- 7. The density of the fill should be checked on each lift by an experienced soils technician. Should utility construction be performed after earthwork, the contractor should be responsible for achieving the appropriate compaction of the Modified Proctor maximum dry density in all trench backfill.
- 8. A sufficient number of in-place density tests should be performed by an engineering technician to verify that the proper degree of compaction is being obtained on all fill soils. As a minimum, each lift should be tested and one test per 2500 square feet of fill.
- 9. The fill should be constructed in such a manner that the surface will be sloped to drain at all times, and fill shall be deposited to prevent excessive moisture accumulation from rainwater.

Table H2: Stone Size

TYPE	SIZE RANGE	d ₅₀	d ₁₀₀	AASHTO	MIDSIZE WEIGHT ¹
NUMBER 57 ¹	3/8 to 1 ½ inch	½ in	1 ½ in	M-43	N/A
NUMBER 1	2 to 3 inch	2 ½ in	3 in	M-43	N/A
RIPRAP ² (CLASS 0)	4 to 7 inch	5 ½ in	7 in	N/A	N/A
CLASS I	N/A	9 ½ in	15 in	N/A	40 lb
CLASS II	N/A	16 in	24 in	N/A	200 lb
CLASS III	N/A	23 in	34 in	N/A	600 lb

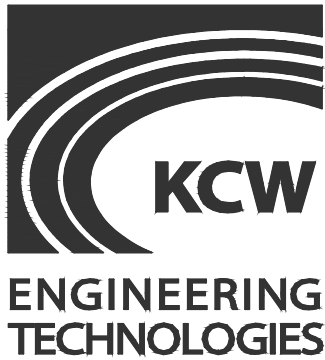
¹ This classification is to be used on the upstream face of stone outlets and check dams.

² This classification is to be used for gabions.

³ Optimum gradation is 50 percent of the stone being above and 50 percent below the midsize.

Stone must be composed of a well graded mixture of stone sized so that fifty (50) percent of the pieces by weight are larger than the size determined by using the charts. A well graded mixture, as used herein, is defined as a mixture composed primarily of larger stone sizes but with a sufficient mixture of other sizes to fill the smaller voids between the stones. The diameter of the largest stone in such a mixture must not exceed the respective d₁₀₀ selected from Table H.2. The d₅₀ refers to the median diameter of the stone. This is the size for which 50 percent, by weight, will be smaller and 50 percent will be larger.

Note: Recycled concrete equivalent may be substituted for all stone classifications for temporary control measures only. Concrete broken into the sizes meeting the appropriate classification, containing no steel reinforcement, and having a minimum density of 150 pounds per cubic foot may be used as an equivalent.



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PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DUL

EROSION AND SEDIMENT CONTROL – STANDARD SPECIFICATIONS FOR BALTIMORE CITY PART 2 OF 2

SHEET REVISION DATE: JANUARY 19, 2018

B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

DEFINITION
TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION.

PURPOSE
TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

CONDITIONS WHERE PRACTICE APPLIES
EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR 6 MONTHS OR MORE.

CRITERIA

- A. SEED MIXTURES
1. GENERAL USE
- a. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE B.3 FOR THE APPROPRIATE PLANT HARDNESS ZONE(FROM FIGURE B.3) AND BASED ON THE SITE CONDITION OR PURPOSE FOUND ON TABLE B.2. ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.
- b. ADDITIONAL PLANTING SPECIFICATIONS FOR EXCEPTIONAL SITES SUCH AS SHORELINES, STREAM BANKS, OR DUNES OR FOR SPECIAL PURPOSES SUCH AS WILDLIFE OR AESTHETIC TREATMENT MAY BE FOUND IN USDA-NRCS TECHNICAL FIELD OFFICE GUIDE, SECTION 342 - CRITICAL AREA PLANTING.
- c. FOR SITES HAVING DISTURBED AREA OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY.
- d. FOR AREAS RECEIVING LOW MAINTENANCE, APPLY UREA FORM FERTILIZER (46-0-0) AT 3.5 POUNDS PER 1000 SQUARE FEET (150 POUNDS PER ACRE) AT THE TIME OF SEEDING IN ADDITION TO THE SOIL AMENDMENTS SHOWN IN THE PERMANENT SEEDING SUMMARY.
2. TURFGRASS MIXTURES
- a. AREAS WHERE TURFGRASS MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, AND COMMERCIAL SITES WHICH WILL RECEIVE A MEDIUM TO HIGH LEVEL OF MAINTENANCE.
- b. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED BELOW BASED ON THE SITE CONDITIONS OR PURPOSE, ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.
- i. KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN AREAS THAT RECEIVE INTENSIVE MANAGEMENT. IRRIGATION REQUIRED IN THE AREAS OF CENTRAL, MARYLAND AND EASTERN SHORE. RECOMMENDED CERTIFIED KENTUCKY BLUEGRASS CULTIVARS SEEDING RATE: 1.5 TO 2.0 POUNDS PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
- ii. KENTUCKY BLUEGRASS/PERENNIAL RYE: FULL SUN MIXTURE: FOR USE IN FULL SUN AREAS WHERE RAPID ESTABLISHMENT IS NECESSARY AND WHEN TURF WILL RECEIVE MEDIUM TO INTENSIVE MANAGEMENT. CERTIFIED PERENNIAL RYEGRASS CULTIVARS/CERTIFIED KENTUCKY BLUEGRASS SEEDING RATE: 2 POUNDS MIXTURE PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
- iii. TALL FESCUE/KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN DROUGHT PRONE AREAS AND/OR FOR AREAS RECEIVING LOW TO MEDIUM MANAGEMENT IN FULL SUN TO MEDIUM SHADE. RECOMMENDED MIXTURE INCLUDES: CERTIFIED TALL FESCUE CULTIVARS 95 TO 100 PERCENT, CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 0 TO 5 PERCENT. SEEDING RATE: 5 TO 8 POUNDS PER 1000 SQUARE FEET. ONE OR MORE CULTIVARS MAY BE BLENDED.
- iv. KENTUCKY BLUEGRASS/FINE FESCUE: SHADE MIXTURE: FOR USE IN AREAS WITH SHADE IN BLUEGRASS LAWNS. FOR ESTABLISHMENT IN HIGH QUALITY, INTENSIVELY MANAGED TURF AREA. MIXTURE INCLUDES: CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 30 TO 40 PERCENT AND CERTIFIED FINE FESCUE AND 60 TO 70 PERCENT. SEEDING RATE: 1.5 TO 3 POUNDS PER 1000 SQUARE FEET. NOTES: SELECT TURFGRASS VARIETIES FROM THOSE LISTED IN THE MOST CURRENT UNIVERSITY OF MARYLAND PUBLICATION, AGRONOMY MEMO #77, "TURFGRASS CULTIVAR RECOMMENDATIONS FOR MARYLAND" CHOOSE CERTIFIED MATERIAL. CERTIFIED MATERIAL IS THE BEST GUARANTEE OF CULTIVAR PURITY. THE CERTIFICATION PROGRAM OF THE MARYLAND DEPARTMENT OF AGRICULTURE, TURF AND SEED SECTION, PROVIDES A RELIABLE MEANS OF CONSUMER PROTECTION AND ASSURES A PURE GENETIC LINE.
- c. IDEAL TIMES OF SEEDING FOR TURF GRASS MIXTURES
- WESTERN MD:
MARCH 15 TO JUNE 1, AUGUST 1 TO OCTOBER 1 (HARDINESS ZONES: 8B, 8A)
- CENTRAL MD:
MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONE: 8B)
- SOUTHERN MD, EASTERN SHORE:
MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONES: 7A, 7B)
- d. TILL AREAS TO RECEIVE SEED BY DISKING OR OTHER APPROVED METHODS TO A DEPTH OF 2 TO 4 INCHES. LEVEL AND RAKE THE AREAS TO PREPARE A PROPER SEEDBED. REMOVE STONES AND DEBRIS OVER 1.5 INCHES IN DIAMETER. THE RESULTING SEEDBED MUST BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL POSE NO DIFFICULTY.
- e. IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER FOR PLANT GROWTH 0.5 TO 1 INCH EVERY 3 TO 4 DAYS (DEPENDING ON SOIL TEXTURE) UNTIL THEY ARE FIRMLY ESTABLISHED. THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE LATE IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOT SEASONS, OR ON ADVERSE SITES.
- B. SOD: TO PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER).
1. GENERAL SPECIFICATIONS
- a. CLASS OF TURFGRASS SOD MUST BE MARYLAND STATE CERTIFIED. SOD LABELS MUST BE MADE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR.
- b. SOD MUST BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 0.75 INCH, PLUS OR MINUS 0.25 INCH, AT THE TIME OF CUTTING. MEASUREMENT FOR THICKNESS MUST EXCLUDE TOP GROWTH AND THATCH. BROKEN PADS AND TORN OR UNEVEN ENDS WILL NOT BE ACCEPTABLE.
- c. STANDARD SIZE: SECTIONS OF SOD MUST BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP ON THE UPPER 10 PERCENT OF THE SECTION.
- d. SOD MUST NOT BE HARVESTED OR TRANSPLANTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL.
- e. SOD MUST BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS. SOD NOT TRANSPLANTED WITHIN THIS PERIOD MUST BE APPROVED BY AN AGRONOMIST OR SOIL SCIENTIST PRIOR TO ITS INSTALLATION.
2. SOD INSTALLATION
- a. DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, LIGHTLY IRRIGATE THE SUBSOIL IMMEDIATELY PRIOR TO LAYING THE SOD.
- b. LAY THE FIRST ROW OF SOD IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO IT AND TIGHTLY WEDGED AGAINST EACH OTHER. STAGGER LATERAL JOINTS TO PROVIDE MORE UNIFORM GROWTH AND STRENGTH. ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE AIR DRYING OF THE ROOTS.
- c. WHEREVER POSSIBLE, LAY SOD WITH THE LONG EDGES PARALLEL TO THE CONTOUR AND WITH STAGGERING JOINTS. ROLL AND TAMP. PEG OR OTHERWISE SECURE THE SOD TO PREVENT SLIPPAGE ON SLOPES. ENSURE SOLID CONTACT EXISTS BETWEEN SOD ROOTS AND THE UNDERLYING SOIL SURFACE.
- d. WATER THE SOD IMMEDIATELY FOLLOWING ROLLING AND TAMPING UNTIL THE UNDERSIDE OF THE NEW SOD PAD AND SOIL SURFACE BELOW THE SOD ARE THOROUGHLY WET. COMPLETE THE OPERATIONS OF LAYING, TAMPING AND IRRIGATING FOR ANY PIECE OF SOD WITHIN EIGHT HOURS.
3. SOD MAINTENANCE
- a. IN THE ABSENCE OF ADEQUATE RAINFALL, WATER DAILY DURING THE FIRST WEEK OR AS OFTEN AND SUFFICIENTLY AS NECESSARY TO MAINTAIN MOIST SOIL TO A DEPTH OF 4 INCHES. WATER SOD DURING THE HEAT OF THE DAY TO PREVENT WILTING.
- b. AFTER THE FIRST WEEK, SOD WATERING IS REQUIRED AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE CONTENT.
- c. DO NOT MOW UNTIL THE SOD IS FIRMLY ROOTED. NO MORE THAN ONE THIRD OF THE GRASS LEAF MUST BE REMOVED BY THE INITIAL CUTTING OR SUBSEQUENT CUTTINGS. MAINTAIN A GRASS HEIGHT OF AT LEAST 3 INCHES UNLESS OTHERWISE SPECIFIED.

PERMANENT SEEDING SUMMARY

HARDNESS ZONE (FROM FIGURE B.3): ____-7A ____ SEED MIXTURE (FROM TABLE B.3): ____ SEE BELOW ____					FERTILIZER RATE (10-20-20)			LIME RATE
NO	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	N	P ₂ O ₅	K ₂ O	
	TALL FESCUE	60	2/15-4/30 8/15-10/31	½-¾ IN.	45 POUNDS PER ACRE (1.0 LB/1000 SF)	90 POUNDS PER ACRE (2 LB/1000 SF)	90 POUNDS PER ACRE (2 LB/1000 SF)	2 TONS/AC (90 LB/1000 SF)
	PERENNIAL RYEGRASS	20		½-¾ IN.				
	KENTUCKY BLUEGRASS	40		½-¾ IN.				

PERMANENT SEEDING NOTES

1. THE SEEDING DATES LISTED ARE AVERAGES FOR THE IDENTIFIED HARDINESS ZONE. WHEN SEEDING TOWARD THE END OF THE LISTED PLANTING DATES, OR WHEN CONDITIONS ARE EXPECTED TO BE LESS THAN OPTIMAL, SELECT AN APPROPRIATE NURSE CROP FROM THE TEMPORARY SEEDING SUMMARY FOUND ON THE EROSION AND SEDIMENT CONTROL - STANDARD SPECIFICATIONS FOR BALTIMORE CITY PART 1 OF 2, AND PLANT TOGETHER WITH THE PERMANENT SEEDING MIX.
2. SEEDING TOWARD THE END OF PLANTING DATE RANGES MAY REQUIRE SUPPLEMENTAL WATERING TO ENSURE PLANT ESTABLISHMENT.
3. FOR GUIDANCE ON STABILIZATION OUTSIDE OF A SEEDING SEASON, SEE B-4-4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION FOUND ON EROSION AND SEDIMENT CONTROL PART - STANDARD SPECIFICATIONS FOR BALTIMORE CITY 1 OF 2.

B-4-7 STANDARDS AND SPECIFICATIONS FOR HEAVY USE AREA PROTECTION

DEFINITION

THE STABILIZATION OF AREAS FREQUENTLY AND INTENSIVELY USED BY SURFACING WITH SUITABLE MATERIALS (E.G., MULCH AND AGGREGATE).

PURPOSE

TO PROVIDE A STABLE, NON-ERODING SURFACE FOR AREAS FREQUENTLY USED AND TO IMPROVE WATER QUALITY FROM THE RUNOFF OF THESE AREAS.

CONDITIONS WHERE PRACTICE APPLIES

THIS PRACTICE APPLIES TO INTENSIVELY USED AREAS (E.G., EQUIPMENT AND MATERIAL STORAGE, STAGING AREAS, HEAVILY USED TRAVEL LANES).

CRITERIA

1. A MINIMUM 4-INCH BASE COURSE OF CRUSHED STONE OR OTHER SUITABLE MATERIALS INCLUDING WOOD CHIPS OVER NONWOVEN GEOTEXTILE SHOULD BE PROVIDED AS SPECIFIED IN SECTION H-1 MATERIALS.
2. SELECT THE STABILIZING MATERIAL BASED ON THE INTENDED USE, DESIRED MAINTENANCE FREQUENCY, AND RUNOFF CONTROL.
3. THE TRANSPORT OF SEDIMENTS, NUTRIENTS, OILS, CHEMICALS, PARTICULATE MATTER ASSOCIATED WITH VEHICULAR TRAFFIC AND EQUIPMENT, AND MATERIAL STORAGE NEEDS TO BE CONSIDERED IN THE SELECTION OF MATERIAL. ADDITIONAL CONTROL MEASURES MAY BE NECESSARY TO CONTROL SOME OF THESE POTENTIAL POLLUTANTS.
4. SURFACE EROSION CAN BE A PROBLEM ON LARGE HEAVY USE AREAS. IN THESE SITUATIONS, MEASURES TO REDUCE THE FLOW LENGTH OF RUNOFF OR EROSION VELOCITIES NEED TO BE CONSIDERED.

MAINTENANCE

THE HEAVY USE AREAS MUST BE MAINTAINED IN A CONDITION THAT MINIMIZES EROSION. THIS MAY REQUIRE ADDING SUITABLE MATERIAL, AS SPECIFIED ON THE APPROVED PLANS, TO MAINTAIN A CLEAN SURFACE.

B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

DEFINITION

A MOUND OR PILE OF SOIL PROTECTED BY APPROPRIATELY DESIGNED EROSION AND SEDIMENT CONTROL MEASURES.

PURPOSE

TO PROVIDE A DESIGNATED LOCATION FOR THE TEMPORARY STORAGE OF SOIL THAT CONTROLS THE POTENTIAL FOR EROSION, SEDIMENTATION, AND CHANGES TO DRAINAGE PATTERNS.

CONDITIONS WHERE PRACTICE APPLIES

STOCKPILE AREAS ARE UTILIZED WHEN IT IS NECESSARY TO SALVAGE AND STORE SOIL FOR LATER USE.

CRITERIA

1. THE STOCKPILE LOCATION AND ALL RELATED SEDIMENT CONTROL PRACTICES MUST BE CLEARLY INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN.
2. THE FOOTPRINT OF THE STOCKPILE MUST BE SIZED TO ACCOMMODATE THE ANTICIPATED VOLUME OF MATERIAL AND BASED ON A SIDE SLOPE RATIO NO STEEPER THAN 2:1. BENCHING MUST BE PROVIDED IN ACCORDANCE WITH SECTION B-3 LAND GRADING.
3. RUNOFF FROM THE STOCKPILE AREA MUST DRAIN TO A SUITABLE SEDIMENT CONTROL PRACTICE.
4. ACCESS THE STOCKPILE AREA FROM THE UPGRADE SIDE.
5. CLEAR WATER RUNOFF INTO THE STOCKPILE AREA MUST BE MINIMIZED BY USE OF A DIVERSION DEVICE SUCH AS AN EARTH DIKE, TEMPORARY SWALE OR DIVERSION FENCE. PROVISIONS MUST BE MADE FOR DISCHARGING CONCENTRATED FLOW IN A NON-EROSIVE MANNER.
6. WHERE RUNOFF CONCENTRATES ALONG THE TOE OF THE STOCKPILE FILL, AN APPROPRIATE EROSION/SEDIMENT CONTROL PRACTICE MUST BE USED TO INTERCEPT THE DISCHARGE.
7. STOCKPILES MUST BE STABILIZED IN ACCORDANCE WITH THE 3/7 DAY STABILIZATION REQUIREMENT AS WELL AS STANDARD B-4-1 INCREMENTAL STABILIZATION AND STANDARD B-4-4 TEMPORARY STABILIZATION.
8. IF THE STOCKPILE IS LOCATED ON AN IMPERVIOUS SURFACE, A LINER SHOULD BE PROVIDED BELOW THE STOCKPILE TO FACILITATE CLEANUP. STOCKPILES CONTAINING CONTAMINATED MATERIAL MUST BE COVERED WITH IMPERMEABLE SHEETING.

MAINTENANCE

THE STOCKPILE AREA MUST CONTINUOUSLY MEET THE REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. SIDE SLOPES MUST BE MAINTAINED AT NO STEEPER THAN A 2:1 RATIO. THE STOCKPILE AREA MUST BE KEPT FREE OF EROSION. IF THE VERTICAL HEIGHT OF A STOCKPILE EXCEEDS 30 FEET FOR 2:1 SLOPES, 30 FEET FOR 3:1 SLOPES, OR 40 FEET FOR 4:1 SLOPES, BENCHING MUST BE PROVIDED IN ACCORDANCE WITH SECTION B-3 LAND GRADING.

H-5 STANDARDS AND SPECIFICATIONS FOR DUST CONTROL

DEFINITION

CONTROLLING THE SUSPENSION OF DUST PARTICLES FROM CONSTRUCTION ACTIVITIES.

PURPOSE

TO PREVENT BLOWING AND MOVEMENT OF DUST FROM EXPOSED SOIL SURFACE TO REDUCE ON AND OFF-SITE DAMAGE INCLUDING HEALTH AND TRAFFIC HAZARDS.

CONDITIONS WHERE PRACTICE APPLIES

AREAS SUBJECT TO DUST BLOWING AND MOVEMENT WHERE ON AND OFF-SITE DAMAGE IS LIKELY WITHOUT TREATMENT.

SPECIFICATIONS

1. MULCHES: SEE SECTION B-4-2 SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS, SECTION B-4-3 SEEDING AND MULCHING, AND SECTION B-4-4 TEMPORARY STABILIZATION. MULCH MUST BE ANCHORED TO PREVENT BLOWING.
2. VEGETATIVE COVER: SEE SECTION B-4-4 TEMPORARY STABILIZATION.
3. TILLAGE: TILL TO ROUGHEN SURFACE AND BRING CLODS TO THE SURFACE. BEGIN PLOWING ON WINDWARD SIDE OF SITE. CHISEL-TYPE PLOWS SPACED ABOUT 12 INCHES APART, SPRING-TOOTHED HARROWS, AND SIMILAR PLOWS ARE EXAMPLES OF EQUIPMENT THAT MAY PRODUCE THE DESIRED EFFECT.
4. IRRIGATION: SPRINKLE SITE WITH WATER UNTIL THE SURFACE IS MOIST. REPEAT AS NEEDED. THE SITE MUST NOT BE IRRIGATED TO THE POINT THAT RUNOFF OCCURS.
5. BARRIERS: SOLID BOARD FENCES, SILT FENCES, SNOW FENCES, BURLAP FENCES, STRAW BALES, AND SIMILAR MATERIAL CAN BE USED TO CONTROL AIR CURRENTS AND SOIL BLOWING.
6. CHEMICAL TREATMENT: USE OF CHEMICAL TREATMENT REQUIRES APPROVAL BY THE APPROPRIATE PLAN REVIEW AUTHORITY.

SUPPLEMENTAL EROSION AND SEDIMENT CONTROL NOTES

1. FOR UTILITY TRENCHES OUTSIDE THE DRAINAGE AREA LIMITS OF EROSION AND SEDIMENT CONTROL (ESC) CONTROLS, THE CONTRACTOR SHALL OPEN ONLY A SECTION OF TRENCH THAT CAN BE BACKFILLED AND STABILIZED AT THE END OF EACH WORKDAY. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT. ANY EXCESS STOCKPILE MATERIAL SHALL BE REMOVED FROM THE SITE AT THE END OF EACH WORKDAY. FOR PERVIOUS SURFACES, THE USE OF ANY VEHICLE TRAFFIC IS PROHIBITED THE FIRST 24 HOURS AFTER A RAIN EVENT.
2. IF A STOCKPILE AREA IS NOT SHOWN ON THE APPROVED ESC PLAN, NO STOCKPILING SHALL BE ALLOWED. ALL EXCESS MATERIAL SHALL BE REMOVED FROM THE SITE AT THE END OF EACH WORK DAY AND SENT TO A DISPOSAL SITE GOVERNED BY AN APPROVED EROSION AND SEDIMENT CONTROL PLAN.
3. IF A STAGING AREA IS NOT SHOWN ON THE APPROVED ESC PLAN, NO STAGING AREA SHALL BE ALLOWED ON SITE. STAGING AREAS OUTSIDE OF THE LOD MUST BE LOCATED ON AN IMPERVIOUS SURFACE, AND SHALL NOT RESULT IN EARTH DISTURBANCE. STOCKPILES OF ERODIBLE MATERIAL WILL NOT BE PERMITTED AT A STAGING AREA.
4. ALL DISTURBED AREAS SHALL BE STABILIZED PER THE STABILIZATION SCHEDULE.
5. THE ESC INSPECTOR HAS AUTHORITY TO REQUIRE ADDITIONAL ESC CONTROLS BEYOND THOSE SHOWN ON THE APPROVED ESC PLAN. ANY ADDITIONAL CONTROLS REQUIRED BY THE INSPECTOR SHALL BE PROVIDED BY THE CONTRACTOR AT THE DIRECTION OF THE INSPECTOR WITH 24 HOURS OF VERBAL NOTIFICATION BY THE ESC INSPECTOR.
6. WHERE NO STABILIZED CONSTRUCTION ENTRANCE (SCE) IS PROVIDED, THE CONTRACTOR SHALL DESIGNATE PIECES OF CONSTRUCTION EQUIPMENT THAT SHALL BE ALLOWED WITHIN THE LOD. THIS EQUIPMENT SHALL BE KEPT WITHIN THE LOD UNTIL THE PROPOSED WORK IS COMPLETE, AND SHALL HAVE TREADS/TIRES CLEANED PRIOR TO LEAVING THE LOD. ALL MATERIAL REMOVAL OR DELIVERY SHALL BE EITHER LIFTED FROM OR INTO THE LOD, AND ANY SEDIMENT TRACKED OR DROPPED OUTSIDE THE LOD CLEANED IMMEDIATELY. FLUSHING WILL NOT BE PERMITTED.
7. WHERE SAME DAY STABILIZATION IS SPECIFIED ON THE ESC PLAN, IT SHALL BE CONSIDERED THE PRIMARY ESC CONTROL. ANY CONTROLS PROVIDED DOWNSTREAM OF AREAS SPECIFIED FOR SAME DAY STABILIZATION SHALL BE CONSIDERED SECONDARY CONTROLS UNLESS SPECIFIED OTHERWISE. (SECONDARY CONTROLS ARE DEFINED AS CONTROLS PROVIDED AS BACKUP MEASURES TO A PRIMARY CONTROL).
8. SAME DAY STABILIZATION IS DEFINED AS THE COMPLETION OF PROPOSED WORK WITHIN A DEFINED AREA WITH THE STIPULATION OF A NON-ERODIBLE SURFACE AT THE END OF EACH WORK DAY. EXAMPLES OF ACCEPTABLE NON-ERODIBLE SURFACES INCLUDE PAVEMENT, STEEL PLATES, A MINIMUM STONE LAYER, OR STABILIZATION MATTING OVER PERMANENT SEEDING. THIRTY (30) MIL PLASTIC SHEETING WITH ANCHORING MAY BE CONSIDERED ACCEPTABLE IF EITHER SPECIFIED ON AN APPROVED PLAN, OR APPROVED BY THE ESC INSPECTOR. TEMPORARY SEEDING AND MULCH IS NOT CONSIDERED AN ACCEPTABLE SAME DAY STABILIZATION PRACTICE.

STANDARD STABILIZATION NOTE

FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION MUST BE COMPLETED WITHIN:

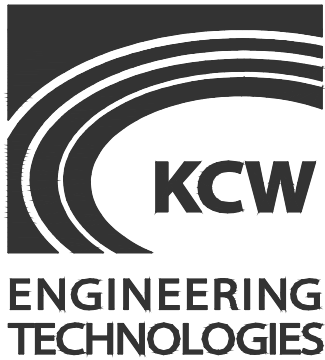
- a. THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND
- b. SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING

MAINTENANCE OF SEDIMENT CONTROL

CONTRACTOR SHALL, WITHOUT EXTRA COST TO THE PROJECT, REPAIR AND MAINTAIN EXISTING SEDIMENT CONTROL DEVICES UNTIL ALL AREAS WITHIN LIMITS OF CONSTRUCTION ARE STABILIZED. ALL SEDIMENT CONTROL MEASURES REFERRED TO ON THESE PLANS SHALL BE IN ACCORDANCE WITH THE PUBLICATION ENTITLED "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL".

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EROSION & SEDIMENT CONTROL
NOTES 2



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PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 46091, EXPIRATION DATE: 05/14/2027.

OWNER:

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EPISCOPAL CHURCH OF THE DIOCESE
4 EAST UNIVERSITY PARKWAY
BALTIMORE, MD 21298

DEVELOPER / APPLICANT:

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REVISIONS

DATE	DESCRIPTION

KCW J.O.: 2240858

SCALE:

DESIGNED: NMA

DRAWN: NMA

CHECKED: LAG

DATE: AUGUST 4, 2025

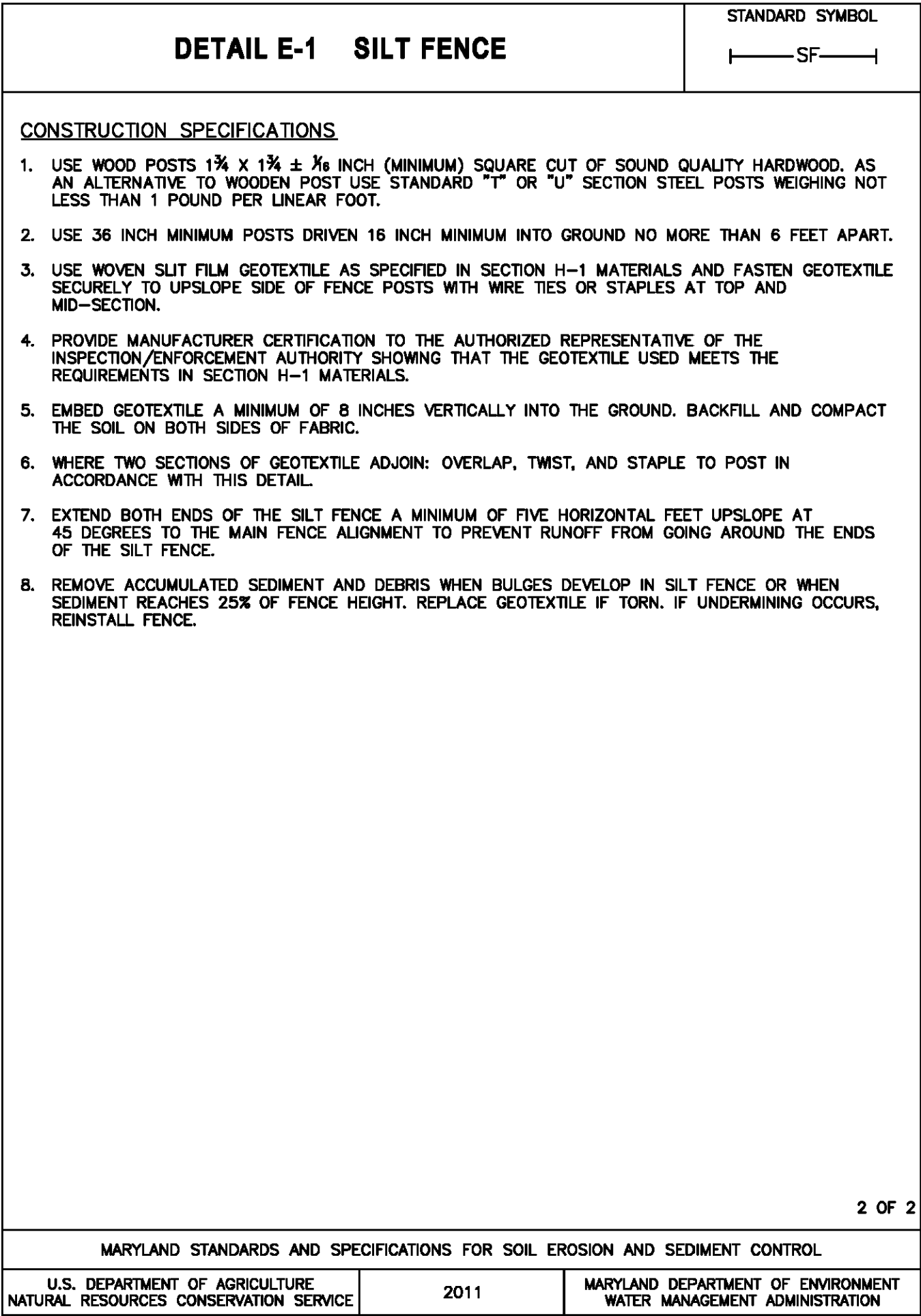
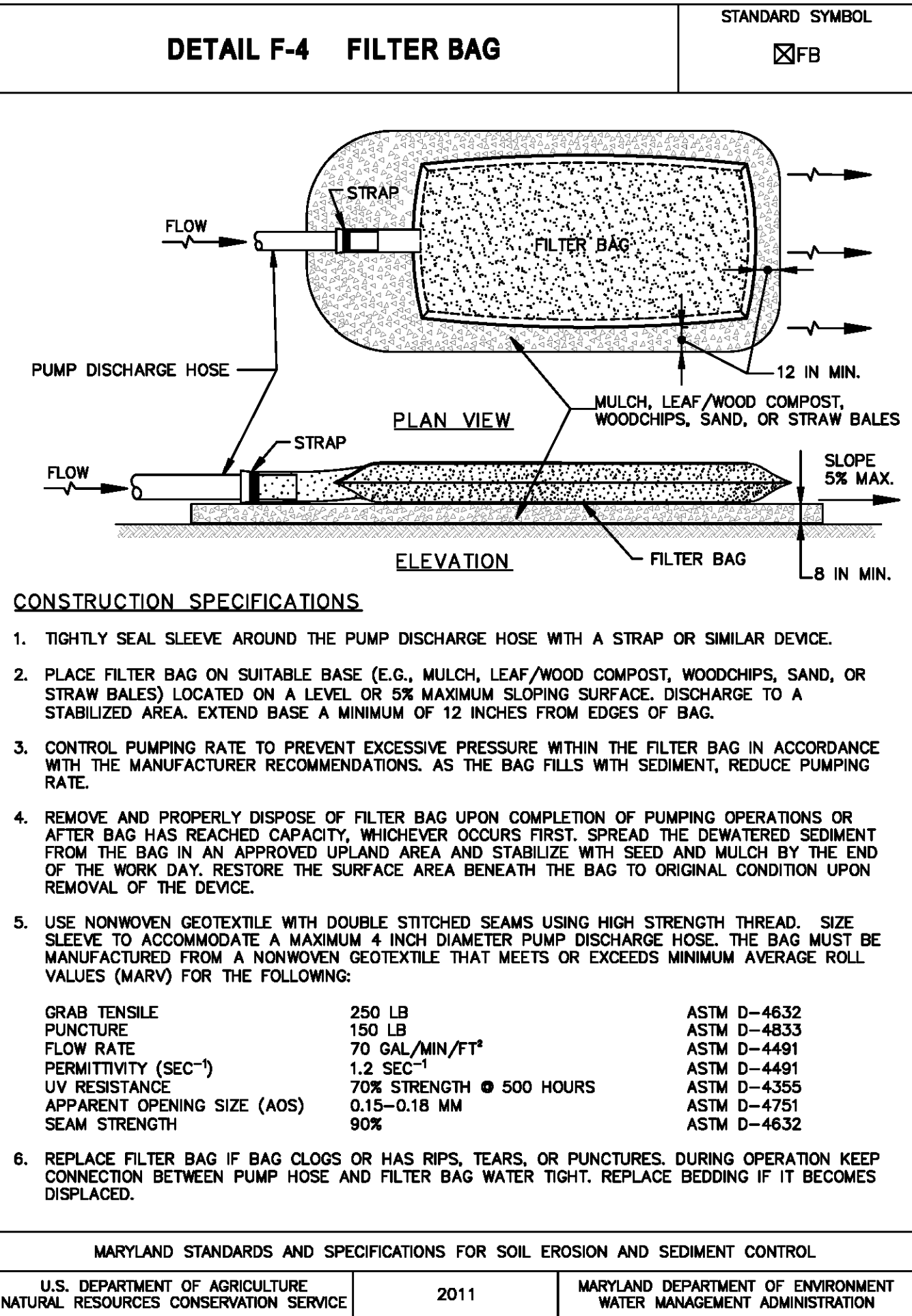
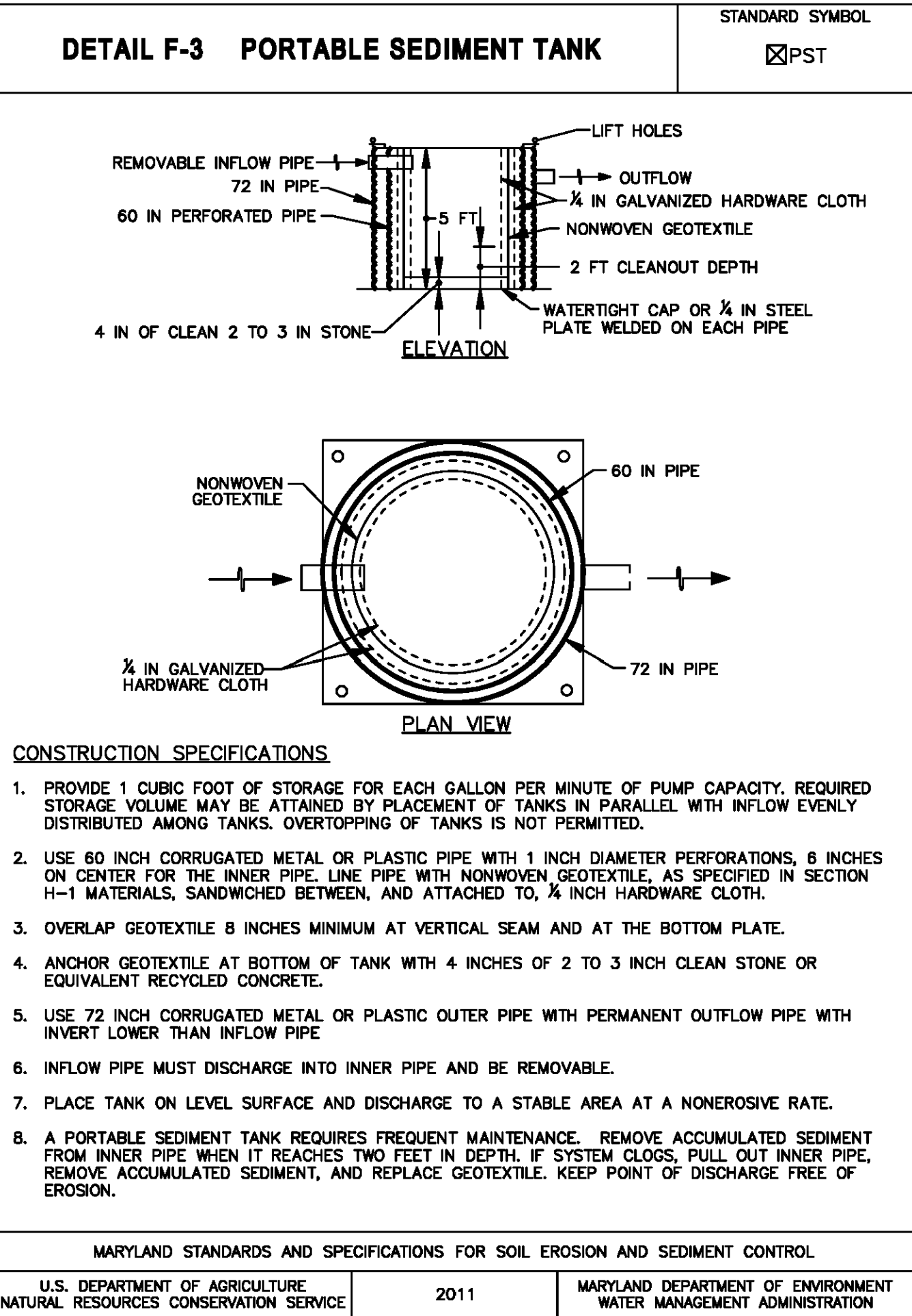
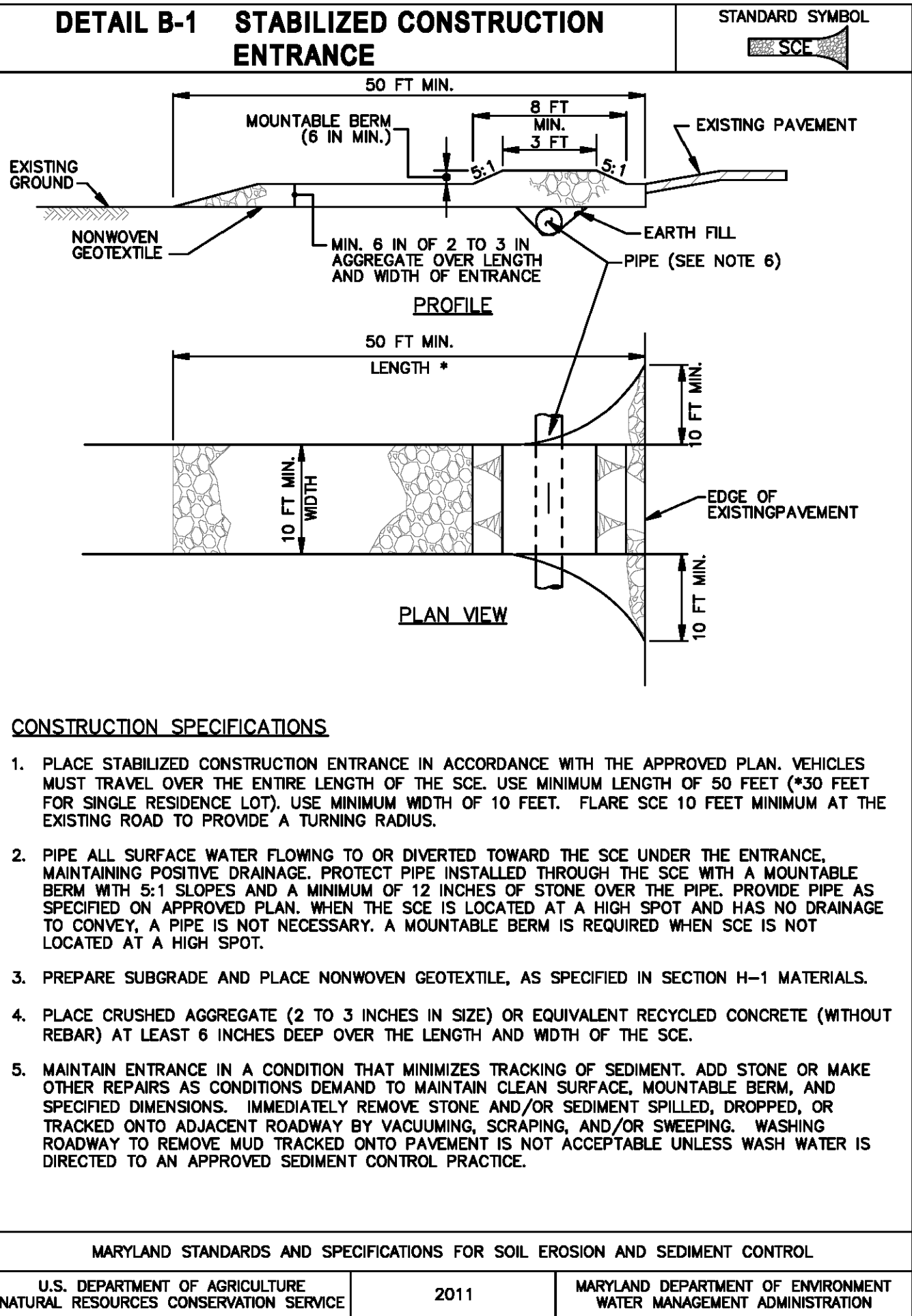
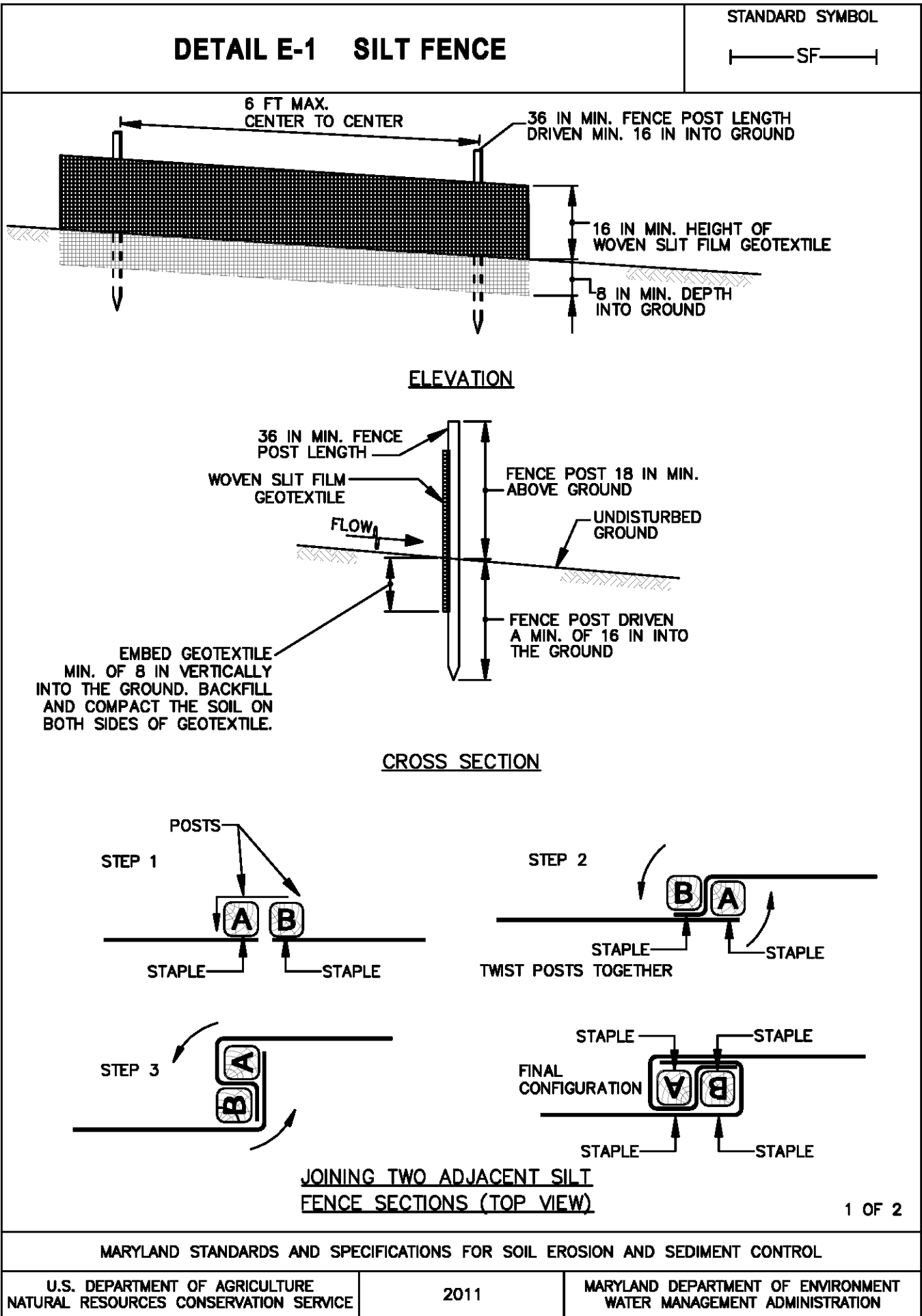
DWG NO.: C-105

ST. LUKE'S YOUTH CENTER
VOLUNTARY SWM FACILITIES

217 NORTH CAREY STREET

Ward 18 Section 03 Block 0169 Lot 033

CITY OF BALTIMORE, MARYLAND



FlexStorm Catch-It™ Inlet Filter

FlexStorm Catch-It inlet filters are a temporary and reusable solution for storm sewer inlet protection. They comply with ASTM D8057 and are the preferred choice for storm water runoff control. FlexStorm Catch-It inlet filters can be configured to fit any drainage structure, are equipped with a high-efficiency filter bag and allow builders to keep their job sites SWPPP compliant during construction.

Applications

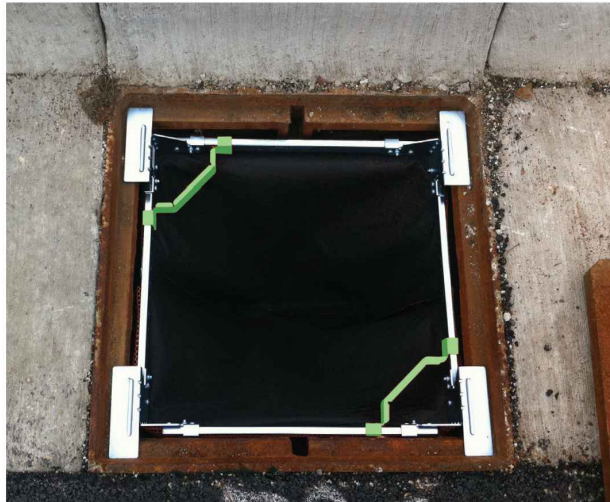
- Residential developments
- Commercial developments
- Roadway construction

Features

- Configured to fit any storm drainage structure
- Bypass feature allows streets to drain if bag is full
- Installs quickly, easy maintenance

Benefits

- Prevents hazardous road conditions by eliminating ponding at curb inlets
- Prevents pollution of rivers, lakes and ponds
- Reduces job site flooding
- Significantly reduces clean-up costs



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ADS® "FlexStorm Catch-It" and the Green Stripe are registered trademarks of Advanced Drainage Systems, Inc. © 2024 Advanced Drainage Systems, Inc. #10891 06/24 Mkt

FlexStorm Catch-It Inlet Filters Specification

Material and Performance

The filter is comprised of a corrosion resistant steel frame and a geotextile filter bag attached to the frame with a stainless steel locking band. The filter bag hangs below the grate, avoiding traffic interference, and has a built-in bypass to allow full water flow even if the bag is completely filled with sediment. The standard "FX" filter bags are rated for 200 gpm/sqft (21.44 liters/minute/cubic meter) with a removal efficiency of 85%. The filters meet ASTM D8057 requirements.

Installation

- Remove the grate from the inlet.
- Clean debris from the ledges of the inlet.
- Place the Inlet Filter onto the load bearing ledges of the structure.
- Replace the grate and confirm it is not elevated more than 1/4" (3 mm).

Frequency of Inspections

Inspection should occur every three months and following rain events greater than 1/2" (13 mm). Sites with greater runoff conditions may need to be inspected more frequently.

Maintenance Guidelines

- Empty the filter bag manually or by industrial vacuum taking care not to damage the geotextile bag when more than half filled or during scheduled inspection period.
- Remove compacted silt from sediment bag and flush with medium spray.
- Inspect and replace filter if bag is torn or punctured.

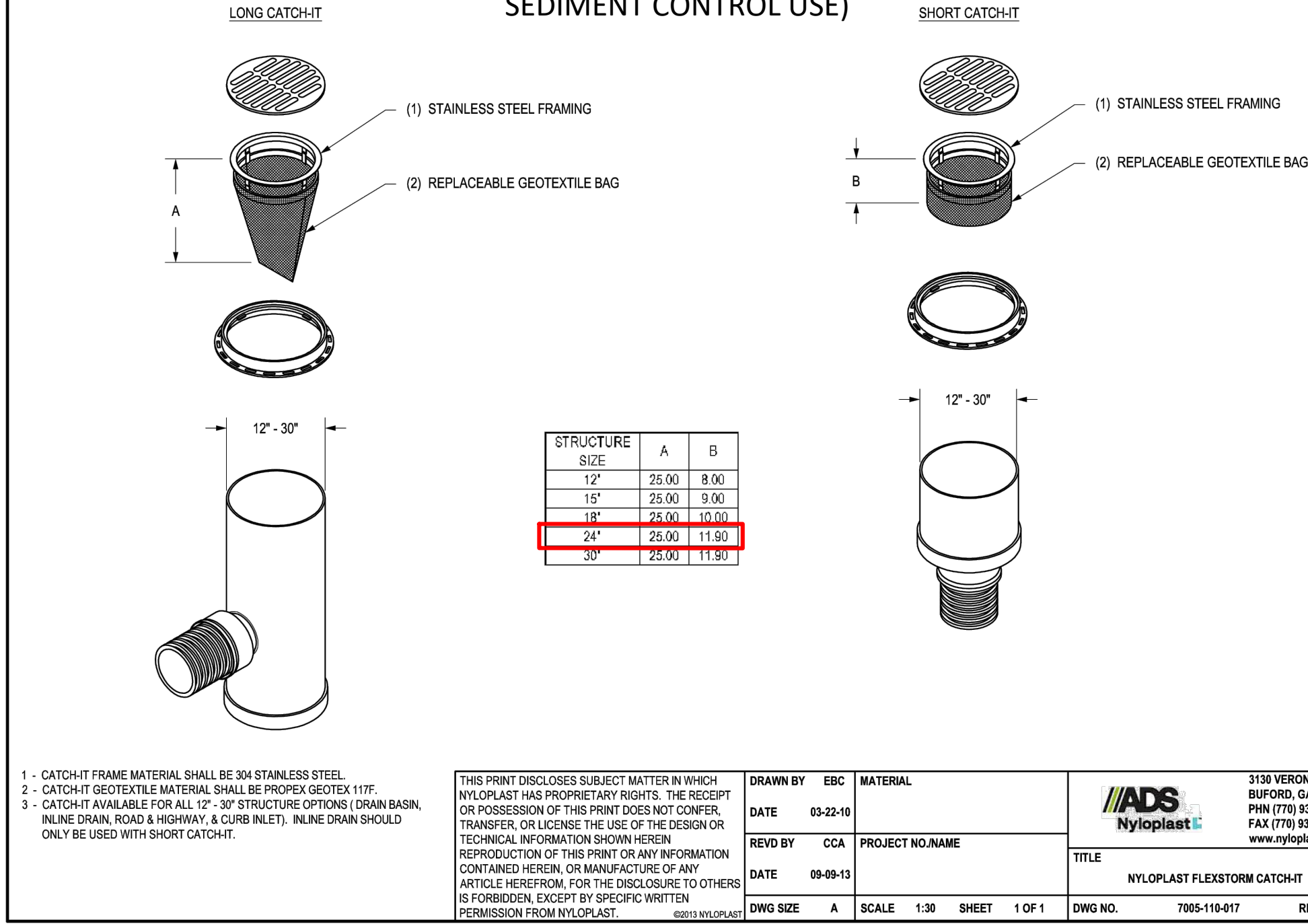
Build America, Buy America (BABA)

ADS FlexStorm Catch-It Inlet Filter is manufactured for temporary use during construction and therefore is not subject to the requirements of the Build America, Buy America (BABA) Act.

adspipe.com
800-821-6710

BCNR # 11811
ESC 5 of 5

NYLOPLAST FLEXSTORM CATCH-IT ("INLET PROTECTION" FOR SEDIMENT CONTROL USE)



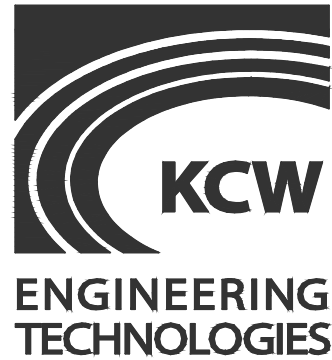
EROSION & SEDIMENT CONTROL DETAILS

ST. LUKE'S YOUTH CENTER VOLUNTARY SWM FACILITIES

217 NORTH CAREY STREET

Ward 18 Section 03 Block 0169 Lot 033

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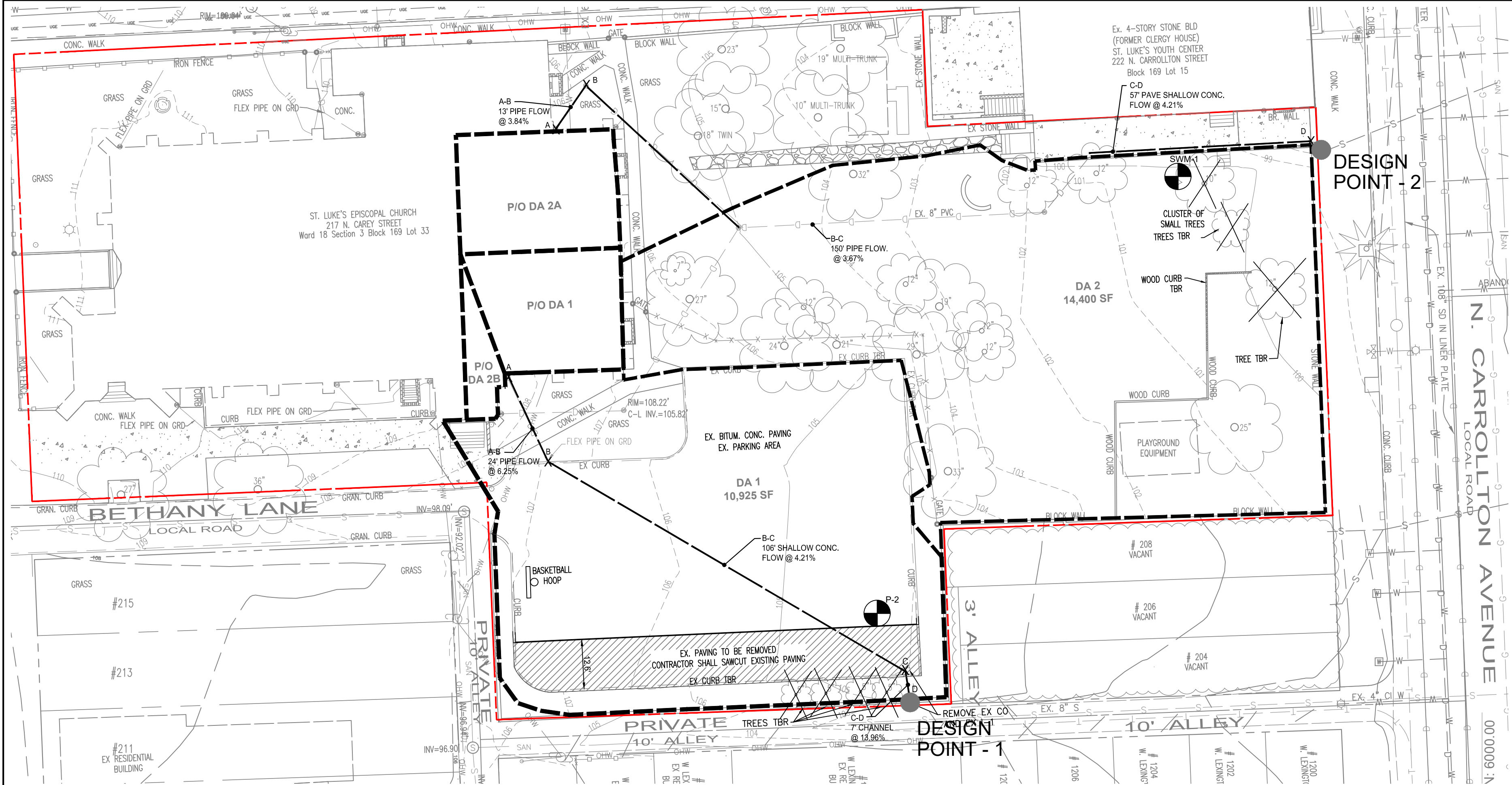
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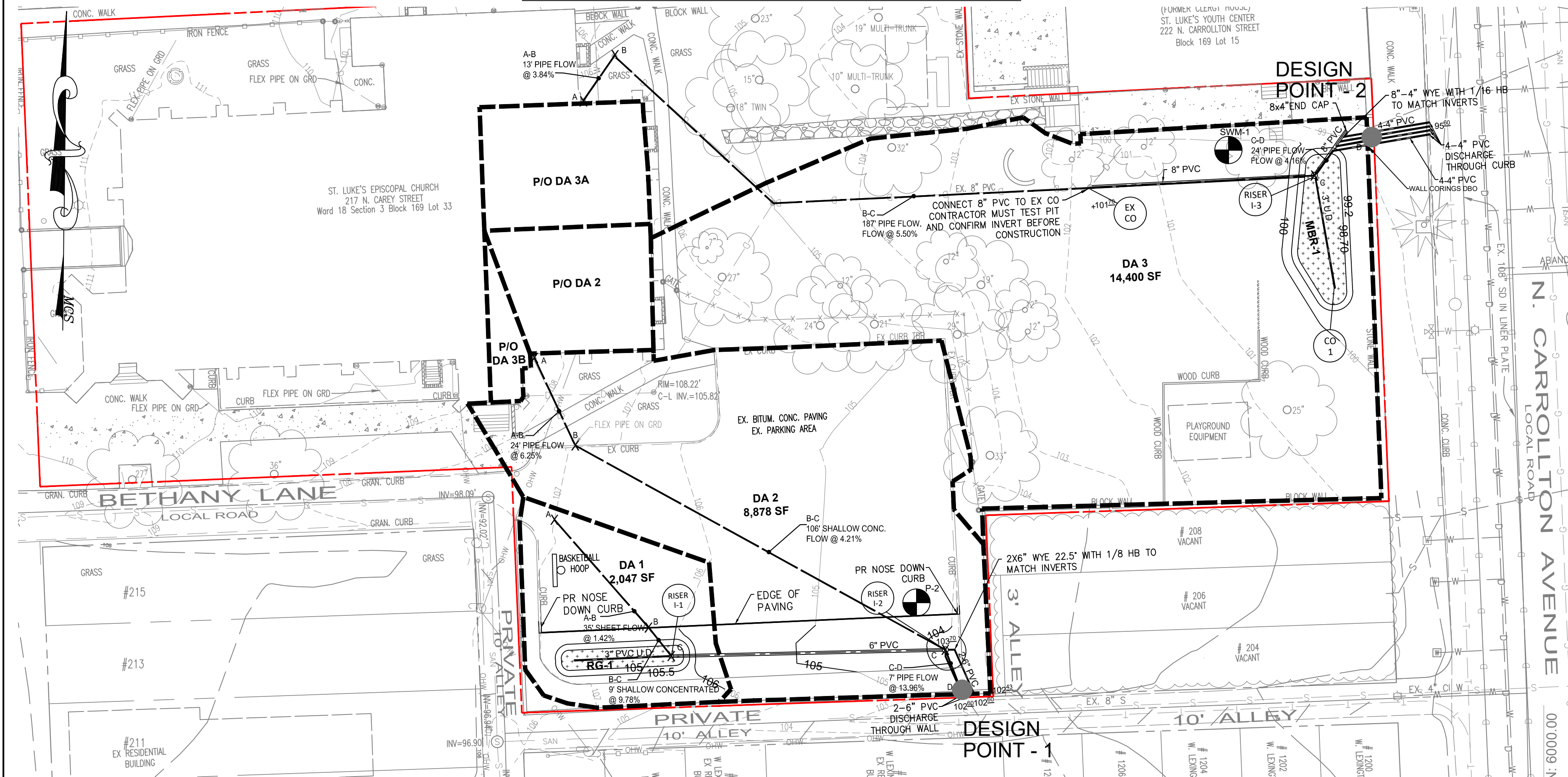
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DATE	DESCRIPTION

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SCALE:
DESIGNED: NMA
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DATE: AUGUST 4, 2025
DWG NO.: C-106



EXISTING DRAINAGE AREA PLAN Scale 1" = 20'



PROPOSED DRAINAGE AREA PLAN Scale 1" = 20'

LEGEND	
LOD	LIMIT OF DISTURBANCE
EXISTING CURB	EXISTING CURB
R/W LINE	R/W LINE
PROPERTY LOT LINE	PROPERTY LOT LINE
EXISTING FENCE	EXISTING FENCE
EXISTING BUILDING	EXISTING BUILDING
EXISTING SANITARY SEWER	EXISTING SANITARY SEWER
EXISTING STORM DRAIN	EXISTING STORM DRAIN
EXISTING TELEPHONE DUCT	EXISTING TELEPHONE DUCT
EXISTING WATER	EXISTING WATER
EXISTING GAS	EXISTING GAS
EXISTING ELEC.	EXISTING ELEC.
EXISTING FIRE HYDRANT	EXISTING FIRE HYDRANT
EXISTING WATER METER	EXISTING WATER METER
EXISTING STORM DRAIN INLETS	EXISTING STORM DRAIN INLETS
EXISTING STORM DRAIN MANHOLE	EXISTING STORM DRAIN MANHOLE
EXISTING SANITARY MANHOLE	EXISTING SANITARY MANHOLE
PROPOSED C&G	PROPOSED CURB & GUTTER
PR. 8" SD	PROPOSED STORM DRAIN
PROPOSED STORM DRAIN MANHOLE	PROPOSED STORM DRAIN MANHOLE
PROPOSED BUILDING	PROPOSED BUILDING
TRAFFIC SIGNAL POLE	TRAFFIC SIGNAL POLE
EXISTING STREET LIGHT - COBRA	EXISTING STREET LIGHT - COBRA
STREET LIGHT - SHOEBOX	STREET LIGHT - SHOEBOX
STREET LIGHT - ACORN	STREET LIGHT - ACORN

-----	DRAINAGE AREA LINE
A-----B	TIME OF CONCENTRATION
[Pattern]	ESD PRACTICE MICRO-BIORETENTION

OUTFALL STATEMENT

OUTFALL FROM THE PROJECT SITE IS THE EXISTING CURB LINE ON THE WEST SIDE OF N CARROLLTON AVENUE TO THE EXISTING STORM DRAIN SYSTEM THROUGH THE INLET AT THE INTERSECTION OF N. CARROLLTON AVENUE AND W. SARATOGA STREET. POST DEVELOPMENT PEAK RUNOFF IS LESS THAN EXISTING THROUGH REDUCTION OF IMPERVIOUS, THEREFORE, THE OUTFALLS ARE ADEQUATE.

SWM DISCHARGE SUMMARY					EXISTING		
	AREA	DRAINAGE AREA (AC.)	RCN	TIME OF CONCENTRATION (HRS.)	PEAK DISCHARGE (CFS)		
					Q ₁	Q ₁₀	Q ₁₀₀
POI 1	DA 1	0.25	94	0.1	0.81	1.74	3.13
POI 2	DA 2	0.33	82	0.1	0.60	1.65	3.37

SWM DISCHARGE SUMMARY					DEVELOPED		
	AREA	DRAINAGE AREA (AC.)	RCN	TIME OF CONCENTRATION (HRS.)	PEAK DISCHARGE (CFS)		
					Q ₁	Q ₁₀	Q ₁₀₀
POI 1	DA 1	0.05	0.87	0.1	0.12	0.30	0.58
POI 2	DA 2	0.20	0.91	0.1	0.58	1.31	2.44
POI 2	DA 3	0.33	82	0.1	0.60	1.65	3.37

ENVIRONMENTAL SITE DESIGN SUMMARY TABLE									
PRACTICE	DIMENSIONS	ESD MEDIA DEPTH (in)	PONDING DEPTH (in)	DRAINAGE AREA (sf)	IMPERVIOUS AREA (sf)	STORAGE VOLUME REQUIRED, ESDv (cf)	STORAGE VOLUME PROVIDED, ESDv (cf)	Pe REQUIRED (in)	Pe PROVIDED (in)
SWMP # 1: (RG-1) RAIN GARDEN	Surface Area = 148 sf	3.0	6.0	2,047	1,060	88	134	1.0	1.5
SWMP # 2: (MBR-1) MICRO-BIORETENTION	Surface Area = 350 sf	3.0	6.0	14,400	1,677	186	279	1.0	1.5

Scale 1" = 20'

BCNR # 11811
SWM 1 of 5

SWM
DRAINAGE AREA MAP

ST. LUKE'S YOUTH CENTER
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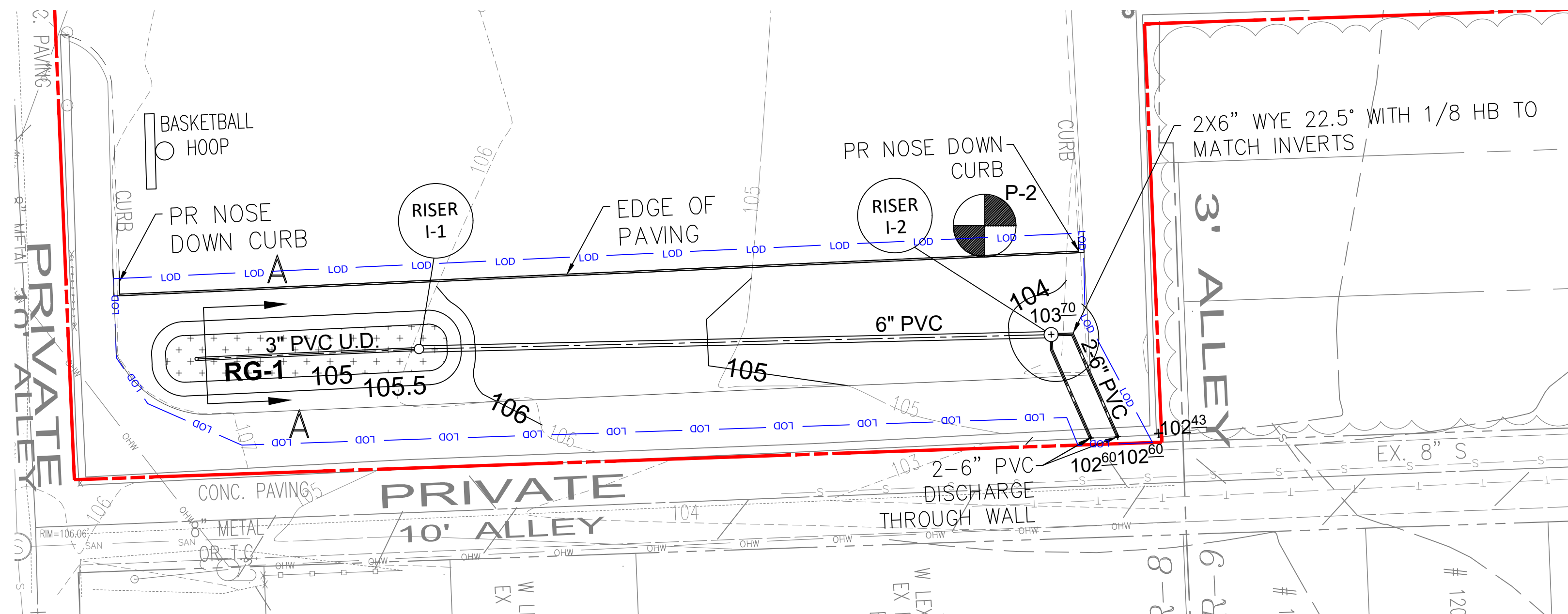
DEVELOPER / APPLICANT:

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REVISIONS

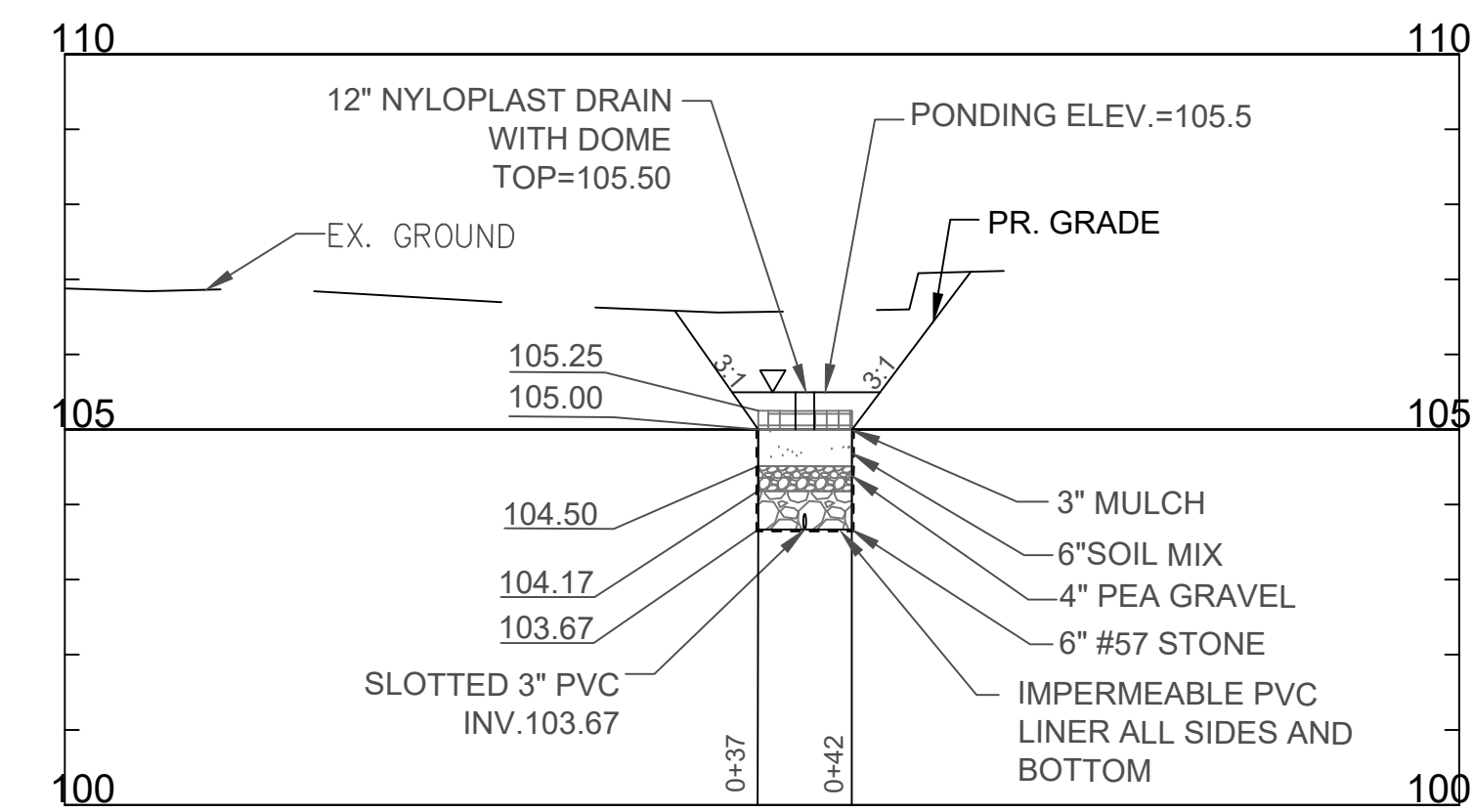
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CHECKED: LAG
DATE: AUGUST 4, 2025
DWG NO.: C-107



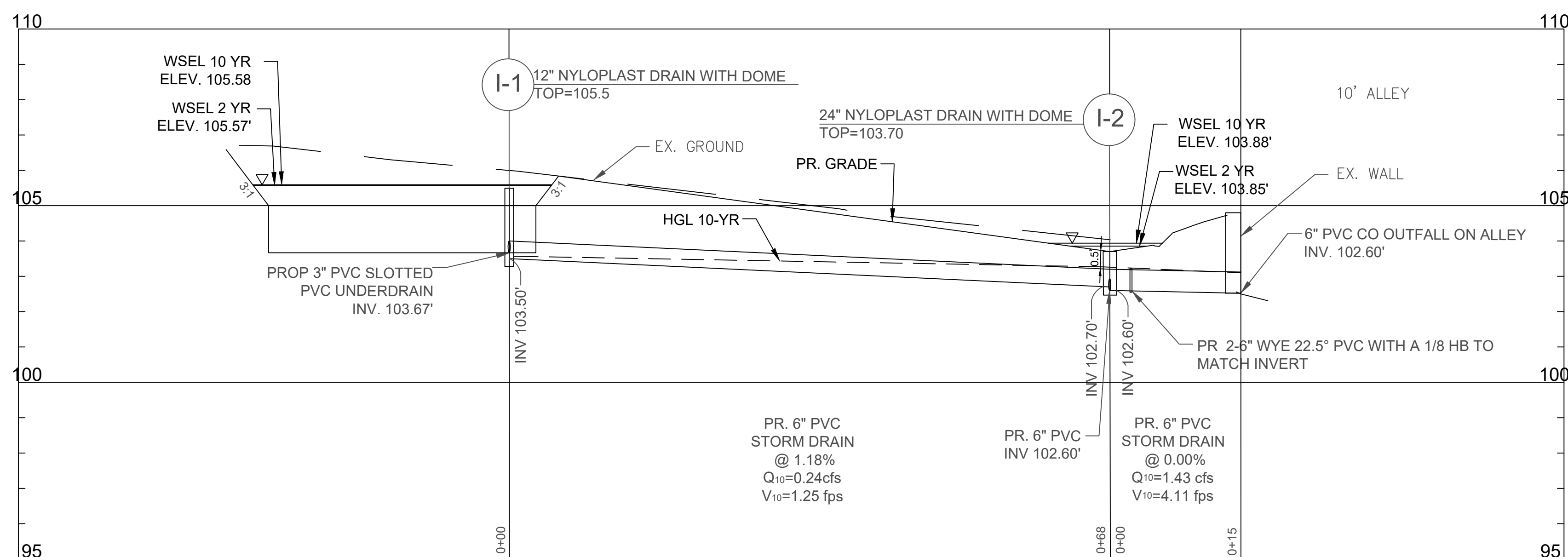
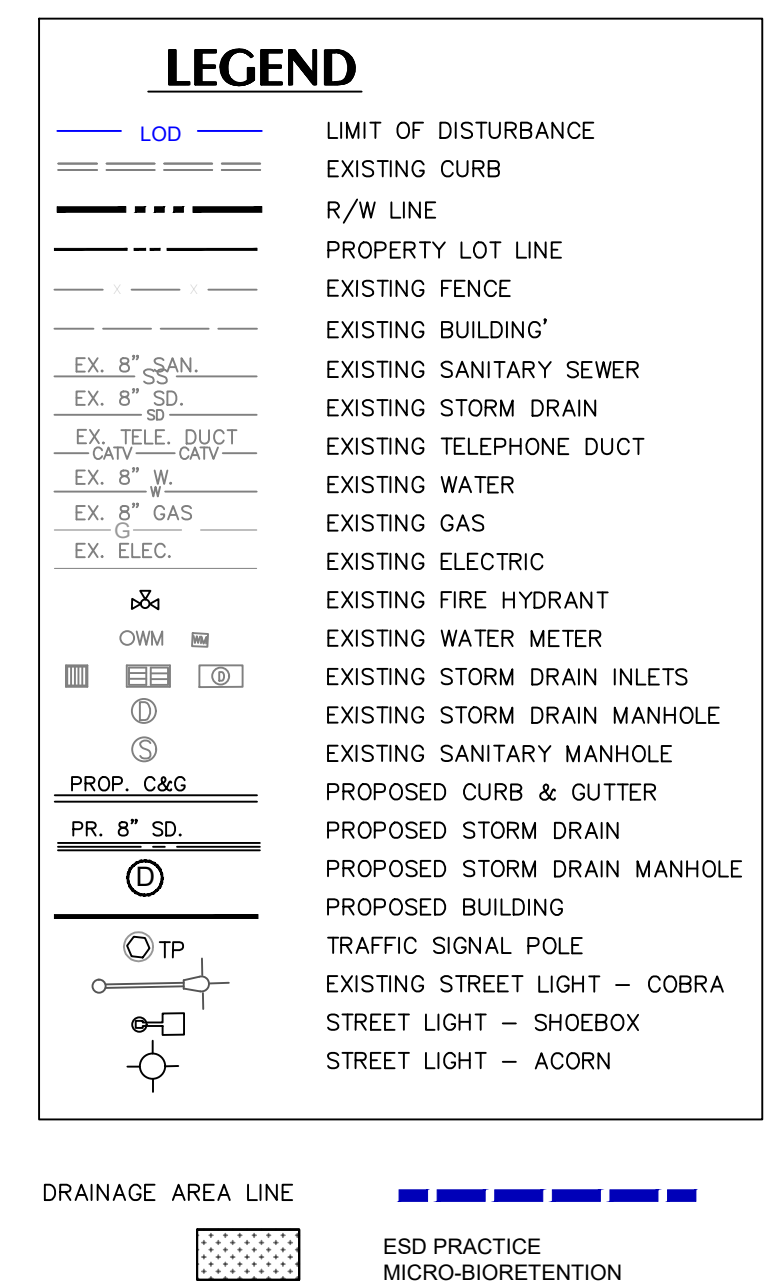
SWM GRADING PLAN - RG-1

Scale 1" = 10'



RG-1 SECTION B-B

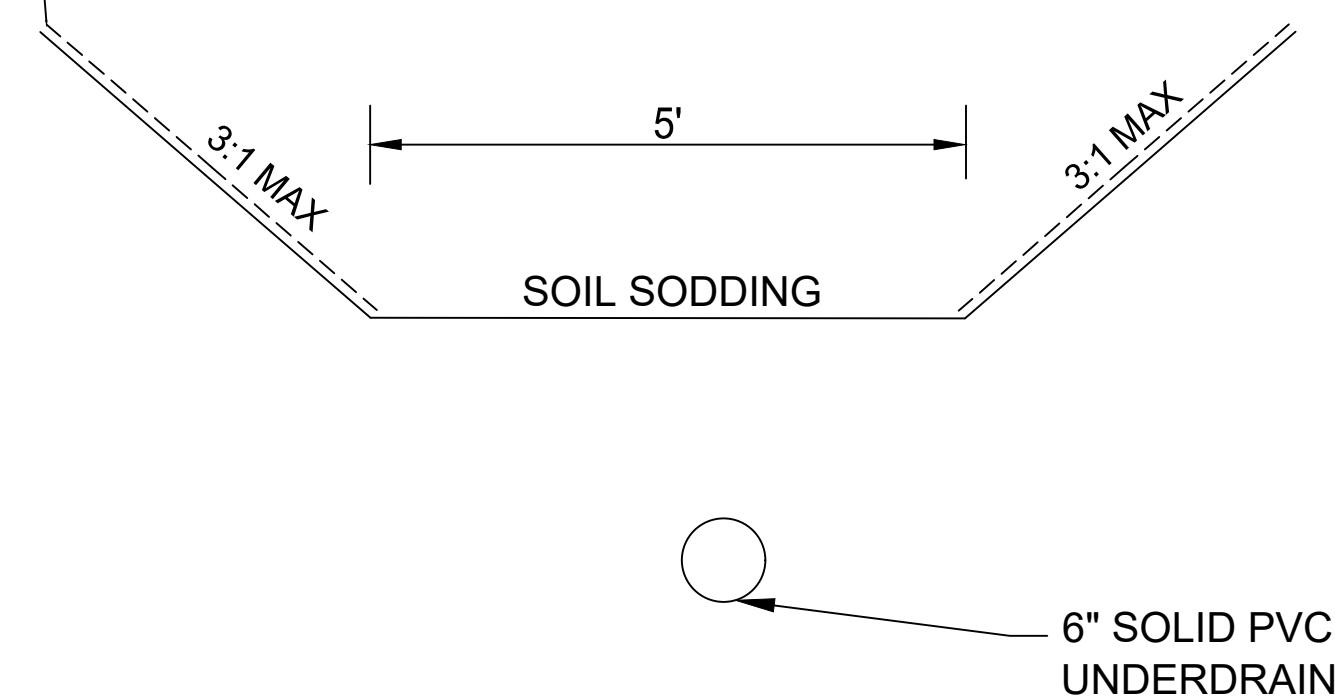
SCALE: HORIZ: 1" = 10'
VERT.: 1" = 2.5'



RAIN GARDEN TO OUTFALL (PRIV. ALLEY)

SCALE: HORIZ: 1" = 10'
VERT.: 1" = 2.5'

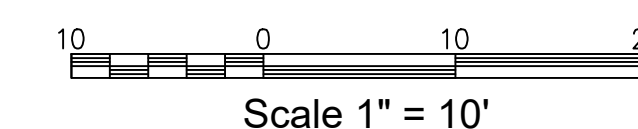
INSTALL TOPSOIL &
PROPEX LANDLOCK 450
TRM OR APPRD. EQUAL
ALONG SIDES (TYP)



GRASS SWALE SECTION

NOT TO SCALE

STORM DRAIN STRUCTURE SCHEDULE						
Structure	Description	Detail	Inverts			Coordinates (BCSCS)
			In	Out	Top	
I-1	12" ADSNyloplast	7001-110-397	-	103.5	105.50	Dome Gate -6216.36 -2267.41
I-2	24" ADSNyloplast	7001-110-397	102.7	102.6	103.70	Dome Gate -6148.40 -2265.86
I-3	24" ADSNyloplast	7001-110-397	98.70	95.77	99.20	Dome Gate -6056.90 -2148.18

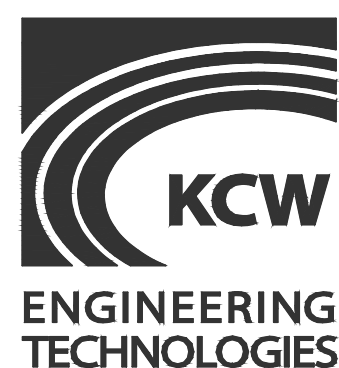


BCNR # 11811
SWM 2 of 5

SWM RAIN GARDEN RG-1
PLAN, PROFILE & SECTIONS

ST. LUKE'S YOUTH CENTER
VOLUNTARY SWM FACILITIES

217 NORTH CAREY STREET
Ward 18 Section 03 Block 0169 Lot 033
CITY OF BALTIMORE, MARYLAND



KCW Engineering Technologies, Inc.
808 Landmark Drive, Suite 217
Glen Burnie, MD 21061
Phone: 410.768.7700
Fax: 410.768.0200
www.kcw-et.com



PROFESSIONAL CERTIFICATION: I HEREBY
CERTIFY THAT THESE DOCUMENTS WERE
PREPARED OR APPROVED BY ME, AND THAT I AM
A DULY LICENSED PROFESSIONAL ENGINEER
UNDER THE LAWS OF THE STATE OF MARYLAND,
LICENSE NO. 46091, EXPIRATION DATE: 05/14/2027.

OWNER:

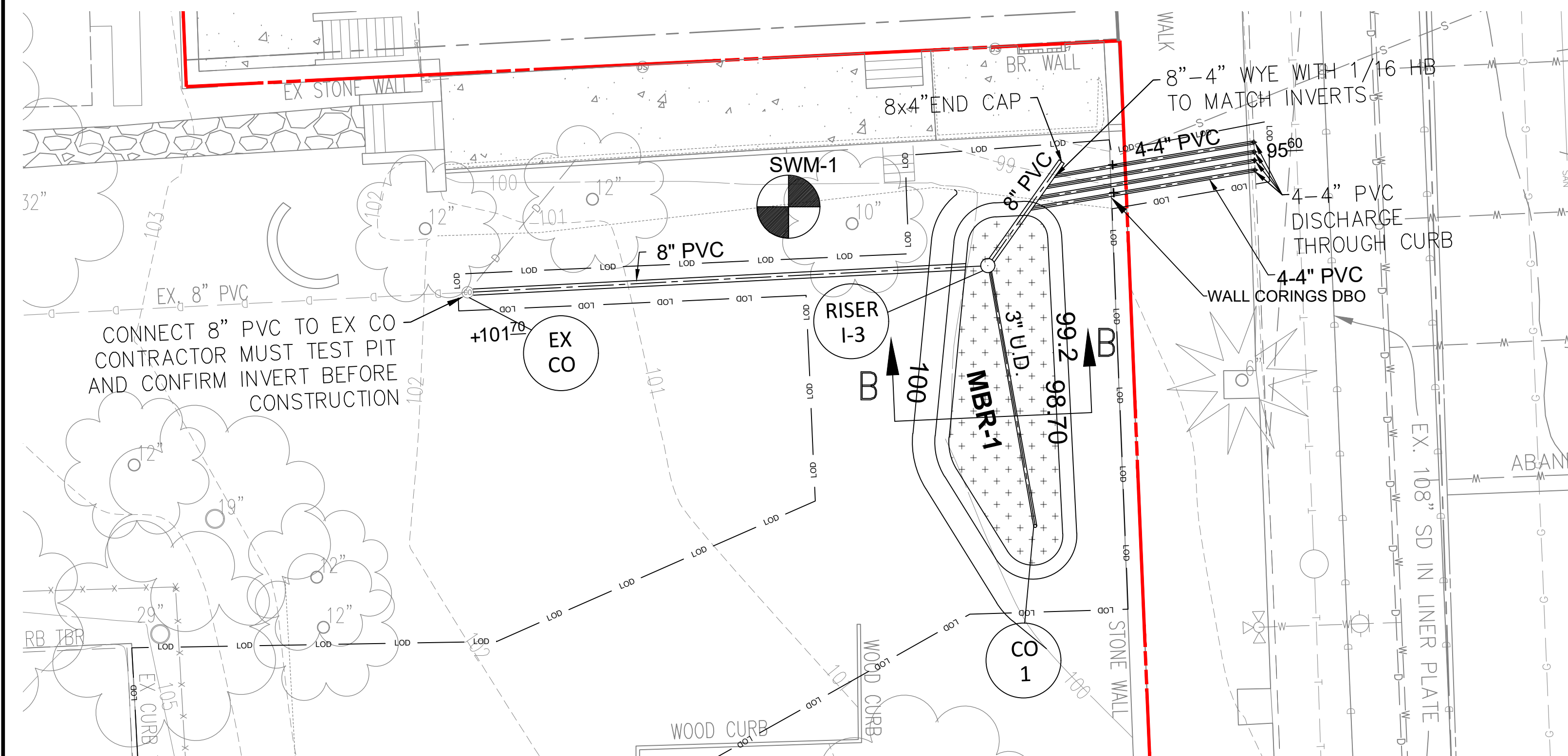
CONVENTION OF THE PROTESTANT
EPISCOPAL CHURCH OF THE DIOCESE
4 EAST UNIVERSITY PARKWAY
BALTIMORE, MD 21288

DEVELOPER / APPLICANT:

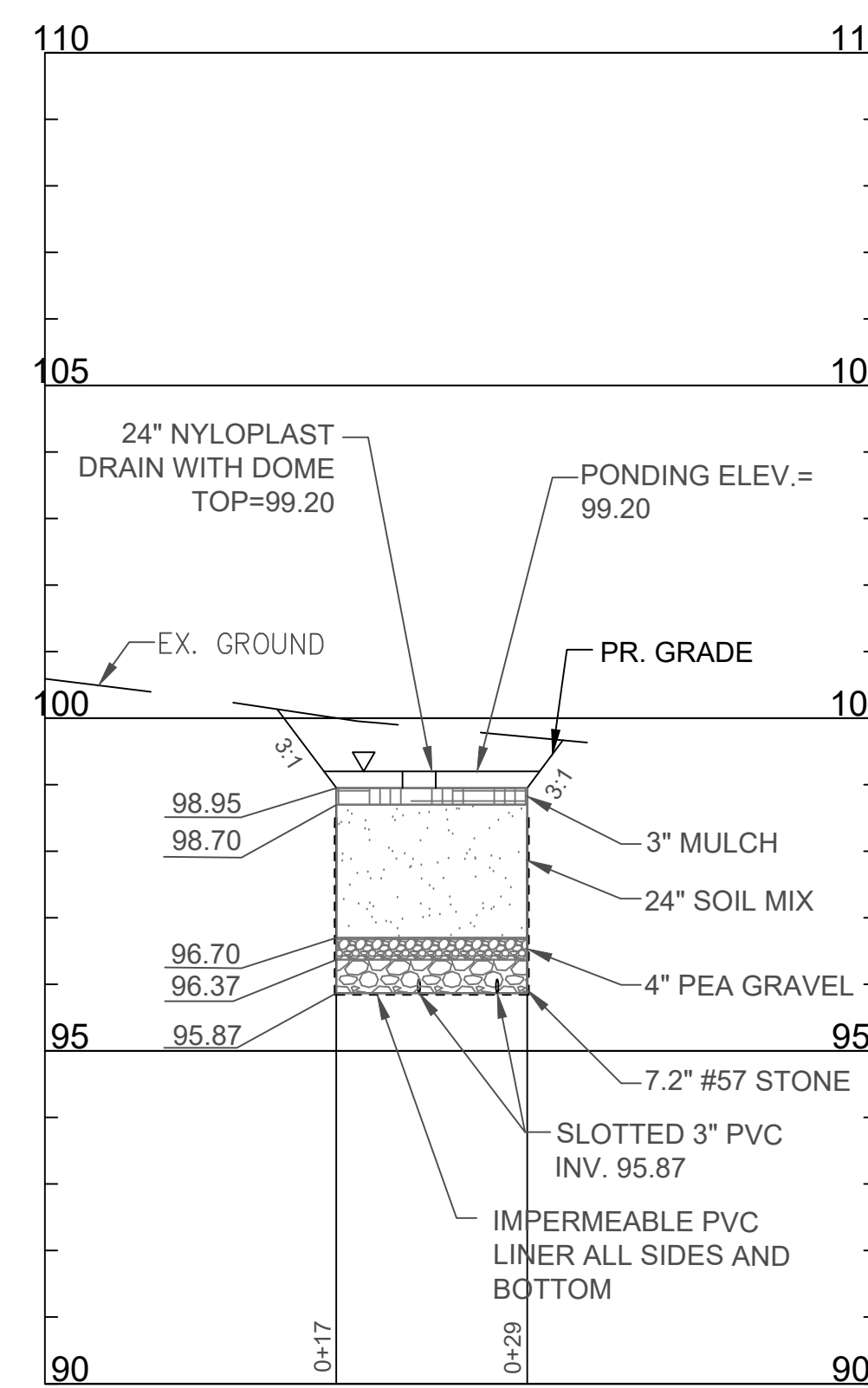
ST. LUKE'S YOUTH CENTER
217 N CAREY ST
BALTIMORE, MD 21223
ATTN: DIALO FLUCAS
TELE: 443-721-1275
EMAIL: DIALO@EPISCOPALHOUSING.COM

REVISIONS	
DATE	DESCRIPTION

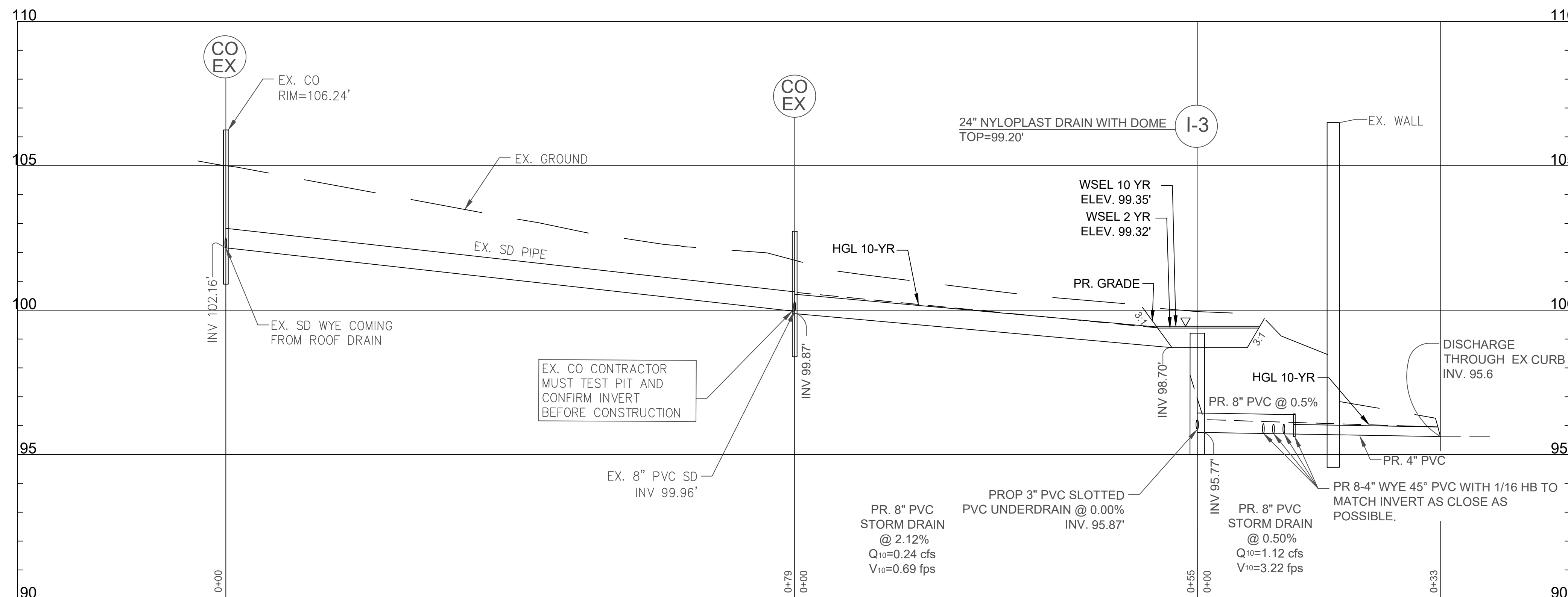
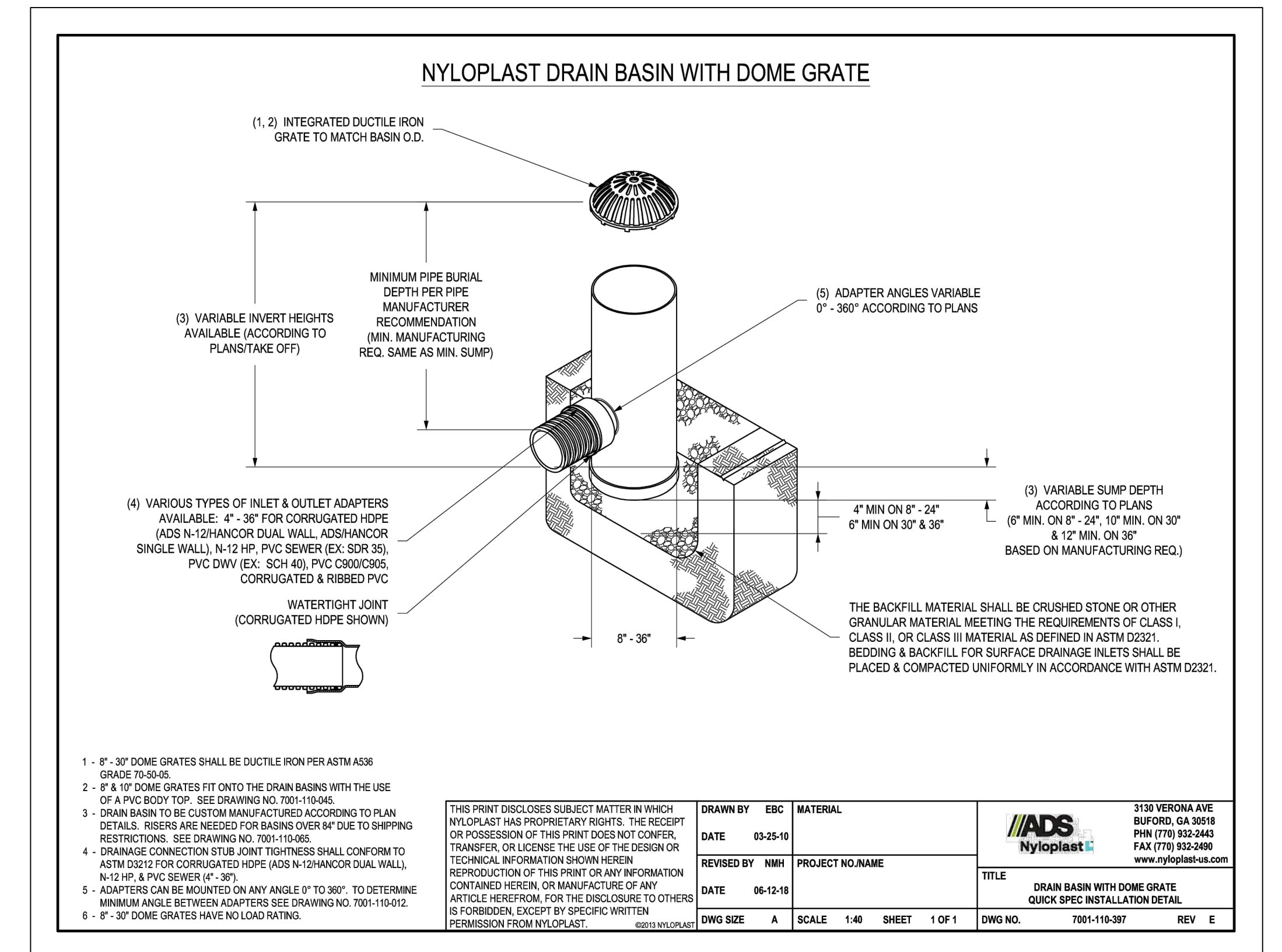
KCW J.O.:	2240858
SCALE:	1" = 10'
DESIGNED:	NMA
DRAWN:	NMA
CHECKED:	LAG
DATE:	AUGUST 4, 2025
DWG NO.:	C-108



SWM GRADING PLAN - MBR-1 Scale 1" = 10'

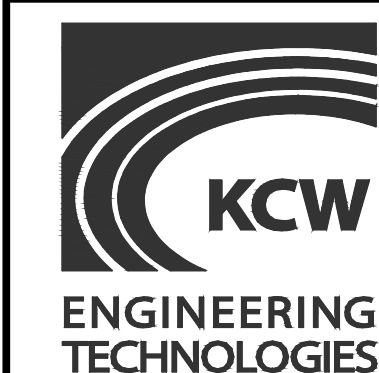


MBR-1 SECTION C-C
SCALE: HORIZ: 1" = 10'
VERT.: 1" = 2.5'

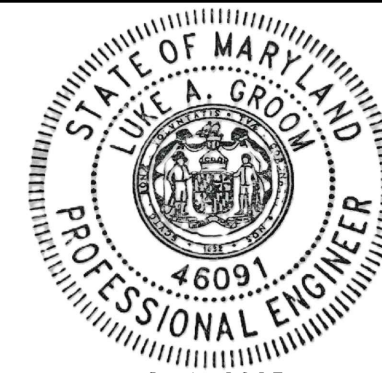


EX CO TO OUTFALL (N CARROLLTON AVE)
SCALE: HORIZ: 1" = 10'
VERT.: 1" = 2.5'

Scale 1" = 10'



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ATTN: DIALO FLUCAS
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EMAIL: DIALO@EPISCOPALHOUSING.COM

REVISIONS

DATE	DESCRIPTION
08-12-18	REVISED BY NMM
08-12-18	REVISED BY NMM
08-12-18	REVISED BY NMM
08-12-18	REVISED BY NMM
08-12-18	REVISED BY NMM

KCW J.O.: 2240858
SCALE: 1" = 10'
DESIGNED: NMA
DRAWN: NMA
CHECKED: LAG
DATE: AUGUST 4, 2025
DWG NO.: **C-109**

**SWM MICRO-BIORENTENTION MBR-1
PLAN, PROFILE & SECTIONS**

**ST. LUKE'S YOUTH CENTER
VOLUNTARY SWM FACILITIES**

217 NORTH CAREY STREET
Ward 18 Section 03 Block 0169 Lot 033
CITY OF BALTIMORE, MARYLAND

B.4.C Specifications for Micro-Bioretenton.

1. Material Specifications
The allowable materials to be used in these practices are detailed in Table B.4.1.

2. Filtering Media or Planting Soil
The soil shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the micro-bioretenton practice that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The planting soil shall be free of Bermuda grass, Quackgrass, Johnson grass, or other noxious weeds as specified under COMAR 15.08.01.05.

The planting soil shall be tested and shall meet the following criteria:
- See SHA specification for bioretention soil mix (BSM), MSHA spec 920.01.05

There shall be at least one soil test per project. Each test shall consist of both the standard soil test for pH, and additional tests of organic matter, and soluble salts. A textural analysis is required from the site stockpiled topsoil. If topsoil is imported, then a texture analysis shall be performed for each location where the topsoil was excavated.

3. Compaction
It is very important to minimize compaction of both the base of bioretention practices and the required backfill. When possible, use excavation hoes to remove original soil. If practices are excavated using a loader, the contractor should use wide track or marsh track equipment, or light equipment with turf type tires. Use of equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high-pressure tires will cause excessive compaction resulting in reduced infiltration rates and is not acceptable. Compaction will significantly contribute to design failure.

Compaction can be alleviated at the base of the bioretention facility by using a primary tilling operation such as a chisel plow, ripper, or subsoiler. These tilling operations are to refracture the soil profile through the 12 inch compaction zone. Substitute methods must be approved by the engineer. Rototillers typically do not till deep enough to reduce the effects of compaction from heavy equipment.

Rototill 2 to 3 inches of sand into the base of the bioretention facility before backfilling the optional sand layer. Pump any ponded water before preparing (rototilling) base.

When backfilling the topsoil over the sand layer, first place 3 to 4 inches of topsoil over the sand, then rototill the sand/topsoil to create a gradation zone. Backfill the remainder of the topsoil to final grade.

When backfilling the bioretention facility, place soil in lifts 12" to 18". Do not use heavy equipment within the bioretention basin. Heavy equipment can be used around the perimeter of the basin to supply soils and sand. Grade bioretention materials with light equipment such as a compact loader or a dozer/loader with marsh tracks.

4. Plant Material
Recommended plant material for micro-bioretenton practices can be found in Appendix A, Section A.2.3.

5. Plant Installation
Compost is a better organic material source, is less likely to float, and should be placed in the invert and other low areas. Mulch should be placed in surrounding to a uniform thickness of 2" to 3". Shredded or chipped hardwood mulch is the only accepted mulch. Pine mulch and wood chips will float and surround to the perimeter of the bioretention area during a storm event and are not acceptable. Shredded mulch must be well aged (6 to 12 months) for acceptance.

Rootstock of the plant material shall be kept moist during transport and on-site storage. The plant root ball should be planted so 1/8th of the ball is above final grade surface. The diameter of the planting pit shall be at least six inches larger than the diameter of the planting ball. Set and maintain the plant straight during the entire planting process. Thoroughly water ground bed cover after installation.

Trees shall be braced using 2" by 2" stakes only as necessary and for the first growing season only. Stakes are to be equally spaced on the outside of the tree ball.

Grasses and legume seed should be drilled into the soil to a depth of at least one inch. Grass and legume plugs shall be planted following the non-grass ground cover planting specifications.

The topsoil specifications provide enough organic material to adequately supply nutrients from natural cycling. The primary function of the bioretention structure is to improve water quality. Adding fertilizers defeats, or at a minimum, impedes this goal. Only add fertilizer if wood chips or mulch are used to amend the soil. Rototill urea fertilizer at a rate of 2 pounds per 1000 square feet.

6. Underdrains
Underdrains should meet the following criteria:
- Pipe- Should be 4" to 6" diameter, slotted or perforated rigid plastic pipe (ASTM F 758, Type PS 28, AASHTO-M-278, or AASHTO-M-252, Type S) in a gravel layer. The preferred material is slotted, 4" rigid pipe (e.g., PVC or HDPE).
- Perforations - If perforated pipe is used, perforations should be 1/4" diameter located 6" on center with a minimum of four holes per row.
Pipe shall be wrapped with a 1/2" (No. 4 or 4x4) galvanized hardware cloth.
- Gravel - The gravel layer (No. 57 stone preferred) shall be at least 3" thick above and below the underdrain.
- The main collector pipe shall be at a minimum 0.5% slope.
- A rigid, non-perforated observation well must be provided (one per every 1,000 square feet) to provide a clean-out port and monitor performance of the filter.
- A 4" layer of pea gravel (1/4" to 1/2" stone) shall be located between the filter media and underdrain to prevent migration of fines into the underdrain. This layer may be considered part of the filter bed when bed thickness exceeds 24".

The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%. Observation wells and/or clean-out pipes must be provided (one minimum per every 1000 square feet of surface area).

MONTHLY INSPECTION		
Inspection Item	Inspection Requirements	Remedial Action
Debris and Trash	Check for trash and debris in facility including inlets, outlets, conveyance systems, and area around facility.	Remove all trash and debris and dispose in an acceptable manner. Unclog all openings.
Plant Composition and Health	Compare plant composition with approved plans. Check for invasive species or weeds. Check for dead or dying vegetation.	Remove invasive species and weeds. Replace dead plants in accordance with approved landscaping plan.
Vegetative Cover	Check for channelizing, erosion, and bare spots. Check for vegetation blocking inlet and outlet.	Remove or cut back vegetation around inlet and outlet structures. Mow side slopes when grass exceeds 12 inches in height, but do not mow filter bed. Remove grass clippings. Re-seed or re-plant in accordance with approved landscaping plans.
Mulch Layer	Check mulch for adequate cover, sediment accumulation, or discoloration.	Replace and remove old mulch and excess sediment. Provide adequate mulch cover according to approved design.
SEASONAL INSPECTION AND AFTER A MAJOR STORM		
Inspection Item	Inspection Requirements	Remedial Action
Dewatering	Check ponding level. Surface storage must dewater within 48 hours of rainfall. Noticeable odors, stained water on the filter surface or at the outlet, or the presence of algae or aquatic vegetation are indicators of anoxic conditions and inadequate dewatering of the facility.	Remove and replace top few inches of media. Confirm adequate dewatering with follow up inspections. If the facility does not function as intended after the above action, the entire system including the underdrain may need refurbishing.
Erosion	Check inlets, filter bed, outlets, and side slopes for erosion, rills, gullies, and runoff channelization.	Re-grading may be required when concentrated flow causes rills or gully through the facility. Grade, vegetate, and/or armor to provide stable conveyance in accordance with approved plans.
Sediment Accumulation	Check for accumulated sediment in conveyance systems and on filter bed. Check for clogged openings.	When sediment accumulates to 1 inch depth, remove sediment. Remove sediment from clogged openings. Dispose of all sediment in an acceptable location.
Blockages	Check overflow inlet (riser), piping, and underdrain for blockages. Check observation wells for water level.	Clear out any blockages.
ANNUAL INSPECTION		
Inspection Item	Inspection Requirements	Remedial Action
Maintenance Access	Check for accessibility to facility.	Prevent excessive vegetative growth, erosion, and obstructions on access way.
Flow Conveyance System	Check overflow inlet, piping, and bypass for misalignments, breakage, and blockage.	Repair any broken or faulty piping. Clear out any blockages.
Structural Components	Check for evidence of structural deterioration, spalling, or cracking. Inlet and outlet structures as well as riprap outfalls must be in good condition.	Repair to good condition according to specifications on the approved plans.
Overall Function of Facility	Check that practice is functioning as designed.	Repair to good condition according to specifications on the approved plans.



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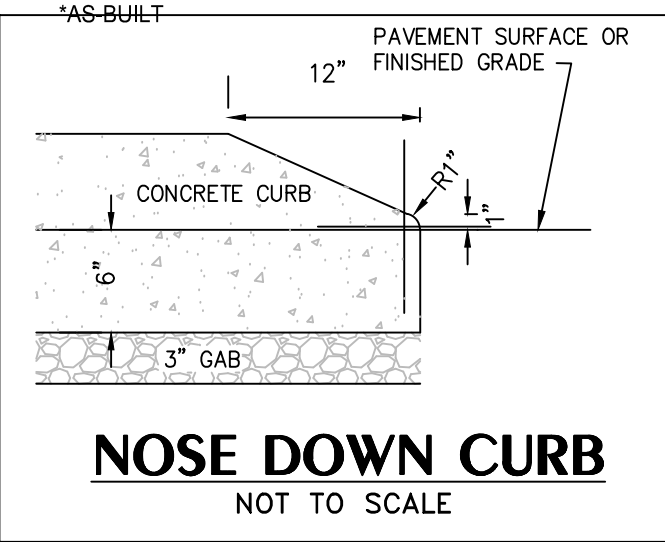
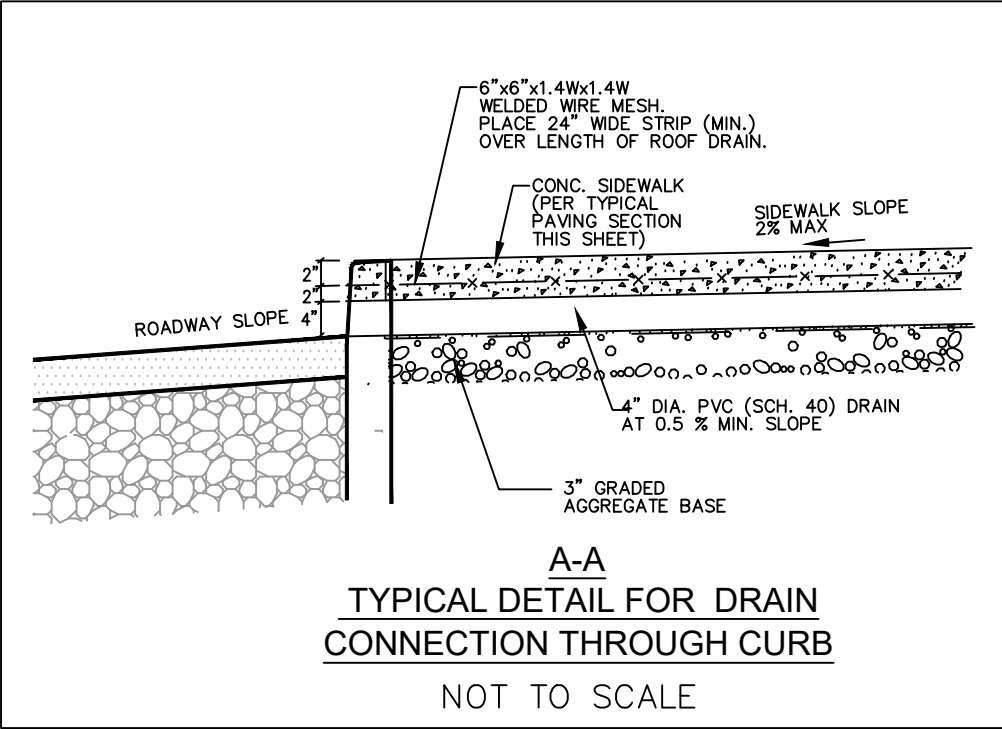
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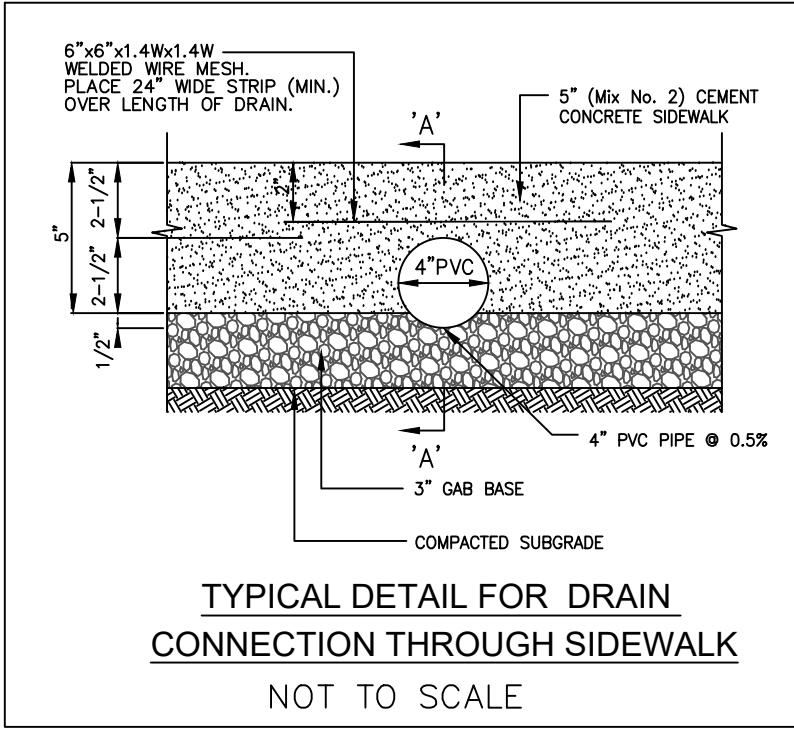
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BALTIMORE, MD 21223
ATTN: DIALO FLUCAS
TELE: 443-721-1275
EMAIL: DIALO@EPISCOPALHOUSING.COM

SWM MBR
SEQUENCE OF CONSTRUCTION

- BEFORE WORK CAN BEGIN, THE CONTRACTOR MUST RECEIVE A WRITTEN NOTICE FROM CECIL COUNTY DEPARTMENT OF PUBLIC WORKS, SWM/ESC INSPECTION SECTION. THE SWM/ESC INSPECTION SECTION MUST BE NOTIFIED OF THE VARIOUS STAGES OF WORK TO BE DONE ON THE FACILITY. CALL 410-996-5265 PRIOR TO 10:00 AM SEVENTY-TWO (72) HOURS PRIOR TO ANY CONSTRUCTION ACTIVITY TO ARRANGE FOR THE INSPECTION. CONTACT ENGINEER IN-CHARGE RESPONSIBLE FOR AS-BUILT (KCW ENGINEERING TECHNOLOGIES, INC. ATTN. KEVIN C. ANDERSON, P.E. 410-768-7700) AT LEAST 48 HOURS PRIOR TO BEGINNING WORK. NO WORK SHALL PROCEED UNTIL THE DEPARTMENT INSPECTS AND APPROVES THE WORK PREVIOUSLY COMPLETED AND FURNISHES THE DEVELOPER WITH THE RESULTS OF THE INSPECTION REPORTS AS SOON AS POSSIBLE AFTER COMPLETION OF EACH REQUIRED INSPECTION. SEE INSPECTION PROCEDURES.
- PRECONSTRUCTION MEETING: AN OPPORTUNITY TO REVIEW SITE PLANS, DISCUSS THE PURPOSE OF THE FACILITY AND TO ANSWER QUESTIONS REGARDING CONSTRUCTION AND/OR INSPECTION PROCEDURES.
- CONSTRUCTION SEQUENCE:
 - ALL CONTRIBUTING DRAINAGE AREA MUST BE PERMANENTLY STABILIZED PRIOR TO CONSTRUCTION OF THE SWM MBR FACILITY.
 - EXCAVATION TO SUBGRADE.
 - SUBGRADE AND BEDDING PREPARATION.
 - INSTALLATION AND BACKFILL OF DRAINAGE DISTRIBUTION SYSTEM
 - PLACEMENT OF THE #57 STONE AND PEA GRAVEL BASE MATERIAL
 - PLACEMENT OF FILTER MEDIA
 - FINAL GRADING, LANDSCAPING AND ESTABLISHMENT OF PERMANENT STABILIZATION.
- AS-BUILT PLANS MUST BE COMPLETED AND SUBMITTED TO CECIL COUNTY WITHIN 30 DAYS OF COMPLETION OF CONSTRUCTION.



AS-BUILT DATA FOR RAINGARDEN		
FEATURE	DESIGN	*AS-BUILT
I-1 INLET DIA. / CREST ELEV. (ft)	8" / 105.50	
RG PIPE TO OUTFALL (SIZE / INVERT)	6" / 103.50	
LOW FLOW ORIFICE DIA. / INV. (ft) at RISER	3" / 103.67	
SURFACE AREA (sf)	148	
FILTER BED AREA (L x W) (sf)	29.6' x 5'	
TOP MULCH ELEVATION (ft)	105.25	
BOTTOM MULCH ELEV. (ft)	105.00	
THICKNESS OF FILTER MEDIA (ft)	2.0'	
BOTTOM BIOSOIL MIX ELEV. (ft)	104.50	
BOTTOM PEA GRAVEL / BRIDGING STONE ELEV. (ft)	104.17	
BOTTOM UNDER DRAIN ELEV. (ft)	103.67	
BOTTOM #57 STONE ELEV. (ft)	103.67	
I-1 INLET COORDINATES	N -2267.42 E -6216.36	



AS-BUILT DATA FOR MICRO-BIORETENTION		
FEATURE	DESIGN	*AS-BUILT
I-3 INLET DIA. / CREST ELEV. (ft)	24" / 99.20	
MBR PIPE TO OUTFALL (SIZE / INVERT)	8" / 95.77	
LOW FLOW ORIFICE DIA. / INV. (ft) at RISER	4" / 95.87	
SURFACE AREA (sf)	350	
FILTER BED AREA (L x W) (sf)	35' x 10'	
TOP MULCH ELEVATION (ft)	98.95	
BOTTOM MULCH ELEV. (ft)	98.70	
THICKNESS OF FILTER MEDIA (ft)	2.0'	
BOTTOM BIOSOIL MIX ELEV. (ft)	96.70	
BOTTOM PEA GRAVEL / BRIDGING STONE ELEV. (ft)	96.37	
BOTTOM UNDER DRAIN ELEV. (ft)	95.87	
BOTTOM #57 STONE ELEV. (ft)	95.87	
I-3 INLET COORDINATES	N -2148.18 E -6056.90	

GENERAL CONSTRUCTION NOTES:

- ALL SITE WORK SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THESE PLANS, THE SPECIFICATIONS WHICH ARE INCLUDED AS PART OF THIS CONTRACT, THE CITY OF BALTIMORE'S "BOOK OF STANDARDS" AND "SPECIFICATIONS FOR CONSTRUCTION", AND THE BALTIMORE CITY BUILDING CODE.
- THE EXISTING UTILITIES SHOWN HEREON ARE BASED UPON THE BEST AVAILABLE INFORMATION FROM THE CITY OF BALTIMORE AND THE UTILITY COMPANIES. THE CORRECTNESS OR COMPLETENESS OF THE INFORMATION GIVEN IS NOT WARRANTED OR GUARANTEED. THE CONTRACTOR SHALL VERIFY ALL SUCH INFORMATION TO HIS OWN SATISFACTION PRIOR TO STARTING ANY WORK.
- CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST THREE (3) WORKING DAYS PRIOR TO THE START OF ANY CONSTRUCTION.
- CONTRACTOR SHALL NOTIFY BALTIMORE CITY STREET LIGHTING SECTION AT 410-396-4446 AT LEAST TWO (2) WEEKS PRIOR TO THE START OF ANY CONSTRUCTION.
- CONTRACTOR SHALL NOTIFY BALTIMORE CITY SEDIMENT CONTROL SECTION IN WRITING AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF ANY CONSTRUCTION.
- CONTRACTOR SHALL CONTACT THE NEW BUSINESS REPRESENTATIVES OF VERIZON, BALTIMORE GAS ELECTRIC COMPANY, AND COMCAST CABLE TV FOR SCHEDULING OF THEIR CONSTRUCTION AND/OR REMOVAL OF EXISTING FACILITIES. CONTRACTOR SHALL INSTALL ALL CONDUIT, RACEWAYS, ETC. AS REQUIRED OF THE DEVELOPER BY THE UTILITY COMPANIES TO PROVIDE THE PROJECT WITH SERVICE.
- EXISTING UTILITIES:
 - CONTRACTOR SHALL MAINTAIN ALL EXISTING UTILITIES. ALL EXISTING UTILITIES ARE TO REMAIN IN PLACE AND IN SERVICE THROUGHOUT CONSTRUCTION, UNLESS OTHERWISE NOTED. OWNER AUTHORIZATION IS REQUIRED PRIOR TO INTERRUPTING UTILITY SERVICES.
 - CONTRACTOR SHALL ADJUST ALL EXISTING UTILITY APPURTENANCES TO NEW GRADES, UNLESS OTHERWISE INDICATED ON PLANS.
 - CONTRACTOR SHALL MAINTAIN UNOBSTRUCTED ACCESS TO EXISTING WATER METERS DURING CONSTRUCTION.
 - CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO SUPPORT AND PROTECT ALL EXISTING UTILITIES WHEN WORKING ADJACENT TO OR CROSSING EXISTING UTILITIES. ANY DAMAGE TO EXISTING FACILITIES SHALL BE REPAIRED OR REPLACED AT CONTRACTOR'S EXPENSE.
- ALL EXISTING PAVING AND OTHER UNSUITABLE OR EXCESS EXCAVATION SHALL BE REMOVED FROM SITE TO AN AREA WITH AN APPROVED SEDIMENT CONTROL PLAN.
- STORM DRAINS: NEW STORM DRAINS WITHIN PUBLIC R/W ARE CLEARWATER CONNECTIONS AND SHALL BE CONSTRUCTED PER DETAILS ON THIS SHEET. CONTRACTOR SHALL OBTAIN PERMIT FROM DEPARTMENT OF TRANSPORTATION, PERMITS DIVISION. ON-SITE STORM DRAINS SHALL BE CONSTRUCTED PER UTILITY PLAN AND PROFILES.
- PAVING: CONTRACTOR SHALL OBTAIN PERMIT FROM DEPARTMENT OF TRANSPORTATION, PERMITS DIVISION, FOR SIDEWALK AND GUTTER REPAIR WITHIN PUBLIC RIGHT-OF-WAY. ON-SITE NOSE DOWN CURB SHALL BE CONSTRUCTED PER GRADING PLAN AND CONSTRUCTION DETAILS.
- FOUR-INCH CORINGS THROUGH STONE WALL ON N. CARROLLTON AVENUE SHALL BE REVIEWED AND APPROVED BY STRUCTURAL ENGINEER PRIOR TO CONSTRUCTION.
- CONTRACTOR SHALL REPLACE SECTION OF CONCRETE WALL ALONG ALLEY IN-KIND WITH SAME DAY STABILIZATION IF SIX-INCH CORINGS SHOW INSTABILITY.

Appendix B.4. Construction Specifications for Environmental Site Design Practices

Table B.4.1 Materials Specifications for Micro-Bioretentation, Rain Gardens & Landscape Infiltration-			
Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil [2" to 4" deep]	loamy sand (60 - 65%) & compost (35 - 40%) or sandy loam (30%), coarse sand (30%) & compost (40%)	n/a	USDA soil types loamy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)		
Mulch	shredded hardwood		aged 6 months, minimum; no pine or wood chips
Pea gravel diaphragm	pea gravel: ASTM-D-448	NO. 8 OR NO. 9 (1/8" TO 3/8")	
Curtain drain	ornamental stone: washed cobbles	stone: 2" to 5"	
Geotextile		n/a	PE Type 1 nonwoven
Gravel (underdrains and infiltration berms)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (3/8" TO 3/4")	
Underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	Slotted or perforated pipe; 3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes. Perforated pipe shall be wrapped with 1/4-inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3; f _c = 3500 psi @ 28 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) not using previously approved State or local standards requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 350.R/89; vertical loading [H-10 or H-20]; allowable horizontal loading (based on soil pressures); and analysis of potential cracking
Sand	AASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone (AASHTO) #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

BCNR # 11811
SWM 4 of 5

SWM
DETAILS & SPECIFICATIONS

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Ward 18 Section 03 Block 0169 Lot 033

CITY OF BALTIMORE, MARYLAND

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