

# Municipal Separate Storm Sewer System (MS4) Annual Progress Report

July 1, 2022 through June 30, 2023



Town of Walkersville  
Frederick County, MD

October 2023  
ARRO Project No.: 00010827.38

Prepared by:



ARRO Consulting,  
Inc. 108 West  
Airport Road Lititz,  
PA 17543



**MARYLAND DEPARTMENT OF THE ENVIRONMENT  
WATER AND SCIENCE ADMINISTRATION**

**NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM  
GENERAL PERMIT FOR DISCHARGES FROM  
SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS**

**GENERAL DISCHARGE PERMIT NO. 13-IM-5500  
GENERAL NPDES NO. MDR055500**

Final Determination: April 27, 2018  
Effective Date: October 31, 2018  
Expiration Date: October 30, 2023

This National Pollutant Discharge Elimination System (NPDES) general permit covers small municipal separate storm sewer systems (MS4s) in certain portions of the State of Maryland. MS4 owners and operators to be regulated under this general permit must submit a Notice of Intent (NOI) to MDE by October 31, 2018. An NOI serves as notification that the MS4 owner or operator intends to comply with the terms and conditions of this general permit.

**APPENDIX D**

**Municipal Small MS4 Progress Report**

**Maryland Department of the Environment (MDE)**

**National Pollutant Discharge Elimination System (NPDES)  
Small Municipal Separate Storm Sewer Systems (MS4) General Permit**

This Progress Report is required for those jurisdictions covered under General Discharge Permit No. 13-IM-5500. Progress Reports must be submitted to:

Maryland Department of the Environment, Water and Science Administration  
Sediment, Stormwater, and Dam Safety Program  
1800 Washington Boulevard, Suite 440, Baltimore, MD 21230-1708  
Phone: 410-537-3543 FAX: 410-537-3553  
Web Site: [www.mde.maryland.gov](http://www.mde.maryland.gov)

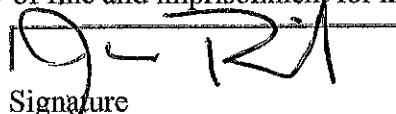
**Contact Information**

Permittee Name:	Town of Walkersville
Responsible Personnel:	Joseph Birch
Mailing Address:	21 West Frederick Street Walkersville, MD 21793
Phone Number(s):	301.845.4500
Email address:	publicworks@walkersvillemd.gov
Additional Contact(s):	Andrew Tuleya
Mailing Address:	108 West Airport Road Lititz, PA 17543
Phone Number(s):	717.205.4551
Email address:	Andrew.Tuleya@arroconsulting.com

**Signature of Responsible Personnel**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

\_\_\_\_\_  
Joseph Birch  
Printed Name

  
Signature

10/30/23  
Date

**Reporting Period (State Fiscal Year):**

July 1, 2022 - June 30, 2023

**Due Date:**

10/31/2023

**Date of Submission:**

10/31/2023

**Type of Report Submitted:**

Impervious Area Restoration Progress Report (Annual):

Six Minimum Control Measures Progress (Years 2 and 4):

Both:

**Permittee Information:**

Renewal Permittee:

New Permittee:

**Compliance with Reporting Requirements**

Part VI of the Small MS4 General Discharge Permit (No. 13-IM-5500) specifies the reporting information that must be submitted to MDE to demonstrate compliance with permit conditions. The specific information required in this MS4 Progress Report includes:

1. Annual: Progress toward compliance with impervious area restoration requirements in accordance with Part V of the general permit. All requested information and supporting documentation must be submitted as specified in Section I of the Progress Report.
2. Years 2 and 4: Progress toward compliance with the six minimum control measures in accordance with Part IV of the general permit. All requested information and supporting documentation shall be reported as specified in Section II of the Progress Report. MDE may request more frequent reporting and/or a final report in year 5 if additional information is needed to demonstrate compliance with the permit.

**Instructions for Completing Appendix D Reporting Forms**

The reporting forms provided in Appendix D allow the user to electronically fill in answers to questions. Users may enter quantifiable information (e.g., number of outfalls inspected) in text boxes. When a more descriptive explanation is requested, the reporting forms will expand as the user types to allow as much information needed to fully answer the question. The permittee must indicate in the forms when attachments are included to provide sufficient information required in the MS4 Progress Report.

**Section I: Impervious Area Restoration Reporting Form**

**Section I: Impervious Area Restoration Reporting**

1. a. Was the impervious area baseline assessment submitted in year 1?

Yes  No

b. If No, describe the status of completing the required information and provide a date at which all information required by MDE will be submitted:

Not applicable.

c. Has the baseline been adjusted since the previous reporting year?

Yes  No

2. Complete the information below based on the most recent data:

Total impervious acres of jurisdiction covered under this permit:

Total impervious acres treated by stormwater water quality best management practices (BMPs):

Total impervious acres treated by BMPs providing partial water quality treatment (multiply acres treated by percent of water quality provided):

Total impervious acres treated by nonstructural practices (i.e., rooftop disconnections, non-rooftop disconnections, or vegetated swales):

Total impervious acres untreated in the jurisdiction:

Twenty percent of this total area (this is the restoration requirement):

Verify that all impervious area draining to BMPs with missing inspection records is not considered treated. Describe how this information was incorporated into the overall analysis:

The Town of Walkersville has established a Memorandum of Understanding (MOU) with Frederick County (County). This MOU establishes that the County conducts tri-annual inspections on all Post Construction Stormwater Management (PCSM) Best Management Practices (BMPs). Upon a failing BMP inspection, the County will provide written documentation to the responsible party communicating maintenance that must be conducted to comply with the Town's MS4 permit. Additionally, all BMPs maintained by the Town are provided regular visual inspections and routine maintenance in accordance with the *Maryland Stormwater Design Manual, Volume 1, Chapter 3 - October 2000, Revised May 2009*.

## Section I: Impervious Area Restoration Reporting

2. Has an Impervious Area Restoration Work Plan been developed and submitted to MDE in accordance with Part V.B, Table 1 of the permit or other format?

Yes  No

Has MDE approved the work plan?

Yes  No

If the answer to either question is No, describe the status of submitting (or resubmitting) the work plan to MDE and provide a date at which all outstanding information will be available:

Not applicable.

Describe progress made toward restoration planning, design, and construction efforts and describe adaptive management strategies necessary to meet restoration requirements by the end of the permit term:

The Town identified four sites in the Town's jurisdiction that currently receive a significant amount of stormwater runoff from upstream development. Two of the sites are owned by the Deerfield Community HOA and receive runoff from the Deerfield neighborhood, one site is owned by Glade Town Community Association Inc. and receives stormwater runoff from the Glade Town neighborhood and adjacent commercial development along S.R. 194, and the final site is an existing basin within the Colony Village subdivision and receives stormwater runoff from the Colony Village neighborhood. The Town is looking to construct two new stormwater management facilities; one is a multiple pond basin located within the Glade Town subdivision and the other is a multiple pond basin located in the Deerfield subdivision. The Town is also looking to perform two stormwater management facility retrofits; one would be a swale retrofit within the Deerfield subdivision and the other a detention basin retrofit within the Colony Village subdivision.

The Town has been in correspondence with local homeowner's associations (HOAs) regarding proposed and retrofitted stormwater facilities. The Town reviewed the preliminary design plans with the HOAs in the spring of 2023. Following the design review, the HOAs provided comments and questions for the Town; the Town is currently revising the plans to address the HOA comments and concerns. The Town of Walkersville is currently finalizing the design plans and anticipates submitting the designs to regulatory agencies in late 2023.

The Town is confident three of the proposed projects will be implemented prior to the 2025 Chesapeake Bay TMDL deadline but the Glade Town BMP may not be implemented during this permit term and will be reconsidered for the next permit cycle's Chesapeake Bay TMDL restoration requirement. The Town's Impervious Area Restoration Work Plan can be found in **Attachment 4 – Impervious Area Baseline Assessment**.



### Section I: Impervious Area Restoration Reporting

3. Has a Restoration Schedule been completed and submitted to MDE in accordance with Part V.B, Table 2 of the permit?

Yes  No

In year 5, has a complete restoration schedule been submitted including a complete list of projects and implementation dates for all BMPs needed to meet the twenty percent restoration requirement?

Yes  No

Are the projected implementation years for completion of all BMPs no later than 2025?

Yes  No

Describe actions planned to provide a complete list of projects in order to achieve compliance by the end of the permit term:

The Town has provided a current list of restoration activities in **Attachment 2 – Restoration Activity Schedule**. The list contains projects that have been planned and completed as of October 2023. The Town will update the list annually to account for project stage progress (planning, under construction, completed). Completed projects will be updated in the **Attachment 3 – BMP Database** over the course of the permit year. Expanded methodology and supporting documentation of these activities can be found in **Attachment 4 – Impervious Area Baseline Assessment**. Additional information regarding the projects the Town is implementing to meet the impervious restoration requirement can be found in **Attachment 5 – Impervious Area Restoration Project Information**.

Describe the progress of restoration efforts (attach examples and photos of proposed or completed projects when available):

The Town has completed mechanical street sweeping within the reporting period. The Town has also compiled a list of new structural stormwater BMPs as well as two existing stormwater BMPs for potential retrofit to fulfill a majority of the Town's restoration requirement. These potential projects have been presented at public meetings and an initial cost to complete these structures has been developed. The designs are currently being revised to address comments provided by the HOAs.

Describe the progress of restoration efforts (attach examples and photos of proposed or completed projects when available):

During the 2021-2022 reporting period the Town approved four projects including the survey and design of two new BMPs and retrofitting of two existing BMPs in order to meet the Town's Chesapeake Bay TMDL restoration requirement. The Town completed surveys of each identified property in September 2022. As of October 2023, the Town is addressing comments provided by the HOAs to come to an agreement regarding the proposed designs. The Town plans on submitting the designs for regulatory review in winter of 2023.

### Section I: Impervious Area Restoration Reporting

The Town conducted mechanical-based street sweeping during the reporting period as well. The Town has, and will continue to, conduct street sweeping at the same annual frequency. Street sweeping will be credited as outlined by the permit guidance.

4. Has the BMP database been submitted to MDE in Microsoft Excel format in accordance with Appendix B, Tables B.1.a, b, and c?

Yes  No

Is the database complete?

Yes  No

If either answer is No, describe efforts underway to complete all data fields, and a date that MDE will receive the required information:

Through a Memorandum of Understanding (MOU), the Town works with Frederick County to provide the most recent information in the Town's BMP Database. Frederick County provided the Town with updated BMP information on July 11, 2023. Additional information is available through Frederick County's annual report.

5. Provide a summary of impervious area restoration activities planned for the next reporting cycle (attach additional information if necessary):

The Town has begun planning for the next five-year reporting period's restoration requirement. Efforts include searching for funding opportunities, anticipating impervious surface baseline calculations for the next five-year cycle, identifying potential areas for new structural and alternative projects, and identifying potential partnership opportunities. In the event the Glade Town BMP does not get constructed prior to the 2025 Chesapeake Bay TMDL deadline, the Town will reconsider the BMP in the next reporting cycle. The Town anticipates having a 10% restoration requirement in the 2023-2028 permit cycle of about 28.12 impervious acres. The Town has obtained 32.34 surplus credits from the planned projects during the 2023-2028 permit cycle.

The Town has evaluated a potential stream restoration project along Glade Creek or Israel Creek. Currently, there are private and public properties with substantial stream reach along these streams. The Town also can perform tree planting efforts on Town on property.

## Section I: Impervious Area Restoration Reporting

6. Describe coordination efforts with other agencies regarding the implementation of impervious area restoration activities:

The Town has coordinated closely with MDE regarding permit progress, questions regarding permit compliance, and feedback based off annual report reviews. The Town also works closely with the Soil Conservation District regarding any questions that may arise during the BMP design process.

The Town has coordinated with Frederick County regarding the MOU established between the Town and the County. The County has provided a summary of BMP inspections conducted by the County during the reporting period. The County currently communicates with responsible parties upon failed BMP inspections conducted by the County on a tri-annual schedule. The Town has obtained the County's BMP database in GIS format. The database has been integrated with the Town's BMP database to ensure that data matches between common facilities.

7. List total cost of developing and implementing the impervious area restoration program during the permit term:

BMP Retrofit/Construction Project Design: \$106,000.00

Street Sweeping: \$25,000.00

Other Misc. MS4 Costs: \$172,500.00

**Total Cost: \$303,500.00**

## **TABLE OF CONTENTS**

MDE Comment Letter Response	Attachment 1
Restoration Activity Schedule	Attachment 2
BMP Database	Attachment 3
Impervious Area Baseline Assessment	Attachment 4
Impervious Area Restoration Project Information	Attachment 5

Attachment 1

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**MDE COMMENT LETTER RESPONSE**

October 31, 2023

Maryland Department of the Environment  
1800 Washington Boulevard  
Baltimore, MD 21230

RE: Town of Walkersville  
Walkersville, Frederick County, MD  
ARRO Project No. 00010827.38

To Whom It May Concern:

- The following comments were noted by MDE on April 6, 2023 in response to the Town's MS4 Progress Report submitted for the 2021-2022 reporting period. The Town's response to each comment requiring a response prior to the 2022-2023 Progress Report submission are noted below each comment. All other comments not specifically outlined within this letter have been acknowledged by the Town.

- Major Comments

- *Make corrections to the BMP database. Details are attached.*

**Town Response:** The Town of Walkersville acknowledges this comment.

- *Please continue to plan for restoration implementation beyond 2025. An updated RAS submitted in the 2023 Progress Report should provide an estimate of impervious area restoration implementation through 2030. The Department recommends that the Town should plan for additional restoration equivalent to 10% of the current baseline by 2030. This information will help to inform future permit requirements.*

**Town Response:** The Town of Walkersville acknowledges this comment. An updated RAS for implementation through 2030 will be provided with the Town's 2023 Annual MS4 Report.

- Section I: Impervious Area Restoration Reporting

- *A Restoration Activity Schedule (RAS) was submitted in the required format. Please correct the following:*
  - *BMP IDs in the RAS must match the BMP database. Please see comment 7a below for information on correcting BMP IDs for Town owned BMPs.*

**Town Response:** The Town of Walkersville acknowledges this comment and has made the recommended changes to the RAS.

- *A BMP database was submitted in the required format. Please correct the following:*
  - *The BMP ID for Town owned BMPs must match the required format, for example, FRWA19BMP0001 to indicate the BMP is in Walkersville in Frederick County. The format "WA23BMP0001" may not be used because this is in use by Washington County. Please correct this for all Town owned BMPs in the three database spreadsheets.*

**Town Response:** The Town of Walkersville acknowledges this comment and has made the recommended changes to the BMP database. The Town has changed the Town-owned BMP IDs to replace WA with WK.

Sincerely,

Andrew Tuleya  
MS4 Coordinator

## Attachment 2

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# RESTORATION ACTIVITY SCHEDULE



## Phase II MS4 Restoration Activity Schedule

**Total Acreage (339.27); Impervious Acre Baseline (281.20); 20% Restoration Target (56.24 acres)**

Type of Restoration Project	BMP Code <sup>1</sup>	BMP ID (Optional)	Cost (\$K) <sup>2</sup>	Imperv Acres Treated	Imperv Acre Target and Balance	Project Status <sup>3</sup>	Year Complete or Projected Implementation Year (by 2025)	MD Grid Coordinates	
					56.24			Northing	Easting
Mechanical Street Sweeping	MSS	WK19BMP0001	32	0.51	55.73	C	2019	369338.28670	201689.13636
Reforestation on Pervious Urban - Trout Park	FPU	WK23BMP0013	0	0.10	55.64	C	2023	370376.54271	202513.00358
New Multiple Pond System (Deerfield)	PMPS	WK25BMP0014	1406	44.00	11.64	P	2025	371427.66401	201641.49088
New Multiple Pond System (Colony Village)	PMED	WK25BMP0016	475	37.05	-25.42	P	2025	370101.9657	201813.8803
Retrofit Dry Swale (Deerfield)	ODSW	WK25BMP0017	413	6.92	-32.34	P	2025	371755.4466	202214.5034
New Multiple Pond System (Glade Town)	PMPS	WK30BMP0015	1082	72.14	-104.48	P	2030	371197.0022	201578.3624

<sup>1</sup> See Appendix B, Tables B.1.a,b, and c, Urban BMP Database. BMP codes are identified under "MDE BMP Classification"

<sup>2</sup> Provide cost at project completion

<sup>3</sup> Project Status: Enter P for planning and design, UC for under construction, and C for complete

Enter Impervious Acreage Baseline	281.2
20% Impervious Acre Target Calculated	56.24
10% Impervious Acre Target Calculated	28.12

# Town of Walkersville, MD

## ALTERNATIVE RESTORATION PROJECT CREDITING

Mechanical Street Sweeping						
Permit Year	Credit Fulfillment (%)	Miles Swept	Street Width (Average Ft.)	Acres	MDE 2014 WLA Credit	Restoration Credit
2018-2019	0.08	30.08	25	91.15	0.07	0.51
2019-2020	0.08	30.08	25	91.15	0.07	0.51
2020-2021	0.08	30.08	25	91.15	0.07	0.51
2021-2022	0.08	30.08	25	91.15	0.07	0.51
2022-2023	0.08	30.08	25	91.15	0.07	0.51
5-Year Permit Cycle Average						<b>0.51</b>

*Methodology based off guidance found in Accounting for SW Wasteload Allocations and Impervious Acres Treated August 2014*

Reforestation on Pervious Urban				
Project Description	Responsible Party	Trees Planted	MDE 2014 WLA Credit	Restoration Credit
Trout Park	Town	25	0.38	0.095
5-Year Permit Cycle Sum				<b>0.095</b>

*Methodology based off guidance found in Accounting for SW Wasteload Allocations and Impervious Acres Treated August 2014*

# Attachment 3

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## BMP DATABASE

**Table B.1.a. BMP Reporting Requirements**

This table represents the basic data elements that are required of all structural, ESD and alternative Best Management Practices (BMPs)

BMP_ID	REPORTING_YEAR	MID_NORTH	MID_EAST	PERMIT_NUM	LOCAL_BMP_ID	BMP_NAME	BMP_CLASS	BMP_TYPE	CON_PURPOSE	LAST_INSP_DATE	BMP_STATUS	MAIN_DATE	REINSP_DATE	REINSP_STATUS	GEN_COMMENTS
FR15POI000006	2023	368286.3804	201198.3839	13-IM-5500	44	Creekside Park, Phase 3 Bioretention	S	FBIO	NEWID	03/11/2021	P	N/A	N/A	N/A	
FR15POI000130	2023	368378.4822	201197.5909	13-IM-5500	32	Walkersville Light Industrial Park - SWM Pond	S	FSND	NEWID	07/05/2022	P	N/A	N/A	N/A	
FR15POI000168	2023	371063.3786	202265.9721	13-IM-5500	53	Brethren in Christ Church (L3)	S	IBAS	NEWID	07/08/2022	P	N/A	N/A	N/A	
FR15POI000169	2023	368895.2102	201483.5973	13-IM-5500	18	Colony Village (L6)	S	XOPD	NEWID	03/22/2023	P	N/A	N/A	N/A	
FR15POI000170	2023	370208.034	202855.0515	13-IM-5500	22	McDonalds - Walkersville (L22)	S	ITRN	NEWID	07/09/2021	P	N/A	N/A	N/A	
FR15POI000172	2023	369946.6552	201870.9405	13-IM-5500	48	Walkersville Amoco (L29)	S	ITRN	NEWID	10/03/2022	P	N/A	N/A	N/A	
FR15POI000173	2023	370807.3851	201960.3433	13-IM-5500	49	Walkers Village Shopping Center (L32)	S	ITRN	NEWID	07/08/2022	P	N/A	N/A	N/A	
FR15POI000174	2023	368996.4496	200791.3654	13-IM-5500	27	Walkersville Vol. Fire Company (L33)	S	XOPD	NEWID	07/08/2022	P	N/A	N/A	N/A	
FR15POI000177	2023	370015.4637	202705.2393	13-IM-5500	23	Walkersville Commercial Center, Regional (L40)	S	XDED	NEWID	11/21/2022	P	N/A	N/A	N/A	
FR15POI000179	2023	370627.122	201830.0666	13-IM-5500	8	Heritage SWM Pond	S	XDED	NEWID	10/03/2022	P	N/A	N/A	N/A	
FR15POI000185	2023	370220.3781	201394.627	13-IM-5500	55	Lancaster Craftsmen Builders (Suafter Property) Dry Swale	S	ITRN	NEWID	02/16/2022	P	N/A	N/A	N/A	
FR15POI000340	2023	368883.292	201166.8298	13-IM-5500	4	Deerfield, Sec. 6, Infiltration Trench	S	ITRN	NEWID	03/05/2022	P	N/A	N/A	N/A	
FR15POI000397	2023	369079.3773	201954.6604	13-IM-5500	52	Bio-Whittaker - Bldg. 100B (Was M.A. Bioproducts)	S	XOPD	NEWID	07/01/2022	P	N/A	N/A	N/A	
FR15POI000398	2023	369162.3168	202144.3715	13-IM-5500	46	Bio-Whittaker - Bldg. 104	S	ODSW	NEWID	03/17/2023	P	N/A	N/A	N/A	
FR15POI000399	2023	370635.2278	202073.3684	13-IM-5500	47	Walkersville United Methodist Church	S	ITRN	NEWID	02/28/2022	P	N/A	N/A	N/A	
FR15POI000400	2023	370338.9955	201811.0284	13-IM-5500	7	Fountain Rock Manor, Pond "B"	S	XOPD	NEWID	10/03/2022	P	N/A	N/A	N/A	
FR15POI000401	2023	370110.181	202102.9217	13-IM-5500	36	Fountain Rock Manor, Pond "C"	S	XOPD	NEWID	03/22/2023	F	N/A	N/A	N/A	Repair and replace fabric at the outfall pipe
FR15POI000402	2023	369081.8334	200885.3594	13-IM-5500	3	Glade Manor, Pond #2	S	XOPD	NEWID	07/08/2022	P	N/A	N/A	N/A	
FR15POI000403	2023	369537.7511	201232.2315	13-IM-5500	5	Glade Towne - Condominiums	S	XOPD	NEWID	12/01/2020	P	N/A	N/A	N/A	
FR15POI000457	2023	368550.6013	199331.4721	13-IM-5500	45	Catvary Assembly of God - Walkersville	S	XDED	NEWID	05/05/2023	P	N/A	N/A	N/A	
FR15POI000474	2023	369613.5783	201300.4974	13-IM-5500	24	Saint Timothy Worship Center - ED Pond	S	XDED	NEWID	07/08/2022	P	N/A	N/A	N/A	
FR15POI000563	2023	371748.6103	202185.6657	13-IM-5500	54	Deerfield, Section 4 - Infiltrating Check Dams	S	ITRN	NEWID	03/11/2021	P	N/A	N/A	N/A	
FR15POI000649	2023	369833.4281	201300.7851	13-IM-5500	71	Creekside Park, Phase 1 Stormceptor STC-2400	S	XCGS	NEWID	03/22/2023	P	N/A	N/A	N/A	
FR15POI000660	2023	371762.3882	202018.2906	13-IM-5500	41	Catvary Assembly of God, SWM Pond #2	S	XDED	NEWID	05/11/2022	P	N/A	N/A	N/A	
FR15POI000664	2023	370600.6929	202188.0064	13-IM-5500	17	Sun Meadows, SWM Pond #1	S	XDED	NEWID	02/28/2023	P	N/A	N/A	N/A	
FR15POI000680	2023	369621.4068	199625.5256	13-IM-5500	25	Fredericktowne Baptist Church	S	XDED	NEWID	03/23/2021	P	N/A	N/A	N/A	
FR15POI000690	2023	370751.7401	202879.2232	13-IM-5500	16	Sun Meadow, SWM Pond #2	S	XDED	NEWID	07/04/2022	P	N/A	N/A	N/A	
FR15POI000701	2023	369974.5425	202476.5846	13-IM-5500	11	Sun Meadows - SWM Pond #3	S	XDED	NEWID	07/05/2022	P	N/A	N/A	N/A	
FR15POI000702	2023	370478.1242	202807.8142	13-IM-5500	15	Sun Meadows - SWM Pond #4	S	XDED	NEWID	02/22/2023	P	N/A	N/A	N/A	
FR15POI000748	2023	370201.034	201751.5588	13-IM-5500	42	Bio-Whittaker - Building 100C	S	PWET	NEWID	07/09/2021	P	N/A	N/A	N/A	
FR15POI000822	2023	368867.3275	200654.5812	13-IM-5500	21	Walkersville "B" Middle School Parking Lot - Sand Filter	S	XDED	NEWID	12/19/2022	P	N/A	N/A	N/A	
FR15POI000852	2023	371559.5065	201679.7828	13-IM-5500	9	Fountain Rock Manor, Lot 133 - ED Facility	S	FSND	NEWID	09/30/2021	P	N/A	N/A	N/A	
FR15POI000899	2023	370402.1951	202058.0468	13-IM-5500	29	Walkersville Elementary School - Biofilter #1	S	FBIO	NEWID	07/09/2021	P	N/A	N/A	N/A	
FR15POI000900	2023	369956.9233	202735.1991	13-IM-5500	30	Walkersville Elementary School - Biofilter #2	S	FBIO	NEWID	07/09/2021	P	N/A	N/A	N/A	
FR16POI000594	2023	369236.5988	201635.526	13-IM-5500	1	Deerfield, Section 8 - Trench #1 (at Structure #J-81)	S	ITRN	NEWID	03/11/2021	P	N/A	N/A	N/A	
FR16POI000595	2023	369409.2303	201842.8212	13-IM-5500	2	Deerfield, Section 8, Trench #2 (at Strs. #J86 & #865)	S	ITRN	NEWID	03/11/2021	P	N/A	N/A	N/A	
FR16POI000585	2023	368613.2207	199587.4142	13-IM-5500	72	Walkersville Sheetz Store-Underground Pipe and Stormceptor	S	XCGS	NEWID	08/02/2022	F	N/A	N/A	N/A	3rd party inspection required for underground structure
FR16POI000650	2023	370148.5338	202079.0484	13-IM-5500	34	Creekside Park, Phase 1B, Bio Pond #1	S	FBIO	NEWID	03/11/2021	P	N/A	N/A	N/A	
FR16POI000651	2023	368033.0585	201216.9138	13-IM-5500	43	Creekside Park, Phase 1B, Bio Pond #2	S	FBIO	NEWID	07/05/2022	P	N/A	N/A	N/A	
FR16POI000652	2023	368116.7487	201396.2885	13-IM-5500	51	Creekside Park, Phase 2, Bio Pond #3	S	FBIO	NEWID	02/20/2023	P	N/A	N/A	N/A	
FR16POI000653	2023	368129.0625	201476.8889	13-IM-5500	50	Creekside Park, Phase 2, Bio Pond #4	S	FBIO	NEWID	07/05/2022	P	N/A	N/A	N/A	
FR16POI000710	2023	370015.4637	202705.2393	13-IM-5500	70	Frederick County Bank @ Walkersville Commercial Center	S	FUND	NEWID	03/22/2023	P	N/A	N/A	N/A	
FR16POI000747	2023	370107.6749	201813.0847	13-IM-5500	6	Fountain Rock Manor, Detention Pond "A" (L37)	S	XOPD	NEWID	03/05/2021	P	N/A	N/A	N/A	
FR18POI001080	2023	368038.2926	201271.8972	13-IM-5500	31	Walkersville Sheetz Rebuild - Biorretention	S	FBIO	NEWID	03/08/2022	P	N/A	N/A	N/A	
FR19POI129849	2023	368787.9977	200609.4944	13-IM-5500	20	Mill Run - Sand Filter and ESD	S	FSND	NEWID	06/06/2023	P	N/A	N/A	N/A	
FR19POI151047	2023	370591.8306	202141.3687	13-IM-5500	37/38/39	Walkersville Library Micro-Biorretentions and Grass Swales	E	MMBR	NEWID	06/06/2023	P	N/A	N/A	N/A	
FR20POI70814	2023	370447.8663	202116.0782	13-IM-5500	33/40	Rutter's Convenience Store #75 - Walkersville	S	FUND	NEWID	12/31/2020	P	N/A	N/A	N/A	
WK18BMP0001	2023	368035.2926	201265.9972	13-IM-5500	11	Mechanical Street Sweeping	A	MSS	REST	06/10/2021	P	N/A	N/A	N/A	
WK21BMP0002	2023	370069.976	202164.946	13-IM-5500	10	State Highway Administration	S	XDED	NEWID	04/23/2021	P	N/A	N/A	N/A	
WK21BMP0003	2023	370160.581	202899.7095	13-IM-5500	13	Winterbrook	S	XDED	NEWID	04/23/2021	P	N/A	N/A	N/A	
WK21BMP0004	2023	369869.693	202798.7933	13-IM-5500	12	Sun Meadow Ex SWM Pond 3	S	PWET	NEWID	04/23/2021	P	N/A	N/A	N/A	
WK21BMP0005	2023	370490.8193	202318.6436	13-IM-5500	14	Winterbrook	S	XDED	NEWID	04/23/2021	P	N/A	N/A	N/A	
WK21BMP0006	2023	368500.4796	201385.4906	13-IM-5500	19	Mill Run	E	MSWG	NEWID	04/23/2021	P	N/A	N/A	N/A	
WK21BMP0007	2023	368512.1599	199438.8951	13-IM-5500	26	Maintenance Shop	S	XDED	NEWID	04/23/2021	P	N/A	N/A	N/A	
WK21BMP0008	2023	371786.4905	201859.5583	13-IM-5500	28	High School	S	XDED	NEWID	04/23/2021	P	N/A	N/A	N/A	
WK21BMP0009	2023	370084.1461	202096.0737	13-IM-5500	35	Creekside	S	WPWS	NEWID	04/23/2021	P	N/A	N/A	N/A	
WK21BMP0010	2023	371786.5205	201859.5593	13-IM-5500	62	Walkersville Water Treatment Plant	E	MMBR	NEWID	05/1/2022	P	N/A	N/A	N/A	
WK21BMP0011	2023	369422.0941	201943.8663	13-IM-5500	56	Ports Circle 1	E	MMBR	NEWID	04/23/2021	P	N/A	N/A	N/A	Town-owned
WK21BMP0012	2023	369430.2433	201946.3005	13-IM-5500	57	Ports Circle 2	E	MMBR	NEWID	04/23/2021	P	N/A	N/A	N/A	
WK23BMP0013	2023	370376.54271	202513.00358	13-IM-5500	42	Reforestation on Previous Urban - Trout Park	A	FPU	REST	10/14/2023	P	N/A	N/A	N/A	

## Table B.1.b. Reporting Requirements for ESD and Structural Practices

More specific data related to ESD and structural BMPs is populated in this table.

BMP_ID	NUM_BMPS	ON_OFF_SITE	CONVERTED_FROM	BMP_STATUS	BMP_DRAIN_AREA	IMP_ACRES	PE_ADR	APPR_DATE	BUILT_DATE	GEN_COMMENTS
FR15POI000006	1	ON	N/A	ACT	4.422165	1.905319	1	8/3/1999	9/5/2003	
FR15POI000130	1	ON	N/A	ACT	5.8644	3.4301	1	9/24/2003	10/20/2005	
FR15POI000168	1	ON	N/A	ACT	2.146175	0.685596	1	12/5/1989	9/14/1993	
FR15POI000169	1	ON	N/A	ACT	28.8577	12.1232	0	8/10/1982	2/13/1992	
FR15POI000170	1	ON	N/A	ACT	2.4246	1.8078	1	7/7/1986	2/26/1992	
FR15POI000172	1	ON	N/A	ACT	0.833344	0.654191	1	9/21/1987	2/26/1991	
FR15POI000173	1	ON	N/A	ACT	0.309997	0.257659	1	6/11/1984	2/26/1992	
FR15POI000174	1	ON	N/A	ACT	2.0823	1.2316	0	9/15/1988	2/25/1992	
FR15POI000177	1	ON	N/A	ACT	35.2259	8.2396	0	12/13/1991	10/1/1993	
FR15POI000179	1	ON	N/A	ACT	6.0450	1.6913	0	5/12/1992	5/14/1996	
FR15POI000185	1	ON	N/A	ACT	2.916337	0.616626	1	2/5/2004	5/19/2006	
FR15POI000340	1	ON	N/A	ACT	1.1614	0.1083	0	8/2/1994	12/20/1996	
FR15POI000397	1	ON	N/A	ACT	1.933242	1.330624	0	8/28/1985	11/2/1997	
FR15POI000398	1	ON	N/A	ACT	0.555404	0.345022	1	1/23/1992	11/2/1997	
FR15POI000399	1	ON	N/A	ACT	0.120034	0.110003	0	6/19/1985	3/11/1990	
FR15POI000400	1	ON	N/A	ACT	6.4654	2.4003	0	3/6/1984	2/1/1985	
FR15POI000401	1	ON	N/A	ACT	2.4051	0.4778	0	3/30/1984	2/1/1985	
FR15POI000402	1	ON	N/A	ACT	12.6684	4.5759	0	5/24/1985	8/11/1990	
FR15POI000403	1	ON	N/A	ACT	4.6118	2.5192	0	6/8/1981	12/5/1985	
FR15POI000457	1	ON	N/A	ACT	9.231444	2.228756	0	11/15/1996	9/2/1997	
FR15POI000474	1	ON	N/A	ACT	9.7220	3.1308	0	12/7/1995	9/8/1997	
FR15POI000563	1	ON	N/A	ACT	11.39769	3.488456	1	8/19/1990	7/20/1991	
FR15POI000660	1	ON	N/A	ACT	2.4654	1.2038	0	7/18/2000	1/14/2005	
FR15POI000664	1	ON	N/A	ACT	34.7494	11.6200	0	12/9/1998	6/3/2004	
FR15POI000680	1	ON	N/A	ACT	10.3584	3.0135	0	8/13/2001	7/28/2005	
FR15POI000690	1	ON	N/A	ACT	11.1174	3.9149	0	12/9/1998	1/18/2008	
FR15POI000701	1	ON	N/A	ACT	3.4495	0.0000	0	9/7/2004	10/8/2008	
FR15POI000702	1	ON	N/A	ACT	10.3485	0.3216	0	9/7/2004	10/8/2008	
FR15POI000748	1	ON	N/A	ACT	14.438	10.1700	1	3/12/1993	9/28/1994	
FR15POI000822	2	ON	N/A	ACT	12.6238	4.5788	0	8/13/2008	11/9/2011	
FR15POI000852	2	ON	N/A	ACT	5.7469	2.1573	1	5/8/2007	11/10/2009	
FR15POI000899	1	ON	N/A	ACT	2.7700	2.4300	1	4/13/2009	7/7/2011	
FR15POI000900	1	ON	N/A	ACT	2.7730	0.0677	1	4/13/2009	7/7/2011	
FR16POI000564	1	ON	N/A	ACT	8.0263	2.5829	1	7/23/1997	11/20/1998	
FR16POI000565	1	ON	N/A	ACT	6.1363	2.2107	1	7/23/1997	11/20/1998	
FR16POI000650	1	ON	N/A	ACT	13.7374	4.1845	1	7/25/1997	11/12/2002	
FR16POI000651	1	ON	N/A	ACT	2.541821	0.878512	1	7/25/1997	11/12/2002	
FR16POI000652	1	ON	N/A	ACT	5.25702	1.250805	1	4/17/1998	11/12/2002	
FR16POI000653	1	ON	N/A	ACT	4.719297	1.384378	1	4/17/1998	11/12/2002	
FR16POI000710	1	ON	N/A	ACT	0.841635	0.714084	1	6/21/2005	11/13/2008	
FR16POI000747	1	ON	N/A	ACT	25.5690	9.6047	0	3/6/1984	1/1/1988	
FR18POI001080	1	ON	N/A	ACT	3.2009	1.5899	2.6	9/19/2016	2/1/2018	
FR19POI129849	4	ON	N/A	ACT	6.6093	1.7964	1	5/12/2015	1/14/2019	
FR19POI151047	4	ON	N/A	ACT	1.2990	0.7590	1.58	8/15/2016	5/17/2019	

FR20POI170614	6	ON	N/A	ACT	1.8013	1.6843	2.2	2/19/2018	11/26/2019	
FR15POI000649	1	ON	N/A	ACT	4.13	1.61	0	10/22/1996	5/27/2002	
FR16POI000585	2	ON	N/A	ACT	1.77	1	0	1/5/1995	2/26/2001	
WK21BMP0002	1	ON	N/A	ACT	2.4143	1.3012	0	Pre-1985	Pre-1985	
WK21BMP0004	1	ON	N/A	ACT	44.0659	13.3090	1	2005-2007	2005-2007	
WK21BMP0003	1	ON	N/A	ACT	34.7125	10.9064	0	1988-2005	1988-2005	
WK21BMP0005	1	ON	N/A	ACT	2.4676	0.2727	0	2005-2007	2005-2007	
WK21BMP0006	1	ON	N/A	ACT	2.9511	1.0718	0	2015-2017	2015-2017	
WK21BMP0007	1	ON	N/A	ACT	3.7037	1.1460	0	2015-2017	2015-2017	
WK21BMP0008	1	ON	N/A	ACT	2.0957	1.9340	0	Pre-1985	Pre-1985	
WK21BMP0009	1	ON	N/A	ACT	3.3341	0.4306	1	1988-2005	1988-2005	
WK21BMP0011	1	ON	N/A	ACT	0.163481	0.150954	1	5/4/2015	6/1/2018	
WK21BMP0012	1	ON	N/A	ACT	0.177107	0.017142	1	5/4/2015	6/1/2018	
WK21BMP0010	1	ON	N/A	ACT	0.991565	0.8123	1	3/21/2017	5/1/2019	

### Table B.1.c Reporting Requirements for Alternative BMPs (Sample Input Table)

More specific data related to alternative BMPs is populated in this table.

BMP_ID <sup>1</sup>	PROJECT_DESC	PROJECT_LENGTH	ACRES_SWEPT	TIMES_SWEPT	ACRES_PLANTED	IMP_ACR_ELIM	EQU_IMP_ACR	INSTALL_DATE	IMPL_COMP_YR	GEN_COMMENTS
WK19BMP0001	Mechanical Street Sweeping	N/A	91.25	2	N/A	N/A	0.51	N/A	2022	
WK23BMP0013	Reforestation on Pervious Urban - Trout Park	N/A	N/A	N/A	0.25	N/A	0.095	10/14/2023	2023	

Note: Several Example BMPs have been incorporated to help display the new structure.

<sup>1</sup> Every BMP Identified in this table should correspond to "BMP" sheet.

## Attachment 4

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# IMPERVIOUS AREA BASELINE ASSESSMENT



# Town of Walkersville

## Frederick County, Maryland

### Impervious Area Baseline Assessment Annual Report 2022-2023



General Discharge Permit No. 13-IM-5500  
General NPDES Permit No. MDR055500

ARRO CONSULTING, INC.  
108 W. Airport Road  
Lititz, PA 17543



# IMPERVIOUS AREA BASELINE ASSESSMENT OUTLINE

SECTION 1: ABBREVIATIONS.....	1
SECTION 2: STORMWATER MANAGEMENT PROGRAM.....	2
SECTION 3: TOWN OF WALKERSVILLE, MARYLAND.....	3
SECTION 4: BASELINE IMPERVIOUS AREA ASSESSMENT AND METHODOLOGY.....	5
BASELINE IMPERVIOUS AREA ASSESSMENT.....	5
BASELINE IMPERVIOUS AREA METHODOLOGY.....	6
SECTION 5: IMPERVIOUS AREA RESTORATION WORK PLAN.....	14
IMPERVIOUS AREA RESTORATION ACTIVITY SCHEDULE.....	18
BMP DATABASE.....	19
RESTORATION PROJECTS.....	20



## SECTION 1: ABBREVIATIONS

AC	Acres
BMP	Best Management Practices
COMAR	Code of Maryland Regulations
CSRC	Construction Site Runoff and Control Program
DEM	Digital Elevation Model
EPA	Environmental Protection Agency
GIS	Geographic Information Systems
IBAS	Infiltration Basin
IDD&E	Illicit Discharge Detection and Elimination Program
MDE	Maryland Department of the Environment
MIBR	Infiltration Basin
MMBR	Micro-Bioretenion
MSS	Mechanical Street Sweeping
ODSW	Bioswale
PCSRC	Post-Construction Site Runoff Control Program
PIPP	Public Involvement and Participation Plan
P <sub>E</sub>	Target Rainfall Amount
PEOP	Public Education and Outreach Program
PP&GH	Pollution Prevention and Good Housekeeping
PWET	Retention Pond (Wet Pond)
SOP	Standard Operation Procedure
SCD	Catocin and Frederick Soil Conservation District
SDV	Storm Drain Vacuuming
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
WIP	Watershed Implementation Plan
XDPD	Detention Structure (Dry Pond)
XOGS	Oil Grit Separator

## SECTION 2: STORMWATER MANAGEMENT PROGRAM

The Town of Walkersville, Maryland (Town) has completed this annual report to demonstrate progress and compliance towards the Maryland Department of the Environment (MDE) National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges from Small Municipal Separate Storm Sewer Systems (MS4s). For the remainder of this report the NPDES General Permit for MS4s will be referred to as the General Permit. This report summarizes progress made toward compliance from 2018 to 2023. As part of the requirements set forth by the General Permit, the Town has completed the following activities.

1. Developed an Impervious Area Restoration Assessment for MDE review and approval.
2. Developed a Restoration Work Plan for MDE review and approval.
3. Developed an Impervious Surface Restoration Activity Schedule.
4. Developed a BMP Database.

The General Permit is part of the Environmental Protection Agency's (EPA) Phase II stormwater program. This program covers the need to address polluted discharges from stormwater runoff within urbanized areas as determined by the 2010 United States Census, or small municipalities located outside urbanized areas designated by MDE. The General Permit term is a period of 5 years. To demonstrate compliance, the Town is required to perform background analysis, fill in data gaps, outline implementation methods and timeline, report progress on an annual basis, and submit information to federal and state agencies.

## SECTION 3: TOWN OF WALKERSVILLE, MARYLAND

Walkersville, Maryland is an incorporated town in Frederick County, Maryland. Geographically positioned in northwest Maryland, north of Interstate 70, the town sits northeast of Frederick, Maryland. The town is approximately 4.79 square miles, stretching 4 miles north to south. Heritage Park is the northern most point of the municipality, while the southern border of the town is defined by portions of the Monocacy River as well as small rural agricultural areas. Schools, government services, local businesses, and a few chain retailers and restaurants make up the center of Walkersville, with most residences in the central and northern portions of town, branching directly off Maryland Route 194. Space in the southern, eastern, and western, extent of the municipality is covered by farmland, rural residences, and small tributaries.

According to the United States Census Bureau, as of the 2017 town population was 6,181. The racial demographic of the town's population was 86.3% White, 6.3% African American, 0.6% Native American, 3.2% Asian, and 3.4% from two or more races. The Hispanic/Latino population of any race was 7.8%. The median age of the town was 41 years old. Based upon estimates from the 2013-2017 American Community Survey, the median household income was \$83,438.00. Individuals living below the poverty level were 9% of the population.

As of 2017, the prevalent types of employment for residents over 16 years old were public administration, health care and social assistance, and retail trade.

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<sup>1</sup> - <https://www.census.gov/programs-surveys/decennial-census/decade.2010.html>

# FIGURE 1

## TOWN OF WALKERSVILLE, MD

Annual Report 2020-2021  
Town of Walkersville, MD



### BASELINE IMPERVIOUS AREA ASSESSMENT

The Town of Walkersville completed a Baseline Impervious Area Assessment as part of its compliance with the General Permit. Section V of the General Permit addresses Maryland's Watershed Implementation Plan (WIP) requirement to reduce nutrient and sediment loads; subsequently addressing the Chesapeake Bay's Total Maximum Daily Load (TMDL) by 2025. Under the General Permit small MS4s must commence restoration efforts for twenty percent of existing developed lands that have little or no stormwater management. The 5-year General Permit term requires permittees to develop planning strategies and work towards implementing water quality improvement projects. The completion of a Baseline Impervious Area Assessment demonstrates the Town's progress towards compliance with Maryland's receiving water quality standards and any stormwater waste load allocation (WLA) established or approved by the EPA for small MS4s regulated under the General Permit.

The Town utilized geospatial data as the basis of its Impervious Surface Area Assessment. High Resolution Land Cover Raster imagery from the Chesapeake Conservancy (2016) was utilized for identifying impervious and non-impervious areas. The Town used existing stormwater infrastructure geospatial data to calculate current impervious surface treatment. Additional data such as municipal boundaries, NAIP Aerial Imagery (2016), a digital elevation model (DEM) of Frederick County, MD (2016) and historic Best Management Practices (BMP) data was also utilized within the methodology of this analysis.

## IMPERVIOUS SURFACE BASELINE ASSESSMENT METHODOLOGY

Methods for calculating values for Section 1: Impervious Area Restoration Reporting Form, were followed based upon the following guidance documents. These documents are available in Section 4.1 Guidance Documents.

1. *NPDES Pollutant Discharge Elimination System General Permit for Discharges from Small Municipal Separate Storm Sewer Systems. April 2018.*
2. *NPDES MS4 Phase II Permit Guidance: Developing and Verifying the Impervious Area Baseline and Restoration Target. August 2019.*
3. *Memorandum: Stormwater Best Management Practices (BMPs) and Completion Dates for MS4 Permitting Purposes. May 2, 2018.*
4. *Accounting for Stormwater Waste load Allocations and Impervious Acres Treated. August 2014.*
5. *Maryland Stormwater Design Manual. Stormwater Credits for Innovative Site Planning. October 2000, Revised May 2009*

The following data and programs were used for the analysis:

1. ESRI ArcMap Version 10.7.1
2. ESRI ArcToolbox Hydrology Toolset
3. Frederick County MD 1-Meter Digital Elevation Model DEM (2015)
4. Stormwater Utility Data in GIS format from The Town of Walkersville, MD
5. Chesapeake Conservancy's high-resolution land cover dataset (2016)
6. Google Earth Historic Imagery (2002-2019)



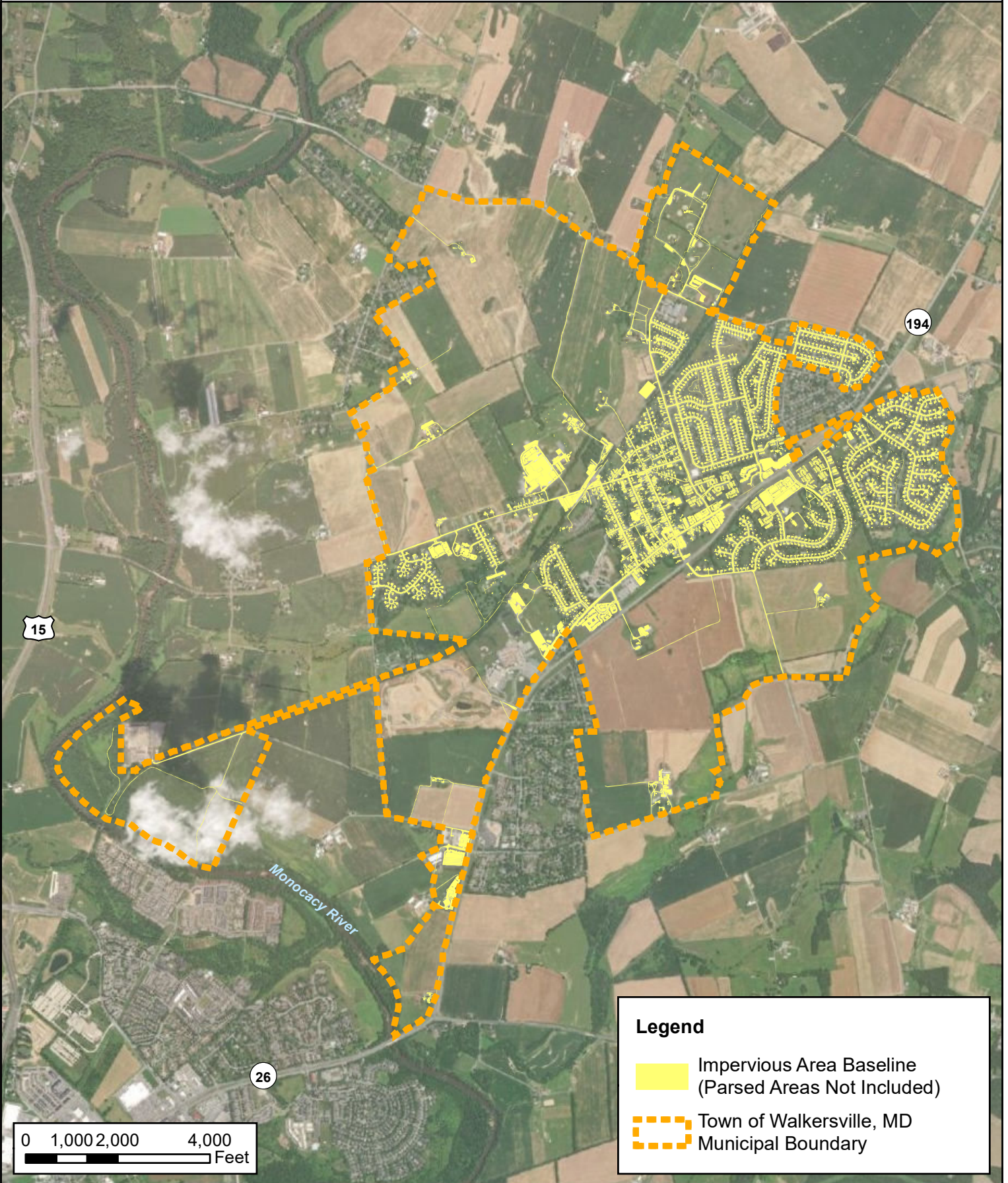
## STEP-BY-STEP METHODOLOGY

1. **Total impervious acres of jurisdiction covered under this permit: 339.27 acres.**
  - a. Using ESRI software, as well as stormwater GIS data from the Town and the Chesapeake Conservancy, query impervious surface polygon data, clip or isolate the layer to the Town of Walkersville's municipal boundaries. Use the field calculator to calculate total acres for impervious surface layer within the Town's boundaries. Areas within the Town's municipal boundaries such as schools, and state roads were not included within this area. Use the field calculator to calculate total acres for impervious surface layer within the Town's boundaries.





# FIGURE 2 IMPERVIOUS SURFACES

2020-2021 Annual Report  
Town of Walkersville, MD



**Legend**

-  Impervious Area Baseline  
(Parsed Areas Not Included)
-  Town of Walkersville, MD  
Municipal Boundary

\\anclife4\GIS\Town of Walkersville\AnnualReport\_2020\_2021\Figure\_2\_Impervious\_Surface.mxd

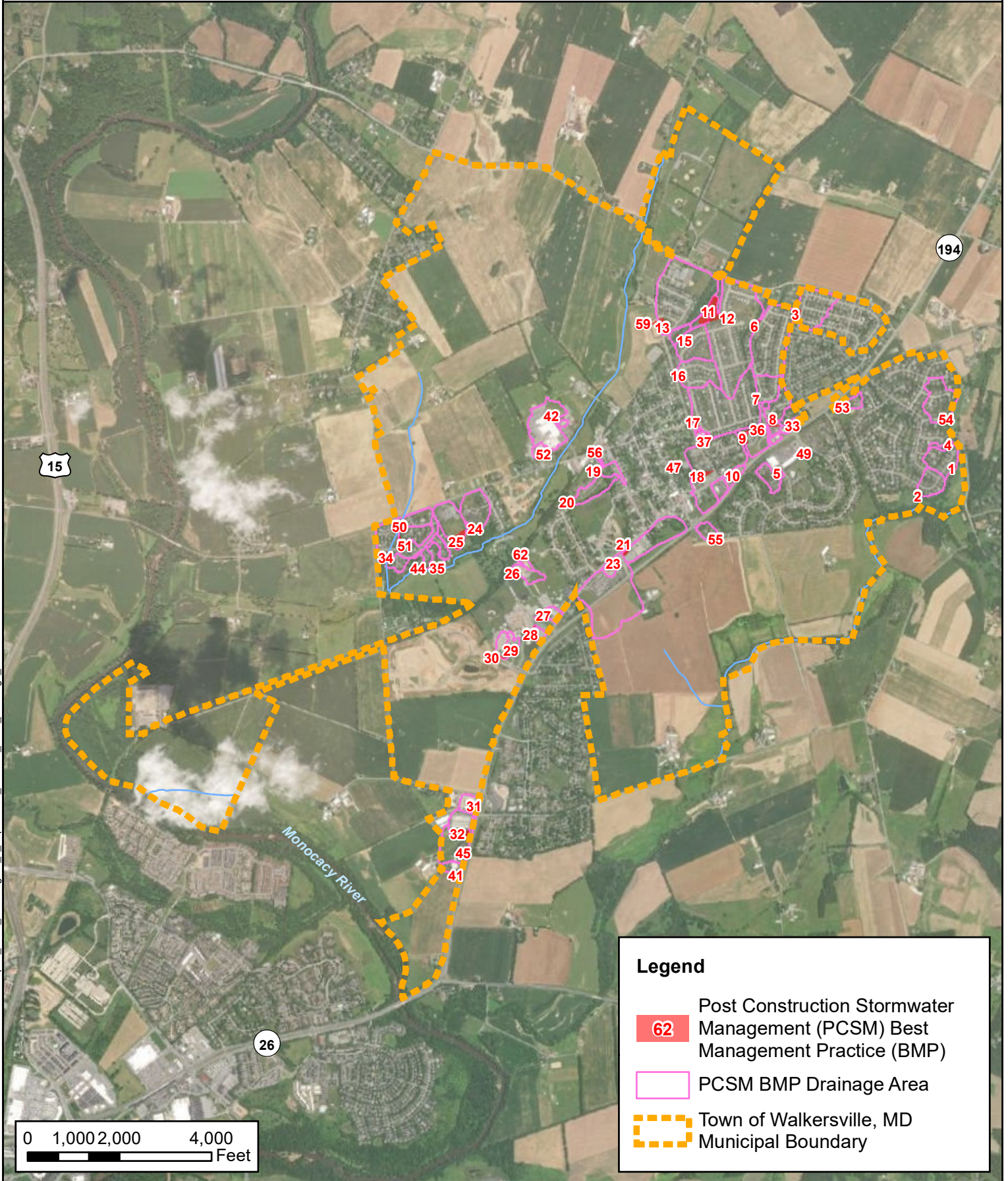
**2. Total impervious acres treated by stormwater water quality best management practices (BMPs): 153.99 acres.**

- a. Utilize existing BMP shapefiles from the Town along with a 1-Meter Digital Elevation Mode (DEM) as inputs into ArcGIS watershed modeling tools. The output using this toolset is BMP Drainage Areas; once each BMPs drainage area is modeled is a polygon, clip or isolate to impervious surfaces layer and recalculate acreage. According to Guidance Document (2), all BMPs were used to calculate current impervious surface treatment. The Town's Impervious Area Restoration Work Plan outlines the Town's plans to verify and/or update BMP inspection records by the end of the permit term to fulfill compliance. This plan can be located in the Town's annual MS4 progress report due to MDE in October of each year.



# FIGURE 3 POST-CONSTRUCTION STORMWATER MANAGEMENT (PCSM) BEST MANAGEMENT PRACTICES (BMPs)

2020-2021 Annual Report  
Town of Walkersville, MD



**3. Total impervious acres treated by stormwater BMPs providing partial water quality treatment: 58.07 acres.**

- a. Using results from the previous step (2.), multiply each BMP Drainage Area by  $P^E$  value. The resulting value represents impervious area treated by the BMP.
- b. Existing inspection and maintenance records, as well as historic imagery were utilized to populate the Town's BMP Database. The Town's BMP Database can be found within the Town's annual MS4 progress report submitted to MDE by October of each year.

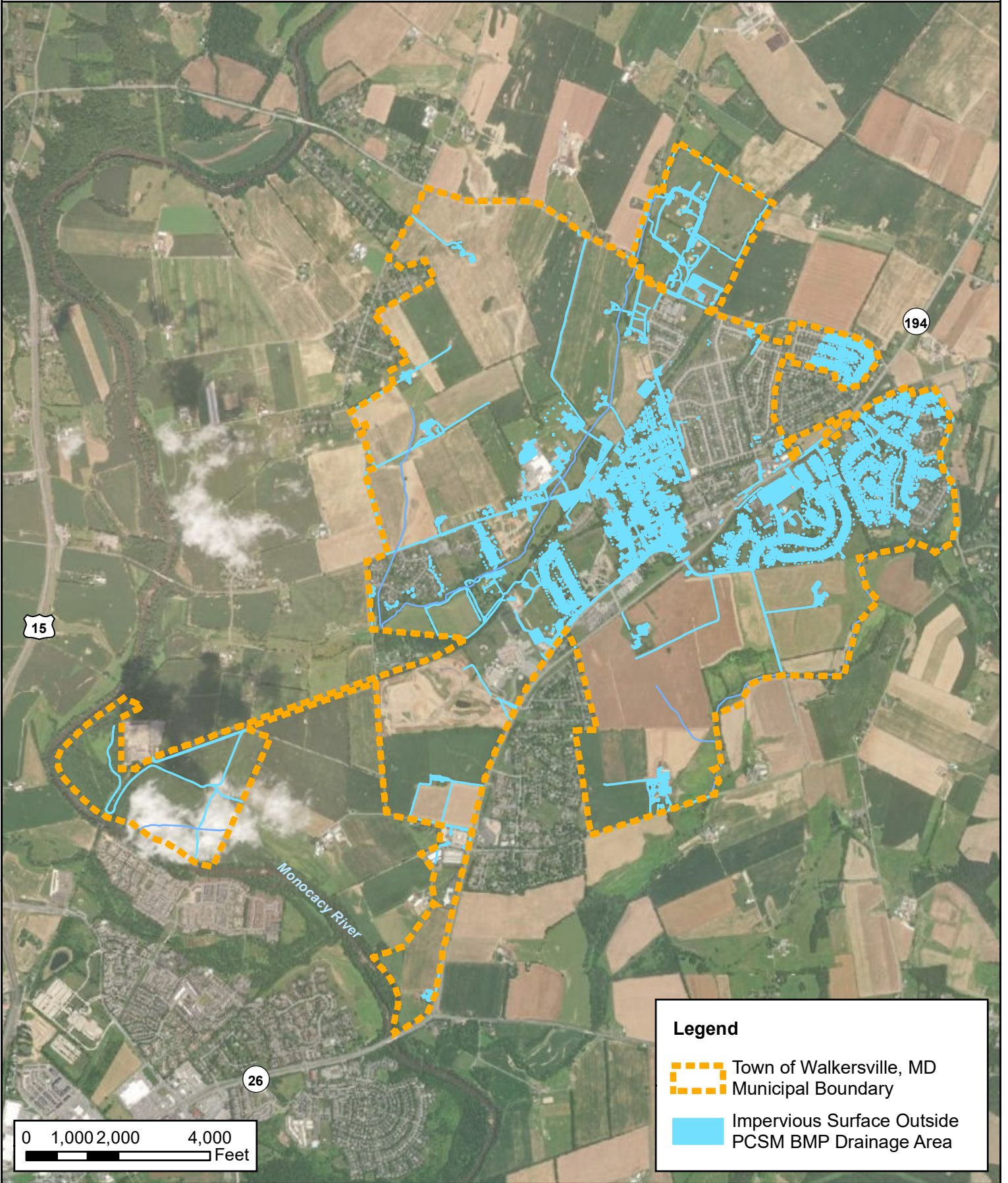
**4. Total impervious acres treated by nonstructural practices: 0 acres.**

- a. Impervious area rooftop & non-rooftop disconnects/Environmental Site Design/Sheet Flow to Buffer **0**
  - i. Utilized land cover data to isolate structural buildings.
  
- b. Swales/Channels **0 acres**
  - i. Utilized utility data from the Town along with ArcToolbox hydrology toolset to model swale drainage areas.



# FIGURE 4 IMPERVIOUS SURFACE OUTSIDE PCSM BMP DRAINAGE AREAS

2020-2021 Annual Report  
Town of Walkersville, MD



**Legend**

- Town of Walkersville, MD Municipal Boundary
- Impervious Surface Outside PCSM BMP Drainage Area

**5. Total impervious acres untreated in the jurisdiction:**

a. Total Impervious Area in Jurisdiction: **339.27 acres**

b. Total Impervious Area Treated: **153.99 acres**

i. This includes impervious area covered by the following:

1. Stormwater BMPs providing partial water quality treatment **58.07 acres**
2. Impervious area rooftop disconnects/non-rooftop disconnects **0 acres**
3. Swales/Channels **0 acres**

c. Total Impervious Area Untreated: **281.2 acres**

**6. Twenty Percent of this total area (Restoration Requirement):**

a. Total Impervious Area Untreated x 20%:  **$281.2 \times .20 = 56.24$  acres**

## SECTION 5: IMPERVIOUS AREA RESTORATION WORK PLAN

### YEAR 1

- **Complete Impervious Area Baseline Assessment.**
  - Utilize existing data and obtain additional necessary data to calculate:
    - BMP Drainage.
    - Impervious Surface.
    - Water Quality Treatment.
    - Additional Utility Drainage.
- **Create a Restoration Work Plan for MDE approval.**
- **Create a draft Restoration Activity Schedule.**
  - Using data from the Baseline Assessment, identify non-treated impervious surface areas.
  - Estimate treatment area (acres) of each project, cost of implementation, date of implementation, and MD Grid Coordinates.
  - Summarize impervious area restoration activities for next reporting cycle.
- **Create a draft BMP Database.**
  - Document data gaps.
  - Utilize alternative data sources to complete BMP database.
- **Identify other NPDES permittees as ideal candidates to partner with.**
- **Submit annual progress report demonstrating development and full implementation of all permit requirements by end of the 5-year permit term.**

### YEAR 2

- **Obtain required documentation to support and/or update findings within Impervious Area Baseline Assessment.**
  - BMP Inspection Records.
  - BMP Maintenance Records.
  - As built drawings of BMPs and other utility infrastructure.
  - Confirmation of additional non-structural rooftop disconnects, non-rooftop disconnects.
  - Private NPDES permit holders
  - Perform BMP Inspections/Maintenance
- **Provide update on Work Plan adaptations and completed tasks.**
- **Impervious Area Restoration Activity.**
  - Evaluate recommended restoration projects.
    - Base recommendations on confirmation of existence or absence of background documentation to support impervious surface treatment by non-structural practices baseline estimate.
    - Tailor recommended restoration projects specific to the Town's geography, culture, and vision.



- Considering alternative restoration projects.
- Confirm or Update costs and associated with each project.
- **Update and Submit BMP Database.**
- **Submit progress report demonstrating development and full implementation of all permit requirements by end of the 5-year permit term.**

### YEAR 3

- **Update and submit Impervious Area Baseline Assessment.**
  - Perform BMP Inspections/Maintenance.
  - Parse areas not under the Town’s jurisdiction or managed under separate NPDES permits for stormwater discharge.
  - Update calculations within the assessment.
- **Update and Submit BMP Database for MDE approval.**
  - Coordinate with county to ensure reviews and plans specific to new projects are streamlined in terms of data and documentation with the Town.
  - Verify IDs from County database match Town’s database.
  - Verify BMP drainage area calculations.
  - Verify BMP drainage area impervious surface calculations.
  - Update previous inspection dates/maintenance.
  - Add completed BMP projects to BMP database.
- **Provide update on Work Plan adaptations and completed tasks.**
- **Impervious Area Restoration Activity.**
  - Begin to plan/implement projects based on Impervious Area Restoration Activity Schedule.
    - Identify BMPs that are within an existing Town easement, another public entity, or a home-owners association.
    - Identify BMPs within existing, untreated areas of structural conveyance with no stormwater facility storage or treatment.
    - Calculate impervious acre credit for potential BMPs in identified areas.
    - Present findings to Town’s Burgess & Commissioners.
  - Look for funding opportunities for restoration projects.
  - Obtain public involvement feedback from the Year 3 MS4 survey and implement thoughts into future project considerations.
  - Engage Private/Public entities for potential project funding and/or implementation.
  - Update and Submit Impervious Area Restoration Activity Schedule for MDE approval.
  - Coordinate with county to ensure reviews and plans specific to new projects are streamlined in terms of data and documentation with the Town.

### YEAR 4

- **Update and submit Impervious Area Baseline Assessment.**
  - Perform BMP Inspections/Maintenance.

- Update calculations within the assessment.
- **Update and Submit BMP Database for MDE approval.**
  - Coordinate with county to ensure reviews and plans specific to new projects are streamlined in terms of data and documentation with the Town.
  - Update BMP database with completed restoration projects.
- **Provide update on Work Plan adaptations and completed tasks.**
- **Impervious Area Restoration Activity.**
  - Implement projects based on Impervious Area Restoration Activity Schedule.
    - Complete survey and design work on initial BMP restoration projects. Complete bid package for construction of restoration projects.
    - Identify projects, likely on private property, to implement remaining projects to complete restoration requirements.
    - Coordinate with property owners to obtain easements and/or permission to construct new/upgraded stormwater BMPs.
    - Conduct survey and design work on remaining BMP projects.
  - Look for funding opportunities for restoration projects.
  - Engage Private/Public entities for potential project funding and/or implementation.
  - Update and submit Impervious Area Restoration Activity Schedule for MDE approval.
  - Educate/involve target audience groups regarding proposed/implemented projects.
  - Coordinate with county to ensure reviews and plans specific to new projects are streamlined in terms of data and documentation with the Town.
  - Begin survey and design of identified restoration projects.
- **Submit progress report demonstrating development and full implementation of all permit requirements by end of the 5-year permit term.**

## YEAR 5

- **Update and submit Impervious Area Baseline Assessment.**
  - Perform BMP Inspections/Maintenance.
- **Update and Submit BMP Database for MDE approval. Ensure all BMP inspection records are complete.**
  - Coordinate with county to ensure reviews and plans specific to new projects are streamlined in terms of data and documentation with the Town.
  - Update BMP database with completed restoration projects.
- **Provide update on Work Plan adaptations and completed tasks.**
- **Impervious Area Restoration Activity.**
  - Implement projects based on Impervious Area Restoration Activity Schedule.
    - Complete survey and design work on remaining BMP restoration projects. Complete bid package for construction of restoration projects.
    - Coordinate with property owners to obtain easements and/or permission to construct new/upgraded stormwater BMPs.

- Complete construction work on initial BMP projects, as well as remaining BMP projects.
- Look for funding opportunities for next 5-year cycle's restoration projects.
- Engage Private/Public entities for potential project funding and/or implementation for next 5-year cycle's restoration projects.
- Update and Submit Impervious Area Restoration Activity Schedule for MDE approval.
- Coordinate with county to ensure reviews and plans specific to new projects are streamlined in terms of data and documentation with the Town.
- Educate/involve target audience groups regarding proposed/implemented projects.

## Attachment 5

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# IMPERVIOUS AREA RESTORATION PROJECT INFORMATION



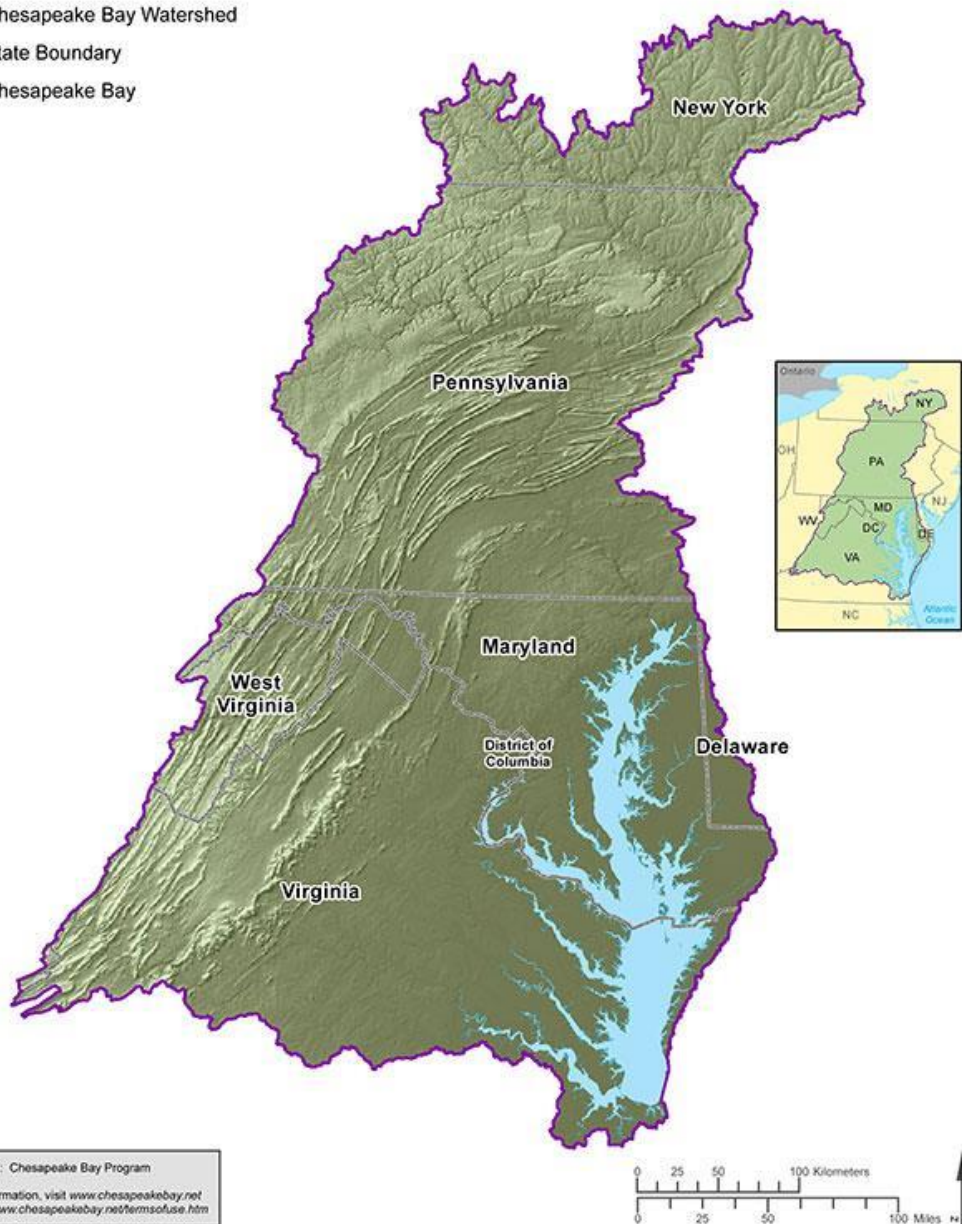
# The Town of Walkersville Municipal Separate Storm Sewer (MS4) Presentation

Wednesday February 8,  
2023



CHESAPEAKE BAY  
RESTORATION PROJECTS  
UPDATE

-  Chesapeake Bay Watershed
-  State Boundary
-  Chesapeake Bay



Data Sources: Chesapeake Bay Program  
For more information, visit [www.chesapeakebay.net](http://www.chesapeakebay.net)  
Disclaimer: [www.chesapeakebay.net/termsofuse.htm](http://www.chesapeakebay.net/termsofuse.htm)

## Chesapeake Bay Restoration Requirements

- Maryland's Watershed Implementation Plan (WIP) specifies the nutrient and sediment load reductions required to address the Chesapeake Bay TMDL by 2025.
- This five-year permit (2018-2023) term requires permittees to develop planning strategies and work toward implementing water quality improvement projects. Restoration planning strategies and implementation schedules required under this general permit are consistent with addressing the water quality goals of the Chesapeake Bay TMDL by 2025.
- The Town of Walkersville has a 56.24 impervious acre restoration requirement by 2025. Walkersville must update or create new stormwater Best Management Practices (BMPs) to account for treatment of 56.24 impervious acres by 2025.

# Meeting Restoration Requirements

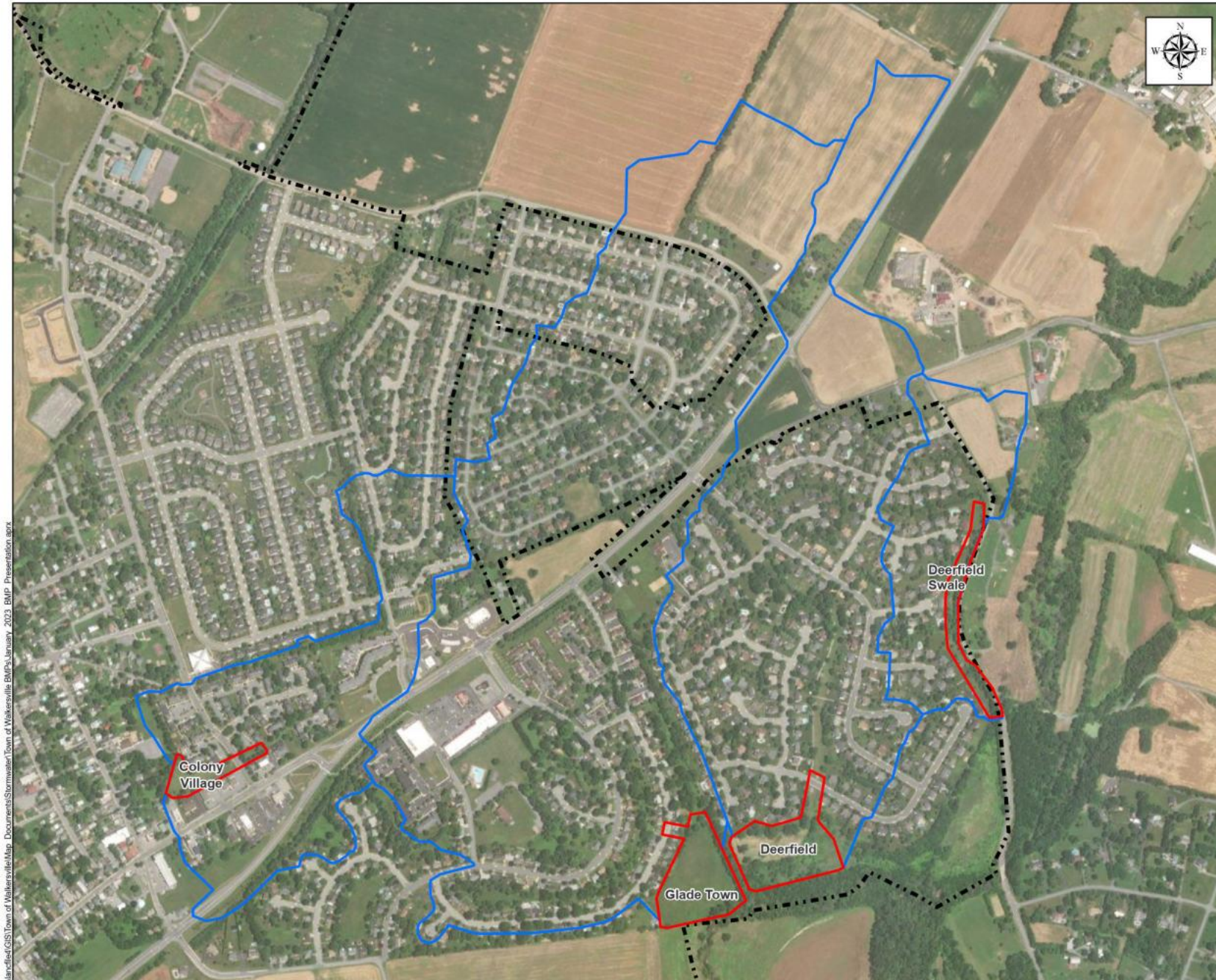
## Initial Assumptions

- Alternative Credits would provide .51 credits – tree planting, street sweeping
- 4 Identified locations would in whole provide conservatively 55.73 credits
- Total cost to meet 56.24 acres of restoration is between 1-2 million dollars

## Future Restoration Requirements and Crediting

- 2025-2030 requirements are still under consideration, but in discussions with MDE the requirement may be 10% reduction of untreated impervious surfaces. Excess credits from the current permit cycle may be used for future restoration credit.



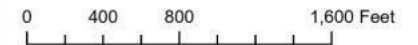


# Stormwater Projects

Town of Walkersville  
Frederick County, MD

## Legend

- Best Management Practice (BMP) Design Project
- BMP DA
- Town Boundary



Date Produced/Author:  
1/24/2023 3:58 PM RWC  
Projection/Coordinate System:  
NAD 1983 NSRS2007 StatePlane Maryland FIPS 1900 Ft US  
Data Source:  
World Imagery: Maxar



I:\landfill\GIS\Town of Walkersville\Map Documents\Stormwater\Town of Walkersville BMP\January 2023 BMP Presentation.aprx

# Summary of Overall Project Status (1 of 2)

- Fall 2022 – Met with MDE to review draft designs, propose outstanding questions, and gather any feedback regarding impervious restoration crediting from MDE’s MS4 program staff.
- ARRO has completed 4 proposed designs to date.
  - Goal is to increase nutrient and sediment load reduction
  - 1 retrofitted multiple pond facility, 2 new multiple pond facilities
  - 1 retrofitted dry swale
  - Fencing is not a requirement but can be implemented if desired.
  - While the permanent ponds will include standing water, vegetative plantings around the pond cells will attract species that feed on insects.
- ARRO will submit designs to the Frederick Soil Conservation District (SCD) and then to Frederick County. Any comments provided will be addressed, and plans will be re-submitted as needed.
  - It is anticipated that an NPDES permit will be required for all projects except the Deerfield swale.
  - It is anticipated that a forest conservation study may be required for Deerfield and Glade Town open space properties.
  - A general permit may also be required at the Deerfield/Glade town open space properties due to the presence of a floodplain on the property.
- After approval from the SCD and the County, ARRO will prepare an opinion of probable construction costs for proposed BMPs, provide an approximate construction time frame for construction and other work to be completed.

# Summary of Overall Project Status (2 of 2)

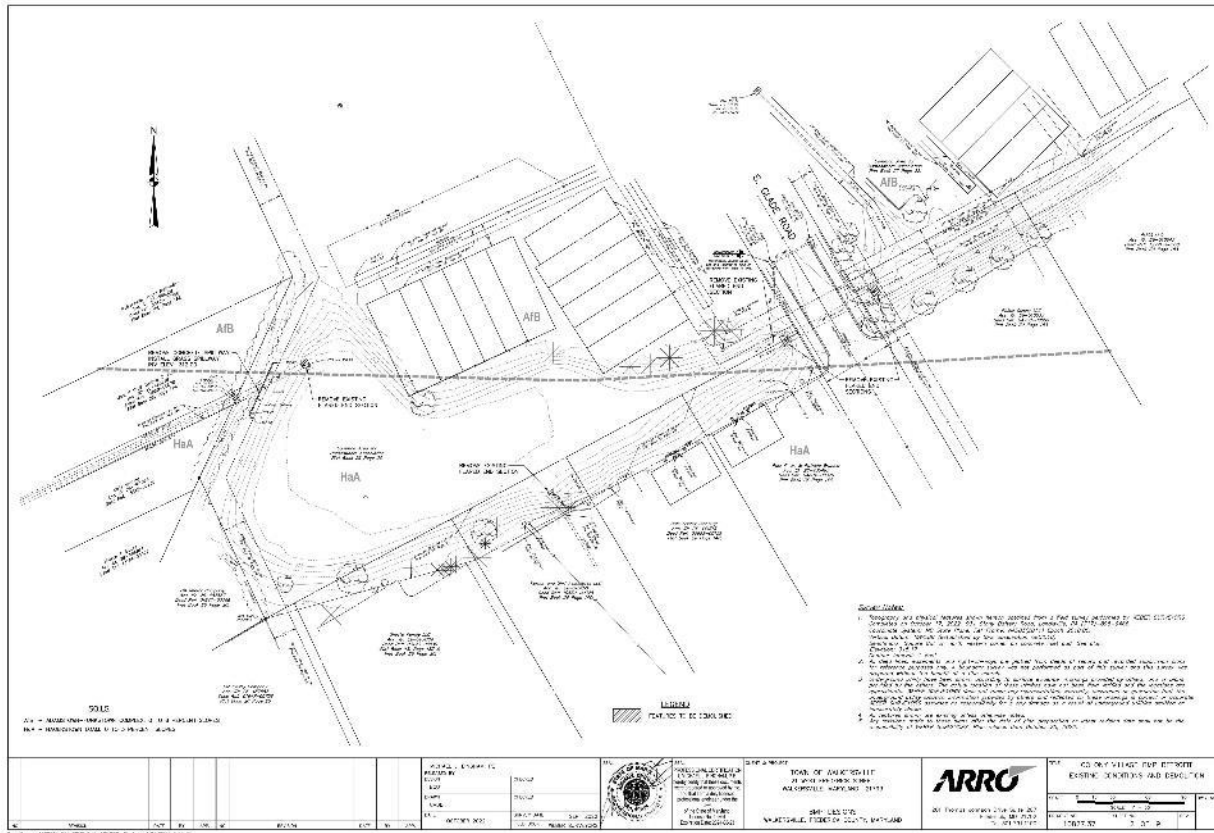
- The Town ARRO will prioritize projects based upon credits received upon implementation, project cost, and the ability to partner with identified property owners.
- The Town/ARRO will review approved designs with identified property owners and execute construction and maintenance easement agreements as appropriate.
- The Town must also prepare bid documents, submit the projects for bid, and award the project to a bidder. ARRO can complete this task if authorized by the Town in an estimated two-month timeframe.
- ARRO currently estimates total construction timeframe of 4-12 months to completely install all projects.
- If authorized, the anticipated start of construction for the new BMPs is Summer 2023, with an anticipated completion date late 2023.

# Colony Village Basin (Retrofit)

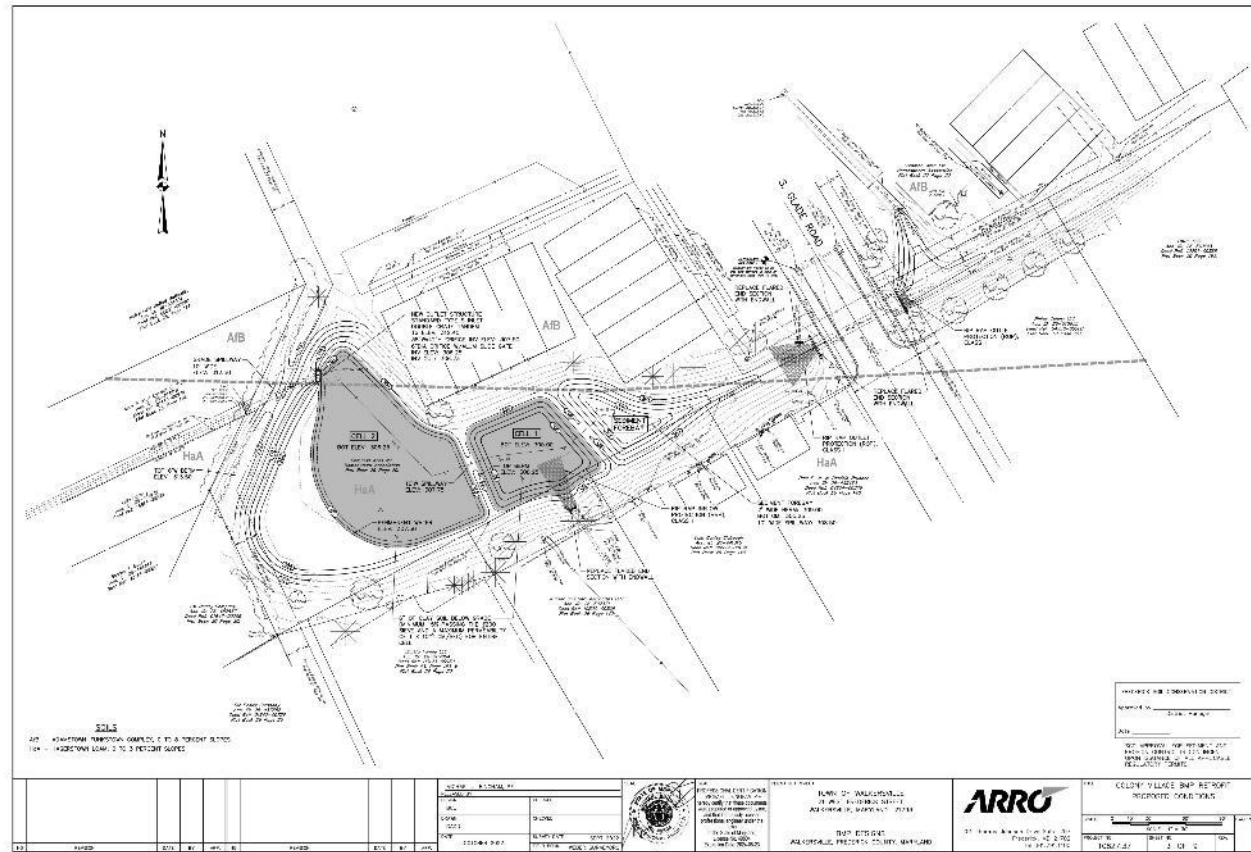
- Current facility drains through a 48" CMP outlet pipe in a westward direction tributary to Glade Creek.
- After construction of the proposed BMP, the site will continue to flow in the same pattern as the existing conditions, however at an even lesser rate due to a larger storage volume and modified outlet structure in the proposed BMP. Project will reduce the current peak flow rates by increasing the basin volume and modifying the outlet structure.
- Six major BMPs are within the drainage area. Each was analyzed and included in the model to accurately portray runoff conditions.
- Structural Improvements Include:
  - Lowering basin bottom
  - Increasing berm height
  - Modifying basin grading
  - Installing a slow-release outlet structure
  - Installation of sediment forebay
  - Increasing spillway invert
  - 2 pond cells to be installed for water quality treatment – **cell 1** – 2.75' permanent water depth, **cell 2** – 1.25' permanent water depth
- 36.9 credits, high-end cost estimate = 350-475 k

# Colony Village Basin (Retrofit)

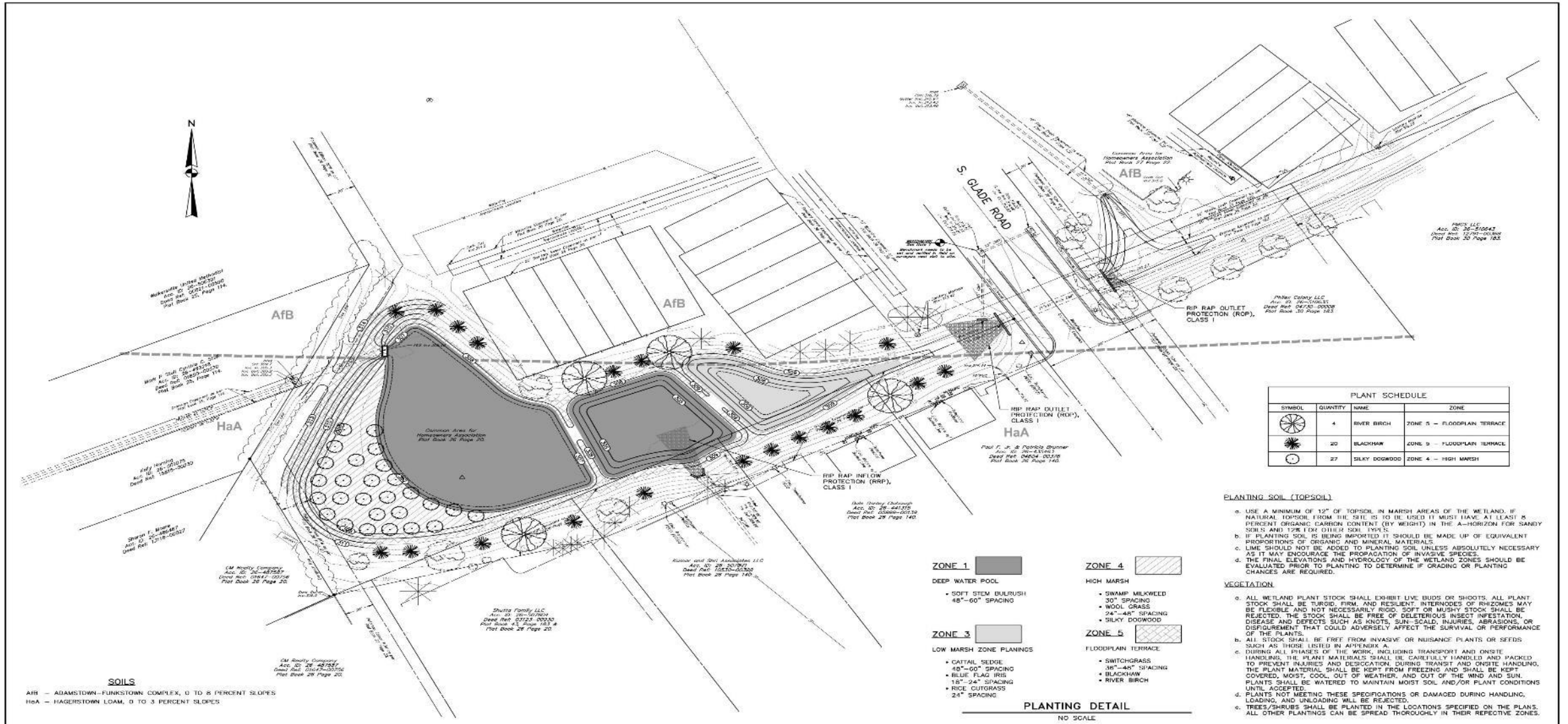
## Existing Conditions



## Proposed Conditions



# Landscape Plan



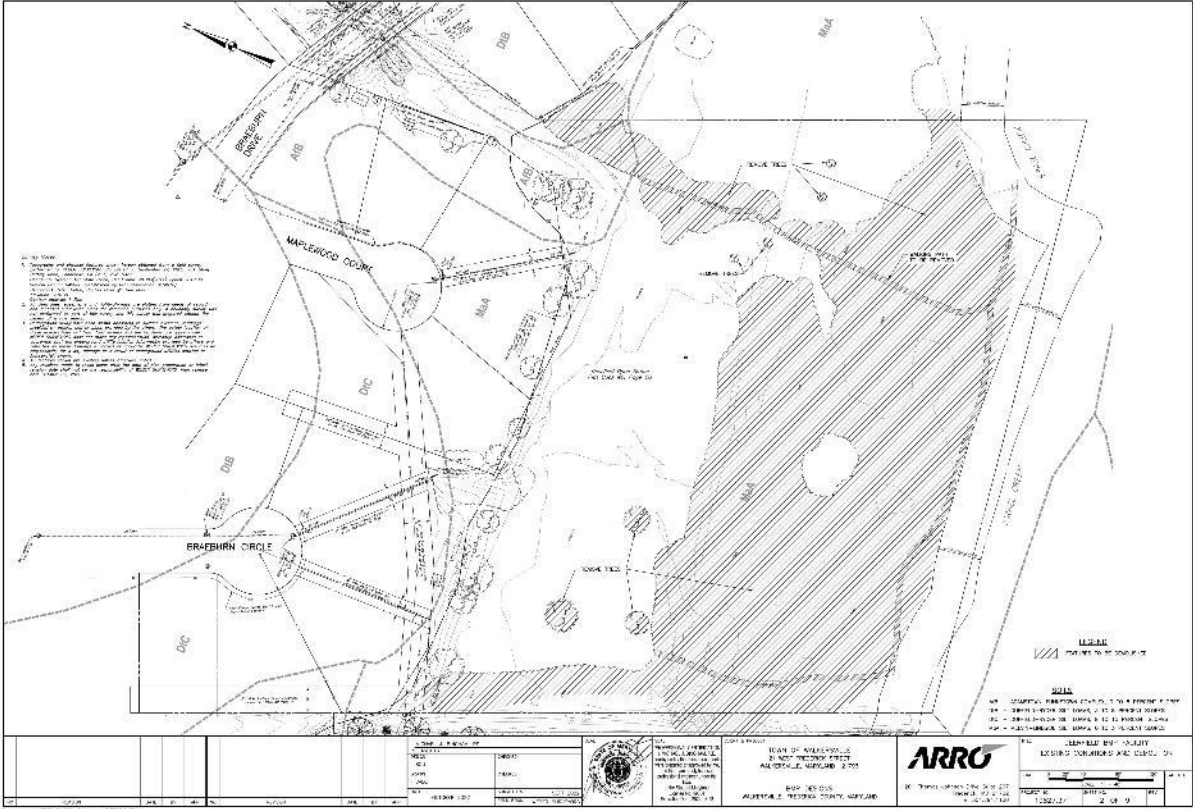
MICHAEL J. BINGHAM, PE DESIGN BY: [ ] CHECKED: [ ] TOWN: [ ] CHECKED: [ ] DATE: OCTOBER 2022 SURVEY DATE: SEPT 2022 FIELD BOOK: WILSON SURVEYS						CLIENT & PROJECT TOWN OF WALKERSVILLE 21 WEST FREDERICK STREET WALKERSVILLE, MARYLAND 21793 BMP DESIGNS WALKERSVILLE, FREDERICK COUNTY, MARYLAND						TITLE: COLONY VILLAGE BMP RETROFIT LANDSCAPE PLAN SCALE: 0' 10' 20' 30' 40' 50' 60' 70' 80' 90' 100' (1" = 30') PROJECT NO: 10B27.37 SHEET NO: 6 OF 9 REV:		
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# Deerfield Stormwater Basin (New)

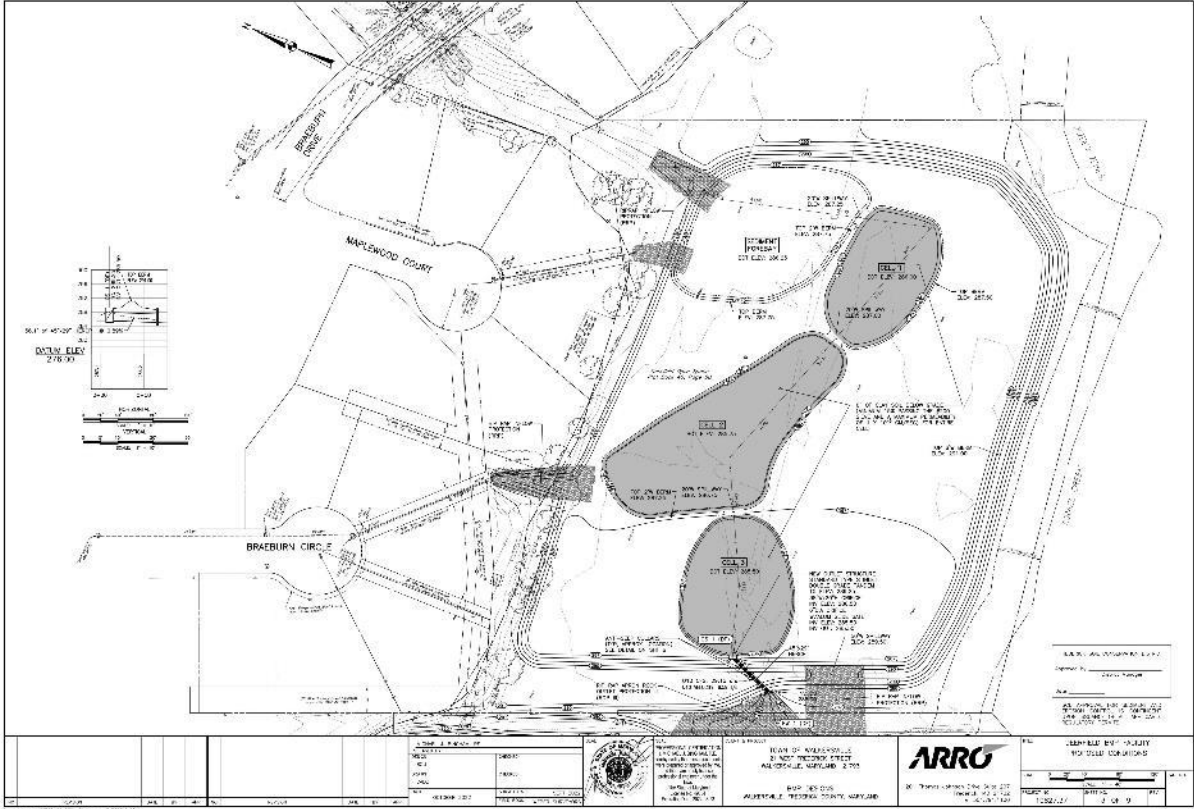
- The site is currently a field that drains in a southward direction into Israel Creek.
- After construction of the proposed BMP, the site will continue to flow in the same pattern as the existing conditions, however at an even lesser rate due to a large storage volume and installed outlet structure in the proposed BMP.
- Improvements will create lower peak runoff rates discharging from the BMP, as well as detain water for a longer period of time which will help treat the stormwater and improve downstream impacts.
- Structural Improvements Include:
  - Forming basin bottom
  - Installing a berm
  - Modifying site grading
  - Installing an outlet structure
  - Installation of sediment forebay
  - Installing an emergency spillway
  - 3 pond cells to be installed for water quality treatment – **cell 1** – 1' permanent water depth, **cell 2** – 1' permanent water depth, **cell 3** 1.1' – permanent water depth
- 44.00 credits, high-end cost estimate = *900-1,800 k*

# Deerfield Stormwater Basin (New)

Existing Conditions

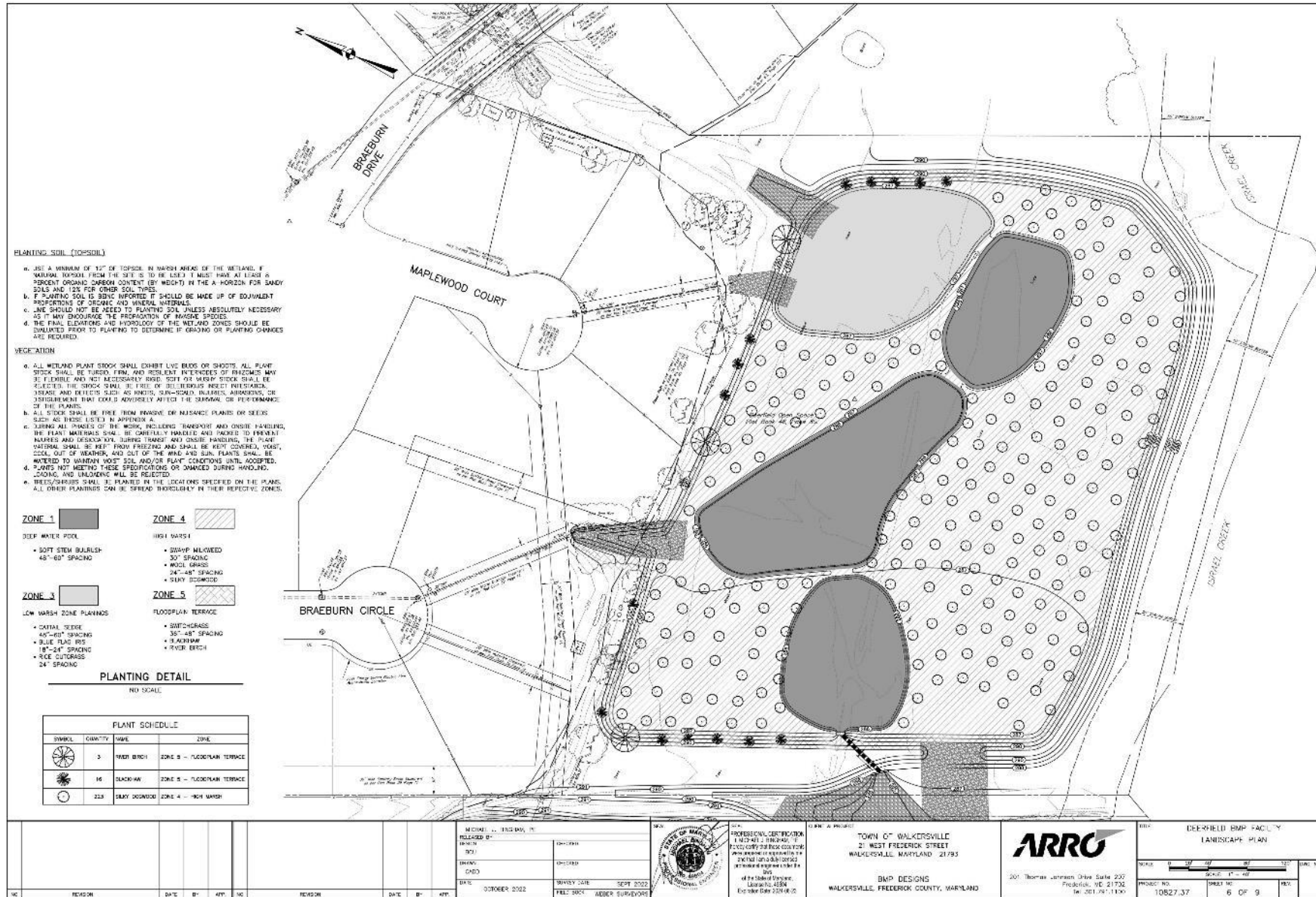


Proposed Conditions





# Landscape Plan

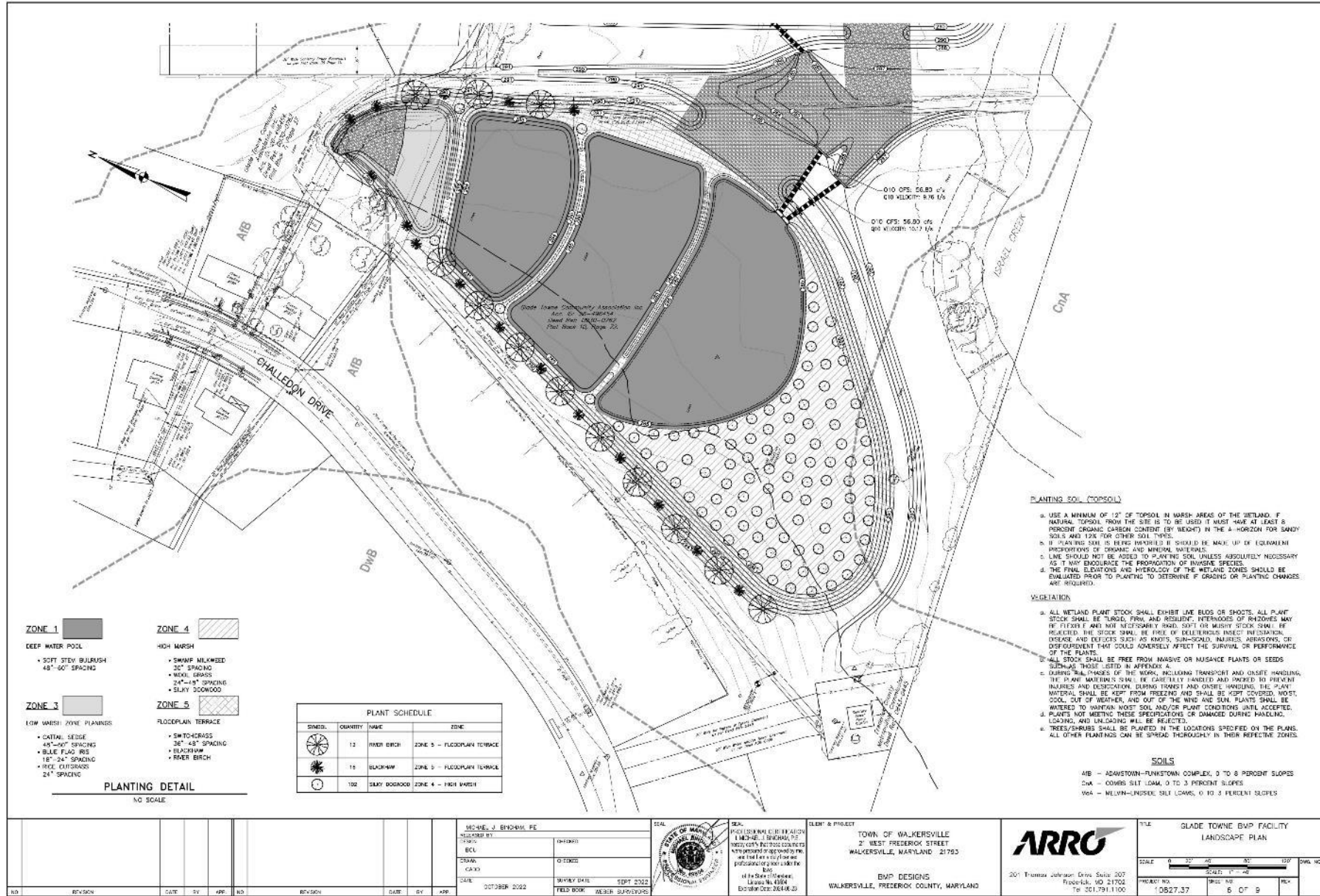


# Glade Town Basin (New)

- The site currently drains through a concrete swale in a southern direction into Israel Creek.
- After construction of the proposed BMP, the site will continue to flow in the same pattern as the existing conditions, however at an even lesser rate due to a larger storage volume and addition of 2 outlet structures in the proposed BMP.
- Improvements will create lower peak runoff rates discharging from the BMP, as well as detain water for a longer period of time which will help treat the stormwater and improve downstream impacts.
- Structural Improvements Include:
  - Forming basin bottom
  - Installing a berm
  - Modifying site grading
  - Installing outlet structures
  - Installation of sediment forebays
  - Installing an emergency spillway
  - 3 pond cells to be installed for water quality treatment – **cell 1** – 2.25' permanent water depth, **cell 2** – 1' permanent water depth, **cell 3** 1.25' – permanent water depth
- 72.14 credits, high-end cost estimate = *900-1,500 k*



# Landscape Plan

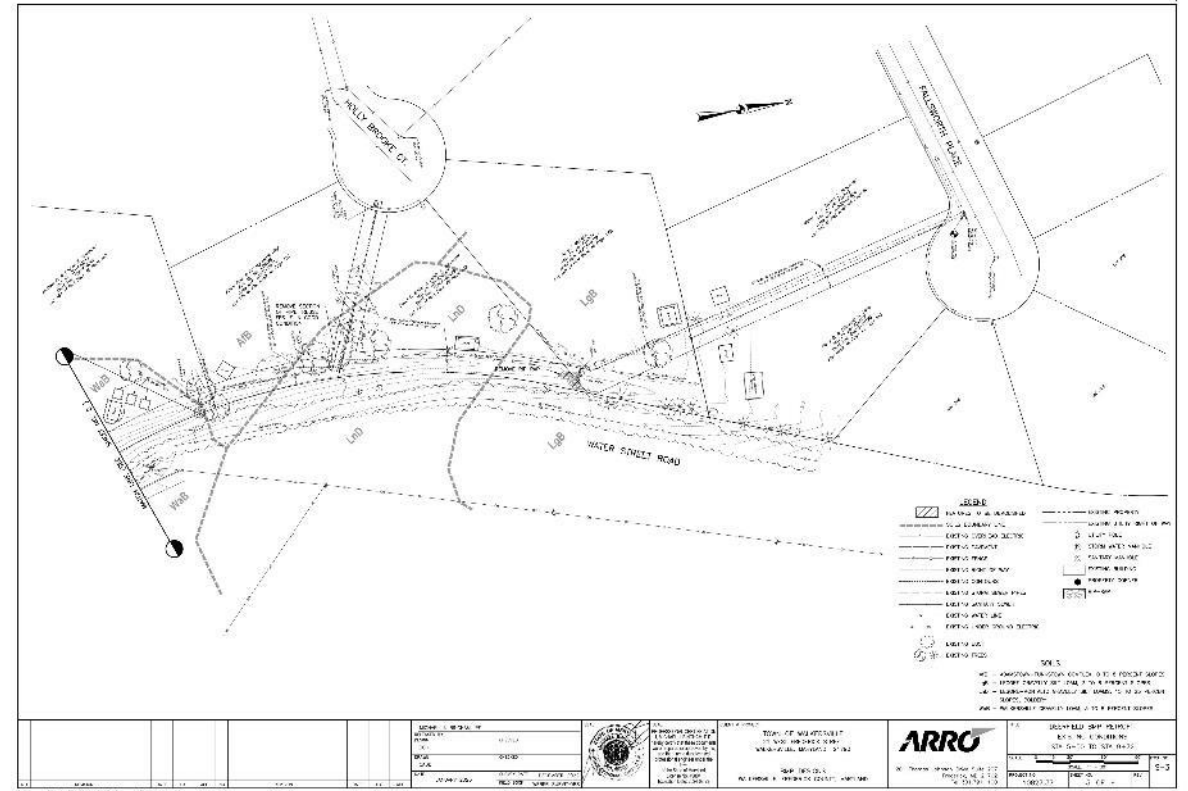
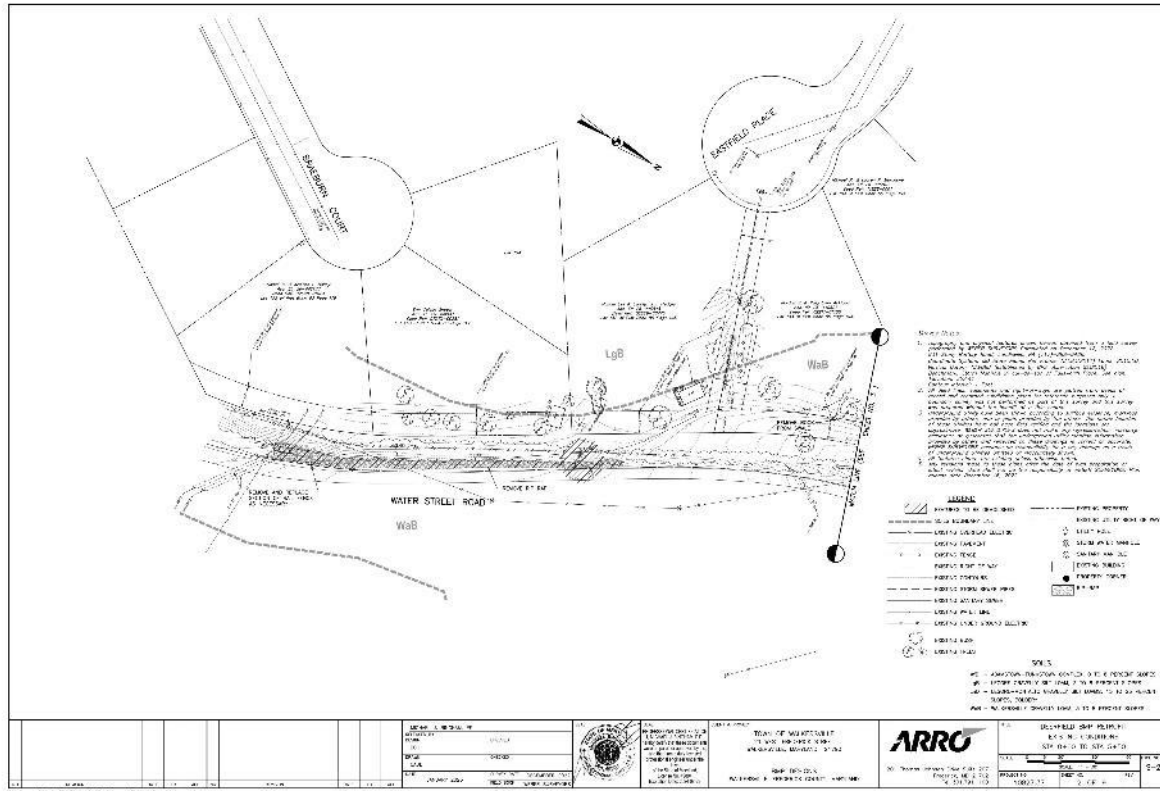


# Deerfield Swale (Retrofit)

- The site is currently a swale that drains through a 2 X 33" RCP culvert in an eastward direction into Israel Creek.
- After construction of the proposed BMP, the site will continue to flow in the same pattern as the existing conditions.
- Retrofitted facility will improve the current site conditions, prevent erosion, and decrease nutrient and sediment loads into local surface waters.
- Structural Improvements Include:
  - Regrading swale
  - Installation of sediment forebay
  - Installing new rip-rap
  - Installing permeable soils
  - Installing a a 4" PVC underdrain
- Currently a number of fences installed by private residents encroach the existing 10' swale buffer.
- 6.96 credits, high-end cost estimate = 250-350 k

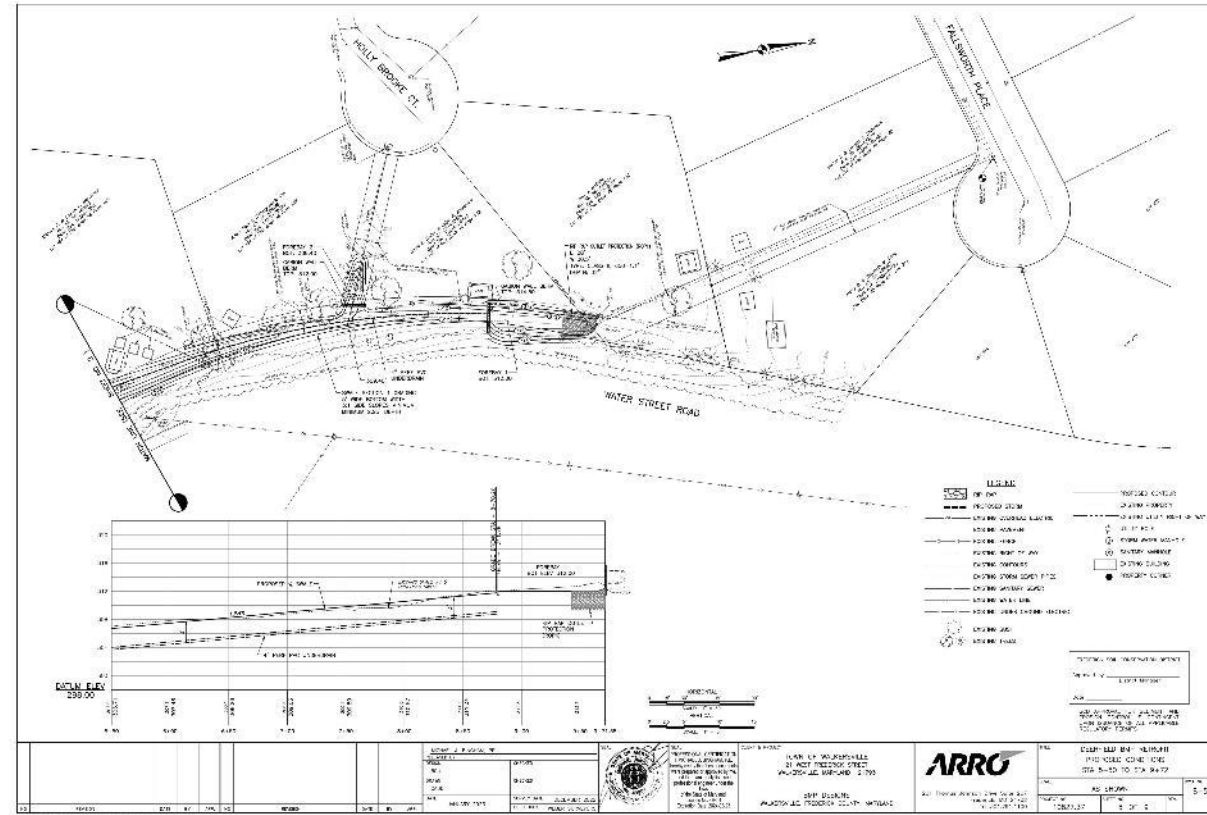
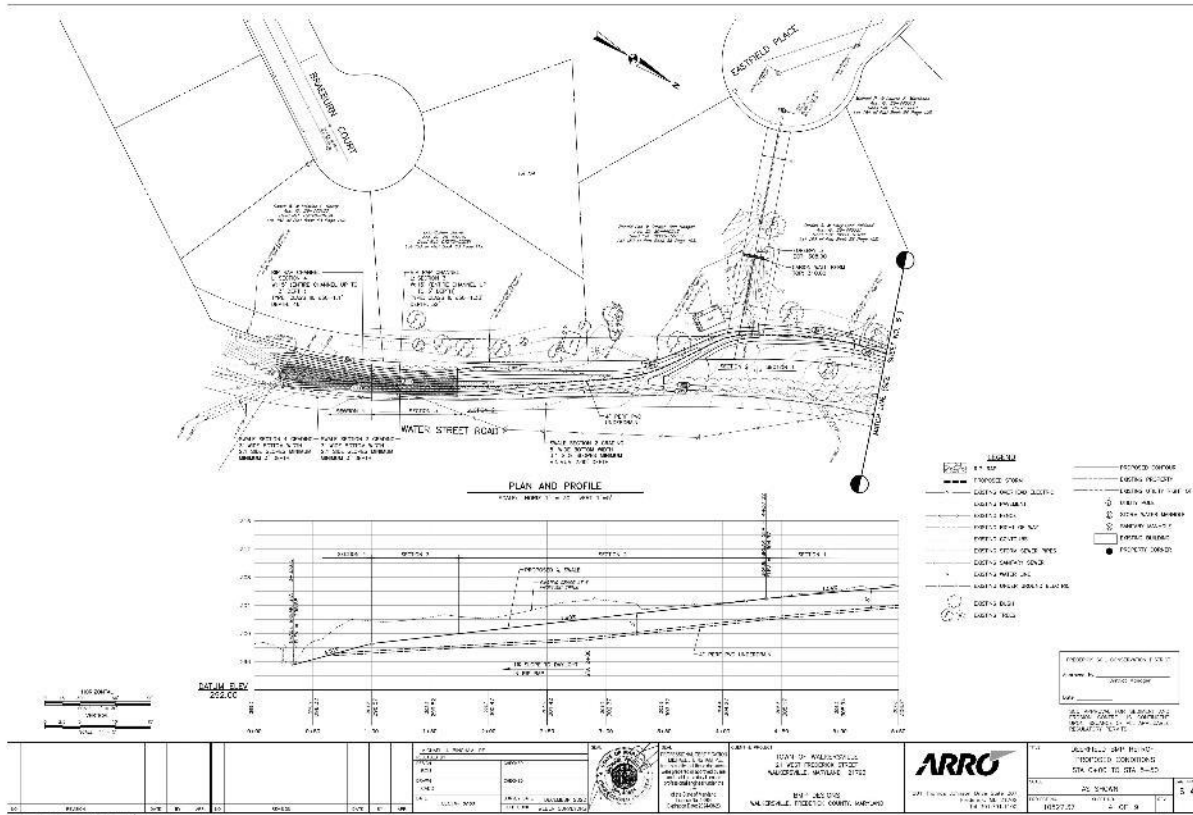
# Deerfield Swale (Retrofit)

## Existing Conditions



# Deerfield Swale (Retrofit)

## Proposed Conditions



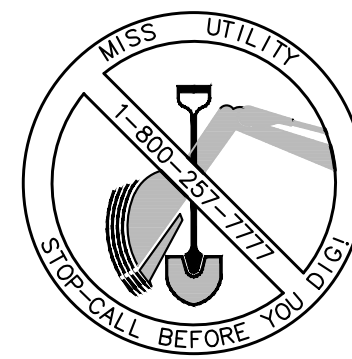
# TOWN OF WALKERSVILLE FREDERICK COUNTY, MARYLAND

## STORMWATER BMP IMPROVEMENTS COLONY VILLAGE BMP RETROFIT

### DRAWING INDEX

### UNDERGROUND UTILITY LINE PROTECTION ACT

THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES OR STRUCTURES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES AND STRUCTURES BEFORE COMMENCING THE WORK. CALL MISS UTILITY AT 1-800-257-7777 AT LEAST 48 HOURS IN ADVANCE OF WORK.




### PROJECT SUMMARY

THE TOWN OF WALKERSVILLE IS PROPOSING TO REDESIGN AND RETROFIT AN EXISTING DRY BASIN INTO A MULTIPLE POND SYSTEM. THE PROJECT WILL DECREASE NUTRIENT AND SEDIMENT LOADS AND THE TOWN OF WALKERSVILLE WILL RECEIVE CREDITS TOWARDS THEIR CHESAPEAKE BAY POLLUTION REDUCTION PLAN. THE DESIGN WILL INVOLVE LOWERING THE BASIN BOTTOM, RAISING THE BERM, MODIFYING GRADING, AND ADJUSTING THE EMERGENCY SPILLWAY. THE IMPROVEMENTS WILL DECREASE EXISTING FLOW RATES AND DETAIN RUNOFF FOR A LONGER PERIOD OF TIME BEFORE EXITING THE SITE IN THE SAME PATTERN AS EXISTING CONDITIONS.


### DISTURBED AREA QUANTITY

THE TOTAL AREA TO BE DISTURBED SHOWN ON THESE PLANS HAS BEEN DETERMINED TO BE APPROXIMATELY 1.294 ACRES (56,378 S.F.) AND THE TOTAL AMOUNT OF EXCAVATION AND FILL AS SHOWN ON THESE PLANS HAS BEEN COMPUTED TO BE APPROXIMATELY 1,787 CUBIC YARDS OF EXCAVATION AND APPROXIMATELY 71 CUBIC YARDS OF FILL. (APPROX. ONLY - NOT FOR BID PURPOSES)  
CUT AND FILL ARE TRENCH EXCAVATION AND BACKFILL ONLY.

  
MICHAEL J. BINGHAM  
MD. PE NO. 49804  
1/20/23  
DATE


### ENGINEER/ARCHITECT DESIGN CERTIFICATION

I HEREBY CERTIFY THAT THE PLANS HAVE BEEN DESIGNED IN ACCORDANCE WITH LOCAL ORDINANCES, COMAR 26.17.01, AND 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.

  
MICHAEL J. BINGHAM  
MD. PE NO. 49804  
1/20/23  
DATE

### DESIGN CERTIFICATION

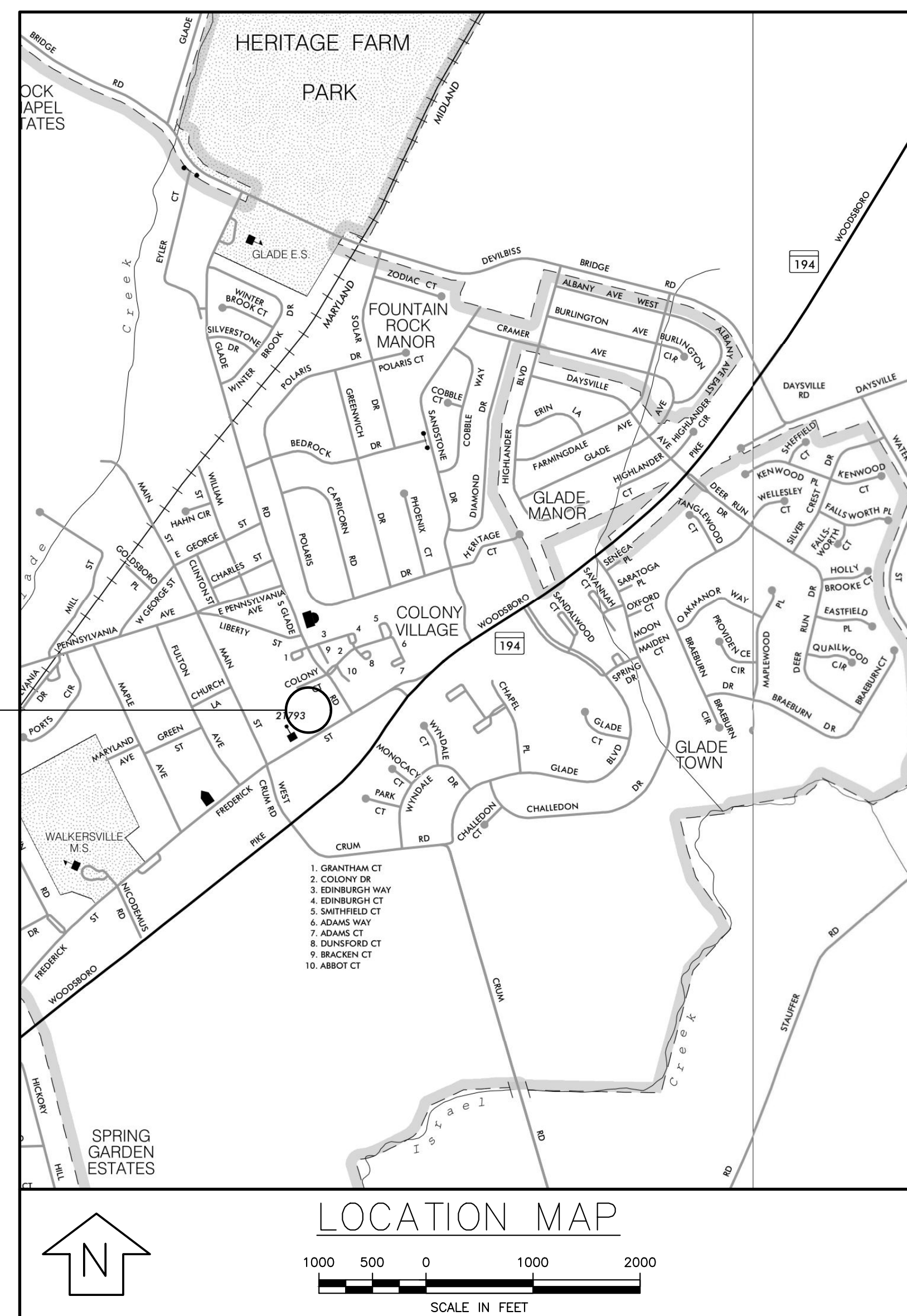
I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE "STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL IN DEVELOPING AREA" AND THE REQUIREMENTS OF THE FREDERICK SOIL CONSERVATION DISTRICT.

  
MICHAEL J. BINGHAM  
MD. PE NO. 49804  
1/20/23  
DATE

### OWNERS/DEVELOPERS CERTIFICATION

I CERTIFY THAT THIS PLAN OF SEDIMENT CONTROL WILL BE IMPLEMENTED TO THE FULLEST EXTENT, AND ALL STRUCTURES WILL BE INSTALLED TO THE DESIGN AND SPECIFICATIONS AS SPELLED OUT IN THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATION OF ATTENDANCE AT A DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE EVALUATION BY THE CATOCIN/FREDERICK SOIL CONSERVATION DISTRICT PERSONNEL AND COOPERATING AGENCIES.

### PROJECT LOCATION



### GENERAL NOTES

- DURING THE LAYOUT OF SEDIMENT CONTROL PRACTICES REQUIRED ON THIS PLAN, MINOR FIELD ADJUSTMENTS CAN AND WILL BE MADE TO INSURE THE ARREST AND CONTROL OF ANY SEDIMENT BEFORE IT LEAVES THE CONSTRUCTION SITE. CHANGES IN SEDIMENT CONTROL PRACTICES REQUIRE PRIOR APPROVAL OF THE SEDIMENT CONTROL INSPECTOR.
- THE CONTRACTOR WILL BE RESPONSIBLE FOR INSTALLING SEDIMENT RETENTION STRUCTURES, AND SURFACE WATER DIVERSIONS AS PART OF THE INITIAL PHASE OF CONSTRUCTION.
- PREVENT THE TRACKING OF MUD FROM THE SITE ONTO PUBLIC ROADS BY PLACING CRUSHED STONE OVER EGRESS AREA OR BY EFFECTIVE MEANS. ALSO RESPONSIBLE FOR THE IMMEDIATE REPAIR OF ANY DAMAGE TO PUBLIC OR PRIVATE ROADS CAUSED BY THIS CONSTRUCTION.
- CONTINUAL INSPECTION AND MAINTENANCE OF SEDIMENT CONTROL FACILITIES SHALL BE PERFORMED UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE SOIL CONSERVATION DISTRICT INSPECTOR.
- NO WORK SHALL PROCEED IN THE STREAM (CLASS IV) CHANNEL DURING STREAM CLOSURE DATES FROM MARCH 1 THRU MAY 31.
- DEPENDING ON SITE CONDITIONS, PHASING OR CONSTRUCTION SEQUENCING, AND STABILIZATION METHODS, ADDITIONAL SEDIMENT CONTROLS (OTHER THAN AS SHOWN HEREON) MAY BE REQUIRED BY THE INSPECTOR.
- NO FEMA FLOODPLAINS OR WETLANDS WERE LOCATED ON SITE.

### FREDERICK SOIL CONSERVATION DISTRICT

Approved by \_\_\_\_\_  
District Manager

Date \_\_\_\_\_

SCD APPROVAL FOR SEDIMENT AND EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS.

File #: xx

A/P #: xx

Due Date:

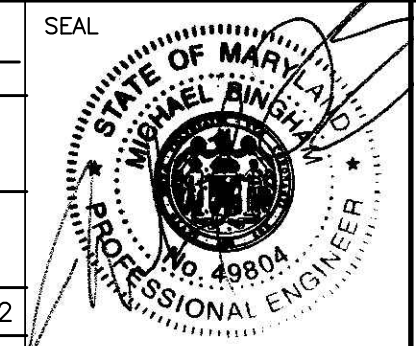

### FREDERICK COUNTY, MARYLAND DEVELOPMENT REVIEW ENGINEERING FOR SWM REVIEW ONLY

APPROVED: \_\_\_\_\_  
DEVELOPMENT REVIEW CHIEF DATE

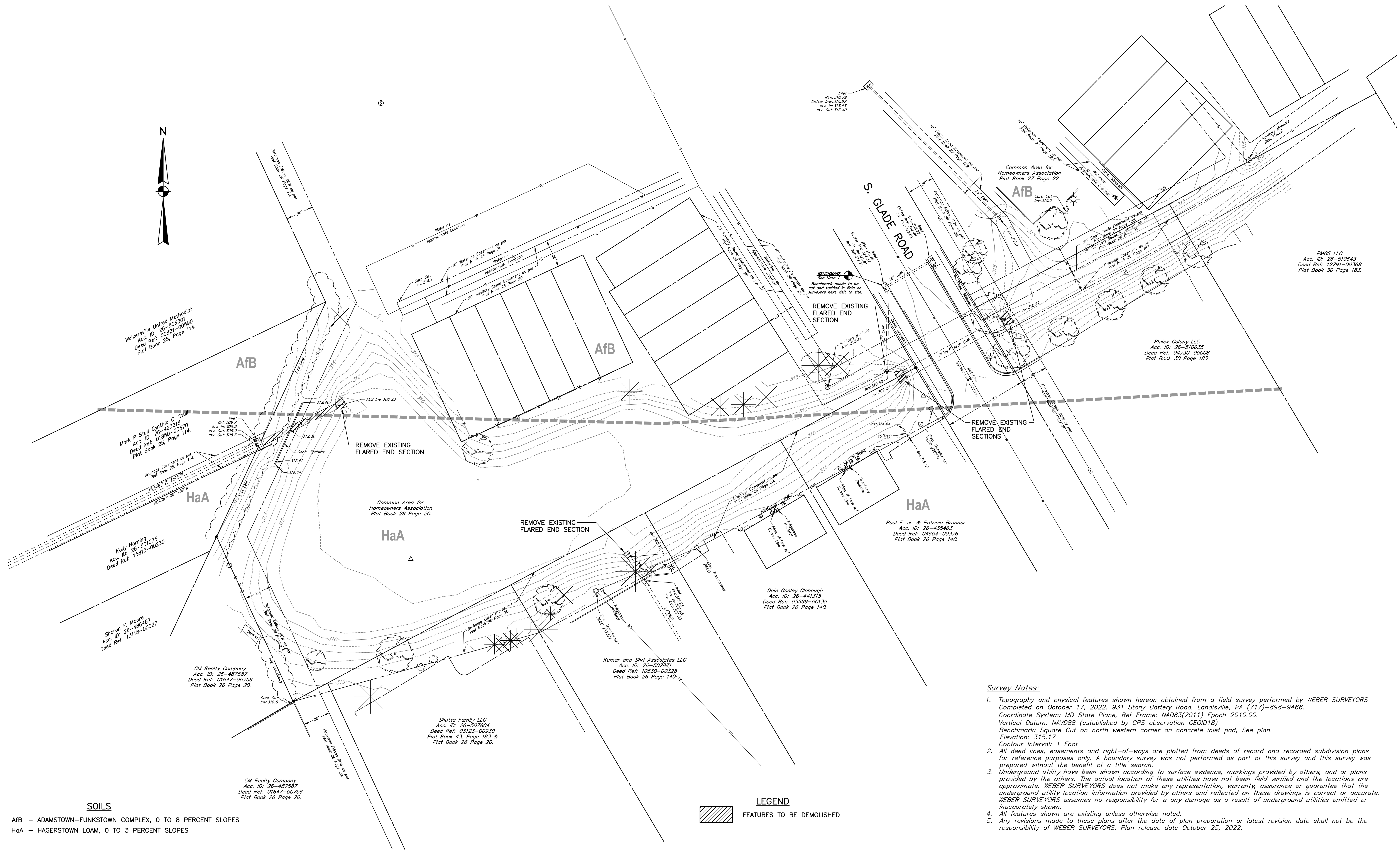
APPROVED: \_\_\_\_\_  
STORMWATER MANAGEMENT DATE

Reviewed in accordance with local County requirements. Frederick County assumes no liability for design and/or construction. Approval is valid for two (2) years after the last date shown above. The project must be under construction before the approval expiration to be considered active. Otherwise, resubmittal of plans, including applicable fees, must be made to Development Review for reapproval. Fees for resubmittal cannot be waived.

REV. #	DATE	REVISION DESCRIPTION * FILL IN THESE BLOCKS FOR REVISIONS ONLY	CONSULTANT: DATE AND INITIAL	DEV. REVIEW: DATE AND INITIAL

MICHAEL J. BINGHAM, PE DESIGN BY: BCU CHECKED DRAWN: CADD CHECKED DATE: OCTOBER 2022 SURVEY DATE: SEPT 2022 FIELD BOOK: WEBER SURVEYORS				SEAL 		SEAL PROFESSIONAL CERTIFICATION I, MICHAEL J. BINGHAM, P.E. 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. 49804, Expiration Date: 2024-08-23		CLIENT & PROJECT TOWN OF WALKERSVILLE 21 WEST FREDERICK STREET WALKERSVILLE, MARYLAND 21793 BMP DESIGNS WALKERSVILLE, FREDERICK COUNTY, MARYLAND		 201 Thomas Johnson Drive Suite 207 Frederick, MD 21702 Tel 301.791.1100		TITLE: COLONY VILLAGE BMP RETROFIT TITLE SHEET SCALE: AS SHOWN PROJECT NO. 10827.37 SHEET NO. 1 OF 10		DWG. NO.
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Walkersville United Methodist  
Acc. ID: 26-506301  
Deed Ref: 00921-00990  
Plat Book 25, Page 114.

Mark P. Stull, Cynthia C. Stull  
Acc. ID: 26-493218  
Deed Ref: 01850-00510  
Plat Book 25, Page 114.

Kelly Horning  
Acc. ID: 26-501075  
Deed Ref: 15815-00230

Sharon F. Moore  
Acc. ID: 26-486467  
Deed Ref: 13118-00027

CM Realty Company  
Acc. ID: 26-487587  
Deed Ref: 01647-00726  
Plat Book 26 Page 20.

CM Realty Company  
Acc. ID: 26-487587  
Deed Ref: 01647-00726  
Plat Book 26 Page 20.

Shutta Family LLC  
Acc. ID: 26-507804  
Deed Ref: 03123-00930  
Plat Book 43, Page 183 &  
Plat Book 26 Page 20.

Kumar and Shri Associates LLC  
Acc. ID: 26-507871  
Deed Ref: 10530-00328  
Plat Book 26 Page 140.

Dale Ganley Clabough  
Acc. ID: 26-441315  
Deed Ref: 05959-00139  
Plat Book 26 Page 140.

Paul F. Jr. & Patricia Brunner  
Acc. ID: 26-43463  
Deed Ref: 04604-00376  
Plat Book 26 Page 140.

Philax Colony LLC  
Acc. ID: 26-510635  
Deed Ref: 04730-00008  
Plat Book 30 Page 183.

PMGS LLC  
Acc. ID: 26-510643  
Deed Ref: 12791-00368  
Plat Book 30 Page 183.

**SOILS**

Afb - ADAMSTOWN-FUNKSTOWN COMPLEX, 0 TO 8 PERCENT SLOPES  
HaA - HAGERSTOWN LOAM, 0 TO 3 PERCENT SLOPES

**LEGEND**

FEATURES TO BE DEMOLISHED

**Survey Notes:**

1. Topography and physical features shown herein obtained from a field survey performed by WEBER SURVEYORS Completed on October 17, 2022. 931 Stony Battery Road, Landisville, PA (717)-898-9466. Coordinate System: MD State Plane, Ref Frame: NAD83(2011) Epoch 2010.00. Vertical Datum: NAVD88 (established by GPS observation GEQID18) Benchmark: Square Cut on north western corner on concrete inlet pad, See plan. Elevation: 315.17 Contour Interval: 1 Foot
2. All deed lines, easements and right-of-ways are plotted from deeds of record and recorded subdivision plans for reference purposes only. A boundary survey was not performed as part of this survey and this survey was prepared without the benefit of a title search.
3. Underground utility have been shown according to surface evidence, markings provided by others, and or plans provided by others. The actual location of these utilities have not been field verified and the locations are approximate. WEBER SURVEYORS does not make any representation, warranty, assurance or guarantee that the underground utility location information provided by others and reflected on these drawings is correct or accurate. WEBER SURVEYORS assumes no responsibility for any damage as a result of underground utilities omitted or inaccurately shown.
4. All features shown are existing unless otherwise noted.
5. Any revisions made to these plans after the date of plan preparation or latest revision date shall not be the responsibility of WEBER SURVEYORS. Plan release date October 25, 2022.

NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.

MICHAEL J. BINGHAM, PE	
RELEASED BY	CHECKED
DESIGN	
BCU	CHECKED
DRAWN	
CADD	
DATE	SURVEY DATE
OCTOBER 2022	SEPT 2022
	FIELD BOOK
	WEBER SURVEYORS

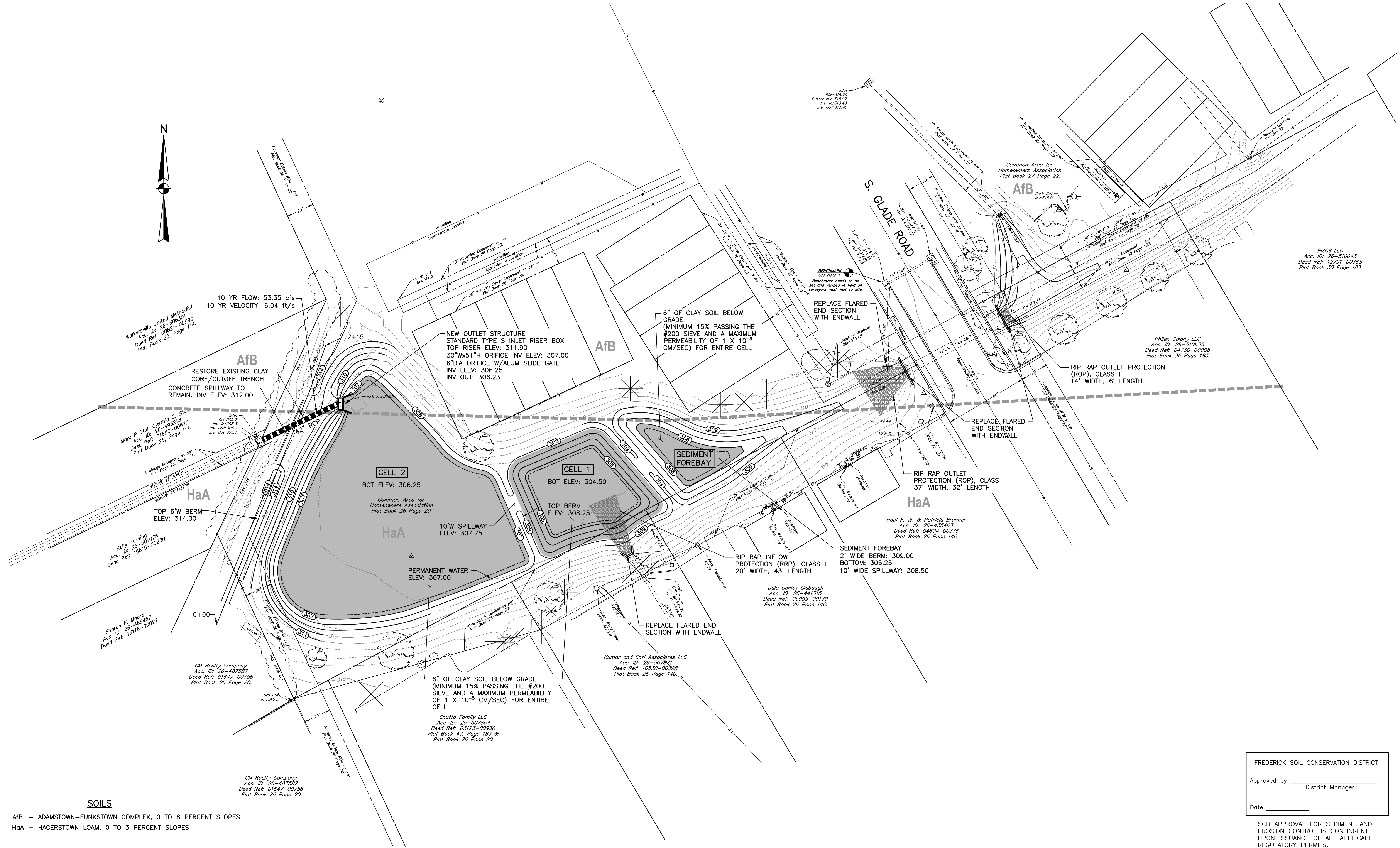


SEAL  
PROFESSIONAL CERTIFICATION  
I, MICHAEL J. BINGHAM, P.E.  
hereby certify that these documents  
were prepared or approved by me,  
and that I am a duly licensed  
professional engineer under the  
laws  
of the State of Maryland,  
License No. 49904  
Expiration Date: 2024-08-23

CLIENT & PROJECT  
TOWN OF WALKERSVILLE  
21 WEST FREDERICK STREET  
WALKERSVILLE, MARYLAND 21793  
BMP DESIGNS  
WALKERSVILLE, FREDERICK COUNTY, MARYLAND



TITLE COLONY VILLAGE BMP RETROFIT EXISTING CONDITIONS AND DEMOLITION		
SCALE 0 15' 30' 60' 90'	SCALE: 1" = 30'	DWG. NO.
PROJECT NO. 10827.37	SHEET NO. 2 OF 10	REV.



10 YR FLOW: 53.35 cfs  
10 YR VELOCITY: 6.04 ft/s

RESTORE EXISTING CLAY CORE/CUTOFF TRENCH  
CONCRETE SPILLWAY TO REMAIN. INV ELEV: 312.00

NEW OUTLET STRUCTURE  
STANDARD TYPE S INLET RISER BOX  
TOP RISER ELEV: 311.90  
30"Wx51"H ORIFICE INV ELEV: 307.00  
6"DIA ORIFICE W/ALUM SLIDE GATE  
INV ELEV: 306.25  
INV OUT: 306.23

6" OF CLAY SOIL BELOW GRADE  
(MINIMUM 15% PASSING THE #200 SIEVE AND A MAXIMUM PERMEABILITY OF  $1 \times 10^{-3}$  CM/SEC) FOR ENTIRE CELL

REPLACE FLARED END SECTION WITH ENDWALL

RIP RAP OUTLET PROTECTION (ROP), CLASS I  
14' WIDTH, 6' LENGTH

REPLACE FLARED END SECTION WITH ENDWALL

RIP RAP OUTLET PROTECTION (ROP), CLASS I  
37' WIDTH, 32' LENGTH

RIP RAP INFLOW PROTECTION (RRP), CLASS I  
20' WIDTH, 43' LENGTH

SEDIMENT FOREBAY  
2' WIDE BERM: 309.00  
BOTTOM: 305.25  
10' WIDE SPILLWAY: 308.50

REPLACE FLARED END SECTION WITH ENDWALL

6" OF CLAY SOIL BELOW GRADE  
(MINIMUM 15% PASSING THE #200 SIEVE AND A MAXIMUM PERMEABILITY OF  $1 \times 10^{-3}$  CM/SEC) FOR ENTIRE CELL

Shutta Family LLC  
Acc. ID: 26-507804  
Deed Ref: 03123-00230  
Plat Book 43, Page 123 & Plat Book 26 Page 20.

**SOILS**

AfB - ADAMSTOWN-FUNKSTOWN COMPLEX, 0 TO 8 PERCENT SLOPES  
HaA - HAGERSTOWN LOAM, 0 TO 3 PERCENT SLOPES

PMGS LLC  
Acc. ID: 26-510643  
Deed Ref: 12791-00368  
Plat Book 30 Page 183.

Philes Colony LLC  
Acc. ID: 26-510635  
Deed Ref: 04730-00008  
Plat Book 30 Page 183.

Paul F. Jr. & Patricia Brunner  
Acc. ID: 26-435463  
Deed Ref: 04604-00376  
Plat Book 26 Page 140.

Date Ganley Clabough  
Acc. ID: 26-441315  
Deed Ref: 05999-00139  
Plat Book 26 Page 140.

Kumar and Shri Associates LLC  
Acc. ID: 26-507821  
Deed Ref: 10530-00328  
Plat Book 26 Page 140.

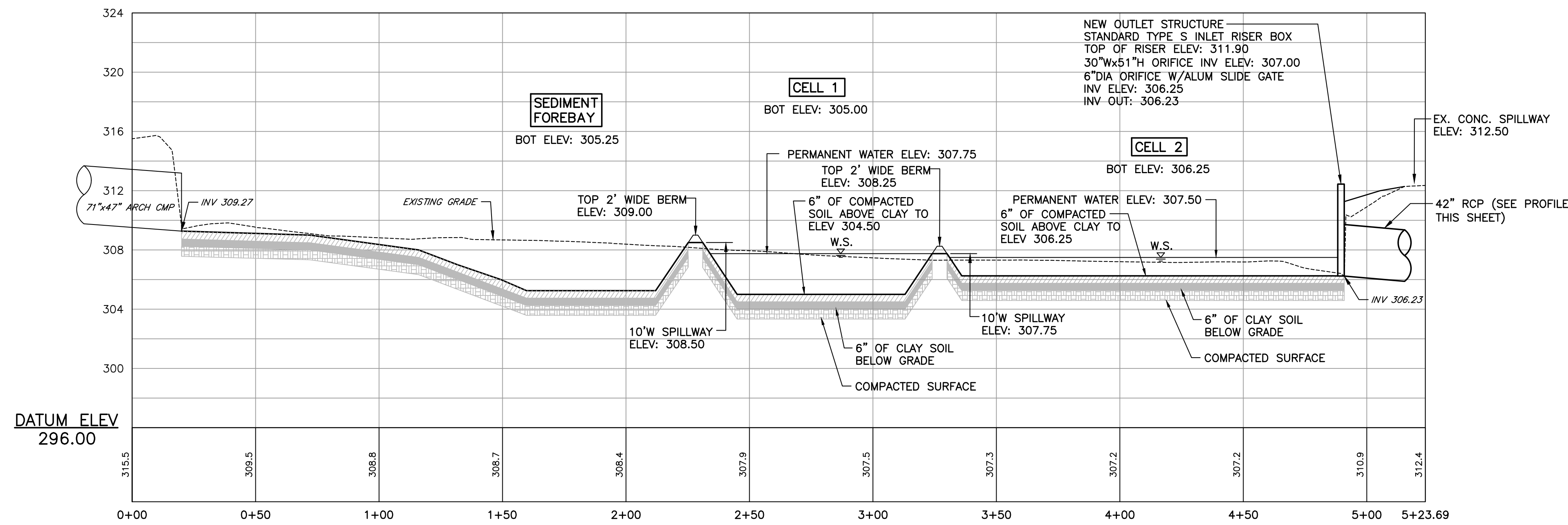
CM Realty Company  
Acc. ID: 26-487587  
Deed Ref: 01647-00756  
Plat Book 26 Page 20.

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Deed Ref: 01647-00756  
Plat Book 26 Page 20.

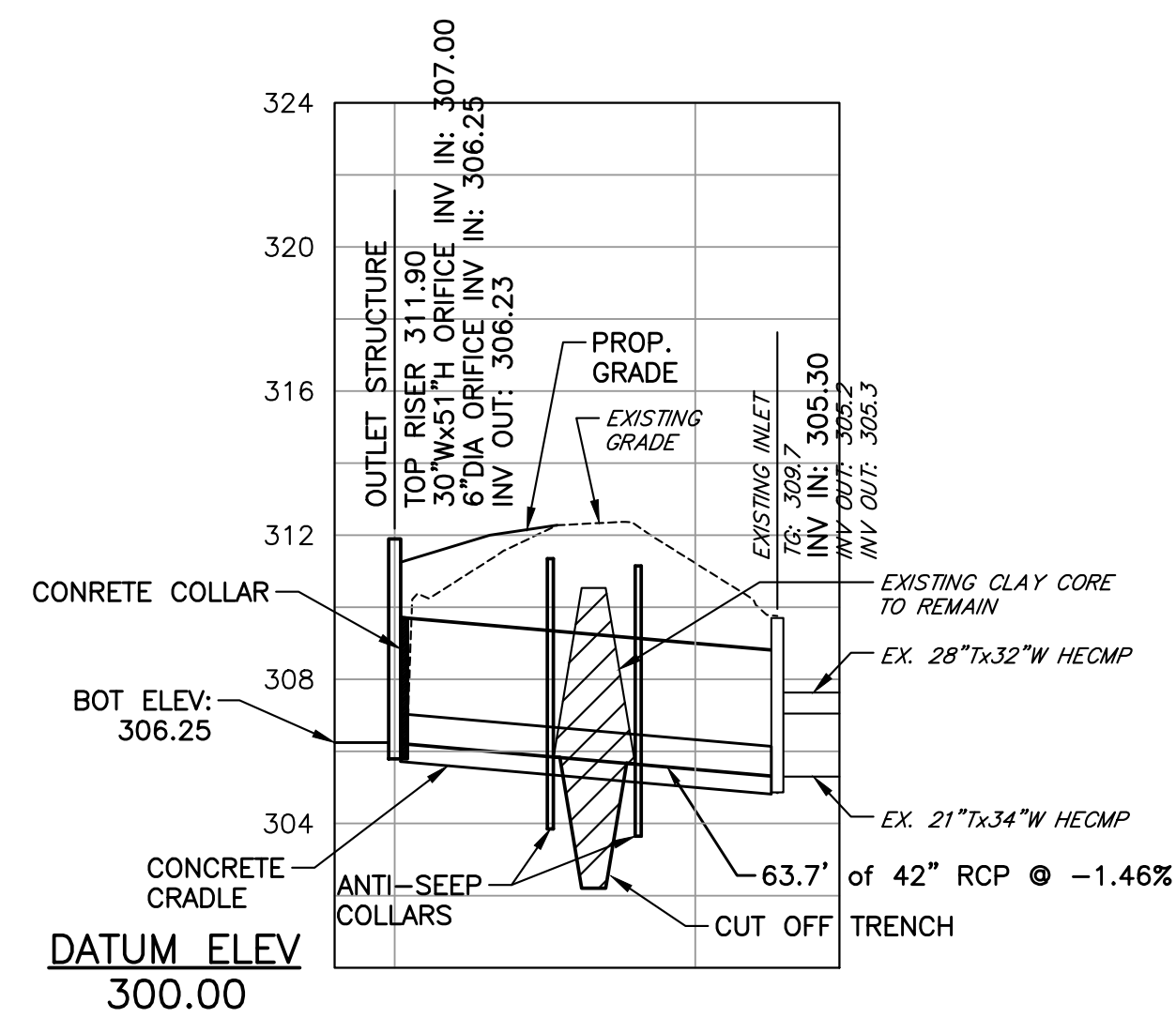
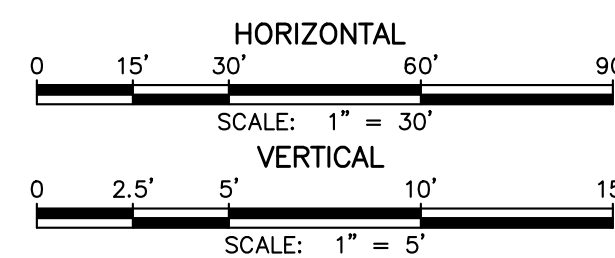
FREDERICK SOIL CONSERVATION DISTRICT  
Approved by \_\_\_\_\_ District Manager  
Date \_\_\_\_\_

SCD APPROVAL FOR SEDIMENT AND EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS.

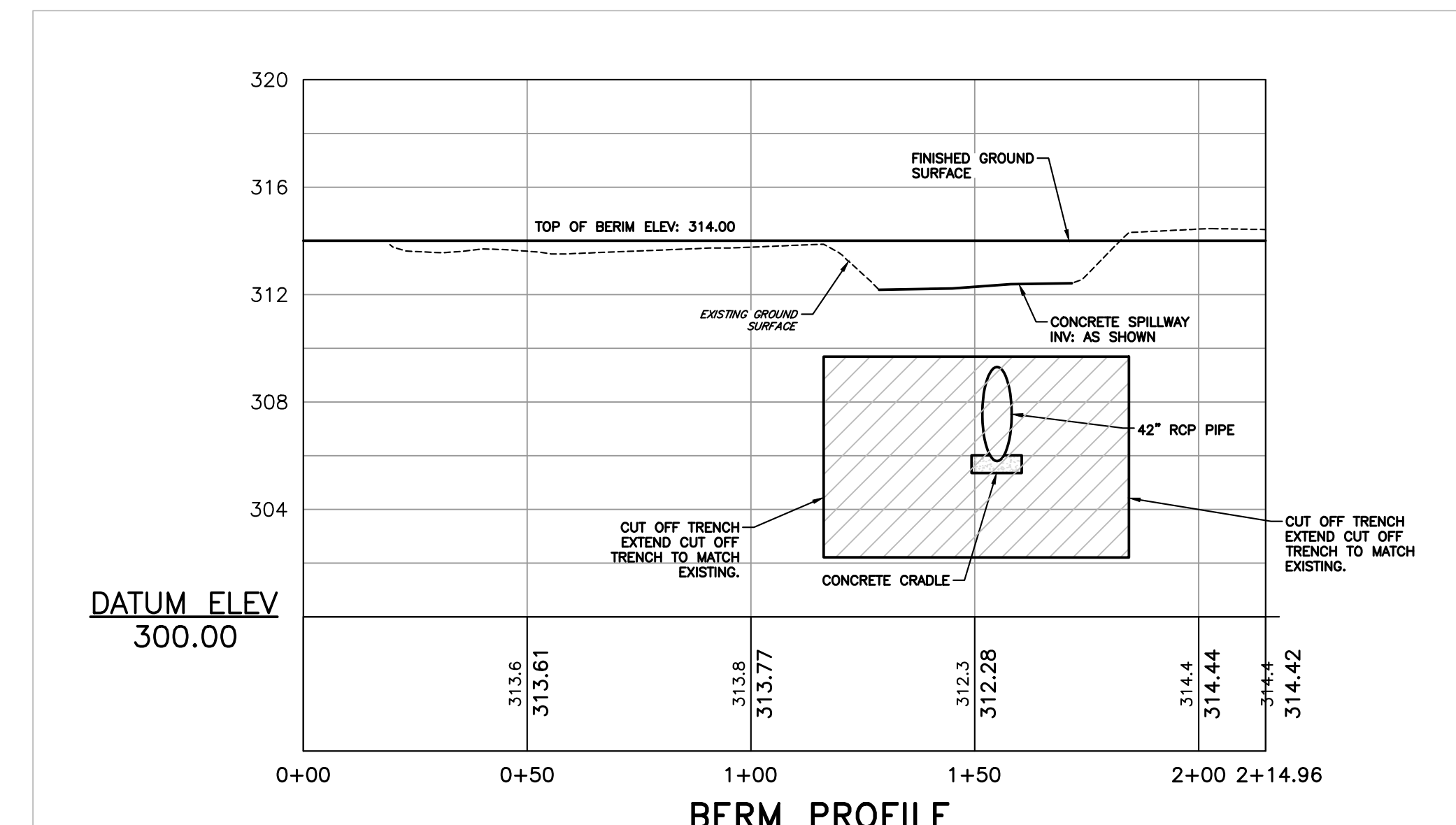
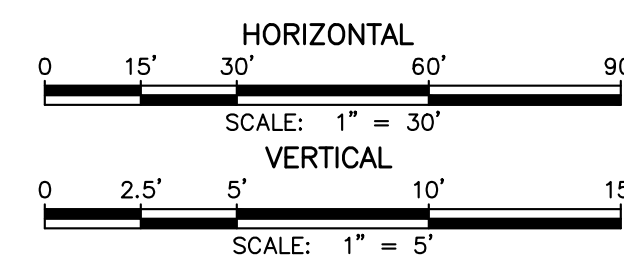
										MICHAEL J. BINGHAM, PE RELEASED BY		SEAL STATE OF MARYLAND PROFESSIONAL ENGINEER No. 49804		SEAL PROFESSIONAL CERTIFICATION I, MICHAEL J. BINGHAM, P.E. hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 49804, Expiration Date: 2024-08-23		CLIENT & PROJECT TOWN OF WALKERSVILLE 21 WEST FREDERICK STREET WALKERSVILLE, MARYLAND 21793  BMP DESIGNS WALKERSVILLE, FREDERICK COUNTY, MARYLAND		ARRCO 201 Thomas Johnson Drive Suite 207 Frederick, MD 21702 Tel 301.791.1100		TITLE COLONY VILLAGE BMP RETROFIT PROPOSED CONDITIONS	
										DESIGN CHECKED								SCALE 0 15' 30' 60' 90'		DWG. NO.	
										DRAWN CHECKED								SCALE: 1" = 30'			
										DATE OCTOBER 2022		SURVEY DATE SEPT 2022						PROJECT NO. 10827.37		SHEET NO. 3 OF 10	
										FIELD BOOK WEBER SURVEYORS								REV.			



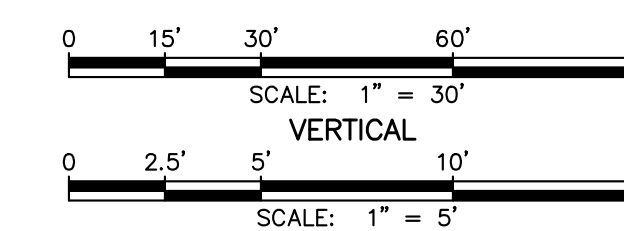
**STORM DRAINAGE PROFILE**



**OUTLET PIPE PROFILE**



**BERM PROFILE**



FREDERICK SOIL CONSERVATION DISTRICT  
 Approved by \_\_\_\_\_ District Manager  
 Date \_\_\_\_\_

SCD APPROVAL FOR SEDIMENT AND EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS.

NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.

MICHAEL J. BINGHAM, PE	
DESIGN	CHECKED
BCU	
DRAWN	CHECKED
CADD	
DATE	SURVEY DATE
OCTOBER 2022	SEPT 2022
	FIELD BOOK
	WEBER SURVEYORS

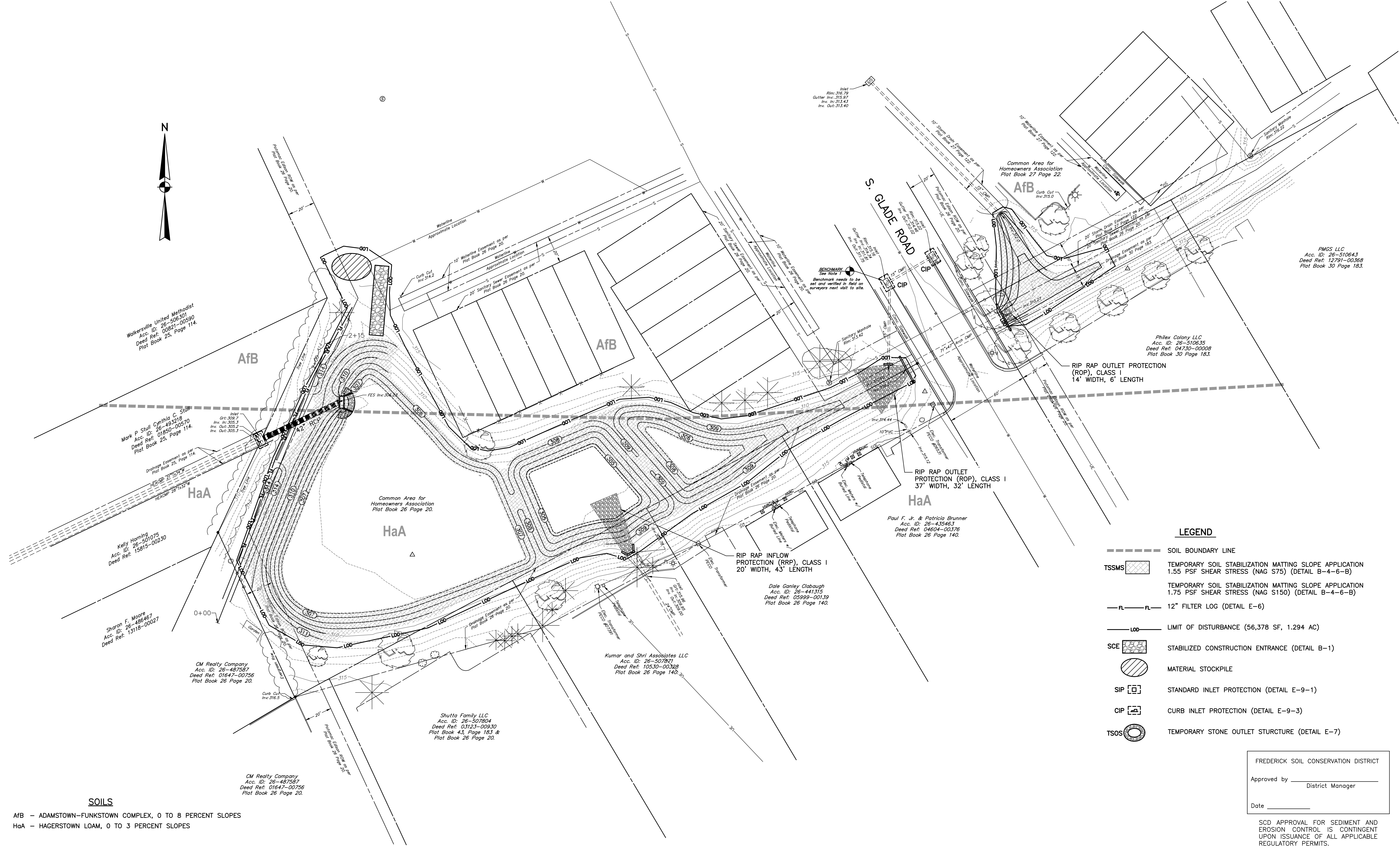


SEAL  
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 and that I am a duly licensed  
 professional engineer under the  
 laws  
 of the State of Maryland,  
 License No. 48804  
 Expiration Date: 2024-08-23

CLIENT & PROJECT  
 TOWN OF WALKERSVILLE  
 21 WEST FREDERICK STREET  
 WALKERSVILLE, MARYLAND 21793  
 BMP DESIGNS  
 WALKERSVILLE, FREDERICK COUNTY, MARYLAND

**ARRG**  
 201 Thomas Johnson Drive Suite 207  
 Frederick, MD 21702  
 Tel 301.791.1100

TITLE		COLONY VILLAGE BMP RETROFIT STORM DRAIN PROFILES	
SCALE		AS SHOWN	
PROJECT NO.	SHEET NO.	REV.	DWG. NO.
10827.37	4 OF 10		



Walkersville United Methodist  
Acc. ID: 26-506301  
Deed Ref: 00821-00590  
Plat Book 25, Page 114.

Mark P. Stull Cynthia C. Stull  
Acc. ID: 26-493218  
Deed Ref: 01850-00570  
Plat Book 25, Page 114.

Kelly Horning  
Acc. ID: 26-501075  
Deed Ref: 15815-00230

Sharon F. Moore  
Acc. ID: 26-486467  
Deed Ref: 13118-00027

CM Realty Company  
Acc. ID: 26-487587  
Deed Ref: 01647-00756  
Plat Book 26 Page 20.

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Common Area for Homeowners Association  
Plat Book 27 Page 22.

Philex Colony LLC  
Acc. ID: 26-510635  
Deed Ref: 04730-00028  
Plat Book 30 Page 183.

PMGS LLC  
Acc. ID: 26-510643  
Deed Ref: 12791-00368  
Plat Book 30 Page 183.

**LEGEND**

- SOIL BOUNDARY LINE
- TSSMS TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION 1.55 PSF SHEAR STRESS (NAG S75) (DETAIL B-4-6-B)
- TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION 1.75 PSF SHEAR STRESS (NAG S150) (DETAIL B-4-6-B)
- 12" FILTER LOG (DETAIL E-6)
- LIMIT OF DISTURBANCE (56,378 SF, 1.294 AC)
- SCE STABILIZED CONSTRUCTION ENTRANCE (DETAIL B-1)
- MATERIAL STOCKPILE
- SIP STANDARD INLET PROTECTION (DETAIL E-9-1)
- CIP CURB INLET PROTECTION (DETAIL E-9-3)
- TSOS TEMPORARY STONE OUTLET STRUCTURE (DETAIL E-7)

FREDERICK SOIL CONSERVATION DISTRICT

Approved by \_\_\_\_\_  
District Manager

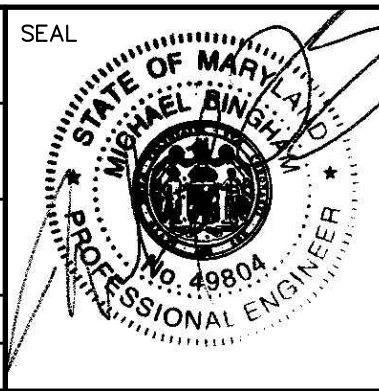
Date \_\_\_\_\_

SCD APPROVAL FOR SEDIMENT AND EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS.

**SOILS**

- AFB - ADAMSTOWN-FUNKSTOWN COMPLEX, 0 TO 8 PERCENT SLOPES
- HaA - HAGERSTOWN LOAM, 0 TO 3 PERCENT SLOPES

MICHAEL J. BINGHAM, PE	
RELEASED BY	CHECKED
DESIGN	BCU
DRAWN	CADD
DATE	OCTOBER 2022
SURVEY DATE	SEPT 2022
FIELD BOOK	WEBER SURVEYORS



PROFESSIONAL CERTIFICATION  
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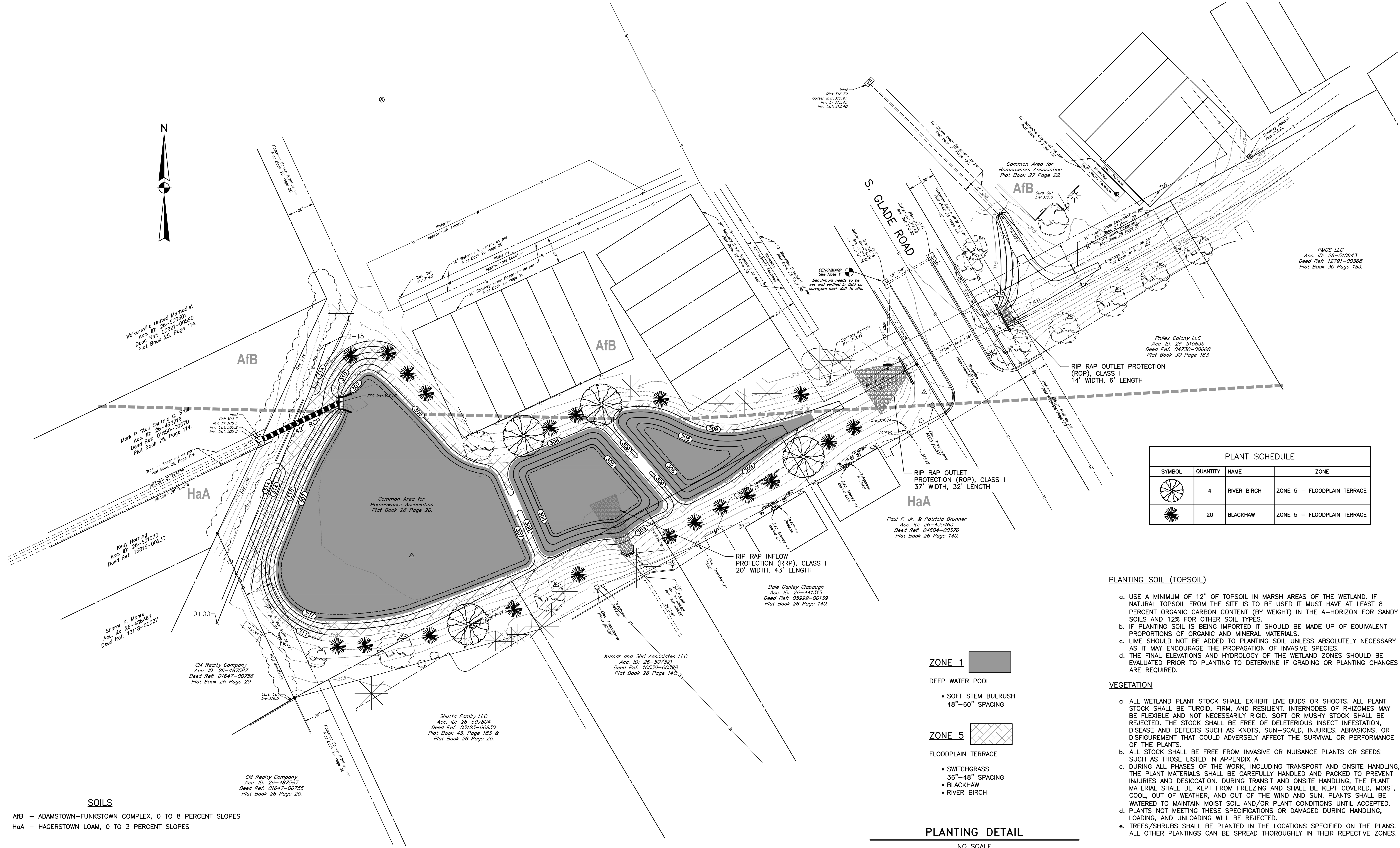
CLIENT & PROJECT

TOWN OF WALKERSVILLE  
21 WEST FREDERICK STREET  
WALKERSVILLE, MARYLAND 21793

BMP DESIGNS  
WALKERSVILLE, FREDERICK COUNTY, MARYLAND



TITLE			
COLONY VILLAGE BMP RETROFIT EROSION AND SEDIMENT CONTROL PLAN			
SCALE	0 15' 30' 60' 90'	DWG. NO.	
SCALE: 1" = 30'			
PROJECT NO.	10827.37	SHEET NO.	5 OF 10
		REV.	



PLANT SCHEDULE			
SYMBOL	QUANTITY	NAME	ZONE
	4	RIVER BIRCH	ZONE 5 - FLOODPLAIN TERRACE
	20	BLACKHAW	ZONE 5 - FLOODPLAIN TERRACE

**PLANTING SOIL (TOPSOIL)**

- a. USE A MINIMUM OF 12" OF TOPSOIL IN MARSH AREAS OF THE WETLAND. IF NATURAL TOPSOIL FROM THE SITE IS TO BE USED IT MUST HAVE AT LEAST 8 PERCENT ORGANIC CARBON CONTENT (BY WEIGHT) IN THE A-HORIZON FOR SANDY SOILS AND 12% FOR OTHER SOIL TYPES.
- b. IF PLANTING SOIL IS BEING IMPORTED IT SHOULD BE MADE UP OF EQUIVALENT PROPORTIONS OF ORGANIC AND MINERAL MATERIALS.
- c. LIME SHOULD NOT BE ADDED TO PLANTING SOIL UNLESS ABSOLUTELY NECESSARY AS IT MAY ENCOURAGE THE PROPAGATION OF INVASIVE SPECIES.
- d. THE FINAL ELEVATIONS AND HYDROLOGY OF THE WETLAND ZONES SHOULD BE EVALUATED PRIOR TO PLANTING TO DETERMINE IF GRADING OR PLANTING CHANGES ARE REQUIRED.

**VEGETATION**

- a. ALL WETLAND PLANT STOCK SHALL EXHIBIT LIVE BUDS OR SHOOTS. ALL PLANT STOCK SHALL BE TURGID, FIRM, AND RESILIENT. INTERNODES OF RHIZOMES MAY BE FLEXIBLE AND NOT NECESSARILY RIGID. SOFT OR MUSHY STOCK SHALL BE REJECTED. THE STOCK SHALL BE FREE OF DELETERIOUS INSECT INFESTATION, DISEASE AND DEFECTS SUCH AS KNOTS, SUN-SCALD, INJURIES, ABRASIONS, OR DISFIGUREMENT THAT COULD ADVERSELY AFFECT THE SURVIVAL OR PERFORMANCE OF THE PLANTS.
- b. ALL STOCK SHALL BE FREE FROM INVASIVE OR NUISANCE PLANTS OR SEEDS SUCH AS THOSE LISTED IN APPENDIX A.
- c. DURING ALL PHASES OF THE WORK, INCLUDING TRANSPORT AND ONSITE HANDLING, THE PLANT MATERIALS SHALL BE CAREFULLY HANDLED AND PACKED TO PREVENT INJURIES AND DESICCATION. DURING TRANSPORT AND ONSITE HANDLING, THE PLANT MATERIAL SHALL BE KEPT FROM FREEZING AND SHALL BE KEPT COVERED, MOIST, COOL, OUT OF WEATHER, AND OUT OF THE WIND AND SUN. PLANTS SHALL BE WATERED TO MAINTAIN MOIST SOIL AND/OR PLANT CONDITIONS UNTIL ACCEPTED. PLANTS NOT MEETING THESE SPECIFICATIONS OR DAMAGED DURING HANDLING, LOADING, AND UNLOADING WILL BE REJECTED.
- e. TREES/SHRUBS SHALL BE PLANTED IN THE LOCATIONS SPECIFIED ON THE PLANS. ALL OTHER PLANTINGS CAN BE SPREAD THOROUGHLY IN THEIR RESPECTIVE ZONES.

**ZONE 1**

DEEP WATER POOL  
 • SOFT STEM BULRUSH  
 48"-60" SPACING

**ZONE 5**

FLOODPLAIN TERRACE  
 • SWITCHGRASS  
 36"-48" SPACING  
 • BLACKHAW  
 • RIVER BIRCH

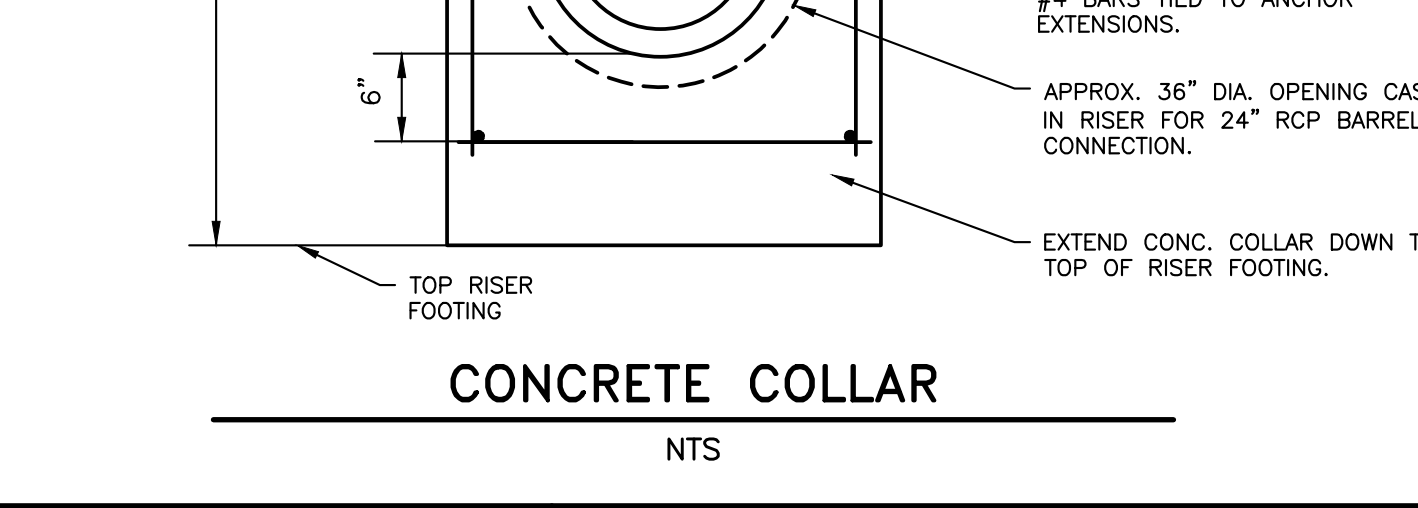
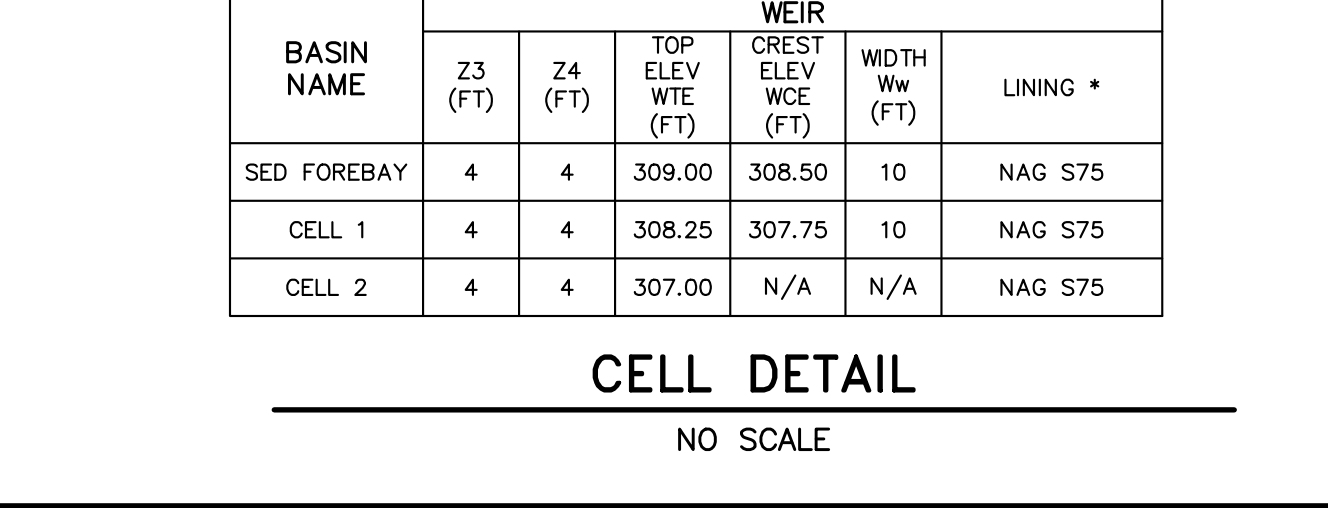
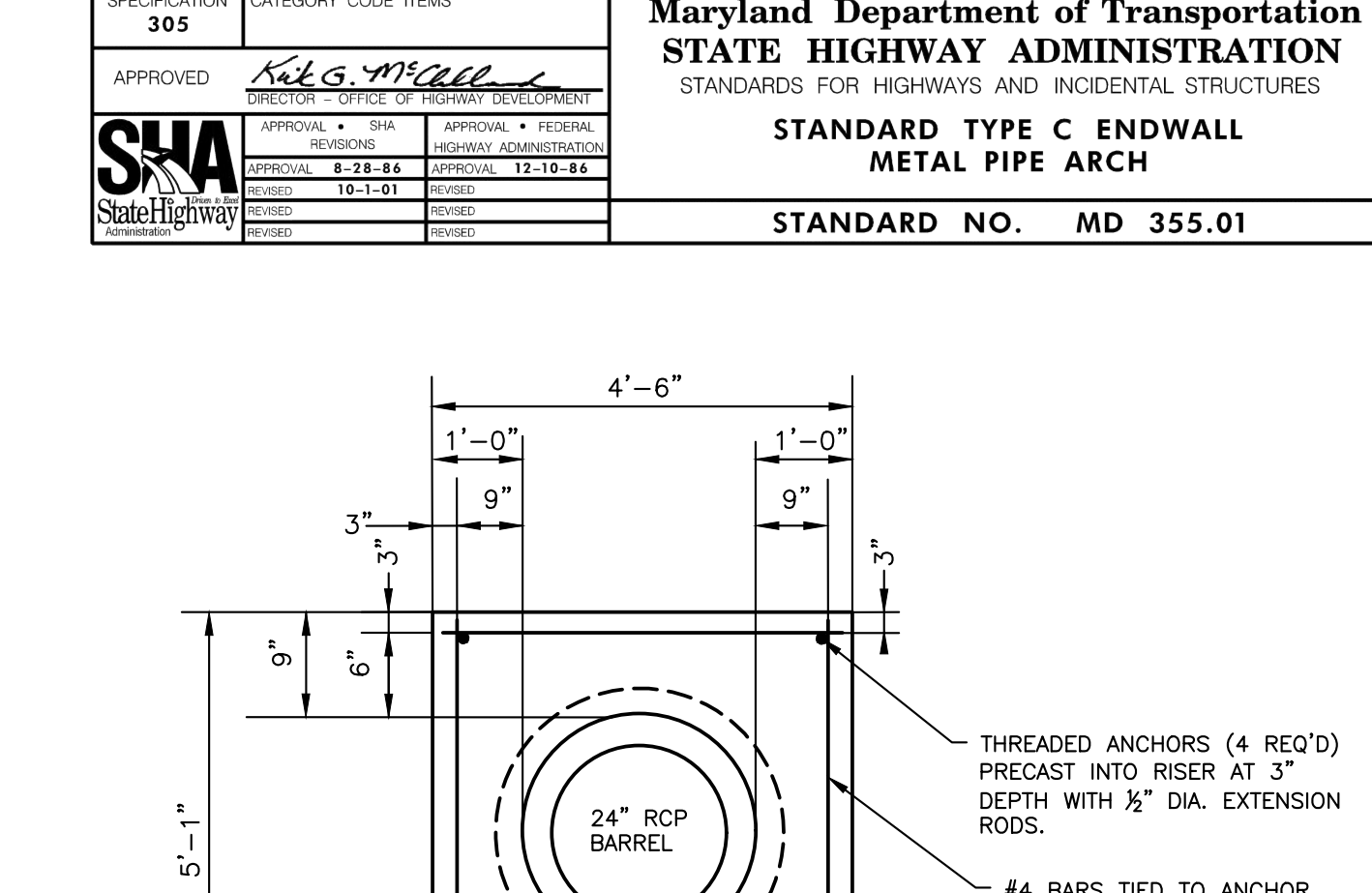
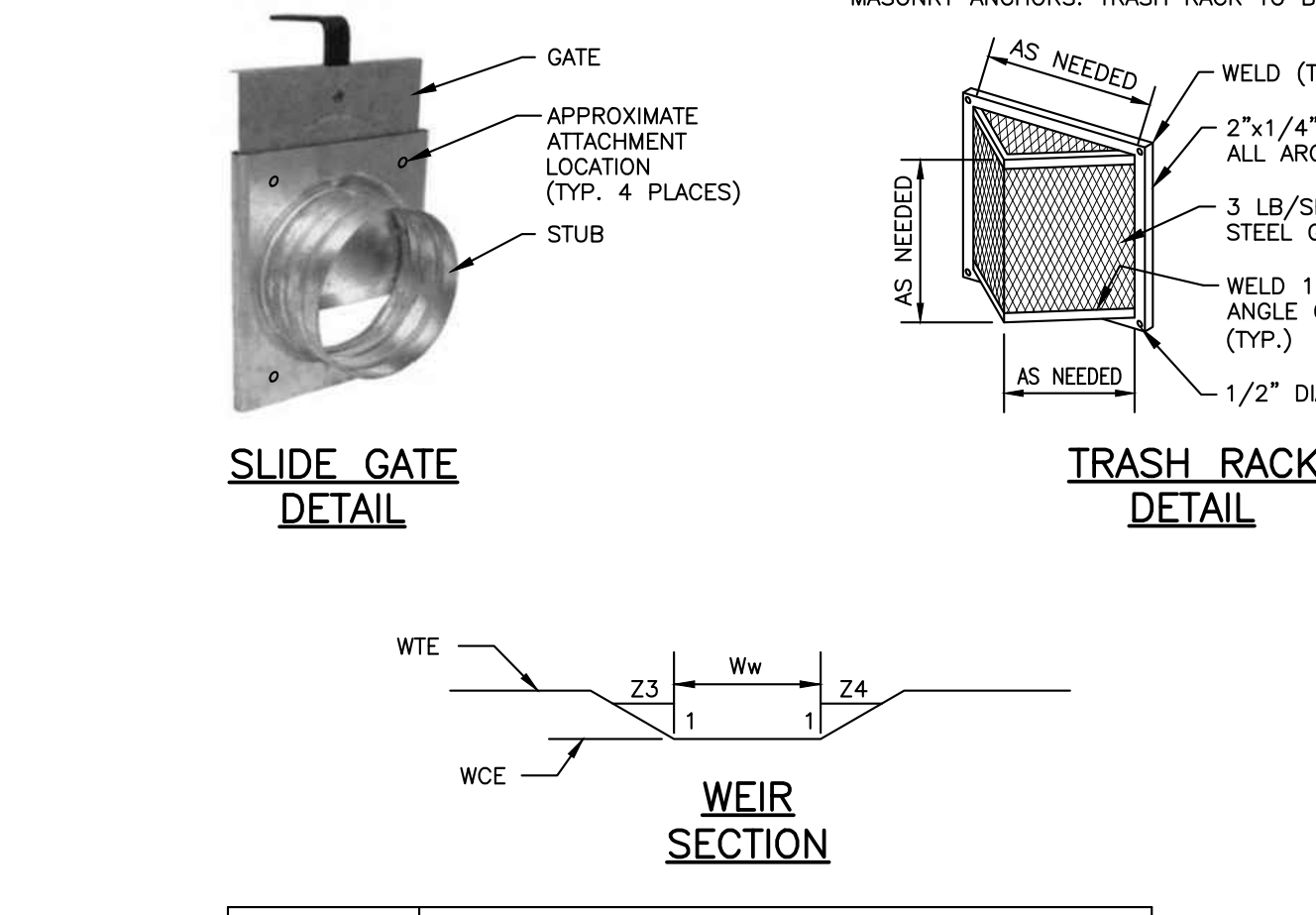
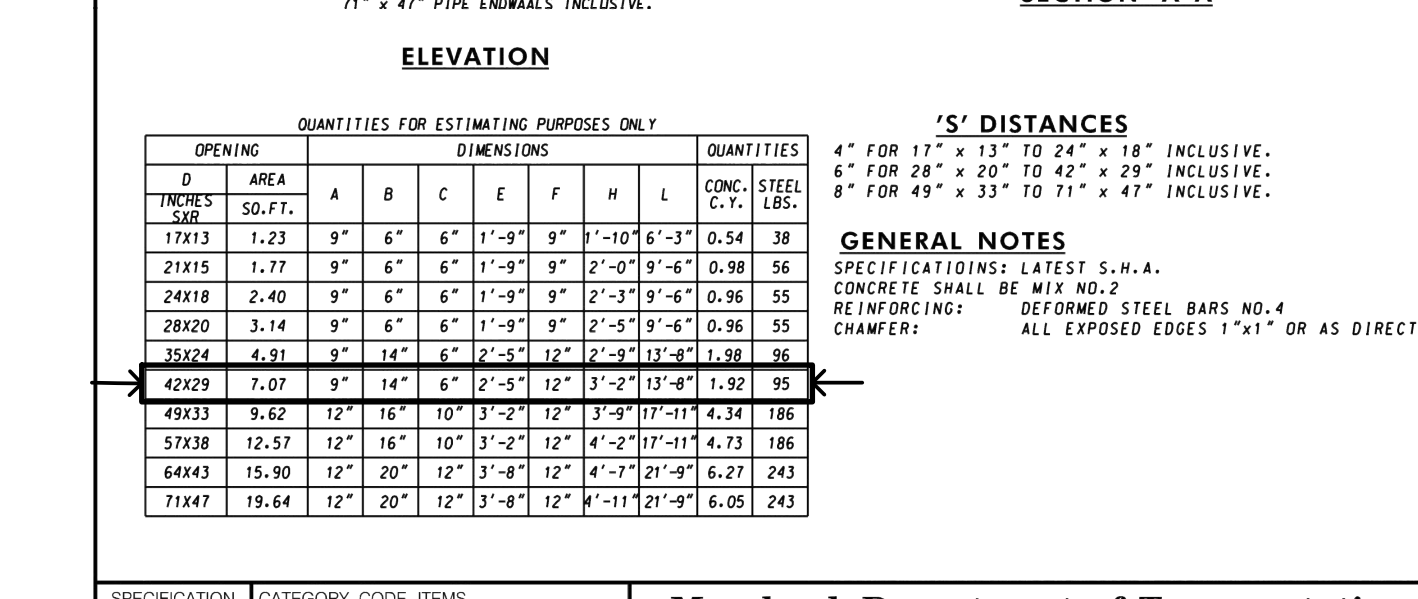
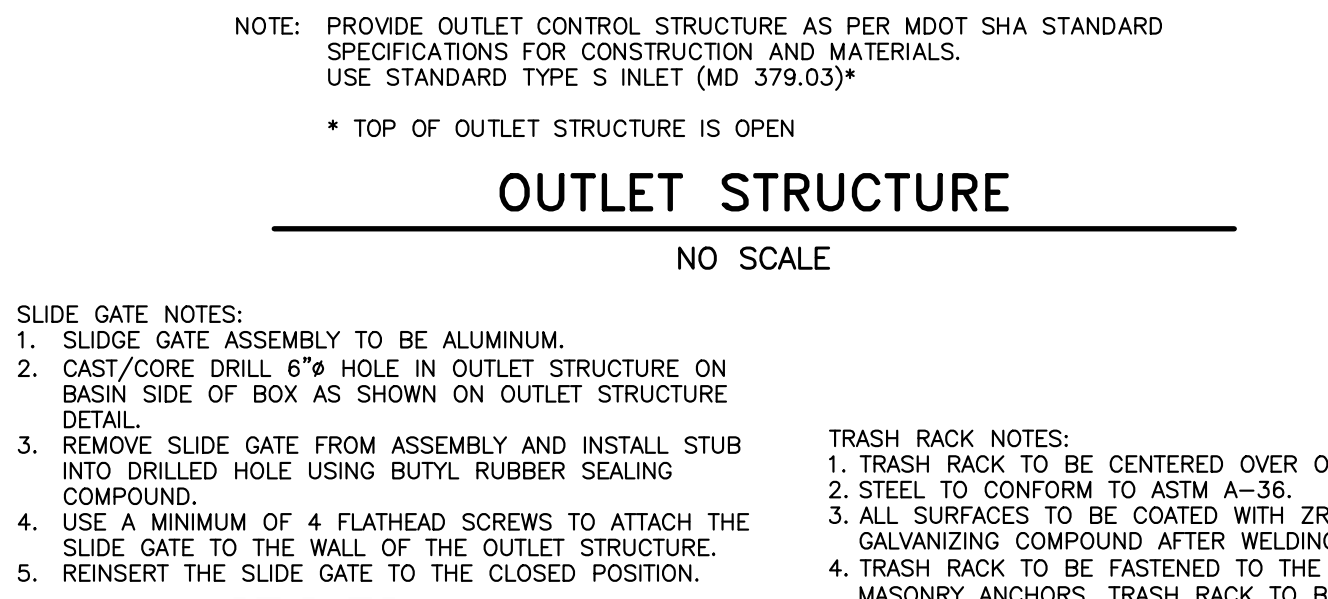
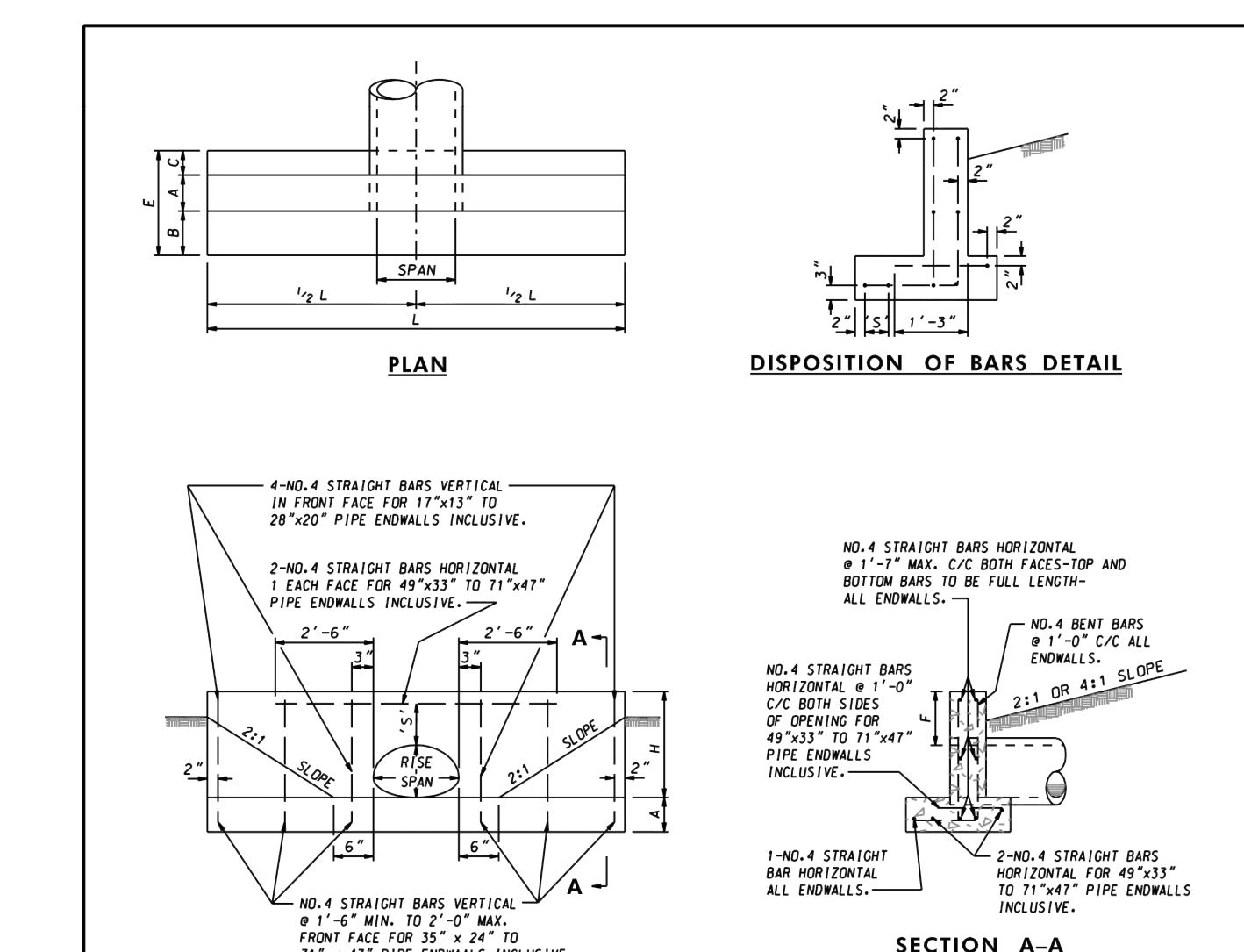
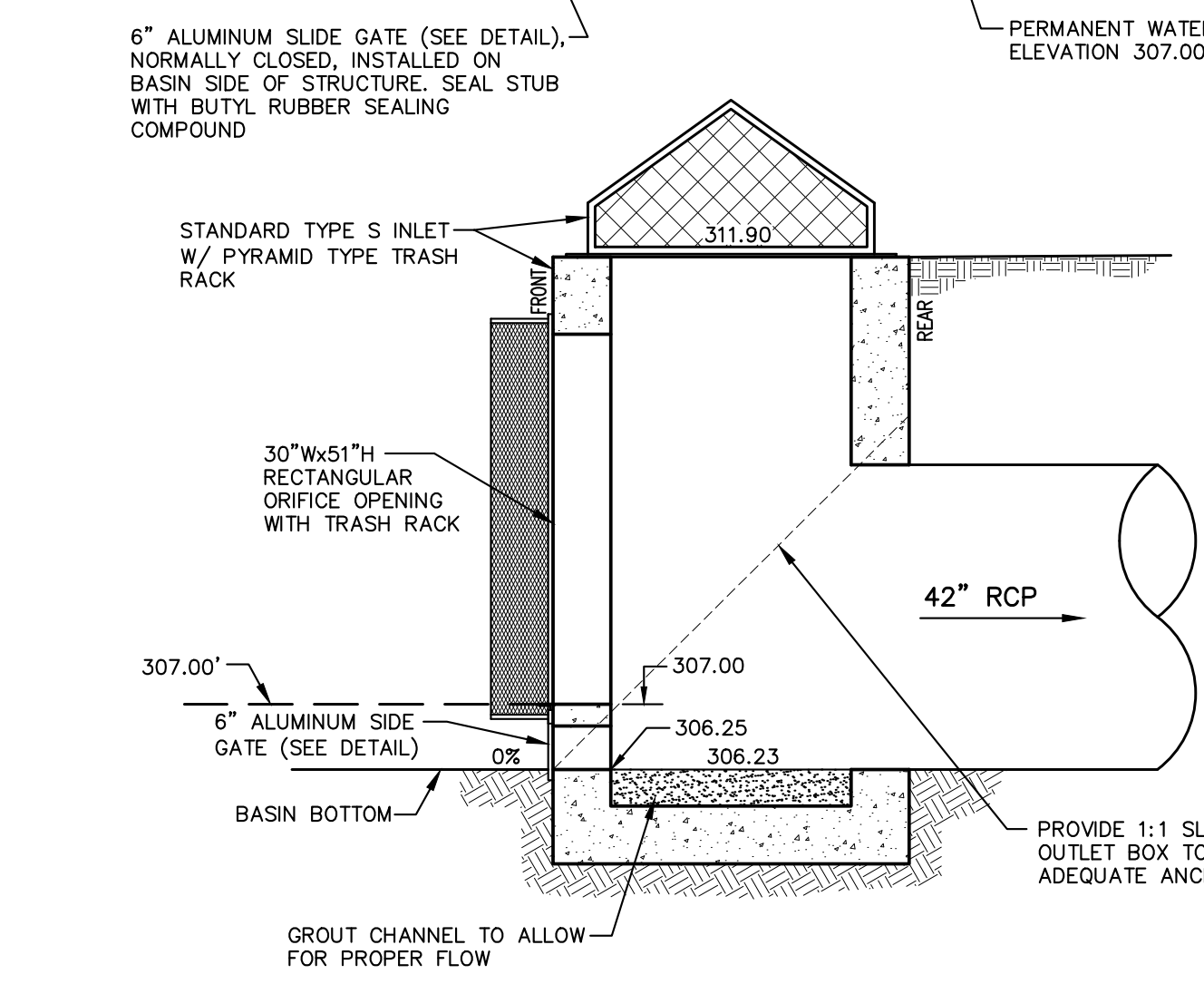
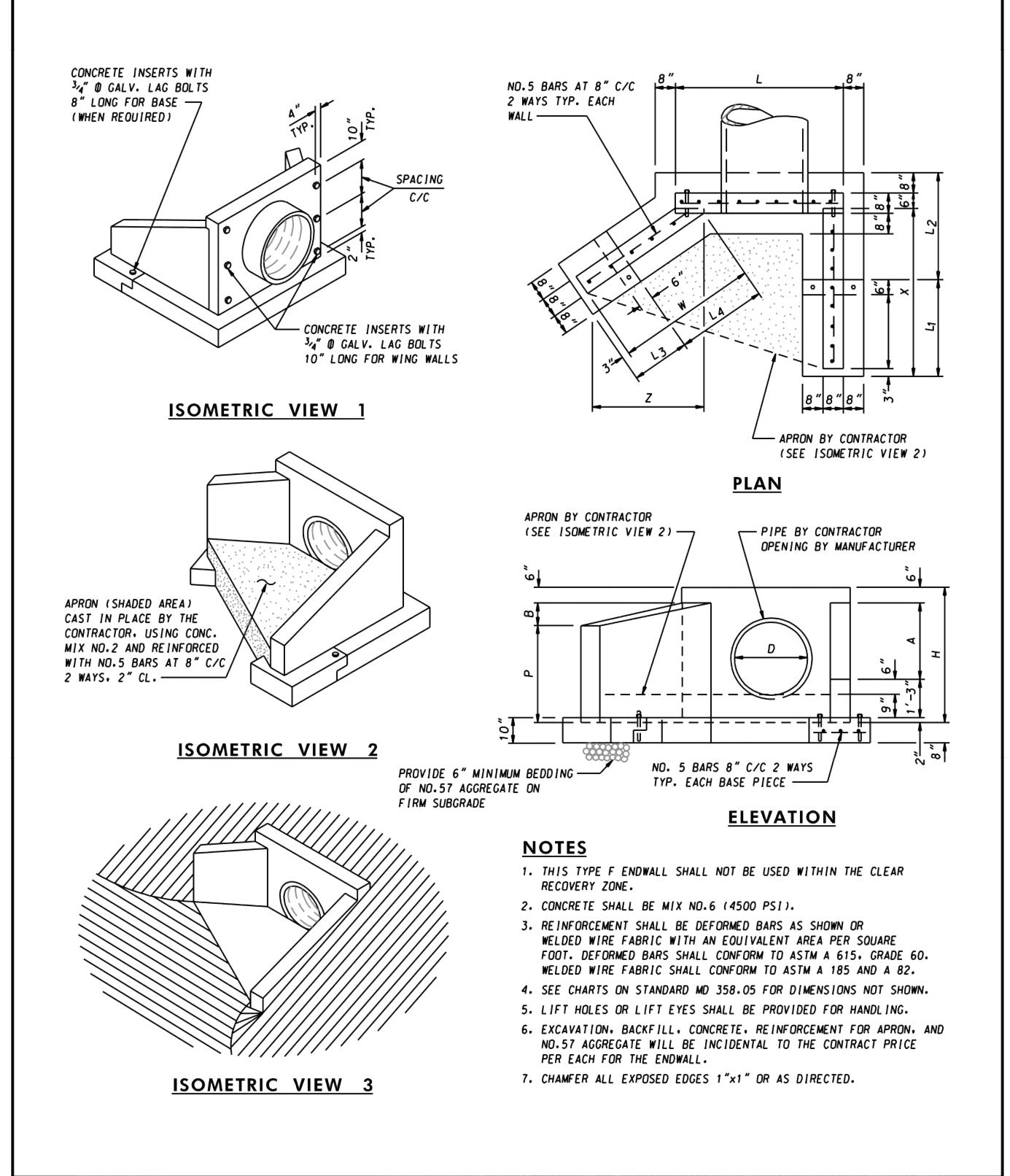
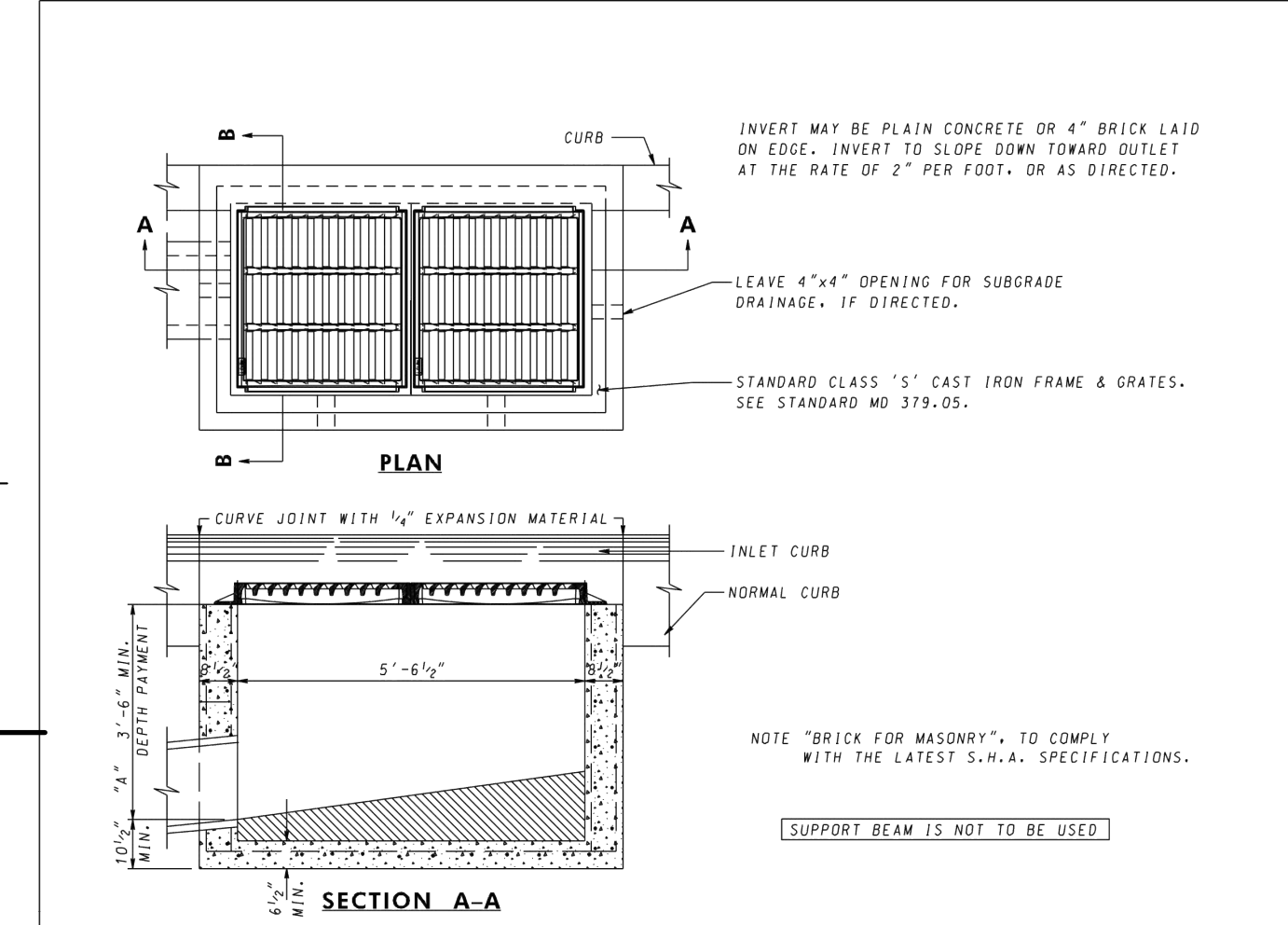
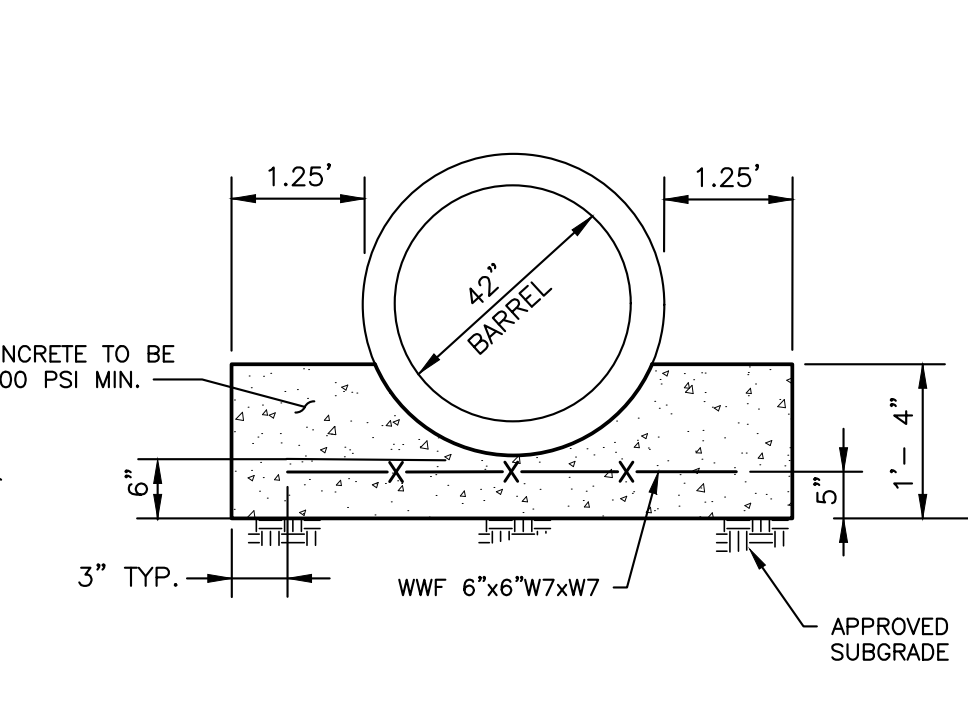
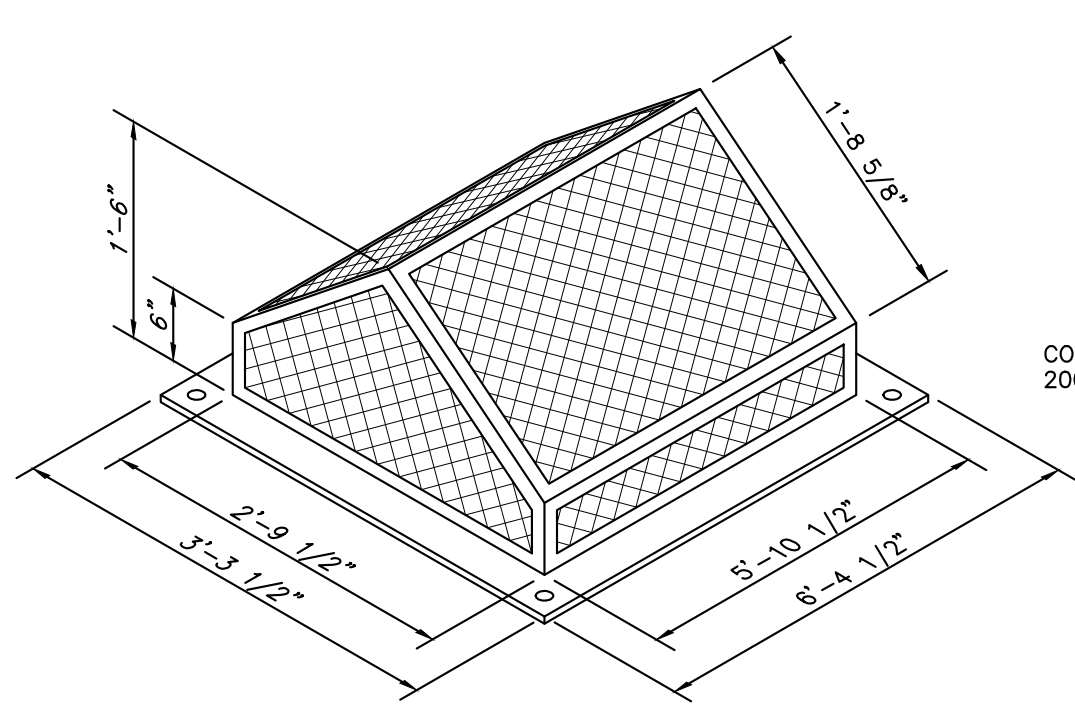
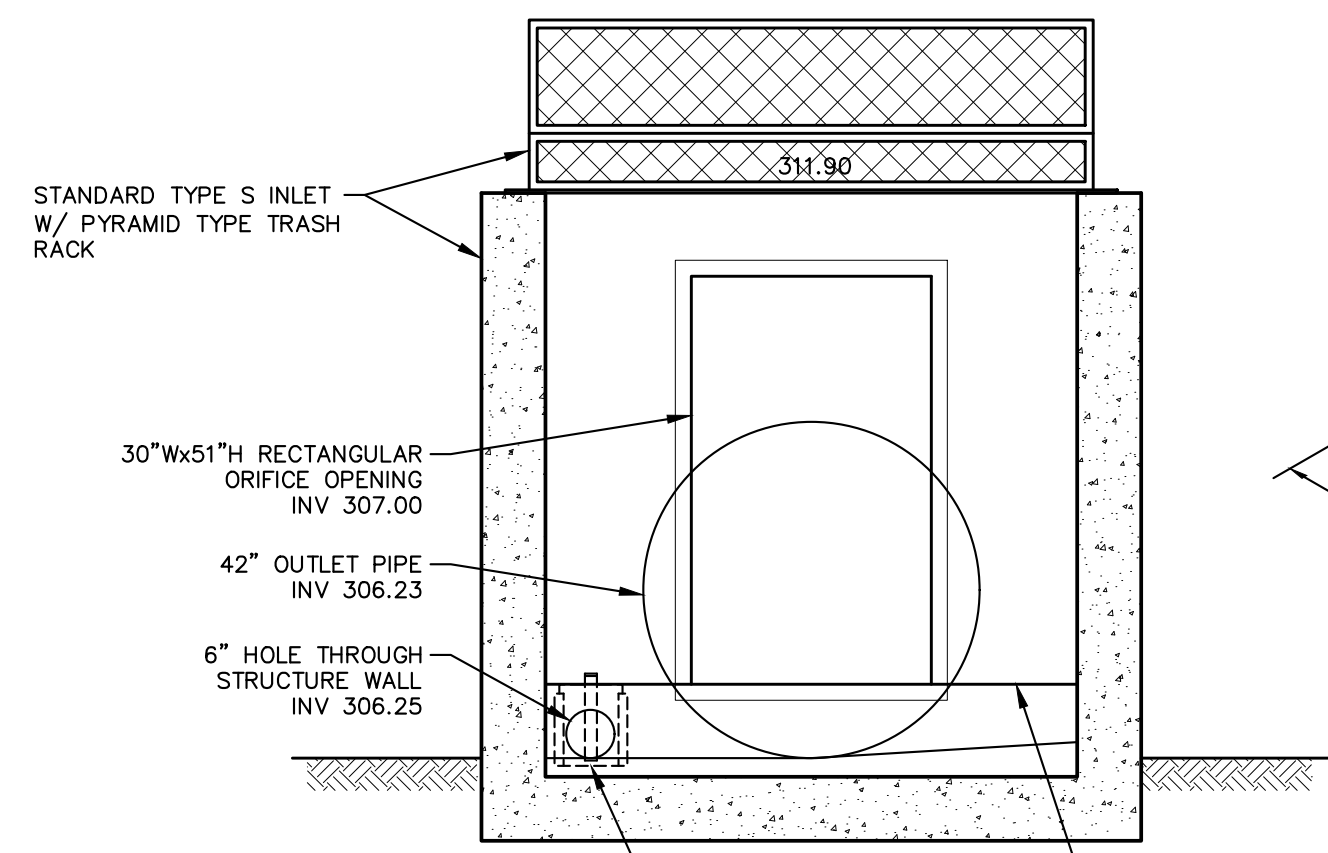
**PLANTING DETAIL**

NO SCALE

**SOILS**

AfB - ADAMSTOWN-FUNKSTOWN COMPLEX, 0 TO 8 PERCENT SLOPES  
 HaA - HAGERSTOWN LOAM, 0 TO 3 PERCENT SLOPES

MICHAEL J. BINGHAM, PE RELEASED BY: BCU DESIGN: BCU DRAWN: CADD DATE: OCTOBER 2022			CHECKED: [Signature] CHECKED: [Signature] SURVEY DATE: SEPT 2022 FIELD BOOK: WEBER SURVEYORS			SEAL: STATE OF MARYLAND PROFESSIONAL ENGINEER SEAL: PROFESSIONAL CERTIFICATION I, MICHAEL J. BINGHAM, P.E. 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. 49804, Expiration Date: 2024-08-23			CLIENT & PROJECT TOWN OF WALKERSVILLE 21 WEST FREDERICK STREET WALKERSVILLE, MARYLAND 21793  BMP DESIGNS WALKERSVILLE, FREDERICK COUNTY, MARYLAND			TITLE: COLONY VILLAGE BMP RETROFIT LANDSCAPE PLAN SCALE: 0 15' 30' 60' 90' SCALE: 1" = 30' PROJECT NO: 10827.37 SHEET NO: 6 OF 10 REV: [ ]								
NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.	DWG. NO.



NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.

MICHAEL J. BINGHAM, PE	DESIGN	BCU	CADD	DATE	OCTOBER 2022
	CHECKED			SURVEY DATE	SEPT 2022
				FIELD BOOK	WEBER SURVEYORS

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MICHAEL J. BINGHAM, PE  
 LICENSE NO. 49804  
 EXPIRES 08/23/24

CLIENT & PROJECT  
 TOWN OF WALKERSVILLE  
 21 WEST FREDERICK STREET  
 WALKERSVILLE, MARYLAND 21793

BMP DESIGNS  
 WALKERSVILLE, FREDERICK COUNTY, MARYLAND

TITLE: COLONY VILLAGE BMP RETROFIT DESIGN DETAILS

SCALE: AS SHOWN

PROJECT NO. 10827.37

SHEET NO. 7 OF 10

DATE: 10/2/2023 2:40 PM

APPROVED BY: District Manager

DATE: \_\_\_\_\_



201 Thomas Johnson Drive Suite 207  
 Frederick, MD 21702  
 Tel 301.791.1100

NO	REVISION	DATE	BY	APP.

**DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE**

STANDARD SYMBOL: SCE

**CONSTRUCTION SPECIFICATIONS**

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

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

**DETAIL B-4-6-B TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION**

STANDARD SYMBOL: TSSMS - \* lb./ft.<sup>2</sup> (\* INCLUDE SHEAR STRESS)

**CONSTRUCTION SPECIFICATIONS**

- USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
- USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2 1/2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
- SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 1/2 INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1 1/2 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
- PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.
- UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDBED SURFACE. AVOID STRETCHING THE MATTING.
- OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
- KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
- STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
- ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

**DETAIL E-6 FILTER LOG**

STANDARD SYMBOL: FL-18

DESIGNATION FL-18 REFERS TO 18 INCH DIAMETER FILTER LOG.

**CONSTRUCTION SPECIFICATIONS**

- PRIOR TO INSTALLATION, CLEAR ALL OBSTRUCTIONS INCLUDING ROCKS, CLODS, AND DEBRIS GREATER THAN ONE INCH THAT MAY INTERFERE WITH PROPER FUNCTION OF FILTER LOG.
- FILL LOG NETTING UNIFORMLY WITH COMPOST (IN ACCORDANCE WITH SECTION H-1 MATERIALS), OR OTHER APPROVED BIODEGRADABLE MATERIAL TO DESIRED LENGTH SUCH THAT LOGS DO NOT DEFORM.
- INSTALL FILTER LOGS PERPENDICULAR TO THE FLOW DIRECTION AND PARALLEL TO THE SLOPE WITH THE BEGINNING AND END OF THE INSTALLATION POINTING SLIGHTLY UP THE SLOPE CREATING A "J" SHAPE AT EACH END TO PREVENT BYPASS.
- FOR UNTRENCHED INSTALLATION BLOW OR HAND PLACE MULCH OR COMPOST ON UPHILL SIDE OF THE SLOPE ALONG LOG.
- STAKE FILTER LOG EVERY 4 FEET OR CLOSER ALONG ENTIRE LENGTH OF LOG OR TRENCH LOG INTO GROUND A MINIMUM OF 4 INCHES AND STAKE LOG EVERY 8 FEET OR CLOSER.
- USE STAKES WITH A MINIMUM NOMINAL CROSS SECTION OF 2X2 INCH AND OF SUFFICIENT LENGTH TO ATTAIN A MINIMUM OF 12 INCHES INTO THE GROUND AND 3 INCHES PROTRUDING ABOVE LOG.
- WHEN MORE THAN ONE LOG IS NEEDED, OVERLAP ENDS 12 INCHES MINIMUM AND STAKE.
- REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO A DEPTH OF 1/2 THE EXPOSED HEIGHT OF LOG AND REPLACE MULCH, REPLACE FILTER LOG IF TORN, REINSTALL FILTER LOG IF UNDERMINING OR DISLODGING OCCURS. REPLACE CLOGGED FILTER LOGS. FOR PERMANENT APPLICATIONS, ESTABLISH AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

**DETAIL E-9-1 STANDARD INLET PROTECTION**

STANDARD SYMBOL: SIP

**CONSTRUCTION SPECIFICATIONS**

- USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
- EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.
- FOR TYPE A, USE NOMINAL 2 INCH X 4 INCH CONSTRUCTION GRADE LUMBER POSTS, DRIVEN 1 FOOT INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE NAIL STRIPS BETWEEN THE POSTS ON THE ENDS OF THE INLET. ASSEMBLE THE TOP PORTION OF THE 2x4 FRAME AS SHOWN. STRETCH 1/2 INCH GALVANIZED HARDWARE CLOTH TIGHTLY AROUND THE FRAME AND FASTEN SECURELY. FASTEN GEOTEXTILE SECURELY TO THE HARDWARE CLOTH WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND HARDWARE CLOTH A MINIMUM OF 18 INCHES BELOW THE WEIR CREST. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLAPPED AND FOLDED, THEN FASTENED TO THE POST.
- FOR TYPE B, USE 2 1/2 INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND 6 FOOT LENGTH, DRIVEN A MINIMUM OF 36 INCHES BELOW THE WEIR CREST AT EACH CORNER OF THE STRUCTURE. FASTEN 9 GAUGE OR HEAVIER CHAIN LINK FENCE, 42 INCHES IN HEIGHT, SECURELY TO THE FENCE POSTS WITH WIRE TIES. FASTEN GEOTEXTILE SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 18 INCHES BELOW THE WEIR CREST.
- BACKFILL AROUND THE INLET IN LOOSE 4 INCH LIFTS AND COMPACT UNTIL SOIL IS LEVEL WITH THE NOTCH ELEVATION ON THE ENDS AND TOP ELEVATION ON THE SIDES.
- STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

**DETAIL E-9-3 CURB INLET PROTECTION**

STANDARD SYMBOL: CIP

**CONSTRUCTION SPECIFICATIONS**

- USE NOMINAL 2 INCH X 4 INCH LUMBER
- USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
- NAIL THE 2x4 WEIR TO 9 INCH LONG VERTICAL SPACERS (MAXIMUM 6 FEET APART).
- ATTACH A CONTINUOUS PIECE OF 1/2 INCH GALVANIZED HARDWARE CLOTH, WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4 WEIR, EXTENDING IT 2 FEET BEYOND THROAT ON EACH SIDE.
- PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE OF THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH TO THE 2x4 WEIR.
- PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FEET LENGTH). EXTEND THE ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
- INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND THE ENDS OF THE THROAT OPENING.
- FORM THE HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND FACE OF CURB TO SPAN THE INLET OPENING. COVER THE HARDWARE CLOTH AND GEOTEXTILE WITH CLEAN 3/4 TO 1 1/2 INCH STONE OR EQUIVALENT RECYCLED CONCRETE.
- AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
- STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

**DETAIL F-4 FILTER BAG**

STANDARD SYMBOL: FB

**CONSTRUCTION SPECIFICATIONS**

- TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
- PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAF/WOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE. DISCHARGE TO A STABILIZED AREA. EXTEND BASE A MINIMUM OF 12 INCHES FROM EDGES OF BAG.
- CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS. AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE.
- REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED SEDIMENT FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH BY THE END OF THE WORK DAY. RESTORE THE SURFACE AREA BENEATH THE BAG TO ORIGINAL CONDITION UPON REMOVAL OF THE DEVICE.
- USE NONWOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH THREAD. SIZE SLEEVE TO ACCOMMODATE A MAXIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE BAG MUST BE MANUFACTURED FROM A NONWOVEN GEOTEXTILE THAT MEETS OR EXCEEDS MINIMUM AVERAGE ROLL VALUES (MARV) FOR THE FOLLOWING:

GRAB TENSILE	250 LB	ASTM D-4632
PUNCTURE	150 LB	ASTM D-4833
FLOW RATE	70 GAL/MIN/FT <sup>2</sup>	ASTM D-4491
PERMITTIVITY (SEC <sup>-1</sup> )	1.2 SEC <sup>-1</sup>	ASTM D-4491
UV RESISTANCE	70% STRENGTH @ 500 HOURS	ASTM D-4355
APPARENT OPENING SIZE (AOS)	0.15-0.18 MM	ASTM D-4751
SEAM STRENGTH	90%	ASTM D-4632

- REPLACE FILTER BAG IF BAG CLOSURE HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

**DETAIL E-6 FILTER LOG**

STANDARD SYMBOL: FL-18

DESIGNATION FL-18 REFERS TO 18 INCH DIAMETER FILTER LOG.

**CONSTRUCTION SPECIFICATIONS**

- PRIOR TO INSTALLATION, CLEAR ALL OBSTRUCTIONS INCLUDING ROCKS, CLODS, AND DEBRIS GREATER THAN ONE INCH THAT MAY INTERFERE WITH PROPER FUNCTION OF FILTER LOG.
- FILL LOG NETTING UNIFORMLY WITH COMPOST (IN ACCORDANCE WITH SECTION H-1 MATERIALS), OR OTHER APPROVED BIODEGRADABLE MATERIAL TO DESIRED LENGTH SUCH THAT LOGS DO NOT DEFORM.
- INSTALL FILTER LOGS PERPENDICULAR TO THE FLOW DIRECTION AND PARALLEL TO THE SLOPE WITH THE BEGINNING AND END OF THE INSTALLATION POINTING SLIGHTLY UP THE SLOPE CREATING A "J" SHAPE AT EACH END TO PREVENT BYPASS.
- FOR UNTRENCHED INSTALLATION BLOW OR HAND PLACE MULCH OR COMPOST ON UPHILL SIDE OF THE SLOPE ALONG LOG.
- STAKE FILTER LOG EVERY 4 FEET OR CLOSER ALONG ENTIRE LENGTH OF LOG OR TRENCH LOG INTO GROUND A MINIMUM OF 4 INCHES AND STAKE LOG EVERY 8 FEET OR CLOSER.
- USE STAKES WITH A MINIMUM NOMINAL CROSS SECTION OF 2X2 INCH AND OF SUFFICIENT LENGTH TO ATTAIN A MINIMUM OF 12 INCHES INTO THE GROUND AND 3 INCHES PROTRUDING ABOVE LOG.
- WHEN MORE THAN ONE LOG IS NEEDED, OVERLAP ENDS 12 INCHES MINIMUM AND STAKE.
- REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO A DEPTH OF 1/2 THE EXPOSED HEIGHT OF LOG AND REPLACE MULCH, REPLACE FILTER LOG IF TORN, REINSTALL FILTER LOG IF UNDERMINING OR DISLODGING OCCURS. REPLACE CLOGGED FILTER LOGS. FOR PERMANENT APPLICATIONS, ESTABLISH AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

**DETAIL E-9-1 STANDARD INLET PROTECTION**

STANDARD SYMBOL: SIP

**CONSTRUCTION SPECIFICATIONS**

- USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
- EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.
- FOR TYPE A, USE NOMINAL 2 INCH X 4 INCH CONSTRUCTION GRADE LUMBER POSTS, DRIVEN 1 FOOT INTO THE GROUND AT EACH CORNER OF THE INLET. PLACE NAIL STRIPS BETWEEN THE POSTS ON THE ENDS OF THE INLET. ASSEMBLE THE TOP PORTION OF THE 2x4 FRAME AS SHOWN. STRETCH 1/2 INCH GALVANIZED HARDWARE CLOTH TIGHTLY AROUND THE FRAME AND FASTEN SECURELY. FASTEN GEOTEXTILE SECURELY TO THE HARDWARE CLOTH WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND HARDWARE CLOTH A MINIMUM OF 18 INCHES BELOW THE WEIR CREST. THE ENDS OF THE GEOTEXTILE MUST MEET AT A POST, BE OVERLAPPED AND FOLDED, THEN FASTENED TO THE POST.
- FOR TYPE B, USE 2 1/2 INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND 6 FOOT LENGTH, DRIVEN A MINIMUM OF 36 INCHES BELOW THE WEIR CREST AT EACH CORNER OF THE STRUCTURE. FASTEN 9 GAUGE OR HEAVIER CHAIN LINK FENCE, 42 INCHES IN HEIGHT, SECURELY TO THE FENCE POSTS WITH WIRE TIES. FASTEN GEOTEXTILE SECURELY TO THE CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 18 INCHES BELOW THE WEIR CREST.
- BACKFILL AROUND THE INLET IN LOOSE 4 INCH LIFTS AND COMPACT UNTIL SOIL IS LEVEL WITH THE NOTCH ELEVATION ON THE ENDS AND TOP ELEVATION ON THE SIDES.
- STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

FREDERICK SOIL CONSERVATION DISTRICT

Approved by \_\_\_\_\_ District Manager

Date \_\_\_\_\_

SCD APPROVAL FOR SEDIMENT AND EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS.

NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.

MICHAEL J. BINGHAM, PE	RELEASED BY	CHECKED
DESIGN	BCU	CHECKED
DRAWN	CADD	CHECKED
DATE	OCTOBER 2022	SURVEY DATE
		SEPT 2022
		FIELD BOOK
		WEBER SURVEYORS

SEAL OF MICHAEL J. BINGHAM, P.E. PROFESSIONAL ENGINEER No. 49804 Expiration Date: 2024-08-23

SEAL PROFESSIONAL CERTIFICATION I, MICHAEL J. BINGHAM, P.E. 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. 49804 Expiration Date: 2024-08-23

CLIENT & PROJECT

TOWN OF WALKERSVILLE  
21 WEST FREDERICK STREET  
WALKERSVILLE, MARYLAND 21793

BMP DESIGNS  
WALKERSVILLE, FREDERICK COUNTY, MARYLAND

201 Thomas Johnson Drive Suite 207  
Frederick, MD 21702  
Tel 301.791.1100

TITLE COLONY VILLAGE BMP RETROFIT EROSION AND SEDIMENT CONTROL DETAILS

SCALE AS SHOWN

PROJECT NO. 10827.37

SHEET NO. 8 OF 10

REV.

DWG. NO.





### CONSTRUCTION SPECIFICATIONS

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

#### 1.) SPECIFICATIONS

- A.) AREAS DESIGNATED FOR BORROW AREAS, EMBANKMENT, AND STRUCTURAL WORKS SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL.
B.) ALL TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED.
C.) CHANNEL BANKS AND SHARP BREAKS SHALL BE SLOPED TO NO STEEPER THAN 1:1.
D.) ALL TREES SHALL BE CLEARED AND GRUBBED WITHIN 15 FEET OF THE TOE OF THE EMBANKMENT.
E.) AREAS TO BE COVERED BY THE RESERVOIR WILL BE CLEARED OF ALL TREES, BRUSH, LOGS, FENCES, RUBBISH AND OTHER OBJECTIONABLE MATERIAL UNLESS OTHERWISE DESIGNATED ON THE PLANS.
F.) TREES, BRUSH, AND STUMPS SHALL BE CUT APPROXIMATELY LEVEL WITH THE GROUND SURFACE.
G.) FOR DRY STORMWATER MANAGEMENT PONDS, A MINIMUM OF A 25'-FOOT RADIUS AROUND THE INLET STRUCTURE SHALL BE CLEARED.
H.) ALL CLEARED AND GRUBBED MATERIAL SHALL BE DISPOSED OF OUTSIDE AND BELOW THE LIMITS OF THE DAM AND RESERVOIR AS DIRECTED BY THE OWNER OR HIS REPRESENTATIVE.
I.) WHEN SPECIFIED, A SUFFICIENT QUANTITY OF TOPSOIL WILL BE STOCKPILED IN A SUITABLE LOCATION FOR USE ON THE EMBANKMENT AND OTHER DESIGNATED AREAS.

### EARTH FILL

#### 1.) MATERIALS

- A.) THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED DESIGNATED BORROW AREAS.
B.) IT SHALL BE FREE OF ROOTS, STUMPS, WOOD, RUBBISH, STONES GREATER THAN 6", FROZEN OR OTHER OBJECTIONABLE MATERIALS.
C.) FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT, AND CUT OFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL AND MUST HAVE AT LEAST 30% PASSING THE #200 SIEVE. CONSIDERATION MAY BE GIVEN TO THE USE OF OTHER MATERIALS IN THE EMBANKMENT IF DESIGNED BY A GEOTECHNICAL ENGINEER.
D.) SUCH SPECIAL DESIGNS MUST HAVE CONSTRUCTION SUPERVISED BY A GEOTECHNICAL ENGINEER. MATERIALS USED IN THE OUTER SHELL OF THE EMBANKMENT MUST HAVE THE CAPABILITY TO SUPPORT VEGETATION OF THE QUALITY REQUIRED TO PREVENT EROSION OF THE EMBANKMENT.

#### 2.) PLACEMENT

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

#### 3.) COMPACTION

- A.) THE MOVEMENT OF THE HAULING AND SPREADING EQUIPMENT OVER THE FILL SHALL BE CONTROLLED SO THAT THE ENTIRE SURFACE OF EACH LIFT SHALL BE TRAVERSED BY NOT LESS THAN ONE TREAD TRACK OF HEAVY EQUIPMENT OR COMPACTION SHALL BE ACHIEVED BY A MINIMUM OF FOUR COMPLETE PASSES OF A SHEEPSFOOT, RUBBER Tired OR VIBRATORY ROLLER.
B.) FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SUCH THAT THE REQUIRED DEGREE OF COMPACTION WILL BE OBTAINED WITH THE EQUIPMENT USED.
C.) THE FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SO THAT IF FORMED INTO A BALL IT WILL NOT CRUMBLE, YET NOT BE SO WET THAT WATER CAN BE SQUEEZED OUT.
D.) WHEN REQUIRED BY THE REVIEWING AGENCY THE MINIMUM REQUIRED DENSITY SHALL NOT BE LESS THAN 95% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN ±2% OF THE OPTIMUM.
E.) EACH LAYER OF FILL SHALL BE COMPACTED AS NECESSARY TO OBTAIN THAT DENSITY, AND IS TO BE CERTIFIED BY THE ENGINEER AT THE TIME OF CONSTRUCTION. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T-99 (STANDARD PROCTOR).

#### 4.) CUT OFF TRENCH

- A.) THE CUTOFF TRENCH SHALL BE EXCAVATED INTO IMPERVIOUS MATERIAL ALONG OR PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS.
B.) THE BOTTOM WIDTH OF THE TRENCH SHALL BE GOVERNED BY THE EQUIPMENT USED FOR EXCAVATION, WITH THE MINIMUM WIDTH BEING FOUR FEET.
C.) THE DEPTH SHALL BE AT LEAST FOUR FEET BELOW EXISTING GRADE OR AS SHOWN ON THE PLANS.
D.) THE SIDE SLOPES OF THE TRENCH SHALL BE 1 TO 1 OR FLATTER. THE BACKFILL SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY.
E.) THE SIDE SLOPES SHALL BE 1 TO 1 OR FLATTER.
F.) THE CORE SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY.

#### 5.) EMBANKMENT CORE

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

### STRUCTURE BACKFILL

- 1.) BACKFILL ADJACENT TO PIPES OR STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL MATERIAL.
2.) THE FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT.
3.) THE MATERIAL NEEDS TO FILL COMPLETELY ALL SPACES UNDER AND ADJACENT TO THE PIPE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A CONCRETE STRUCTURE OR PIPE, UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE.
4.) STRUCTURE BACKFILL MAY BE FLOWABLE FILL MEETING THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 313 AS MODIFIED.
5.) THE MIXTURE SHALL HAVE A 100-200 PSI; 28 DAY UNCONFINED COMPRESSIVE STRENGTH. THE FLOWABLE FILL SHALL HAV
6.) E A MINIMUM PH OF 4.0 AND A MINIMUM RESISTIVITY OF 2,000 OHM-CM. MATERIAL SHALL BE PLACED SUCH THAT A MINIMUM OF 6" (MEASURED PERPENDICULAR TO THE OUTSIDE OF THE PIPE OF FLOWABLE FILL SHALL BE UNDER (BEDDING), OVER AND, ON THE SIDES OF THE PIPE.
7.) IT ONLY NEEDS TO EXTEND UP TO THE SPRING LINE FOR RIGID CONDUITS. AVERAGE SLUMP OF THE FILL SHALL BE 7" TO ASSURE FLOWABILITY OF THE MATERIAL.
8.) ADEQUATE MEASURES SHALL BE TAKEN (SAND BAGS, ETC.) TO PREVENT FLOATING THE PIPE. WHEN USING FLOWABLE FILL, ALL METAL PIPE SHALL BE BITUMINOUS COATED.
9.) ANY ADJOINING SOIL FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT.
10.) THE MATERIAL SHALL COMPLETELY FILL ALL VOIDS ADJACENT TO THE FLOWABLE FILL ZONE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE.
11.) UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A STRUCTURE OR PIPE UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE. BACKFILL MATERIAL OUTSIDE THE STRUCTURAL BACKFILL (FLOWABLE FILL) ZONE SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE CORE OF THE EMBANKMENT OR OTHER EMBANKMENT MATERIALS.

### PIPE CONDUITS

ALL PIPES SHALL B CIRCULAR IN CROSS SECTION.

#### 1.) CORRUGATE METAL PIPE

ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR CORRUGATE METAL PIPE:

- A.) MATERIALS
(POLYMER COATED STEEL PIPE) -STEEL PIPES WITH POLYMERIC COATINGS SHALL HAVE A MINIMUM COATING THICKNESS OF 0.01 INCH (10 MIL) ON BOTH SIDES OF THE PIPE. THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATIONS M-245 & M-246 WITH WATERTIGHT COUPLING BANDS OR FLANGES.
(ALUMINUM COATED STEEL PIPE) - THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-274 WITH WATERTIGHT COUPLING BANDS OR FLANGES. ALUMINUM COATED STEEL PIPE, WHEN USED WITH FLOWABLE FILL OR WHEN SOIL AND/OR WATER CONDITIONS WARRANT INCREASED DURABILITY, SHALL BE FULLY BITUMINOUS COATED PER REQUIREMENTS OF AASHTO SPECIFICATION M-190 TYPE A. ANY ALUMINUM COATING DAMAGED OR OTHERWISE REMOVED SHALL BE REPLACED WITH COLD APPLIED BITUMINOUS COATING COMPOUND. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER OR TWO COATS OF ASPHALT.
(ALUMINUM PIPE) - THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-196 OR M-211 WITH WATERTIGHT COUPLING BANDS OR FLANGES. ALUMINUM PIPE, WHEN USED WITH FLOWABLE FILL OR WHEN SOIL AND/OR WATER CONDITIONS WARRANT FOR INCREASED DURABILITY, SHALL BE FULLY BITUMINOUS COATED PER REQUIREMENTS OF AASHTO SPECIFICATION M-190 TYPE A. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER OR TWO COATS OF ASPHALT. HOT DIP GALVANIZED BOLTS MAY BE USED FOR CONNECTIONS. THE PH OF THE SURROUNDING SOILS SHALL BE BETWEEN 4 AND 9.
B.) COUPLING BANDS, ANTI-SEEP COLLARS, END SECTIONS, ETC., MUST BE COMPOSED OF THE SAME MATERIAL AND COATINGS AS THE PIPE. METALS MUST BE INSULATED FROM DISSIMILAR MATERIALS WITH USE OF RUBBER OR PLASTIC INSULATING MATERIALS AT LEAST 24 MILS IN THICKNESS.
C.) CONNECTIONS-ALL CONNECTIONS WITH PIPES MUST BE COMPLETELY WATERTIGHT. THE DRAIN PIPE OR BARREL CONNECTION TO THE RISER SHALL BE WELDED ALL AROUND WHEN THE PIPE AND RISER ARE METAL. ANTI-SEEP COLLARS SHALL BE CONNECTED TO THE PIPE IN SUCH A MANNER AS TO BE COMPLETELY WATERTIGHT. DIMPLE BANDS ARE NOT CONSIDERED TO BE WATERTIGHT.

ALL CONNECTIONS SHALL USE A RUBBER OR NEOPRENE GASKET WHEN JOINING PIPE SECTIONS. THE END OF EACH PIPE SHALL BE RE-ROLLED AN ADEQUATE NUMBER OF CORRUGATIONS TO ACCOMMODATE THE BANDWIDTH. THE FOLLOWING TYPE CONNECTIONS ARE ACCEPTABLE FOR PIPES LESS THAN 24 INCHES IN DIAMETER: FLANGES ON BOTH ENDS OF THE PIPE WITH A CIRCULAR 3/8 INCH CLOSED CELL NEOPRENE GASKET, PRE-PUNCHED TO THE FLANGE BOLT CIRCLE, SANDWICHED BETWEEN ADJACENT FLANGES; A 12-INCH WIDE STANDARD LAP TYPE BAND WITH 12-INCH WIDE BY 3/8-INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET; AND A 12-INCH WIDE HUGGER TYPE BAND WITH ROLLER GASKETS HAVING A MINIMUM DIAMETER OF 1/2 INCH GREATER THAN THE CORRUGATION DEPTH. PIPES 24 INCHES IN DIAMETER AND LARGER SHALL BE CONNECTED BY A 24 INCH LONG ANNULAR CORRUGATED BAND USING A MINIMUM OF 4 (FOUR) RODS AND LUGS, 2 ON EACH CONNECTING PIPE END. A 24-INCH WIDE BY 3/8-INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET WILL BE INSTALLED WITH 12 INCHES ON THE END OF EACH PIPE. FLANGED JOINTS WITH 3/8 INCH CLOSED CELL GASKETS THE FULL WIDTH OF THE FLANGE IS ALSO ACCEPTABLE. HELICALLY CORRUGATED PIPE SHALL HAVE EITHER CONTINUOUSLY WELDED SEAMS OR HAVE LOCK SEAMS WITH INTERNAL CAULKING OR A NEOPRENE BEAD.

- D.) BEDDING-THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.
E.) BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".
F.) OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

#### 2.) REINFORCED CONCRETE PIPE

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

- A.) MATERIALS -REINFORCED CONCRETE PIPE SHALL HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS AND SHALL EQUAL OR EXCEED ASTM C-361.
B.) BEDDING - REINFORCED CONCRETE PIPE CONDUITS SHALL BE LAID IN A CONCRETE BEDDING / CRADLE FOR THEIR ENTIRE LENGTH. THIS BEDDING / CRADLE SHALL CONSIST OF HIGH SLUMP CONCRETE PLACED UNDER THE PIPE AND UP THE SIDES OF THE PIPE AT LEAST 50% OF ITS OUTSIDE DIAMETER WITH A MINIMUM THICKNESS OF 6 INCHES. WHERE A CONCRETE CRADLE IS NOT NEEDED FOR STRUCTURAL REASONS, FLOWABLE FILL MAY BE USED AS DESCRIBED IN THE "STRUCTURE BACKFILL" SECTION OF THIS STANDARD. GRAVEL BEDDING IS NOT PERMITTED. POND MD-378-17 NRCS - MARYLAND JANUARY 2000
C.) LAYING PIPE - BELL AND SPIGOT PIPE SHALL BE PLACED WITH THE BELL END UPSTREAM. JOINTS SHALL BE MADE IN ACCORDANCE WITH RECOMMENDATIONS OF THE MANUFACTURER OF THE MATERIAL. AFTER THE JOINTS ARE SEALED FOR THE ENTIRE LINE, THE BEDDING SHALL BE PLACED SO THAT ALL SPACES UNDER THE PIPE ARE FILLED. CARE SHALL BE EXERCISED TO PREVENT ANY DEVIATION FROM THE ORIGINAL LINE AND GRADE OF THE PIPE. THE FIRST JOINT MUST BE LOCATED WITHIN 4 FEET FROM THE RISER.
D.) BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".
E.) OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

#### 3.) PLASTIC PIPE

THE FOLLOWING CRITERIA SHALL APPLY FOR PLASTIC PIPE:

- A.) MATERIALS - PVC PIPE SHALL BE PVC-1120 OR PVC-1220 CONFORMING TO ASTM D1785 OR ASTM D-2241. CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) PIPE, COUPLINGS AND FITTINGS SHALL CONFORM TO THE FOLLOWING: 4"-10" INCH PIPE SHALL MEET THE REQUIREMENTS OF AASHTO M252 TYPE S, AND 12" THROUGH 24" INCH SHALL MEET THE REQUIREMENTS OF AASHTO M294 TYPE S.
B.) JOINTS AND CONNECTIONS TO ANTI-SEEP COLLARS SHALL BE COMPLETELY WATERTIGHT.
C.) BEDDING -THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.
D.) BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".
E.) OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

#### 4.) DRAINAGE DIAPHRAGMS

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

### CONCRETE

CONCRETE SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 414, MIX NO. 3.

### ROCK RIPRAP

ROCK RIPRAP SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 311.

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

### CARE OF WATER DURING CONSTRUCTION

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

### STABILIZATION

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

### EROSION AND SEDIMENT CONTROL

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

#### SEDIMENT CONTROL/ STORM WATER MANAGEMENT REQUIRED INSPECTIONS

YOU MUST NOTIFY THE SEDIMENT CONTROL AND STORMWATER MANAGEMENT OFFICE AT 301-694-1679 BEFORE 9:00 A.M. 24 HOURS PRIOR TO THE REQUIRED INSPECTION. FAILURE TO NOTIFY THIS OFFICE WILL RESULT IN A STOP WORK ORDER OR OTHER PENALTIES AS OUTLINED IN FREDERICK COUNTY CODES.

\*\*\*\*\*NOTICE\*\*\*\*\*

THIS LIST IS FOR SEQUENCE OF CONSTRUCTION ONLY. THIS OFFICE ASSUMES NO RESPONSIBILITY OR LIABILITY FOR IMPROPER INSTALLATION OF ANY ITEM ON THIS CHECKLIST. THIS OFFICE RECOMMENDS THAT A PROFESSIONAL ENGINEER BE PRESENT FOR EACH OF THE REQUIRED INSPECTIONS.

TYPE OF INSPECTION	MISC. COMMENTS/INITIALS
1. PRECONSTRUCTION MEETING	
2. COMPLETION OF SEDIMENT CONTROL MEASURE (IE USING BASIN SEE BS BELOW)	
3. PRIOR TO MODIFICATION OR REMOVAL OF SED. CONTROL	
4. INFILTRATION SYSTEMS	
A. SITE READINESS PER SEQUENCE OF CONSTRUCTION	
B. INFILTRATION AREA, PROTECTED FROM SEDIMENTATION	
C. DIMENSIONS	
D. FILTERING MATERIAL	
E. FILL MATERIAL	
F. SIZE, PLACEMENT, TYPE OF PIPING	
G. OBSERVATION WELL	
H. COVER/STABILIZATION	
5. OPEN CHANNEL FLOW ATTENUATION	
A. SITE READINESS PER SEQUENCE OF CONSTRUCTION	
B. CROSS SECTION CONFORMANCE	
C. MATERIAL (TYPE/SIZE)	
D. STABILIZATION	
6. RETENTION/DETENTION STRUCTURES (BASIN/PONDS)	
A. SUBGRADE PREPARATION	
1. CORE TRENCH	
2. SUITABLE MATERIAL/ COMPACTION	
B. EMBANKMENT CONSTRUCTION	
1. SUITABLE MATERIAL/COMPACTION	
2. SLOPE GRADE	
3. DIMENSIONS	
C. BARREL AND RISER ASSEMBLY	
1. CORRECT MATERIAL ONSITE	
2. SIZING	
3. ANTI-SEEP COLLARS	
4. ANTI-FILTRATION DEVICE	
5. CONCRETE GRADE (IF ONLY)	
6. INSTALLATION /BARRELF/COMPACTION	
D. CONCRETE STRUCTURES	
1. FOOTER DIMENSIONS	
2. REINFORCING MATERIAL (TYPE, SIZE, PLACEMENT)	
3. WEIR POUR/MATERIAL/SUMP TEST	
4. FORM STRIP AND FINISHING	
E. IMPROVING AREA	
1. LOW FLOW CHANNELS/STABILIZATION	
2. DEWATERING DEVICE	
3. EMERGENCY SPILLWAY	
4. EXTENDED DETENTION DEVICE	
F. OUTFALL AREA (LEVEL SPREADER, RIPRAP CHANNEL, ECT.)	
G. VEGETATIVE STABILIZATION	
H. MISCELLANEOUS	

FREDERICK SOIL CONSERVATION DISTRICT

Approved by \_\_\_\_\_ District Manager

Date \_\_\_\_\_

SCD APPROVAL FOR SEDIMENT AND EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS

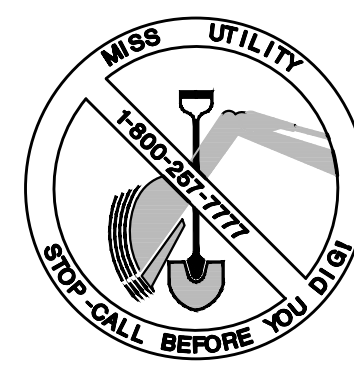
Professional seal for Michael J. Bingham, PE, License No. 49804, State of Maryland. Includes project information for COLONY VILLAGE BMP RETROFIT, EROSION AND SEDIMENT CONTROL NOTES, AS SHOWN, and contact info for ARRG (201 Thomas Johnson Drive Suite 207, Frederick, MD 21702).

# TOWN OF WALKERSVILLE FREDERICK COUNTY, MARYLAND

## STORMWATER BMP IMPROVEMENTS DEERFIELD BMP FACILITY

### UNDERGROUND UTILITY LINE PROTECTION ACT

THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES OR STRUCTURES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES AND STRUCTURES BEFORE COMMENCING THE WORK. CALL MISS UTILITY AT 1-800-257-7777 AT LEAST 48 HOURS IN ADVANCE OF WORK.




### PROJECT SUMMARY

THE TOWN OF WALKERSVILLE IS PROPOSING TO DESIGN A NEW MULTIPLE POND SYSTEM. THE PROJECT WILL DECREASE NUTRIENT AND SEDIMENT LOADS AND THE TOWN OF WALKERSVILLE WILL RECEIVE CREDITS TOWARDS THEIR CHESAPEAKE BAY POLLUTION REDUCTION PLAN. THE DESIGN WILL INVOLVE FORMING A BASIN BOTTOM, CREATING A BERM AND EMBANKMENT, MODIFYING GRADING, AND FORMING AN EMERGENCY SPILLWAY. THE IMPROVEMENTS WILL DECREASE EXISTING FLOW RATES AND DETAIN RUNOFF FOR A LONGER PERIOD OF TIME BEFORE EXITING THE SITE IN THE SAME PATTERN AS EXISTING CONDITIONS.

### DISTURBED AREA QUANTITY

THE TOTAL AREA TO BE DISTURBED SHOWN ON THESE PLANS HAS BEEN DETERMINED TO BE APPROXIMATELY 8.045 ACRES (350,423 S.F.) AND THE TOTAL AMOUNT OF EXCAVATION AND FILL AS SHOWN ON THESE PLANS HAS BEEN COMPUTED TO BE APPROXIMATELY 13,200 CUBIC YARDS OF EXCAVATION AND APPROXIMATELY 4,000 CUBIC YARDS OF FILL. (APPROX. ONLY - NOT FOR BID PURPOSES)  
CUT AND FILL ARE TRENCH EXCAVATION AND BACKFILL ONLY.

  
MICHAEL J. BINGHAM  
MD. PE NO. 49804  
12/19/22  
DATE

### ENGINEER/ARCHITECT DESIGN CERTIFICATION

I HEREBY CERTIFY THAT THE PLANS HAVE BEEN DESIGNED IN ACCORDANCE WITH LOCAL ORDINANCES, COMAR 26.17.01, AND 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.

  
MICHAEL J. BINGHAM  
MD. PE NO. 49804  
12/19/22  
DATE

### DESIGN CERTIFICATION

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE "STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL IN DEVELOPING AREA" AND THE REQUIREMENTS OF THE FREDERICK SOIL CONSERVATION DISTRICT.

  
MICHAEL J. BINGHAM  
MD. PE NO. 49804  
12/19/22  
DATE

### OWNERS/DEVELOPERS CERTIFICATION

I CERTIFY THAT THIS PLAN OF SEDIMENT CONTROL WILL BE IMPLEMENTED TO THE FULLEST EXTENT, AND ALL STRUCTURES WILL BE INSTALLED TO THE DESIGN AND SPECIFICATIONS AS SPELLED OUT IN THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATION OF ATTENDANCE AT A DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE EVALUATION BY THE CATOCIN/FREDERICK SOIL CONSERVATION DISTRICT PERSONNEL AND COOPERATING AGENCIES.

XX

### DRAWING INDEX

- 1 OF 10 TITLE SHEET
- 2 OF 10 EXISTING CONDITIONS AND DEMOLITION
- 3 OF 10 PROPOSED CONDITIONS
- 4 OF 10 STORM DRAIN PROFILE AND DETAILS
- 5 OF 10 EROSION AND SEDIMENT CONTROL PLAN
- 6 OF 10 LANDSCAPE PLAN
- 7 OF 10 DESIGN DETAILS
- 8 OF 10 EROSION AND SEDIMENT CONTROL DETAILS
- 9 OF 10 EROSION AND SEDIMENT CONTROL NOTES
- 10 OF 10 EROSION AND SEDIMENT CONTROL NOTES

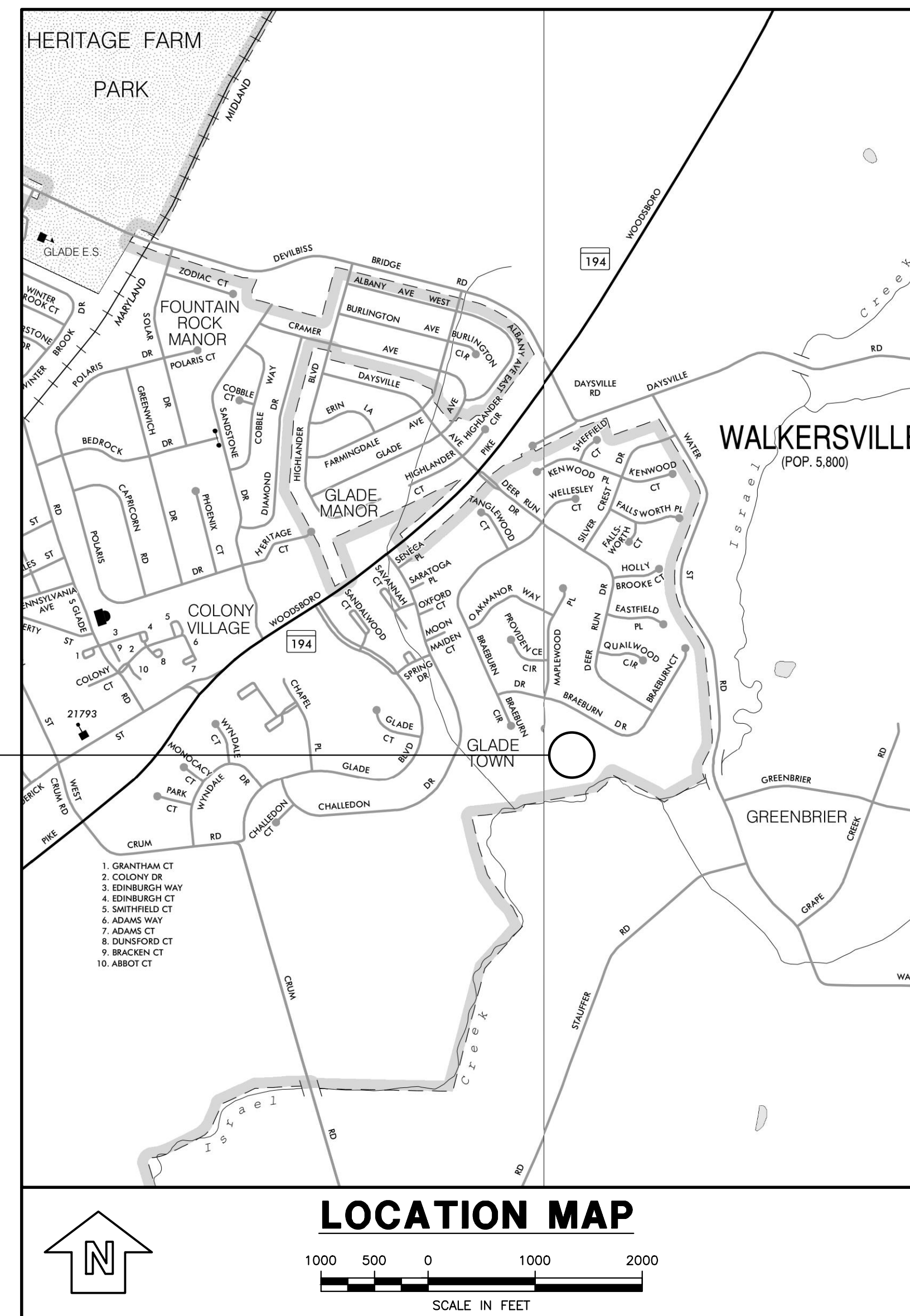
### GENERAL NOTES

1. DURING THE LAYOUT OF SEDIMENT CONTROL PRACTICES REQUIRED ON THIS PLAN, MINOR FIELD ADJUSTMENTS CAN AND WILL BE MADE TO INSURE THE ARREST AND CONTROL OF ANY SEDIMENT BEFORE IT LEAVES THE CONSTRUCTION SITE. CHANGES IN SEDIMENT CONTROL PRACTICES REQUIRE PRIOR APPROVAL OF THE SEDIMENT CONTROL INSPECTOR.
2. THE CONTRACTOR WILL BE RESPONSIBLE FOR INSTALLING SEDIMENT RETENTION STRUCTURES, AND SURFACE WATER DIVERSIONS AS PART OF THE INITIAL PHASE OF CONSTRUCTION.
3. PREVENT THE TRACKING OF MUD FROM THE SITE ONTO PUBLIC ROADS BY PLACING CRUSHED STONE OVER EGRESS AREA OR BY EFFECTIVE MEANS. ALSO RESPONSIBLE FOR THE IMMEDIATE REPAIR OF ANY DAMAGE TO PUBLIC OR PRIVATE ROADS CAUSED BY THIS CONSTRUCTION.
4. CONTINUAL INSPECTION AND MAINTENANCE OF SEDIMENT CONTROL FACILITIES SHALL BE PERFORMED UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE SOIL CONSERVATION DISTRICT INSPECTOR.
5. NO WORK SHALL PROCEED IN THE STREAM (CLASS IV) CHANNEL DURING STREAM CLOSURE DATES FROM MARCH 1 THRU MAY 31.
6. DEPENDING ON SITE CONDITIONS, PHASING OR CONSTRUCTION SEQUENCING, AND STABILIZATION METHODS, ADDITIONAL SEDIMENT CONTROLS (OTHER THAN AS SHOWN HEREON) MAY BE REQUIRED BY THE INSPECTOR.
7. NO WETLANDS WERE LOCATED ON SITE.

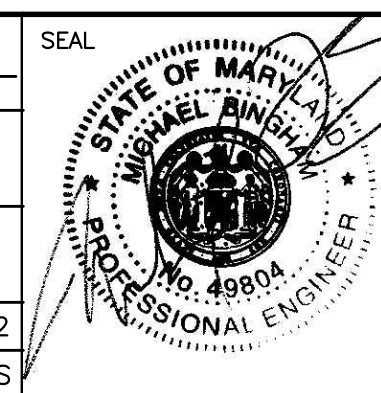

FREDERICK SOIL CONSERVATION DISTRICT  
Approved by \_\_\_\_\_  
District Manager  
Date \_\_\_\_\_

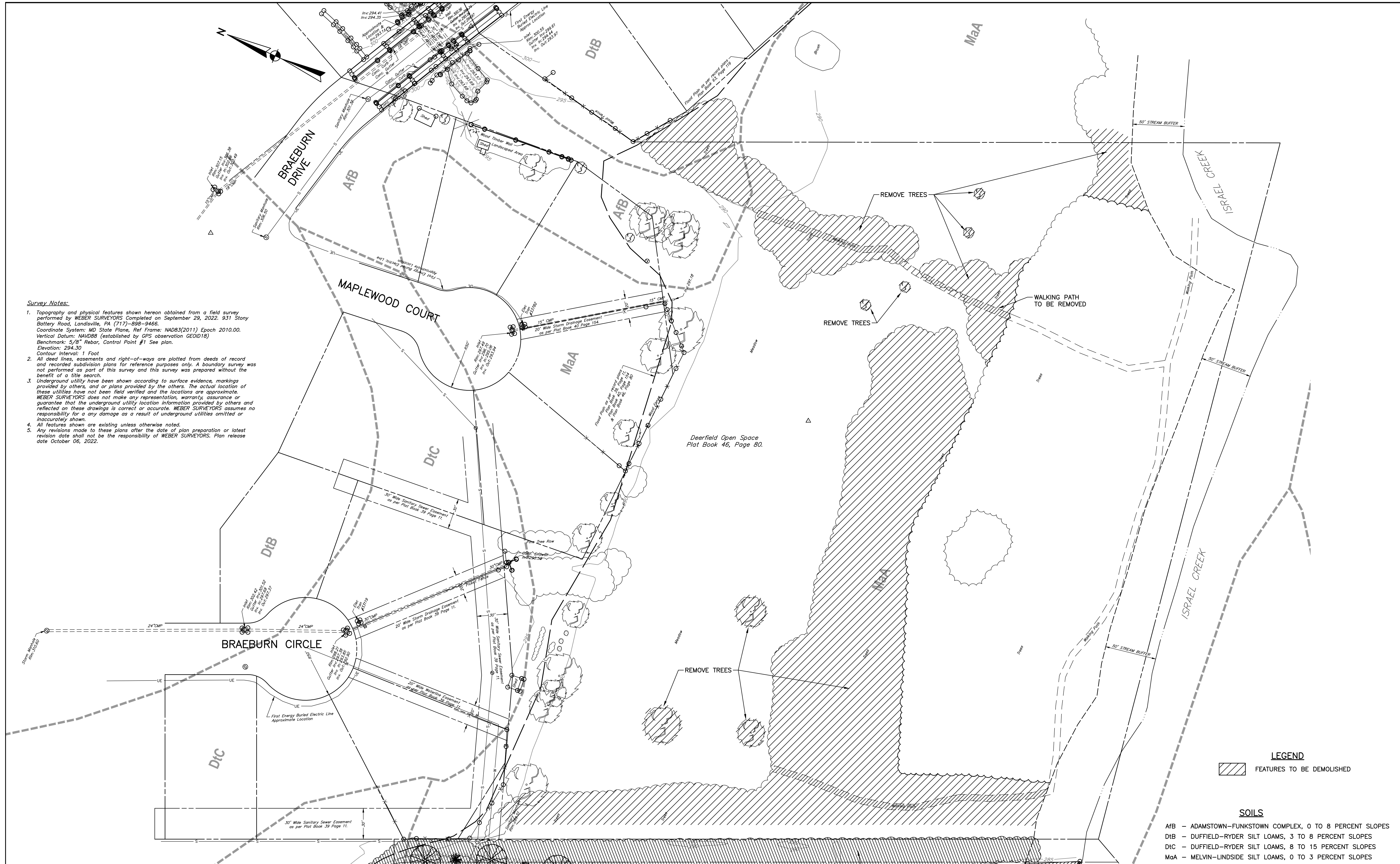
SCD APPROVAL FOR SEDIMENT AND EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS.

File #: xx  
A/P #: xx  
Due Date:



FREDERICK COUNTY, MARYLAND DEVELOPMENT REVIEW ENGINEERING FOR SWM REVIEW ONLY				
APPROVED:	DEVELOPMENT REVIEW CHIEF	DATE		
APPROVED:	STORMWATER MANAGEMENT	DATE		
Reviewed in accordance with local County requirements. Frederick County assumes no liability for design and/or construction. Approval is valid for two (2) years after the last date shown above. The project must be under construction before the approval expiration to be considered active. Otherwise, resubmittal of plans, including applicable fees, must be made to Development Review for reapproval. Fees for resubmittal cannot be waived.				
REV. #	DATE	REVISION DESCRIPTION <small>* FILL IN THESE BLOCKS FOR REVISIONS ONLY</small>	CONSULTANT: DATE AND INITIAL	DEV. REVIEW: DATE AND INITIAL

<table border="1"> <tr> <td>NO</td> <td>REVISION</td> <td>DATE</td> <td>BY</td> <td>APP.</td> <td>NO</td> <td>REVISION</td> <td>DATE</td> <td>BY</td> <td>APP.</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>										NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.											MICHAEL J. BINGHAM, PE RELEASED BY DESIGN: BCU CHECKED DRAWN: CADD CHECKED DATE: OCTOBER 2022 SURVEY DATE: SEPT 2022 FIELD BOOK: WEBER SURVEYORS		SEAL  SEAL PROFESSIONAL CERTIFICATION I, MICHAEL J. BINGHAM, P.E. 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. 49804, Expiration Date: 2024-08-23		CLIENT & PROJECT TOWN OF WALKERSVILLE 21 WEST FREDERICK STREET WALKERSVILLE, MARYLAND 21793  BMP DESIGNS WALKERSVILLE, FREDERICK COUNTY, MARYLAND		 201 Thomas Johnson Drive Suite 207 Frederick, MD 21702 Tel 301.791.1100		TITLE: DEERFIELD BMP FACILITY TITLE SHEET  SCALE: AS SHOWN PROJECT NO. 10827.37 SHEET NO. 1 OF 10 DWG. NO.	
NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.																														



**Survey Notes:**

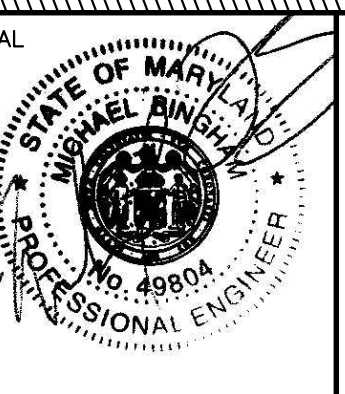
1. Topography and physical features shown hereon obtained from a field survey performed by WEBER SURVEYORS Completed on September 29, 2022. 931 Stony Battery Road, Landisville, PA (717)-898-9466. Coordinate System: MD State Plane, Ref Frame: NAD83(2011) Epoch 2010.00. Vertical Datum: NAVD83 (established by GPS observation GEOID18). Benchmark: 5/8" Rebar, Control Point #1 See plan. Elevation: 294.30. Contour Interval: 1 Foot
2. All deed lines, easements and right-of-ways are plotted from deeds of record and recorded subdivision plans for reference purposes only. A boundary survey was not performed as part of this survey and this survey was prepared without the benefit of a title search.
3. Underground utility have been shown according to surface evidence, markings provided by others, and or plans provided by the others. The actual location of these utilities have not been field verified and the locations are approximate. WEBER SURVEYORS does not make any representation, warranty, assurance or guarantee that the underground utility location information provided by others and reflected on these drawings is correct or accurate. WEBER SURVEYORS assumes no responsibility for a any damage as a result of underground utilities omitted or inaccurately shown.
4. All features shown are existing unless otherwise noted.
5. Any revisions made to these plans after the date of plan preparation or latest revision date shall not be the responsibility of WEBER SURVEYORS. Plan release date October 06, 2022.

**LEGEND**  
 FEATURES TO BE DEMOLISHED

**SOILS**  
 Afb - ADAMSTOWN-FUNKSTOWN COMPLEX, 0 TO 8 PERCENT SLOPES  
 Dib - DUFFIELD-RYDER SILT LOAMS, 3 TO 8 PERCENT SLOPES  
 Dtc - DUFFIELD-RYDER SILT LOAMS, 8 TO 15 PERCENT SLOPES  
 MaA - MELVIN-LINDSIDE SILT LOAMS, 0 TO 3 PERCENT SLOPES

NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.

MICHAEL J. BINGHAM, PE	
RELEASED BY	CHECKED
DESIGN	BCU
DRAWN	CHECKED
CADD	CADD
DATE	OCTOBER 2022
SURVEY DATE	SEPT 2022
FIELD BOOK	WEBER SURVEYORS

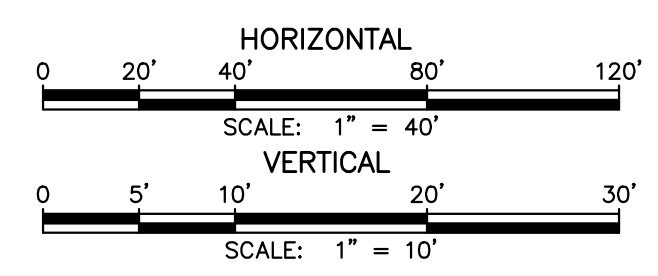
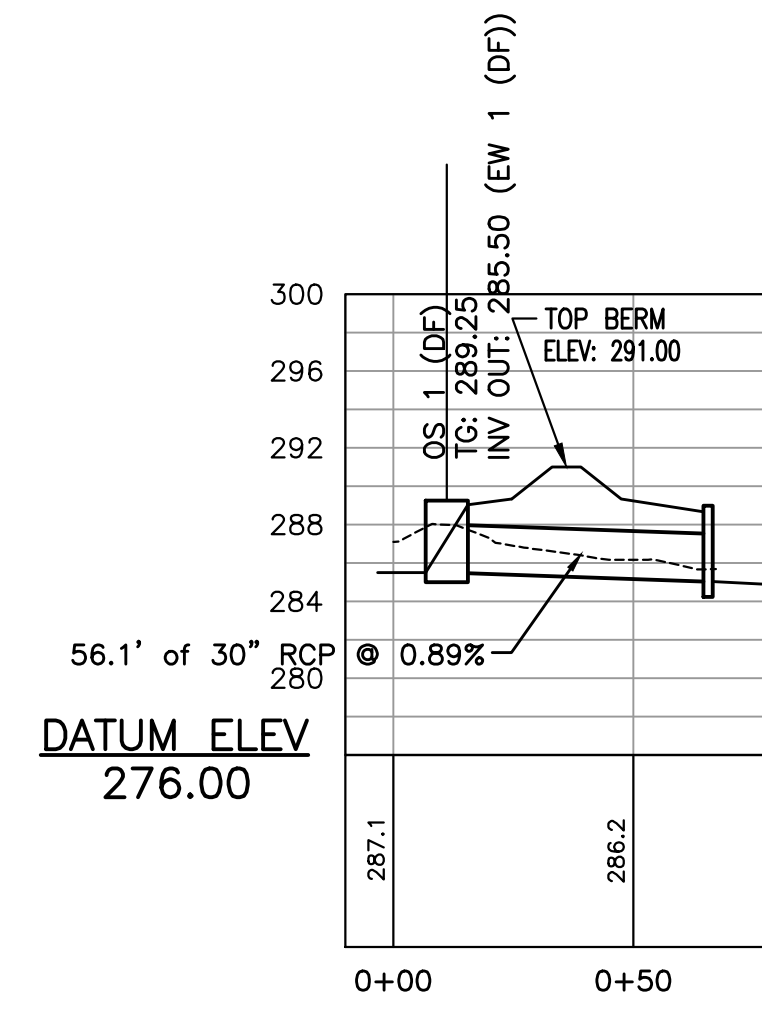
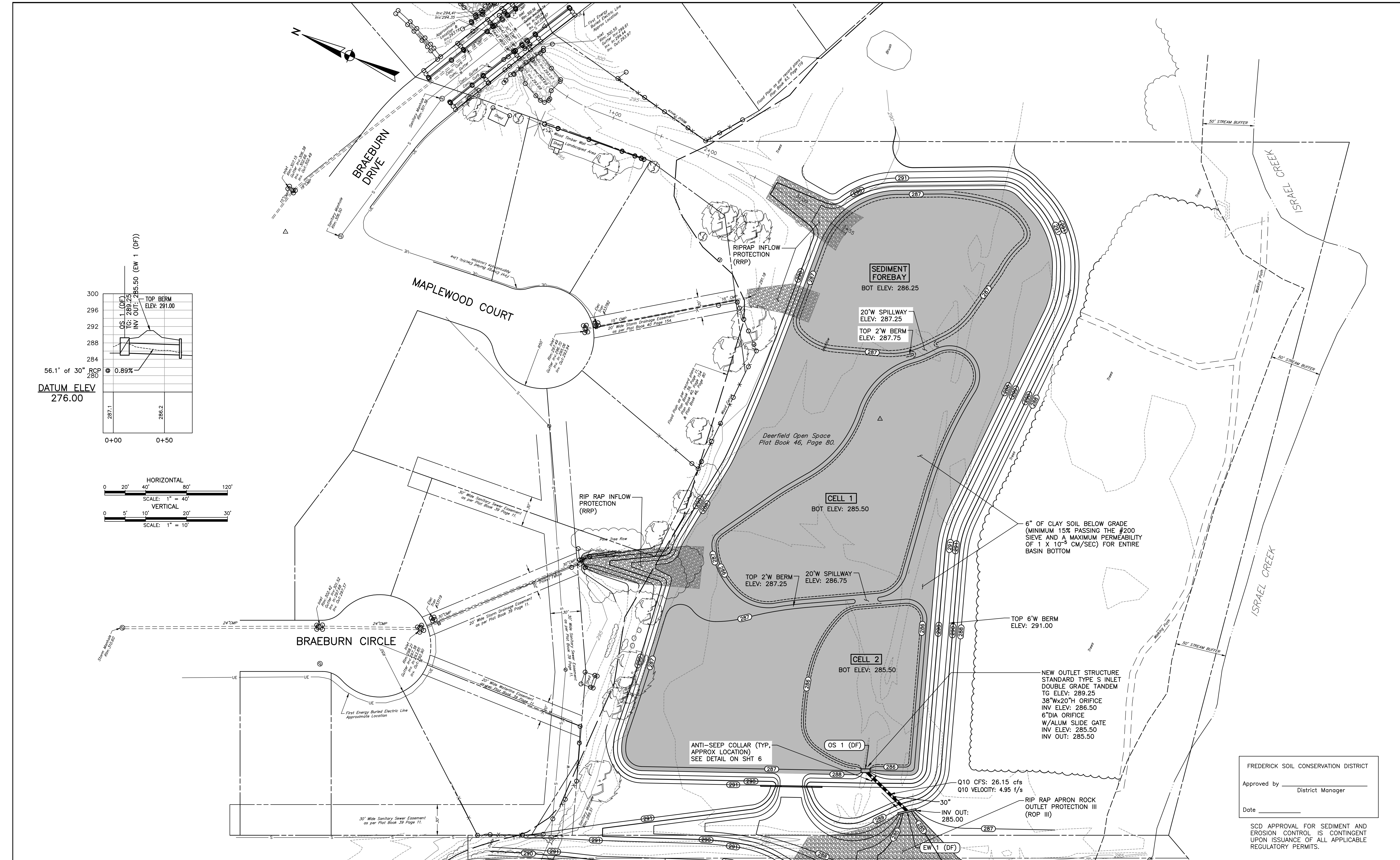


SEAL  
 PROFESSIONAL CERTIFICATION  
 I, MICHAEL J. BINGHAM, P.E.  
 hereby certify that these documents  
 were prepared or approved by me,  
 and that I am a duly licensed  
 professional engineer under the  
 laws  
 of the State of Maryland,  
 License No. 49804  
 Expiration Date: 2024-08-23

CLIENT & PROJECT  
 TOWN OF WALKERSVILLE  
 21 WEST FREDERICK STREET  
 WALKERSVILLE, MARYLAND 21793  
 BMP DESIGNS  
 WALKERSVILLE, FREDERICK COUNTY, MARYLAND



TITLE DEERFIELD BMP FACILITY EXISTING CONDITIONS AND DEMOLITION			
SCALE 0 20' 40' 80' 120'	SCALE: 1" = 40'		DWG. NO.
PROJECT NO. 10827.37	SHEET NO. 2 OF 10	REV.	



FREDERICK SOIL CONSERVATION DISTRICT

Approved by \_\_\_\_\_ District Manager

Date \_\_\_\_\_

SCD APPROVAL FOR SEDIMENT AND EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS.

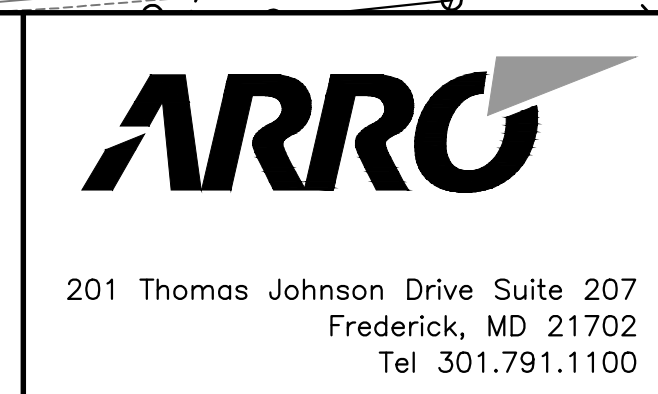
NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.

MICHAEL J. BINGHAM, PE	
RELEASED BY	CHECKED
DESIGN	BCU
DRAWN	CHECKED
CADD	
DATE	SURVEY DATE
OCTOBER 2022	SEPT 2022
	FIELD BOOK
	WEBER SURVEYORS

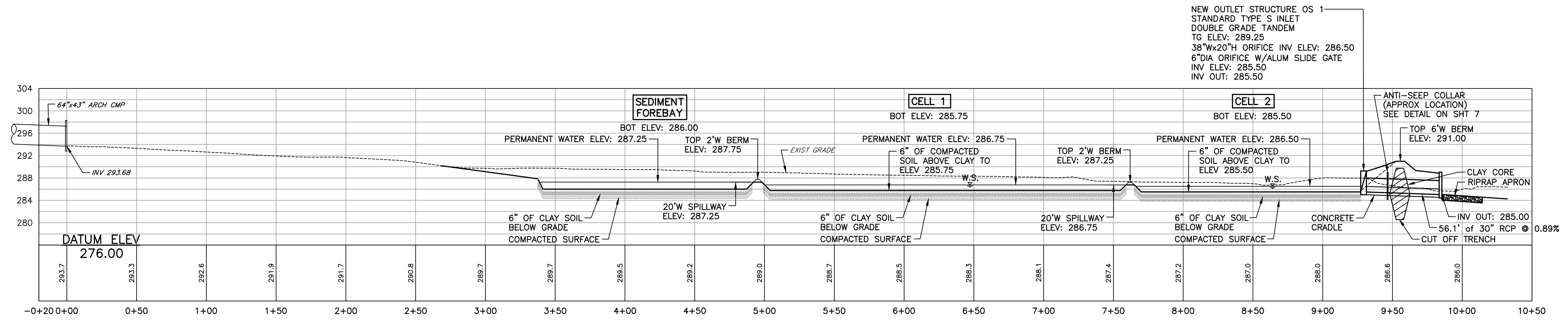


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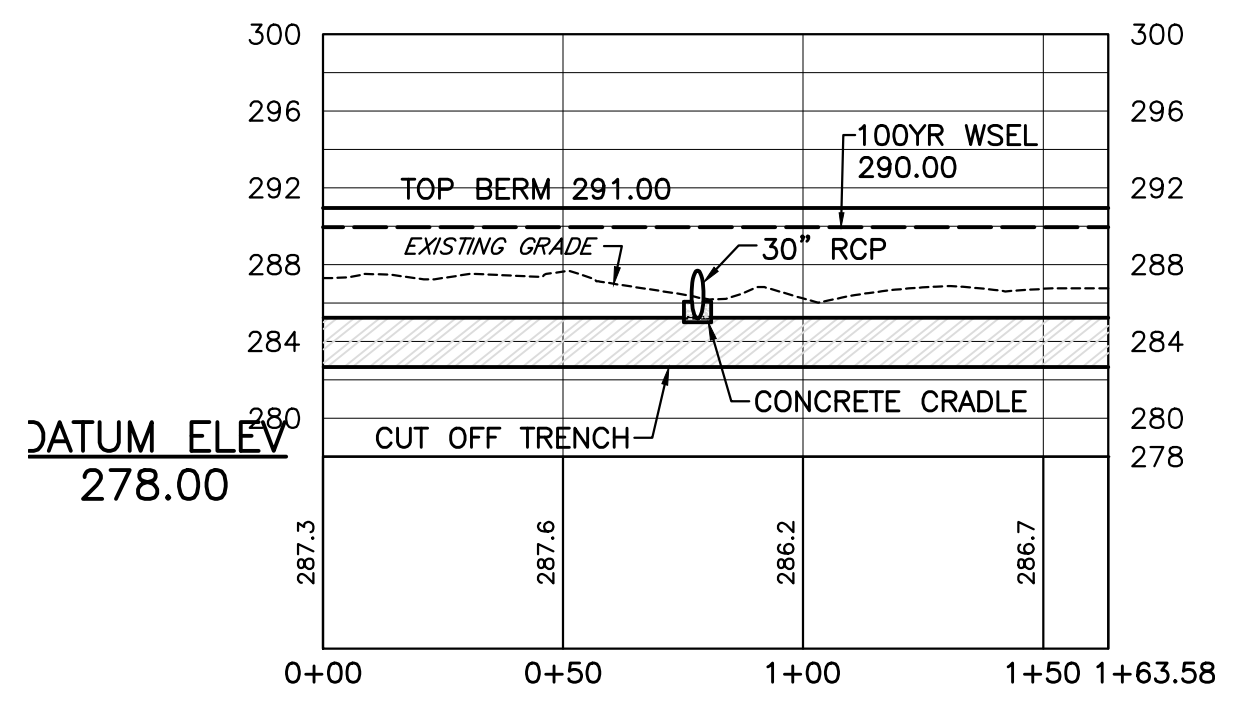
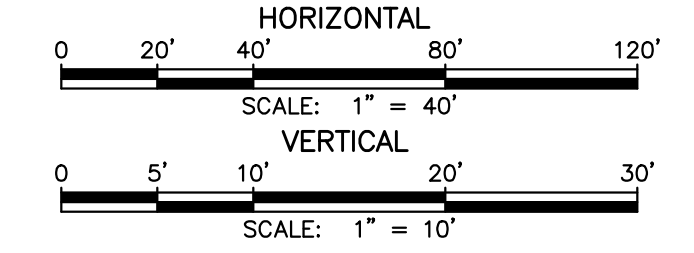
CLIENT & PROJECT  
 TOWN OF WALKERSVILLE  
 21 WEST FREDERICK STREET  
 WALKERSVILLE, MARYLAND 21793  
 BMP DESIGNS  
 WALKERSVILLE, FREDERICK COUNTY, MARYLAND



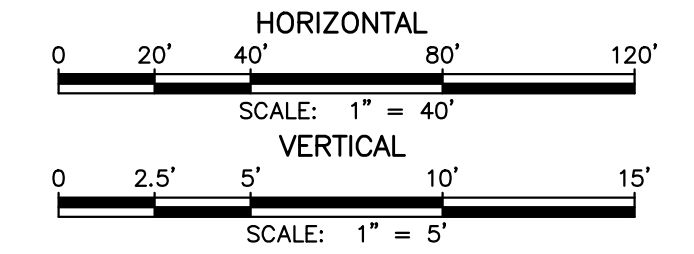
TITLE		DEERFIELD BMP FACILITY PROPOSED CONDITIONS	
SCALE	0 20' 40' 80' 120'	DWG. NO.	
SCALE: 1" = 40'		PROJECT NO.	10827.37
SHEET NO.	3 OF 10	REV.	



**STORM DRAINAGE PROFILE**



**BERM PROFILE**



FREDERICK SOIL CONSERVATION DISTRICT  
 Approved by \_\_\_\_\_ District Manager  
 Date \_\_\_\_\_

SCD APPROVAL FOR SEDIMENT AND EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS.

NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.

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	DRAWN	CADD		CHECKED
	DATE	OCTOBER 2022	SURVEY DATE	SEPT 2022
			FIELD BOOK	WEBER SURVEYORS



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 WALKERSVILLE, MARYLAND 21793  
 BMP DESIGNS  
 WALKERSVILLE, FREDERICK COUNTY, MARYLAND



TITLE	DEERFIELD BMP FACILITY STORM DRAIN PROFILE AND DETAILS		
SCALE	0 20' 40' 80' 120'	DWG. NO.	
PROJECT NO.	10827.37	SHEET NO.	4 OF 10
		REV.	



**LEGEND**

- SOIL BOUNDARY LINE
- TSSMS TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION 1.55 PSF SHEAR STRESS (NAG S75) (DETAIL B-4-6-B)
- TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION 1.75 PSF SHEAR STRESS (NAG S150) (DETAIL B-4-6-B)
- 12" FILTER LOG (DETAIL E-6)
- LIMIT OF DISTURBANCE (223,210 SF, 5.124 AC)
- SCE STABILIZED CONSTRUCTION ENTRANCE (DETAIL B-1)
- MATERIAL STOCKPILE
- AGIP AT GRADE INLET PROTECTION (DETAIL E-9-2)
- TSOS TEMPORARY STONE OUTLET STRUCTURE (DETAIL E-7)

FREDERICK SOIL CONSERVATION DISTRICT  
 Approved by \_\_\_\_\_ District Manager  
 Date \_\_\_\_\_

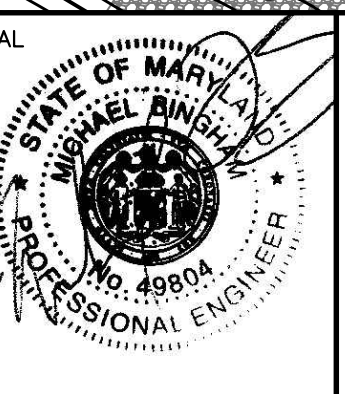
SCD APPROVAL FOR SEDIMENT AND EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS.

**SOILS**

- A1B - ADAMSTOWN-FUNKSTOWN COMPLEX, 0 TO 8 PERCENT SLOPES
- D1B - DUFFIELD-RYDER SILT LOAMS, 3 TO 8 PERCENT SLOPES
- D1C - DUFFIELD-RYDER SILT LOAMS, 8 TO 15 PERCENT SLOPES
- MaA - MELVIN-LINDSIDE SILT LOAMS, 0 TO 3 PERCENT SLOPES

NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.

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 BMP DESIGNS  
 WALKERSVILLE, FREDERICK COUNTY, MARYLAND



TITLE DEERFIELD BMP FACILITY EROSION AND SEDIMENT CONTROL PLAN		
SCALE 0 20' 40' 80' 120'	DWC. NO.	
SCALE: 1" = 40'		
PROJECT NO. 10827.37	SHEET NO. 5 OF 10	REV.



**PLANTING SOIL (TOPSOIL)**

- a. USE A MINIMUM OF 12" OF TOPSOIL IN MARSH AREAS OF THE WETLAND. IF NATURAL TOPSOIL FROM THE SITE IS TO BE USED IT MUST HAVE AT LEAST 8 PERCENT ORGANIC CARBON CONTENT (BY WEIGHT) IN THE A-HORIZON FOR SANDY SOILS AND 12% FOR OTHER SOIL TYPES.
- b. IF PLANTING SOIL IS BEING IMPORTED IT SHOULD BE MADE UP OF EQUIVALENT PROPORTIONS OF ORGANIC AND MINERAL MATERIALS.
- c. LIME SHOULD NOT BE ADDED TO PLANTING SOIL UNLESS ABSOLUTELY NECESSARY AS IT MAY ENCOURAGE THE PROPAGATION OF INVASIVE SPECIES.
- d. THE FINAL ELEVATIONS AND HYDROLOGY OF THE WETLAND ZONES SHOULD BE EVALUATED PRIOR TO PLANTING TO DETERMINE IF GRADING OR PLANTING CHANGES ARE REQUIRED.

**VEGETATION**

- a. ALL WETLAND PLANT STOCK SHALL EXHIBIT LIVE BUDS OR SHOOTS. ALL PLANT STOCK SHALL BE TURPID, FIRM, AND RESILIENT. INTERNODES OF RHIZOMES MAY BE FLEXIBLE AND NOT NECESSARILY RIGID. SOFT OR MUSHY STOCK SHALL BE REJECTED. THE STOCK SHALL BE FREE OF DELETERIOUS INSECT INFESTATION, DISEASE AND DEFECTS SUCH AS KNOTS, SUN-SCALD, INJURIES, ABRASIONS, OR DISFIGUREMENT THAT COULD ADVERSELY AFFECT THE SURVIVAL OR PERFORMANCE OF THE PLANTS.
- b. ALL STOCK SHALL BE FREE FROM INVASIVE OR NUISANCE PLANTS OR SEEDS SUCH AS THOSE LISTED IN APPENDIX A.
- c. DURING ALL PHASES OF THE WORK, INCLUDING TRANSPORT AND ONSITE HANDLING, THE PLANT MATERIALS SHALL BE CAREFULLY HANDLED AND PACKED TO PREVENT INJURIES AND DESICCATION. DURING TRANSIT AND ONSITE HANDLING, THE PLANT MATERIAL SHALL BE KEPT FROM FREEZING AND SHALL BE KEPT COVERED, MOIST, COOL, OUT OF WEATHER, AND OUT OF THE WIND AND SUN. PLANTS SHALL BE WATERED TO MAINTAIN MOIST SOIL AND/OR PLANT CONDITIONS UNTIL ACCEPTED.
- d. PLANTS NOT MEETING THESE SPECIFICATIONS OR DAMAGED DURING HANDLING, LOADING, AND UNLOADING WILL BE REJECTED.
- e. TREES/SHRUBS SHALL BE PLANTED IN THE LOCATIONS SPECIFIED ON THE PLANS. ALL OTHER PLANTINGS CAN BE SPREAD THOROUGHLY IN THEIR RESPECTIVE ZONES.

<p><b>ZONE 1</b> [Symbol]</p> <p>DEEP WATER POOL</p> <ul style="list-style-type: none"> <li>• SOFT STEM BULRUSH</li> <li>48"-60" SPACING</li> </ul>	<p><b>ZONE 4</b> [Symbol]</p> <p>HIGH MARSH</p> <ul style="list-style-type: none"> <li>• SWAMP MILKWEED</li> <li>30" SPACING</li> <li>• WOOL GRASS</li> <li>24"-48" SPACING</li> </ul>
<p><b>ZONE 3</b> [Symbol]</p> <p>LOW MARSH ZONE PLANINGS</p> <ul style="list-style-type: none"> <li>• CATTAIL SEDGE</li> <li>48"-60" SPACING</li> <li>• BLUE FLAG IRIS</li> <li>18"-24" SPACING</li> <li>• RICE CUTGRASS</li> <li>24" SPACING</li> </ul>	<p><b>ZONE 5</b> [Symbol]</p> <p>FLOODPLAIN TERRACE</p> <ul style="list-style-type: none"> <li>• SWITCHGRASS</li> <li>36"-48" SPACING</li> <li>• BLACKHAW</li> <li>• RIVER BIRCH</li> </ul>

**PLANTING DETAIL**

NO SCALE

PLANT SCHEDULE			
SYMBOL	QUANTITY	NAME	ZONE
[Symbol]	3	RIVER BIRCH	ZONE 5 - FLOODPLAIN TERRACE
[Symbol]	12	BLACKHAW	ZONE 5 - FLOODPLAIN TERRACE

NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.

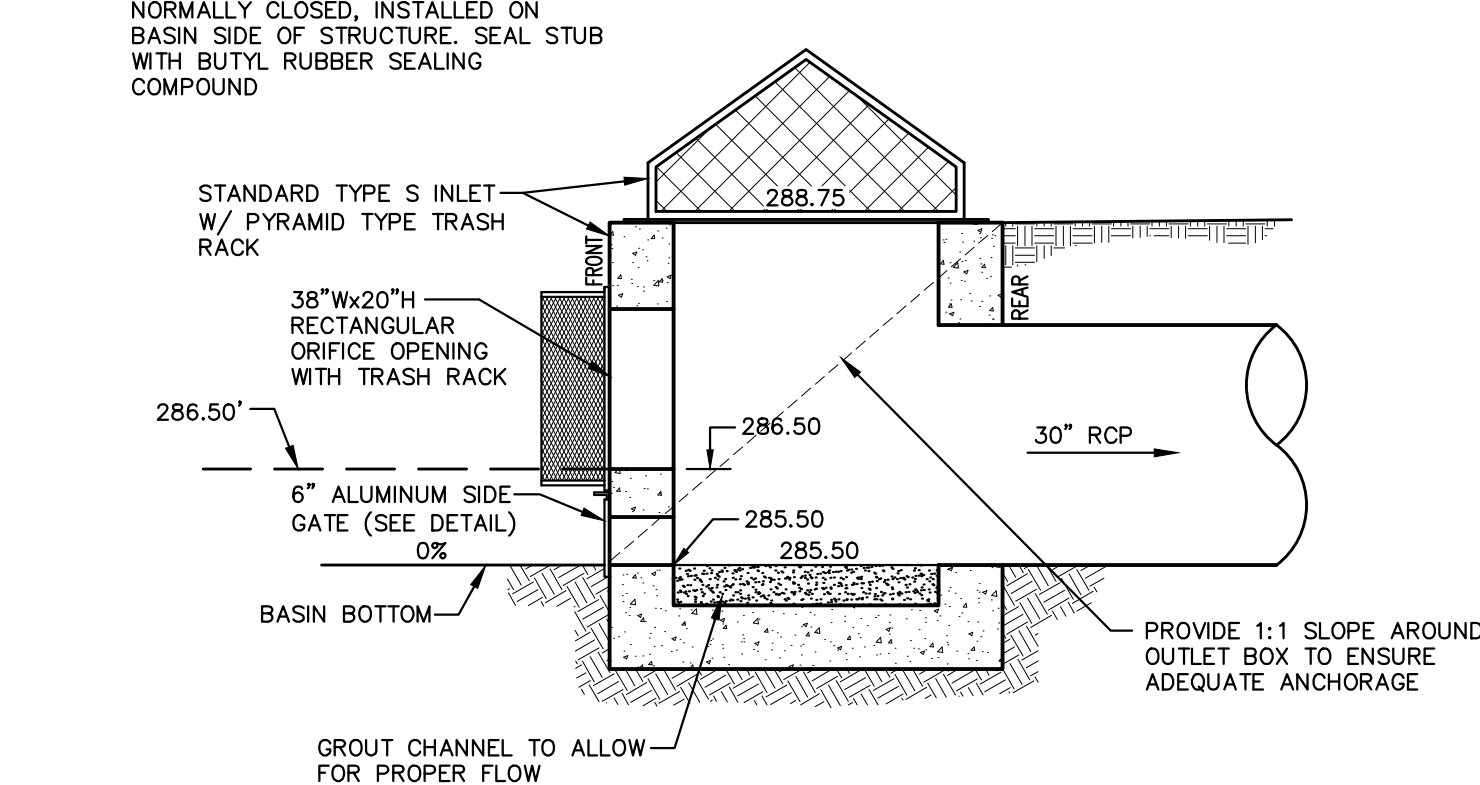
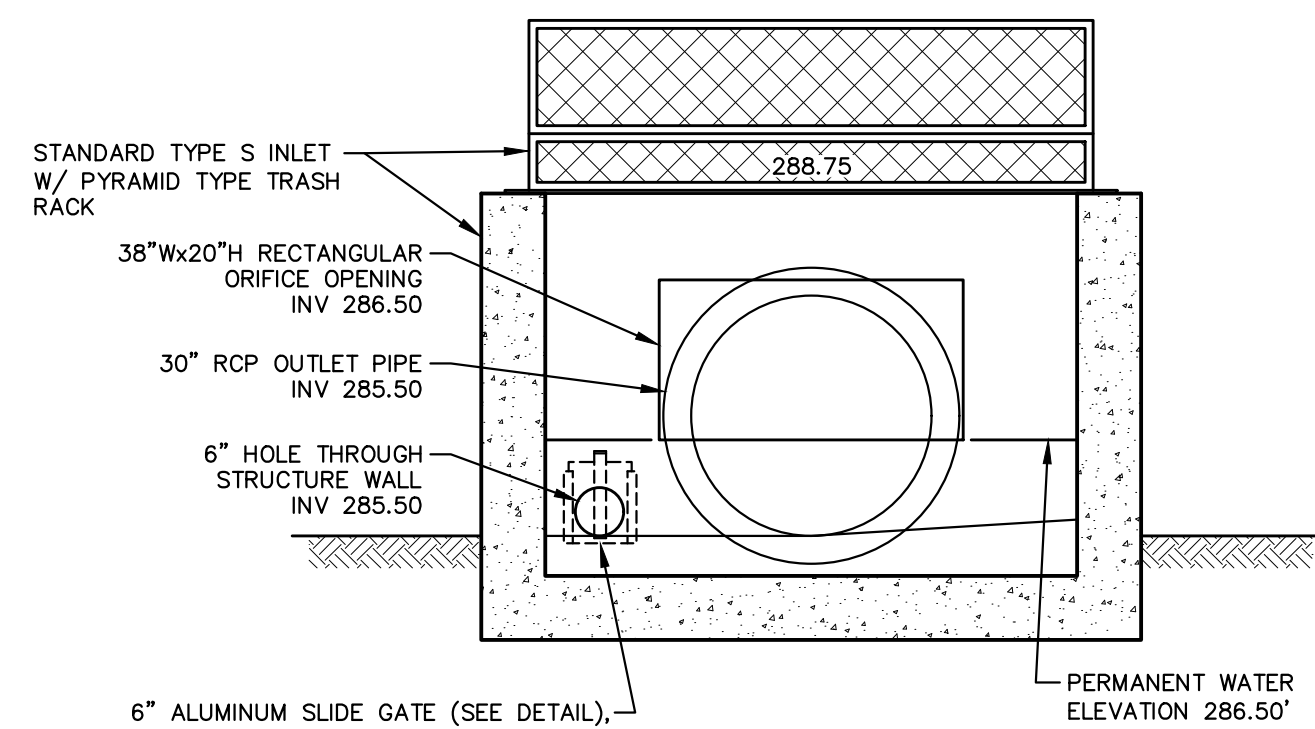
MICHAEL J. BINGHAM, PE	SEAL
RELEASED BY	
DESIGN	CHECKED
BCU	
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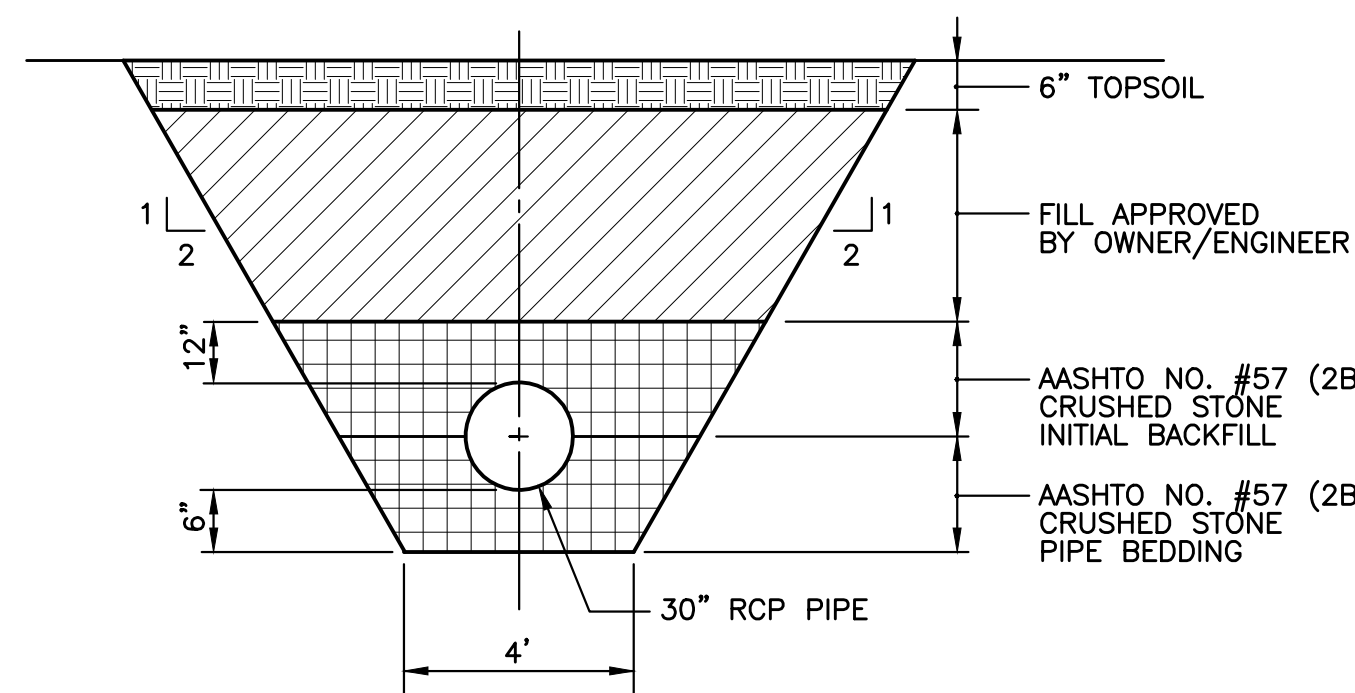
**ARRG**  
 201 Thomas Johnson Drive Suite 207  
 Frederick, MD 21702  
 Tel 301.791.1100

TITLE	DEERFIELD BMP FACILITY LANDSCAPE PLAN		
SCALE	0 20' 40' 80' 120'	DWG. NO.	
PROJECT NO.	10827.37	SHEET NO.	6 OF 10
REV.			



NOTE: PROVIDE OUTLET CONTROL STRUCTURE AS PER MDOT SHA STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS. USE STANDARD TYPE S INLET (MD 379.03) AND DOUBLE GRATE TANDEM (MD 379.05).

**OUTLET STRUCTURE OS 1**  
NO SCALE



NOTE: SAME SIZE TRENCH TO BE USED FOR PIPE REMOVAL.

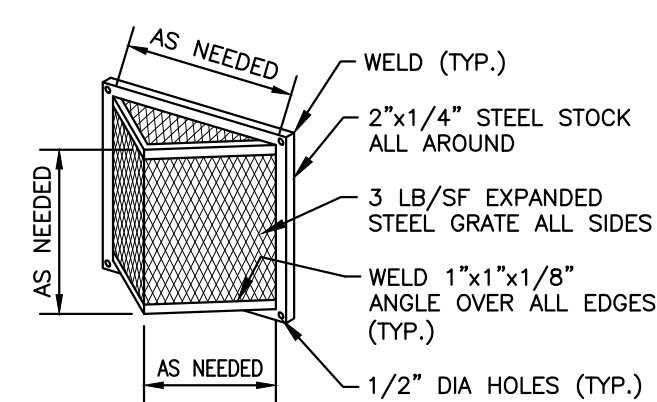
**PIPE INSTALLATION DETAIL**  
NO SCALE

**WEIR SECTION Z-Z**

BASIN NAME	WEIR		TOP ELEV WTE (FT)	CREST ELEV WTE (FT)	WIDTH (FT)	LINING *
	Z3 (FT)	Z4 (FT)				
SF	4	4	287.25	286.75	20	NAG S75
1	4	4	286.75	286.25	20	NAG S75
2	4	4	N/A	N/A	N/A	NAG S75

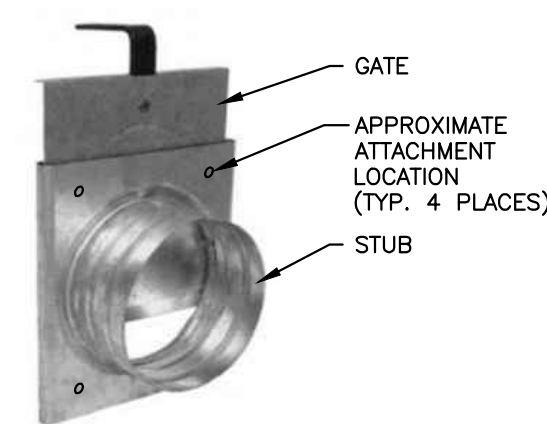
**CELL DETAIL**  
NO SCALE

**TRASH RACK NOTES:**  
1. TRASH RACK TO BE CENTERED OVER OPENING.  
2. STEEL TO CONFORM TO ASTM A-36.  
3. ALL SURFACES TO BE COATED WITH ZRC COLD GALVANIZING COMPOUND AFTER WELDING.  
4. TRASH RACK TO BE FASTENED TO THE WALL WITH 1/2\"/>

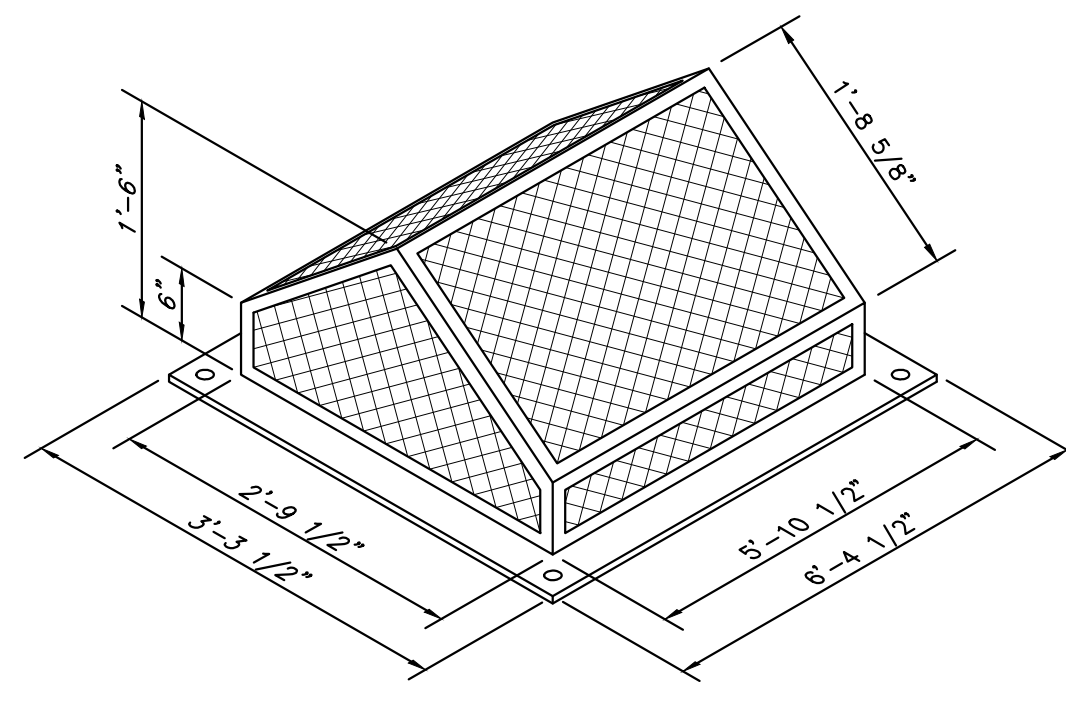


**TRASH RACK DETAIL**

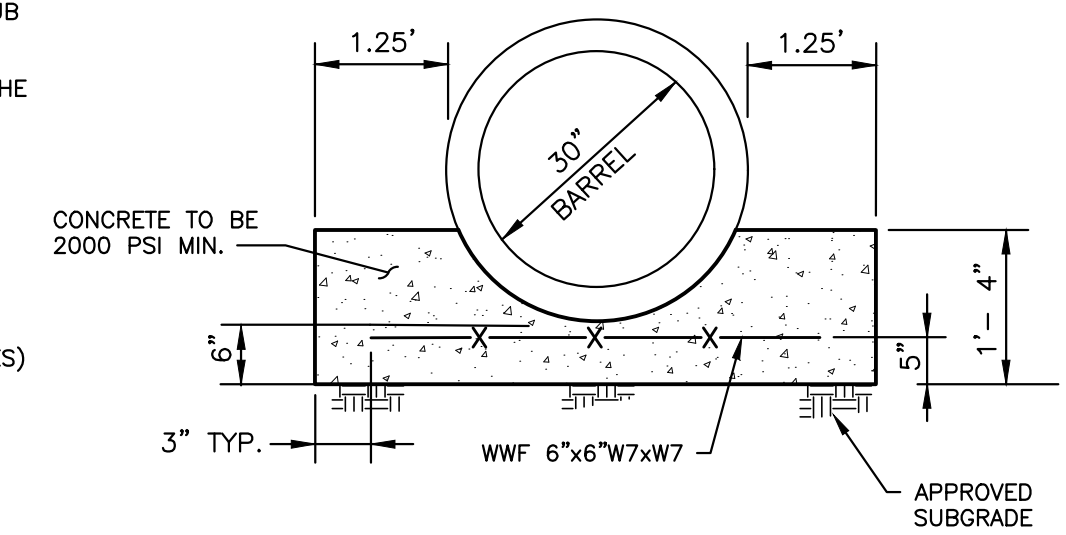
**SLIDE GATE NOTES:**  
1. SLUDGE GATE ASSEMBLY TO BE ALUMINUM.  
2. CAST/CORE DRILL 6\"/>



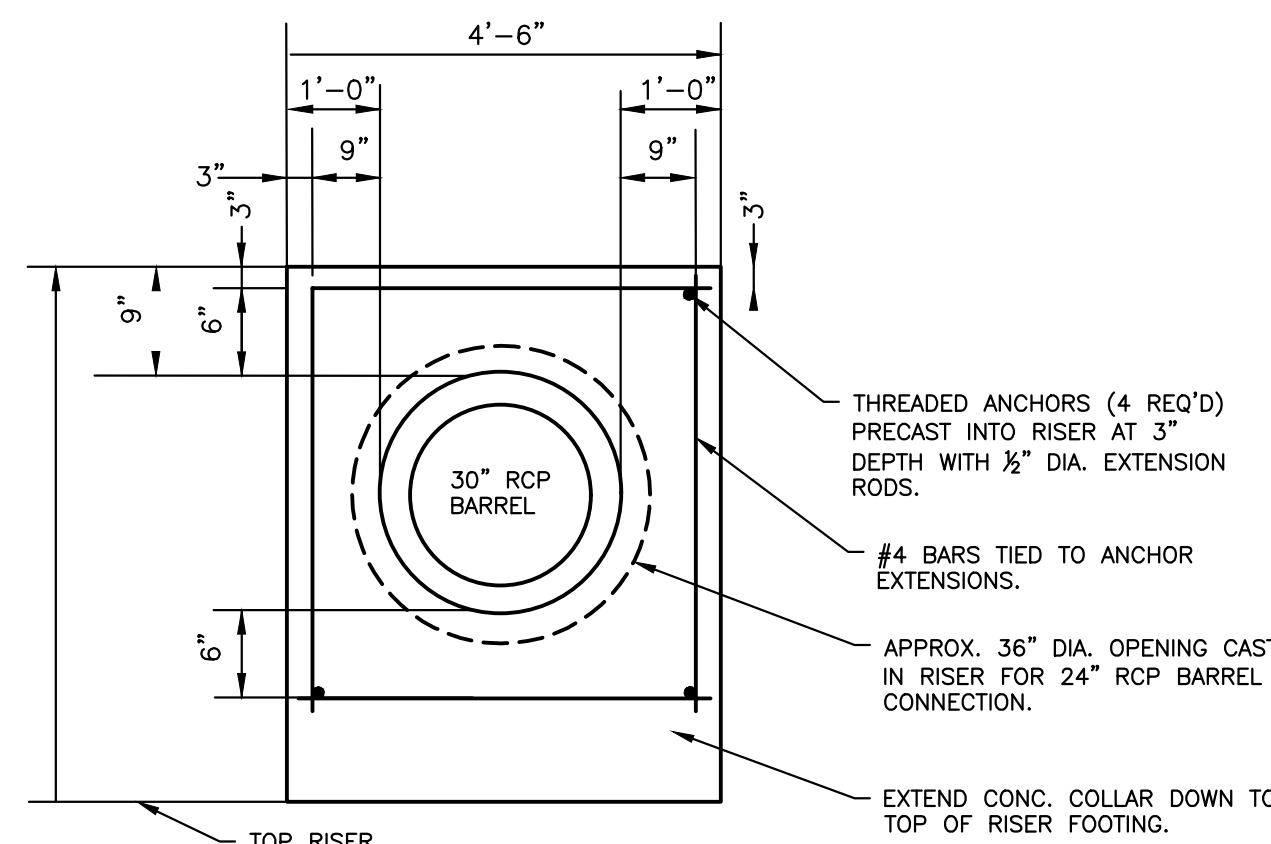
**SLIDE GATE DETAIL**



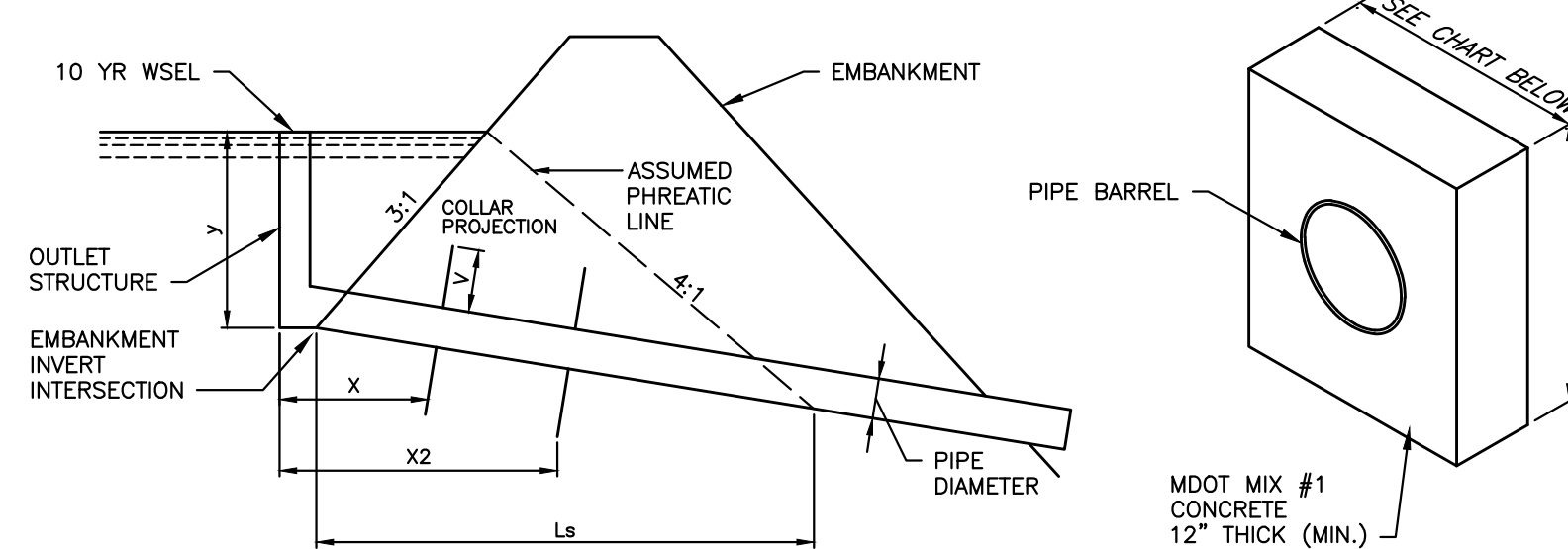
**PYRAMID TRASH RACK DETAIL**



**CONCRETE CRADLE**  
NTS



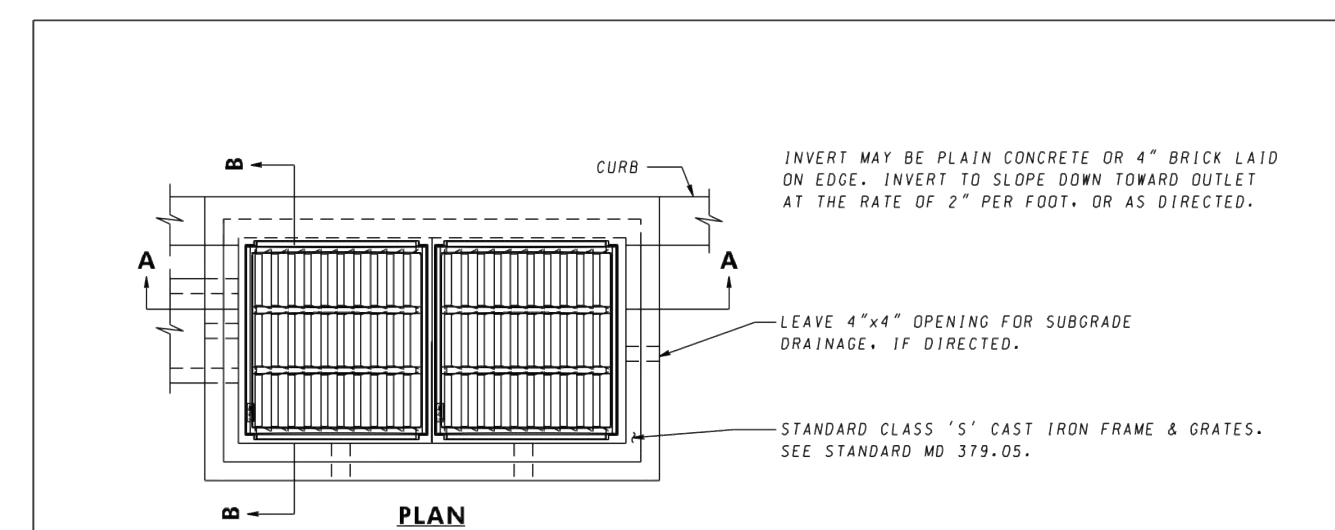
**CONCRETE COLLAR**  
NTS



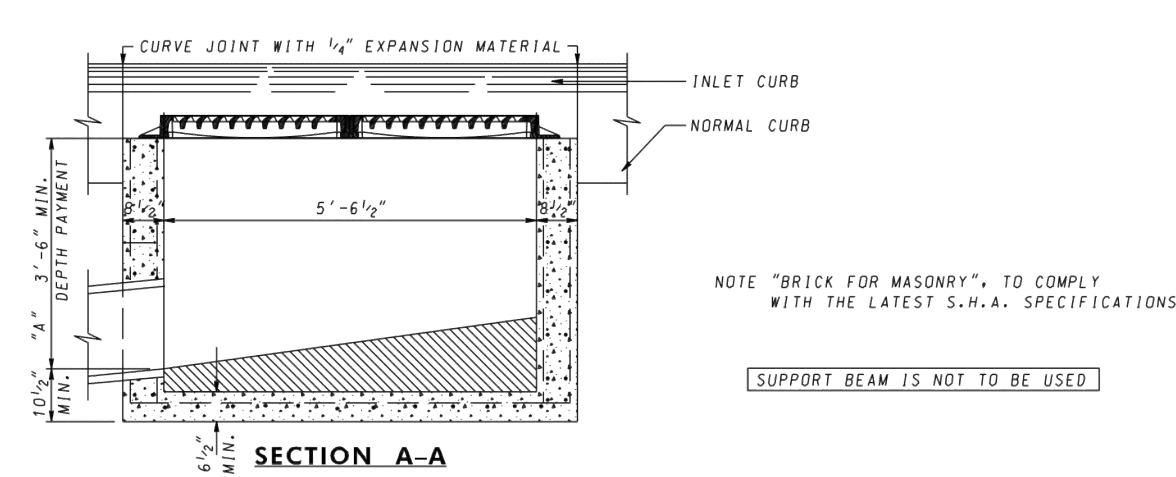
BASIN NAME	EMBANKMENT INVERT	10YR WSEL	y (FT.)	z	PIPE SLOPE	Ls (FT.)	PIPE O.D. (IN.)	NO. OF COLLARS	COLLARS PROJECTION (FT.)	BARREL O.D. (IN.)	COLLAR SIZE (SQ. FT.)	OFFSITE X (FT.)
DEERFIELD	291.00	288.45	2.95	4	0.0089	24	30	1	2	37	7.08	12.25

(\*) ANTI-SEEP COLLARS SHALL NOT BE INSTALLED WITHIN 2 FEET OF ANY PIPE JOINT. A MINIMUM OF 1' OF COVER SHALL BE PROVIDED OVER THE TOP OF ANTI-SEEP COLLARS.

**ANTI-SEEP COLLAR DETAIL**  
NO SCALE



**PLAN**

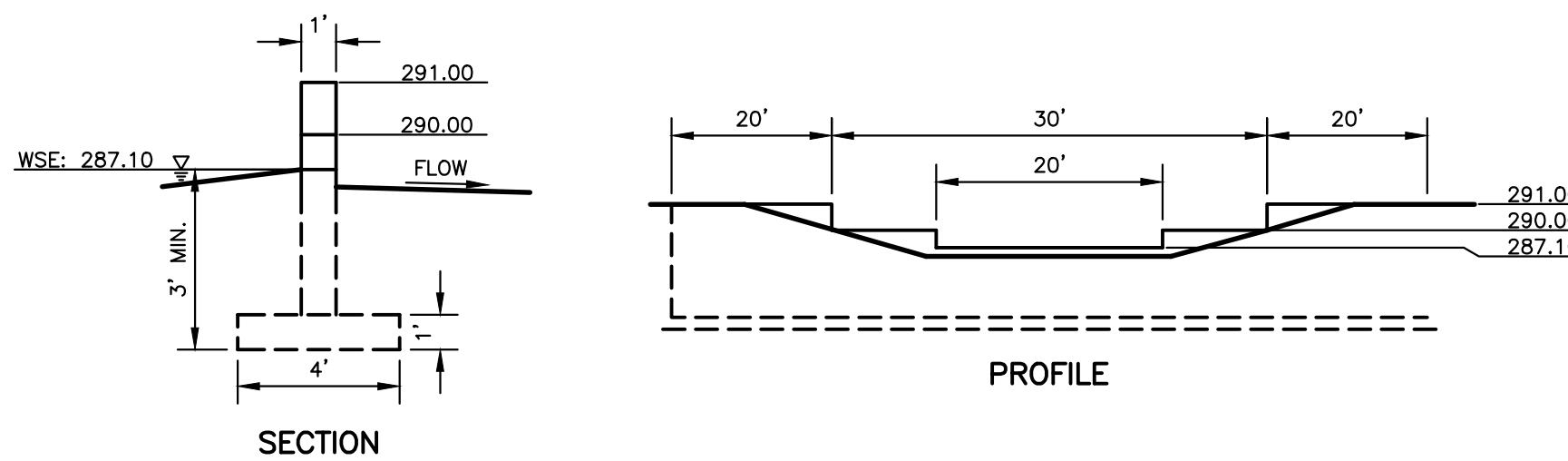


**SECTION A-A**

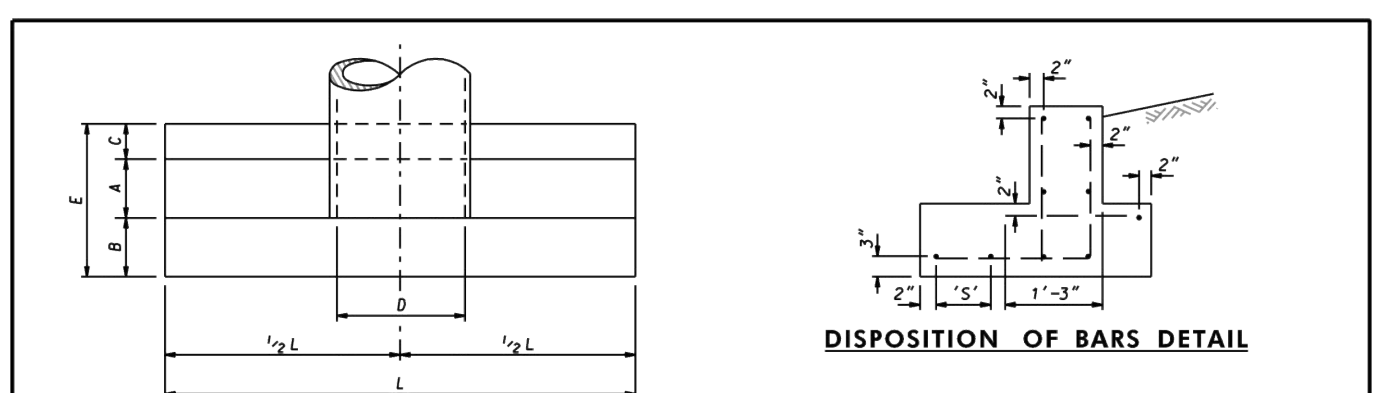
**GENERAL NOTES:**  
1. CONCRETE TO BE MIX NO. 2 (3,000 PSI).  
2. SIZE, TYPE, AND DIRECTION OF INLET CONNECTION WILL VARY TO SUIT CONDITIONS.  
3. SEE SHA LATEST SPECIFICATIONS FOR INLETS.  
4. WHEN "A" IS LESS THAN 7'-0\"/>

SPECIFICATION	CATEGORY	CODE	ITEMS	STANDARD NO.	MD
305				MD 379.03	

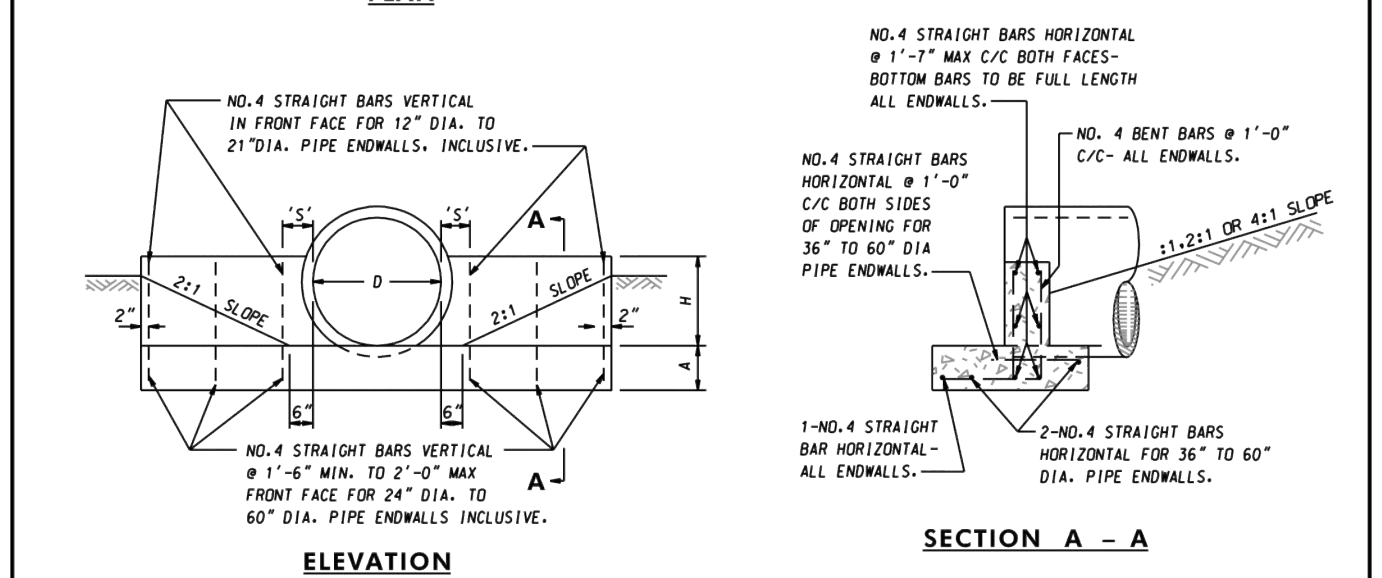
**CONCRETE WEIR CONSTRUCTION NOTES:**  
1. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO ADEQUATELY BRACE THE STRUCTURE DURING ALL PHASES OF CONSTRUCTION.  
2. CAST IN PLACE CONCRETE DESIGN STRENGTH 3,000 P.S.I. @ 28 DAYS.  
3. CONCRETE COVER: BOTTOM OF FOOTINGS CAST AGAINST EARTH 3\"/>



**CONCRETE WEIR WALL**  
NO SCALE



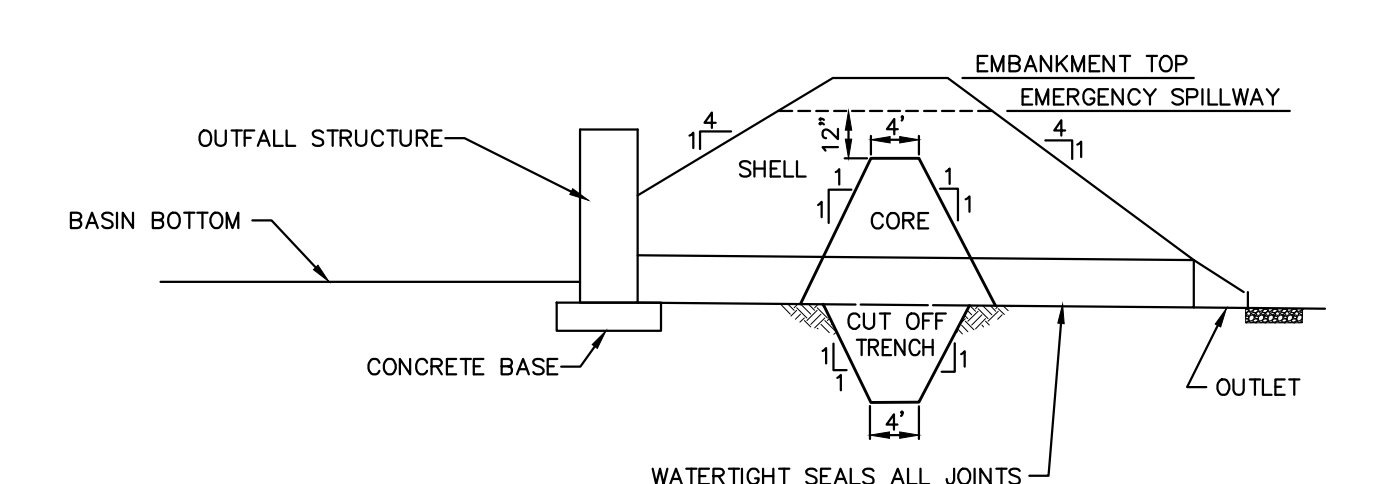
**PLAN**



**ELEVATION**

OPENING	D	AREA	DIMENSIONS						QUANTITIES	
			A	B	C	E	H	L	CONC. C.Y.	STEEL LBS.
12	0.79	9"	6"	6"	1'-9"	0'-10"	4'-0"	0.27	24	
15	1.23	9"	6"	6"	1'-9"	1'-0"	4'-0"	0.34	26	
18	1.77	9"	6"	6"	1'-9"	1'-0"	5'-4"	0.41	29	
21	2.40	9"	6"	6"	1'-9"	1'-6"	6'-3"	0.48	33	
24	3.14	9"	14"	6"	2'-5"	1'-6"	7'-0"	0.67	38	
27	3.98	9"	14"	6"	2'-5"	1'-8"	7'-0"	0.72	49	
30	4.91	9"	14"	6"	2'-5"	1'-9"	8'-4"	0.85	53	
33	5.94	9"	14"	6"	2'-5"	1'-11"	9'-3"	0.95	56	
36	7.07	12"	16"	10"	3'-2"	2'-0"	10'-0"	1.65	85	
42	9.62	12"	16"	10"	3'-2"	2'-3"	11'-4"	1.96	96	
48	12.57	12"	16"	10"	3'-2"	2'-6"	13'-0"	2.27	106	
54	15.90	12"	20"	12"	3'-8"	2'-8"	14'-4"	2.86	121	
60	19.64	12"	20"	12"	3'-8"	3'-0"	16'-0"	3.22	143	

SPECIFICATION	CATEGORY	CODE	ITEMS	STANDARD NO.	MD
305				MD 350.01	

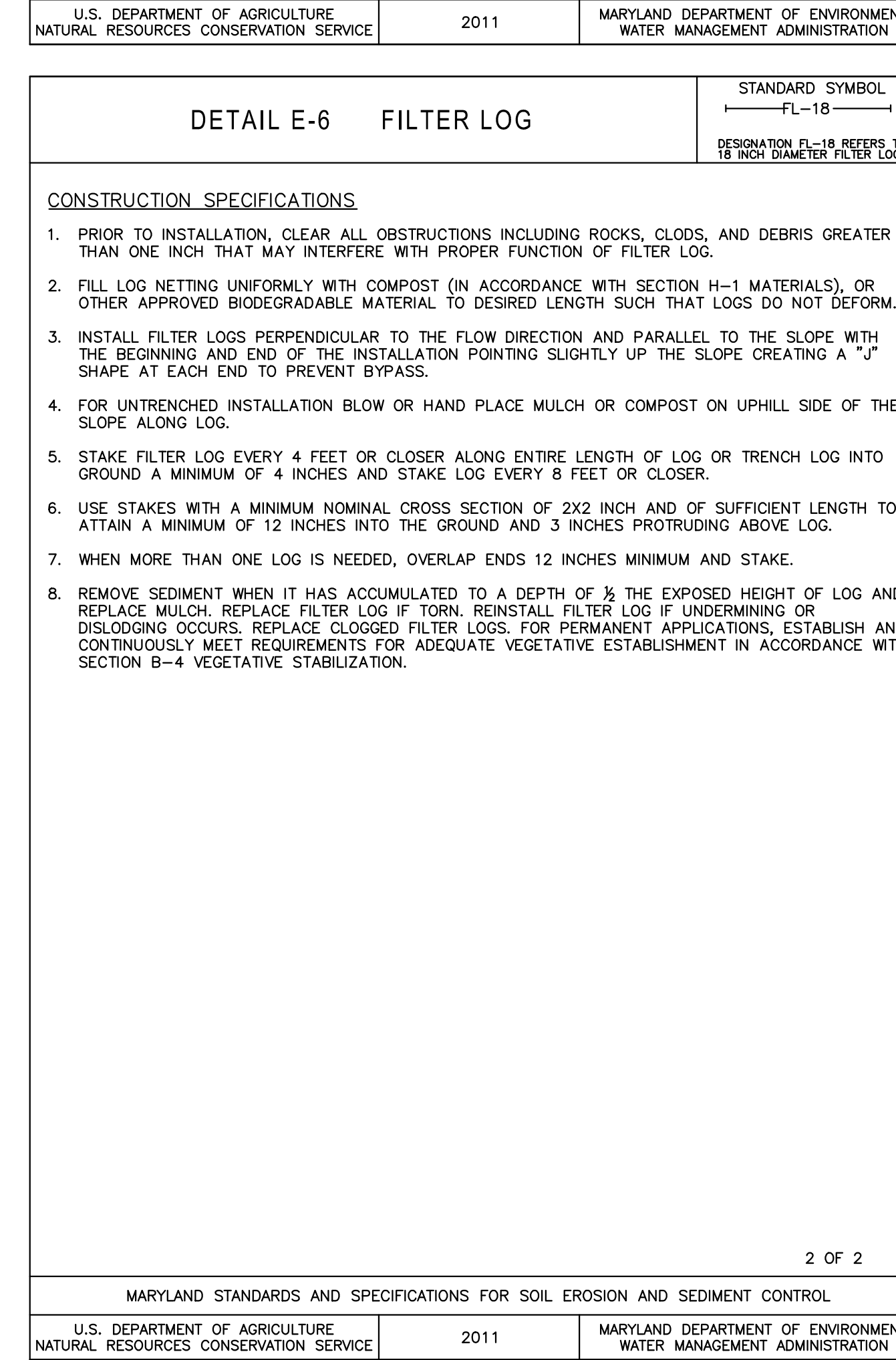
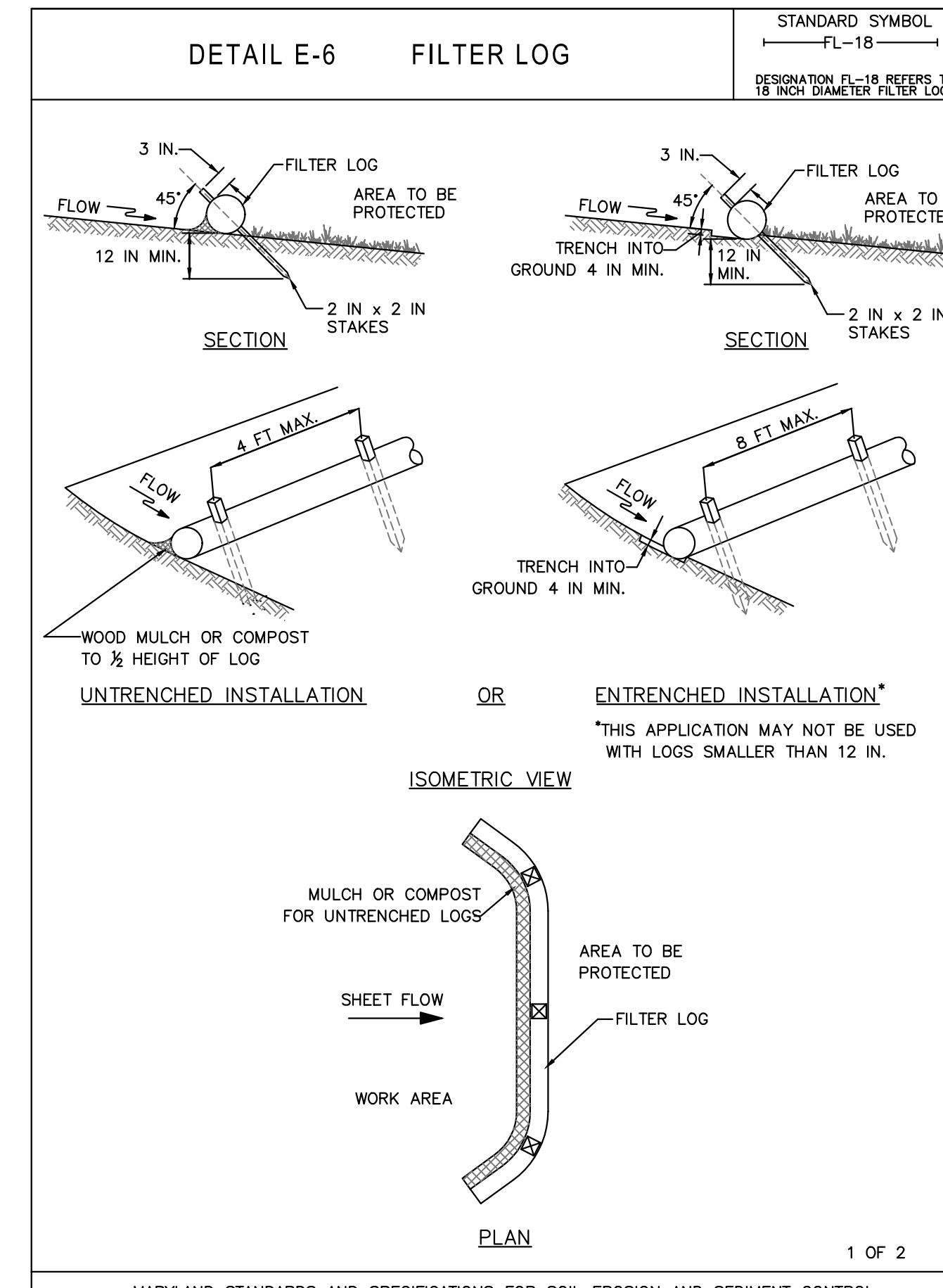
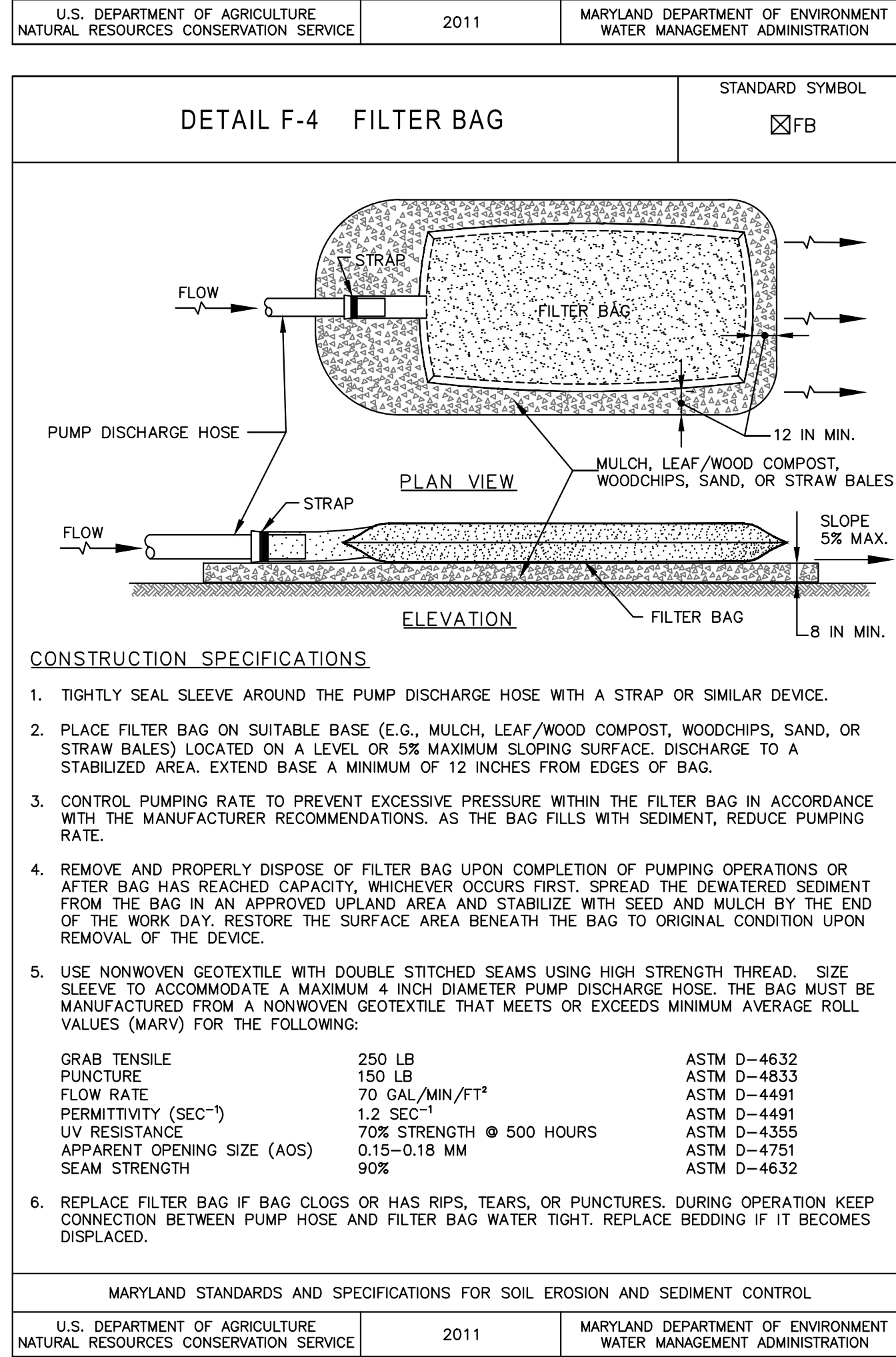
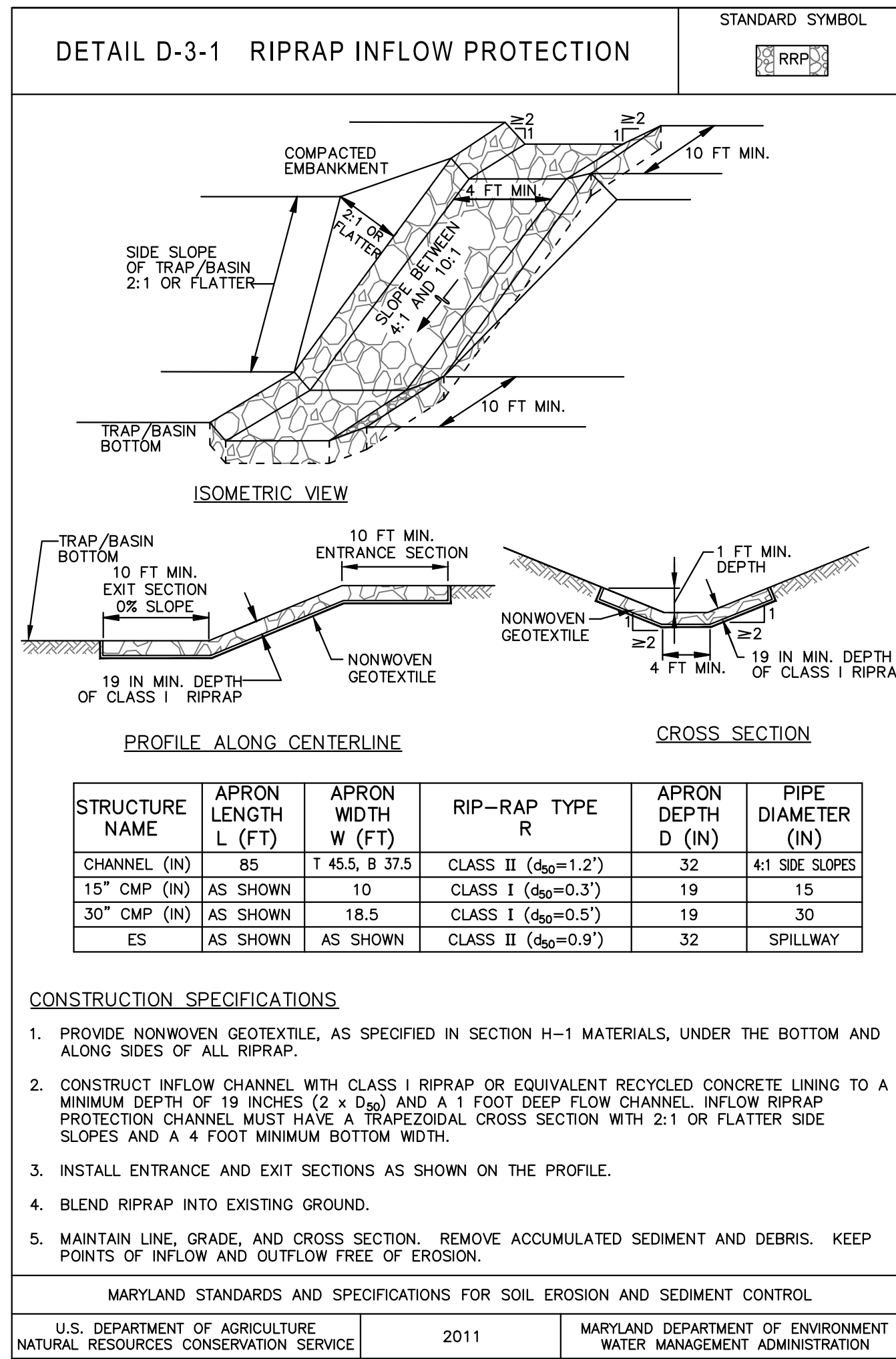
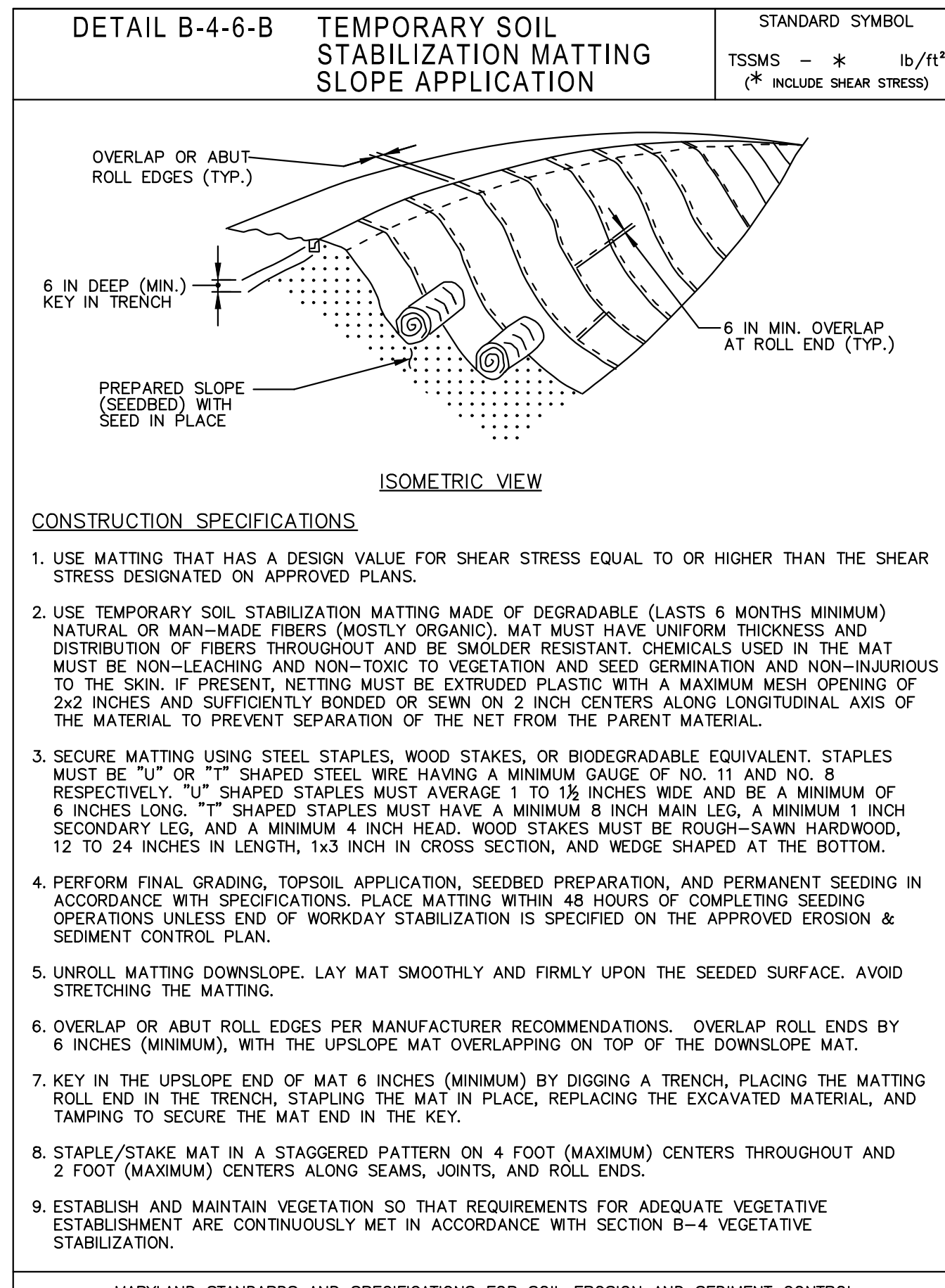
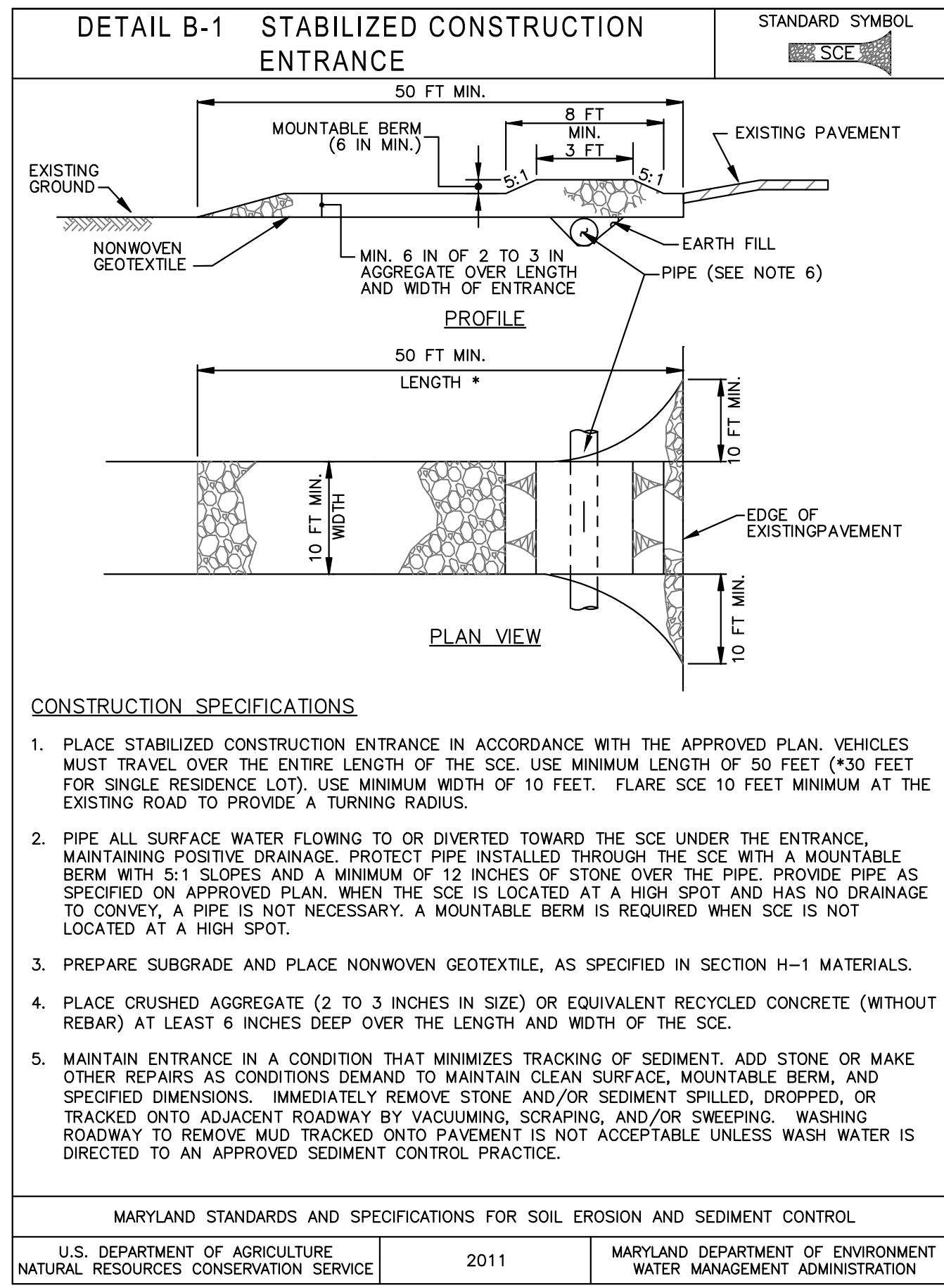


**NOTES:**  
NOTE: PREFERENCE IS FOR ANTI-SEEP COLLARS TO BE OUTSIDE OF CUTOFF TRENCH.  
CUTOFF TRENCH - THE CUTOFF TRENCH SHALL BE EXCAVATED INTO IMPERVIOUS MATERIAL ALONG OR PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE BOTTOM WIDTH OF THE TRENCH SHALL BE GOVERNED BY THE EQUIPMENT USED FOR EXCAVATION, WITH THE MINIMUM WIDTH BEING FOUR FEET. THE DEPTH SHALL BE AT LEAST FOUR FEET BELOW EXISTING GRADE OR AS SHOWN ON THE PLANS. THE SIDE SLOPES OF THE TRENCH SHALL BE 1 TO 1 OR FLATTER. THE BACKFILL SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY. CUT-OFF TRENCH MUST BE CONTINUOUS AND EXTEND THE ENTIRE LENGTH OF EMBANKMENT. COMPACTION REQUIREMENTS ARE THE SAME AS THOSE FOR THE EMBANKMENT.  
EMBANKMENT CORE - THE CORE SHALL BE PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE TOP WIDTH OF THE CORE SHALL BE A MINIMUM OF FOUR FEET. THE HEIGHT SHALL EXTEND UP TO AT LEAST THE 10 YEAR WATER ELEVATION OR AS SHOWN ON THE PLANS. THE SIDE SLOPES SHALL BE 1 TO 1 OR FLATTER. THE CORE SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY. IN ADDITION, THE CORE SHALL BE PLACED CONCURRENTLY WITH THE OUTER SHELL OF THE EMBANKMENT.

**CUTOFF TRENCH DETAIL**  
NO SCALE

MICHAEL J. BINGHAM, PE RELEASED BY: _____ DESIGN: BCU DRAWN: CADD DATE: OCTOBER 2022				SEAL 		CLIENT & PROJECT TOWN OF WALKERSVILLE 21 WEST FREDERICK STREET WALKERSVILLE, MARYLAND 21793 BMP DESIGNS WALKERSVILLE, FREDERICK COUNTY, MARYLAND		TITLE DEERFIELD BMP FACILITY DESIGN DETAILS	
CHECKED: _____ SURVEY DATE: SEPT 2022 FIELD BOOK: WEBER SURVEYORS				SEAL 		DWG. NO. AS SHOWN PROJECT NO. 10827.37 SHEET NO. 7 OF 10		SCALE AS SHOWN	
NO REVISION DATE BY APP.				NO REVISION DATE BY APP.		NO REVISION DATE BY APP.		NO REVISION DATE BY APP.	





FREDERICK SOIL CONSERVATION DISTRICT

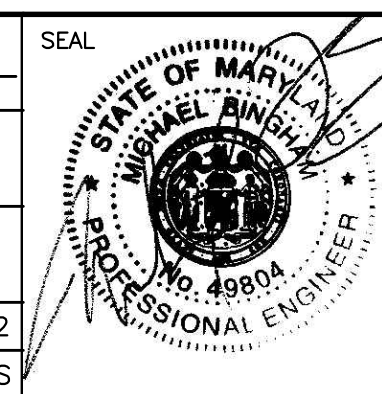
Approved by \_\_\_\_\_ District Manager

Date \_\_\_\_\_

NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.

MICHAEL J. BINGHAM, PE	RELEASED BY	DESIGN	BCU	CHECKED
	DRAWN	CADD		CHECKED
	DATE	OCTOBER 2022	SURVEY DATE	SEPT 2022
			FIELD BOOK	WEBER SURVEYORS



SEAL PROFESSIONAL CERTIFICATION  
I, MICHAEL J. BINGHAM, P.E. 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. 49804 Expiration Date: 2024-08-23

CLIENT & PROJECT  
TOWN OF WALKERSVILLE  
21 WEST FREDERICK STREET  
WALKERSVILLE, MARYLAND 21793  
  
BMP DESIGNS  
WALKERSVILLE, FREDERICK COUNTY, MARYLAND



TITLE		DEERFIELD BMP FACILITY EROSION AND SEDIMENT CONTROL DETAILS	
SCALE	AS SHOWN	DWG. NO.	
PROJECT NO.	10827.37	SHEET NO.	8 OF 10
REV.			

**SEDIMENT CONTROL NOTES**

- ALL EROSION AND SEDIMENT CONTROL STRUCTURES SHALL BE INSTALLED PRIOR TO GRADING OPERATIONS.
- ALL EROSION AND SEDIMENT CONTROL STRUCTURES SHALL BE MAINTAINED IN GOOD WORKING ORDER WITH PERIODIC INSPECTIONS AND REPAIR IF NECESSARY. DURING CONSTRUCTION, ALL SEDIMENT CONTROL STRUCTURES WILL BE INSPECTED AFTER EACH RAINFALL AND REPAIRED IF NECESSARY. SEDIMENT TO BE REMOVED TO A SUITABLE DISPOSAL AREA AND STABILIZED WITH PERMANENT VEGETATIVE COVER.
- ANY TEMPORARY STRUCTURES SHALL BE REMOVED WHEN THE DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED.
- IF THE COUNTY SEDIMENT CONTROL INSPECTOR FINDS THAT ADDITIONAL SEDIMENT CONTROL MEASURES ARE NECESSARY, HE MAY DIRECT THE CONTRACTOR TO EITHER INSTALL THE ADDITIONAL MEASURES, OR SUBMIT A REVISED GRADING PLAN TO THE FCSD FOR APPROVAL.
- ALL DISTURBED AREAS SHALL BE STABILIZED BY GRASS, GRAVEL, PAVEMENT, CROWN VETCH, OR OTHER APPROVED MEANS AS SOON AS POSSIBLE UPON COMPLETION OF EXCAVATION.
- THE FREDERICK COUNTY SOIL CONSERVATION DISTRICT RESERVES THE RIGHT TO ADD TO, DELETE, OR MODIFY ANY OR ALL SEDIMENT CONTROL MEASURES AS SHOWN HEREON AS NEEDED TO ESTABLISH PROPER SOIL STABILIZATION AND EROSION AND SEDIMENT CONTROL ANYTIME THROUGHOUT THE LIFE OF THE PROJECT.
- REFERENCE IS HEREBY MADE TO THE "STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL IN DEVELOPING AREAS", USDA-SC, 1994 FOR STANDARDS AND REQUIREMENTS.
- ALL EROSION/SEDIMENT CONTROL MEASURES SHALL COMPLY WITH THE "MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" AS APPROVED BY THE FREDERICK COUNTY SOIL CONSERVATION DISTRICT.
- FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:
  - SEVEN (7) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN 3 HORIZONTAL TO 1 VERTICAL; AND
  - FOURTEEN (14) DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
- APPROVAL FROM THE SEDIMENT CONTROL INSPECTOR IS NEEDED TO REMOVE SEDIMENT CONTROL STRUCTURES.
- ALL SOIL STOCKPILES SHALL BE TEMPORARILY SEEDED AND SILT FENCE PLACED AROUND THE BASE. THE STOCKPILES SHOULD BE PLACED WITHIN THE LIMITS OF THE DISTURBED AREAS.
- ALL UTILITIES, SUCH AS STORM DRAIN, PUBLIC WATER, SANITARY SEWER, ELECTRIC POWER, TELEPHONE, CABLE, AND GAS LINES THAT ARE NOT IN PAVED AREAS ARE NOT UNDERGOING ACTIVE GRADING SHALL BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 3 DAYS OF INITIAL DISTURBANCE.

**FOR UTILITY WORK ONLY OR FOR OFF-SITE UTILITY WORK**

- PLACE ALL EXCAVATED MATERIAL ON THE HIGH SIDE OF THE TRENCH, SILT FENCE ON THE LOW SIDE.
- ONLY DO AS MUCH WORK AS CAN BE DONE IN ONE DAY SO BACKFILLING AS SHOWN HEREON AS NEEDED TO ESTABLISH PROPER SOIL STABILIZATION AND EROSION AND SEDIMENT CONTROL ANYTIME THROUGHOUT THE LIFE OF THE PROJECT.
- ANY SEDIMENT CONTROL MEASURES DISTURBED BY CONSTRUCTION SHALL BE REPAIRED ON THE SAME DAY.

STOCKPILE NOTES

- NO STOCKPILING ALLOWED ON ASPHALT.
- ALL STOCKPILES LEFT AT THE END OF THE DAY NEED TO BE STABILIZED UNTIL THE NEXT REDISTURBANCE.

VEGETATIVE SPECIFICATIONS AND NOTES

- DISTURB AS SMALL OF THE PRESENT COVER AS POSSIBLE WHILE PERFORMING GRADING.
- ESTABLISH PERMANENT VEGETATIVE COVER IMMEDIATELY AFTER FINAL GRADING IS COMPLETED. (THIS INCLUDES ALL GRADING ON OR OFF THE SITE THAT IS AFFECTED BY THIS CONSTRUCTION). IF FINAL GRADING IS COMPLETED AT A TIME OTHER THAN THE SEEDING SEASON, A TEMPORARY GROUND COVER SUCH AS MULCHING WILL BE USED TO STABILIZE THE BARE SOIL.
- TEMPORARY SEEDING REQUIREMENTS:  
SEED: BALBOA RYE AT 150 LBS/AC.  
MULCH: STRAW AT 1.5 TON/AC.  
ASPHALT: SS-1 OR EQUIVALENT, 150 GAL./AC.
- PERMANENT SEEDING AND SODDING REQUIREMENTS: SEE SPECIFICATIONS.

**CHECKLIST FOR REQUIRED INSPECTIONS**

YOU MUST NOTIFY THE ENVIRONMENTAL PRESERVATION BRANCH AT 301-694-1132 BEFORE 9 A.M. TWENTY-FOUR HOURS BEFORE THE REQUIRED INSPECTION. FAILURE TO NOTIFY THIS OFFICE WILL RESULT IN A STOP WORK ORDER OR OTHER PENALTIES AS OUTLINED IN THE FREDERICK COUNTY CODES.

\*\*\*NOTICE\*\*\*  
THIS LIST IS FOR SEQUENCE OF CONSTRUCTION ONLY. THIS OFFICE ASSUMES NO RESPONSIBILITY OR LIABILITY FOR IMPROPER INSTALLATION OF ANY ITEM ON THIS CHECKLIST. THIS OFFICE RECOMMENDS THAT A PROFESSIONAL ENGINEER BE PRESENT FOR EACH OF THE REQUIRED INSPECTIONS.

TYPE OF INSPECTION	INITIALS
1) PRECONSTRUCTION MEETING	
2) COMPLETION OF SEDIMENT CONTROL MEASURES	
3) PRIOR TO MODIFICATION OR REMOVAL OF SEDIMENT CONTROL	

**SEQUENCE OF CONSTRUCTION**

- NOTIFY SEDIMENT CONTROL INSPECTOR 24 HOURS PRIOR TO START OF CONSTRUCTION. CALL 301-748-7263 & 301-600-3507 TO CONTACT FREDERICK COUNTY EC FOR PRECONSTRUCTION MEETING.
- PERFORM CLEARING AND GRUBBING REQUIRED FOR INSTALLATION OF PERIMETER CONTROLS.
- INSTALL FILTER LOG AND SCE PER PLAN AND DETAILS. NOTIFY SEDIMENT CONTROL INSPECTOR AND OBTAIN APPROVAL BEFORE PROCEEDING FURTHER.
- UPON TEMPORARY CESSATION OF AN EARTH DISTURBANCE ACTIVITY, THE DISTURBED AREA SHALL BE TEMPORARILY SEEDED.
- EXCAVATE CUT-OFF TRENCH ALONG CENTERLINE OF PROPOSED EMBANKMENT A MINIMUM DEPTH OF 4 FEET AND A BOTTOM (MIN. 4 FEET) WIDE ENOUGH TO PERMIT OPERATION OF EXCAVATION AND COMPACTION EQUIPMENT. CONSTRUCT SIDE SLOPES 1:1 OR FLATTER. CUT-OFF TRENCH MUST BE CONTINUOUS AND EXTEND THE ENTIRE LENGTH OF EMBANKMENT. COMPACTION REQUIREMENTS ARE THE SAME AS THOSE FOR THE EMBANKMENT. DEWATER THE TRENCH DURING THE BACKFILLING COMPACTION OPERATIONS, USING AN APPROVED PRACTICE.
- CONSTRUCT EMBANKMENT OF CLEAN SOIL FREE OF ROOTS, WOODY VEGETATION, OVERSIZED STONES, ROCKS, OR OTHER OBJECTIONABLE MATERIAL. FILL MATERIAL FOR IMPERVIOUS CORE AND CUT-OFF TRENCH MUST CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL AND MUST HAVE AT LEAST 30 PERCENT PASSING THE #200 SIEVE. USE FILL MATERIAL CONTAINING SUFFICIENT MOISTURE SO THAT THE SOIL CAN BE FORMED BY HAND INTO A BALL WITHOUT CRUMBLING. IF WATER CAN BE SQUEEZED OUT OF THE BALL, IT IS TOO WET FOR PROPER COMPACTION. PLACE FILL MATERIAL IN SIX-INCH TO EIGHT INCH THICK CONTINUOUS LIFTS OVER THE ENTIRE LENGTH OF THE FILL. OBTAIN COMPACTION BY PASSING CONSTRUCTION EQUIPMENT OR COMPACTOR OVER THE FILL, SO THAT THE ENTIRE SURFACE OF EACH LAYER OF FILL IS TRAVERSED AT LEAST FOUR TIMES. CONSTRUCT THE EMBANKMENT TO AN ELEVATION A MINIMUM OF 10 PERCENT HIGHER THAN THE DESIGN HEIGHT TO ALLOW FOR SETTLEMENT.
- INSTALL ALL IMPROVEMENTS, INCLUDING SEDIMENT FOREBAYS, PIPING, RIP-RAP, ENDWALLS, OUTLET STRUCTURES, AND CELLS, PER THE CONSTRUCTION PLANS.
- COMPLETE FINAL GRADING, PERMANENT STABILIZATION, NAG C350 LINING, AND LANDSCAPING.
- NOTIFY SEDIMENT CONTROL INSPECTOR AND OBTAIN APPROVAL TO REMOVE SEDIMENT AND EROSION CONTROL DEVICES.
- IF ANY WATER IS ENCOUNTERED IN THE BASIN OR TRENCHES DURING CONSTRUCTION, IT SHALL BE REMOVED VIA A PUMPED WATER FILTER BAG.

**REVISED UTILITY NOTE FOR SECONDARY UTILITY WORK**

- ALL DISTURBANCES FROM SECONDARY UTILITY'S SUCH AS PHONE, CABLE, ELECTRIC CABLE, TV CABLE, ETC., WILL BE CONTRACTORS RESPONSIBILITY TO BRING WORK AREA BACK TO GRADE LEVEL THAT WAS EXISTING AND SEED AND MULCH ANY DISTURBANCES FROM INSTALLATION OF LINES OR CONDUIT.
- CONTRACTOR WILL BE RESPONSIBLE FOR RE-INSTALLING OR REPAIRING ANY SILT LOG OR SEDIMENT CONTROLS THAT WERE EXISTING TO MAINTAIN PROPER SEDIMENT CONTROL THAT MIGHT HAVE BEEN DAMAGED.

**SOIL STOCKPILE NOTES:**

CRITERIA

- THE STOCKPILE LOCATION AND ALL RELATED SEDIMENT CONTROL PRACTICES MUST BE CLEARLY INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN.
- 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.
- RUNOFF FROM THE STOCKPILE AREA MUST DRAIN TO A SUITABLE SEDIMENT CONTROL PRACTICE.
- ACCESS THE STOCKPILE AREA FROM THE UPGRADE SIDE.
- 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.
- WHERE RUNOFF CONCENTRATES ALONG THE TOE OF THE STOCKPILE FILL AN APPROPRIATE EROSION/SEDIMENT CONTROL PRACTICE MUST BE USED TO INTERCEPT THE DISCHARGE.
- 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.
- 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 2:1 RATIO. THE STOCKPILE AREA MUST BE KEPT FREE OF EROSION. IF THE VERTICAL HEIGHT OF A STOCKPILE EXCEEDS 20 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.

**OPERATIONS & MAINTENANCE DETAILS**

- DEERFIELD BASIN - MULTIPLE POND SYSTEM
  - ALL REQUIRED MAINTENANCE SHALL PERFORMED BY AND AT THE OWNER'S EXPENSE.
  - MAINTENANCE IS NECESSARY EVERY QUARTER TO ENSURE PROPER FUNCTIONALITY OF THE MULTIPLE POND SYSTEM.
  - ANY BASIN STRUCTURE THAT IS EXPECTED TO RECEIVE AND/OR TRAP DEBRIS AND SEDIMENT SHALL BE THOROUGHLY INSPECTED FOR EXCESSIVE DEBRIS AND CLOGGING. INSPECTIONS SHALL BE CONDUCTED AT A MINIMUM FOUR (4) TIMES PER YEAR OR IMMEDIATELY FOLLOWING ANY STORM CREATING GREATER THAN ONE (1) INCH OF WATER.
  - VEHICLES SHALL NOT BE PARKED OR DRIVEN ON A MULTIPLE POND SYSTEM AND CARE SHALL BE TAKEN TO AVOID EXCESSIVE COMPACTION BY A MOWER IF APPLICABLE.
  - REMOVAL OF SEDIMENT FROM BASINS SHALL OCCUR WHEN BASINS ARE COMPLETELY DRY. SEDIMENT REMOVED FROM THE BASINS SHALL BE DISPOSED OF PROPERLY, AND ANY AREAS THAT WERE DISTURBED SHALL BE STABILIZED AND REVEGETATED IMMEDIATELY. SEDIMENTS EXCAVATED FROM STORMWATER PONDS THAT DO NOT RECEIVE RUNOFF FROM DESIGNATED HOTSPOTS ARE NOT CONSIDERED TOXIC OR HAZARDOUS MATERIAL AND CAN BE SAFELY DISPOSED BY EITHER LAND APPLICATION OR LAND FILLING. CELL 2 SHALL BE PROPERLY DRAINED VIA SLIDE GATE PRIOR TO SEDIMENT REMOVAL. SEDIMENT FOREBAY SHALL BE PROPERLY DRAINED VIA PUMPED WATER FILTER BAG PRIOR TO SEDIMENT REMOVAL.
  - SEDIMENT FOREBAYS SHALL BE CLEANED WHEN ACCUMULATED SEDIMENT REACHES HALF THE TOTAL DEPTH OF THE FOREBAY.
  - CARE SHALL BE TAKEN TO PREVENT COMPACTION OF IN SITU SOILS IN THE BOTTOM OF THE LOW FLOW SWALE AND HIGH MARSH ZONE (ZONE 4) PLANTINGS TO PROMOTE HEALTHY VEGETATION GROWTH AND TO ENCOURAGE INFILTRATION.
  - INSPECT THE BASIN AFTER RUNOFF EVENTS AND MAKE SURE THE RUNOFF DRAINS WITHIN 72 HOURS. MOSQUITOES SHALL NOT BE A PROBLEM IF THE WATER DRAINS WITHIN 72 HOURS. MOSQUITOES REQUIRE A CONSIDERABLY LONG BREEDING PERIOD WITH RELATIVELY STATIC WATER LEVELS.
  - ALSO INSPECT FOR DAMAGE TO OUTLET CONTROL STRUCTURES, EROSION CONTROL MEASURES, SIGNS OF WATER CONTAMINATION/SPILLS, AND SLOPE STABILITY IN THE BERMS.
  - UPKEEP OF VEGETATION INCLUDING MOWING AND/OR TRIMMING SHALL BE PERFORMED AS NECESSARY TO SUSTAIN THE SYSTEM. ALL DETRITUS SHALL BE REMOVED FROM THE BASIN.
    - FERTILIZERS AND PESTICIDES SHALL NOT BE USED IN MAINTAINING THE VEGETATION.
    - ALL VEGETATED AREAS SHALL BE INSPECTED EVERY YEAR FOR ANY EROSION.
    - ALL VEGETATED AREAS SHALL BE INSPECTED EVERY YEAR FOR UNWANTED GROWTH OF EXOTIC AND/OR INVASIVE SPECIES.
  - VEGETATIVE COVER SHALL BE MAINTAINED AT A MINIMUM OF NINETY-FIVE (95) PERCENT. VEGETATION SHALL BE REESTABLISHED IF VEGETATIVE COVER HAS BEEN REDUCED BY TEN (10) PERCENT.
  - A DAM INSPECTION CHECKLIST SHALL BE INCLUDED IN THE MAINTENANCE AND SHALL BE COMPLETED AT A MINIMUM OF ONCE EVERY YEAR.
- ADDITIONAL NOTES
  - REGULAR INSPECTION OF THE MULTIPLE POND SYSTEM SHALL OCCUR TO ASSURE PROPER IMPLEMENTATION OF THE CONSTRUCTION AND MAINTENANCE PLANS SHALL BE INSPECTED BY A QUALIFIED PERSON, WHICH MAY INCLUDE THE LANDOWNER OR THE OWNER'S DESIGNEE (INCLUDING THE MUNICIPALITY FOR DEDICATED AND OWNED FACILITIES).

**PERMANENT SEEDING & SODDING**

GENERAL

- SCOPE: PLANTING PERMANENT, LONG-LIVED VEGETATIVE COVER ON GRADED OR CLEARED AREAS.
- STANDARDS: PERMANENT SEEDING SHALL CONFORM TO ALL REQUIREMENTS OF "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" PUBLISHED JOINTLY BY WATER RESOURCES ADMINISTRATION, SOIL CONSERVATION SERVICE, AND STATE SOIL CONSERVATION COMMITTEE.

SPECIFICATIONS

- SITE PREPARATION
  - PRIOR TO SEEDING INSTALL ALL REQUIRED SEDIMENT AND EROSION CONTROL MEASURES.
  - FINE GRADING REQUIRED FOR PERMANENT SEEDING.
- SOIL AMENDMENTS
  - FERTILIZER SHALL BE APPLIED AT THE RATE OF 1000 LBS/ACRE USING 10-10-10 OR EQUIVALENT.
- SEEDBED PREPARATION
  - SOIL SHALL BE LOOSENEED TO A DEPTH OF 3" BY RAKING, DICING, OR OTHER ACCEPTABLE MEANS PRIOR TO SEEDING.
  - APPLY SEED UNIFORMLY WITH A CYCLONE SEEDER, DRILL, CULTIPACKER SEEDER OR HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER ON A FIRM, MOIST SEEDBED). MAXIMUM SEEDING DEPTH SHOULD BE 1/4" ON CLAYEY SOILS AND 1/2 INCH ON SANDY SOILS, WHEN USING OTHER THAN HYDROSEEDER METHOD OF APPLICATION. NOTE: IF HYDROSEEDING IS USED AND THE SEED FERTILIZER IS MIXED, THEY WILL BE MIXED ON SITE AND THE SEEDING SHALL BE IMMEDIATE WITHOUT INTERRUPTION.

PERMANENT STABILIZATION WITH SOD

- ALL SPECIFICATIONS, SITE PREPARATION, INSTALLATION AND MAINTENANCE OF SOD FOR PERMANENT, LONG-LIVED VEGETATIVE COVER SHALL CONFORM TO SECTION G-20 OF "1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL", PUBLISHED JOINTLY BY WATER RESOURCES ADMINISTRATION, SOIL CONSERVATION SERVICE, AND THE STATE SOIL CONSERVATION COMMITTEE.

PERMANENT SEEDING SUMMARY

SEED MIXTURE (FOR HARDINESS ZONE 6B)				FERTILIZER RATE (10-20-20)			LIME RATE	UREA-FORM (46-0-0)
NO.	SPECIES	APPLICATION RATE (lb/ac)	SEEDING DATES	N	P205	K20		
3	TALL FESCUE	125	3/1 to 5/15 8/15 to 10/15	1"-2"				
3	PERENNIAL RYEGRASS	15	3/1 to 5/15 8/15 to 10/15	1"-2"	90 lb/ac (2.0 lb/1000 sf)	175 lb/ac (4.0 lb/1000 sf)	175 lb/ac (4.0 lb/1000 sf)	2 tons/ac (100 lb/1000 sf)
3	KENTUCKY BLUEGRASS	10	3/1 to 5/15 8/15 to 10/15	1"-2"				150 lb/ac

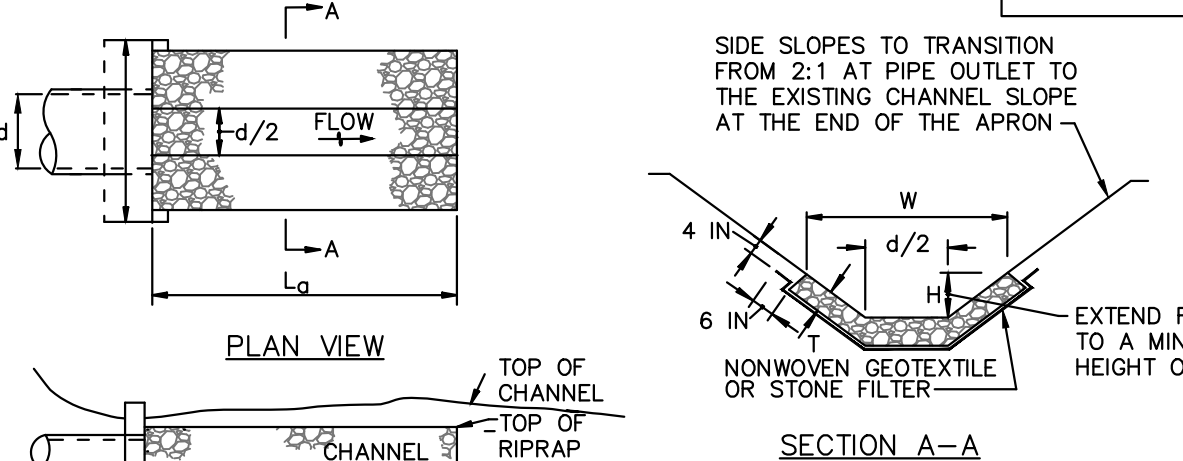
TEMPORARY SEEDING WITH ANNUAL RYEGRASS, MILLET, OATS, AND/OR RYE CONFORMING TO SCS, 1994 MANUAL.

NATIVE DETENTION AREA MIX SEEDING SUMMARY

SEED MIXTURE (FOR HARDINESS ZONE 6B)				FERTILIZER RATE (10-20-20)			LIME RATE	UREA-FORM (46-0-0)
NO.	SPECIES	APPLICATION RATE (lb/ac)	SEEDING DATES	N	P205	K20		
-	ERNMX-183 DEERWARRIE 47% WINDSOR WILDFE 20% FOX SEED 20% AUTUMN BENTGRASS 5% TUCKERGRASS 2% PITH RUSH 1%	22	3/1 to 5/15 8/15 to 10/15	1"-2"	NONE	NONE	NONE	NONE

STRUCTURE NAME	APRON LENGTH L (FT)	APRON WIDTH W (FT)*	RIP-RAP TYPE R	APRON DEPTH D (IN)	PIPE DIAMETER (IN)
30" RCP (OUT)	AS SHOWN	20.5	CLASS I (d <sub>50</sub> =0.8')	19	30

(\*)- WIDTH MAY VARY BASED ON RECEIVING CHANNEL CONDITIONS.



RIPRAP	
CLASS	THICKNESS (T)
I	19 IN
II	32 IN
III	46 IN

CONSTRUCTION SPECIFICATIONS

- RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
- USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
- PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (3/8 TO 1/2 INCH STONE FOR 6 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
- EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPRAP.
- CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENEOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE STONE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
- WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.
- CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
- MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLOGGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

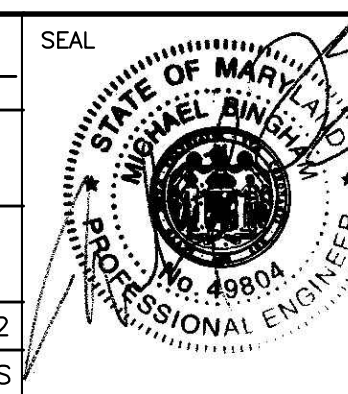
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL  
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

FREDERICK SOIL CONSERVATION DISTRICT  
Approved by \_\_\_\_\_ District Manager  
Date \_\_\_\_\_

SCD AND NRCS APPROVAL FOR SEDIMENT AND EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS

NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.

Michael J. Bingham, PE  
RELEASED BY: BCU  
DRAWN: CADD  
DATE: OCTOBER 2022  
SURVEY DATE: SEPT 2022  
FIELD BOOK: WEBER SURVEYS



CLIENT & PROJECT  
TOWN OF WALKERSVILLE  
21 WEST FREDERICK STREET  
WALKERSVILLE, MARYLAND 21793  
BMP DESIGNS  
WALKERSVILLE, FREDERICK COUNTY, MARYLAND

ARRG  
201 Thomas Johnson Drive Suite 207  
Frederick, MD 21702  
Tel 301.791.1100

TITLE: DEERFIELD BMP FACILITY  
EROSION AND SEDIMENT CONTROL NOTES  
SCALE: AS SHOWN  
PROJECT NO. 10827.37  
SHEET NO. 9 OF 10  
REV.

## CONSTRUCTION SPECIFICATIONS

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

### 1.) SPECIFICATIONS

- AREAS DESIGNATED FOR BORROW AREAS, EMBANKMENT, AND STRUCTURAL WORKS SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL.
- ALL TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED.
- CHANNEL BANKS AND SHARP BREAKS SHALL BE SLOPED TO NO STEEPER THAN 1:1.
- ALL TREES SHALL BE CLEARED AND GRUBBED WITHIN 15 FEET OF THE TOE OF THE EMBANKMENT.
- AREAS TO BE COVERED BY THE RESERVOIR WILL BE CLEARED OF ALL TREES, BRUSH, LOGS, FENCES, RUBBISH AND OTHER OBJECTIONABLE MATERIAL UNLESS OTHERWISE DESIGNATED ON THE PLANS.
- TREES, BRUSH, AND STUMPS SHALL BE CUT APPROXIMATELY LEVEL WITH THE GROUND SURFACE.
- FOR DRY STORMWATER MANAGEMENT PONDS, A MINIMUM OF A 25-FOOT RADIUS AROUND THE INLET STRUCTURE SHALL BE CLEARED.
- ALL CLEARED AND GRUBBED MATERIAL SHALL BE DISPOSED OF OUTSIDE AND BELOW THE LIMITS OF THE DAM AND RESERVOIR AS DIRECTED BY THE OWNER OR HIS REPRESENTATIVE.
- WHEN SPECIFIED, A SUFFICIENT QUANTITY OF TOPSOIL WILL BE STOCKPILED IN A SUITABLE LOCATION FOR USE ON THE EMBANKMENT AND OTHER DESIGNATED AREAS.

## EARTH FILL

### 1.) MATERIALS

- THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED DESIGNATED BORROW AREAS.
- IT SHALL BE FREE OF ROOTS, STUMPS, WOOD, RUBBISH, STONES GREATER THAN 6", FROZEN OR OTHER OBJECTIONABLE MATERIALS.
- FILL MATERIAL FOR THE CENTER OF THE EMBANKMENT, AND CUT OFF TRENCH SHALL CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL AND MUST HAVE AT LEAST 30% PASSING THE #200 SIEVE. CONSIDERATION MAY BE GIVEN TO THE USE OF OTHER MATERIALS IN THE EMBANKMENT IF DESIGNED BY A GEOTECHNICAL ENGINEER.
- SUCH SPECIAL DESIGNS MUST HAVE CONSTRUCTION SUPERVISED BY A GEOTECHNICAL ENGINEER. MATERIALS USED IN THE OUTER SHELL OF THE EMBANKMENT MUST HAVE THE CAPABILITY TO SUPPORT VEGETATION OF THE QUALITY REQUIRED TO PREVENT EROSION OF THE EMBANKMENT.

### 2.) PLACEMENT

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

### 3.) COMPACTION

- THE MOVEMENT OF THE HAULING AND SPREADING EQUIPMENT OVER THE FILL SHALL BE CONTROLLED SO THAT THE ENTIRE SURFACE OF EACH LIFT SHALL BE TRAVERSED BY NOT LESS THAN ONE TREAD TRACK OF HEAVY EQUIPMENT OR COMPACTION SHALL BE ACHIEVED BY A MINIMUM OF FOUR COMPLETE PASSES OF A SHEEPSFOOT, RUBBER TIRE OR VIBRATORY ROLLER.
- FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SUCH THAT THE REQUIRED DEGREE OF COMPACTION WILL BE OBTAINED WITH THE EQUIPMENT USED.
- THE FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SO THAT IF FORMED INTO A BALL IT WILL NOT CRUMBLE, YET NOT BE SO WET THAT WATER CAN BE SQUEEZED OUT.
- WHEN REQUIRED BY THE REVIEWING AGENCY THE MINIMUM REQUIRED DENSITY SHALL NOT BE LESS THAN 95% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN  $\pm 2\%$  OF THE OPTIMUM.
- EACH LAYER OF FILL SHALL BE COMPACTED AS NECESSARY TO OBTAIN THAT DENSITY, AND IS TO BE CERTIFIED BY THE ENGINEER AT THE TIME OF CONSTRUCTION. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T-99 (STANDARD PROCTOR).

### 4.) CUT OFF TRENCH

- THE CUTOFF TRENCH SHALL BE EXCAVATED INTO IMPERVIOUS MATERIAL ALONG OR PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS.
- THE BOTTOM WIDTH OF THE TRENCH SHALL BE GOVERNED BY THE EQUIPMENT USED FOR EXCAVATION, WITH THE MINIMUM WIDTH BEING FOUR FEET.
- THE DEPTH SHALL BE AT LEAST FOUR FEET BELOW EXISTING GRADE OR AS SHOWN ON THE PLANS.
- THE SIDE SLOPES OF THE TRENCH SHALL BE 1 TO 1 OR FLATTER. THE BACKFILL SHALL BE COMPACTED WITH CONSTRUCTION EQUIPMENT, ROLLERS, OR HAND TAMPERS TO ASSURE MAXIMUM DENSITY AND MINIMUM PERMEABILITY.

### 5.) EMBANKMENT CORE

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

## STRUCTURE BACKFILL

- BACKFILL ADJACENT TO PIPES OR STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL MATERIAL.
- THE FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT.
- THE MATERIAL NEEDS TO FILL COMPLETELY ALL SPACES UNDER AND ADJACENT TO THE PIPE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A CONCRETE STRUCTURE OR PIPE, UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE.
- STRUCTURE BACKFILL MAY BE FLOWABLE FILL MEETING THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 313 AS MODIFIED.
- THE MIXTURE SHALL HAVE A 100-200 PSI; 28 DAY UNCONFINED COMPRESSIVE STRENGTH. THE FLOWABLE FILL SHALL HAVE
- E A MINIMUM PH OF 4.0 AND A MINIMUM RESISTIVITY OF 2,000 OHM-CM. MATERIAL SHALL BE PLACED SUCH THAT A MINIMUM OF 6" (MEASURED PERPENDICULAR TO THE OUTSIDE OF THE PIPE OF FLOWABLE FILL SHALL BE UNDER (BEDDING), OVER AND, ON THE SIDES OF THE PIPE.
- IT ONLY NEEDS TO EXTEND UP TO THE SPRING LINE FOR RIGID CONDUITS. AVERAGE SLUMP OF THE FILL SHALL BE 7" TO ASSURE FLOWABILITY OF THE MATERIAL.
- ADEQUATE MEASURES SHALL BE TAKEN (SAND BAGS, ETC.) TO PREVENT FLOATING THE PIPE. WHEN USING FLOWABLE FILL, ALL METAL PIPE SHALL BE BITUMINOUS COATED.
- ANY ADJOINING SOIL FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT.
- THE MATERIAL SHALL COMPLETELY FILL ALL VOIDS ADJACENT TO THE FLOWABLE FILL ZONE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE.
- UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A STRUCTURE OR PIPE UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE. BACKFILL MATERIAL OUTSIDE THE STRUCTURAL BACKFILL (FLOWABLE FILL) ZONE SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE CORE OF THE EMBANKMENT OR OTHER EMBANKMENT MATERIALS.

## PIPE CONDUITS

ALL PIPES SHALL B CIRCULAR IN CROSS SECTION.

### 1.) CORRUGATE METAL PIPE

ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR CORRUGATE METAL PIPE:

- MATERIALS
  - (POLYMER COATED STEEL PIPE) –STEEL PIPES WITH POLYMERIC COATINGS SHALL HAVE A MINIMUM COATING THICKNESS OF 0.01 INCH (10 MIL) ON BOTH SIDES OF THE PIPE. THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATIONS M-245 & M-246 WITH WATERTIGHT COUPLING BANDS OR FLANGES.
  - (ALUMINUM COATED STEEL PIPE) – THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-274 WITH WATERTIGHT COUPLING BANDS OR FLANGES. ALUMINUM COATED STEEL PIPE, WHEN USED WITH FLOWABLE FILL OR WHEN SOIL AND/OR WATER CONDITIONS WARRANT THE NEED FOR INCREASED DURABILITY, SHALL BE FULLY BITUMINOUS COATED PER REQUIREMENTS OF AASHTO SPECIFICATION M-190 TYPE A. ANY ALUMINUM COATING DAMAGED OR OTHERWISE REMOVED SHALL BE REPLACED WITH COLD APPLIED BITUMINOUS COATING COMPOUND. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER OR TWO COATS OF ASPHALT.
  - (ALUMINUM PIPE) – THIS PIPE AND ITS APPURTENANCES SHALL CONFORM TO THE REQUIREMENTS OF AASHTO SPECIFICATION M-196 OR M-211 WITH WATERTIGHT COUPLING BANDS OR FLANGES. ALUMINUM PIPE, WHEN USED WITH FLOWABLE FILL OR WHEN SOIL AND/OR WATER CONDITIONS WARRANT FOR INCREASED DURABILITY, SHALL BE FULLY BITUMINOUS COATED PER REQUIREMENTS OF AASHTO SPECIFICATION M-190 TYPE A. ALUMINUM SURFACES THAT ARE TO BE IN CONTACT WITH CONCRETE SHALL BE PAINTED WITH ONE COAT OF ZINC CHROMATE PRIMER OR TWO COATS OF ASPHALT. HOT DIP GALVANIZED BOLTS MAY BE USED FOR CONNECTIONS. THE PH OF THE SURROUNDING SOILS SHALL BE BETWEEN 4 AND 9.
- COUPLING BANDS, ANTI-SEEP COLLARS, END SECTIONS, ETC., MUST BE COMPOSED OF THE SAME MATERIAL AND COATINGS AS THE PIPE. METALS MUST BE INSULATED FROM DISSIMILAR MATERIALS WITH USE OF RUBBER OR PLASTIC INSULATING MATERIALS AT LEAST 24 MILS IN THICKNESS.
- CONNECTIONS—ALL CONNECTIONS WITH PIPES MUST BE COMPLETELY WATERTIGHT. THE DRAIN PIPE OR BARREL CONNECTION TO THE RISER SHALL BE WELDED ALL AROUND WHEN THE PIPE AND RISER ARE METAL. ANTI-SEEP COLLARS SHALL BE CONNECTED TO THE PIPE IN SUCH A MANNER AS TO BE COMPLETELY WATERTIGHT. DIMPLE BANDS ARE NOT CONSIDERED TO BE WATERTIGHT.

ALL CONNECTIONS SHALL USE A RUBBER OR NEOPRENE GASKET WHEN JOINING PIPE SECTIONS. THE END OF EACH PIPE SHALL BE RE-ROLLED AN ADEQUATE NUMBER OF CORRUGATIONS TO ACCOMMODATE THE BANDWIDTH. THE FOLLOWING TYPE CONNECTIONS ARE ACCEPTABLE FOR PIPES LESS THAN 24 INCHES IN DIAMETER: FLANGES ON BOTH ENDS OF THE PIPE WITH A CIRCULAR 3/8 INCH CLOSED CELL NEOPRENE GASKET, PRE-PUNCHED TO THE FLANGE BOLT CIRCLE, SANDWICHED BETWEEN ADJACENT FLANGES; A 12-INCH WIDE STANDARD LAP TYPE BAND WITH 12-INCH WIDE BY 3/8-INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET; AND A 12-INCH WIDE HUGGER TYPE BAND WITH ORING GASKETS HAVING A MINIMUM DIAMETER OF 1/2 INCH GREATER THAN THE CORRUGATION DEPTH. PIPES 24 INCHES IN DIAMETER AND LARGER SHALL BE CONNECTED BY A 24 INCH LONG ANNUALAR CORRUGATED BAND USING A MINIMUM OF 4 (FOUR) RODS AND LUGS, 2 ON EACH CONNECTING PIPE END. A 24-INCH WIDE BY 3/8-INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET WILL BE INSTALLED WITH 12 INCHES ON THE END OF EACH PIPE. FLANGED JOINTS WITH 3/8 INCH CLOSED CELL GASKETS THE FULL WIDTH OF THE FLANGE IS ALSO ACCEPTABLE. HELICALLY CORRUGATED PIPE SHALL HAVE EITHER CONTINUOUSLY WELDED SEAMS OR HAVE LOCK SEAMS WITH INTERNAL CAULKING OR A NEOPRENE BEAD.

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

E.) BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".

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

### 2.) REINFORCED CONCRETE PIPE

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

- MATERIALS –REINFORCED CONCRETE PIPE SHALL HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS AND SHALL EQUAL OR EXCEED ASTM C-361.
- BEDDING – REINFORCED CONCRETE PIPE CONDUITS SHALL BE LAID IN A CONCRETE BEDDING / CRADLE FOR THEIR ENTIRE LENGTH. THIS BEDDING / CRADLE SHALL CONSIST OF HIGH SLUMP CONCRETE PLACED UNDER THE PIPE AND UP THE SIDES OF THE PIPE AT LEAST 50% OF ITS OUTSIDE DIAMETER WITH A MINIMUM THICKNESS OF 6 INCHES. WHERE A CONCRETE CRADLE IS NOT NEEDED FOR STRUCTURAL REASONS, FLOWABLE FILL MAY BE USED AS DESCRIBED IN THE "STRUCTURE BACKFILL" SECTION OF THIS STANDARD. GRAVEL BEDDING IS NOT PERMITTED. POND MD-378-17 NRCS – MARYLAND JANUARY 2000
- LAYING PIPE – BELL AND SPIGOT PIPE SHALL BE PLACED WITH THE BELL END UPSTREAM. JOINTS SHALL BE MADE IN ACCORDANCE WITH RECOMMENDATIONS OF THE MANUFACTURER OF THE MATERIAL. AFTER THE JOINTS ARE SEALED FOR THE ENTIRE LINE, THE BEDDING SHALL BE PLACED SO THAT ALL SPACES UNDER THE PIPE ARE FILLED. CARE SHALL BE EXERCISED TO PREVENT ANY DEVIATION FROM THE ORIGINAL LINE AND GRADE OF THE PIPE. THE FIRST JOINT MUST BE LOCATED WITHIN 4 FEET FROM THE RISER.

D.) BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".

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

### 3.) PLASTIC PIPE

THE FOLLOWING CRITERIA SHALL APPLY FOR PLASTIC PIPE:

- MATERIALS – PVC PIPE SHALL BE PVC-1120 OR PVC-1220 CONFORMING TO ASTM D1785 OR ASTM D-2241. CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) PIPE, COUPLINGS AND FITTINGS SHALL CONFORM TO THE FOLLOWING: 4"-10" INCH PIPE SHALL MEET THE REQUIREMENTS OF AASHTO M252 TYPE S, AND 12" THROUGH 24" INCH SHALL MEET THE REQUIREMENTS OF AASHTO M294 TYPE S.
- JOINTS AND CONNECTIONS TO ANTI-SEEP COLLARS SHALL BE COMPLETELY WATERTIGHT.
- BEDDING –THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.
- BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".
- OTHER DETAILS (ANTI-SEEP COLLARS, VALVES, ETC.) SHALL BE AS SHOWN ON THE DRAWINGS.

### 4.) DRAINAGE DIAPHRAGMS

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

## CONCRETE

CONCRETE SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 414, MIX NO. 3.

## ROCK RIPRAP

ROCK RIPRAP SHALL MEET THE REQUIREMENTS OF MARYLAND DEPARTMENT OF TRANSPORTATION, STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, SECTION 921.09, CLASS C.

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

## CARE OF WATER DURING CONSTRUCTION

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

## STABILIZATION

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

## EROSION AND SEDIMENT CONTROL

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

### SEDIMENT CONTROL/ STORM WATER MANAGEMENT REQUIRED INSPECTIONS

YOU MUST NOTIFY THE SEDIMENT CONTROL AND STORMWATER MANAGEMENT OFFICE AT 301-494-1679 BEFORE 5:00 A.M. 24 HOURS PRIOR TO THE REQUIRED INSPECTION. FAILURE TO NOTIFY THIS OFFICE WILL RESULT IN A STOP WORK ORDER OR OTHER PENALTIES AS OULINED IN FREDERICK COUNTY CODES.

\*\*\*\*\*NOTICE\*\*\*\*\*

THIS LIST IS FOR SEQUENCE OF CONSTRUCTION ONLY. THIS OFFICE ASSUMES NO RESPONSIBILITY OR LIABILITY FOR IMPROPER INSTALLATION OF ANY ITEM ON THIS CHECKLIST. THIS OFFICE RECOMMENDS THAT A PROFESSIONAL ENGINEER BE PRESENT FOR EACH OF THE REQUIRED INSPECTIONS.

1.	TYPE OF INSPECTION	MISC. COMMENTS /INITIALS
1.	PRECONSTRUCTION MEETING	
2.	COMPLETION OF SEDIMENT CONTROL MEASURE (IF USING BASIN SEE IS BELOW)	
3.	PRIOR TO MODIFICATION OR REMOVAL OF SED. CONTRL	
4.	INFILTRATION SYSTEMS	
A.	SITE READINESS PER SEQUENCE OF CONSTRUCTION	
B.	INFILTRATION AREA, PROTECTED FROM SEDIMENTATION	
C.	DIMENSIONS	
D.	FILTRATING MATERIAL	
E.	FILL MATERIAL	
F.	SIZE, PLACEMENT, TYPE OF PIPING	
G.	OBSERVATION WELL	
H.	COVER/STABILIZATION	
5.	OPEN CHANNEL FLOW ATTENUATION	
A.	SITE READINESS PER SEQUENCE OF CONSTRUCTION	
B.	CROSS SECTION CONFORMANCE	
C.	MATERIAL (TYPE/SIZE)	
D.	STABILIZATION	
6.	RETENTION/DETECTION STRUCTURES (BASIN/PONDS)	
A.	SUBGRADE PREPARATION	
1.	CORE TRENCH	
2.	SUITABLE MATERIAL/ COMPACTION	
B.	EMBANKMENT CONSTRUCTION	
1.	SUITABLE MATERIAL/COMPACTION	
2.	SLOPE GRADE	
3.	DIMENSIONS	
C.	BARREL AND RISER ASSEMBLY	
1.	CORRECT MATERIAL ONSTE	
2.	SIZING	
3.	ANTI-SEEP COLLARS	
4.	ANTI-FLOTATION DEVICE	
5.	CONCRETE GRADE (RIP ONLY)	
6.	INSTALLATION /BACKFILL/COMPACTION	
D.	CONCRETE STRUCTURES	
1.	FOOTER DIMENSIONS	
2.	REINFORCING MATERIAL (TYPE, SIZE, PLACEMENT)	
3.	WER POUR/MATERIAL/SLUMP TEST	
4.	FORM STRIP AND FINISHING	
E.	IMBOUNDING AREA	
1.	LOW FLOW CHANNELS/STABILIZATION	
2.	DEWATERING DEVICE	
3.	EMERGENCY SPILLWAY	
4.	EXTENDED DETENTION DEVICE	
F.	OUTFALL AREA (LEVEL SPREADER, RIPRAP CHANNEL, ECT.,	
G.	VEGETATIVE STABILIZATION	
H.	MISCELLANEOUS	

FREDERICK SOIL CONSERVATION DISTRICT

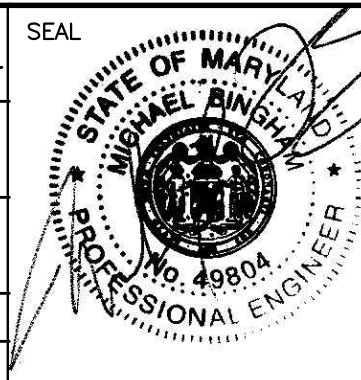
Approved by \_\_\_\_\_  
District Manager

Date \_\_\_\_\_

SCD APPROVAL FOR SEDIMENT AND EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS

NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.

MICHAEL J. BINGHAM, PE RELEASED BY		SEAL
DESIGN	BCU	CHECKED
DRAWN	CADD	CHECKED
DATE	OCTOBER 2022	SURVEY DATE
		SEPT 2022
		FIELD BOOK
		WEBER SURVEYORS



SEAL  
PROFESSIONAL CERTIFICATION  
I, MICHAEL J. BINGHAM, P.E.  
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. 49804  
Expiration Date: 2024-08-23

CLIENT & PROJECT	
TOWN OF WALKERSVILLE 21 WEST FREDERICK STREET WALKERSVILLE, MARYLAND 21793	
BMP DESIGNS WALKERSVILLE, FREDERICK COUNTY, MARYLAND	

**ARRG**  
201 Thomas Johnson Drive Suite 207  
Frederick, MD 21702  
Tel 301.791.1100

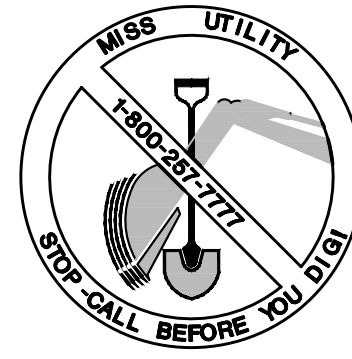
TITLE		
DEERFIELD BMP FACILITY EROSION AND SEDIMENT CONTROL NOTES		
SCALE AS SHOWN		DWG. NO.
PROJECT NO. 1082737	SHEET NO. 10 OF 10	REV.

# TOWN OF WALKERSVILLE FREDERICK COUNTY, MARYLAND

## STORMWATER BMP IMPROVEMENTS DEERFIELD BMP RETROFIT

### UNDERGROUND UTILITY LINE PROTECTION ACT

THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES OR STRUCTURES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES AND STRUCTURES BEFORE COMMENCING THE WORK. CALL MISS UTILITY AT 1-800-257-7777 AT LEAST 48 HOURS IN ADVANCE OF WORK.



### PROJECT SUMMARY

THE TOWN OF WALKERSVILLE IS PROPOSING TO REDESIGN AND RETROFIT AN EXISTING SWALE INTO A DRY SWALE LOCATED IN FREDERICK COUNTY. THE PROJECT WILL DECREASE NUTRIENT AND SEDIMENT LOADS AND THE TOWN OF WALKERSVILLE WILL RECEIVE CREDITS TOWARDS THEIR CHESAPEAKE BAY POLLUTION REDUCTION PLAN. THE RETROFIT WILL INVOLVE REGRADING THE SWALE, REPLACING RIP RAP, INSTALLING A PVC UNDERDRAIN WITH CLEANOUTS, PERMEABLE SOILS, AND SEDIMENT FOREBAY INSTALLATIONS. FLOW IS EXPECTED TO LEAVE THE SITE IN A SIMILAR PATTERN TO EXISTING CONDITIONS AND FLOWS TOWARD ISRAEL CREEK.

### DISTURBED AREA QUANTITY

THE TOTAL AREA TO BE DISTURBED SHOWN ON THESE PLANS HAS BEEN DETERMINED TO BE APPROXIMATELY 0.74 ACRES (32,170.99 S.F.) AND THE TOTAL AMOUNT OF EXCAVATION AND FILL AS SHOWN ON THESE PLANS HAS BEEN COMPUTED TO BE APPROXIMATELY 1,775 CUBIC YARDS OF EXCAVATION AND APPROXIMATELY 153 CUBIC YARDS OF FILL. (APPROX. ONLY - NOT FOR BID PURPOSES)  
CUT AND FILL ARE TRENCH EXCAVATION AND BACKFILL ONLY.

MICHAEL J. BINGHAM  
MD. PE NO. 49804

1/5/23  
DATE

### ENGINEER/ARCHITECT DESIGN CERTIFICATION

I HEREBY CERTIFY THAT THE PLANS HAVE BEEN DESIGNED IN ACCORDANCE WITH LOCAL ORDINANCES, COMAR 26.17.01, AND 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL.

MICHAEL J. BINGHAM  
MD. PE NO. 49804

1/5/23  
DATE

### DESIGN CERTIFICATION

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE "STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL IN DEVELOPING AREA" AND THE REQUIREMENTS OF THE FREDERICK SOIL CONSERVATION DISTRICT.

MICHAEL J. BINGHAM  
MD. PE NO. 49804

1/5/23  
DATE

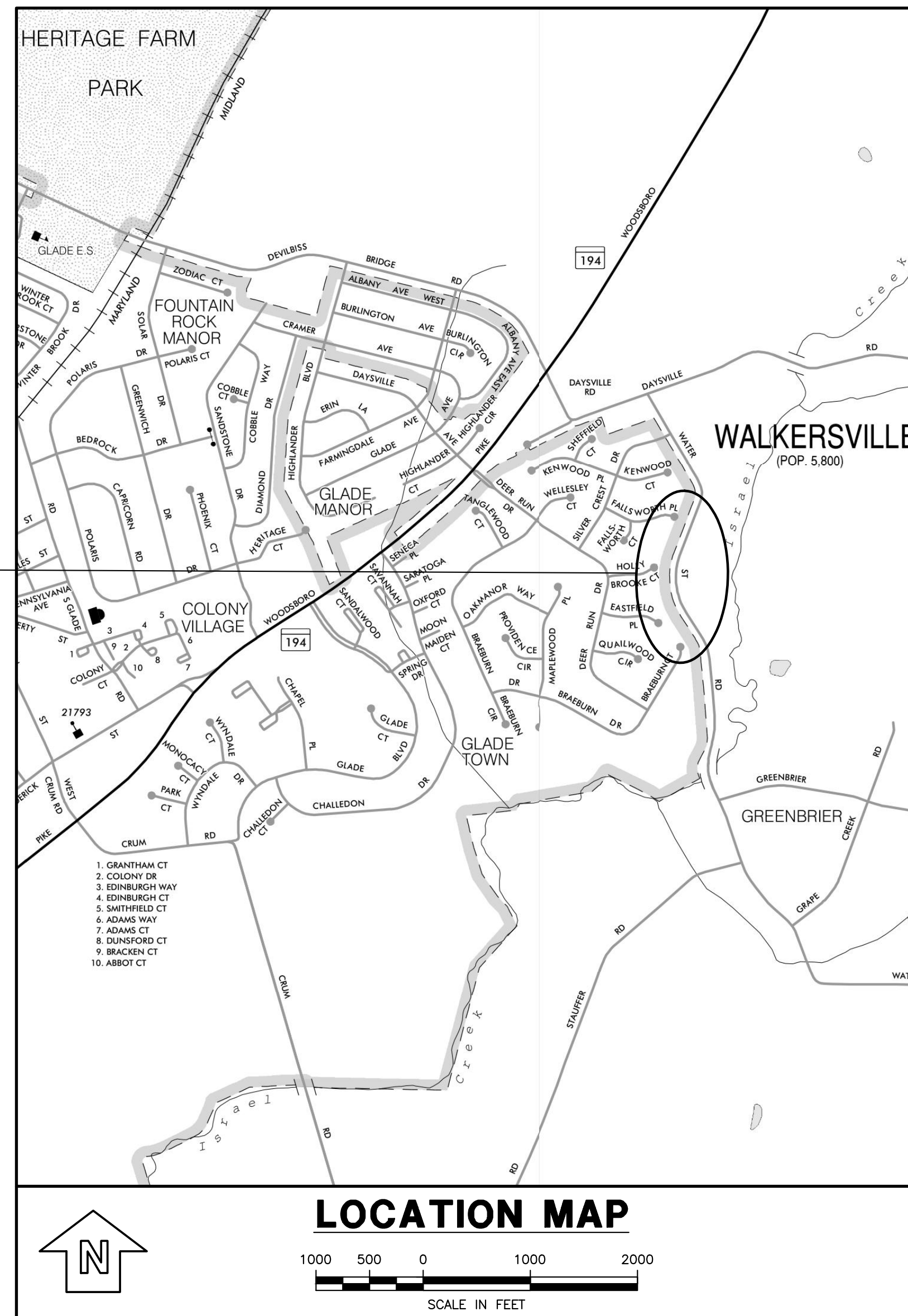
### OWNERS/DEVELOPERS CERTIFICATION

I CERTIFY THAT THIS PLAN OF SEDIMENT CONTROL WILL BE IMPLEMENTED TO THE FULLEST EXTENT, AND ALL STRUCTURES WILL BE INSTALLED TO THE DESIGN AND SPECIFICATIONS AS SPELLED OUT IN THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATION OF ATTENDANCE AT A DEPARTMENT OF ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE EVALUATION BY THE CATOCIN/FREDERICK SOIL CONSERVATION DISTRICT PERSONNEL AND COOPERATING AGENCIES.

XX  
\_\_\_\_\_

XX

**PROJECT  
LOCATION**



### DRAWING INDEX

- 1 OF 9 DEERFIELD BMP RETROFIT TITLE SHEET
- 2 OF 9 DEERFIELD BMP RETROFIT EXISTING CONDITIONS STA 0+00 TO STA 5+50
- 3 OF 9 DEERFIELD BMP RETROFIT EXISTING CONDITIONS STA 5+50 TO STA 9+72
- 4 OF 9 DEERFIELD BMP RETROFIT PROPOSED CONDITIONS STA 0+00 TO STA 5+50
- 5 OF 9 DEERFIELD BMP RETROFIT PROPOSED CONDITIONS STA 5+50 TO STA 9+72
- 6 OF 9 DEERFIELD BMP RETROFIT EROSION AND SEDIMENT CONTROL PLAN
- 7 OF 9 DEERFIELD BMP RETROFIT DESIGN DETAILS
- 8 OF 9 DEERFIELD BMP RETROFIT EROSION AND SEDIMENT CONTROL DETAILS
- 9 OF 9 DEERFIELD BMP RETROFIT EROSION AND SEDIMENT CONTROL NOTES

### GENERAL NOTES

1. DURING THE LAYOUT OF SEDIMENT CONTROL PRACTICES REQUIRED ON THIS PLAN, MINOR FIELD ADJUSTMENTS CAN AND WILL BE MADE TO INSURE THE ARREST AND CONTROL OF ANY SEDIMENT BEFORE IT LEAVES THE CONSTRUCTION SITE. CHANGES IN SEDIMENT CONTROL PRACTICES REQUIRE PRIOR APPROVAL OF THE SEDIMENT CONTROL INSPECTOR.
2. THE CONTRACTOR WILL BE RESPONSIBLE FOR INSTALLING SEDIMENT RETENTION STRUCTURES, AND SURFACE WATER DIVERSIONS AS PART OF THE INITIAL PHASE OF CONSTRUCTION.
3. PREVENT THE TRACKING OF MUD FROM THE SITE ONTO PUBLIC ROADS BY PLACING CRUSHED STONE OVER EGRESS AREA OR BY EFFECTIVE MEANS. ALSO RESPONSIBLE FOR THE IMMEDIATE REPAIR OF ANY DAMAGE TO PUBLIC OR PRIVATE ROADS CAUSED BY THIS CONSTRUCTION.
4. CONTINUAL INSPECTION AND MAINTENANCE OF SEDIMENT CONTROL FACILITIES SHALL BE PERFORMED UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE SOIL CONSERVATION DISTRICT INSPECTOR.
5. NO WORK SHALL PROCEED IN THE STREAM (CLASS IV) CHANNEL DURING STREAM CLOSURE DATES FROM MARCH 1 THRU MAY 31.
6. DEPENDING ON SITE CONDITIONS, PHASING OR CONSTRUCTION SEQUENCING, AND STABILIZATION METHODS, ADDITIONAL SEDIMENT CONTROLS (OTHER THAN AS SHOWN HEREON) MAY BE REQUIRED BY THE INSPECTOR.
7. NO FEMA FLOODPLAINS OR WETLANDS WERE LOCATED ON SITE.

FREDERICK SOIL CONSERVATION DISTRICT

Approved by \_\_\_\_\_  
District Manager

Date \_\_\_\_\_

SCD APPROVAL FOR SEDIMENT AND EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS.

File #: xx
A/P #: xx
Due Date:

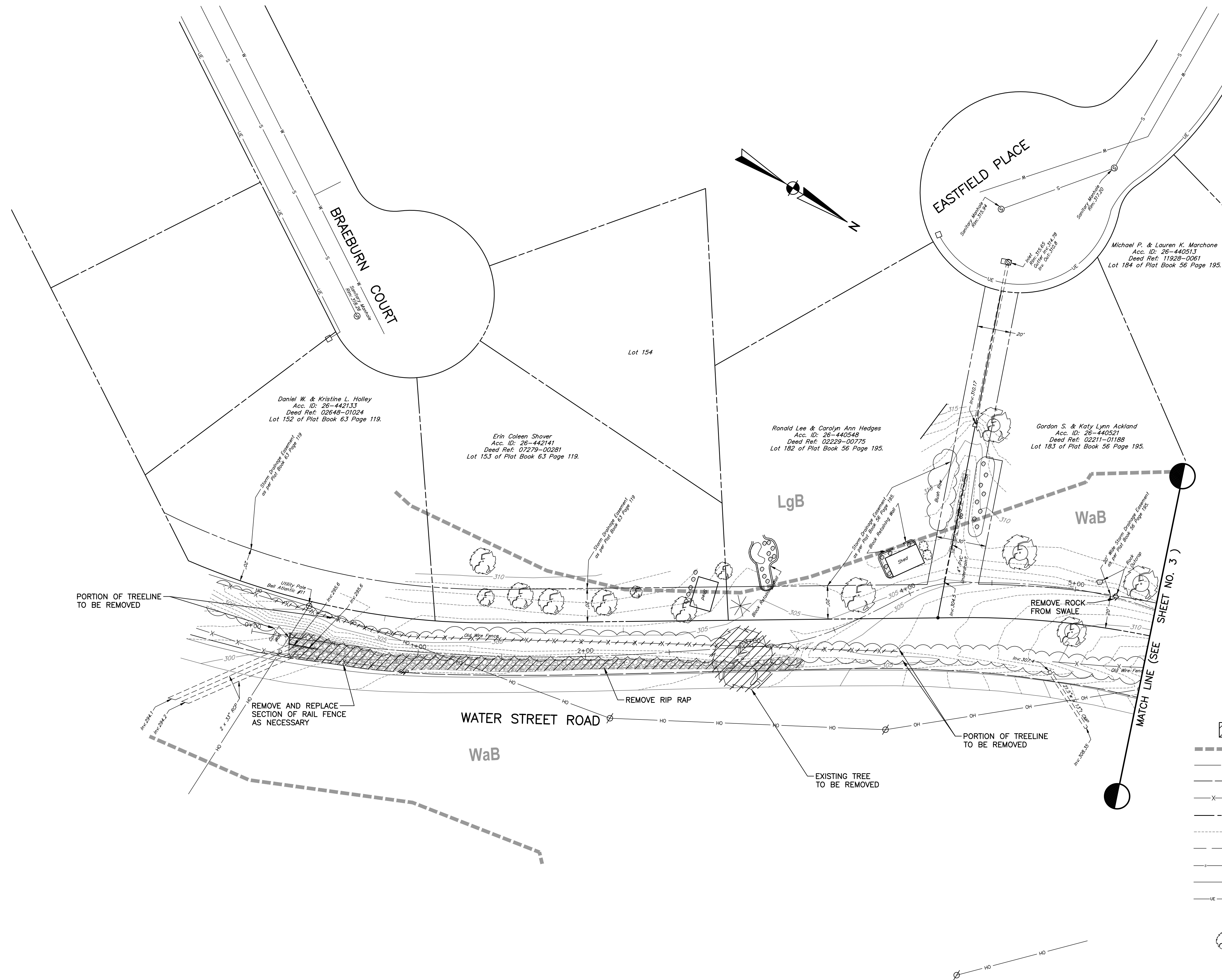
FREDERICK COUNTY, MARYLAND DEVELOPMENT REVIEW ENGINEERING FOR SWM REVIEW ONLY				
APPROVED: _____	DEVELOPMENT REVIEW CHIEF	DATE	_____	DATE
APPROVED: _____	STORMWATER MANAGEMENT	DATE	_____	DATE
Reviewed in accordance with local County requirements. Frederick County assumes no liability for design and/or construction. Approval is valid for two (2) years after the last date shown above. The project must be under construction before the approval expiration to be considered active. Otherwise, resubmittal of plans, including applicable fees, must be made to Development Review for reapproval. Fees for resubmittal cannot be waived.				
REV. #	DATE	REVISION DESCRIPTION <small>* FILL IN THESE BLOCKS FOR REVISIONS ONLY</small>	CONSULTANT: DATE AND INITIAL	DEV. REVIEW: DATE AND INITIAL

NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.

MICHAEL J. BINGHAM, PE	
DESIGN BY	RELEASED BY
BCU	CHECKED
DRAWN	CHECKED
CADD	
DATE	SURVEY DATE
JANUARY 2023	DECEMBER 2022
	FIELD BOOK
	WEBER SURVEYORS

 SEAL PROFESSIONAL ENGINEER MICHAEL J. BINGHAM, P.E. License No. 49804 Expiration Date: 2024-08-23	CLIENT & PROJECT  TOWN OF WALKERSVILLE 21 WEST FREDERICK STREET WALKERSVILLE, MARYLAND 21793  BMP DESIGNS WALKERSVILLE, FREDERICK COUNTY, MARYLAND
---	---

 201 Thomas Johnson Drive Suite 207 Frederick, MD 21702 Tel 301.791.1100	TITLE DEERFIELD BMP RETROFIT TITLE SHEET		DWG. NO. S-1
	SCALE AS SHOWN	PROJECT NO. 10827.37	



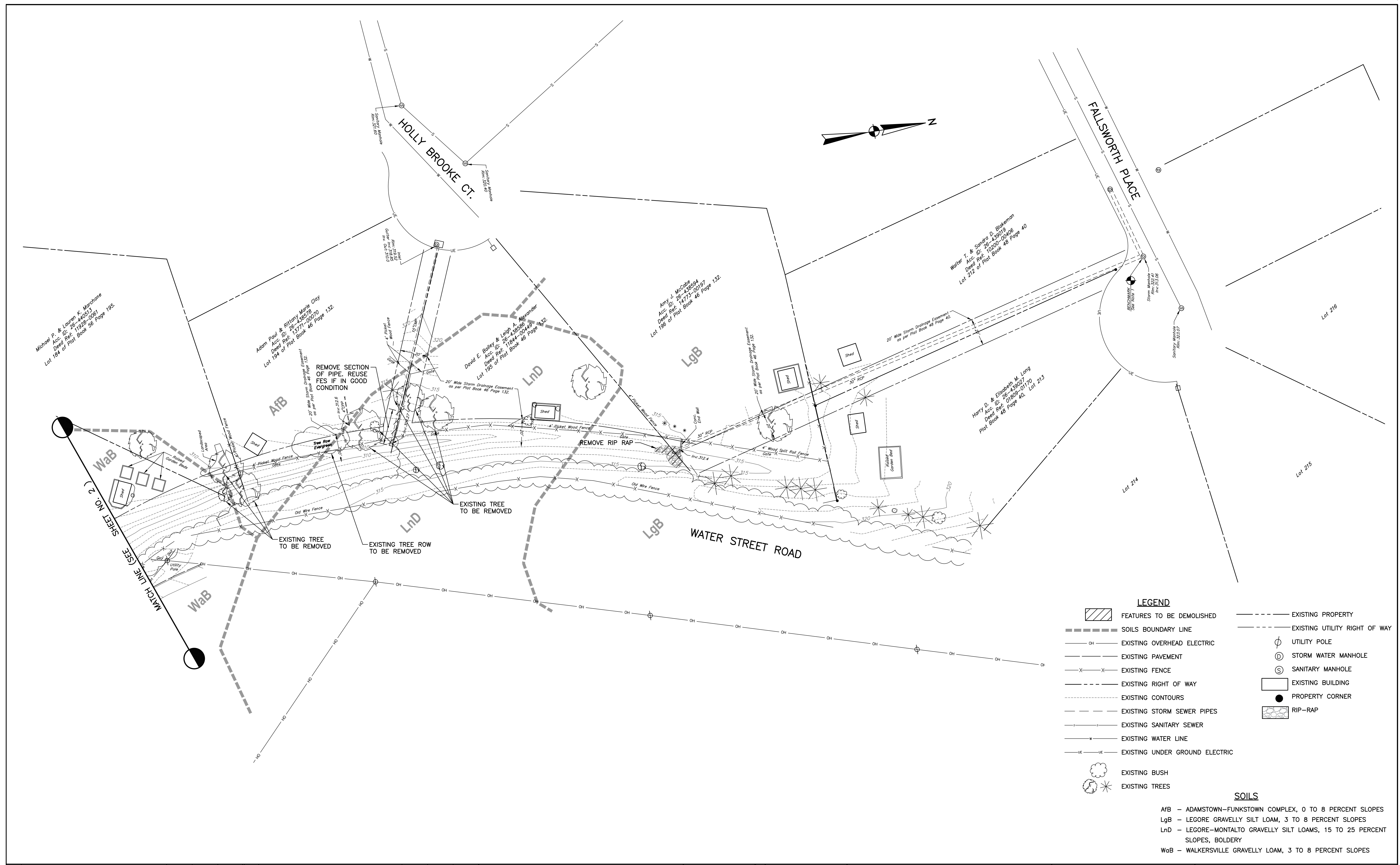
- Survey Notes:**
1. Topography and physical features shown hereon obtained from a field survey performed by WEBER SURVEYORS Completed on December 12, 2022. 931 Stony Battery Road, Landisville, PA (717)-898-9466. Coordinate System: MD State Plane, Ref Frame: NAD83(2011) Epoch 2010.00. Vertical Datum: NAVD88 (established by GPS observation GEOID18). Benchmark: Storm Manhole in cul-de-sac of Fallsworth Place, See plan. Elevation: 322.41. Contour Interval: 1 Foot.
  2. All deed lines, easements and right-of-ways are plotted from deeds of record and recorded subdivision plans for reference purposes only. A boundary survey was not performed as part of this survey and this survey was prepared without the benefit of a title search.
  3. Underground utility have been shown according to surface evidence, markings provided by others, and or plans provided by the others. The actual location of these utilities have not been field verified and the locations are approximate. WEBER SURVEYORS does not make any representation, warranty, assurance or guarantee that the underground utility location information provided by others and reflected on these drawings is correct or accurate. WEBER SURVEYORS assumes no responsibility for a any damage as a result of underground utilities omitted or inaccurately shown.
  4. All features shown are existing unless otherwise noted.
  5. Any revisions made to these plans after the date of plan preparation or latest revision date shall not be the responsibility of WEBER SURVEYORS. Plan release date December 16, 2022.

LEGEND	
	FEATURES TO BE DEMOLISHED
	EXISTING PROPERTY
	SOILS BOUNDARY LINE
	EXISTING OVERHEAD ELECTRIC
	EXISTING PAVEMENT
	EXISTING FENCE
	EXISTING RIGHT OF WAY
	EXISTING CONTOURS
	EXISTING STORM SEWER PIPES
	EXISTING SANITARY SEWER
	EXISTING WATER LINE
	EXISTING UNDER GROUND ELECTRIC
	EXISTING BUSH
	EXISTING TREES
	EXISTING UTILITY RIGHT OF WAY
	UTILITY POLE
	STORM WATER MANHOLE
	SANITARY MANHOLE
	EXISTING BUILDING
	PROPERTY CORNER
	RIP-RAP

**SOILS**

AFB - ADAMSTOWN-FUNKSTOWN COMPLEX, 0 TO 8 PERCENT SLOPES
LgB - LEGORE GRAVELLY SILT LOAM, 3 TO 8 PERCENT SLOPES
LnD - LEGORE-MONTALTO GRAVELLY SILT LOAMS, 15 TO 25 PERCENT SLOPES, BOLDERY
WaB - WALKERSVILLE GRAVELLY LOAM, 3 TO 8 PERCENT SLOPES

										MICHAEL J. BINGHAM, PE RELEASED BY DESIGN BCU DRAWN CADD DATE JANUARY 2023		CHECKED CHECKED SURVEY DATE DECEMBER 2022 FIELD BOOK WEBER SURVEYORS		SEAL 		SEAL PROFESSIONAL CERTIFICATION I, MICHAEL J. BINGHAM, P.E. 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. 49804, Expiration Date: 2024-08-23		CLIENT & PROJECT TOWN OF WALKERSVILLE 21 WEST FREDERICK STREET WALKERSVILLE, MARYLAND 21793 BMP DESIGNS WALKERSVILLE, FREDERICK COUNTY, MARYLAND		201 Thomas Johnson Drive Suite 207 Frederick, MD 21702 Tel 301.791.1100		TITLE DEERFIELD BMP RETROFIT EXISTING CONDITIONS STA 0+00 TO STA 5+50 SCALE: 1" = 30' PROJECT NO. 1082737 SHEET NO. 2 OF 9 REV.		DWG. NO. S-2	
NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.																



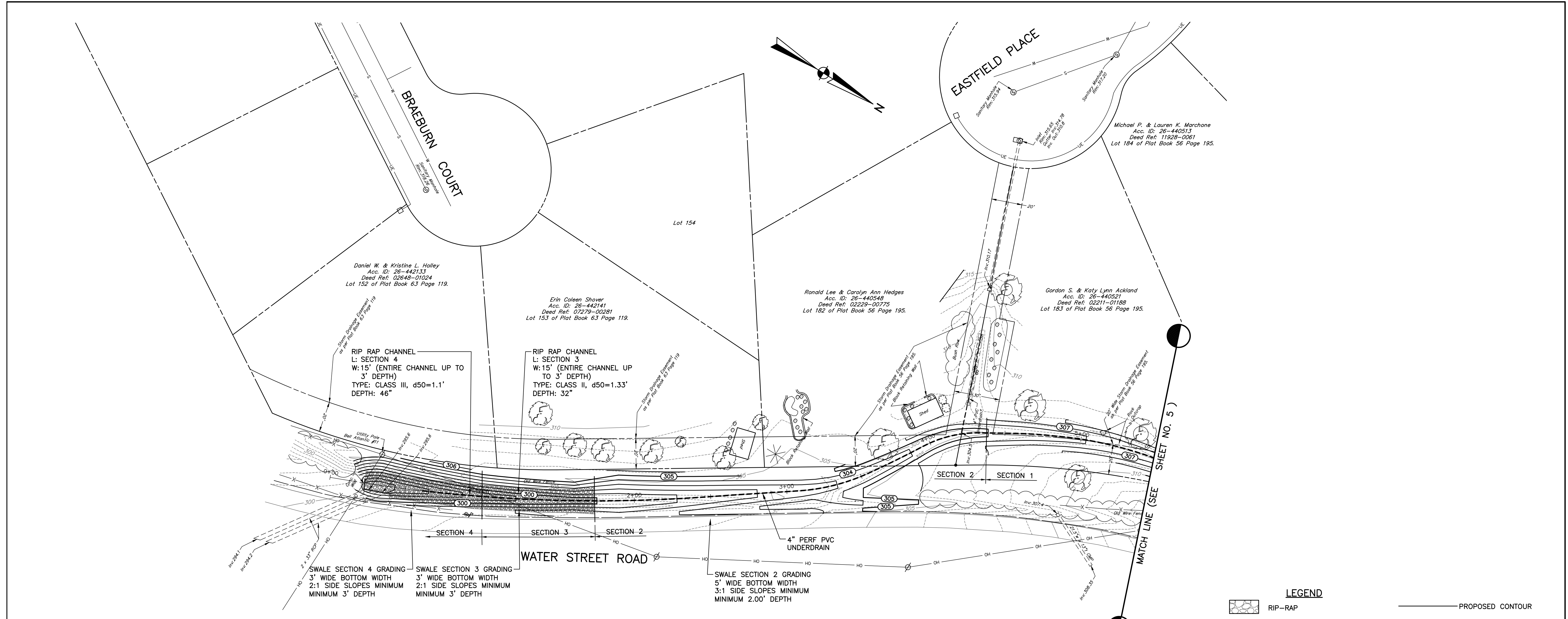
**LEGEND**

- FEATURES TO BE DEMOLISHED
- SOILS BOUNDARY LINE
- EXISTING OVERHEAD ELECTRIC
- EXISTING PAVEMENT
- EXISTING FENCE
- EXISTING RIGHT OF WAY
- EXISTING CONTOURS
- EXISTING STORM SEWER PIPES
- EXISTING SANITARY SEWER
- EXISTING WATER LINE
- EXISTING UNDER GROUND ELECTRIC
- EXISTING BUSH
- EXISTING TREES
- EXISTING PROPERTY
- EXISTING UTILITY RIGHT OF WAY
- UTILITY POLE
- STORM WATER MANHOLE
- SANITARY MANHOLE
- EXISTING BUILDING
- PROPERTY CORNER
- RIP-RAP

**SOILS**

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- LgB - LEGORE GRAVELLY SILT LOAM, 3 TO 8 PERCENT SLOPES
- LnD - LEGORE-MONTALTO GRAVELLY SILT LOAMS, 15 TO 25 PERCENT SLOPES, BOLDERY
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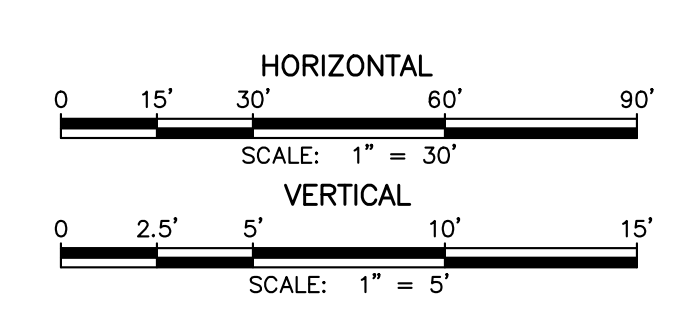
MICHAEL J. BINGHAM, PE RELEASED BY: DESIGN BCU, DRAWN CADD, DATE JANUARY 2023, CHECKED, SURVEY DATE DECEMBER 2022, FIELD BOOK WEBER SURVEYORS											CLIENT & PROJECT TOWN OF WALKERSVILLE 21 WEST FREDERICK STREET WALKERSVILLE, MARYLAND 21793  BMP DESIGNS WALKERSVILLE, FREDERICK COUNTY, MARYLAND				TITLE DEERFIELD BMP RETROFIT EXISTING CONDITIONS STA 5+50 TO STA 9+72		SCALE: 0 15' 30' 60' 90' SCALE: 1" = 30' PROJECT NO. 10827.37, SHEET NO. 3 OF 9, REV.		DWG. NO. S-3
NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.										



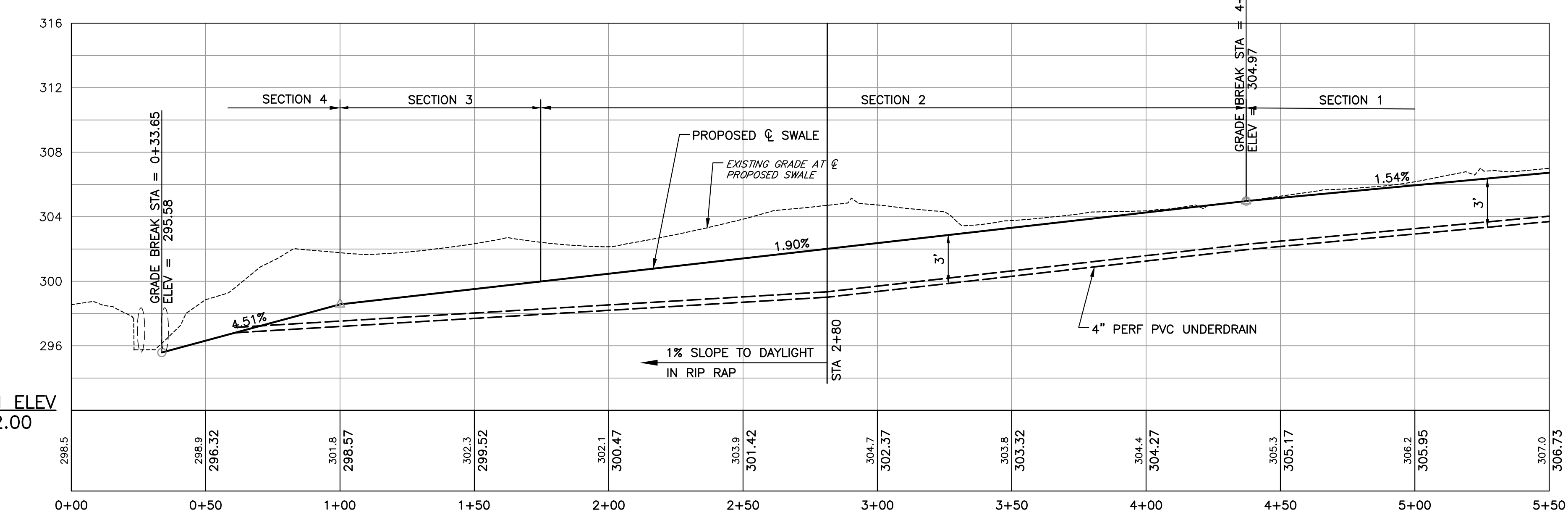
**PLAN AND PROFILE**

SCALE: HORIZ 1" = 30' VERT 1" = 5'

- LEGEND**
- RIP-RAP
  - PROPOSED STORM
  - EXISTING OVERHEAD ELECTRIC
  - EXISTING PAVEMENT
  - EXISTING FENCE
  - EXISTING RIGHT OF WAY
  - EXISTING CONTOURS
  - EXISTING STORM SEWER PIPES
  - EXISTING SANITARY SEWER
  - EXISTING WATER LINE
  - EXISTING UNDER GROUND ELECTRIC
  - EXISTING BUSH
  - EXISTING TREES
  - PROPOSED CONTOUR
  - EXISTING PROPERTY
  - EXISTING UTILITY RIGHT OF WAY
  - UTILITY POLE
  - STORM WATER MANHOLE
  - SANITARY MANHOLE
  - EXISTING BUILDING
  - PROPERTY CORNER



DATUM ELEV 292.00



FREDERICK SOIL CONSERVATION DISTRICT  
 Approved by \_\_\_\_\_ District Manager  
 Date \_\_\_\_\_

SCD APPROVAL FOR SEDIMENT AND EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS.

NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.

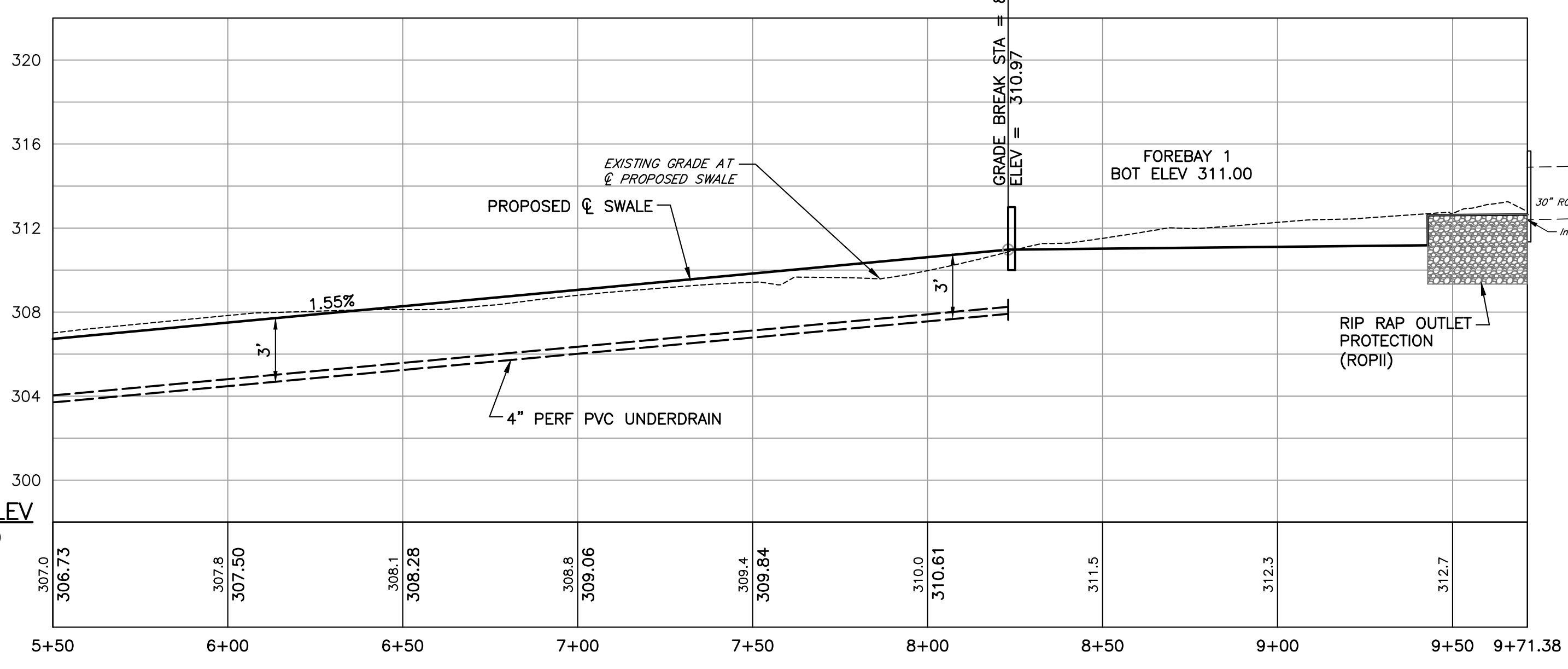
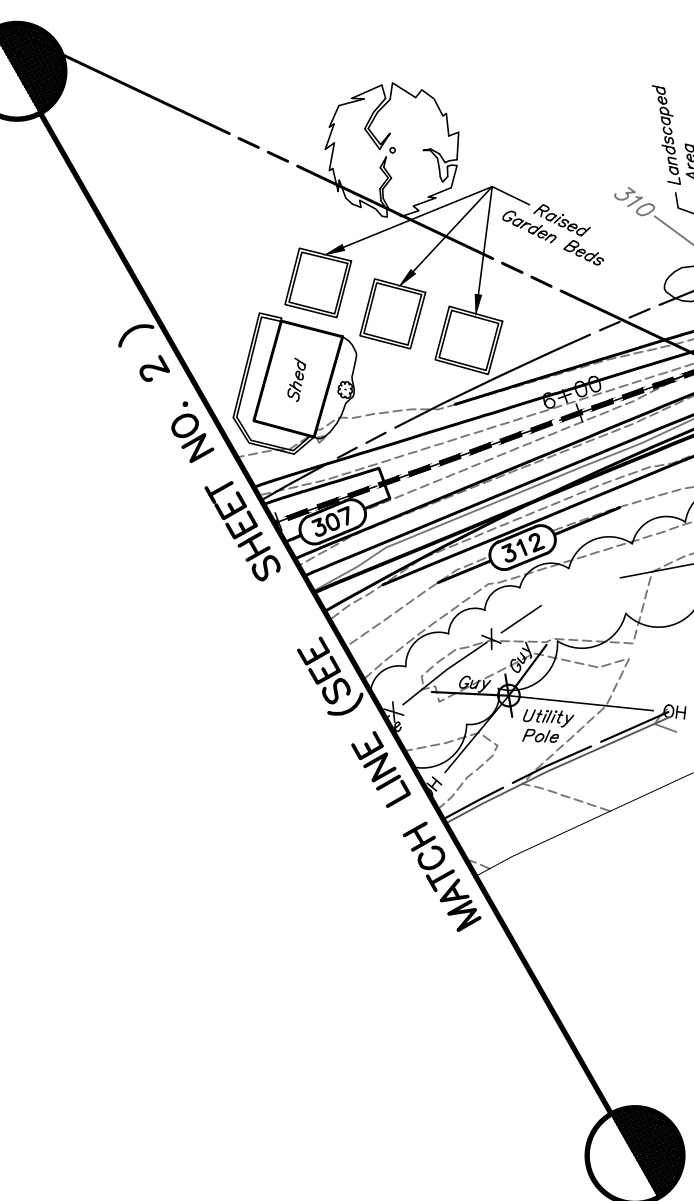
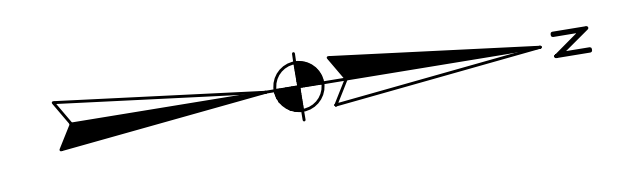
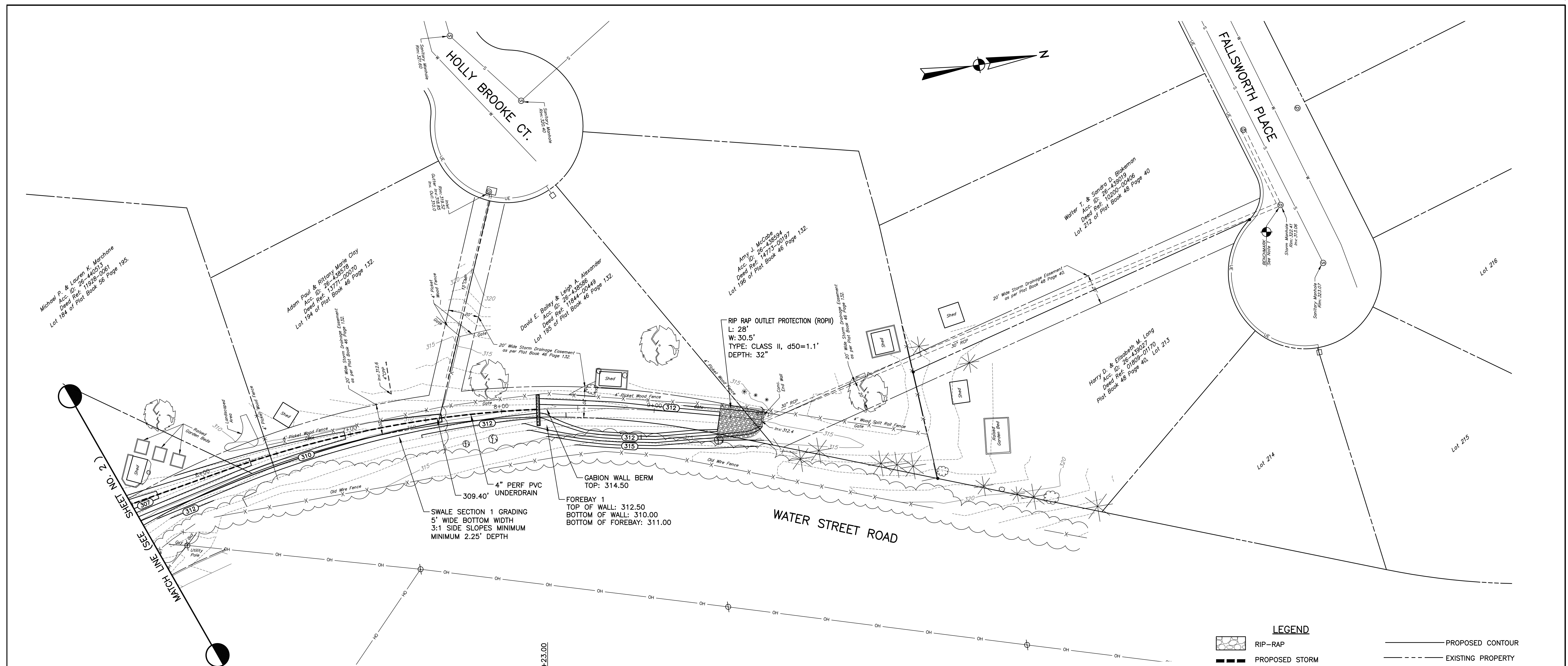
MICHAEL J. BINGHAM, PE	DESIGN BY	BCU	CHECKED
	DRAWN	CADD	CHECKED
	DATE	JANAUARY 2023	SURVEY DATE
			DECEMEBR 2022
			FIELD BOOK
			WEBER SURVEYORS

SEAL  
  
 SEAL  
 PROFESSIONAL CERTIFICATION  
 I, MICHAEL J. BINGHAM, P.E. 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. 49804, Expiration Date: 2024-08-23

CLIENT & PROJECT  
 TOWN OF WALKERSVILLE  
 21 WEST FREDERICK STREET  
 WALKERSVILLE, MARYLAND 21793  
 BMP DESIGNS  
 WALKERSVILLE, FREDERICK COUNTY, MARYLAND

  
 201 Thomas Johnson Drive Suite 207  
 Frederick, MD 21702  
 Tel 301.791.1100

TITLE	DEERFIELD BMP RETROFIT PROPOSED CONDITIONS STA 0+00 TO STA 5+50		
SCALE	AS SHOWN	DWG. NO.	S-4
PROJECT NO.	10827.37	SHEET NO.	4 OF 9
REV.			

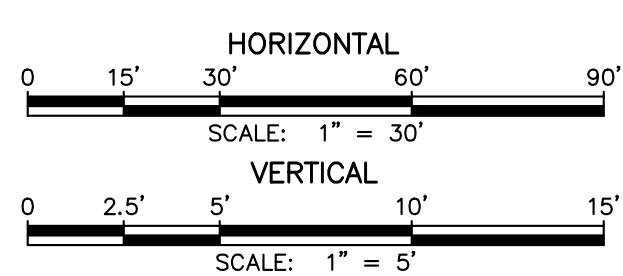


**LEGEND**

- RIP-RAP
- PROPOSED STORM
- EXISTING OVERHEAD ELECTRIC
- EXISTING PAVEMENT
- EXISTING FENCE
- EXISTING RIGHT OF WAY
- EXISTING CONTOURS
- EXISTING STORM SEWER PIPES
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- UTILITY POLE
- STORM WATER MANHOLE
- SANITARY MANHOLE
- EXISTING BUILDING
- PROPERTY CORNER

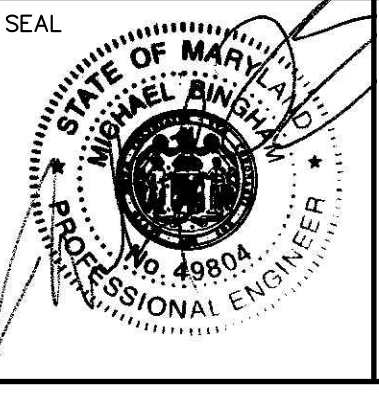
FREDERICK SOIL CONSERVATION DISTRICT  
 Approved by \_\_\_\_\_ District Manager  
 Date \_\_\_\_\_

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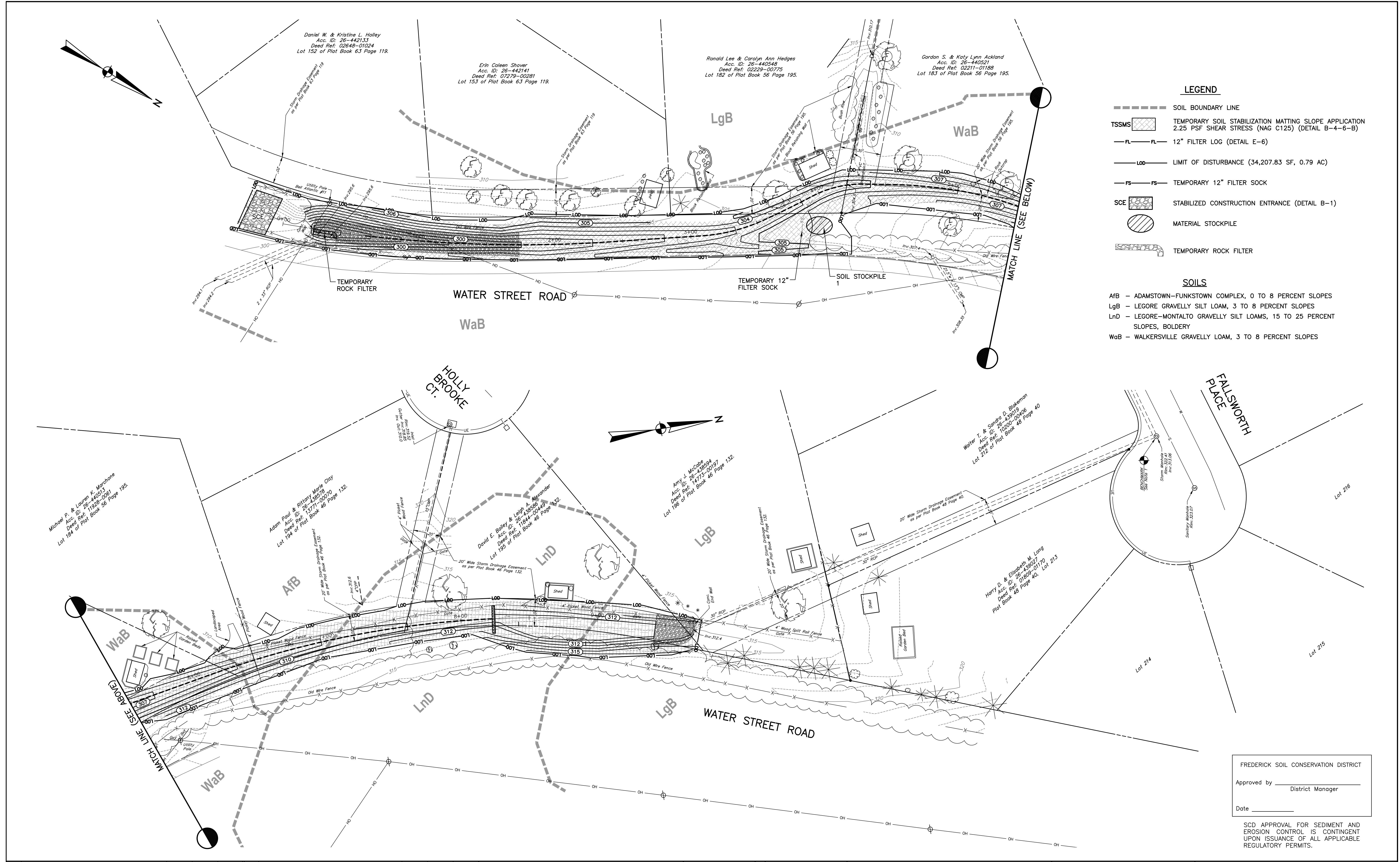
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 TOWN OF WALKERSVILLE  
 21 WEST FREDERICK STREET  
 WALKERSVILLE, MARYLAND 21793  
 BMP DESIGNS  
 WALKERSVILLE, FREDERICK COUNTY, MARYLAND



TITLE	DEERFIELD BMP RETROFIT PROPOSED CONDITIONS STA 5+50 TO STA 9+72		
SCALE	AS SHOWN		
PROJECT NO.	10827.37	SHEET NO.	5 OF 9
DWG. NO.	S-5		





**LEGEND**

- SOIL BOUNDARY LINE
- TSSMS [Symbol] TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION  
2.25 PSF SHEAR STRESS (NAG C125) (DETAIL B-4-6-B)
- FL — 12" FILTER LOG (DETAIL E-6)
- LOD — LIMIT OF DISTURBANCE (34,207.83 SF, 0.79 AC)
- FS — TEMPORARY 12" FILTER SOCK
- SCE [Symbol] STABILIZED CONSTRUCTION ENTRANCE (DETAIL B-1)
- [Symbol] MATERIAL STOCKPILE
- [Symbol] TEMPORARY ROCK FILTER

**SOILS**

- Afb - ADAMSTOWN-FUNKSTOWN COMPLEX, 0 TO 8 PERCENT SLOPES
- LgB - LEGORE GRAVELLY SILT LOAM, 3 TO 8 PERCENT SLOPES
- Lnd - LEGORE-MONTALTO GRAVELLY SILT LOAMS, 15 TO 25 PERCENT SLOPES, BOLDERY
- WaB - WALKERSVILLE GRAVELLY LOAM, 3 TO 8 PERCENT SLOPES

FREDERICK SOIL CONSERVATION DISTRICT

Approved by \_\_\_\_\_  
District Manager

Date \_\_\_\_\_

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NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.

MICHAEL J. BINGHAM, PE	
RELEASED BY	CHECKED
DESIGN	BCU
DRAWN	CADD
DATE	JANUARY 2023
SURVEY DATE	DECEMBER 2022
FIELD BOOK	WEBER SURVEYORS

SEAL

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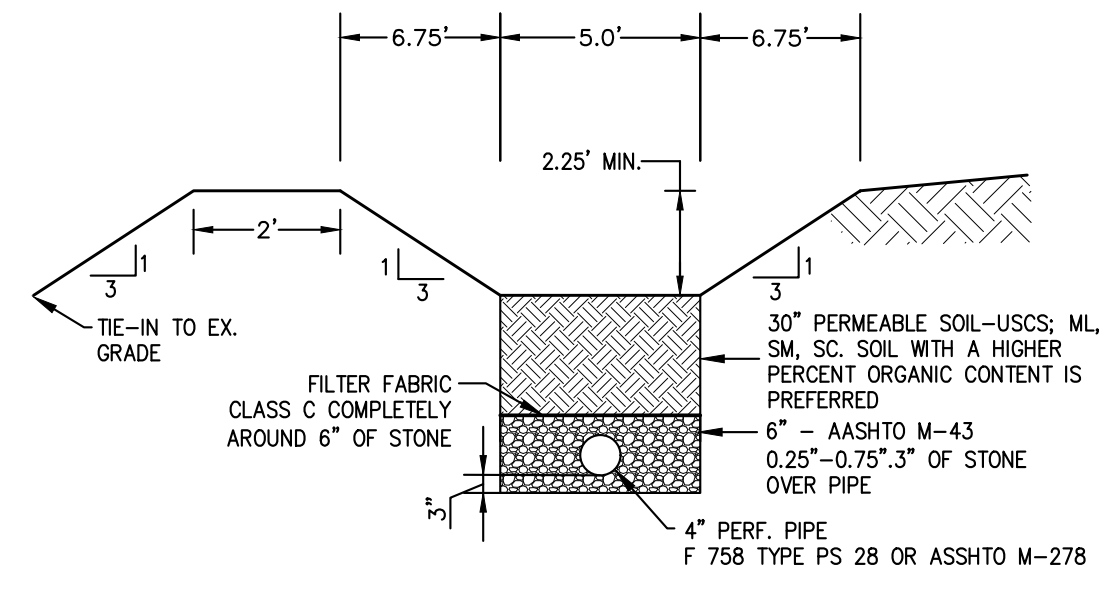
CLIENT & PROJECT

TOWN OF WALKERSVILLE  
21 WEST FREDERICK STREET  
WALKERSVILLE, MARYLAND 21793

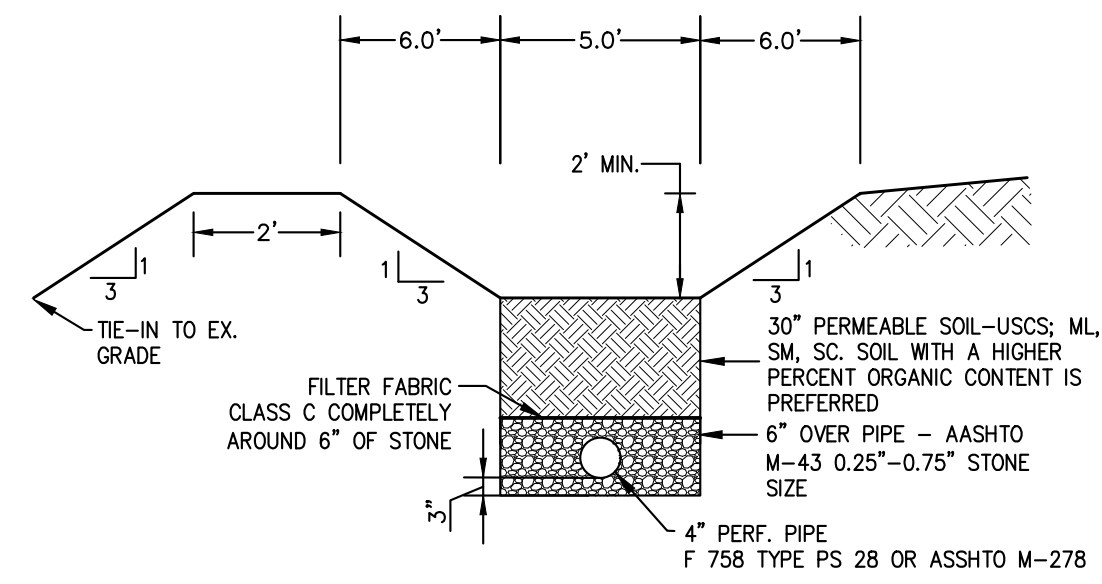
BMP DESIGNS  
WALKERSVILLE, FREDERICK COUNTY, MARYLAND

201 Thomas Johnson Drive Suite 207  
Frederick, MD 21702  
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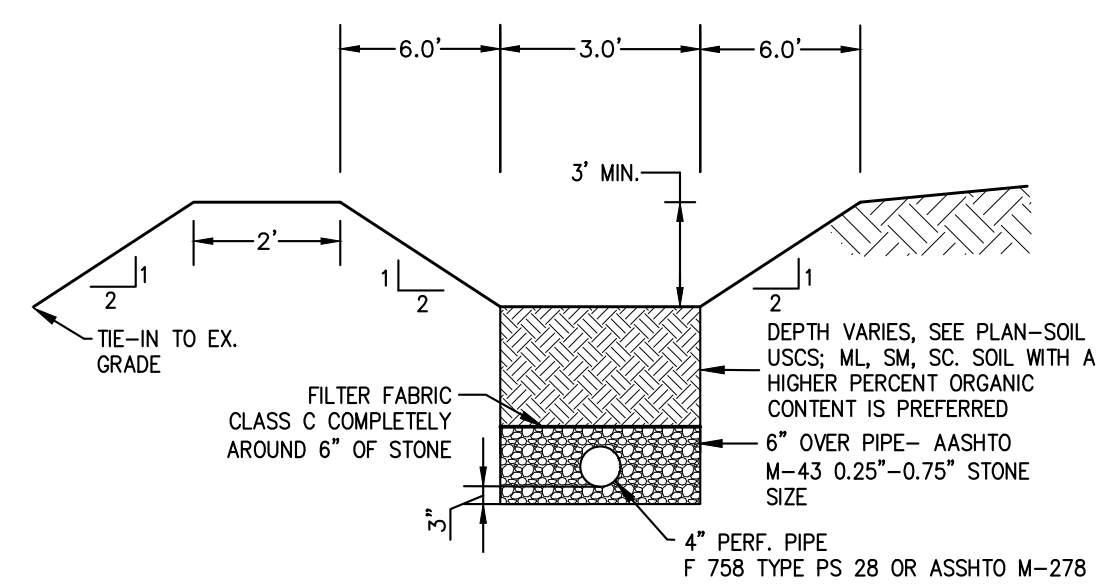
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SCALE	0' 15' 30' 60' 90'	DWG. NO.	S-6
PROJECT NO.	10827.37	SHEET NO.	6 OF 9
REV.			



SECTION 1



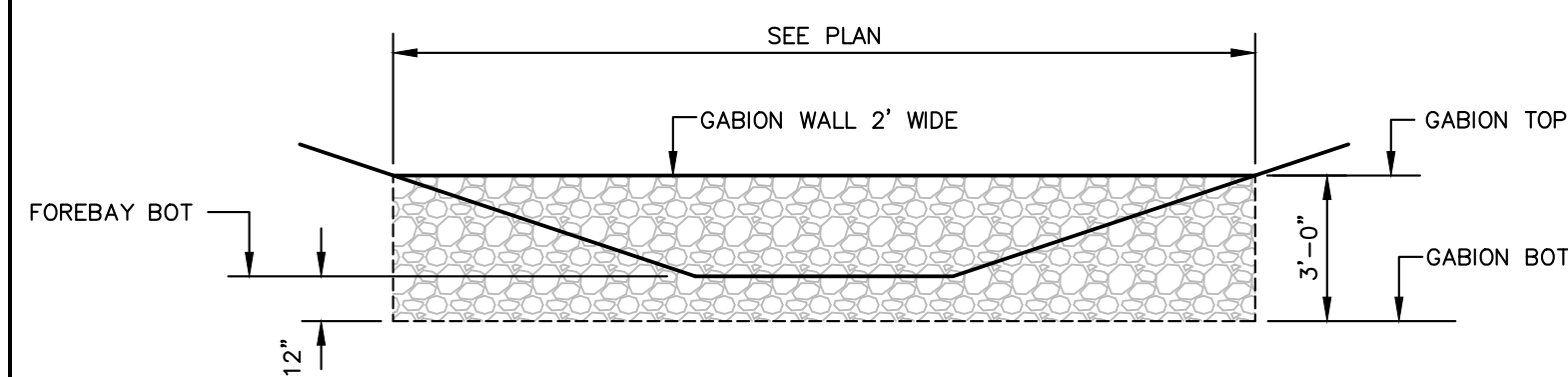
SECTION 2



SECTION 3/4

SWALE SECTIONS

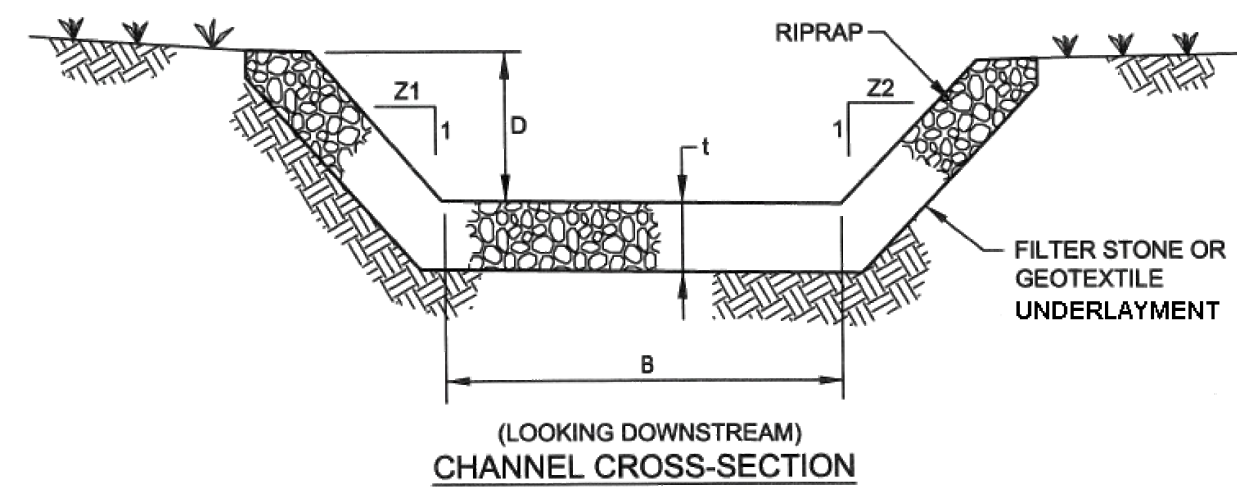
NO SCALE



FOREBAY NO.	FOREBAY BOTTOM ELEV.	GABION TOP WALL ELEV.	GABION BOT WALL ELEV.	WALL LENGTH (FT.)	WALL HEIGHT (FT.)	WALL WIDTH (FT.)
1	311.00	312.50	310.00	AS SHOWN	2.5	2

GABION FOREBAY DETAIL

NO SCALE



CHANNEL CROSS-SECTION

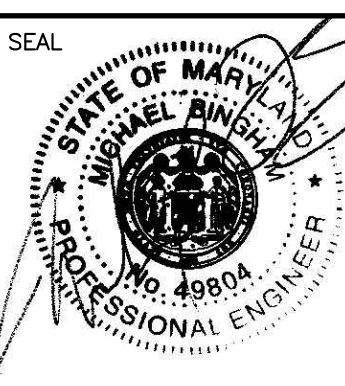
Section	Stations	B	D	Z1	Z2	Riprap Gradation	t	Underlayment	Underlayment Thickness
3	N/A	3'	3'	2:1	2:1	CLASS II	32"	NONWOVEN GEOTEXTILE FABRIC	N/A
4	N/A	3'	3'	2:1	2:1	CLASS III	48"	NONWOVEN GEOTEXTILE FABRIC	N/A

RIPRAP CHANNEL DETAIL

NO SCALE

NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.

MICHAEL J. BINGHAM, PE	DESIGNED BY	BCU	CHECKED
	DRAWN	CADD	CHECKED
	DATE	JANUARY 2023	SURVEY DATE
			DECEMBER 2022
			FIELD BOOK
			WEBER SURVEYORS

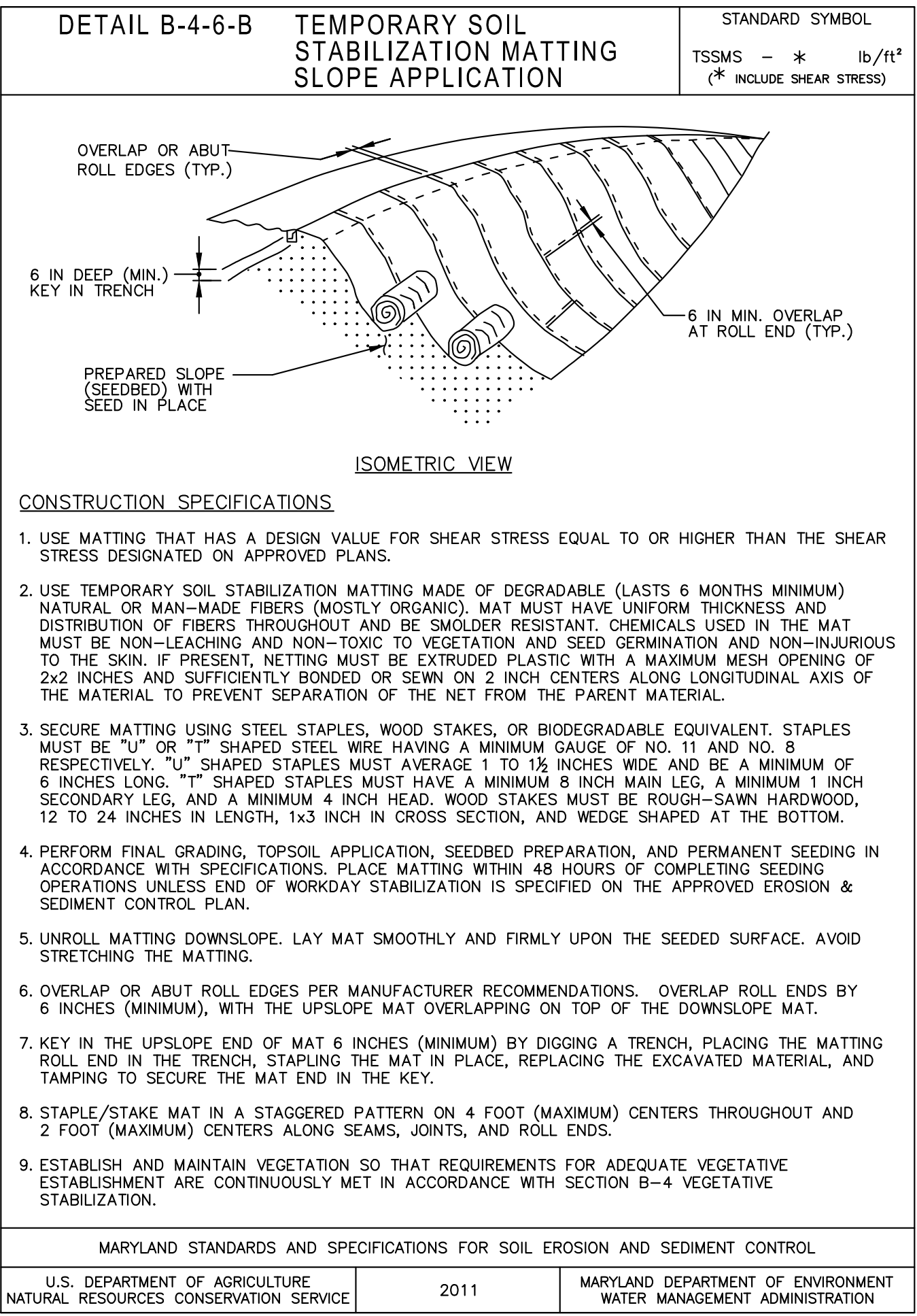
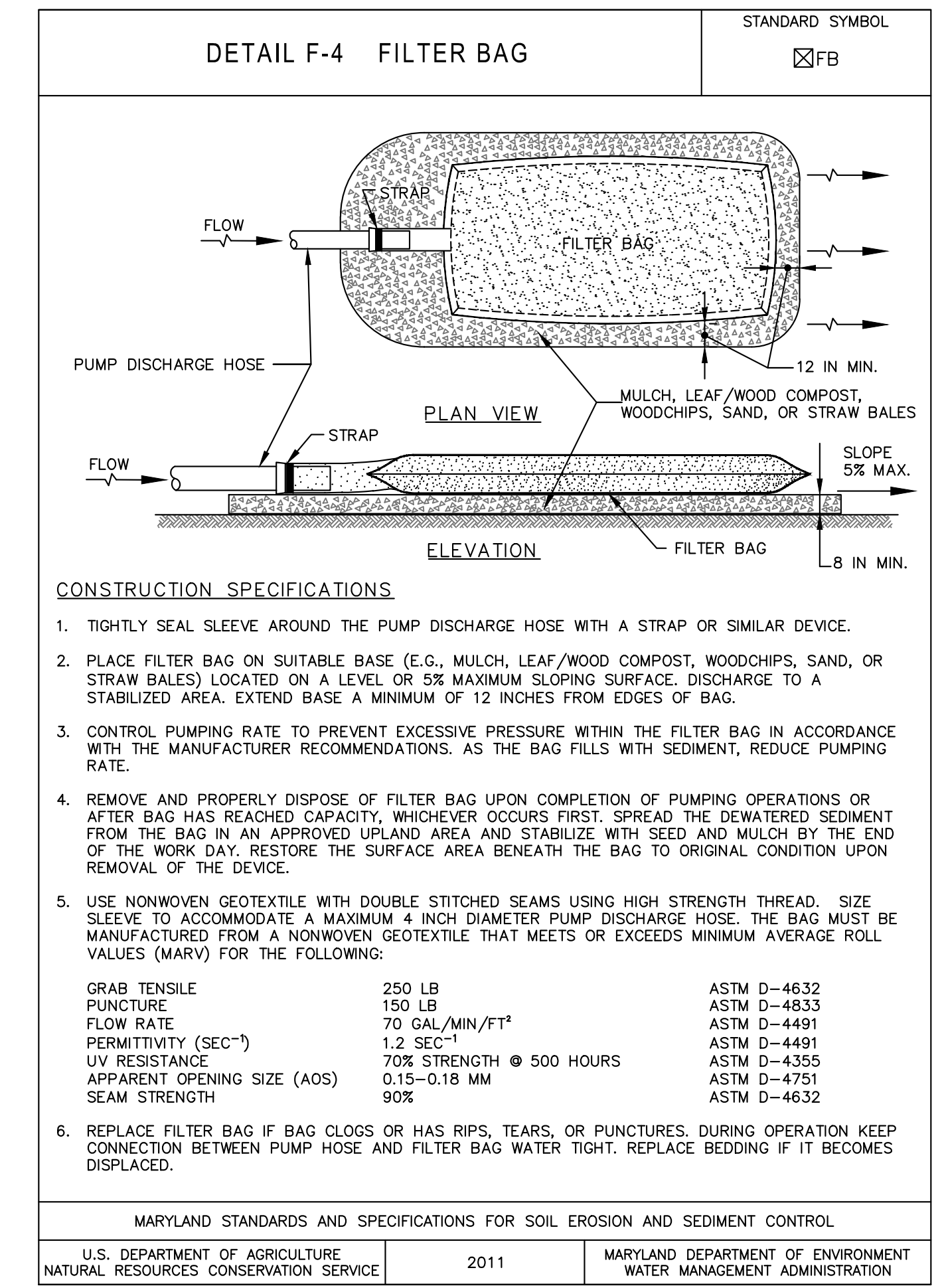
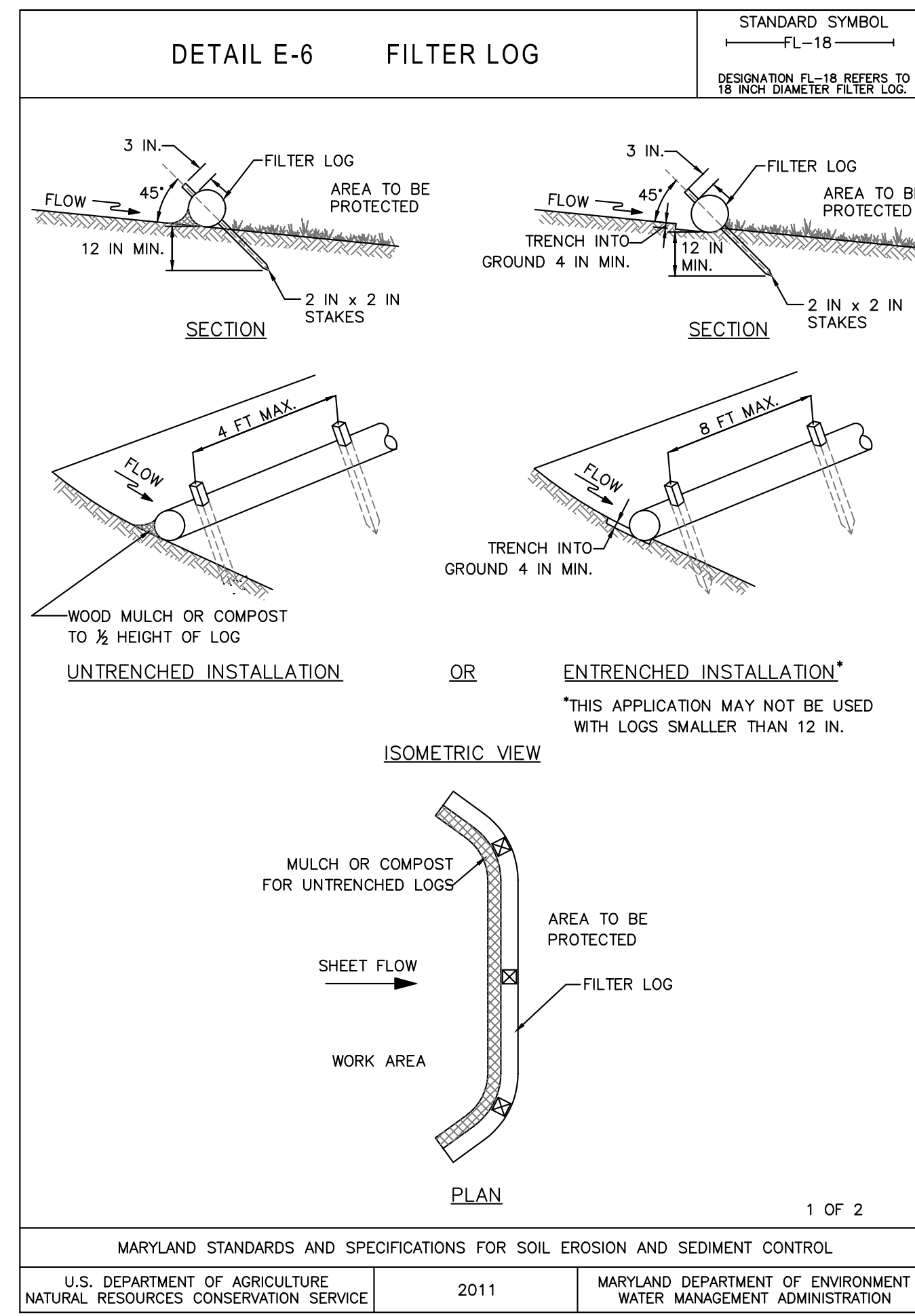
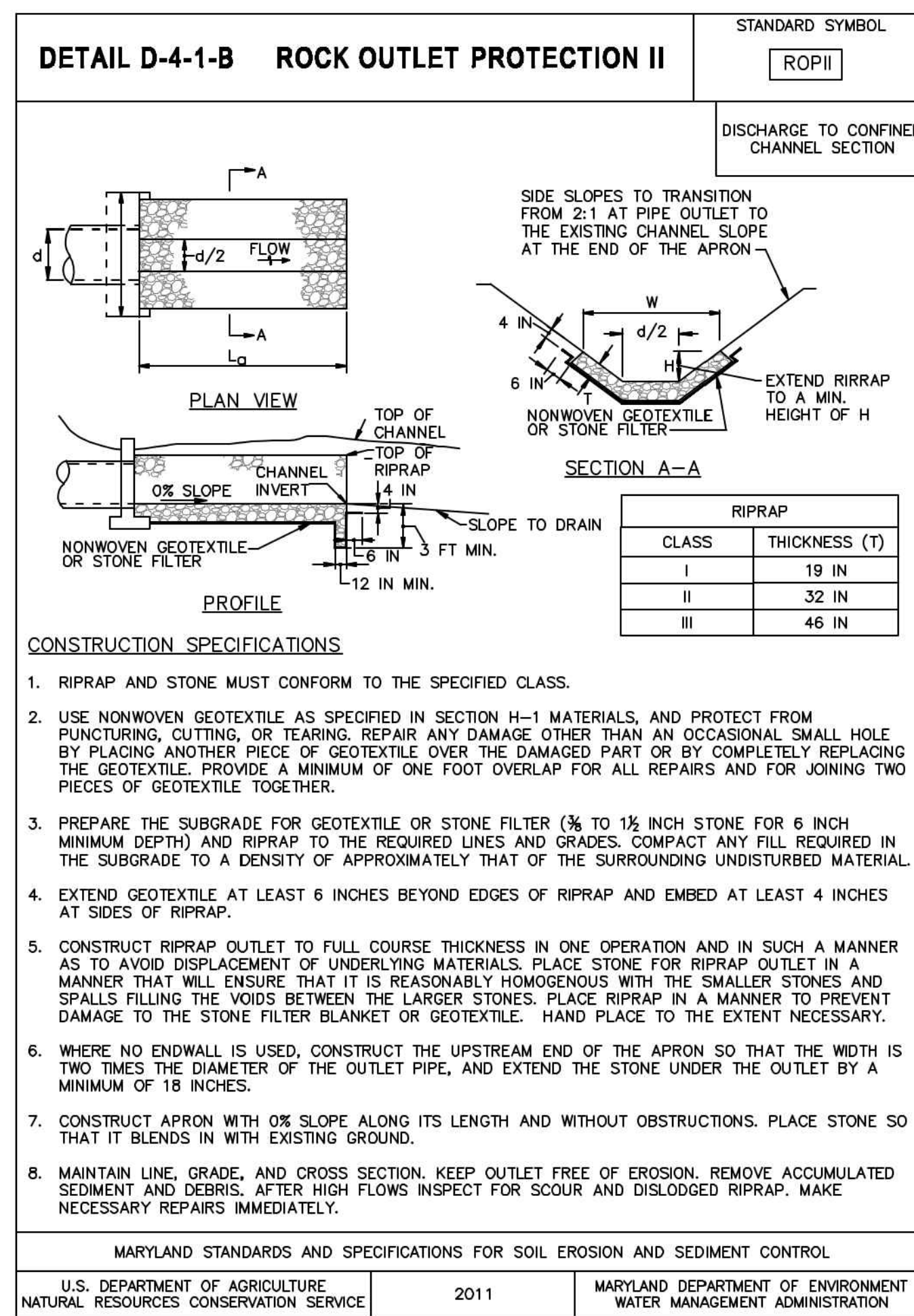
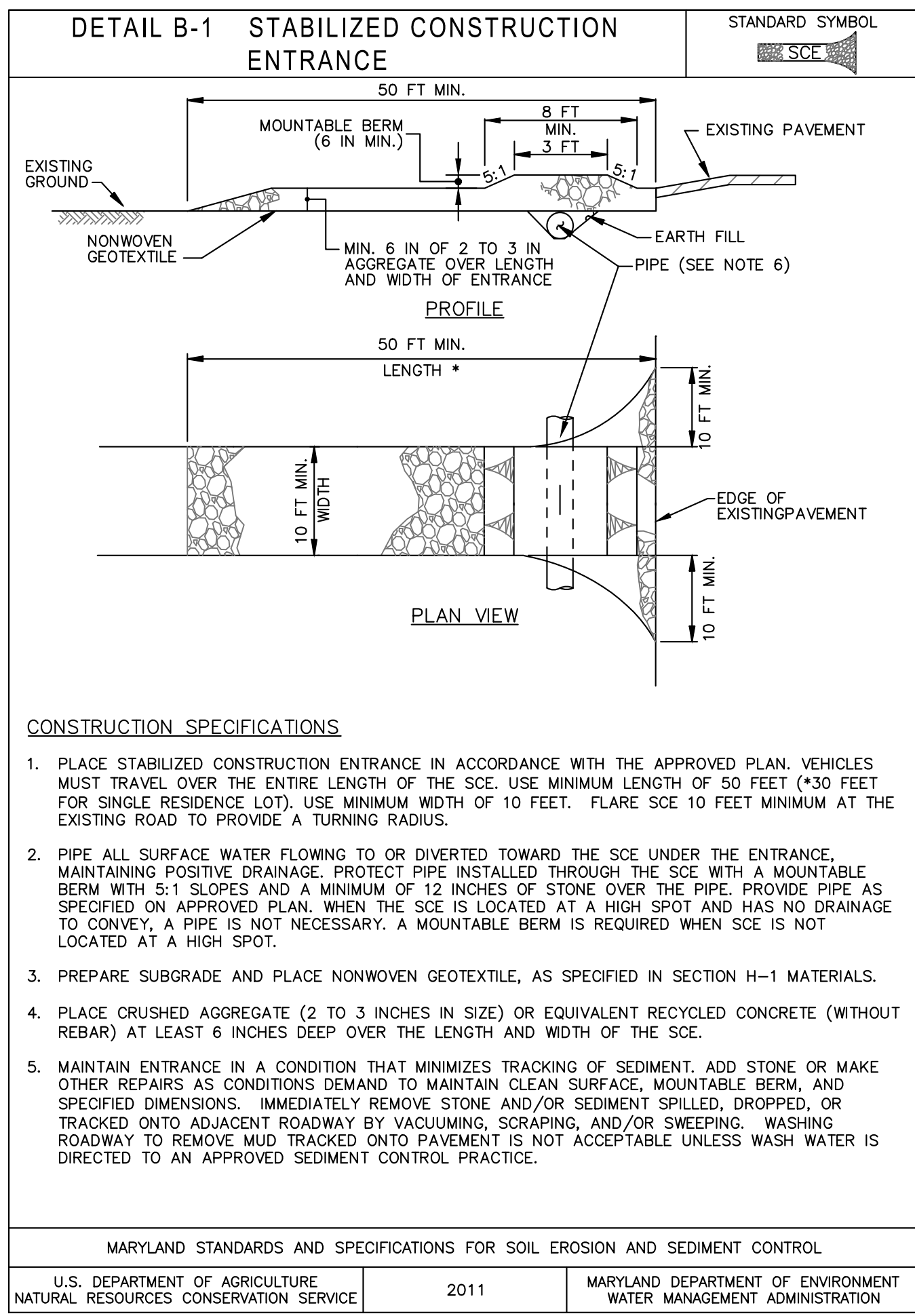


SEAL  
PROFESSIONAL CERTIFICATION  
I, MICHAEL J. BINGHAM, P.E.  
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Expiration Date: 2024-08-23

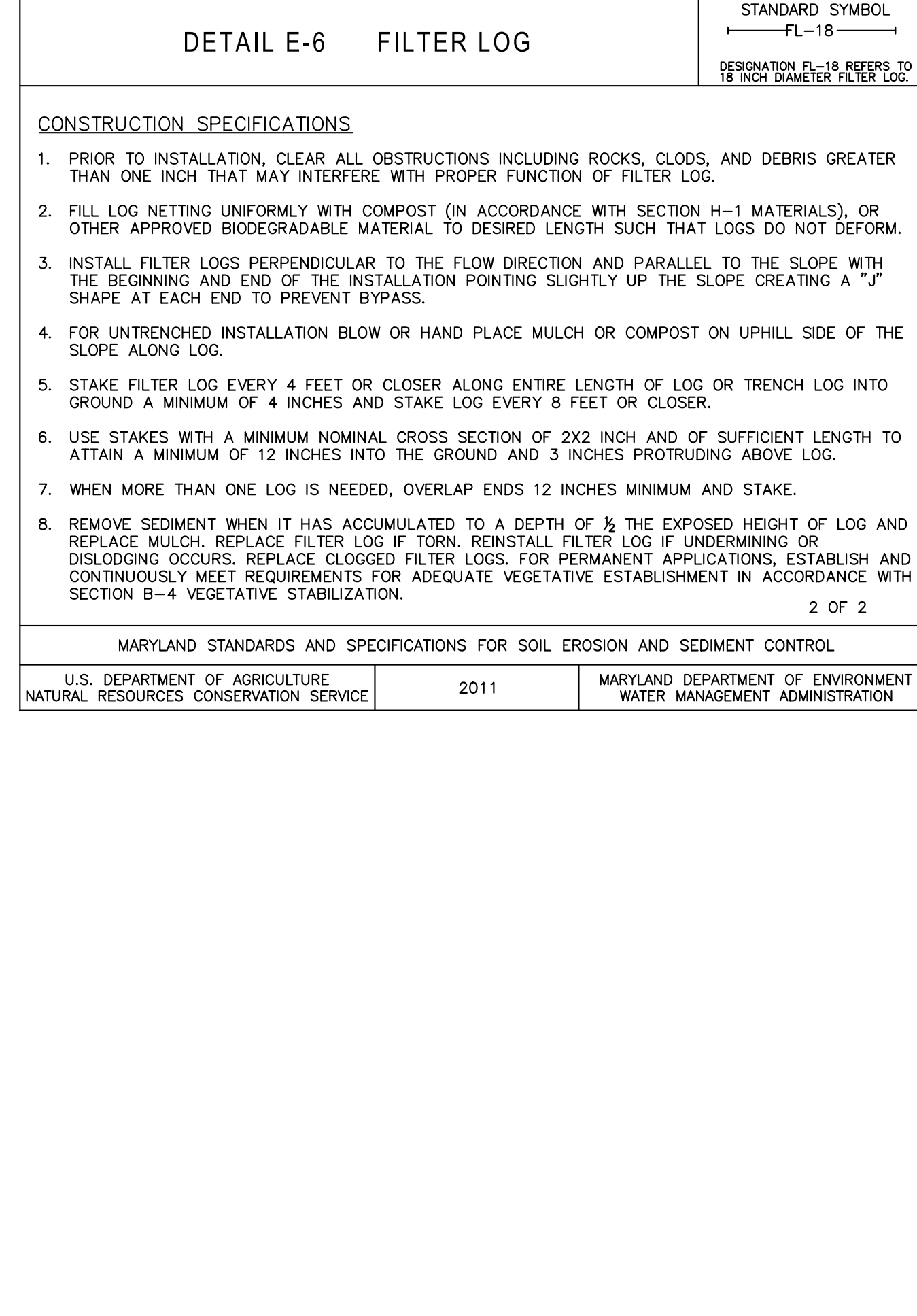
CLIENT & PROJECT  
TOWN OF WALKERSVILLE  
21 WEST FREDERICK STREET  
WALKERSVILLE, MARYLAND 21793  
  
BMP DESIGNS  
WALKERSVILLE, FREDERICK COUNTY, MARYLAND



TITLE DEERFIELD BMP RETROFIT DESIGN DETAILS		DWG. NO. S-7
SCALE AS SHOWN		
PROJECT NO. 10827.37	SHEET NO. 7 OF 9	REV. 



STRUCTURE NAME	APRON LENGTH L (FT)	APRON WIDTH W (FT)	RIP-RAP TYPE R	APRON DEPTH D (IN)	PIPE DIAMETER (IN)
30" RCP (IN)	28	30.5	CLASS II (d <sub>50</sub> =1.1')	32	30



FREDERICK SOIL CONSERVATION DISTRICT

Approved by \_\_\_\_\_ District Manager

Date \_\_\_\_\_

SCD AND NRCS APPROVAL FOR SEDIMENT AND EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS

MICHAEL J. BINGHAM, PE DESIGN BY		RELEASED BY	BCU	CHECKED
DRAWN		CADD	CHECKED	
DATE	JANUARY 2023	SURVEY DATE	DECEMBER 2022	
FIELD BOOK	WEBER SURVEYORS			

SEAL: STATE OF MARYLAND PROFESSIONAL ENGINEER No. 49804

SEAL: PROFESSIONAL CERTIFICATION I, MICHAEL J. BINGHAM, P.E. 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. 49804 Expiration Date: 2024-08-23

CLIENT & PROJECT: TOWN OF WALKERSVILLE 21 WEST FREDERICK STREET WALKERSVILLE, MARYLAND 21793

BMP DESIGNS WALKERSVILLE, FREDERICK COUNTY, MARYLAND

201 Thomas Johnson Drive Suite 207 Frederick, MD 21702 Tel 301.791.1100

TITLE: DEERFIELD BMP RETROFIT EROSION AND SEDIMENT CONTROL DETAILS		DWG. NO. S-8
SCALE: AS SHOWN	SHEET NO. 8 OF 9	REV.
PROJECT NO. 10827.37		

**SEDIMENT CONTROL NOTES**

- ALL EROSION AND SEDIMENT CONTROL STRUCTURES SHALL BE INSTALLED PRIOR TO GRADING OPERATIONS.
- ALL EROSION AND SEDIMENT CONTROL STRUCTURES SHALL BE MAINTAINED IN GOOD WORKING ORDER WITH PERIODIC INSPECTIONS AND REPAIR IF NECESSARY. DURING CONSTRUCTION, ALL SEDIMENT CONTROL STRUCTURES WILL BE INSPECTED AFTER EACH RAINFALL AND REPAIRED IF NECESSARY. SEDIMENT TO BE REMOVED TO A SUITABLE DISPOSAL AREA AND STABILIZED WITH PERMANENT VEGETATIVE COVER.
- ANY TEMPORARY STRUCTURES SHALL BE REMOVED WHEN THE DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED.
- IF THE COUNTY SEDIMENT CONTROL INSPECTOR FINDS THAT ADDITIONAL SEDIMENT CONTROL MEASURES ARE NECESSARY, HE MAY DIRECT THE CONTRACTOR TO EITHER INSTALL THE ADDITIONAL MEASURES, OR SUBMIT A REVISED GRADING PLAN TO THE FCSJ FOR APPROVAL.
- ALL DISTURBED AREAS SHALL BE STABILIZED BY GRASS, GRAVEL, PAVEMENT, CROWN VETCH, OR OTHER APPROVED MEANS AS SOON AS POSSIBLE UPON COMPLETION OF EXCAVATION.
- THE FREDERICK COUNTY SOIL CONSERVATION DISTRICT RESERVES THE RIGHT TO ADD TO, DELETE, OR MODIFY ANY OR ALL SEDIMENT CONTROL MEASURES AS SHOWN HEREON AS NEEDED TO ESTABLISH PROPER SOIL STABILIZATION AND EROSION AND SEDIMENT CONTROL ANYTIME THROUGHOUT THE LIFE OF THE PROJECT.
- REFERENCE IS HEREBY MADE TO THE "STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL IN DEVELOPING AREAS", USDA-USC, 1994 FOR STANDARDS AND REQUIREMENTS.
- ALL EROSION/SEDIMENT CONTROL MEASURES SHALL COMPLY WITH THE "MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" AS APPROVED BY THE FREDERICK COUNTY SOIL CONSERVATION DISTRICT.
- FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:
  - SEVEN (7) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN 3 HORIZONTAL TO 1 VERTICAL; AND
  - FOURTEEN (14) DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
- APPROVAL FROM THE SEDIMENT CONTROL INSPECTOR IS NEEDED TO REMOVE SEDIMENT CONTROL STRUCTURES.
- ALL SOIL STOCKPILES SHALL BE TEMPORARILY SEEDED AND SILT FENCE PLACED AROUND THE BASE. THE STOCKPILES SHOULD BE PLACED WITHIN THE LIMITS OF THE DISTURBED AREAS.
- ALL UTILITIES, SUCH AS STORM DRAIN, PUBLIC WATER, SANITARY SEWER, ELECTRIC POWER, TELEPHONE, CABLE, AND GAS LINES THAT ARE NOT IN PAVED AREAS ARE NOT UNDERGOING ACTIVE GRADING SHALL BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 3 DAYS OF INITIAL DISTURBANCE.

**FOR UTILITY WORK ONLY OR FOR OFF-SITE UTILITY WORK**

- PLACE ALL EXCAVATED MATERIAL ON THE HIGH SIDE OF THE TRENCH, SILT FENCE ON THE LOW SIDE.
- ONLY DO AS MUCH WORK AS CAN BE DONE IN ONE DAY SO BACKFILLING, FINAL GRADING, SEEDING AND MULCHING CAN OCCUR.
- ANY SEDIMENT CONTROL MEASURES DISTURBED BY CONSTRUCTION SHALL BE REPAIRED ON THE SAME DAY.

**STOCKPILE NOTES**

- NO STOCKPILING ALLOWED ON ASPHALT.
- ALL STOCKPILES LEFT AT THE END OF THE DAY NEED TO BE STABILIZED UNTIL THE NEXT REDISTURBANCE.

**VEGETATIVE SPECIFICATIONS AND NOTES**

- DISTURB AS SMALL OF THE PRESENT COVER AS POSSIBLE WHILE PERFORMING GRADING.
- ESTABLISH PERMANENT VEGETATIVE COVER IMMEDIATELY AFTER FINAL GRADING IS COMPLETED. (THIS INCLUDES ALL GRADING ON OR OFF THE SITE THAT IS AFFECTED BY THIS CONSTRUCTION). IF FINAL GRADING IS COMPLETED AT A TIME OTHER THAN THE SEEDING SEASON, A TEMPORARY GROUND COVER SUCH AS MULCHING WILL BE USED TO STABILIZE THE BARE SOIL.
- TEMPORARY SEEDING REQUIREMENTS:
 

SEED: BALBOA RYE AT 150 LBS/AC.  
MULCH: STRAW AT 1.5 TON/AC.  
ASPHALT: SS-1 OR EQUIVALENT, 150 GAL./AC.
- PERMANENT SEEDING AND SODDING REQUIREMENTS: SEE SPECIFICATIONS.

**CHECKLIST FOR REQUIRED INSPECTIONS**

YOU MUST NOTIFY THE ENVIRONMENTAL PRESERVATION BRANCH AT 301-694-1132 BEFORE 9 A.M. TWENTY-FOUR HOURS BEFORE THE REQUIRED INSPECTION. FAILURE TO NOTIFY THIS OFFICE WILL RESULT IN A STOP WORK ORDER OR OTHER PENALTIES AS OUTLINED IN THE FREDERICK COUNTY CODES.

\*\*\*NOTICE\*\*\*  
THIS LIST IS FOR SEQUENCE OF CONSTRUCTION ONLY. THIS OFFICE ASSUMES NO RESPONSIBILITY OR LIABILITY FOR IMPROPER INSTALLATION OF ANY ITEM ON THIS CHECKLIST. THIS OFFICE RECOMMENDS THAT A PROFESSIONAL ENGINEER BE PRESENT FOR EACH OF THE REQUIRED INSPECTIONS.

TYPE OF INSPECTION	INITIALS
1) PRECONSTRUCTION MEETING	
2) COMPLETION OF SEDIMENT CONTROL MEASURES	
3) PRIOR TO MODIFICATION OR REMOVAL OF SEDIMENT CONTROL	

**SEQUENCE OF CONSTRUCTION**

- NOTIFY SEDIMENT CONTROL INSPECTOR 24 HOURS PRIOR TO START OF CONSTRUCTION. CALL 301-748-7263 & 301-600-3507 TO CONTACT FREDERICK COUNTY EC FOR PRECONSTRUCTION MEETING.
- PERFORM CLEARING AND GRUBBING REQUIRED FOR INSTALLATION OF PERIMETER CONTROLS.
- INSTALL FILTER LOG AND SCE PER PLAN AND DETAILS. NOTIFY SEDIMENT CONTROL INSPECTOR AND OBTAIN APPROVAL BEFORE PROCEEDING FURTHER.
- UPON TEMPORARY CESSATION OF AN EARTH DISTURBANCE ACTIVITY, THE DISTURBED AREA SHALL BE TEMPORARILY SEEDED.
- INSTALL ALL IMPROVEMENTS, INCLUDING SEDIMENT FOREBAYS, UNDERDRAIN, RIP-RAP, AND ENDWALLS, PER THE CONSTRUCTION PLANS.
- COMPLETE FINAL GRADING, PERMANENT STABILIZATION, NAG C125 LINING, AND LANDSCAPING.
- NOTIFY SEDIMENT CONTROL INSPECTOR AND OBTAIN APPROVAL TO REMOVE SEDIMENT AND EROSION CONTROL DEVICES.

**REVISED UTILITY NOTE FOR SECONDARY UTILITY WORK**

- ALL DISTURBANCES FROM SECONDARY UTILITY'S SUCH AS PHONE, CABLE, ELECTRIC CABLE, TV CABLE, ETC., WILL BE CONTRACTORS RESPONSIBILITY TO BRING WORK AREA BACK TO GRADE LEVEL THAT WAS EXISTING AND SEED AND MULCH ANY DISTURBANCES FROM INSTALLATION OF LINES OR CONDUIT.
- CONTRACTOR WILL BE RESPONSIBLE FOR RE-INSTALLING OR REPAIRING ANY SILT LOG OR SEDIMENT CONTROLS THAT WERE EXISTING TO MAINTAIN PROPER SEDIMENT CONTROL THAT MIGHT HAVE BEEN DAMAGED.

**SOIL STOCKPILE NOTES:**

**CRITERIA**

- THE STOCKPILE LOCATION AND ALL RELATED SEDIMENT CONTROL PRACTICES MUST BE CLEARLY INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN.
- 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.
- RUNOFF FROM THE STOCKPILE AREA MUST DRAIN TO A SUITABLE SEDIMENT CONTROL PRACTICE.
- ACCESS THE STOCKPILE AREA FROM THE UPGRADE SIDE.
- 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.
- WHERE RUNOFF CONCENTRATES ALONG THE TOE OF THE STOCKPILE FILL, AN APPROPRIATE EROSION/SEDIMENT CONTROL PRACTICE MUST BE USED TO INTERCEPT THE DISCHARGE.
- 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.
- 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 2:1 RATIO. THE STOCKPILE AREA MUST BE KEPT FREE OF EROSION. IF THE VERTICAL HEIGHT OF A STOCKPILE EXCEEDS 20 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.

**BMP INSPECTION & MAINTENANCE**

**INSPECTION:**

REGULAR INSPECTIONS SHALL BE MADE DURING THE FOLLOWING STAGES OF CONSTRUCTION:

- DURING EXCAVATION TO SUBGRADE.
- DURING PLACEMENT OF BACKFILL AND OBSERVATION WELL.
- DURING PLACEMENT OF FILTER FABRIC, SOIL, AND GRAVEL MEDIA.
- DURING CONSTRUCTION OF APPURTENANT CONVEYANCE STRUCTURES.
- UPON COMPLETION OF FINAL GRADING AND ESTABLISHMENT OF PERMANENT STABILIZATION.

**MAINTENANCE:**

- DURING THE FIRST YEAR OF OPERATION, INSPECT AFTER MAJOR STORMS AND REVEGETATE POORLY ESTABLISHED AREAS.
- SEDIMENT ACCUMULATION ON THE SURFACE SHALL BE REMOVED AND TOP TWO TO THREE INCHES OF SURFACE LAYER REPLACED AS NEEDED.
- THE TOP FEW INCHES OF THE PLANTING SOIL SHALL BE REMOVED AND REPLACED WHEN WATER PONDS FOR MORE THAN 48 HOURS OR THERE IS ALGAL GROWTH ON THE SURFACE.
- IF STANDING WATER PERSISTS AFTER FILTER MEDIA HAS BEEN MAINTAINED, THE GRAVEL, SOIL, AND SAND MAY NEED TO BE CLEANED AND/OR REPLACED.
- OCCASIONALLY PRUNE AND REPLACE DEAD VEGETATION. IF PLANTS ARE NOT SURVIVING RE-PLANT WITH APPROPRIATE SPECIES. WATER AS NEEDED DURING PROLONGED DRY PERIODS.
- MOW AS NEEDED DURING GROWING SEASON TO MAINTAIN HEIGHTS OF AROUND 4-6 INCHES.
- SEDIMENT SHALL BE REMOVED FROM THE FOREBAYS' WHEN FILLED UP TO 50% CAPACITY. SEDIMENT SHALL BE REMOVED FROM THE CHANNEL WHEN IT REACHES 25% CAPACITY.

**PERMANENT SEEDING & SODDING**

**GENERAL**

- SCOPE: PLANTING PERMANENT, LONG-LIVED VEGETATIVE COVER ON GRADED OR CLEARED AREAS.
- STANDARDS: PERMANENT SEEDING SHALL CONFORM TO ALL REQUIREMENTS OF "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" PUBLISHED JOINTLY BY WATER RESOURCES ADMINISTRATION, SOIL CONSERVATION SERVICE, AND STATE SOIL CONSERVATION COMMITTEE.

**SPECIFICATIONS**

- SITE PREPARATION
    - PRIOR TO SEEDING INSTALL ALL REQUIRED SEDIMENT AND EROSION CONTROL MEASURES.
    - FINE GRADING REQUIRED FOR PERMANENT SEEDING.
  - SOIL AMENDMENTS
    - FERTILIZER SHALL BE APPLIED AT THE RATE OF 1000 LBS/ACRE USING 10-10-10 OR EQUIVALENT.
  - SEEDBED PREPARATION
    - SOIL SHALL BE LOOSENED TO A DEPTH OF 3" BY RAKING, DIGGING, OR OTHER ACCEPTABLE MEANS PRIOR TO SEEDING.
    - APPLY SEED UNIFORMLY WITH CYCLONE SEEDER, DRILL, CULTIPACKER SEEDER OR HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER ON A FIRM, MOIST SEEDBED). MAXIMUM SEEDING DEPTH SHOULD BE 1/4" ON CLAYEY SOILS AND 1/2 INCH ON SANDY SOILS, WHEN USING OTHER THAN HYDROSEEDER METHOD OF APPLICATION. NOTE: IF HYDROSEEDING IS USED AND THE SEED FERTILIZER IS MIXED, THEY WILL BE MIXED ON SITE AND THE SEEDING SHALL BE IMMEDIATE WITHOUT INTERRUPTION.
- PERMANENT STABILIZATION WITH SOD**
- ALL SPECIFICATIONS, SITE PREPARATION, INSTALLATION AND MAINTENANCE OF SOD FOR PERMANENT, LONG-LIVED VEGETATIVE COVER SHALL CONFORM TO SECTION G-20 OF "1994" MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL", PUBLISHED JOINTLY BY WATER RESOURCES ADMINISTRATION, SOIL CONSERVATION SERVICE, AND THE STATE SOIL CONSERVATION COMMITTEE.

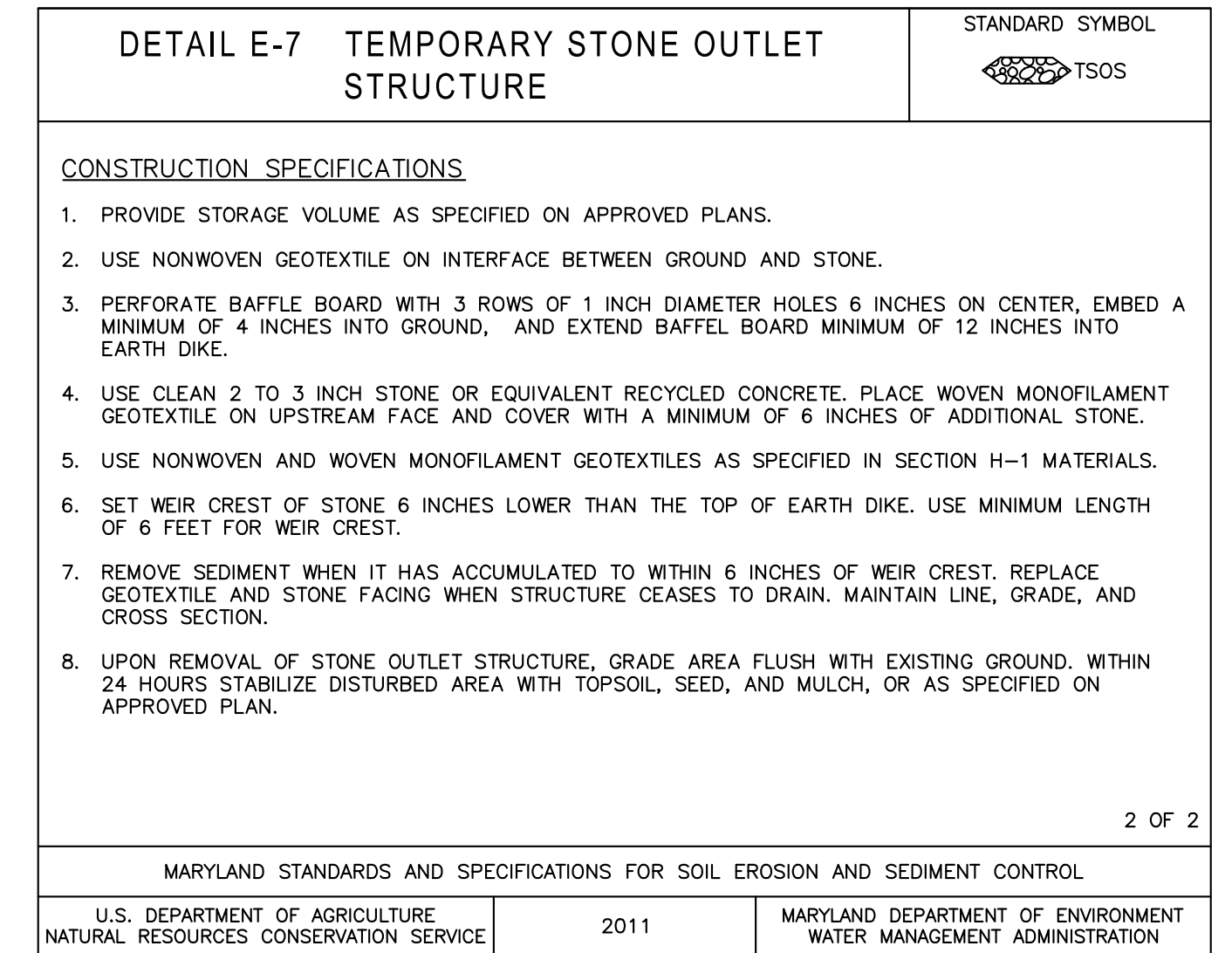
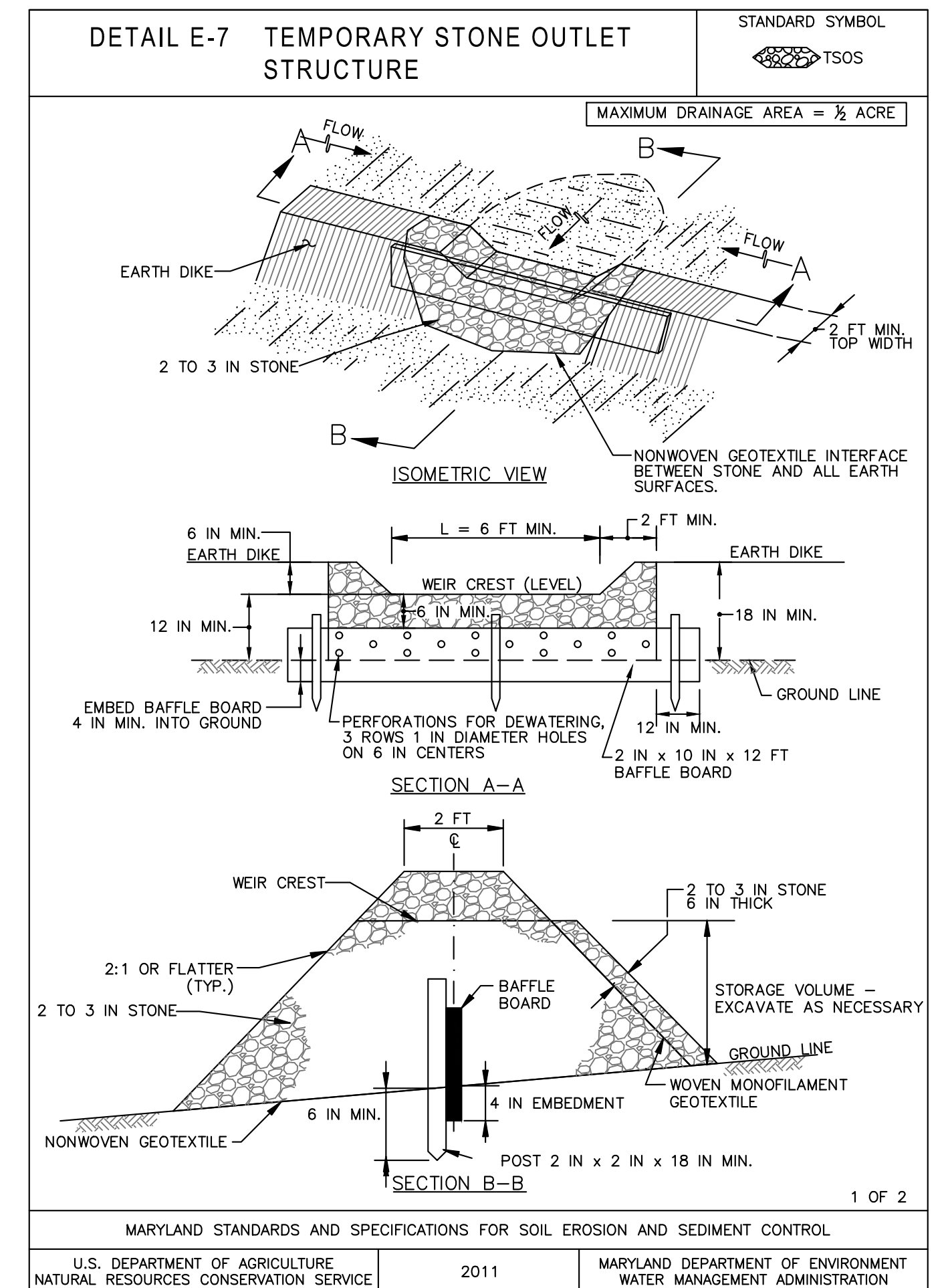
**PERMANENT SEEDING SUMMARY**

SEED MIXTURE (FOR HARDINESS ZONE 6B)					FERTILIZER RATE (10-20-20)			LIME RATE	UREA-FORM (46-0-0)
NO.	SPECIES	APPLICATION RATE (lb/ac)	SEEDING DATES	SEEDING DEPTHS	N	P205	K20		
3	TALL FESCUE	125	3/1 TO 5/15 8/15 TO 10/15	1"-2"					
3	PERENNIAL RYEGRASS	15	3/1 TO 5/15 8/15 TO 10/15	1"-2"	90 lb/ac (2.0 lb/1000 sf)	175 lb/ac (4.0 lb/1000 sf)	175 lb/ac (4.0 lb/1000 sf)	2 tons/ac (100 lb/1000 sf)	
3	KENTUCKY BLUEGRASS	10	3/1 TO 5/15 8/15 TO 10/15	1"-2"				150 lb/ac	

TEMPORARY SEEDING WITH ANNUAL RYEGRASS, MILLET, OATS, AND/OR RYE CONFORMING TO SCS, 1994 MANUAL.

**NATIVE DETENTION AREA MIX SEEDING SUMMARY**

SEED MIXTURE (FOR HARDINESS ZONE 6B)					FERTILIZER RATE (10-20-20)			LIME RATE	UREA-FORM (46-0-0)
NO.	SPECIES	APPLICATION RATE (lb/ac)	SEEDING DATES	SEEDING DEPTHS	N	P205	K20		
-	ERNMX-183 DEERWALDE 47% VIRGINIA BLUEGRASS 25% FOX SEDGE 20% AUTUMN BENTGRASS 5% TICKLERGRASS 2% PAIN RUSH 1%	22	3/1 TO 5/15 8/15 TO 10/15	1"-2"	NONE	NONE	NONE	NONE	



FREDERICK SOIL CONSERVATION DISTRICT

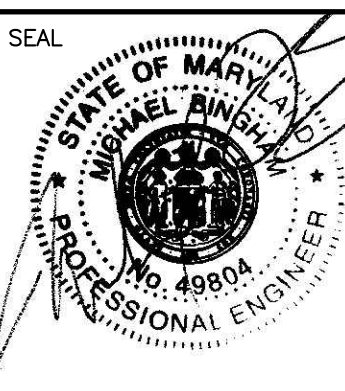
Approved by \_\_\_\_\_ District Manager

Date \_\_\_\_\_

SCD AND NRCS APPROVAL FOR SEDIMENT AND EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS

NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.

MICHAEL J. BINGHAM, PE	DESIGN BY	BCU	CHECKED
	DRAWN	CADD	CHECKED
	DATE	JANUARY 2023	SURVEY DATE DECEMBER 2022
			FIELD BOOK WEBER SURVEYORS



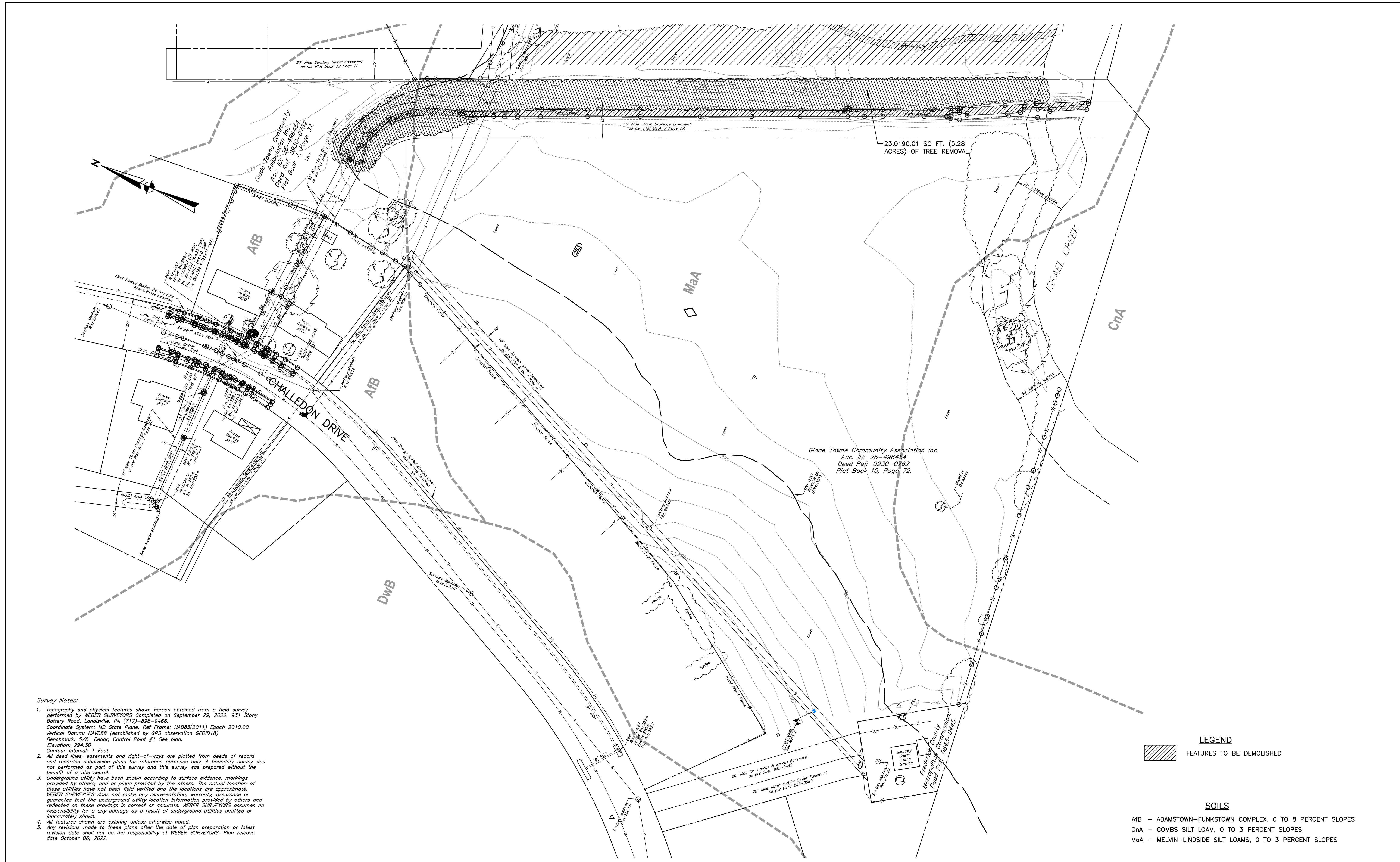
SEAL PROFESSIONAL CERTIFICATION  
I, MICHAEL J. BINGHAM, P.E. hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 49804 Expiration Date: 2024-08-23

CLIENT & PROJECT  
TOWN OF WALKERSVILLE  
21 WEST FREDERICK STREET  
WALKERSVILLE, MARYLAND 21793  
BMP DESIGNS  
WALKERSVILLE, FREDERICK COUNTY, MARYLAND

**ARRG**  
201 Thomas Johnson Drive Suite 207  
Frederick, MD 21702  
Tel 301.791.1100

TITLE DEERFIELD BMP RETROFIT EROSION AND SEDIMENT CONTROL NOTES		
SCALE AS SHOWN	DWG. NO. S-9	
PROJECT NO. 10827.37	SHEET NO. 9 OF 9	REV.





- Survey Notes:**
1. Topography and physical features shown hereon obtained from a field survey performed by WEBER SURVEYORS Completed on September 29, 2022. 931 Stony Battery Road, Landisville, PA (717)-838-9486. Coordinate System: MD State Plane, Ref Frame: NAD83(2011) Epoch 2010.00. Vertical Datum: NAVD88 (established by GPS observation GEOID18). Benchmark: 5/8" Rebar, Control Point #1 See plan. Elevation: 294.30 Contour Interval: 1 Foot
  2. All deed lines, easements and right-of-ways are plotted from deeds of record and recorded subdivision plans for reference purposes only. A boundary survey was not performed as part of this survey and this survey was prepared without the benefit of a title search.
  3. Underground utility have been shown according to surface evidence, markings provided by others, and or plans provided by the others. The actual location of these utilities have not been field verified and the locations are approximate. WEBER SURVEYORS does not make any representation, warranty, assurance or guarantee that the underground utility location information provided by others and reflected on these drawings is correct or accurate. WEBER SURVEYORS assumes no responsibility for any damage as a result of underground utilities omitted or inaccurately shown.
  4. All features shown are existing unless otherwise noted.
  5. Any revisions made to these plans after the date of plan preparation or latest revision date shall not be the responsibility of WEBER SURVEYORS. Plan release date October 06, 2022.

**LEGEND**

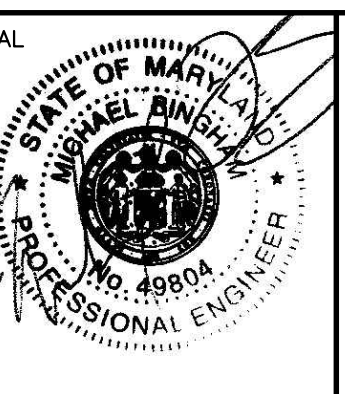
FEATURES TO BE DEMOLISHED

**SOILS**

AfB - ADAMSTOWN-FUNKSTOWN COMPLEX, 0 TO 8 PERCENT SLOPES  
 CnA - COMBS SILT LOAM, 0 TO 3 PERCENT SLOPES  
 MaA - MELVIN-LINDSIDE SILT LOAMS, 0 TO 3 PERCENT SLOPES

NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.

MICHAEL J. BINGHAM, PE	
RELEASED BY	CHECKED
DESIGN	
BCU	
DRAWN	CHECKED
CADD	
DATE	SURVEY DATE
OCTOBER 2022	SEPT 2022
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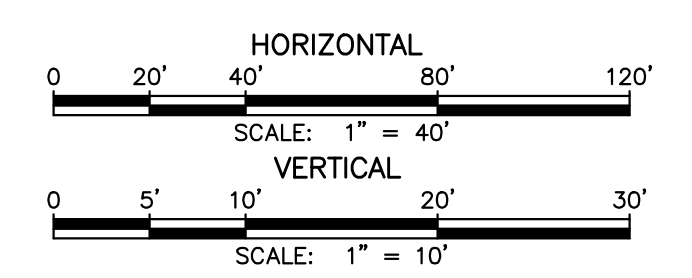
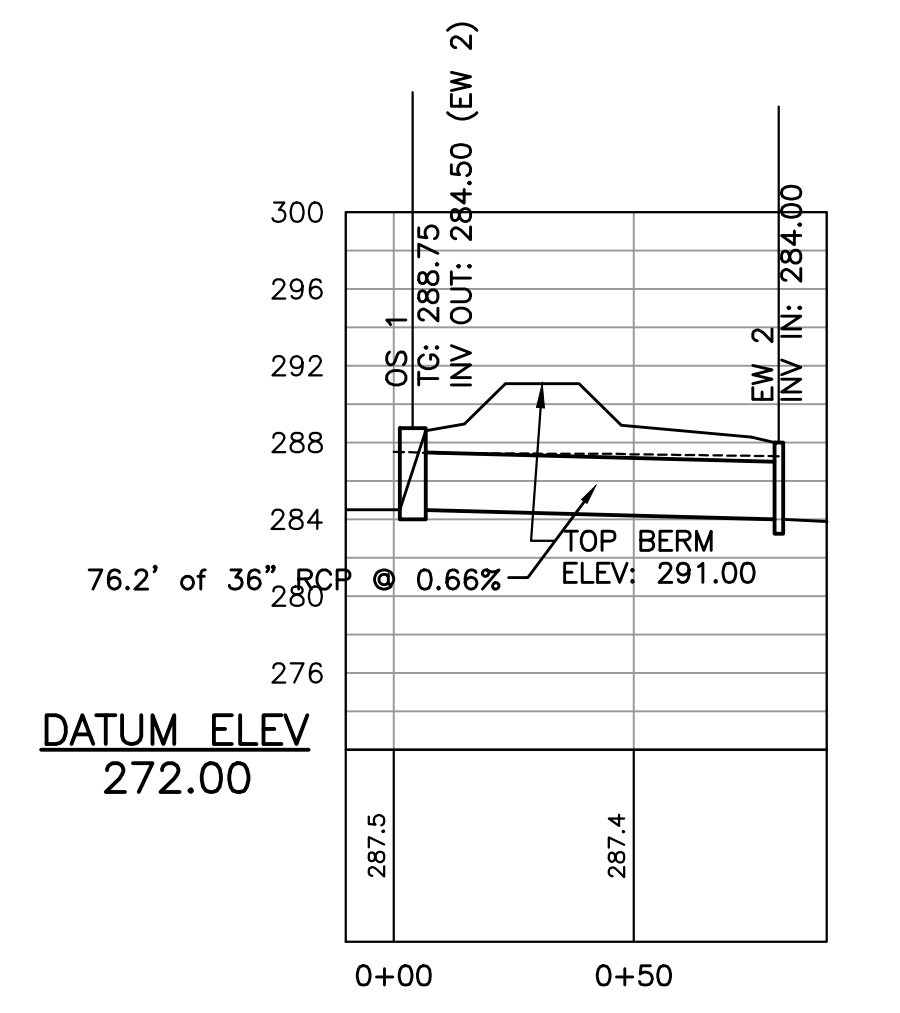
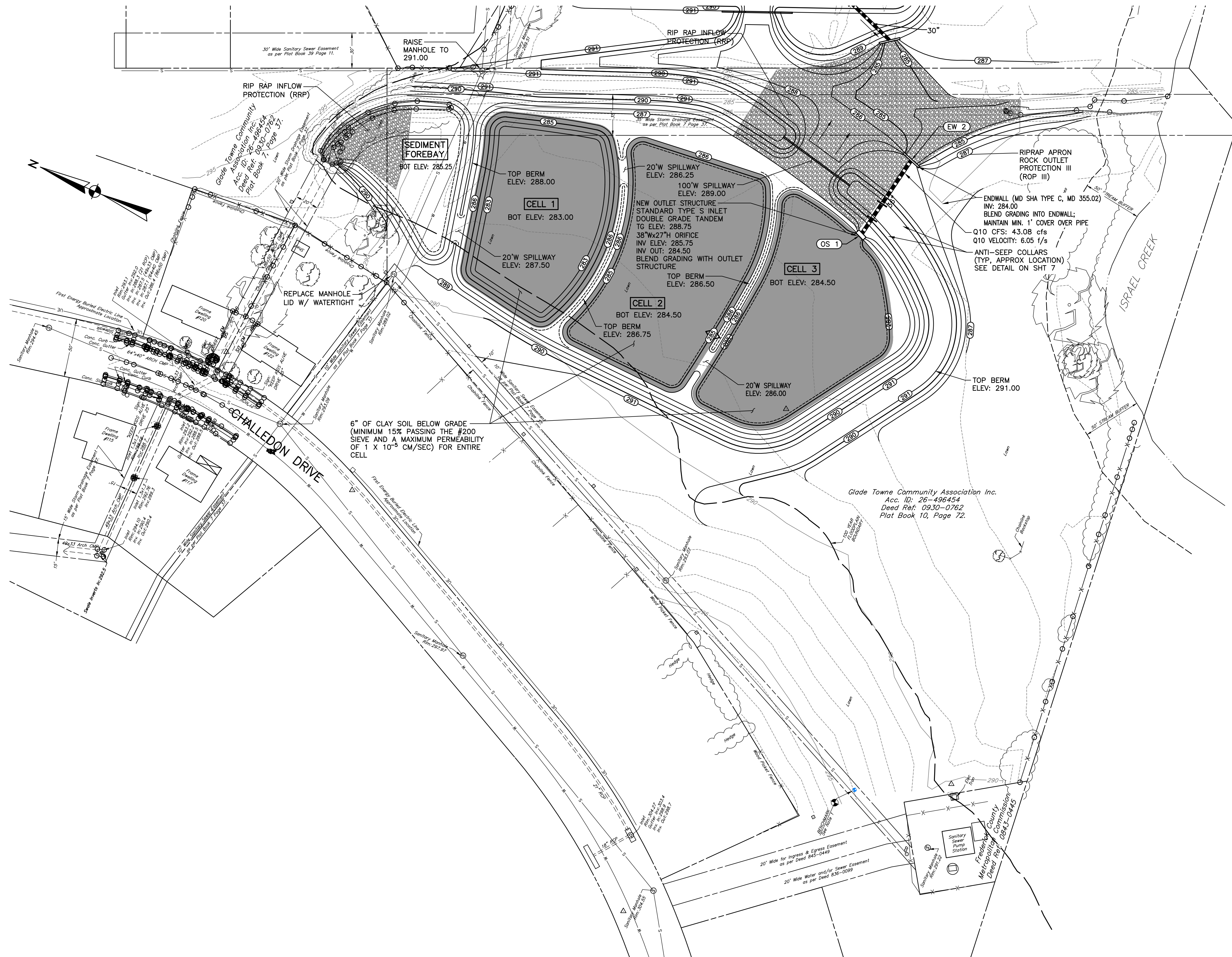


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 WALKERSVILLE, MARYLAND 21793  
 BMP DESIGNS  
 WALKERSVILLE, FREDERICK COUNTY, MARYLAND



TITLE GLADE TOWNE BMP FACILITY EXISTING CONDITIONS AND DEMOLITION			
SCALE	0 20' 40' 80' 120'	DWG. NO.	
	SCALE: 1" = 40'		
PROJECT NO.	SHEET NO.	REV.	
10827.37	2 OF 10		



FREDERICK SOIL CONSERVATION DISTRICT

Approved by \_\_\_\_\_ District Manager

Date \_\_\_\_\_

SCD APPROVAL FOR SEDIMENT AND EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS.

NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.

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DATE	SURVEY DATE
OCTOBER 2022	SEPT 2022
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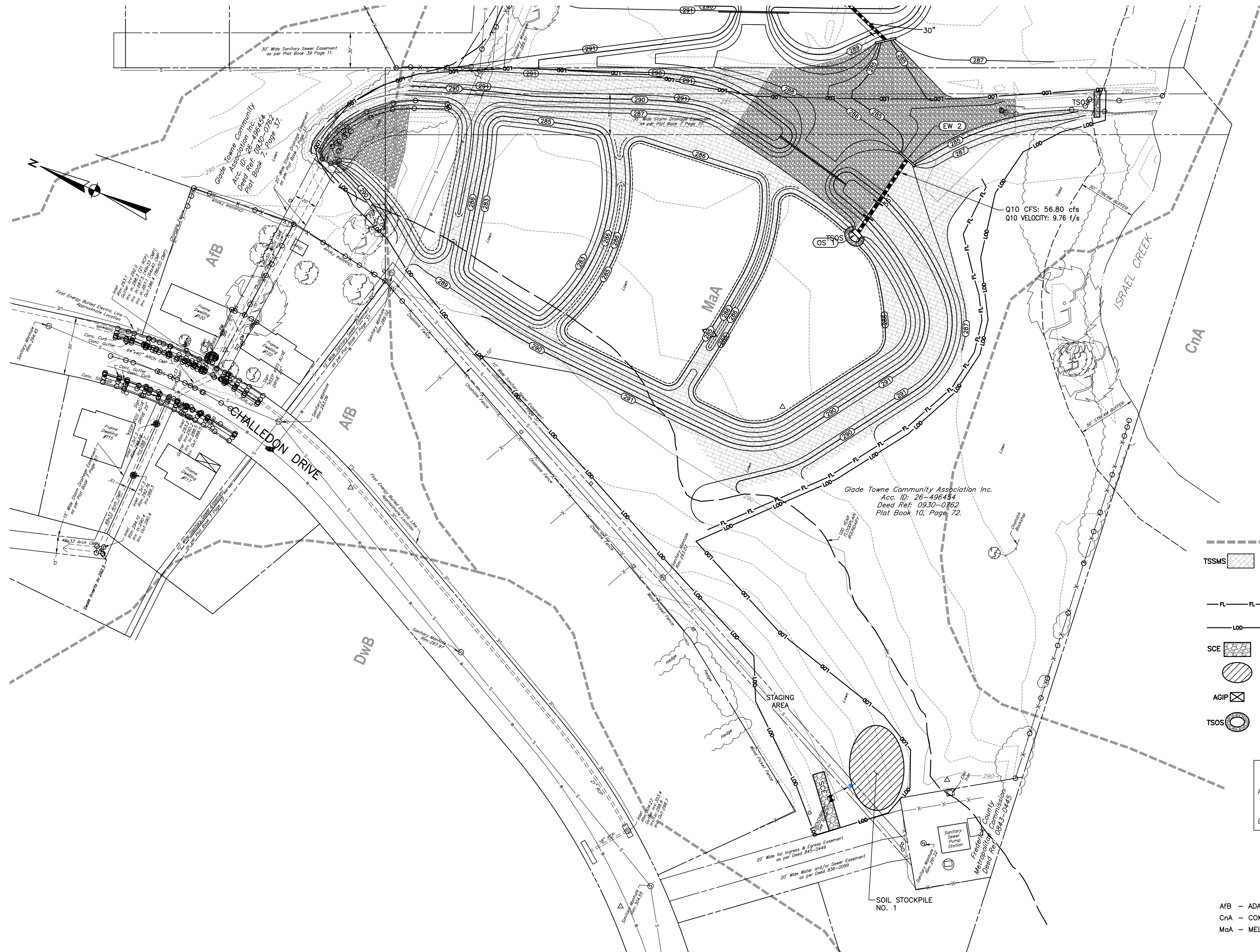
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21 WEST FREDERICK STREET  
WALKERSVILLE, MARYLAND 21793  
BMP DESIGNS  
WALKERSVILLE, FREDERICK COUNTY, MARYLAND



TITLE GLADE TOWNE BMP FACILITY PROPOSED CONDITIONS	
SCALE 0 20' 40' 80' 120' SCALE: 1" = 40'	DWG. NO.
PROJECT NO. 10827.37	SHEET NO. 3 OF 10
REV.	







- LEGEND**
- SOIL BOUNDARY LINE
  - TSSMS [Symbol] TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION  
1.55 PSF SHEAR STRESS (NAG S75) (DETAIL B-4-6-B)
  - [Symbol] TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION  
1.75 PSF SHEAR STRESS (NAG S150) (DETAIL B-4-6-B)
  - FL-FL 12" FILTER LOG (DETAIL E-6)
  - LOD LIMIT OF DISTURBANCE (183,666 SF, 4.216 AC)
  - SCE [Symbol] STABILIZED CONSTRUCTION ENTRANCE (DETAIL B-1)
  - [Symbol] MATERIAL STOCKPILE
  - AGIP [Symbol] AT GRADE INLET PROTECTION (DETAIL E-9-2)
  - TSOS [Symbol] TEMPORARY STONE OUTLET STRUCTURE (DETAIL E-7)

FREDERICK SOIL CONSERVATION DISTRICT  
 Approved by \_\_\_\_\_ District Manager  
 Date \_\_\_\_\_

SCD APPROVAL FOR SEDIMENT AND EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS.

- SOILS**
- AfB - ADAMSTOWN-FUNKSTOWN COMPLEX, 0 TO 8 PERCENT SLOPES
  - CnA - COMBS SILT LOAM, 0 TO 3 PERCENT SLOPES
  - MaA - MELVIN-LINDSIDE SILT LOAMS, 0 TO 3 PERCENT SLOPES

NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.

MICHAEL J. BINGHAM, PE	
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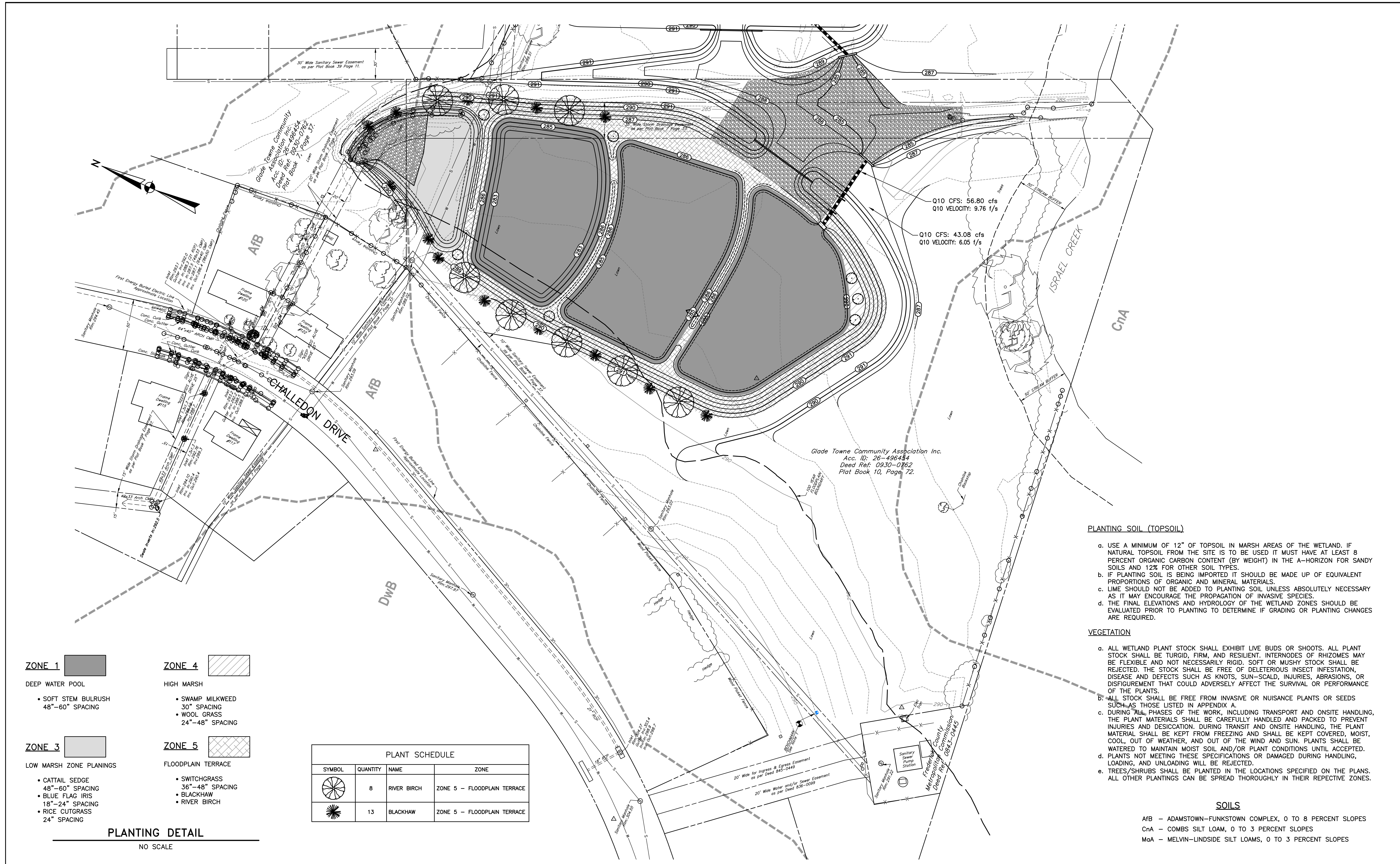


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 BMP DESIGNS  
 WALKERSVILLE, FREDERICK COUNTY, MARYLAND



TITLE		GLADE TOWNE BMP FACILITY EROSION AND SEDIMENT CONTROL PLAN	
SCALE	0 20' 40' 80' 120'	SCALE:	1" = 40'
PROJECT NO.	10827.37	SHEET NO.	5 OF 10
REV.			



- ZONE 1** [Symbol] DEEP WATER POOL
- SOFT STEM BULRUSH 48"-60" SPACING
- ZONE 2** [Symbol] LOW MARSH ZONE PLANTINGS
- CATTAIL SEDGE 48"-60" SPACING
  - BLUE FLAG IRIS 18"-24" SPACING
  - RICE CUTGRASS 24" SPACING
- ZONE 3** [Symbol] LOW MARSH ZONE PLANTINGS
- CATTAIL SEDGE 48"-60" SPACING
  - BLUE FLAG IRIS 18"-24" SPACING
  - RICE CUTGRASS 24" SPACING
- ZONE 4** [Symbol] HIGH MARSH
- SWAMP MILKWEED 30" SPACING
  - WOOL GRASS 24"-48" SPACING
- ZONE 5** [Symbol] FLOODPLAIN TERRACE
- SWITCHGRASS 36"-48" SPACING
  - BLACKHAW
  - RIVER BIRCH

PLANT SCHEDULE			
SYMBOL	QUANTITY	NAME	ZONE
[Symbol]	8	RIVER BIRCH	ZONE 5 - FLOODPLAIN TERRACE
[Symbol]	13	BLACKHAW	ZONE 5 - FLOODPLAIN TERRACE

- PLANTING SOIL (TOPSOIL)**
- USE A MINIMUM OF 12" OF TOPSOIL IN MARSH AREAS OF THE WETLAND. IF NATURAL TOPSOIL FROM THE SITE IS TO BE USED IT MUST HAVE AT LEAST 8 PERCENT ORGANIC CARBON CONTENT (BY WEIGHT) IN THE A-HORIZON FOR SANDY SOILS AND 12% FOR OTHER SOIL TYPES.
  - IF PLANTING SOIL IS BEING IMPORTED IT SHOULD BE MADE UP OF EQUIVALENT PROPORTIONS OF ORGANIC AND MINERAL MATERIALS.
  - LIME SHOULD NOT BE ADDED TO PLANTING SOIL UNLESS ABSOLUTELY NECESSARY AS IT MAY ENCOURAGE THE PROPAGATION OF INVASIVE SPECIES.
  - THE FINAL ELEVATIONS AND HYDROLOGY OF THE WETLAND ZONES SHOULD BE EVALUATED PRIOR TO PLANTING TO DETERMINE IF GRADING OR PLANTING CHANGES ARE REQUIRED.

- VEGETATION**
- ALL WETLAND PLANT STOCK SHALL EXHIBIT LIVE BUDS OR SHOOTS. ALL PLANT STOCK SHALL BE TURGID, FIRM, AND RESILIENT. INTERNODES OF RHIZOMES MAY BE FLEXIBLE AND NOT NECESSARILY RIGID. SOFT OR MUSHY STOCK SHALL BE REJECTED. THE STOCK SHALL BE FREE OF DELETERIOUS INSECT INFESTATION, DISEASE AND DEFECTS SUCH AS KNOTS, SUN-SCALD, INJURIES, ABRASIONS, OR DISFIGUREMENT THAT COULD ADVERSELY AFFECT THE SURVIVAL OR PERFORMANCE OF THE PLANTS.
  - ALL STOCK SHALL BE FREE FROM INVASIVE OR NUISANCE PLANTS OR SEEDS SUCH AS THOSE LISTED IN APPENDIX A.
  - DURING ALL PHASES OF THE WORK, INCLUDING TRANSPORT AND ONSITE HANDLING, THE PLANT MATERIALS SHALL BE CAREFULLY HANDLED AND PACKED TO PREVENT INJURIES AND DESICCATION. DURING TRANSIT AND ONSITE HANDLING, THE PLANT MATERIAL SHALL BE KEPT FROM FREEZING AND SHALL BE KEPT COVERED, MOIST, COOL, OUT OF WEATHER, AND OUT OF THE WIND AND SUN. PLANTS SHALL BE WATERED TO MAINTAIN MOIST SOIL AND/OR PLANT CONDITIONS UNTIL ACCEPTED.
  - PLANTS NOT MEETING THESE SPECIFICATIONS OR DAMAGED DURING HANDLING, LOADING, AND UNLOADING WILL BE REJECTED.
  - TREES/SHRUBS SHALL BE PLANTED IN THE LOCATIONS SPECIFIED ON THE PLANS. ALL OTHER PLANTINGS CAN BE SPREAD THOROUGHLY IN THEIR RESPECTIVE ZONES.

- SOILS**
- AfB - ADAMSTOWN-FUNKSTOWN COMPLEX, 0 TO 8 PERCENT SLOPES
  - CnA - COMBS SILT LOAM, 0 TO 3 PERCENT SLOPES
  - MaA - MELVIN-LINDSIDE SILT LOAMS, 0 TO 3 PERCENT SLOPES

**PLANTING DETAIL**  
NO SCALE

NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.

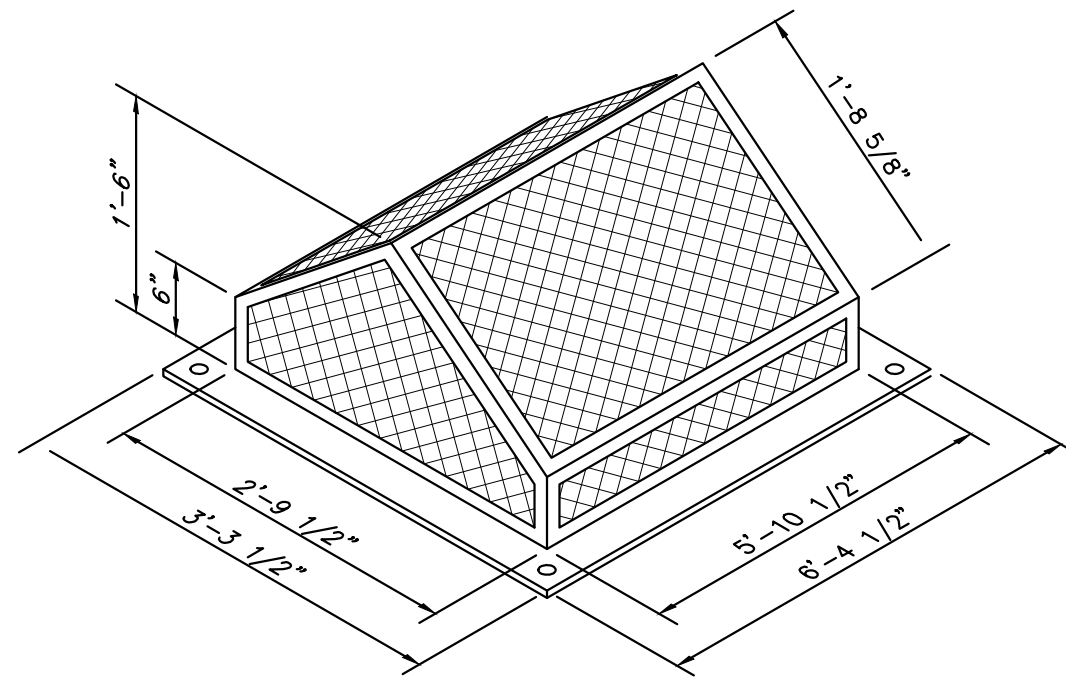
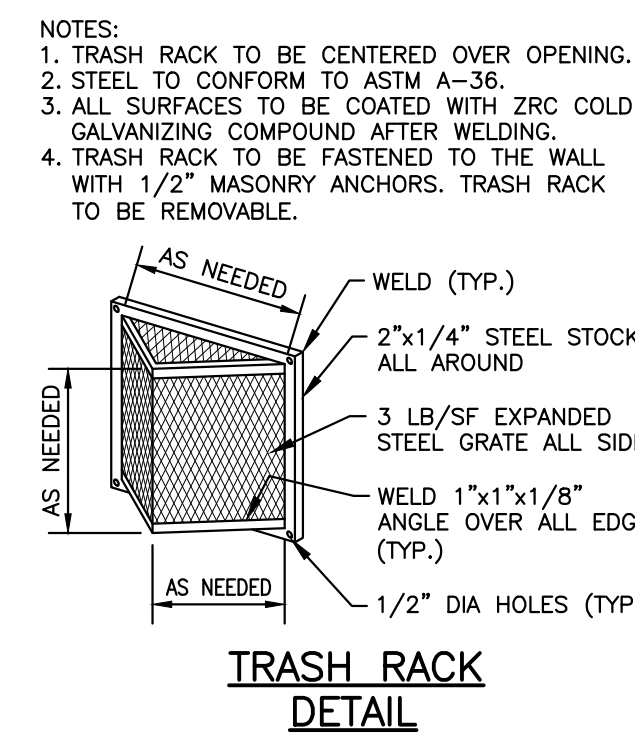
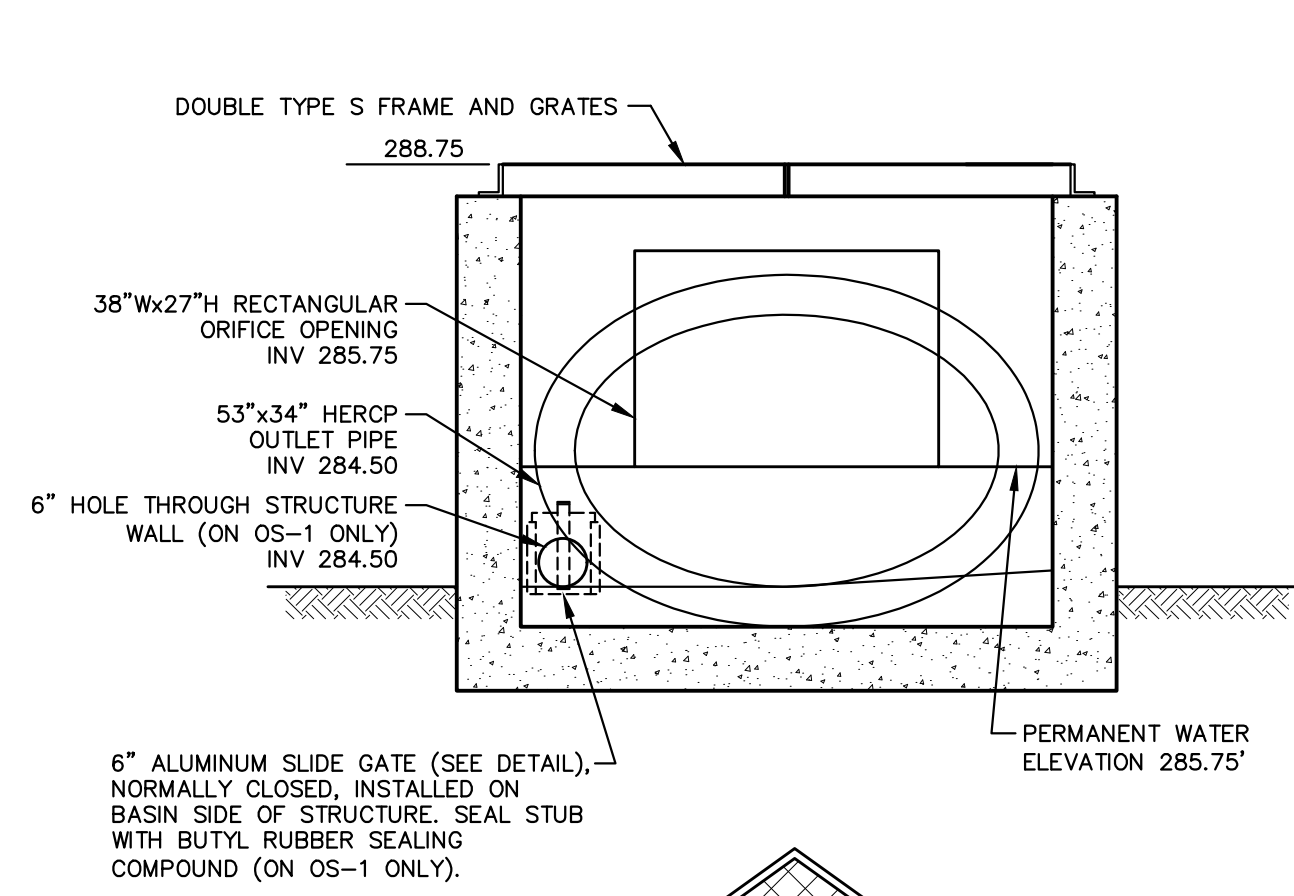
MICHAEL J. BINGHAM, PE	RELEASED BY	DESIGN	BCU	CHECKED
	DRAWN	CADD		CHECKED
	DATE	OCTOBER 2022	SURVEY DATE	SEPT 2022
	FIELD BOOK	WEBER SURVEYORS		

SEAL  
  
 SEAL  
 PROFESSIONAL CERTIFICATION  
 I, MICHAEL J. BINGHAM, P.E. 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. 49804, Expiration Date: 2024-08-23

CLIENT & PROJECT  
 TOWN OF WALKERSVILLE  
 21 WEST FREDERICK STREET  
 WALKERSVILLE, MARYLAND 21793  
 BMP DESIGNS  
 WALKERSVILLE, FREDERICK COUNTY, MARYLAND

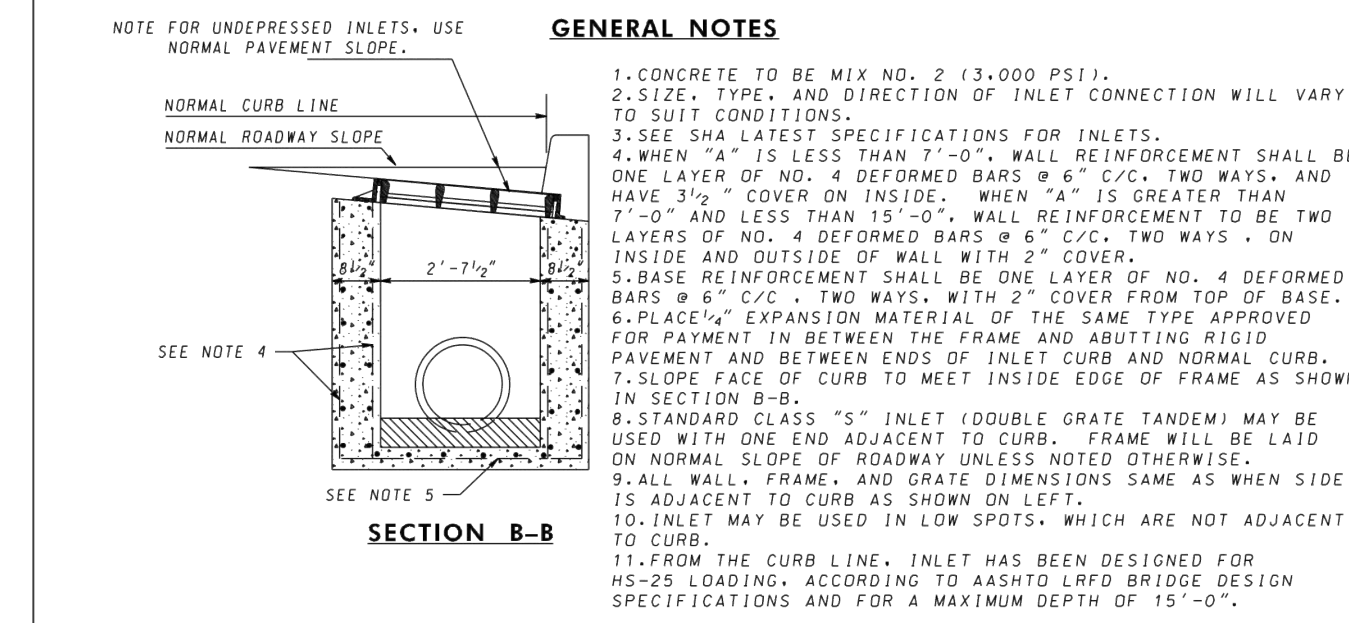
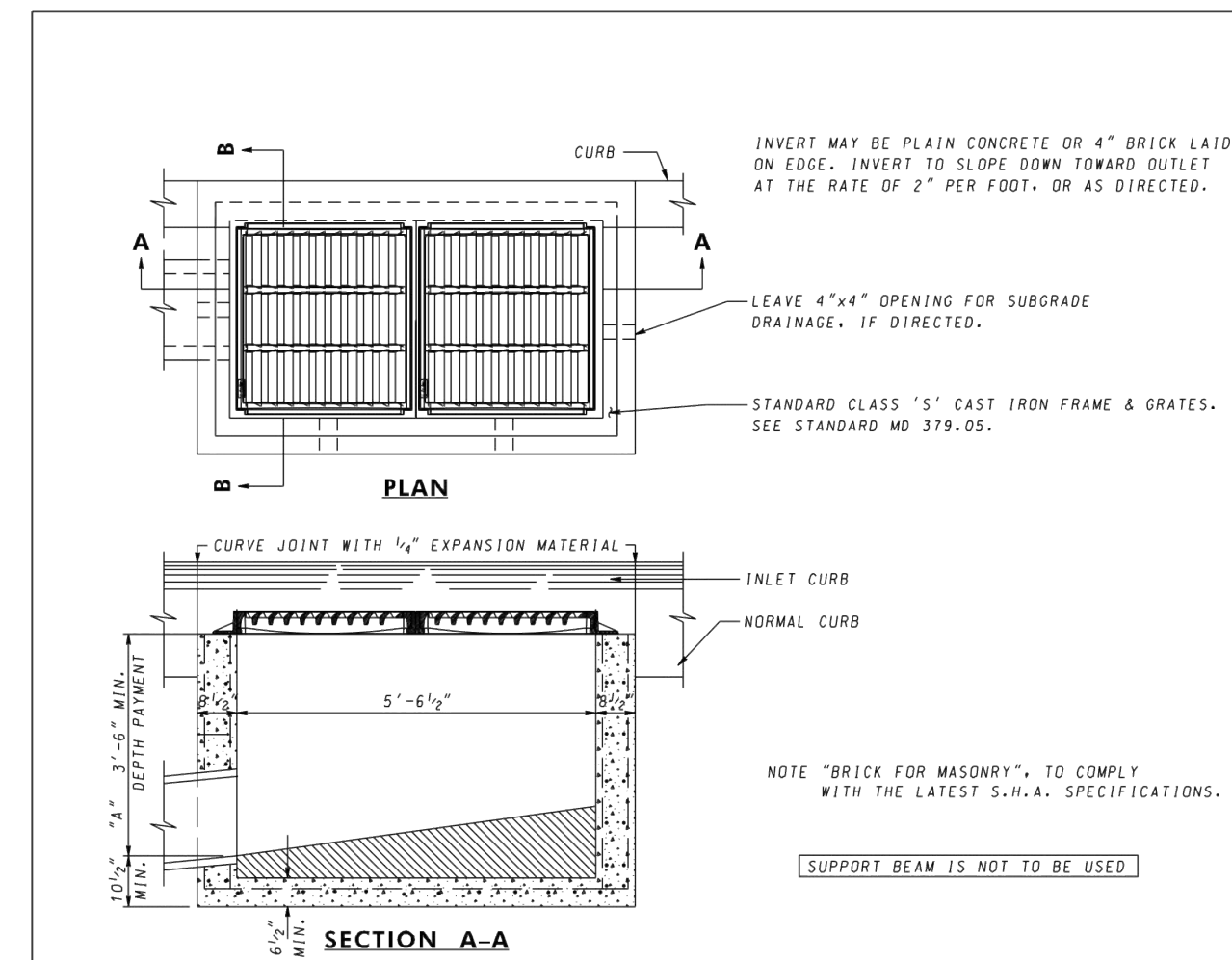
**ARRG**  
 201 Thomas Johnson Drive Suite 207  
 Frederick, MD 21702  
 Tel 301.791.1100

TITLE	GLADE TOWNE BMP FACILITY LANDSCAPE PLAN		
SCALE	0 20' 40' 60' 120' DWG. NO.		
PROJECT NO.	10827.37	SHEET NO.	6 OF 10
REV.			



- TRASH RACK DETAIL**
- SLIDE GATE NOTES:
- SLIDE GATE ASSEMBLY TO BE ALUMINUM.
  - CAST/CORE DRILL 6" HOLE IN OUTLET STRUCTURE ON BASIN SIDE OF BOX AS SHOWN ON OUTLET STRUCTURE DETAIL.
  - REMOVE SLIDE GATE FROM ASSEMBLY AND INSTALL STUB INTO DRILLED HOLE USING BUTYL RUBBER SEALING COMPOUND.
  - USE A MINIMUM OF 4 FLATHEAD SCREWS TO ATTACH THE SLIDE GATE TO THE WALL OF THE OUTLET STRUCTURE.
  - REINSERT THE SLIDE GATE TO THE CLOSED POSITION.

**PYRAMID TRASH RACK DETAIL**

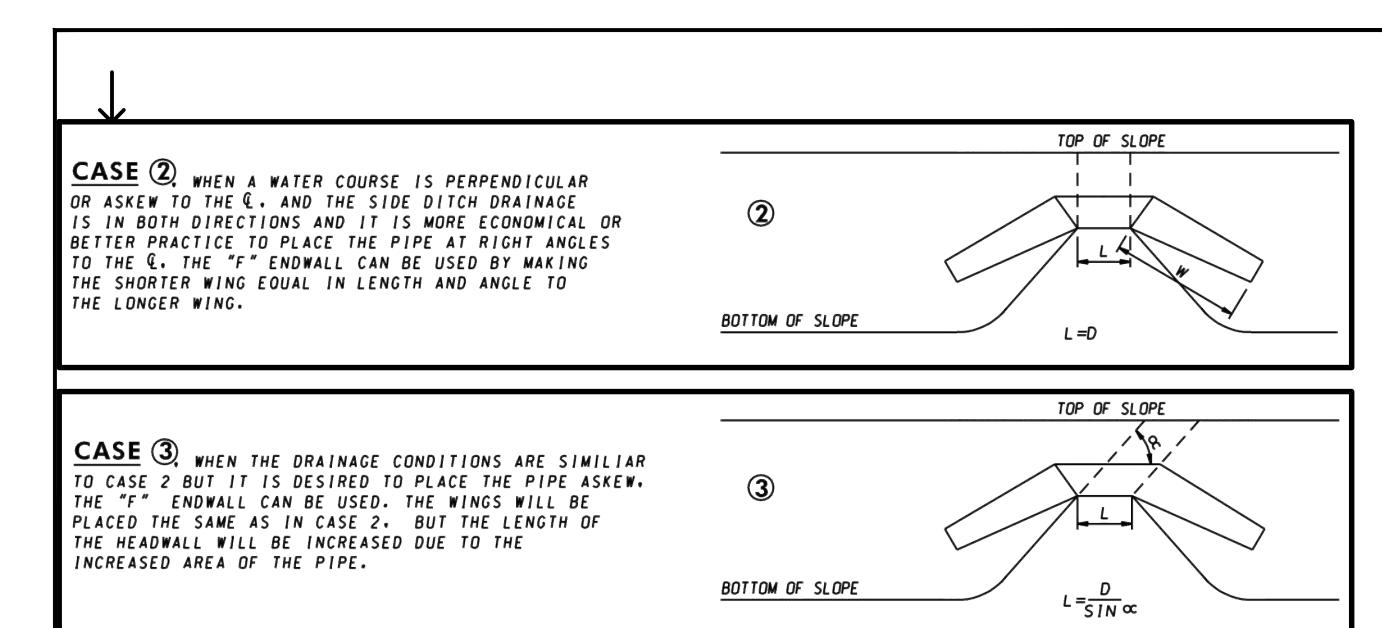


**GENERAL NOTES**

- CONCRETE TO BE MIX NO. 2 (3,000 P.S.I.)
- SIZE, TYPE, AND DIRECTION OF INLET CONNECTION WILL VARY TO SUIT CONDITIONS.
- SEE SHA LATEST SPECIFICATIONS FOR INLETS.
- WHEN "A" IS LESS THAN 7'-0" WALL REINFORCEMENT SHALL BE ONE LAYER OF NO. 4 DEFORMED BARS @ 6" C/C, TWO WAYS, AND MAKE 3/4" COVER ON INSIDE. WHEN "A" IS GREATER THAN 7'-0" AND LESS THAN 15'-0", WALL REINFORCEMENT TO BE TWO LAYERS OF NO. 4 DEFORMED BARS @ 6" C/C, TWO WAYS - ON INSIDE AND OUTSIDE OF WALL WITH 2" COVER.
- BASE REINFORCEMENT SHALL BE ONE LAYER OF NO. 4 DEFORMED BARS @ 6" C/C, TWO WAYS.
- PLACE "C" EXPANSION MATERIAL OF THE SAME TYPE APPROVED FOR PAYMENT IN BETWEEN THE FRAME AND ADJUTING RIGID PAVEMENT AND BETWEEN ENDS OF INLET CURB AND NORMAL CURB.
- STANDARD TYPE S INLET (DOUBLE GRATE TANDEM) MAY BE USED WITH ONE END ADJUTANT TO CURB. FRAME WILL BE LAID ON NORMAL SLOPE OF ROADWAY UNLESS NOTED OTHERWISE.
- ALL WALL, FRAME, AND GRATE DIMENSIONS SAME AS WHEN SIDE IS ADJUTANT TO CURB AS SHOWN ON LEFT.
- INLET MAY BE USED IN LOW SPOTS WHICH ARE NOT ADJUTANT TO CURB.
- FROM THE CURB LINE, INLET HAS BEEN DESIGNED FOR HS-20 LOADING, ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND FOR A MAXIMUM DEPTH OF 15'-0".

**CONCRETE WEIR CONSTRUCTION NOTES:**

- IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO ADEQUATELY BRACE THE STRUCTURE DURING ALL PHASES OF CONSTRUCTION.
- CAST IN PLACE CONCRETE DESIGN STRENGTH 3,000 P.S.I. @ 28 DAYS.
- CONCRETE COVER: BOTTOM OF FOOTINGS CAST AGAINST EARTH 3" OTHER FOUNDATION SURFACES 2"
- ALL BACKFILL AGAINST FOUNDATIONS AND WALLS SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY AS DETERMINED BY ASHTO T180, METHOD C.
- IF ROCK IS ENCOUNTERED, FOUNDATIONS ARE TO BE POURED DIRECTLY ON LEVEL ROCK.
- THE CONTRACTOR SHALL VERIFY ALL LOCATIONS AND DIMENSIONS WITH FIELD CONDITIONS PRIOR TO ORDERING OR FABRICATING ANY MATERIALS.
- REINFORCING STEEL SHALL CONFORM TO ASTM A-615 GRADE 60. DETAILING, BENDING AND PLACEMENT OF ALL REINFORCING SHALL BE IN ACCORDANCE WITH LATEST A.C.I. CODE. MINIMUM LAP 36 BAR DIAMETERS.
- REBAR SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
- ASSUMED ALLOWABLE SOIL BEARING PRESSURE IS 2,000 PSI. CONTRACTOR TO PROVIDE SOILS TESTING AND VERIFY IN FIELD. BOTTOM OF FOOTING TO BE LOCATED 1' MINIMUM INTO EXISTING GROUND AND 3' MINIMUM BELOW FINISHED GRADE.
- EXPANSION AND CONTRACTION JOINTS:
  - JOINT LOCATIONS SHALL BE SHOWN ON CONTRACT DRAWINGS. IF NO LOCATIONS ARE GIVEN, CONCRETE RETAINING WALLS SHALL HAVE CONTRACTION JOINTS A MAXIMUM OF EVERY 30'-0" AND EXPANSION JOINTS WITH CORK TYPE EXPANSION MATERIAL A MAXIMUM OF EVERY 50'-0".
  - STOP KEY X" BELOW WALL.
  - REINFORCING STEEL SHALL NOT PASS THROUGH CONTRACTION OR EXPANSION JOINTS.
  - ALL KEYS ARE NOMINAL SIZE.
  - ONLY PLACE CONTRACTION AND EXPANSION JOINTS IN STEPS IF NO JOINT IN FOOTER.
- THE CONCRETE WEIR SHALL BE EMBEDDED A MINIMUM OF 10' INTO THE BASIN BERM ON EACH SIDE.



**Maryland Department of Transportation STATE HIGHWAY ADMINISTRATION**

STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

**STANDARD TYPE F ENDWALL MODIFICATIONS**

STANDARD NO. MD 358.03

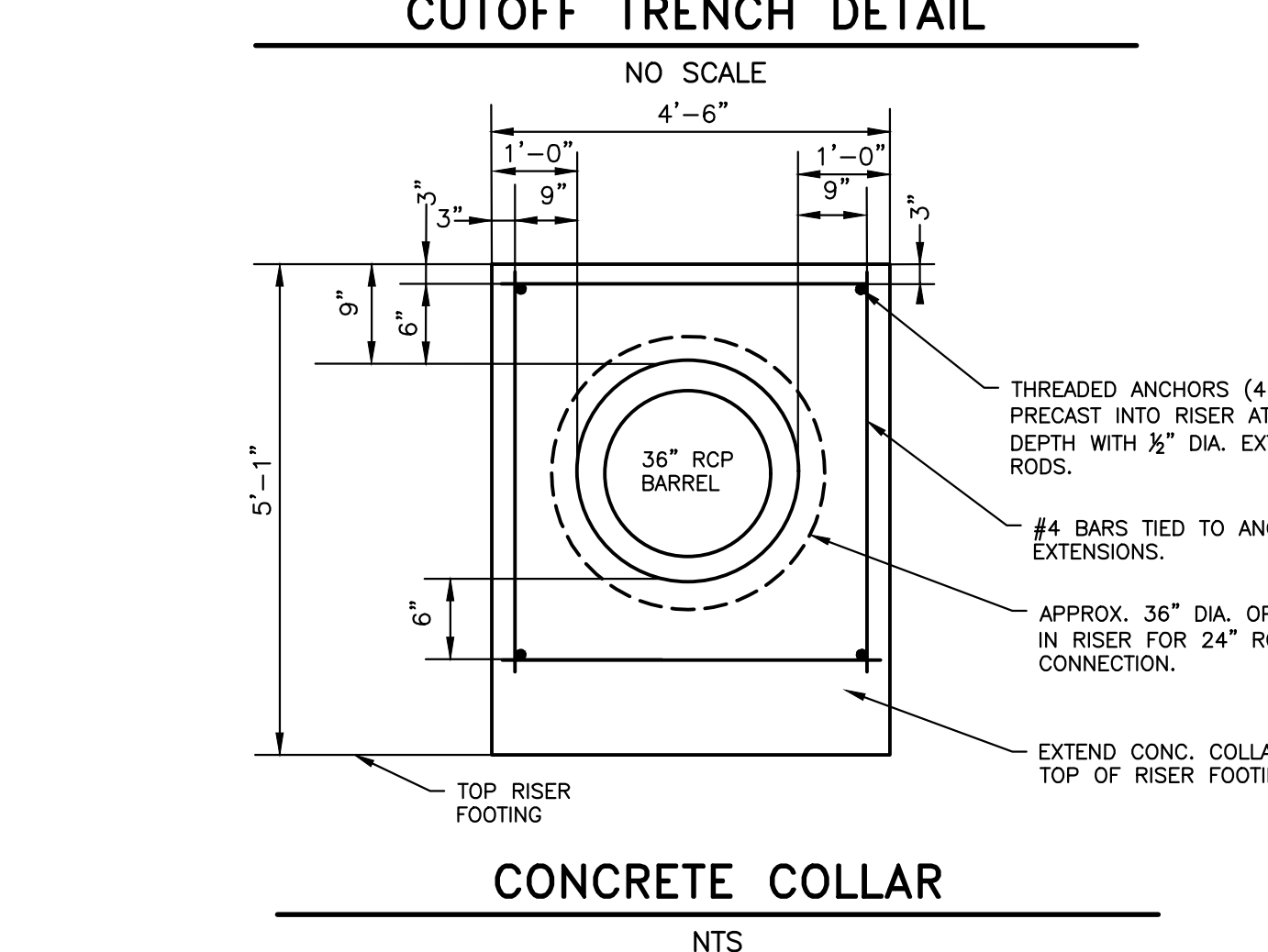
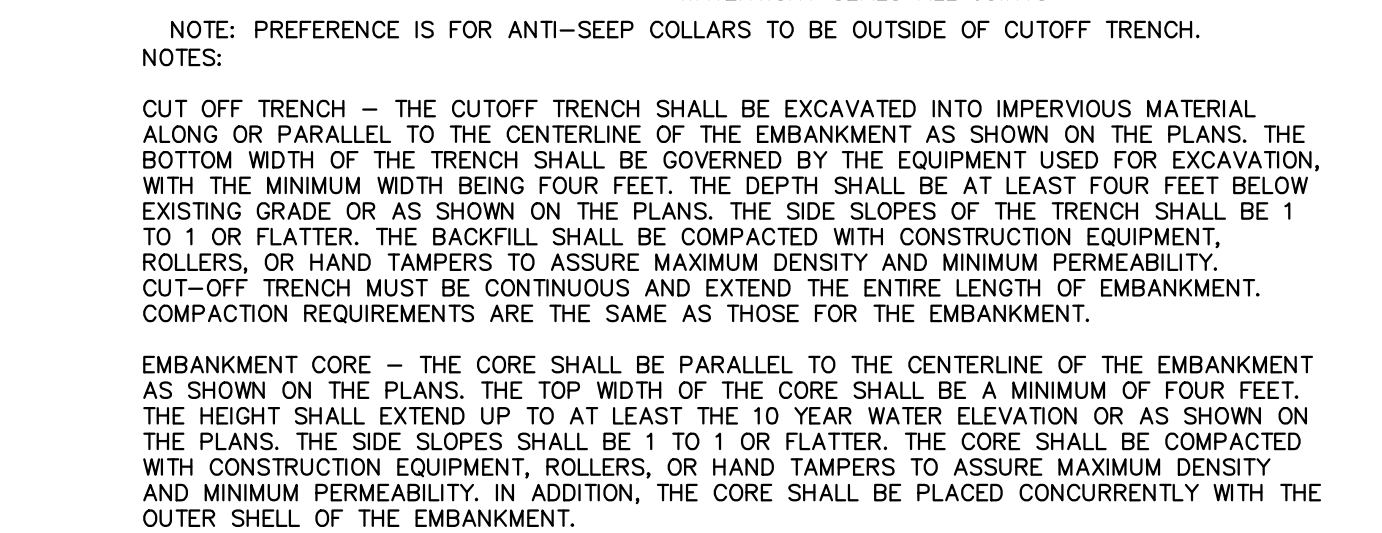
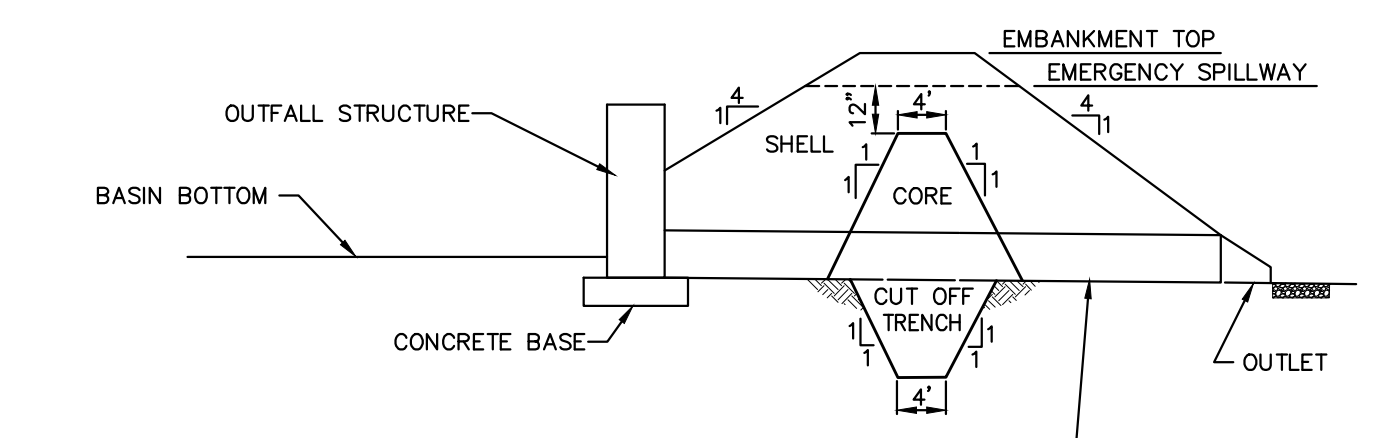
PIPE SIZE	DIMENSIONS - SLOPE 4:1											LAG BOLTS FOR WING WALLS		
D	L	X	L1	L2	W	L3	L4	Z	H	A	B	P	SPACING NO. REQ. C/C	EA. WALL
12"	3'-3"	4'-4"	1'-9"	4'-0"	2'-4"	-	-	2'-0"	2'-9"	10"	1"	2'-2"	1'-3"	2
15"	3'-6"	5'-5"	2'-10"	4'-0"	2'-11"	-	-	2'-6"	3'-0"	1'-11"	2 1/2"	2'-5 1/2"	1'-10"	2
18"	3'-9"	6'-6"	3'-11"	4'-0"	3'-4"	-	-	2'-11"	3'-4"	1'-5"	3"	2'-7"	2'-2"	2
21"	4'-4"	7'-7"	5'-0"	4'-0"	3'-7"	-	-	3'-1"	3'-7"	1'-8"	4"	2'-9"	2'-5"	2
24"	5'-0"	8'-8"	6'-0"	4'-0"	2'-0"	1'-3 1/2"	3'-0"	3'-0"	3'-0"	1'-11 1/2"	4 1/2"	2'-11 1/2"	1'-4"	3
27"	5'-3"	9'-4"	6'-8"	4'-0"	4'-7"	1'-10"	3'-0"	3'-6"	4'-11"	2'-2"	6"	3'-11"	1'-5 1/2"	3
30"	5'-6"	10'-0"	7'-5"	4'-0"	5'-0"	2'-3"	3'-0"	4'-4"	4'-5"	2'-6"	7"	3'-4"	1'-7 1/2"	3
33"	5'-9"	11'-6"	8'-11"	4'-0"	5'-6"	2'-9"	3'-0"	4'-9"	4'-8"	2'-9"	8"	3'-6"	1'-9"	3
36"	6'-0"	13'-0"	10'-5"	4'-0"	5'-11"	3'-2"	3'-0"	5'-2"	4'-11"	3'-0"	9"	3'-8"	1'-10 1/2"	3
42"	6'-6"	15'-2"	12'-7"	4'-0"	7'-0"	4'-3"	3'-0"	6'-1"	5'-8"	3'-7"	10"	4'-0"	2'-2"	3
48"	7'-0"	17'-4"	14'-9"	4'-0"	7'-11"	5'-2"	3'-0"	6'-10"	6'-0"	4'-1"	1'-2"	4'-4"	2'-5"	3

**Maryland Department of Transportation STATE HIGHWAY ADMINISTRATION**

STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

**PRECAST TYPE F ENDWALL DIMENSIONS METAL OR CONCRETE ROUND PIPE**

STANDARD NO. MD 358.05



**ARRG**

201 Thomas Johnson Drive Suite 207 Frederick, MD 21702 Tel 301.791.1100

**TOWN OF WALKERSVILLE**  
21 WEST FREDERICK STREET WALKERSVILLE, MARYLAND 21793

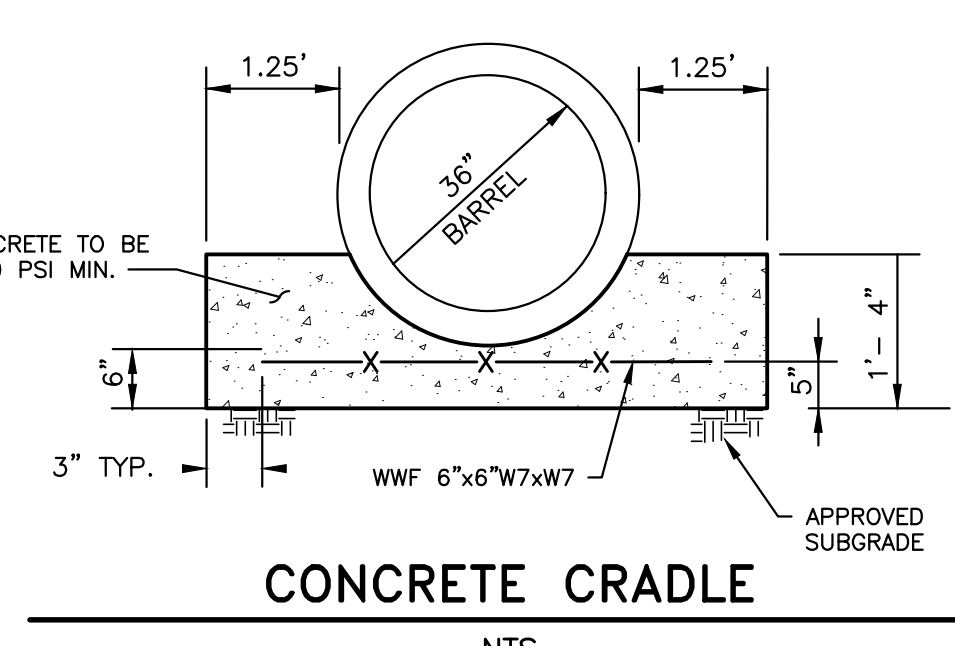
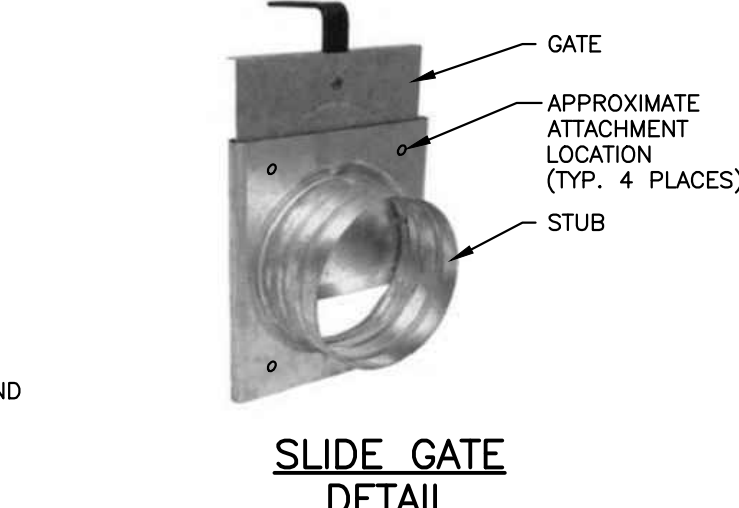
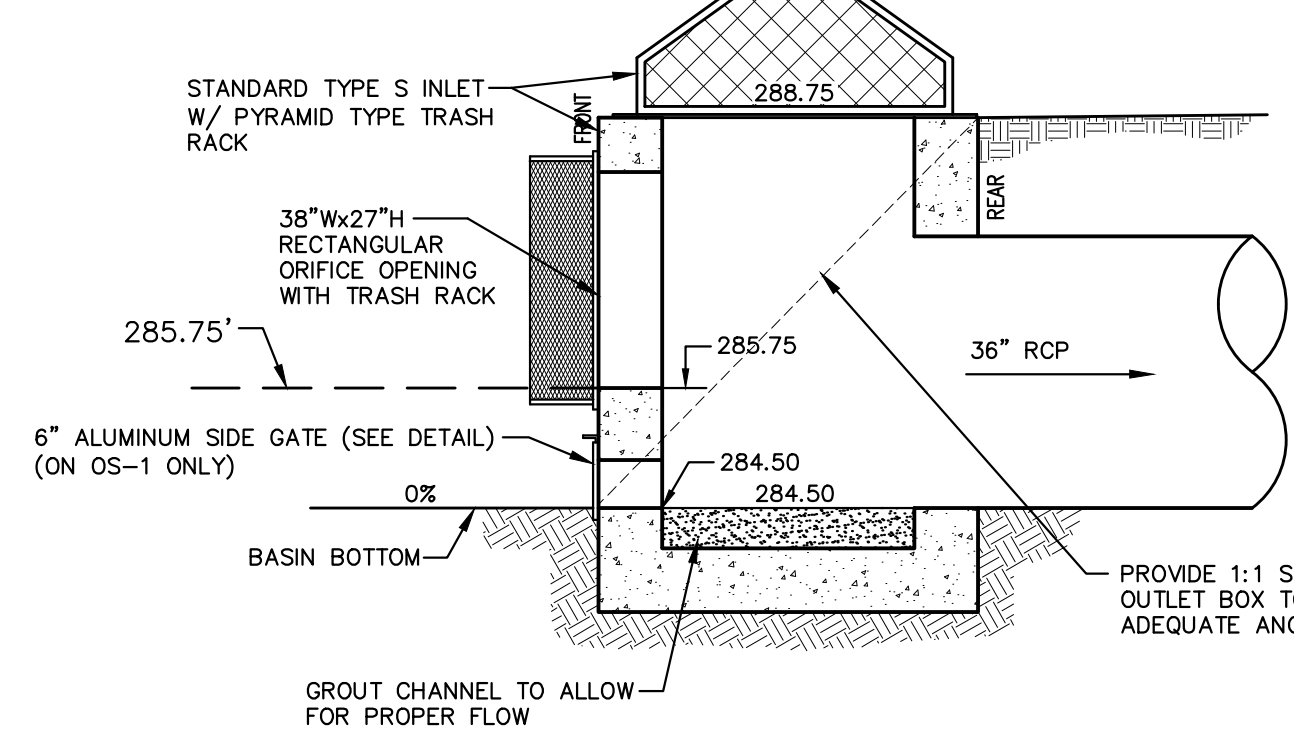
**BMP DESIGNS**  
WALKERSVILLE, FREDERICK COUNTY, MARYLAND

**TITLE** GLADE TOWNE BMP FACILITY DESIGN DETAILS

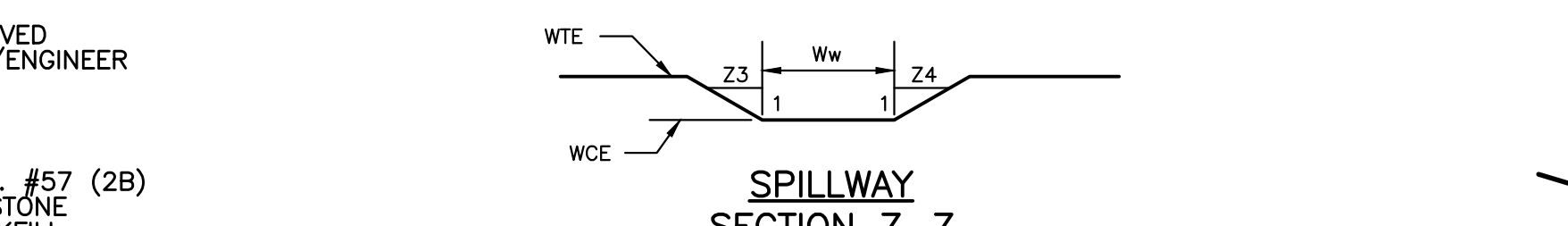
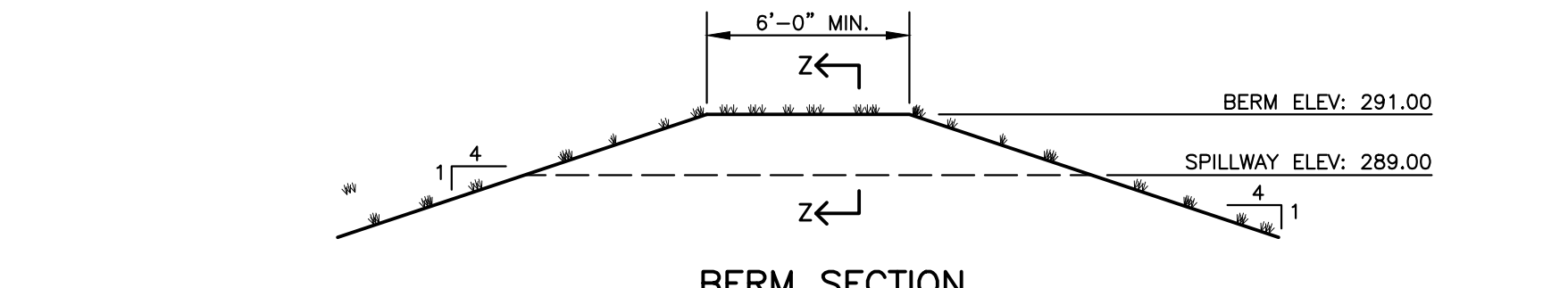
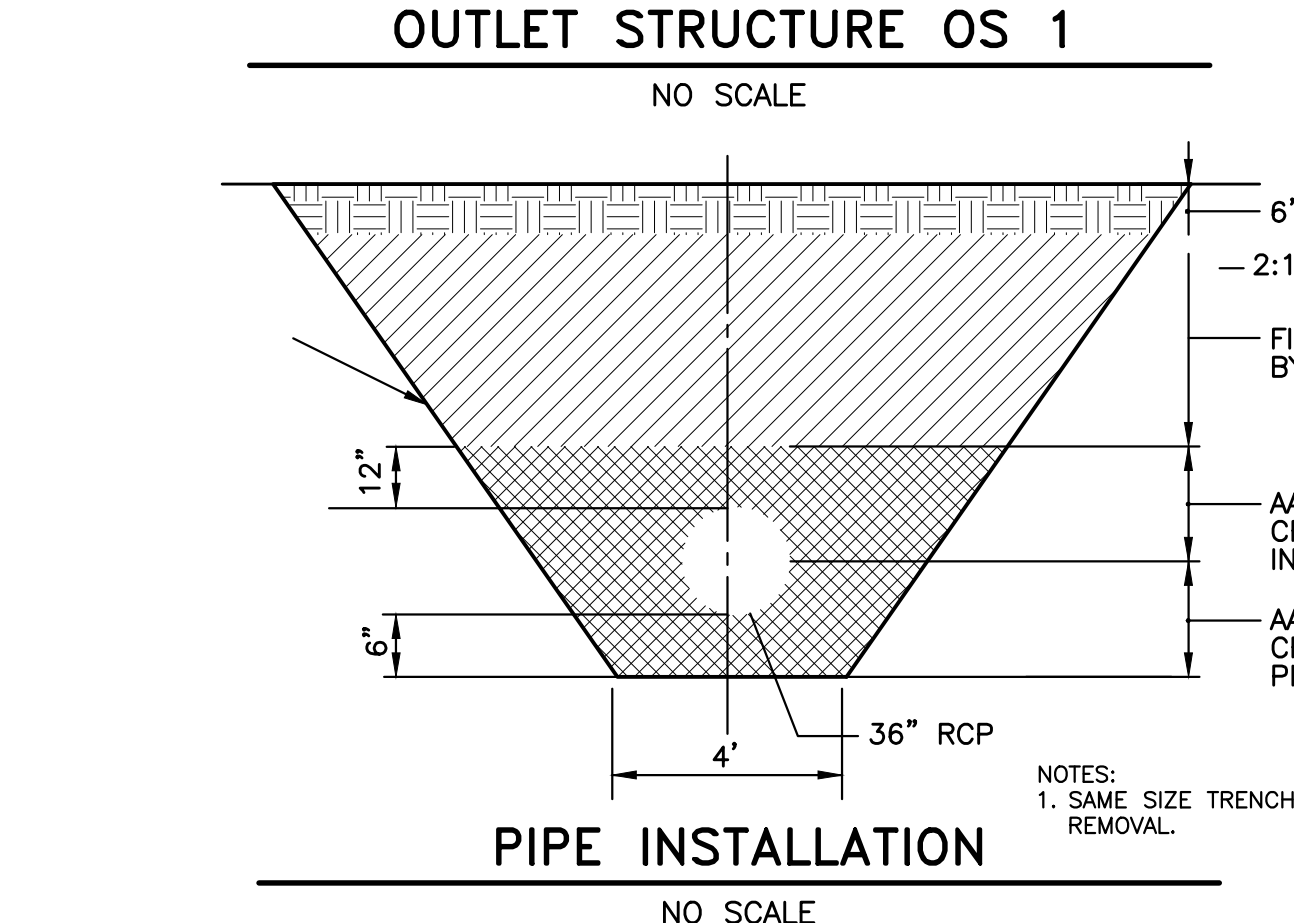
**SCALE** AS SHOWN

**PROJECT NO.** 10827.37

**SHEET NO.** 7 OF 10



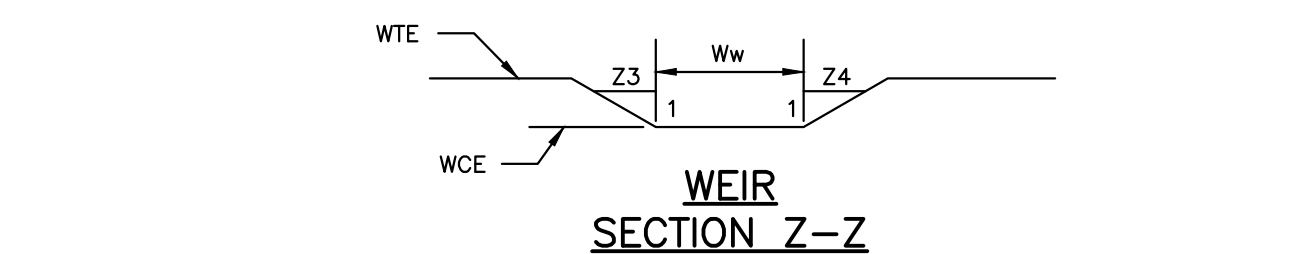
NOTE: PROVIDE OUTLET CONTROL STRUCTURE AS PER MDOT SHA STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS. USE STANDARD TYPE S INLET (MD 379.03) AND DOUBLE GRATE TANDEM (MD 379.05).



BASIN NAME	WEIR				LINING *
	Z3 (FT)	Z4 (FT)	TOP ELEV WTE (FT)	BOTTOM WIDTH Ww (FT)	
GT	4	4	291.00	100	RIP RAP

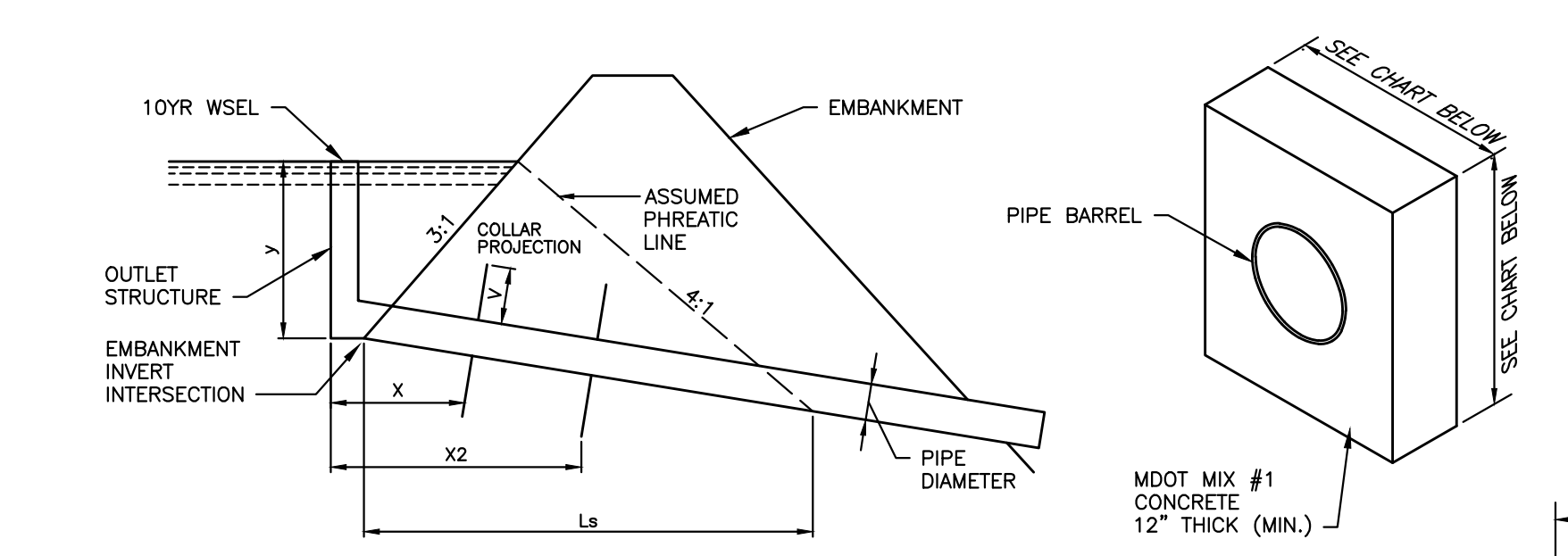
**EMERGENCY SPILLWAY**

BASIN NAME	OUTLET PIPE LEN LN	OUTLET PIPE SIZE SZ	OUTLET PIPE SLOPE SL	DOWNSTRUC INV DS
CELL 3 OS 1	68.9	53"W X 34"H	0.0073	284.00
CELL 3 OS 2	76.2	53"W X 34"H	0.0066	284.00



BASIN NAME	WEIR				LINING *	
	Z3 (FT)	Z4 (FT)	TOP ELEV WTE (FT)	WIDTH Ww (FT)		
SF	4	4	288.00	287.50	20	NAG S75
CELL 1	4	4	286.75	286.25	20	NAG S75
CELL 2	4	4	286.50	286.00	20	NAG S75
CELL 3	4	4	285.75	N/A	N/A	

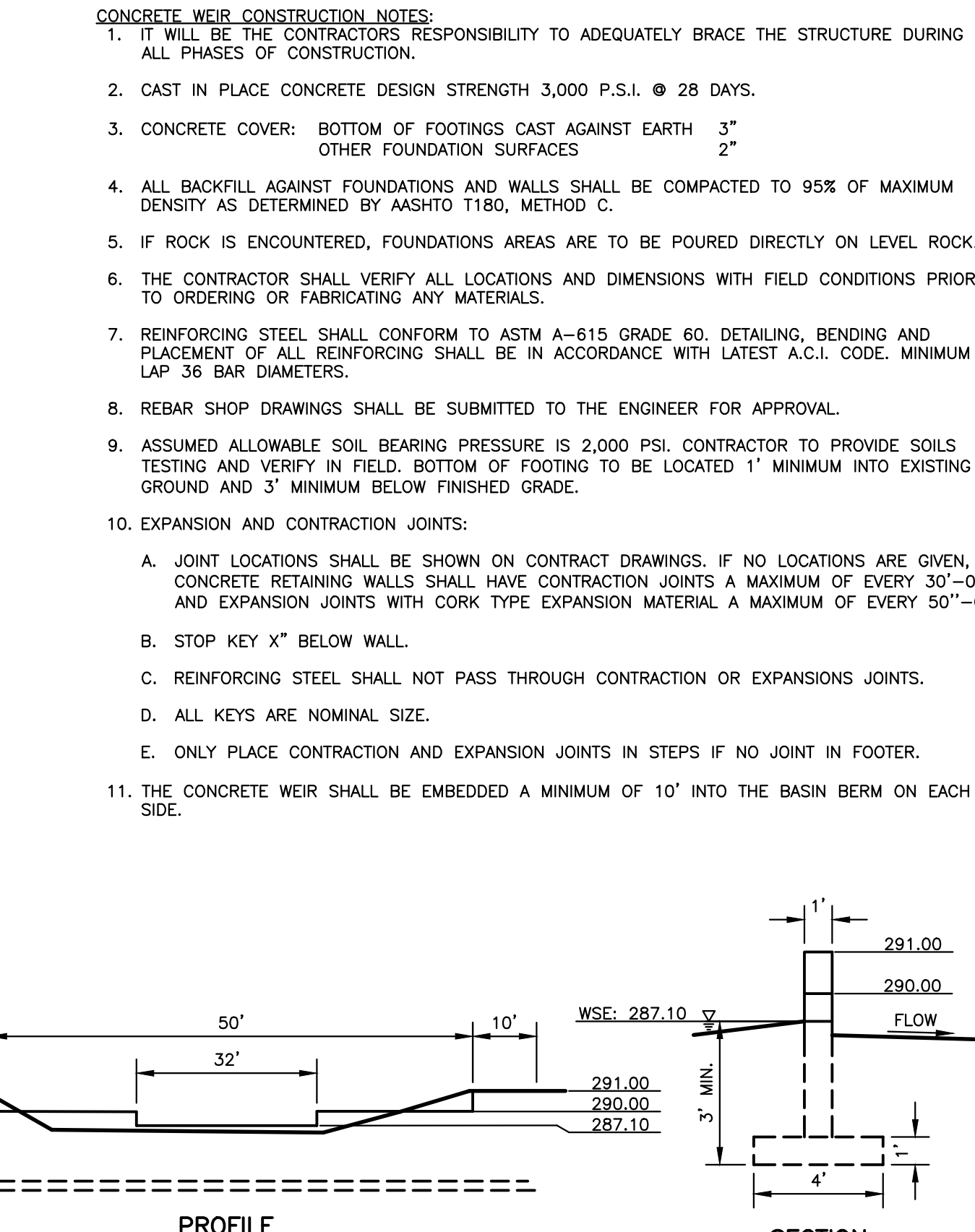
**CELL DETAIL**



BASIN NAME	EMBANKMENT INVERT	10YR WSEL	Y (FT.)	Z	PIPE SLOPE	Ls (FT.)	PIPE DIA. (IN.)	NO. OF COLLARS	COLLAR PROJECTION (FT.)	BARREL O.D. (IN.)	COLLAR SIZE (SQ. FT.)	OFFSITE X (FT.)	OFFSITE Z2 (FT.)
OS 1	291.00	288.52	4.02	4	0.0073	33	36	2	2	37	7.08	11.04	22.08

(\* ) ANTI-SEEP COLLARS SHALL NOT BE INSTALLED WITHIN 2 FEET OF ANY PIPE JOINT. A MINIMUM OF 1" OF COVER SHALL BE PROVIDED OVER THE TOP OF ANTI-SEEP COLLARS.

**ANTI-SEEP COLLAR DETAIL**



**CONCRETE WEIR WALL**

**MICHAEL J. BINGHAM, PE**

RELEASED BY

DESIGN BCU CHECKED

DRAWN CADD CHECKED

DATE OCTOBER 2022 SURVEY DATE SEPT 2022

FIELD BOOK WEBER SURVEYORS

**STATE OF MARYLAND PROFESSIONAL ENGINEER**

**SEAL**

**CLIENT & PROJECT**

**TOWN OF WALKERSVILLE**  
21 WEST FREDERICK STREET WALKERSVILLE, MARYLAND 21793

**BMP DESIGNS**  
WALKERSVILLE, FREDERICK COUNTY, MARYLAND

### DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE

**CONSTRUCTION SPECIFICATIONS**

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

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

### DETAIL B-4-6-B TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION

STANDARD SYMBOL: TSMS - \* lb/ft<sup>2</sup> (\* INCLUDE SHEAR STRESS)

**CONSTRUCTION SPECIFICATIONS**

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOULDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 1/2 INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.
5. UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDBED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
7. KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

### DETAIL E-6 FILTER LOG

STANDARD SYMBOL: FL-18 (DESIGNATION FL-18 REFERS TO 18 INCH DIAMETER FILTER LOG)

**CONSTRUCTION SPECIFICATIONS**

1. PRIOR TO INSTALLATION, CLEAR ALL OBSTRUCTIONS INCLUDING ROCKS, CLODS, AND DEBRIS GREATER THAN ONE INCH THAT MAY INTERFERE WITH PROPER FUNCTION OF FILTER LOG.
2. FILL LOG NETTING UNIFORMLY WITH COMPOST (IN ACCORDANCE WITH SECTION H-1 MATERIALS), OR OTHER APPROVED BIODEGRADABLE MATERIAL TO DESIRED LENGTH SUCH THAT LOGS DO NOT DEFORM.
3. INSTALL FILTER LOGS PERPENDICULAR TO THE FLOW DIRECTION AND PARALLEL TO THE SLOPE WITH THE BEGINNING AND END OF THE INSTALLATION POINTING SLIGHTLY UP THE SLOPE CREATING A "J" SHAPE AT EACH END TO PREVENT BYPASS.
4. FOR UNTRRENCHED INSTALLATION BLOW OR HAND PLACE MULCH OR COMPOST ON UPHILL SIDE OF THE SLOPE ALONG LOG.
5. STAKE FILTER LOG EVERY 4 FEET OR CLOSER ALONG ENTIRE LENGTH OF LOG OR TRENCH LOG INTO GROUND A MINIMUM OF 4 INCHES AND STAKE LOG EVERY 8 FEET OR CLOSER.
6. USE STAKES WITH A MINIMUM NOMINAL CROSS SECTION OF 2x2 INCH AND OF SUFFICIENT LENGTH TO ATTAIN A MINIMUM OF 12 INCHES INTO THE GROUND AND 3 INCHES PROTRUDING ABOVE LOG.
7. WHEN MORE THAN ONE LOG IS NEEDED, OVERLAP ENDS 12 INCHES MINIMUM AND STAKE.
8. REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO A DEPTH OF 1/2 THE EXPOSED HEIGHT OF LOG AND REPLACE MULCH. REPLACE FILTER LOG IF TORN, REINSTALL FILTER LOG IF UNDERMINING OR DISLODGING OCCURS. REPLACE CLOGGED FILTER LOGS. FOR PERMANENT APPLICATIONS, ESTABLISH AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

### DETAIL E-9-6 COMBINATION INLET PROTECTION

STANDARD SYMBOL: COIP

**CONSTRUCTION SPECIFICATIONS**

1. USE NOMINAL 2 INCH x 4 INCH LUMBER.
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
3. LIFT GRATE, AND WRAP WITH NONWOVEN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS, THEN SET GRATE BACK IN PLACE.
4. ATTACH A CONTINUOUS PIECE OF 1/2 INCH GALVANIZED HARDWARE CLOTH WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4, EXTENDING 2 FEET BEYOND THROAT ON EACH SIDE.
5. PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH IT TO THE WEIR.
6. NAIL THE 2x4 WEIR TO THE TOP OF A 9 INCH LONG VERTICAL SPACER TO BE LOCATED BETWEEN THE WEIR AND THE INLET FACE (MAXIMUM 4 FEET APART).
7. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FOOT LENGTHS OF 2x4 INCH TO THE TOP OF THE WEIR AT SPACER LOCATIONS). EXTEND 2x4 ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
8. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND BOTH ENDS OF THE THROAT OPENING.
9. FORM THE 1/2 INCH HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND AGAINST THE FACE OF THE CURB ON BOTH SIDES OF THE INLET. PLACE CLEAN 3/4 TO 1 1/2 INCH STONE OR EQUIVALENT RECYCLED CONCRETE OVER THE HARDWARE CLOTH AND GEOTEXTILE IN SUCH A MANNER TO PREVENT WATER FROM ENTERING THE INLET UNDER OR AROUND THE GEOTEXTILE.
10. AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
11. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

### DETAIL D-3-1 RIPRAP INFLOW PROTECTION

STANDARD SYMBOL: RRP

**CONSTRUCTION SPECIFICATIONS**

1. PROVIDE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, UNDER THE BOTTOM AND ALONG SIDES OF ALL RIPRAP.
2. CONSTRUCT INFLOW CHANNEL WITH CLASS I RIPRAP OR EQUIVALENT RECYCLED CONCRETE LINING TO A MINIMUM DEPTH OF 19 INCHES (2 x D<sub>50</sub>) AND A 1 FOOT DEEP FLOW CHANNEL. INFLOW RIPRAP PROTECTION CHANNEL MUST HAVE A TRAPEZOIDAL CROSS SECTION WITH 2:1 OR FLATTER SIDE SLOPES AND A 4 FOOT MINIMUM BOTTOM WIDTH.
3. INSTALL ENTRANCE AND EXIT SECTIONS AS SHOWN ON THE PROFILE.
4. BLEND RIPRAP INTO EXISTING GROUND.
5. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. KEEP POINTS OF INFLOW AND OUTFLOW FREE OF EROSION.

STRUCTURE NAME	APRON LENGTH L (FT)	APRON WIDTH W (FT)	RIP-RAP TYPE R	APRON DEPTH D (IN)	PIPE DIAMETER (IN)
86"x50" ACPM	52	60	CLASS III (d <sub>50</sub> =2.0')	46	86"x50"
E SPILLWAY	AS SHOWN	AS SHOWN	CLASS III (d <sub>50</sub> =2.0')	46	SPILLWAY

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

### DETAIL F-4 FILTER BAG

STANDARD SYMBOL: FB

**CONSTRUCTION SPECIFICATIONS**

1. TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
2. PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAF/WOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE. DISCHARGE TO A STABILIZED AREA. EXTEND BASE A MINIMUM OF 12 INCHES FROM EDGES OF BAG.
3. CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS. AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE.
4. REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED SEDIMENT FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH BY THE END OF THE WORK DAY. RESTORE THE SURFACE AREA BENEATH THE BAG TO ORIGINAL CONDITION UPON REMOVAL OF THE DEVICE.
5. USE NONWOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH THREAD. SIZE SLEEVE TO ACCOMMODATE A MAXIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE BAG MUST BE MANUFACTURED FROM A NONWOVEN GEOTEXTILE THAT MEETS OR EXCEEDS MINIMUM AVERAGE ROLL VALUES (MARV) FOR THE FOLLOWING:

GRAB TENSILE	250 LB	ASTM D-4632
PUNCTURE	150 LB	ASTM D-4833
FLOW RATE	70 GAL/MIN/FT <sup>2</sup>	ASTM D-4491
PERMITTIVITY (SEC <sup>-1</sup> )	1.2 SEC <sup>-1</sup>	ASTM D-4491
UV RESISTANCE	70% STRENGTH @ 500 HOURS	ASTM D-4355
APPARENT OPENING SIZE (AOS)	0.15-0.18 MM	ASTM D-4751
SEAM STRENGTH	90%	ASTM D-4632

6. REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

### DETAIL E-6 FILTER LOG

STANDARD SYMBOL: FL-18 (DESIGNATION FL-18 REFERS TO 18 INCH DIAMETER FILTER LOG)

**CONSTRUCTION SPECIFICATIONS**

1. PRIOR TO INSTALLATION, CLEAR ALL OBSTRUCTIONS INCLUDING ROCKS, CLODS, AND DEBRIS GREATER THAN ONE INCH THAT MAY INTERFERE WITH PROPER FUNCTION OF FILTER LOG.
2. FILL LOG NETTING UNIFORMLY WITH COMPOST (IN ACCORDANCE WITH SECTION H-1 MATERIALS), OR OTHER APPROVED BIODEGRADABLE MATERIAL TO DESIRED LENGTH SUCH THAT LOGS DO NOT DEFORM.
3. INSTALL FILTER LOGS PERPENDICULAR TO THE FLOW DIRECTION AND PARALLEL TO THE SLOPE WITH THE BEGINNING AND END OF THE INSTALLATION POINTING SLIGHTLY UP THE SLOPE CREATING A "J" SHAPE AT EACH END TO PREVENT BYPASS.
4. FOR UNTRRENCHED INSTALLATION BLOW OR HAND PLACE MULCH OR COMPOST ON UPHILL SIDE OF THE SLOPE ALONG LOG.
5. STAKE FILTER LOG EVERY 4 FEET OR CLOSER ALONG ENTIRE LENGTH OF LOG OR TRENCH LOG INTO GROUND A MINIMUM OF 4 INCHES AND STAKE LOG EVERY 8 FEET OR CLOSER.
6. USE STAKES WITH A MINIMUM NOMINAL CROSS SECTION OF 2x2 INCH AND OF SUFFICIENT LENGTH TO ATTAIN A MINIMUM OF 12 INCHES INTO THE GROUND AND 3 INCHES PROTRUDING ABOVE LOG.
7. WHEN MORE THAN ONE LOG IS NEEDED, OVERLAP ENDS 12 INCHES MINIMUM AND STAKE.
8. REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO A DEPTH OF 1/2 THE EXPOSED HEIGHT OF LOG AND REPLACE MULCH. REPLACE FILTER LOG IF TORN, REINSTALL FILTER LOG IF UNDERMINING OR DISLODGING OCCURS. REPLACE CLOGGED FILTER LOGS. FOR PERMANENT APPLICATIONS, ESTABLISH AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

### DETAIL E-9-6 COMBINATION INLET PROTECTION

STANDARD SYMBOL: COIP

**CONSTRUCTION SPECIFICATIONS**

1. USE NOMINAL 2 INCH x 4 INCH LUMBER.
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
3. LIFT GRATE, AND WRAP WITH NONWOVEN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS, THEN SET GRATE BACK IN PLACE.
4. ATTACH A CONTINUOUS PIECE OF 1/2 INCH GALVANIZED HARDWARE CLOTH WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4, EXTENDING 2 FEET BEYOND THROAT ON EACH SIDE.
5. PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH IT TO THE WEIR.
6. NAIL THE 2x4 WEIR TO THE TOP OF A 9 INCH LONG VERTICAL SPACER TO BE LOCATED BETWEEN THE WEIR AND THE INLET FACE (MAXIMUM 4 FEET APART).
7. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FOOT LENGTHS OF 2x4 INCH TO THE TOP OF THE WEIR AT SPACER LOCATIONS). EXTEND 2x4 ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
8. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND BOTH ENDS OF THE THROAT OPENING.
9. FORM THE 1/2 INCH HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND AGAINST THE FACE OF THE CURB ON BOTH SIDES OF THE INLET. PLACE CLEAN 3/4 TO 1 1/2 INCH STONE OR EQUIVALENT RECYCLED CONCRETE OVER THE HARDWARE CLOTH AND GEOTEXTILE IN SUCH A MANNER TO PREVENT WATER FROM ENTERING THE INLET UNDER OR AROUND THE GEOTEXTILE.
10. AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
11. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

FREDERICK SOIL CONSERVATION DISTRICT

Approved by \_\_\_\_\_ District Manager

Date \_\_\_\_\_

SCD APPROVAL FOR SEDIMENT AND EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS.

NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.

MICHAEL J. BINGHAM, PE	RELEASED BY	DESIGN	BCU	CHECKED
		DRAWN	CADD	CHECKED
		DATE	OCTOBER 2022	SURVEY DATE
				FIELD BOOK
				WEBER SURVEYORS

SEAL: STATE OF MARYLAND, MICHAEL J. BINGHAM, P.E., LICENSE NO. 49804, EXPIRATION DATE: 2024-08-23

CLIENT & PROJECT: TOWN OF WALKERSVILLE, 21 WEST FREDERICK STREET, WALKERSVILLE, MARYLAND 21793

BMP DESIGNS, WALKERSVILLE, FREDERICK COUNTY, MARYLAND

ARRG: 201 Thomas Johnson Drive Suite 207, Frederick, MD 21702, Tel 301.791.1100

TITLE: GLADE TOWNE BMP FACILITY EROSION AND SEDIMENT CONTROL DETAILS

SCALE: AS SHOWN

PROJECT NO. 10827.37

SHEET NO. 8 OF 10

DWG. NO. D-2

SEDIMENT CONTROL NOTES

- 1. ALL EROSION AND SEDIMENT CONTROL STRUCTURES SHALL BE INSTALLED PRIOR TO GRADING OPERATIONS.
2. ALL EROSION AND SEDIMENT CONTROL STRUCTURES SHALL BE MAINTAINED IN GOOD WORKING ORDER WITH PERIODIC INSPECTIONS AND REPAIR IF NECESSARY.
3. ANY TEMPORARY STRUCTURES SHALL BE REMOVED WHEN THE DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED.
4. IF THE COUNTY SEDIMENT CONTROL INSPECTOR FINDS THAT ADDITIONAL SEDIMENT CONTROL MEASURES ARE NECESSARY, HE MAY DIRECT THE CONTRACTOR TO EITHER INSTALL THE ADDITIONAL MEASURES, OR SUBMIT A REVISED GRADING PLAN TO THE FCSD FOR APPROVAL.
5. ALL DISTURBED AREAS SHALL BE STABILIZED BY GRASS, GRAVEL, PAVEMENT, CROWN VETCH, OR OTHER APPROVED MEANS AS SOON AS POSSIBLE UPON COMPLETION OF EXCAVATION.
6. THE FREDERICK COUNTY SOIL CONSERVATION DISTRICT RESERVES THE RIGHT TO ADD TO, DELETE, OR MODIFY ANY OR ALL SEDIMENT CONTROL MEASURES AS SHOWN HEREON AS NEEDED TO ESTABLISH PROPER SOIL STABILIZATION AND EROSION AND SEDIMENT CONTROL ANYTIME THROUGHOUT THE LIFE OF THE PROJECT.
7. REFERENCE IS HEREBY MADE TO THE "STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL IN DEVELOPING AREAS", USDA-USC, 1994 FOR STANDARDS AND REQUIREMENTS.
8. ALL EROSION/SEDIMENT CONTROL MEASURES SHALL COMPLY WITH THE "MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" AS APPROVED BY THE FREDERICK COUNTY SOIL CONSERVATION DISTRICT.
9. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:
A. SEVEN (7) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN 3 HORIZONTAL TO 1 VERTICAL; AND
B. FOURTEEN (14) DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
10. APPROVAL FROM THE SEDIMENT CONTROL INSPECTOR IS NEEDED TO REMOVE SEDIMENT CONTROL STRUCTURES.
11. ALL SOIL STOCKPILES SHALL BE TEMPORARILY SEEDDED AND SILT FENCE PLACED AROUND THE BASE. THE STOCKPILES SHOULD BE PLACED WITHIN THE LIMITS OF THE DISTURBED AREAS.
12. ALL UTILITIES, SUCH AS STORM DRAIN, PUBLIC WATER, SANITARY SEWER, ELECTRIC POWER, TELEPHONE, CABLE, AND GAS LINES THAT ARE NOT IN PAVED AREAS ARE NOT UNDERGOING ACTIVE GRADING SHALL BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 3 DAYS OF INITIAL DISTURBANCE.

FOR UTILITY WORK ONLY OR FOR OFF-SITE UTILITY WORK

- 1. PLACE ALL EXCAVATED MATERIAL ON THE HIGH SIDE OF THE TRENCH, SILT FENCE ON THE LOW SIDE.
2. ONLY DO AS MUCH WORK AS CAN BE DONE IN ONE DAY SO BACKFILLING, FINAL GRADING, SEEDING AND MULCHING CAN OCCUR.
3. ANY SEDIMENT CONTROL MEASURES DISTURBED BY CONSTRUCTION SHALL BE REPAIRED ON THE SAME DAY.

STOCKPILE NOTES

- 1. NO STOCKPILING ALLOWED ON ASPHALT.
2. ALL STOCKPILES LEFT AT THE END OF THE DAY NEED TO BE STABILIZED UNTIL THE NEXT REDISTURBANCE.

VEGETATIVE SPECIFICATIONS AND NOTES

- 1. DISTURB AS SMALL OF THE PRESENT COVER AS POSSIBLE WHILE PERFORMING GRADING.
2. ESTABLISH PERMANENT VEGETATIVE COVER IMMEDIATELY AFTER FINAL GRADING IS COMPLETED. (THIS INCLUDES ALL GRADING ON OR OFF THE SITE THAT IS AFFECTED BY THIS CONSTRUCTION). IF FINAL GRADING IS COMPLETED AT A TIME OTHER THAN THE SEEDING SEASON, A TEMPORARY GROUND COVER SUCH AS MULCHING WILL BE USED TO STABILIZE THE BARE SOIL.
3. TEMPORARY SEEDING REQUIREMENTS:
SEED: BALBOA RYE AT 150 LBS/AC.
MULCH: STRAW AT 1.5 TON/AC.
ASPHALT: SS-1 OR EQUIVALENT, 150 GAL./AC.
4. PERMANENT SEEDING AND SODDING REQUIREMENTS: SEE SPECIFICATIONS.

CHECKLIST FOR REQUIRED INSPECTIONS

YOU MUST NOTIFY THE ENVIRONMENTAL PRESERVATION BRANCH AT 301-694-1132 BEFORE 9 A.M. TWENTY-FOUR HOURS BEFORE THE REQUIRED INSPECTION. FAILURE TO NOTIFY THIS OFFICE WILL RESULT IN A STOP WORK ORDER OR OTHER PENALTIES AS OUTLINED IN THE FREDERICK COUNTY CODES.

\*\*\*NOTICE\*\*\*

THIS LIST IS FOR SEQUENCE OF CONSTRUCTION ONLY. THIS OFFICE ASSUMES NO RESPONSIBILITY OR LIABILITY FOR IMPROPER INSTALLATION OF ANY ITEM ON THIS CHECKLIST. THIS OFFICE RECOMMENDS THAT A PROFESSIONAL ENGINEER BE PRESENT FOR EACH OF THE REQUIRED INSPECTIONS.

Table with 2 columns: TYPE OF INSPECTION, INITIALS. Rows include PRECONSTRUCTION MEETING, COMPLETION OF SEDIMENT CONTROL MEASURES, PRIOR TO MODIFICATION OR REMOVAL OF SEDIMENT CONTROL.

SEQUENCE OF CONSTRUCTION

- 1. NOTIFY SEDIMENT CONTROL INSPECTOR 24 HOURS PRIOR TO START OF CONSTRUCTION. CALL 301-748-7263 & 301-600-3507 TO CONTACT FREDERICK COUNTY EC FOR PRECONSTRUCTION MEETING.
2. PERFORM CLEARING AND GRUBBING REQUIRED FOR INSTALLATION OF PERIMETER CONTROLS.
3. INSTALL FILTER LOG AND SCE PER PLAN AND DETAILS. NOTIFY SEDIMENT CONTROL INSPECTOR AND OBTAIN APPROVAL BEFORE PROCEEDING FURTHER.
4. UPON TEMPORARY CESSATION OF AN EARTH DISTURBANCE ACTIVITY, THE DISTURBED AREA SHALL BE TEMPORARILY SEEDDED.
5. EXCAVATE CUT-OFF TRENCH ALONG CENTERLINE OF PROPOSED EMBANKMENT A MINIMUM DEPTH OF 4 FEET AND A BOTTOM (MIN. 4 FEET) WIDE ENOUGH TO PERMIT OPERATION OF EXCAVATION AND COMPACTION EQUIPMENT. CONSTRUCT SIDE SLOPES 1:1 OR FLATTER. CUT-OFF TRENCH MUST BE CONTINUOUS AND EXTEND THE ENTIRE LENGTH OF EMBANKMENT. COMPACTION REQUIREMENTS ARE THE SAME AS THOSE FOR THE EMBANKMENT. DEWATER THE TRENCH DURING THE BACKFILLING COMPACTION OPERATIONS, USING AN APPROVED PRACTICE.
6. CONSTRUCT EMBANKMENT OF CLEAN SOIL FREE OF ROOTS, WOODY VEGETATION, OVERSIZED STONES, ROCKS, OR OTHER OBJECTIONABLE MATERIAL. FILL MATERIAL FOR IMPERVIOUS CORE AND CUT-OFF TRENCH MUST CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL AND MUST HAVE AT LEAST 30 PERCENT PASSING THE #200 SIEVE. USE FILL MATERIAL CONTAINING SUFFICIENT MOISTURE SUCH THAT THE SOIL CAN BE FORMED BY HAND INTO A BALL WITHOUT CRUMBLING. IF WATER CAN BE SQUEEZED OUT OF THE BALL, IT IS TOO WET FOR PROPER COMPACTION. PLACE FILL MATERIAL IN SIX-INCH TO EIGHT INCH THICK CONTINUOUS LIFTS OVER THE ENTIRE LENGTH OF THE FILL. OBTAIN COMPACTION BY PASSING CONSTRUCTION EQUIPMENT OR COMPACTOR OVER THE FILL, SO THAT THE ENTIRE SURFACE OF EACH LAYER OF FILL IS TRAVERSED AT LEAST FOUR TIMES. CONSTRUCT THE EMBANKMENT TO AN ELEVATION A MINIMUM OF 10 PERCENT HIGHER THAN THE DESIGN HEIGHT TO ALLOW FOR SETTLEMENT.
7. INSTALL ALL IMPROVEMENTS, INCLUDING SEDIMENT FOREBAYS, PIPING, RIP-RAP, ENDWALLS, OUTLET STRUCTURES, AND CELLS, PER THE CONSTRUCTION PLANS.
8. COMPLETE FINAL GRADING, PERMANENT STABILIZATION, NAG C350 LINING, AND LANDSCAPING.
9. NOTIFY SEDIMENT CONTROL INSPECTOR AND OBTAIN APPROVAL TO REMOVE SEDIMENT AND EROSION CONTROL DEVICES.
10. IF ANY WATER IS ENCOUNTERED IN THE BASIN OR TRENCHES DURING CONSTRUCTION, IT SHALL BE REMOVED VIA A PUMPED WATER FILTER BAG.

REVISED UTILITY NOTE FOR SECONDARY UTILITY WORK

- 1. ALL DISTURBANCES FROM SECONDARY UTILITY'S SUCH AS PHONE, CABLE, ELECTRIC CABLE, TV CABLE, ETC., WILL BE CONTRACTORS RESPONSIBILITY TO BRING WORK AREA BACK TO GRADE LEVEL THAT WAS EXISTING AND SEED AND MULCH ANY DISTURBANCES FROM INSTALLATION OF LINES OR CONDUIT.
2. CONTRACTOR WILL BE RESPONSIBLE FOR RE-INSTALLING OR REPAIRING ANY SILT LOG OR SEDIMENT CONTROLS THAT WERE EXISTING TO MAINTAIN PROPER SEDIMENT CONTROL THAT MIGHT HAVE BEEN DAMAGED.

SOIL STOCKPILE NOTES:

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 2:1 RATIO. THE STOCKPILE AREA MUST BE KEPT FREE OF EROSION. IF THE VERTICAL HEIGHT OF A STOCKPILE EXCEEDS 20 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.

OPERATIONS & MAINTENANCE DETAILS

- 1. GLADE TOWNE BASIN - MULTIPLE POND SYSTEM
A. ALL REQUIRED MAINTENANCE SHALL PERFORMED BY AND AT THE OWNER'S EXPENSE.
B. MAINTENANCE IS NECESSARY EVERY QUARTER TO ENSURE PROPER FUNCTIONALITY OF THE MULTIPLE POND SYSTEM.
C. ANY BASIN STRUCTURE THAT IS EXPECTED TO RECEIVE AND/OR TRAP DEBRIS AND SEDIMENT SHALL BE THOROUGHLY INSPECTED FOR EXCESSIVE DEBRIS AND CLOGGING. INSPECTIONS SHALL BE CONDUCTED AT A MINIMUM FOUR (4) TIMES PER YEAR OR IMMEDIATELY FOLLOWING ANY STORM CREATING GREATER THAN ONE (1) INCH OF WATER.
D. VEHICLES SHALL NOT BE PARKED OR DRIVEN ON A MULTIPLE POND SYSTEM AND CARE SHALL BE TAKEN TO AVOID EXCESSIVE COMPACTION BY A MOWER IF APPLICABLE.
E. REMOVAL OF SEDIMENT FROM BASINS SHALL OCCUR WHEN BASINS ARE COMPLETELY DRY. SEDIMENT REMOVED FROM THE BASINS SHALL BE DISPOSED OF PROPERLY, AND ANY AREAS THAT WERE DISTURBED SHALL BE STABILIZED AND REVEGETATED IMMEDIATELY. SEDIMENTS EXCAVATED FROM STORMWATER PONDS THAT DO NOT RECEIVE RUNOFF FROM DESIGNATED HOTSPOTS ARE NOT CONSIDERED TOXIC OR HAZARDOUS MATERIAL AND CAN BE SAFELY DISPOSED BY EITHER LAND APPLICATION OR LAND FILLING. CELL 2 SHALL BE PROPERLY DRAINED VIA SLIDE GATE PRIOR TO SEDIMENT REMOVAL. SEDIMENT FOREBAY SHALL BE PROPERLY DRAINED VIA PUMPED WATER FILTER BAG PRIOR TO SEDIMENT REMOVAL.
F. SEDIMENT FOREBAYS SHALL BE CLEANED WHEN ACCUMULATED SEDIMENT REACHES HALF THE TOTAL DEPTH OF THE FOREBAY.
G. CARE SHALL BE TAKEN TO PREVENT COMPACTION OF IN SITU SOILS IN THE BOTTOM OF THE LOW FLOW SWALE AND HIGH MARSH ZONE (ZONE 4) PLANTINGS TO PROMOTE HEALTHY VEGETATION GROWTH AND TO ENCOURAGE INFILTRATION.
H. INSPECT THE BASIN AFTER RUNOFF EVENTS AND MAKE SURE THE RUNOFF DRAINS WITHIN 72 HOURS. MOSQUITOES SHALL NOT BE A PROBLEM IF THE WATER DRAINS WITHIN 72 HOURS. MOSQUITOES REQUIRE A CONSIDERABLY LONG BREEDING PERIOD WITH RELATIVELY STATIC WATER LEVELS.
I. ALSO INSPECT FOR DAMAGE TO OUTLET CONTROL STRUCTURES, EROSION CONTROL MEASURES, SIGNS OF WATER CONTAMINATION/SPILLS, AND SLOPE STABILITY IN THE BERMS.
J. UPKEEP OF VEGETATION INCLUDING MOWING AND/OR TRIMMING SHALL BE PERFORMED AS NECESSARY TO SUSTAIN THE SYSTEM. ALL DETRITUS SHALL BE REMOVED FROM THE BASIN.
1) FERTILIZERS AND PESTICIDES SHALL NOT BE USED IN MAINTAINING THE VEGETATION.
2) ALL VEGETATED AREAS SHALL BE INSPECTED EVERY YEAR FOR ANY EROSION.
3) ALL VEGETATED AREAS SHALL BE INSPECTED EVERY YEAR FOR UNWANTED GROWTH OF EXOTIC AND/OR INVASIVE SPECIES.
4) VEGETATIVE COVER SHALL BE MAINTAINED AT A MINIMUM OF NINETY-FIVE (95) PERCENT. VEGETATION SHALL BE REESTABLISHED IF VEGETATIVE COVER HAS BEEN REDUCED BY TEN (10) PERCENT.
K. A DAM INSPECTION CHECKLIST SHALL BE INCLUDED IN THE MAINTENANCE AND SHALL BE COMPLETED AT A MINIMUM OF ONCE EVERY YEAR.
2. ADDITIONAL NOTES
A. REGULAR INSPECTION OF THE MULTIPLE POND SYSTEM SHALL OCCUR TO ASSURE PROPER IMPLEMENTATION OF THE OPERATION AND MAINTENANCE PLANS SHALL BE INSPECTED BY A QUALIFIED PERSON, WHICH MAY INCLUDE THE LANDOWNER OR THE OWNER'S DESIGNEE (INCLUDING THE MUNICIPALITY FOR DEDICATED AND OWNED FACILITIES).

PERMANENT SEEDING & SODDING

GENERAL

- 1. SCOPE: PLANTING PERMANENT, LONG-LIVED VEGETATIVE COVER ON GRADED OR CLEARED AREAS.
2. STANDARDS: PERMANENT SEEDING SHALL CONFORM TO ALL REQUIREMENTS OF "2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL" PUBLISHED JOINTLY BY WATER RESOURCES ADMINISTRATION, SOIL CONSERVATION SERVICE, AND STATE SOIL CONSERVATION COMMITTEE.

SPECIFICATIONS

- 1. SITE PREPARATION
A) PRIOR TO SEEDING INSTALL ALL REQUIRED SEDIMENT AND EROSION CONTROL MEASURES.
B) FINE GRADING REQUIRED FOR PERMANENT SEEDING.
2. SOIL AMENDMENTS
A) FERTILIZER SHALL BE APPLIED AT THE RATE OF 1000 LBS/ACRE USING 10-10-10 OR EQUIVALENT.
3. SEEDBED PREPARATION
A) SOIL SHALL BE LOOSENEED TO A DEPTH OF 3" BY RAKING, DICING, OR OTHER ACCEPTABLE MEANS PRIOR TO SEEDING.
B) APPLY SEED UNIFORMLY WITH A CYCLONE SEEDER, DRILL, CULTIPACKER SEEDER OR HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER ON A FIRM, MOIST SEEDBED). MAXIMUM SEEDING DEPTH SHOULD BE 1/4" ON CLAYEY SOILS AND 1/2 INCH ON SANDY SOILS, WHEN USING OTHER THAN HYDROSEEDER METHOD OF APPLICATION. NOTE: IF HYDROSEEDING IS USED AND THE SEED FERTILIZER IS MIXED, THEY WILL BE MIXED ON SITE AND THE SEEDING SHALL BE IMMEDIATE WITHOUT INTERRUPTION.

PERMANENT STABILIZATION WITH SOD

- 1. ALL SPECIFICATIONS, SITE PREPARATION, INSTALLATION AND MAINTENANCE OF SOD FOR PERMANENT, LONG-LIVED VEGETATIVE COVER SHALL CONFORM TO SECTION G-20 OF "1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL", PUBLISHED JOINTLY BY WATER RESOURCES ADMINISTRATION, SOIL CONSERVATION SERVICE, AND THE STATE SOIL CONSERVATION COMMITTEE.

PERMANENT SEEDING SUMMARY

Table with columns: SEED MIXTURE (FOR HARDINESS ZONE 6B), FERTILIZER RATE (10-20-20), LIME RATE, UREA-FORM (46-0-0). Rows include TALL FESCUE, PERENNIAL RYEGRASS, KENTUCKY BLUEGRASS.

TEMPORARY SEEDING WITH ANNUAL RYEGRASS, MILLET, OATS, AND/OR RYE CONFORMING TO SCS, 1994 MANUAL.

NATIVE DETENTION AREA MIX SEEDING SUMMARY

Table with columns: SEED MIXTURE (FOR HARDINESS ZONE 6B), FERTILIZER RATE (10-20-20), LIME RATE, UREA-FORM (46-0-0). Rows include ERNMX-183, WIRMA WILDFE 20%, FOX SEED 20%, AUTUMN BENTGRASS 5%, TOLDOGRASS 2%, PATH RUSH 1%.

Table with columns: STRUCTURE NAME, APRON LENGTH L (FT), APRON WIDTH W (FT), RIP-RAP TYPE R, APRON DEPTH D (IN), PIPE DIAMETER (IN). Row: (2) 53"x34" HERCP AS SHOWN, 33, CLASS 1 (d50=0.9'), 19, 53"x34"

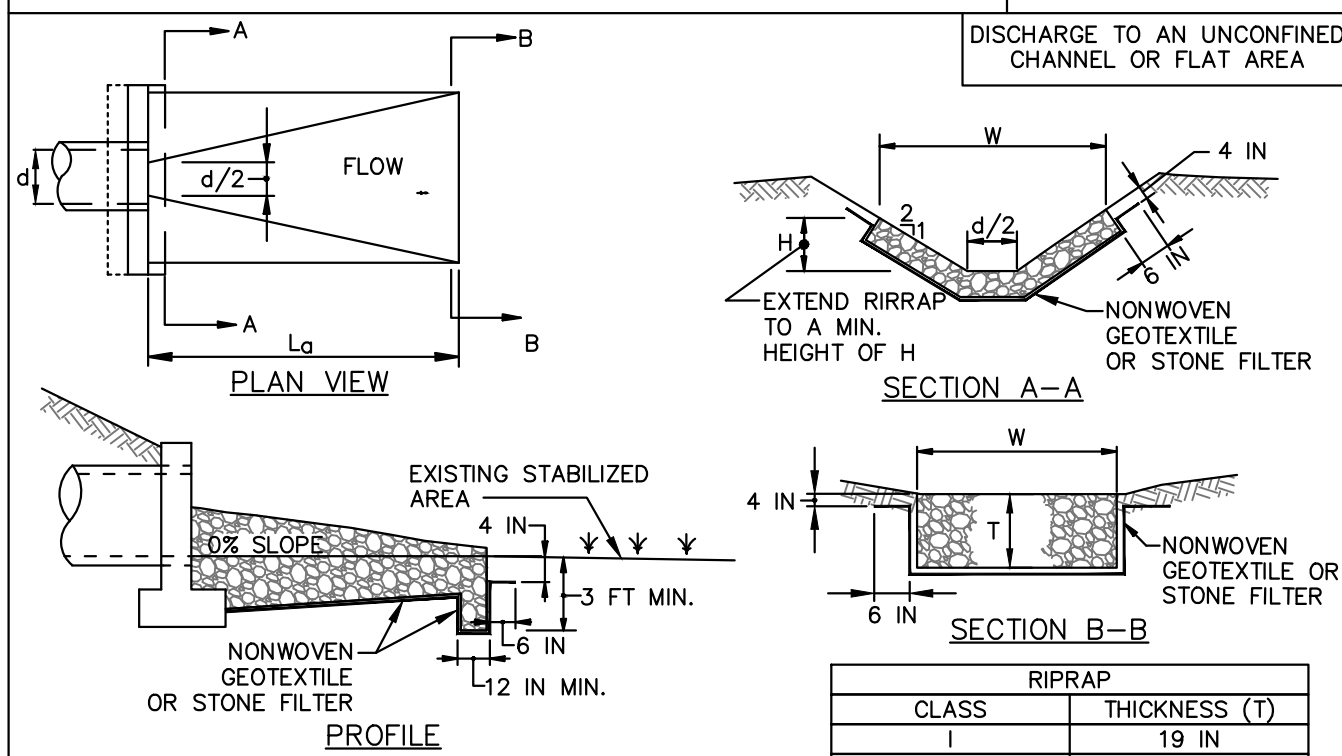
FREDERICK SOIL CONSERVATION DISTRICT
Approved by \_\_\_\_\_ District Manager
Date \_\_\_\_\_

SCD AND NRCS APPROVAL FOR SEDIMENT AND EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS

Professional Engineer Seal for Michael J. Bingham, PE. Client & Project: TOWN OF WALKERSVILLE, 21 WEST FREDERICK STREET, WALKERSVILLE, MARYLAND 21793. BMP DESIGNS, WALKERSVILLE, FREDERICK COUNTY, MARYLAND. Title: GLADE TOWNE BMP FACILITY EROSION AND SEDIMENT CONTROL NOTES. Scale: AS SHOWN. Project No: 10827.37. Sheet No: 9 OF 10. Rev: DWG. NO.

DETAIL D-4-1-C ROCK OUTLET PROTECTION III

STANDARD SYMBOL  
ROPIII



CONSTRUCTION SPECIFICATIONS

- RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
- USE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
- PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (¾ TO 1½ INCH MINIMUM STONE FOR 6 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
- EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPRAP.
- CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENEOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
- WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.
- CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
- MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND RIPRAP DISLOGGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL  
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

SEDIMENT CONTROL/ STORM WATER MANAGEMENT REQUIRED INSPECTIONS

YOU MUST NOTIFY THE SEDIMENT CONTROL AND STORMWATER MANAGEMENT OFFICE AT 301-694-1679 BEFORE 9:00 A.M. 24 HOURS PRIOR TO THE REQUIRED INSPECTION. FAILURE TO NOTIFY THIS OFFICE WILL RESULT IN A STOP WORK ORDER OR OTHER PENALTIES AS OUTLINED IN FREDERICK COUNTY CODES.

\*\*\*\*\*NOTICE\*\*\*\*\*

THIS LIST IS FOR SEQUENCE OF CONSTRUCTION ONLY. THIS OFFICE ASSUMES NO RESPONSIBILITY OR LIABILITY FOR IMPROPER INSTALLATION OF ANY ITEM ON THIS CHECKLIST. THIS OFFICE RECOMMENDS THAT A PROFESSIONAL ENGINEER BE PRESENT FOR EACH OF THE REQUIRED INSPECTIONS.

TYPE OF INSPECTION	MISC. COMMENTS /INITIALS
1. PRECONSTRUCTION MEETING	
2. COMPLETION OF SEDIMENT CONTROL MEASURE (IF USING BASIN SEE #6 BELOW)	
3. PRIOR TO MODIFICATION OR REMOVAL OF SED. CONTRL.	
4. INFILTRATION SYSTEMS A. SITE READINESS PER SEQUENCE OF CONSTRUCTION B. INFILTRATION AREA, PROTECTED FROM SESIMENTATION C. DIMENSIONS D. FILTERING MATERIAL E. FILL MATERIAL F. SIZE, PLACEMENT, TYPE OF PIPING G. OBSERVATION WELL H. COVER/STABILIZATION	
5. OPEN CHANNEL FLOW ATTENUATION A. SITE READINESS PER SEQUENCE OF CONSTRUCTION B. CROSS SECTION CONFORMANCE C. MATERIAL (TYPE/SIZE) D. STABILIZATION	
6. RETENTION/DETENTION STRUCTURES (BASIN/PONDS) A. SUBGRADE PREPARATION 1. CORE TRENCH 2. SUITABLE MATERIAL/ COMPACTION B. EMBANKMENT CONSTRUCTION 1. SUITABLE MATERIAL/COMPACTION 2. SLOPE GRADE 3. DIMENSIONS C. BARREL AND RISER ASSEMBLY 1. CORRECT MATERIAL ONSITE 2. SIZING 3. ANTI-SEEP COLLARS 4. ANTI-FLOTATION DEVICE 5. CONCRETE CRADLE (RCP ONLY) 6. INSTALLATION /BANKFILL/COMPACTION D. CONCRETE STRUCTURES 1. FORMER DIMENSIONS 2. REINFORCING MATERIAL (TYPE, SIZE, PLACEMENT) 3. WEIR POUR/MATERIAL/SUMP TEST 4. FORM STRIP AND FINISHING E. IMPOUNDING AREA 1. LOW FLOW CHANNELS/STABILIZATION 2. DEWATERING DEVICE 3. EMERGENCY SPILLWAY 4. EXTENDED DETENTION DEVICE F. OUTFALL AREA (LEVEL SPREADER, RIPRAP CHANNEL, ECT.) G. VEGETATIVE STABILIZATION H. MISCELLANEOUS	

CHECKLIST FOR REQUIRED INSPECTIONS

YOU MUST NOTIFY THE ENVIRONMENTAL PRESERVATION BRANCH AT 301-694-1132 BEFORE 9 A.M. TWENTY-FOUR HOURS BEFORE THE REQUIRED INSPECTION. FAILURE TO NOTIFY THIS OFFICE WILL RESULT IN A STOP WORK ORDER OR OTHER PENALTIES AS OUTLINED IN THE FREDERICK COUNTY CODES.

\*\*\*NOTICE\*\*\*  
THIS LIST IS FOR SEQUENCE OF CONSTRUCTION ONLY. THIS OFFICE ASSUMES NO RESPONSIBILITY OR LIABILITY FOR IMPROPER INSTALLATION OF ANY ITEM ON THIS CHECKLIST. THIS OFFICE RECOMMENDS THAT A PROFESSIONAL ENGINEER BE PRESENT FOR EACH OF THE REQUIRED INSPECTIONS.

TYPE OF INSPECTION	INITIALS
1) PRECONSTRUCTION MEETING	
2) COMPLETION OF SEDIMENT CONTROL MEASURES	
3) PRIOR TO MODIFICATION OR REMOVAL OF SEDIMENT CONTROL	

FREDERICK SOIL CONSERVATION DISTRICT

Approved by \_\_\_\_\_  
District Manager

Date \_\_\_\_\_

SCD AND NRCS APPROVAL FOR SEDIMENT AND EROSION CONTROL IS CONTINGENT UPON ISSUANCE OF ALL APPLICABLE REGULATORY PERMITS

NO	REVISION	DATE	BY	APP.	NO	REVISION	DATE	BY	APP.	MICHAEL J. BINGHAM, PE RELEASED BY DESIGN BCU CHECKED DRAWN CADD CHECKED DATE OCTOBER 2022 SURVEY DATE SEPT 2022 FIELD BOOK WEBER SURVEYORS	SEAL SEAL PROFESSIONAL CERTIFICATION I, MICHAEL J. BINGHAM, P.E. 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. 49804 Expiration Date: 2024-08-23	CLIENT & PROJECT TOWN OF WALKERSVILLE 21 WEST FREDERICK STREET WALKERSVILLE, MARYLAND 21793  BMP DESIGNS WALKERSVILLE, FREDERICK COUNTY, MARYLAND	201 Thomas Johnson Drive Suite 207 Frederick, MD 21702 Tel 301.791.1100	TITLE GLAD TOWNE BMP FACILITY EROSION AND SEDIMENT CONTROL NOTES  SCALE AS SHOWN PROJECT NO. 10827.37 SHEET NO. 10 OF 10 REV.	DWG. NO.
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