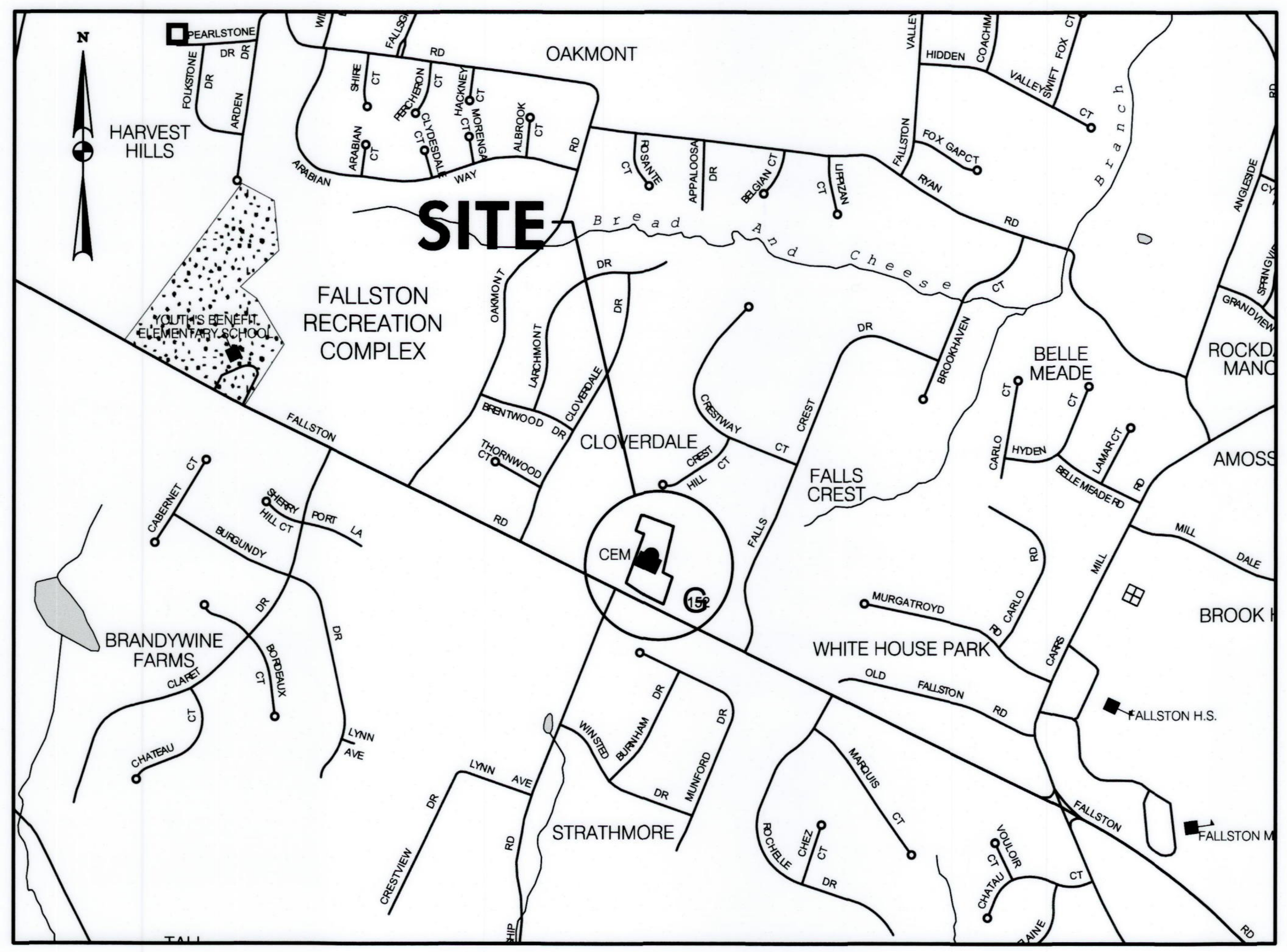
INDEX OF SHEETS

HARFORD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS

BID NO. 21–104

FALLSTON LIBRARY STORMWATER MANAGEMENT RETROFIT FINAL DESIGN



LOCATION MAP

SCALE 1" = 1000'

1000' 0 1000' 2000'

SCALE: 1" = 1000'

OWNER'S CERTIFICATION

I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT AND PLAN FOR EROSION AND SEDIMENT CONTROL AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATION OF ATTENDANCE AT A DEPARTMENT OF NATURAL RESOURCES APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ONSITE INSPECTION BY THE HARFORD SOIL CONSERVATION DISTRICT OR THIER AUTHORIZED AGENTS, OR AS DEEMED NECESSARY.

[signature] OWNER — 10.13.2020 DATE

DEVELOPER'S /LANDOWNERS'S CERTIFICATION

I/WE HEREBY CERTIFY THAT ALL PROPOSED WORK SHOWN ON THESE CONSTRUCTION DRAWING(S) WILL BE CCOMPLISHED PURSUANT TO THESE PLANS. I/WE ALSO UNDERSTAND THAT IT IS MY/OUR RESPONSIBILITY TO AVE THE ONSTRUCTION SUPERVISED AND CERTIFIED, INCLUDING THE SUBMITTAL OF *AS-BUILT* PLANS WITHIN 30 DAYS OF COMPLETION, BY A REGISTERED PROFESSIONAL ENGINEER.

JOSEPH J. SIEMEK, P.E. — PRINTED NAME; [signature] — SIGNATURE

DIRECTOR OF PUBLIC WORKS — TITLE; 10.13.2020 — DATE

AS–BUILT CERTIFICATION

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

NAME ______ SIGNATURE ______

MARYLAND. REGISTRATION NUMBER. P.E., R.L.S. OR R.L.A. (circle) ______ DATE ______

CERTIFY MEANS TO STATE OR DECLAIM A PROFESSIONAL OPINION BASED UPON ONSITE INSPECTIONS AND MATERIAL TESTS WHICH ARE CONDUCTED DURING CONSTRUCTION . THE ONSITE INSPECTION AND MATERIAL TESTS ARE THOSE INSPECTIONS AND TESTS DEEMED SUFFICIENT AND APPROPRIATE BY COMMONLY ACCEPTED ENGINEERED STANDARDS. CERTIFY DOES NOT MEAN IMPLY A GUARANTEE BY THE ENGINEER NOR DOES AN ENGINEER'S CERTIFICATION RELIEVE ANY OTHER PARTY FROM MEETING REQUIREMENTS IMPOSED BY CONTRACT, EMPLOYMENT, OR OTHER MEANS INCLUDING MEETING COMMONLY ACCEPTED INDUSTRY PRACTICES.

FIELD VERIFICATION CERTIFICATION

I HEREBY CERTIFY THAT I COMPLETED A FIELD VERIFICATION TO THE INFORMATION SHOWN ON THE PLANS ON 7 /3 /2019 AND THAT THE INFORMATION SHOWN ON THE PLANS IS IN AGREEMENT WITH THE ACTUAL FIELD CONDITIONS.

DAVID J. BRIGLIO — NAME

[signature] — SIGNATURE; 3 /18 /2021 — DATE

ENGINEER'S CERTIFICATION

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED BY ME, OR UNDER MY SUPERVISION, AND MEETS THE MINIMUM STANDARDS OF THE HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS AND/OR THE UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, ND/OR THE MARYLAND DEPARTMENT OF THE ENVIRONMENT, WATER MANAGEMENT ADMINISTRATION.

BRIAN S NOLL — NAME; [signature] — SIGNATURE

25402 — MARYLAND. REGISTRATION NUMBER. (P.E.) R.L.S. OR R.L.A. (circle); 7 /17 /2022 — DATE

WHITNEY BAILEY COX & MAGNANI, LLC
300 East Joppa Road Suite 200
Baltimore, MD 21286
410.512.4500 www.wbcm.com

WBCM
Designing Infrastructure for Tomorrow®

Owner: HARFORD COUNTY, MARYLAND
220 SOUTH MAIN STREET
BEL AIR, MD 21014
PH: 1–410–638–3210

Developer: HARFORD COUNTY D.P.W. WATERSHED PROTECTION & RESTORATION OFFICE
212 SOUTH BOND ST. 1ST FLOOR
BEL AIR, MD 21014
CONTACT PERSON: NICK JENKINS
PH: 410–638–3217, EXT. 1394

STATE OF MARYLAND BRIAN SCOTT NOLL NO. 25402 REGISTERED PROFESSIONAL ENGINEER

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

LICENSE NO. 25402

EXPIRATION DATE: 7 /17 /2022

GENERAL NOTES

1. SPECIFICATIONS: ALL WORK IS TO BE PERFORMED IN ACCORDANCE WITH THE MARYLAND STATE HIGHWAY ADMINISTRATIONS STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS DATED JULY 2019 AND WITH THE HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS ROADWAY AND STORMDRAIN DESIGN STANDARDS, DATED DECEMBER 2, 2008 AND THE MOST RECENT REVISIONS THEREOF AND ADDITIONS THERETO.
2. UTILITIES: UTILITY LOCATIONS SHOWN ON THE PLANS ARE BASED ON LIMITED INFORMATION AVAILABLE. HOWEVER, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE ACCURACY OF THIS INFORMATION. THE COST OF REPAIR OR REPLACEMENT OF ANY SUCH FACILITIES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE BORNE BY HIM.

   CONTACT "MISS UTILITY" PHONE 1–800–257–7777, 48 HOURS PRIOR TO THE START OF WORK. THERE SHOULD BE NO EXCAVATION UNTIL THE LOCATIONS OF UNDERGROUND UTILITIES HAVE BEEN DETERMINED.
3. STANDARD DETAILS: REFERENCE MADE TO STANDARDS ARE TAKEN FROM THE HARFORD COUNTY ROAD CODE "BOOK OF STANDARD DETAILS" AND FROM "THE MARYLAND STATE HIGHWAY ADMINISTRATION'S BOOK OF STANDARDS–HIGHWAY AND INCIDENTAL STRUCTURES", IT WILL BE THE CONTRACTOR'S RESPONSIBILITY THAT THE STANDARD DRAWINGS IN HIS POSSESSION ARE THE LATEST REVISED STANDARDS UP TO AND INCLUDING THE DATE OF THE ADVERTISEMENT OF THIS CONTRACT.
4. RIGHT–OF–WAY LINES: RIGHT–OF–WAY LINES SHOWN ON THESE PLANS DO NOT INCLUDE EASEMENTS. THEY ARE FOR ASSISTANCE IN INTERPRETING THE PLANS ONLY. THESE LINES DO NOT REPRESENT THE OFFICIAL PROPERTY ACQUISITION LINES. FOR OFFICIAL FEE RIGHT–OF–WAY AND EASEMENT INFORMATION, SEE THE APPROPRIATE RIGHT–OF–WAY PLATS.
5. NO STOCKPILING EQUIPMENT OR ERODIBLE MATERIAL IN THE 100–YEAR FLOODPLAIN.
6. EXISTING MAILBOXES AND EXISTING SIGNS: ALL EXISTING MAILBOXES, SIGNS AND PAPER BOXES DISTURBED DURING CONSTRUCTION SHALL BE TEMPORARILY RESET IMMEDIATELY AND PERMANENTLY RESET AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE INCIDENTAL TO ALL OTHER ITEMS IN THE CONTRACT.
7. SURVEYS:

   THIS PLAN IS BASED UPON A FIELD–RUN TOPOGRAPHIC SURVEY PERFORMED BY WBCM IN MAY, 2019 AND REFLECTS SITE CONDITIONS AS OF THAT DATE.

   COORDINATES AND DIRECTIONS SHOWN HEREON ARE REFERRED TO THE MARYLAND STATE PLANE COORDINATE SYSTEM, NAD 83/2011 AS DETERMINED FROM REAL TIME KINEMATIC SURVEYING AS BROADCAST BY THE LEICA SMARTNET NETWORK.

   BASE STATION
   LATITUDE 39° 31' 32.31143" N
   LONGITUDE 76° 39' 06.12216" W

   ELEVATIONS SHOWN HEREON ARE REFERRED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88), AS DETERMINED BY R.T.K. G.P.S. OBSERVATONS AS BROADCASTED BY THE LEICA SMARTNET NETWORK(GEOID12A).

   BASE STATION
   ELEVATION = 519.06'

   ADDITIONAL SPOT ELEVATIONS RESIDE IN THE ELECTRONIC VERSION OF THIS DRAWING BUT ARE NOT PLOTTED HEREON.

   THE LOCATION OF EXISTING UNDERGROUND UTILITIES IS SHOWN IN AN APPROXIMATE WAY ONLY. THE DESCRIPTION OF THE UNDERGROUND UTILITIES AS SHOWN HEREON WERE BASED SOLEY UPON FIELD OBSERVATIONS AND HAVE NOT BEEN COMPARED TO OR VERIFIED WITH RECORD UTILITY DRAWINGS OR FIELD TEST PITS. THE SIZE, TYPE AND LOCATION OF THE UTILITY LINES SHOULD BE VERIFIED BY THE USER OF THIS DRAWING.

   IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY ACTUAL SITE CONDITIONS PRIOR TO THE START OF ANY WORK. THERE IS NO WARRANTY OR GUARANTEE ON THE COMPLETENESS OR CORRECTNESS OF THE EXISTING CONDITION INFORMATION. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ARCHITECT/ENGINEER PRIOR TO THE START OF ANY WORK.

   THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING "MISS UTILITY" AT 1–800–257–7777 THREE DAYS PRIOR TO THE START OF ANY EXCAVATION WORK.

   THE WORDS "CERTIFY" OR "CERTIFICATION" AS USED HEREON ARE UNDERSTOOD TO BE AN EXPRESSION OF PROFESSIONAL OPINION BY THE UNDERSIGNED SURVEYOR, BASED UPON HIS BEST KNOWLEDGE, INFORMATION, AND BELIEF. AS SUCH, IT DOES NOT CONSTITUTE A GUARANTEE NOR A WARRANTY, EXPRESSED OR IMPLIED.
8. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE EXISTENCE OF PROPERTY MARKERS, PIPES, MONUMENTS. STAKES, ETC. THAT SHALL NOT BE DISTURBED. IN THE EVENT THESE MARKERS ARE REMOVED, DAMAGED, OR DESTROYED BY THE CONTRACTOR, THEY SHALL BE REPLACED IN KIND BY A LICENSED SURVEYOR AT THE CONTRACTOR'S EXPENSE.

SITE DATA:

1.) ADDRESS:	1461 FALLSTON RD FALLSTON, MD 21047
2.) TAX ID:	03–043436
3.) MAP PARCEL:	1303043436
4.) ZONING:	AG–AGRICULTURE
5.) SETBACKS:	FRONT 15' REAR 0' SIDE 0'
6.) FLOOD PLAIN INFO:	THE SITE LIES WITHIN ZONE X OF THE 100–YR FLOODPLAIN AS SHOWN ON F.I.R.M MAP 24025C0143E DATED APRIL 19, 2016, ZONE X IS DEFINED AS AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN
7.) SOILS:	THE ENTIRE SITE LIES WITHIN 'MANOR LOAM' (MbB2) WITH 3–8% MODERATELY ERODED SLOPES IN HYDROLOGICAL SOIL GROUP B AND A K–FACTOR RATING OF 0.28
8.) WATERSHED:	ATKISSON RESERVOIR (#02130703)
9.) WELL /SEPTIC INFO:	THERE ARE NO WELLS OR SEPTIC SYSTEMS LOCATED WITHIN 200' RADIUS OF THE SITE

SWM SITE ANALYSIS:

TOTAL SITE AREA: 3.97 AC. ±
TOTAL SITE IMPERVIOUS AREA (EXISTING): 1.47 AC. ±
TOTAL LIMIT OF DISTURBANCE: 0.63 AC. ±
EXISTING IMPERVIOUS WITHIN LOD: 0.00 AC. ±
PROPOSED IMPERVIOUS WITHIN LOD: 0.00 AC. ±
TOTAL SITE IMPERVIOUS AREA REDUCTION: 0.00 AC. ±
TOTAL SITE IMPERVIOUS AREA (PROPOSED): 1.47 AC. ±
SWM WATERSHED: 3.40 AC ±

ESD AND UNIFIED SIZING CRITERIA

PROVIDED VOLUME (WQv): 7,607 CF (Pe=1.40")
PROVIDED RECHARGE (REv): 1,978 CF
CHANNEL PROTECTION (CPv): N /A (1–YR STORM REDUCED)
OVERBANK PROTECTION VOL: N /A (10–YR STORM REDUCED)
FREEBOARD PROVIDED: 487.00'–485.75' = 1.25'

S /C PLANS #59859
GRADING PERMIT #2818–2020

EROSION AND SEDIMENT CONTROL PLAN #: 59859

RECOMMENDED FOR APPROVAL:

[signature] 10.13.20 — HARFORD COUNTY, DPW

TECHINCAL CONCURRANCE

[signature] 10-15-20 — HARFORD SOIL CONSERVATION DISTRICT

APPROVED:

[signature] 10.16.2020 — HARFORD SOIL CONSERVATION DISTRICT

SWM #EG–SWMENG–000442–2019
SWM BILLING #97057

STORMWATER MANAGEMENT APPROVAL

REVIEWED FOR TECHNICAL SUFFICIENCY ______
STORMWATER MANAGEMENT

REVIEWED AND APPROVAL RECOMMENDED: ______
CHIEF ENGINEER

APPROVAL RECOMMENDED: ______
DEPUTY DIRECTOR OF PUBLIC WORKS

APPROVED: ______
DIRECTOR OF PUBLIC WORKS

S/C# 201494

ADC MAP : XXXX GRID: XX
TAX MAP : XXXX/XXX
HCG BILLING ID No.:
HCG DWG ID No.:
SCALE : 1 inch

HARFORD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS

BID NO. 21–104

FALLSTON LIBRARY STORMWATER MANAGEMENT RETROFIT FINAL DESIGN

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OWNER — DATE: 11-30-2020

DEVELOPER'S /LANDOWNERS'S CERTIFICATION

I/WE HEREBY CERTIFY THAT ALL PROPOSED WORK SHOWN ON THESE CONSTRUCTION DRAWING(S) WILL BE CCOMPLISHED PURSUANT TO THESE PLANS. I/WE ALSO UNDERSTAND THAT IT IS MY/OUR RESPONSIBILITY TO AVE THE ONSTRUCTION SUPERVISED AND CERTIFIED, INCLUDING THE SUBMITTAL OF *AS–BUILT* PLANS WITHIN 30 DAYS OF COMPLETION, BY A REGISTERED PROFESSIONAL ENGINEER.

JOSEPH J. SIEMEK, P.E. — PRINTED NAME — SIGNATURE

DIRECTOR OF PUBLIC WORKS — TITLE — DATE: 11.30.2020

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NAME — SIGNATURE

MARYLAND REGISTRATION NUMBER. — DATE

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DAVID J. BRIGLIO

NAME

SIGNATURE — DATE: 3 /18 /2021

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BRIAN S NOLL — NAME — SIGNATURE

25402 — MARYLAND REGISTRATION NUMBER. — DATE: 7 /17 /2022

(P.E.) R.L.S. OR R.L.A. (circle)

WHITNEY BAILEY COX & MAGNANI, LLC
300 East Joppa Road Suite 200
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WBCM

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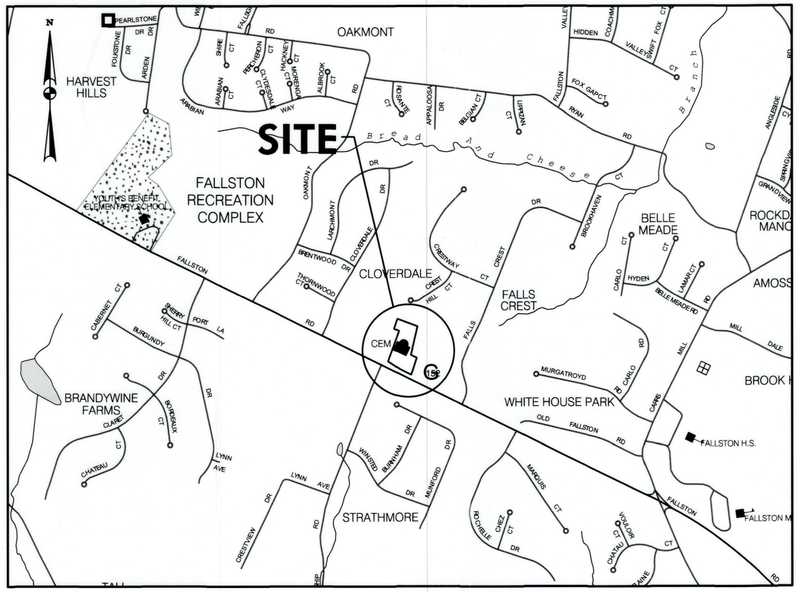

LOCATION MAP

SCALE 1" =1000'

1000' 0 1000' 2000'

SCALE: 1"=1000'

GENERAL NOTES

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7. SURVEYS:

   THIS PLAN IS BASED UPON A FIELD–RUN TOPOGRAPHIC SURVEY PERFORMED BY WBCM IN MAY, 2019 AND REFLECTS SITE CONDITIONS AS OF THAT DATE.

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   LONGITUDE 76° 39' 06.12216" W

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SITE DATA:

1.) ADDRESS:	1461 FALLSTON RD FALLSTON, MD 21047	
2.) TAX ID:	03–043436	
3.) MAP PARCEL:	47 /16	
4.) ZONING:	AG–AGRICULTURE	
5.) SETBACKS:	FRONT	REAR / SIDE
	15'	0' / 0'
6.) FLOOD PLAIN INFO:	THE SITE LIES WITHIN ZONE X OF THE 100–YR FLOODPLAIN AS SHOWN ON F.I.R.M MAP 24025C0143E DATED APRIL 19, 2016, ZONE X IS DEFINED AS AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN	
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8.) WATERSHED:	ATKISSON RESERVOIR (#02130703)	
9.) WELL /SEPTIC INFO:	THERE ARE NO WELLS OR SEPTIC SYSTEMS LOCATED WITHIN 200' RADIUS OF THE SITE	

S /C PLANS #59859
GRADING PERMIT #2818–2020

EROSION AND SEDIMENT CONTROL
PLAN #: 59859

RECOMMENDED FOR APPROVAL:

HARFORD COUNTY, DPW
TECHINCAL CONCURRANCE

HARFORD SOIL CONSERVATION DISTRICT
APPROVED:

HARFORD SOIL CONSERVATION DISTRICT

SWM #EG–SWMENG–000442–2019
SWM BILLING #97057

STORMWATER MANAGEMENT APPROVAL
REVIEWED FOR TECHNICAL SUFFICIENCY
R. Bruce Appell 12/10/2020
STORMWATER MANAGEMENT

REVIEWED AND APPROVAL RECOMMENDED:
Robert S. Ambrose 12-11-20
CHIEF ENGINEER

APPROVAL RECOMMENDED:
12/11/2020
DEPUTY DIRECTOR OF PUBLIC WORKS

APPROVED:
12-15-2020
DIRECTOR OF PUBLIC WORKS

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

LICENSE NO. 25402

EXPIRATION DATE: 7 /17 /2022

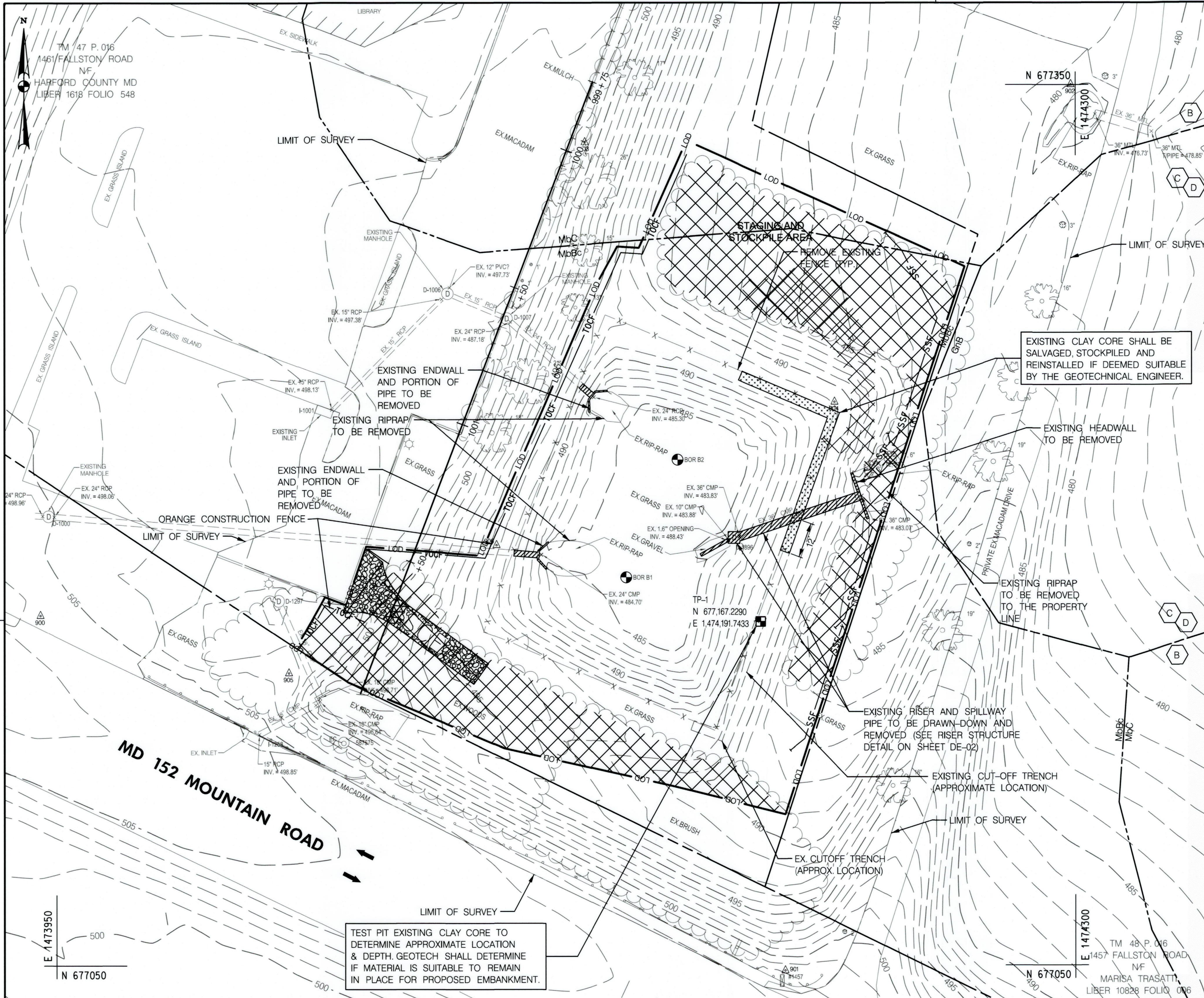
SWM SITE ANALYSIS:

TOTAL SITE AREA: 3.97 AC. ±
TOTAL SITE IMPERVIOUS AREA (EXISTING): 1.47 AC. ±
TOTAL LIMIT OF DISTURBANCE: 0.63 AC. ±
EXISTING IMPERVIOUS WITHIN LOD: 0.00 AC. ±
PROPOSED IMPERVIOUS WITHIN LOD: 0.00 AC. ±
TOTAL SITE IMPERVIOUS AREA REDUCTION: 0.00 AC. ±
TOTAL SITE IMPERVIOUS AREA (PROPOSED): 1.47 AC. ±
SWM WATERSHED: 3.40 AC ±

ESD AND UNIFIED SIZING CRITERIA

PROVIDED VOLUME (WQv): 5,923 CF (Pe=1.09")
PROVIDED RECHARGE (REv): 1,540 CF
CHANNEL PROTECTION (CPv): N /A (1–YR STORM REDUCED)
OVERBANK PROTECTION VOL: N /A (10–YR STORM REDUCED)
FREEBOARD PROVIDED: 487.21 –485.74 =1.47'

ADC MAP : XXXX GRID: XX
TAX MAP : XXXX/XXXX
HCG BILLING ID No.: 97057
HCG DWG ID No.: 201807
SCALE: 1" = 1000'



EXISTING CONDITIONS AND DEMOLITION PLAN SHEET

SCALE: 1" = 20'

20' 0 20' 40'
SCALE: 1" = 20'

DATUM: NAD 83/91 Horizontal
NAVD 88 Vertical

LEGEND

- EXISTING CONTOUR
- EXISTING STORM DRAIN
- EXISTING FENCE
- EXISTING DRAINAGE STRUCTURES
- VEGETATION TO BE REMOVED
- SOIL BOUNDARY
- EXISTING GUARDRAIL
- PROPERTY LINE
- LIMIT OF DISTURBANCE
- EXISTING TREE
- EXISTING TREE TO BE REMOVED
- SUBSOIL BOUNDARY (HSG TYPE / HSG TYPE)
- DRAINAGE STRUCTURE / PIPE TO BE REMOVED
- TEMPORARY ORANGE CONSTRUCTION FENCE
- TEST PIT

NOTE:
NO WELL /SEPTIC SYSTEMS WITH-IN 200' OF SITE

WHITNEY BAILEY COX & MAGNANI, LLC
300 East Joppa Road Suite 200
Baltimore, MD 21286
410.512.4500 www.wbcm.com
WBCM
Designing Infrastructure for Tomorrow®

Schnabel ENGINEERING — HAND AUGER LOG

Project: Fallston Library
Hand Auger Number: B-1
Contract Number: 19C14020.00
Sheet: 1 of 1

Contractor: Connelly and Associates, Inc. Frederick, Maryland
Contractor Foreman: S. Lind
Schnabel Representative: S. Bhattarai
Equipment: Hand Auger
Method: Hand Auger
Dates Started: 6/3/19 Finished: 6/3/19
Location: See Location Plan
Ground Surface Elevation: 484± (ft) Total Depth: 8.5 ft

Groundwater Observations	Date	Time	Depth	Casing	Caved
Encountered	6/3	1:10 PM	8.5'	—	—
Completion	6/3	1:11 PM	8.5'	—	—
24 Hour Reading	6/4	8:00 AM	7.0'	—	8.0'

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	Topsoil, grass=4-inches							
0.4	SILTY SAND; moist, dark brown, contains mica	SM	483.6	A		S-1, AUGER 8+12+14		
						S-2, AUGER 8+12+24	MC = 15.6% % Passing #200 = 21.6	
						S-3, AUGER 8+30		
						S-4, AUGER 9+15+23		
					5	S-5, AUGER 8+12+18		
						S-6, AUGER 7+23+30		
						AUGER 15+18+21		
8.5	Change: wet, contains gravel		475.5					Auger grinding at 8.5 feet
	Bottom of Hand Auger at 8.5 ft.							

TEST BORING LOG; P:19C14020.00 FALLSTON LIBRARY.GPJ; D: L:GINT LIBRARY_2018_06_01B(BALTIMORE).GLB; Print:6/11/19

Schnabel ENGINEERING — HAND AUGER LOG

Project: Fallston Library
Hand Auger Number: B-2
Contract Number: 19C14020.00
Sheet: 1 of 1

Contractor: Connelly and Associates, Inc. Frederick, Maryland
Contractor Foreman: S. Lind
Schnabel Representative: S. Bhattarai
Equipment: Hand Auger
Method: Hand Auger
Dates Started: 6/3/19 Finished: 6/3/19
Location: See Location Plan
Ground Surface Elevation: 484± (ft) Total Depth: 10.0 ft

Groundwater Observations	Date	Time	Depth	Casing	Caved
Encountered	6/3	1:40 PM	8.5'	—	—
Completion	6/3	1:41 PM	8.5'	—	—
24 Hour Reading	6/4	8:00 AM	6.5'	—	9.0'

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DEPTH	SAMPLING DATA	TESTS	REMARKS
	Topsoil, grass=4-inches							
0.4	SILTY SAND; moist, dark brown, contains mica	SM	483.6	A		S-1, AUGER 4+6+5		
						S-2, AUGER 7+9+10	MC = 22.2% % Passing #200 = 20.8	
					5	S-3, AUGER 7+18+24		
	Change: wet							
10.0			474.0		10			
	Bottom of Hand Auger at 10.0 ft.							

TEST BORING LOG; P:19C14020.00 FALLSTON LIBRARY.GPJ; D: L:GINT LIBRARY_2018_06_01B(BALTIMORE).GLB; Print:6/11/19

REMOVAL OF EXISTING PIPE

LOCATION	QTY (LF)	REMARKS
STA. 1001+32 TO STA. 1001+35, LT.	8	–
STA. 1000+73 TO STA. 1000+75, LT.	6	–
STA. 1001+04 TO STA. 1001+12, LT.	11	–
STA. 1000+73 TO STA. 1001+02, LT.	45	–

REMOVAL OF EXISTING MASONRY

LOCATION	QTY (CY)	REMARKS
STA. 1001+03, LT.	3	–

ADC MAP : XXXX GRID: XX
TAX MAP : XXXX/XXX
HCG BILLING ID No.: 97057
HCG DWG ID No.: 201808

S /C PLANS #59859
GRADING PERMIT #2818-2020
SWM PLAN #EG-SWMENG-000442-2019
SWM BILLING #97057

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND
LICENSE NO. 25402
EXPIRATION DATE: 7 /17 /2022

REVISIONS

HARFORD COUNTY, MARYLAND

FALLSTON LIBRARY STORMWATER MANAGEMENT RETROFIT
FINAL DESIGN
EXISTING CONDITIONS AND DEMOLITION PLAN SHEET (EX-01)

DRAWN BY :	RG	CONTRACT NO. :	
DESIGNED BY :	BA /CF	SCALE :	1" = 20'
REVIEWED BY :	BN	SHEET :	2 OF 14
		DATE :	3 /18 /2020

BY: arussell

PLOTTED: Tuesday, November 10, 2020 AT 09:12 AM
FILE: P:\2016\16095605\Drawings\20-EWR\pEX-P001_FallstonLibrary.dgn

BIORETENTION

Specifications for Bioretention

1. Material Specifications

The allowable materials to be used in bioretention area are detailed in Table B.3.2 below.

2. Planting Soil

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

The planting soil shall be tested and shall meet the following criteria:

pH range 5.2 – 7.0
organic matter 1.5 – 4% (by weight)
magnesium 35 lb/ac
phosphorus (phosphate – P2O5) 75 lb/ac
potassium (potash – K2O) 85 lb/ac
soluble salts not to exceed 500 ppm

All bioretention areas shall have a minimum of one test. Each test shall consist of both the standard soil test for pH, phosphorus, and potassium and additional tests of organic matter, and soluble salts. A textural analysis is required from the site stockpiled topsoil. If topsoil is imported, then a texture analysis shall be performed for each location where the top soil was excavated.

Since different labs calibrate their testing equipment differently, all testing results shall come from the same testing facility.

Should the pH fall out of the acceptable range, it may be modified (higher) with lime or (lower) with iron sulfate plus sulfur.

3. Compaction

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

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

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

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

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

4. Plant Material

See Landscape Plans Sheets 11 and 12 of 13.

5. Plant Installation

Mulch should be placed to a uniform thickness of 2" to 3". Shredded hardwood mulch is the only accepted mulch. Pine mulch and wood chips will float and move to the perimeter of the bioretention area during a storm event and are not acceptable. Shredded mulch must be well aged (6 to 12 months) for acceptance.

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

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

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

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

6. Underdrains

Underdrains are to be placed on a 3'-0" wide section of filter cloth. Pipe is placed next, followed by the gravel bedding. The ends of underdrain pipes not terminating in an observation well shall be capped.

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

7. Miscellaneous

The bioretention facility may not be constructed until all contributing drainage area has been stabilized.

Table B.3.2 Materials Specifications for Bioretention

Material	Specification	Size	Notes
Plantings	see plan sheet 12 of 13.	n/a	plantings are site-specific
planting soil [2.5' to 4' deep]	sand 35 - 60% silt 30 - 55% clay 10 - 25%	n/a	USDA soil types loamy sand, sandy loam or loam
mulch	shredded hardwood		aged 6 months, minimum
pea gravel diaphragm and curtain drain	pea gravel: ASTM-D-448 ornamental stone: washed cobbles	pea gravel: No. 6 stone: 2" to 5"	
geotextile	Class "C" - apparent opening size (ASTM-D-4751), grab tensile strength (ASTM-D-4632), puncture resistance (ASTM-D-4833)	n/a	for use as necessary beneath underdrains only
underdrain gravel	AASHTO M-43	0.375" to 0.75"	
underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes
poured in place concrete (if required)	MSHA Mix No. 3; f'_c = 3500 psi @ 28 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) *not using previously approved State or local standards* requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 350.R/89; vertical loading [H-10 or H-20]; allowable horizontal loading (based on soil pressures); and analysis of potential cracking
sand [1' deep]	AASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

COMMON BORROW*

A soil or soil aggregate mixture meeting the following:

Maximum dry density and optimum moisture content of the material per T 180, Method C unless the material has more than 35 percent retained on the No. 4 sieve, in which case Method D shall be used. Material with a maximum dry density of less than 100 lb/ft3 is unsatisfactory and shall not be used in embankments. Potentially expansive materials, such as steel slag, are prohibited.

Common Borrow Requirments					
Max Dry Density minimum P.C.F. T 180	LL Maximum T89	PI Maximum T90	Gradation Requirements T88	Refence MSMT soil Classification	Refence AASHTO Classification
105	34	7	30% Max paas No. 200 sieve	A-2, A-3, A-2-4	A-1-a, A-1-b A-3, A-2-4

*Comon Borrow to be used in embankment fill, must meet earth fill requirements seen this sheet.

EARTH FILL

Material
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.

Placement
Areas on which fill is to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in maxi–mum 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 down–stream portions of the embankment. The principal spillway must be installed concurrently with fill placement and not excavated into the embankment.

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 tired 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 ±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).

BIORETENTION INSPECTION SCHEDULE

IT IS THE OWNER'S /CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE ENGINEER / INSPECTOR OF AN APPROPRIATE TIME FOR INSPECTION OF THE FOLLOWING ITEMS:

1. CONSTRUCTION OF INFLOW RIPRAP CHANNELS AND OUTFALL PROTECTION.
2. EXCAVATION TO SUBGRADE AND ROTOTILLING PROCESURES.
3. INSTALLATION OF UNDERDRAIN NETWORK GRAVEL JACKET AND EXISTING |–| CONNECTION.
4. BACKFILL AND PLACMENT OF REMAINING FACILITY MATERIAL SECTIONS INCLUDING 'BSM' MIX.
5. UPON COMPLETION OF FINAL GRADING PLANTINGS AND STABILIZATION.

CONTACT INFO: HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS
ATTN: NICK JENKINS
PHONE: (410) 658–3217, EXT. 1394

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

HARFORD COUNTY STORMWATER MANAGEMENT FACILITY MAINTENANCE REQUIREMENTS

1. THE FACILITY SHALL BE INSPECTED EVERY THREE YEARS. VISUAL INSPECTION OF ALL COMPONENTS SHALL BE COMPLETED BY THE OWNER. THE OWNER SHALL KEEP NOTES OF EACH INSPECTION.
2. THE FACILITY SHALL BE KEPT FREE OF TRASH INCLUDING ALL AREAS DISCHARGING INTO THE FACILITY.
3. THE FACILITY EMBANKMENT SHALL BE MOWED A MINIMUM OF 3 TIMES PER GROWING SEASON TO MAINTAIN MAXIMUM GRASS HEIGHTS OF LEES THAN 12 INCHES.
4. VEGETATIVE COVER SHALL BE MAINTAINED BY MOWING, LIMING, AND FERTILIZING. AS A MINIMUM REQUIREMENT, THE LIME AND FERTILIZER SHALL BE APPLIED ONCE EVERY TWO YEARS.
5. IN THE EVENT THE FACILITY REQUIRES DEWATERING, THE SLUICE GATE SHALL BE OPENED TO FULLY DEWATER THE FACILITY WITHIN 48 HOURS.
5. ALL FENCES AND GATES SHALL BE KEPT IN GOOD REPAIR.
6. DETERIORATION OF THE PIPE, RISER, EMBANKMENT, ETC. AND MALFUNCTION OF THE FACILITY SHALL BE REPORTED TO HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS AT (410) 638–3545 AS SOON AS DISCOVERED AND PRIOR TO REPAIR.

RIP RAP

Stone for Riprap.

Ensure that stone for riprap is uniformly graded from the smallest to the largest pieces as specified in the Contract Documents. The stone will be accepted upon visual inspection at the point of usage, as follows:

CLASS OF RIPRAP	SIZE	PERCENT OF TOTAL by weight
I	Heavier than 150 LBs Heavier than 40 LBs Less than 2 LBs	0 50 10 Max

CONSTRUCTION CRITERIA FOR BIORETENTION FACILITY

EROSION AND SEDIMENT CONTROL:
BIORETENTION PRACTICES SHOULD NOT BE CONSTRUCTED UNTIL THE CONTRIBUTING DRAINAGE AREA IS STABILIZED.

SOIL COMPACTION:
EXCAVATION SHOULD BE CONDUCTED IN DRY CONDITIONS WITH EQUIPMENT LOCATED OUTSIDE OF THE PRACTICE TO MINIMIZE BOTTOM AND SIDEWALL COMPACTION. ONLY LIGHTWEIGHT, LOW GROUND–CONTACT EQUIPMENT SHOULD BE USED WITHIN MICRO–BIORETENTION PRACTICES AND THE BOTTOM SCARIFIED BEFORE INSTALLING UNDERDRAINS AND FILTERING MEDIA.

UNDERDRAIN INSTALLATION:
GRAVEL FOR THE UNDERDRAIN SYSTEM SHOULD BE CLEAN, WASHED, AND FREE OF FINES. UNDERDRAIN PIPES SHOULD BE CHECKED TO ENSURE THAT BOTH THE MATERIAL AND PERFORATIONS MEET SPECIFICATIONS. THE UPSTREAM ENDS OF THE UNDERDRAIN PIPE SHOULD BE CAPPED PRIOR TO INSTALLATION.

FILTER MEDIA INSTALLATION:
SOILS SHOULD NOT BE PLACED UNDER SATURATED CONDITIONS. THE FILTER MEDIA SHOULD BE PLACED AND GRADED USING EXCAVATORS OR BACKHOES OPERATING ADJACENT TO THE PRACTICE AND BE PLACED IN HORIZONTAL LAYERS (12 INCHES PER LIFT MAXIMUM). PROPER COMPACTION OF THE MEDIA WILL OCCUR NATURALLY. SPRAYING OR SPRINKLING WATER ON EACH LIFT UNTIL SATURATED MAY QUICKEN SETTLING TIMES.

LANDSCAPE INSTALLATION:
THE OPTIMUM PLANTING TIME IS DURING THE FALL. SPRING PLANTING IS ALSO ACCEPTABLE

FURNISHED TOPSOIL SPECIFICATIONS (MDSHA)

920.01.02 FURNISHED TOPSOIL. A NATURAL, FRIABLE, SURFACE SOIL THAT IS UNIFORM IN COLOR AND TEXTURE, AND NOT DERIVED FROM THE PROJECT. PRODUCERS SHALL BE INCLUDED IN THE QUALIFIED PRODUCTS LIST MAINTAINED BY THE ADMINISTRATION FOR FURNISHED TOPSOIL.

(a.) COMPOSITION. FURNISHED TOPSOIL SHALL CONFORM TO THE FOLLOWING.

COMPOSITION - FURNISHED TOPSOIL					
TEST PROPERTY	TEST METHOD	TEST VALUE AND AMEDMENT			
Prohibited Weeds	-	FREE OF LIVE STEMS AND ROOTS OF SPECIES IN 920.01.01 AS WELL AS LIVE STEMS AND ROOTS OF BERMUDA GRASS, QUACK GRASS, AND YELLOW NUTSEDGE			
Debris	-	920.01.01			
Grading Analyse	R-58	920.01.01			
Textural Analyse	T-88	Particle		% Passing by Weight	
		Size	mm	Minimum	Maximum
		Sand	2.0-0.050	20	75
		Silt	0.050-0.002	Combined Silt & Clay 25	75
		Clay	Less than 0.0002		30
Soil pH	ASTM D 4972	pH of 6.1 to 7.2			
ORGANIC MATTER	T 194	4.0 to 8.0% OM by by weight			
NUTRIENT CONTENT	-	920.01.01			
SOLUBLE SALTS	ECI:2 (V:V)	500 ppm (0.78 mmhos/cm) or less			
HARMFUL MATERIALS	-	920.01.01			

(a) STORAGE. FURNISHED TOPSOIL SHALL BE A HOMOGENOUS MIXTURE STORED AT A SPECIFIC, IDENTIFIABLE SITE IN A STOCKPILE CONSTRUCTED AS SPECIFIED IN 308.03.28 AND 701.03.02(C).

(b) APPROVAL. TESTS SHALL BE COMPLETED AND APPROVAL WILL BE GRANTED BEFORE FURNISHED TOPSOIL IS DELIVERED. ENSURE THAT FORM 27B HAS BEEN COMPLETED AND THAT A SOURCE OF SUPPLY LETTER FOR THE FURNISHED TOPSOIL SOIL HAS BEEN SUBMITTED AND APPROVED.

(c) DELIVERY. CERTIFICATION SHALL BE SUBMITTED THAT THE FURNISHED TOPSOIL IS DELIVERED FROM AN APPROVED STOCKPILE. A BILL OF LADING OR OTHER ACCEPTABLE DOCUMENTATION THAT IDENTIFIES THE APPROVED SOURCE OF SUPPLY SHALL BE SUBMITTED WHEN FURNISHED TOPSOIL IS DELIVERED

NO. 57 AGGREGATE

Stone for NO. 57 Aggregate.

Ensure that stone for No. 57 Aggregate is uniformly graded from the smallest to the largest pieces as specified in the Contract Documents. The stone will be accepted upon visual inspection at the point of usage, as follows:

Material	Sieve Size				
	1-1/2"	2"	1/2"	No. 4	No. 8
	37.5 mm	25 mm	12.5 mm	4.75 mm	2.36 mm
COARSE AGGREGATE 57 AND UNDERDRAIN	100	95-100	25-60	0-10	0-5

S /C PLANS #59859
GRADING PERMIT #2818–2020
SWM PLAN #EG–SWMENG–000442–2019
SWM BILLING #97057

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND
LICENSE NO. 25402
EXPIRATION DATE: 7 /17 /2022

REVISIONS

HARFORD COUNTY, MARYLAND

FALLSTON LIBRARY STORMWATER MANAGEMENT RETROFIT
FINAL DESIGN
STORMWATER MANAGEMENT DETAILS (DE–01)

DRAWN BY : RG
DESIGNED BY : BA /CF
REVIEWED BY : BN

CONTRACT NO. :
SCALE : NTS
SHEET : 3 OF 14
DATE : 3 /18 /2020

WHITNEY BAILEY COX & MAGNANI, LLC
300 East Joppa Road Suite 200
Baltimore, MD 21286
410.512.4500 www.wbcm.com
WBCM
Designing Infrastructure for Tomorrow ®

BY: arussell –

ADC MAP : XXXX GRID: XX
TAX MAP : XXXX/XXX
HCG BILLING ID No.: 97057
HCG DWG ID No.: 201809
SCALE : 1 inch

SWM FACILITY 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.

SITE PREPARATION

AREAS DESIGNED 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 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 POND OR 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

MATERIAL - THE FILL MATERIAL SHALL BE TAKEN FROM APPROVED DESIGNATED BORROW AREA OR 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 UNITED 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.

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.

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 TIRED OR VIBRATORY ROLLER. FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SUCH THAT THE REQUIRED DEGREE OF COMPACTION CAN 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 ±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).

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.

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 SHALL BE PLACED 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 TWENTY-FOUR INCHES OR GREATER OVER THE STRUCTURE OR PIPE.

STRUCTURE BACKFILL MAY BE FLOWABLE FILL MEET 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 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 CONCRETE STRUCTURE OR PIPE UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OF 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 BE CIRCULAR IN CROSS SECTION.

CORRUGATED METAL PIPE - ALL OF THE FOLLOWING CRITERIA SHALL APPLY FOR CORRUGATED METAL PIPE:

1. 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.

MATERIALS - (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.

MATERIALS - (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.

2. 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.

3. CONNECTIONS - ALL CONNECTIONS WITH PIPES MUST BE COMPLETELY WATERTIGHT. THE DRAIN PIPE OR 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 BAND WIDTH. THE FOLLOWING TYPE CONNECTIONS ARE ACCEPTABLE FOR PIPES LESS THAN 24" 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 O-RING 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, 21 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.

4. 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.

5. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".

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

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

1. MATERIALS - REINFORCED CONCRETE PIPE SHALL HAVE BELL AND SPIGOT JOINTS WITH RUBBER GASKETS AND SHALL EQUAL OR EXCEED ASTM SPECIFICATION C-361.

2. 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.

3. 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.

4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL."

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

PLASTIC PIPE - THE FOLLOWING CRITERIA SHALL APPLY FOR PLASTIC PIPE:

1. MATERIALS - PVC PIPE SHALL BE PVC-1120 OR PVC-1220 CONFORMING TO ASTM D-1785 OR ASTM D-2241. CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE) PIPE, COUPLINGS AND FITTINGS SHALL BE CONFORMED TO THE FOLLOWING: 4" - 10" PIPE SHALL MEET THE REQUIREMENTS OF AASHTO M252 TYPE S, AND 12" THROUGH 24" SHALL MEET THE REQUIREMENTS OF AASHTO M294 TYPE S.

2. JOINTS AND CONNECTIONS TO ANTI-SEEP COLLARS SHALL BE COMPLETELY WATERTIGHT.

3. 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.

4. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL."

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

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 SE.

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 THE 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 OF REQUIRED EXCAVATIONS AND WILL ALLOW SATISFACTORY PERFORMANCE OF ALL CONSTRUCTION OPERATIONS. DURING THE PLACING AND COMPACTING OF MATERIAL IN REQUIRED 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 TO SUMPS FROM WHICH THE WATER SHALL BE PUMPED.

STABILIZATION

ALL BORROW AREAS SHALL BE GRADED TO PROVIDE PROPER DRAINAGE AND LEFT IN A SIGHTLY 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 MARYLAND SOIL 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

OPERATION AND MAINTENANCE

AN OPERATION AND MAINTENANCE PLAN IN ACCORDANCE WITH LOCAL OR STATE REGULATIONS WILL BE PREPARED FOR ALL PONDS. AS A MINIMUM, THE DAM INSPECTION CHECKLIST LOCATED IN APPENDIX A SHALL BE INCLUDED AS PART OF THE OPERATION AND MAINTENANCE PLAN AND PERFORMED AT LEAST ANNUALLY. WRITTEN RECORDS OF MAINTENANCE AND MAJOR REPAIRS NEEDS TO BE RETAINED IN A FILE. THE ISSUANCE OF A MAINTENANCE AND REPAIR PERMIT FOR ANY REPAIRS OR MAINTENANCE THAT INVOLVES THE MODIFICATION OF THE DAM OR SPILLWAY FROM ITS ORIGINAL DESIGN AND SPECIFICATIONS IS REQUIRED. A PERMIT IS ALSO REQUIRED FOR ANY REPAIRS OR RECONSTRUCTION THAT INVOLVE A SUBSTANTIAL PORTION OF THE STRUCTURE. ALL INDICATED REPAIRS ARE TO BE MADE AS SOON AS PRACTICAL.

S /C PLANS #59859
GRADING PERMIT #2818-2020
SWM PLAN #EG-SWMENG-000442-2019
SWM BILLING #97057

STATE OF MARYLAND — BRIAN SCOTT NOLL — NO. 25402 — REGISTERED — PROFESSIONAL ENGINEER

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

LICENSE NO. 25402

EXPIRATION DATE: 7 /17 /2022

REVISIONS	HARFORD COUNTY, MARYLAND	
	FALLSTON LIBRARY STORMWATER MANAGEMENT RETROFIT FINAL DESIGN SWM FACILITY CONSTRUCTION NOTES (DE-02)	
	DRAWN BY : RG	CONTRACT NO. :
	DESIGNED BY : BA /CF	SCALE : N.T.S
	REVIEWED BY : BN	SHEET : 4 OF 14
		DATE : 3 /18 /2020

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ADC MAP : XXXX GRID: XX

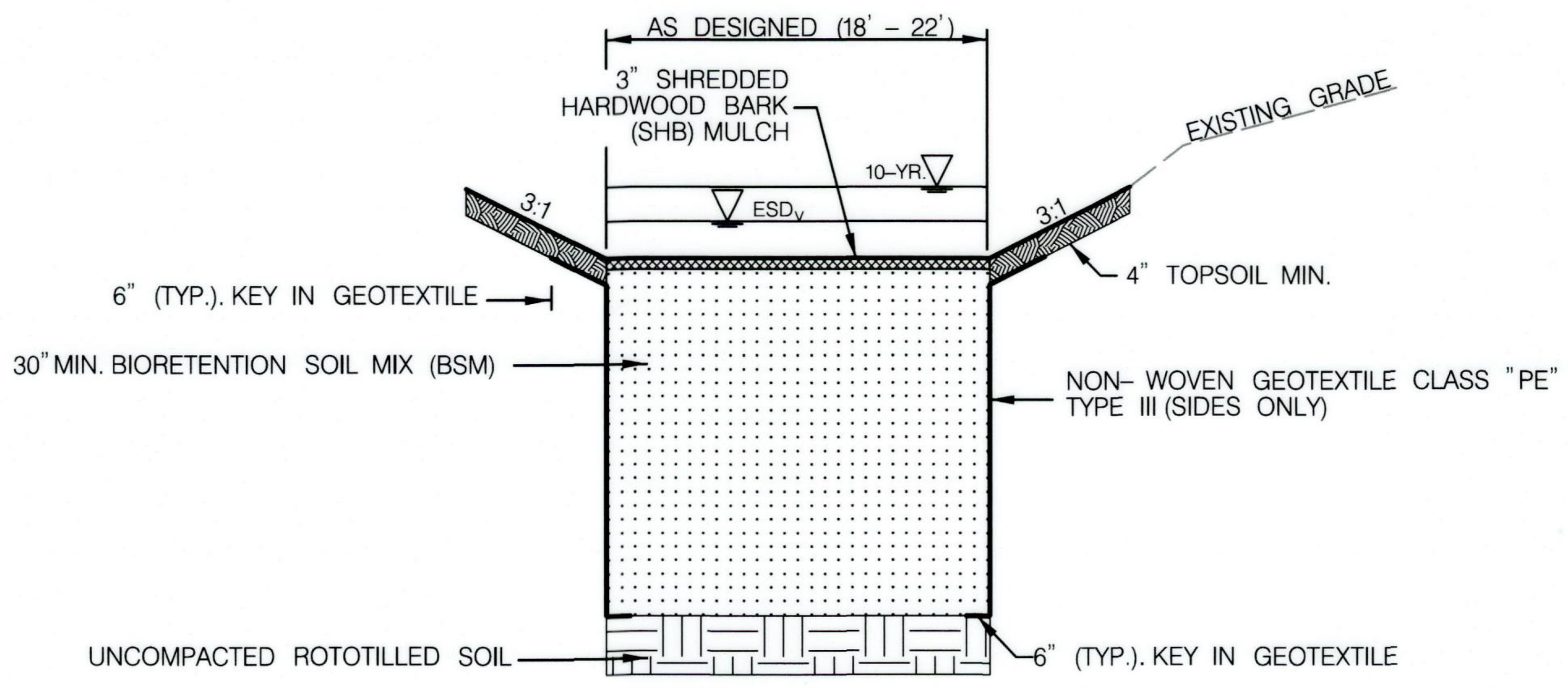
TAX MAP : XXXX/XXX

HCG BILLING ID No.: 97057

HCG DWG ID No.: 28106

SCALE : 1 inch

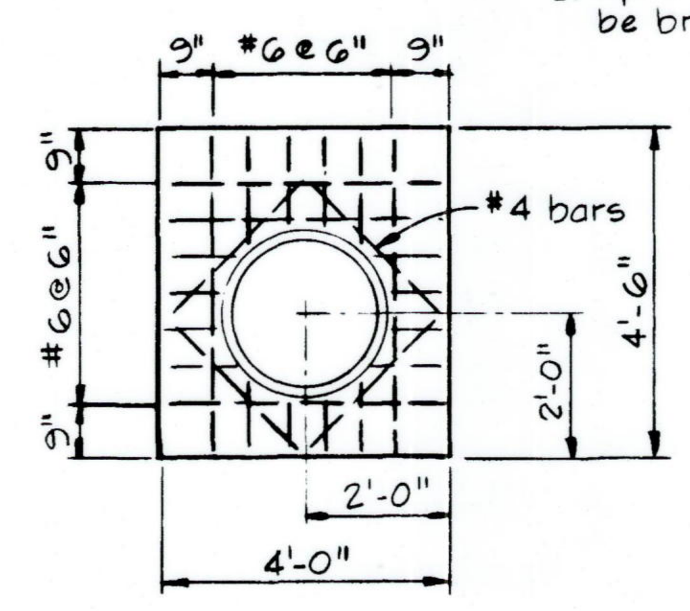
PLOTTED: Tuesday, November 10, 2020 AT 09:15 AM
FILE: P:\2016\16095605\Drawings\20-EWR\pSW-D004_FallstonLibrary.dgn



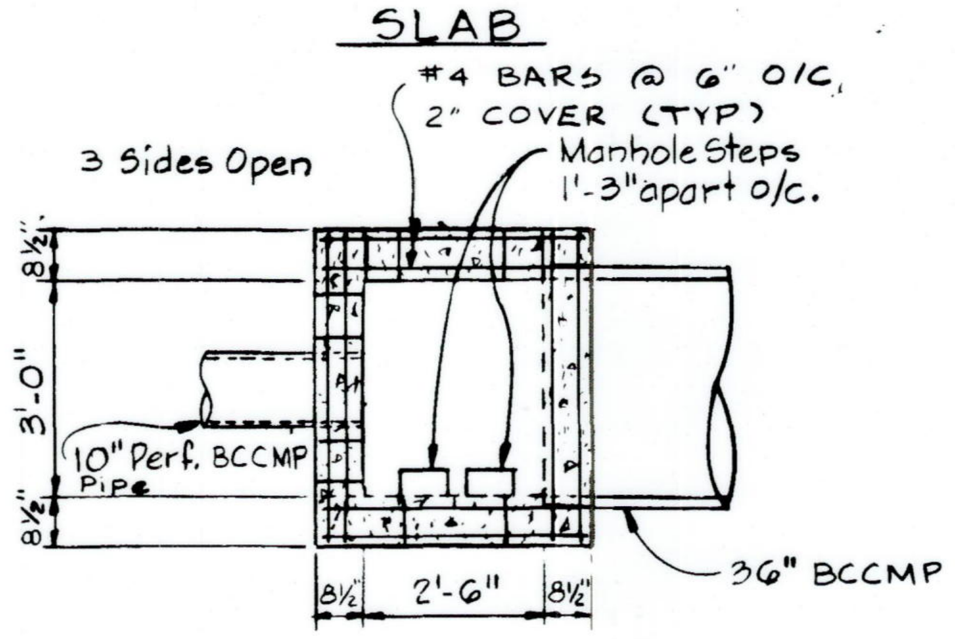
BIORETENTION SECTION

SCALE: NTS

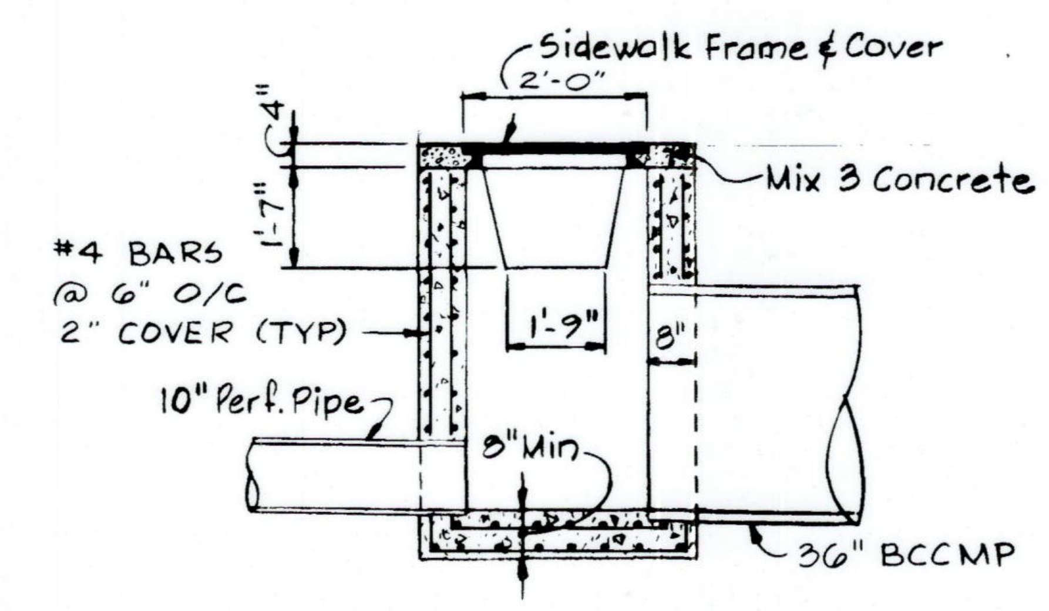
Notes:
1. Invert shall be brick or plain Mix 3 Concrete
2. Top 4" of walls shall be brick masonry.



SLAB



PLAN BELOW SLAB

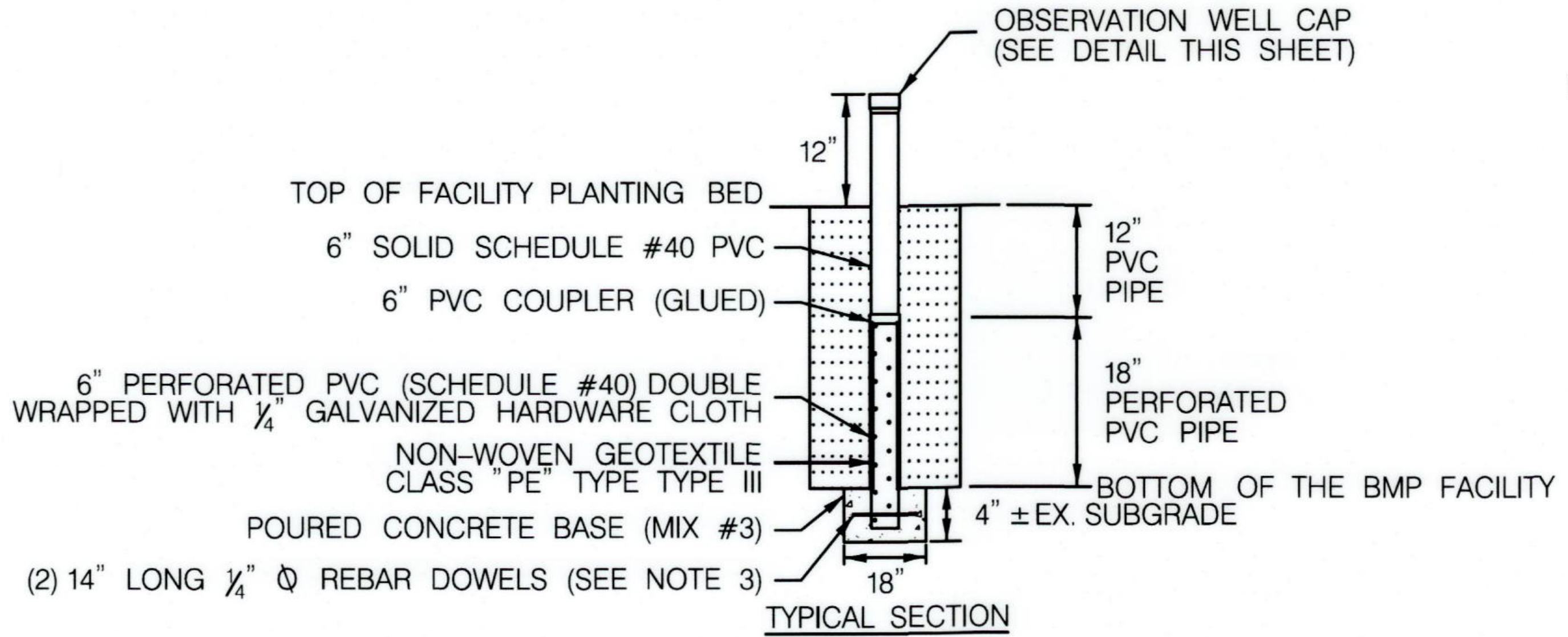


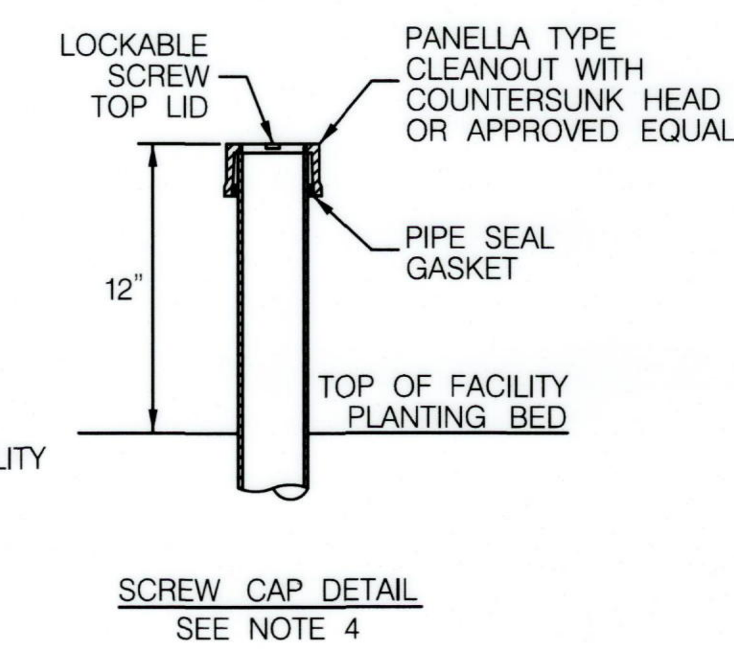
SECTION

EXISTING RISER DETAIL

SCALE: NTS

NOTES:
1. EXISTING RISER TO BE REMOVED.
2. EXISTING DIMENSIONS ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR TO VERIFY.

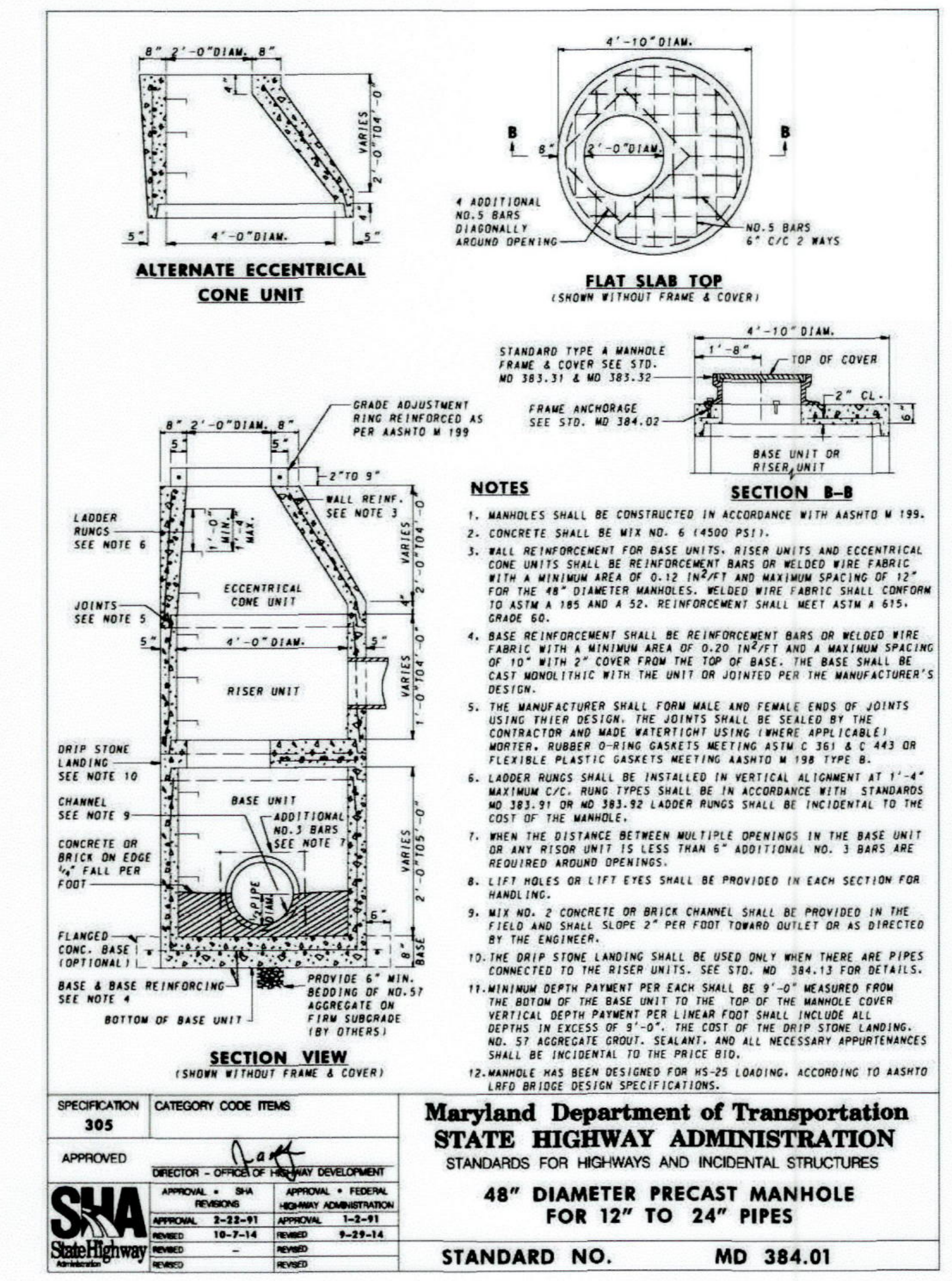


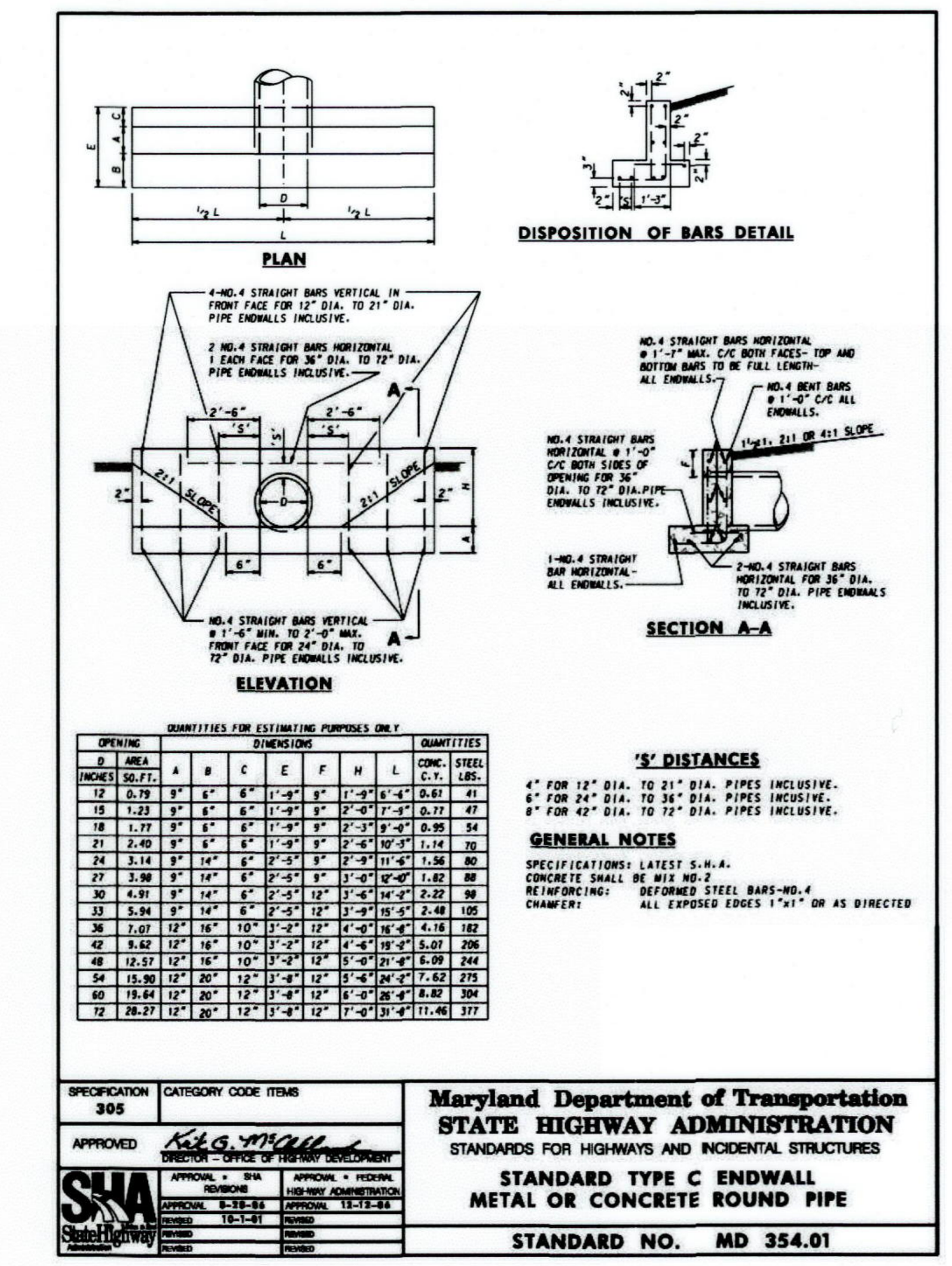


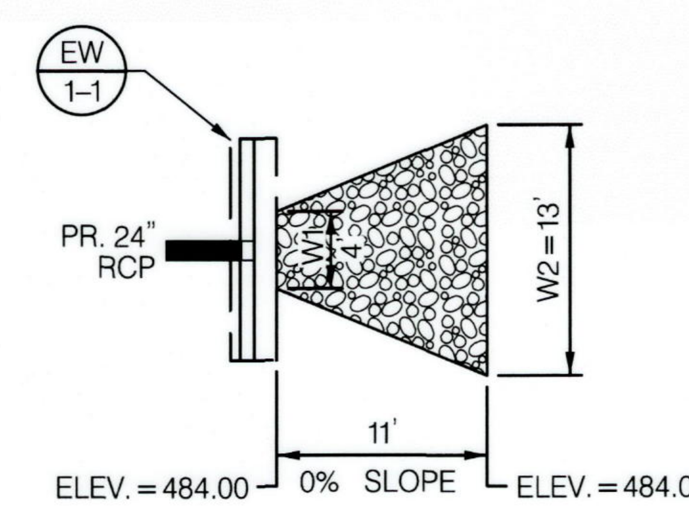
SWM OBSERVATION WELL DETAIL

SCALE: NTS

NOTE:
1. COST OF THE CONCRETE PAD, AND GEOTEXTILE IS INCIDENTAL TO THE COST OF THE PERFORATED PIPE ITEM AS USED FOR THE OBSERVATION WELL.
2. CONTRACTOR TO SECURELY FASTEN GEOTEXTILE TO PVC PIPE.
3. PROPOSED 14" LONG ¼" O (#2) REBAR SLEEVED THROUGH OPPOSITE OPENINGS, 7-INCHES ON CENTER. THE CONTRACTOR SHALL DRILL (5/16" HOLES) TWO OPPOSITE SETS OF OPENINGS WHICH BEST CENTER THE BARS LEVEL 90° TO EACH OTHER AND CENTERED WITHIN THE POURED CONCRETE BASE.
4. THE TUBE SHALL HAVE A FACTORY ATTACHED CAST IRON OR HIGH IMPACT PLASTIC COLLAR WITH RIBS TO PREVENT ROTATION WHEN REMOVING SCREW TOP LID. THE SCREW TOP LID SHALL BE CAST IRON OR HIGH IMPACT PLASTIC THAT WILL WITHSTAND ULTRA VIOLET RAYS. CONTRACTOR SHALL MARK THE DEPTH TO INVERT ON THE INSIDE OF THE LID.

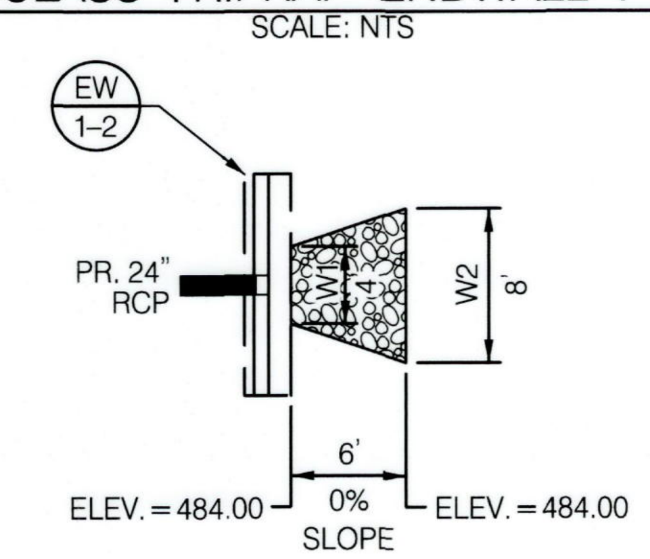






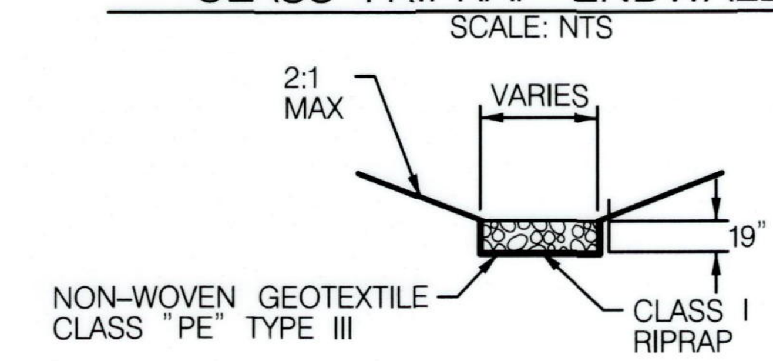
CLASS I RIPRAP ENDWALL 1-1

SCALE: NTS



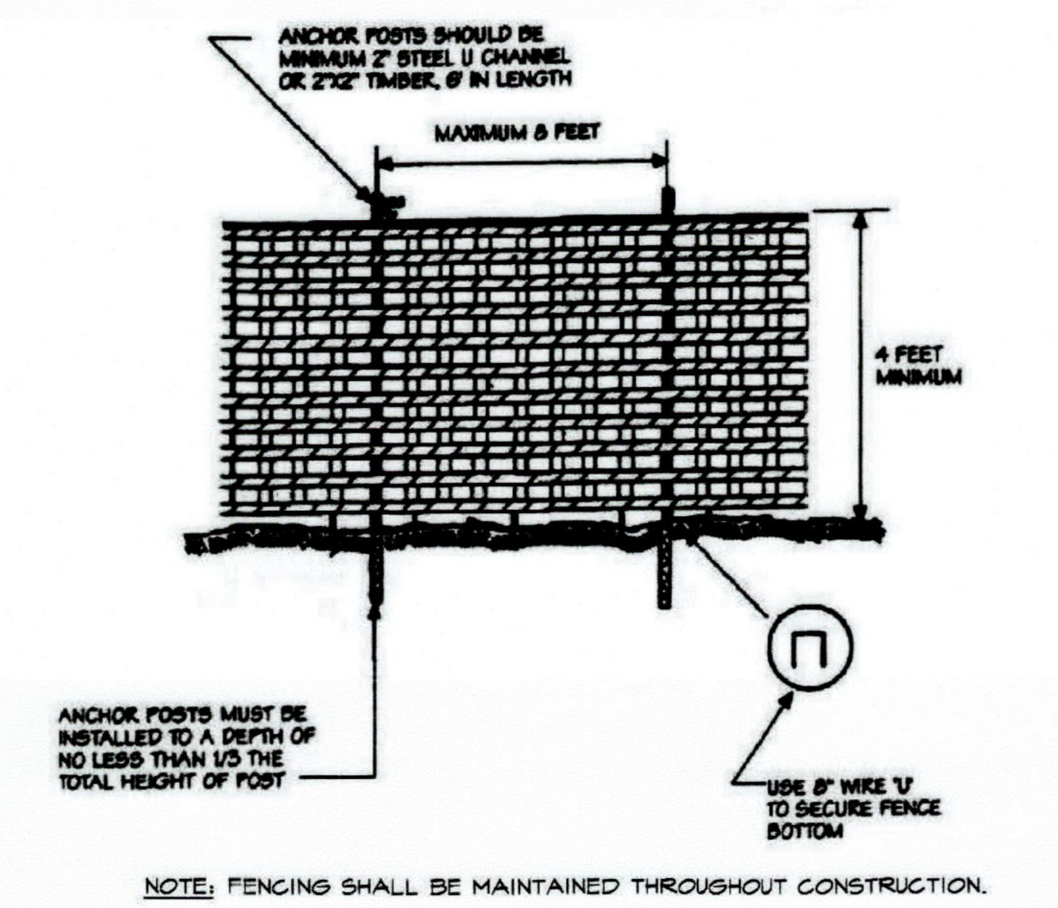
CLASS I RIPRAP ENDWALL 1-2

SCALE: NTS



CLASS I RIPRAP TYPICAL SECTION

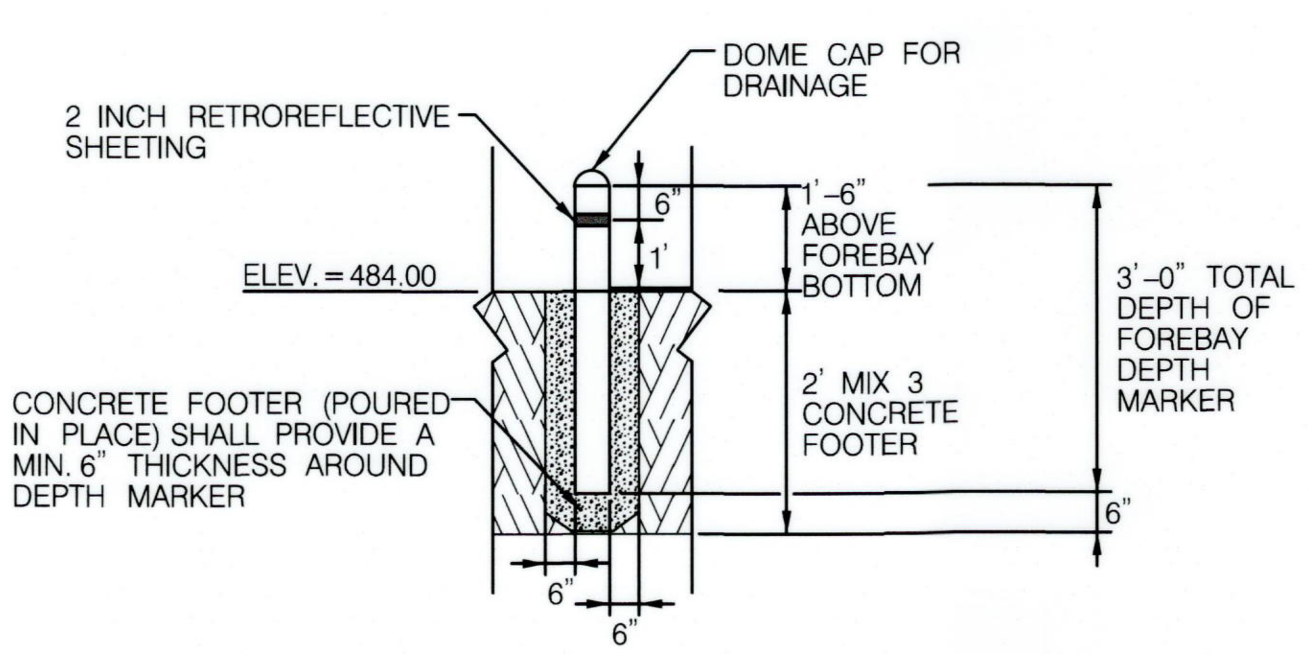
SCALE: NTS



NOTE: FENCING SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.

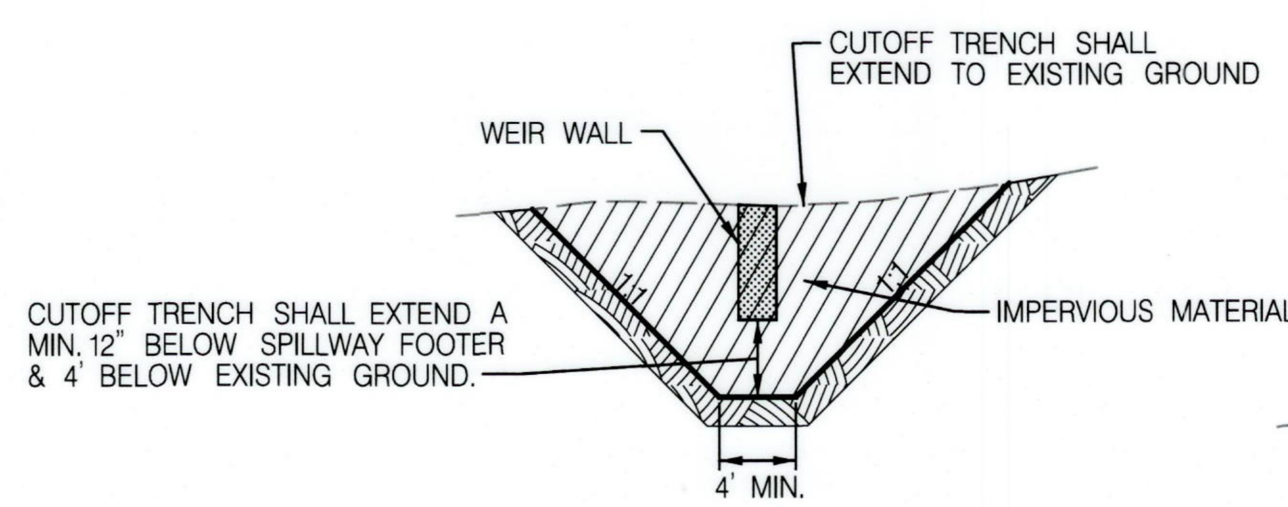
TEMPORARY ORANGE CONSTRUCTION FENCE

NOT TO SCALE



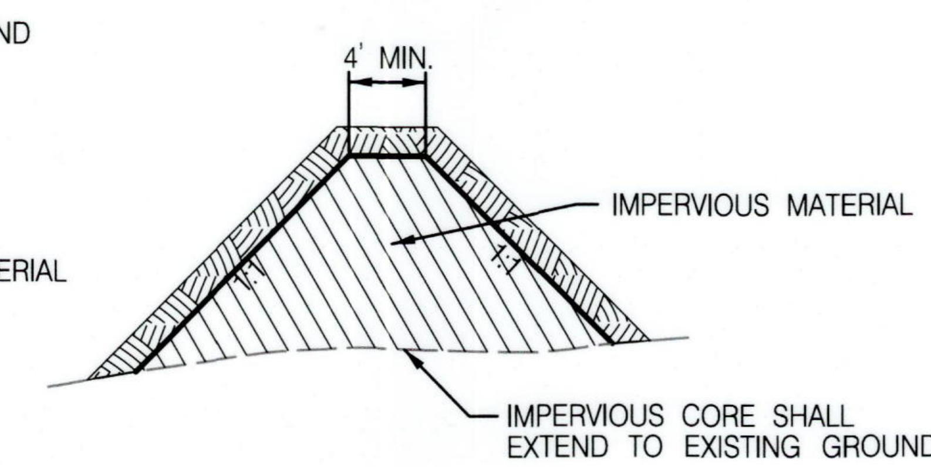
FOREBAY SEDIMENT MARKER

SCALE: NTS



CUTOFF TRENCH DETAIL

SCALE: NTS



IMPERVIOUS CORE DETAIL

SCALE: NTS

NOTE:
SOILS SHALL CONFORM TO 95% OF THE T-99 MOISTURE-DENSITY BASED UPON ASTM-D698. ALL SOILS SHALL ALSO BE WITHIN 2% OF THIER OPTIMAL MOISTURE CONTENT. SOILS SHALL ALSO CONFORM TO UNIFIED SOIL CLASSIFICATION GC, SC, CH, OR CL AND SHALL HAVE A MINIMUM OF 30% PASSING THE #200 SIEVE.

S /C PLANS #59859
GRADING PERMIT #2818-2020
SWM PLAN #EG-SWMENG-000442-2019
SWM BILLING #97057

STATE OF MARYLAND — BRIAN SCOTT ROSS — No. 25402 — PROFESSIONAL ENGINEER

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND
LICENSE NO. 25402
EXPIRATION DATE: 7 /17 /2022

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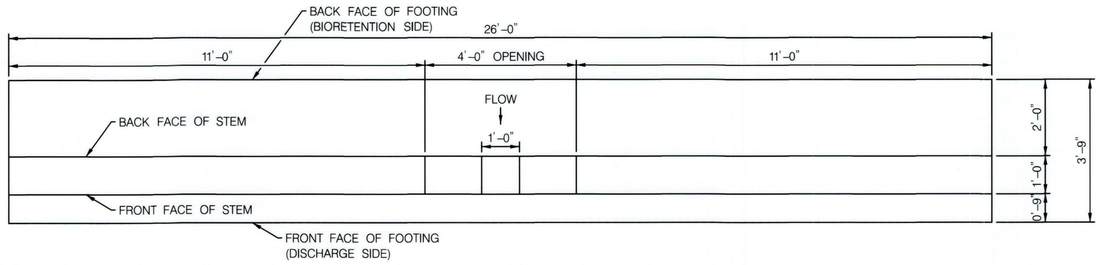
REVISIONS	HARFORD COUNTY, MARYLAND
	FALLSTON LIBRARY STORMWATER MANAGEMENT RETROFIT FINAL DESIGN STORMWATER MANAGEMENT DETAILS (DE-03)

DRAWN BY :	RG	CONTRACT NO. :	
DESIGNED BY :	BA /CF	SCALE :	NTS
REVIEWED BY :	BN	SHEET :	5 OF 14
		DATE :	3 /18 /2020

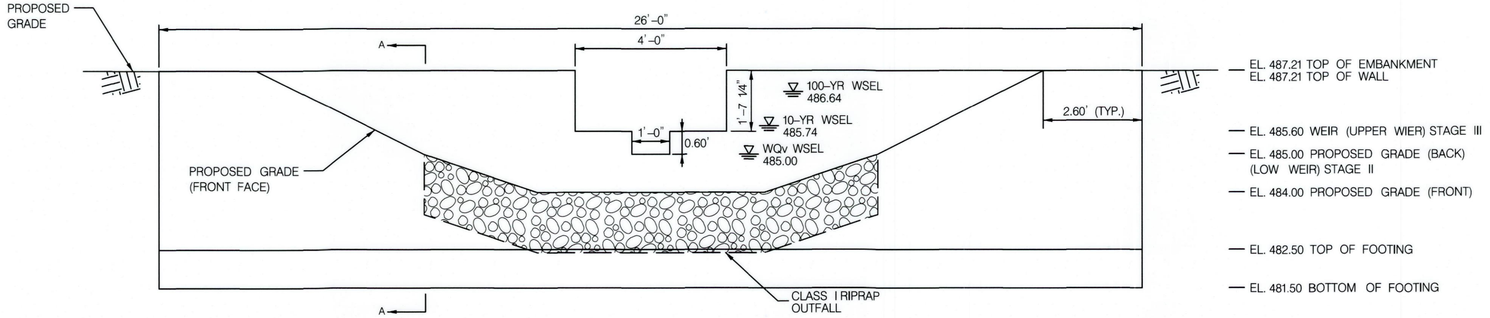
ADC MAP : XXXX GRID: XX
TAX MAP : XXXX/XXX
HCG BILLING ID No.: 97057
HCG DWG ID No.: 201811

BY: arussell

PLOTTED: Tuesday, November 10, 2020 AT 09:16 AM
FILE: P:\2016\16095605\Drawings\20-EWR\pSW-D002_FallstonLibrary.dgn



BIORETENTION WEIR WALL – PLAN VIEW
SCALE: ½" = 1'



BIORETENTION WEIR WALL – ELEVATION
SCALE: ½" = 1'

GENERAL NOTES:

DESIGN: TYPE: CAST–IN–PLACE ONLY
DESIGN METHOD: LOAD AND RESISTANCE FACTOR
CONCRETE: f'c = 4,000 PSI
REINFORCING STEEL: fy = 60,000 PSI

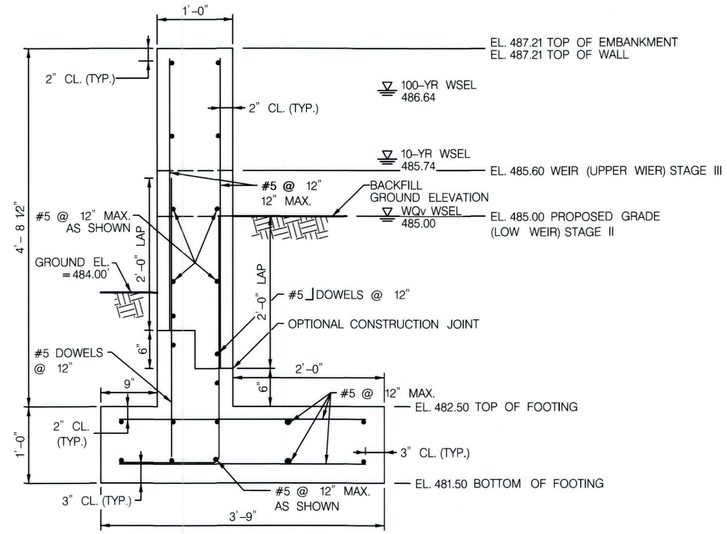
CONCRETE: ALL CONCRETE SHALL BE MIX NO. 6 (4,500 PSI) (DESIGN = 4,000 PSI)

REINFORCING STEEL: REINFORCING STEEL SHALL CONFORM TO ASTM A 615 GRADE 60.

ONLY GRADE 60 CAN BE USED ON THIS PROJECT.
ALL SPLICES NOT SHOWN SHALL BE LAPPED AS PER BAR LAP CHARTS.
MINIMUM COVER FOR ANY BAR SHALL BE 2", EXCEPT FOR THE COVER TO THE BOTTOM LAYER OF FOOTING REBAR AND THE SIDE COVER TO ALL FOOTING REBAR WHICH SHALL BE 3".

FOR TIES AND STIRRUPS; STANDARD ACI BENDING TOLERANCES ARE MODIFIED TO PLUS (+) ZERO INCHES, MINUS (–) NORMAL ACI BENDING TOLERANCES.

GEOTECHNICAL: THE FOOTING IS DESIGNED FOR A FACTORED BEARING RESISTANCE OF 1.5 KSF (LRFD). THE BEARING CAPACITY RESISTANCE FACTOR SHALL BE 0.55. THE BEARING STRATUM SHALL BE INSPECTED FOR THE NOMINAL RESISTANCE OR ULTIMATE BEARING CAPACITY OF 2.8 KSF BEFORE PLACING CONCRETE.



BIORETENTION WEIR WALL SECTION – SECTION A–A
SCALE: 1" = 1'

NOTE:
AT THE CONTRACTORS OPTION, THE DOWEL AND STEM BARS MAY BE PLACED AS CONTINUOUS BAR. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR THIS OPTION.

ADC MAP : XXXX GRID: XX

TAX MAP : XXXX/XXX

HCG BILLING ID No.: 97057

HCG DWG ID No.: 20182

S /C PLANS #59859
GRADING PERMIT #2818–2020
SWM PLAN #EG–SWMENG–000442–2019
SWM BILLING #97057

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410.512.4500 www.wbcm.com
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PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND

JASON M. ROGERS	
NAME	SIGNATURE
33123	1/5/2022
(P.E.) R.L.S., R.L.A., OR R.A. (CIRCLE ONE)	EXP. DATE

STATE OF MARYLAND · JASON M. ROGERS · 33123 · PROFESSIONAL ENGINEER

REVISIONS

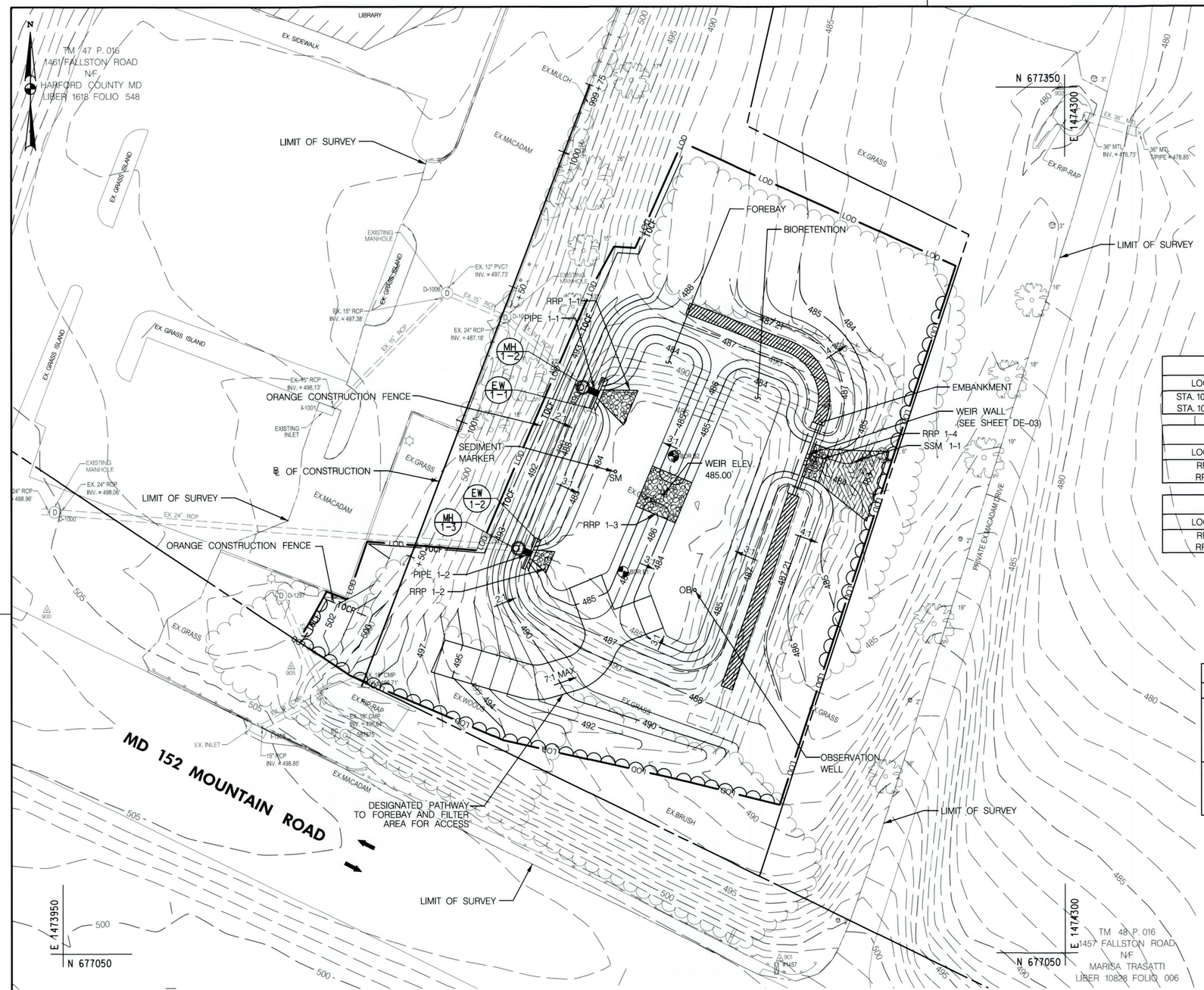
HARFORD COUNTY, MARYLAND

FALLSTON LIBRARY STORMWATER MANAGEMENT RETROFIT
FINAL DESIGN
WEIR WALL DETAILS (DE–04)

DRAWN BY : RG	CONTRACT NO. :
DESIGNED BY : CJB	SCALE : NTS
REVIEWED BY : JMR	SHEET : 6 OF 14
	DATE : 3/18/2020

BY: arussell–

PLOTTED: Tuesday, November 10, 2020 AT 09:17 AM
FILE: P:\2016\16095605\Drawings\20-EWR\pSW-D003_FallstonLibrary.dgn



STORMWATER MANAGEMENT PLAN

SCALE: 1" = 20'

20' 0 20' 40'

SCALE: 1" = 20'

DATUM: NAD 83/91 Horizontal
NAVD 88 Vertical

LEGEND

EXISTING CONTOUR	PROPERTY LINE	OBS	OBSERVATION WELL
EXISTING STORM DRAIN	PROPOSED CONTOUR	SM	SEDIMENT MARKER
EXISTING FENCE	LIMIT OF DISTURBANCE		PROPOSED CLAY CORE CUT-OFF TRENCH
EXISTING DRAINAGE STRUCTURES	PROPOSED TREELINE		
EXISTING TREE	CLASS I RIPRAP		
	TYPE A SOIL STABILIZATION MATTING		
EXISTING GUARDRAIL	TEMPORARY ORANGE CONSTRUCTION FENCE		

TYPE A SOIL STABILIZATION MATTING			
ID	LOCATION	QTY (SY)	REMARKS
SSM 1–1	STA. 1000+69, 124 LT TO 1000+69, 144 LT	42	–

PIPE SCHEDULE				
ID	TYPE	INV. US	INV. DS	LENGTH (LF)
PIPE 1–1	24" CLASS IV RCP	484.02	484.00	4
PIPE 1–2	24" CLASS IV RCP	484.02	484.00	4

CLASS 1 EXCAVATION		
LOCATION	QTY (CY)	REMARKS
SITE	1,530	–

BIORETENTION SOIL MIX		
LOCATION	QTY (CY)	REMARKS
FACILITY BOTTOM	168	–

PLACING SALVAGED CLAY CORE		
LOCATION	QTY (CY)	REMARKS
STA. 1000+48 TO STA. 1001+69, LT.	136	ASSUME 24 CY LOSS FOR EXPANSION/CONTRACTION

PLACING FURNISHED CLAY CORE		
LOCATION	QTY (CY)	REMARKS
STA. 1000+33 TO STA. 1001+54, LT.	82	–

BOTTOM CUTOFF WALLS FOR CLASS I RIPRAP		
LOCATION	QTY (LF)	REMARKS
RRP 1–1	13	–
RRP 1–2	8	–

SIDE CUTOFF WALLS FOR CLASS I RIPRAP		
LOCATION	QTY (LF)	REMARKS
RRP 1–1	24	–
RRP 1–2	14	–

CLAY CORE CUT–OFF TRENCH SCHEDULE	
DESCRIPTION	QUANTITY
EXCAVATION OF EX. CLAY CORE TRENCH	160 C.Y.
LOSS DUE TO EXPANSION/CONTRACTION	–24 C.Y.
PLACING SALVAGED CLAY CORE	136 C.Y.
PLACING FURNISHED CLAY CORE	82 C.Y.
TOTAL PROPOSED CLAY CORE TRENCH REQUIRED	218 C.Y.

COMMON BORROW		
LOCATION	QTY (CY)	REMARKS
SITE	58	–

FOREBAY SEDIMENT MARKER		
LOCATION	QTY (EA)	REMARKS
STA. 1000+97, 56 LT	1	–

NO 57 AGGREGATE FOR STORMWATER MANAGEMENT FACILITIES		
LOCATION	QTY (CY)	REMARKS
STA. 1001+25, 97 LT	1	OBSERVATION WELL

6 INCH SUB–DRAIN PIPE		
LOCATION	QTY (LF)	REMARKS
STA. 1001+25, 97 LT	2 (SOLID)	OBSERVATION WELL
	2 (PERFORATED)	

MIX 6 CONCRETE FOR MISC. STRUCTURES		
LOCATION	QTY (CY)	REMARKS
STA. 1000+56, 117 LT TO STA. 1000+82, 117 LT	9	WEIR WALL

CLASS 1 RIPRAP FOR SLOPE AND CHANNEL PROTECTION (d_{50}=9.5", t=19")					
ID	LOCATION	LENGTH (FT)	WIDTH (FT) A /B	SIDE SLOPES (H:V)	QTY (SY)
RRP 1–1	STA. 1000+75, 40 LT TO STA. 1000+84, 61 LT	11	4 /13	–	11
RRP 1–2	STA. 1001+32, 42 LT TO STA. 1001+28, 56 LT	6	4 /8	–	4
RRP 1–3	STA. 1000+97, 67 LT TO STA. 1000+97, 83 LT	15	15	3:1	25
RRP 1–4	STA. 1000+69, 118 LT TO STA. 1000+69, 124 LT	6	12	–	8

BIORETENTION DESIGN SUMMARY	
DRAINAGE AREA	3.40
STRUCTURE CLASSIFICATION	CHAPTER 3
LEVEL OF MANAGEMENT	WQv AND 10–YEAR STORM
STORAGE VOLUME OF TOP OF DAM	16,929 cf
STORAGE VOLUME OF EMERGENCY SPILLWAY CREST	N /A
HEIGHT OF EMBANKMENT	4.13 ft
TOP WIDTH OF EMBANKMENT	11.8 ft
STORAGE–HEIGHT PRODUCT (100–YR STORM)	0.87 ac–ft
10–YEAR INFLOW	9.29 cfs
10–YEAR OUTFLOW	3.22
100–YR INFLOW	20.20 cfs
100–YR OUTFLOW	16.52
FREEBOARD PROVIDED (ON 10–YR STORM)	1.47 FT

DRAINAGE STRUCTURE SCHEDULE						
STRUCTURE ID	STRUCTURE TYPE	STATION	OFFSET	TOP OF STRUCTURE	STD. NO.	REMARKS
EW 1–1	TYPE "C" ENDWALL	1000+75	38 LT	–	MD. SHA 354.01	REMOVE EXISTING ENDWALL
EW 1–2	TYPE "C" ENDWALL	1001+32	40 LT	–	MD SHA. 354.01	REMOVE EXISTING ENDWALL
MH 1–2	48" DIAMETER PRECAST MANHOLE FOR 12" TO 24" PIPES	1000+74	35 LT	490.81	MD. SHA 384.01	–
MH 1–3	48" DIAMETER PRECAST MANHOLE FOR 12" TO 24" PIPES	1001+34	34 LT	490.24	MD SHA. 384.01	–

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I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND
LICENSE NO. 25402
EXPIRATION DATE: 7 /17 /2022

S /C PLANS #59859
GRADING PERMIT #2818–2020
SWM PLAN #EG–SWMENG–000442–2019
SWM BILLING #97057

REVISIONS

HARFORD COUNTY, MARYLAND

FALLSTON LIBRARY STORMWATER MANAGEMENT RETROFIT FINAL DESIGN
STORMWATER MANAGEMENT PLAN SHEET (SW–01)

DRAWN BY : RG
DESIGNED BY : BA /CF
REVIEWED BY : BN
CONTRACT NO. :
SCALE : 1" = 20'
SHEET : 7 OF 14
DATE : 3 /18 /2020

ADC MAP : XXXX GRID: XX
TAX MAP : XXXX/XXX
HCG BILLING ID No.: 97057
HCG DWG ID No.: 20183
SCALE 1:100

BY: arussell

PLOTTED: Wednesday, November 11, 2020 AT 09:20 AM
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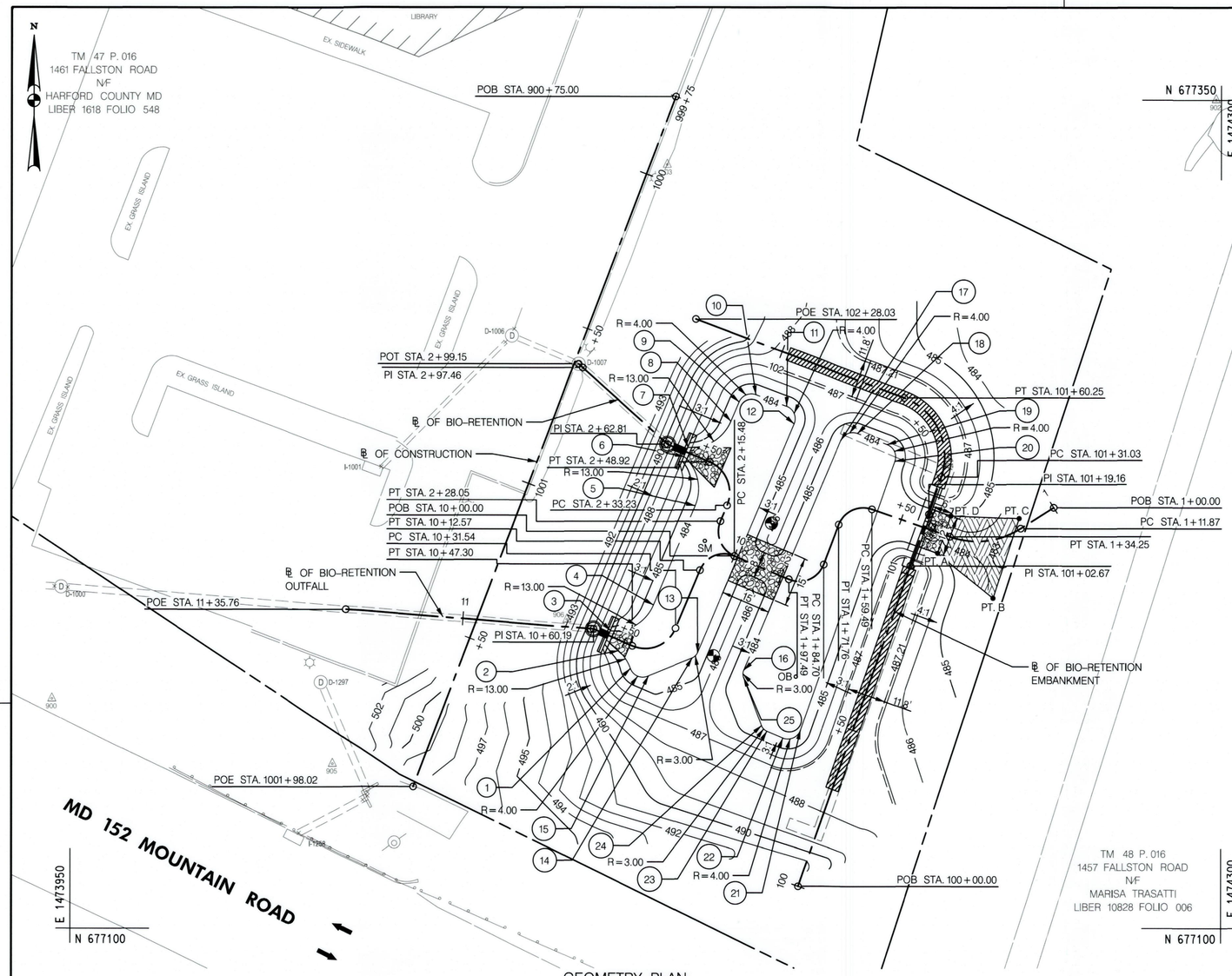

GEOMETRY PLAN
SCALE: 1" = 20'

20' 0 20' 40'
SCALE: 1" = 20'

DATUM: NAD 83/91 Horizontal
NAVD 88 Vertical

TYPE A SOIL STABILIZATION MATTING			
NO.	STA./OFFSET	NORTHING	EASTING
PT. A	1000 + 75 / 124' LT	677,213	1,474,214
PT. B	1000 + 82 / 144' LT	677,200	1,474,231
PT. C	1000 + 56 / 143' LT	677,224	1,474,239
PT. D	1000 + 63 / 124' LT	677,224	1,474,218

BASELINE OF CONSTRUCTION				
NO.	STATION	NORTHING	EASTING	BEARING AHEAD
POB	999 + 75.00	677,134	1,474,134	S 20° 57' 19.52" W
POE	1001 + 98.02	677,143	1,474,054	–

PROFILE STAKEOUT INFORMATION BIO-RETENTION					
NO.	STATION	NORTHING	EASTING	BEARING AHEAD	CURVE
POB	1 + 00.00	677,227	1,474,249	S 57° 53' 46.87" W	–
PC	1 + 11.87	677,221	1,474,239	–	25.00'
PT	1 + 34.25	677,218	1,474,218	N 70° 48' 51.05" W	–
PC	1 + 59.49	677,227	1,474,194	–	8.00'
PT	1 + 71.76	677,222	1,474,184	S 21° 15' 25.09" W	–
PC	1 + 84.70	677,210	1,474,179	–	8.00'
PT	1 + 97.49	677,205	1,474,168	N 67° 06' 26.08" W	–
PC	2 + 15.48	677,212	1,474,152	–	8.00'
PT	2 + 28.05	677,223	1,474,148	N 22° 53' 33.92" E	–
PC	2 + 33.23	677,228	1,474,150	–	10.00'
PT	2 + 48.92	677,241	1,474,144	N 48° 10' 12.31" W	–
PI	2 + 62.81	677,246	1,474,132	N 48° 13' 32.51" W	–
PI	2 + 97.46	677,269	1,474,106	N 48° 13' 32.51" W	–
POE	2 + 99.15	677,270	1,474,104	–	–

PROFILE STAKEOUT INFORMATION BIO-RETENTION OUTFALL					
NO.	STATION	NORTHING	EASTING	BEARING AHEAD	CURVE
POB	10 + 00.00	677,212	1,474,152	–	8.00'
PT	10 + 12.57	677,208	1,474,141	S 22° 53' 33.92" W	–
PC	10 + 31.54	677,191	1,474,134	–	10.00'
PT	10 + 47.30	677,185	1,474,121	N 66° 49' 17.01" W	–
PI	10 + 60.19	677,190	1,474,109	N 85° 29' 13.72" W	–
POE	11 + 35.76	677,196	1,474,034	–	–

PROFILE STAKEOUT INFORMATION BIO-RETENTION EMBANKMENT					
NO.	STATION	NORTHING	EASTING	BEARING AHEAD	CURVE
POB	100 + 00.00	677,113	1,474,171	N 19° 27' 19.89" W	–
PI	101 + 02.67	677,209	1,474,206	N 19° 52' 02.17" E	–
PI	101 + 19.16	677,225	1,474,211	N 18° 41' 24.01" W	–
PC	101 + 31.03	677,236	1,474,215	–	19.00'
PT	101 + 60.25	677,260	1,474,204	N 69° 26' 36.76" W	–
POE	102 + 28.03	677,284	1,474,140	–	–

STORMWATER FACILITY GRADING TABLE											
NO.	STATION	OFFSET	NORTHING	EASTING	ELEVATION	NO.	STATION	OFFSET	NORTHING	EASTING	ELEVATION
1	1001 + 41.01	48.92 LT	677,178	1,474,120	484.00	14	1001 + 31.37	65.33 LT	677,182	1,474,139	484.00
2	1001 + 37.33	43.64 LT	677,184	1,474,117	484.00	15	1001 + 41.14	54.86 LT	677,176	1,474,126	484.00
3	1001 + 32.59	39.26 LT	677,190	1,474,114	484.00	16	1001 + 29.20	81.30 LT	677,178	1,474,155	484.00
4	1001 + 20.58	48.58 LT	677,198	1,474,127	484.00	17	1000 + 53.90	83.98 LT	677,247	1,474,184	484.00
5	1000 + 88.21	49.74 LT	677,227	1,474,140	484.00	18	1000 + 50.04	87.95 LT	677,246	1,474,189	484.00
6	1000 + 75.56	41.30 LT	677,242	1,474,137	484.00	19	1000 + 49.98	97.60 LT	677,241	1,474,198	484.00
7	1000 + 72.49	41.40 LT	677,245	1,474,138	484.00	20	1000 + 53.87	101.62 LT	677,241	1,474,201	484.00
8	1000 + 60.48	50.73 LT	677,253	1,474,151	484.00	21	1001 + 40.00	103.92 LT	677,160	1,474,172	484.00
9	1000 + 54.13	50.95 LT	677,259	1,474,153	484.00	22	1001 + 44.11	99.78 RT	677,157	1,474,167	484.00
10	1000 + 50.27	54.92 LT	677,261	1,474,158	484.00	23	1001 + 43.92	94.48 LT	677,159	1,474,162	484.00
11	1000 + 50.20	64.93 LT	677,258	1,474,168	484.00	24	1001 + 42.91	92.34 LT	677,161	1,474,160	484.00
12	1000 + 54.35	68.96 LT	677,252	1,474,170	484.00	25	1001 + 31.29	82.05 LT	677,176	1,474,155	484.00
13	1001 + 29.29	66.28 LT	677,183	1,474,141	484.00						

TRAVERSE POINTS				
POINT ID	NORTHING	EASTING	ELEVATION	DESCRIPTION
900	677,169.30	1,473,944.45	506.12	TRV RC
902	677,350.07	1,474,298.38	480.14	TRV RC
903	677,330.46	1,474,131.39	501.73	TRV WBCM RC
904	677,241.88	1,474,217.22	490.94	TRV RC
905	677,149.70	1,474,029.72	503.20	TRV WBCM RC
906	677,193.19	1,474,101.01	493.51	TRV WBCM RC

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LICENSE NO. 25402

EXPIRATION DATE: 7 /17 /2020

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GRADING PERMIT #2818-2020
SWM PLAN #EG-SWMENG-000442-2019
SWM BILLING #97057

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REVISIONS

HARFORD COUNTY, MARYLAND

FALLSTON LIBRARY STORMWATER MANAGEMENT RETROFIT
FINAL DESIGN
GEOMETRY PLAN SHEET (GS-01)

DRAWN BY : RG
DESIGNED BY : BA /CF
REVIEWED BY : BN

CONTRACT NO. :
SCALE : 1" = 20'
SHEET : 8 OF 14
DATE : 3 /18 /2020

ADC MAP : XXXX GRID: XX
TAX MAP : XXXX/XXX
HCG BILLING ID No.: 97057
HCG DWG ID No.: 41807
SCALE: 1 inch

BY: arussell –

PLOTTED: Tuesday, November 10, 2020 AT 09:19 AM
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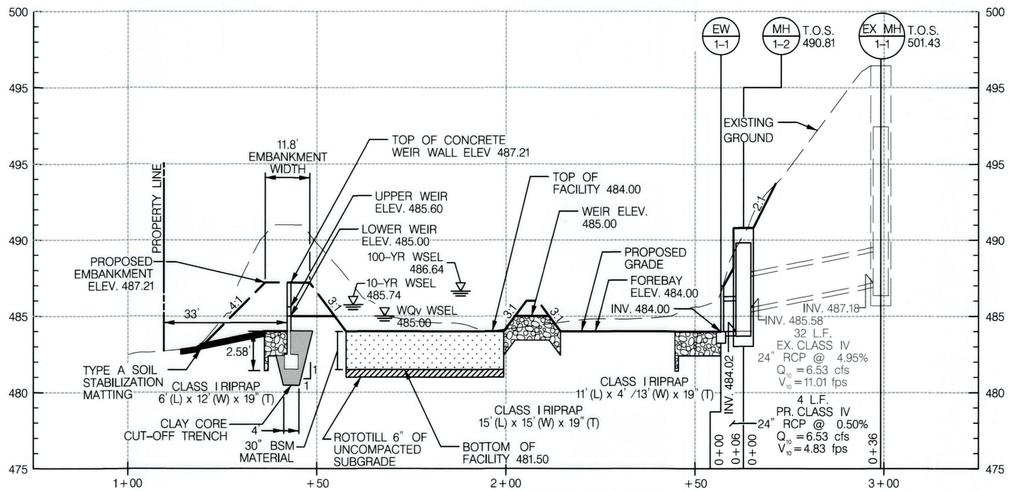
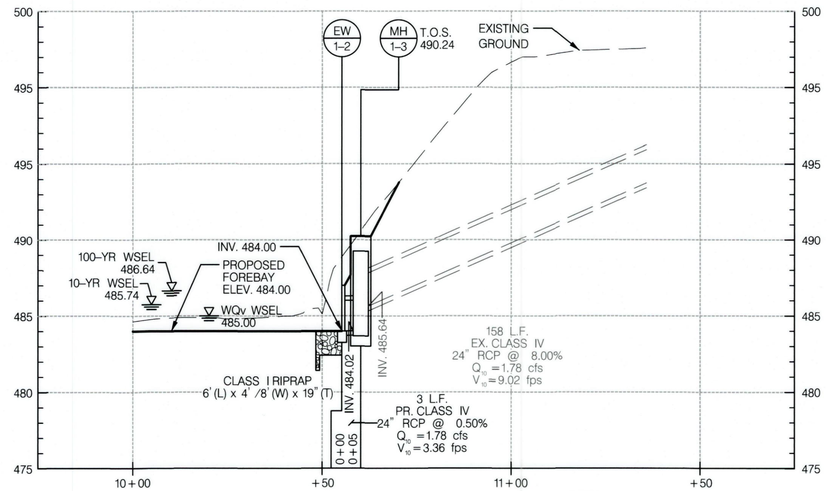
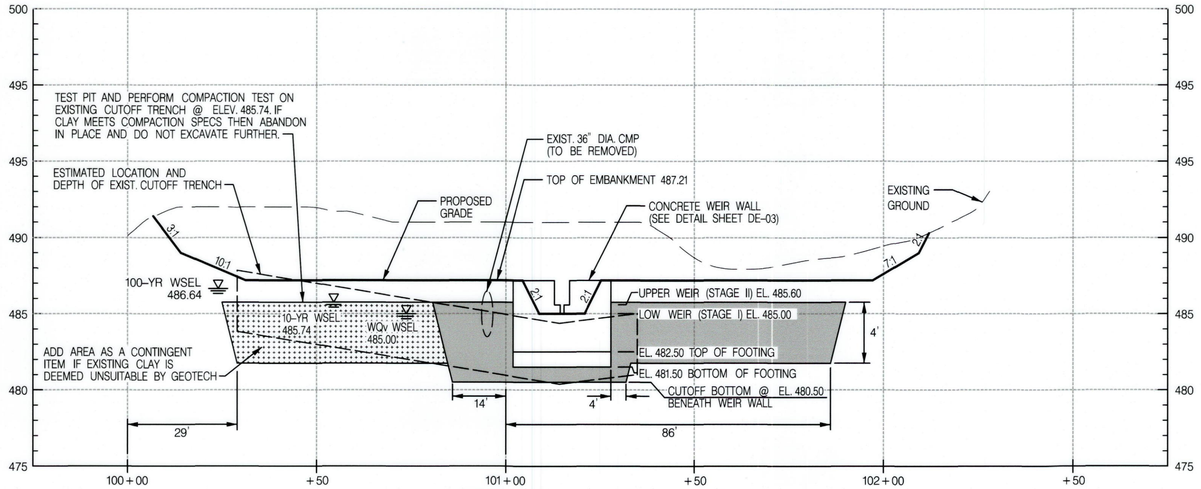


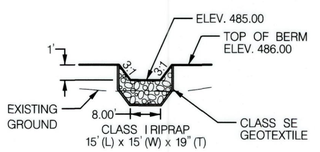
FALLSTON LIBRARY BIO–RETENTION PROFILE
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 5'



FALLSTON LIBRARY BIO–RETENTION OUTFALL PROFILE
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 5'



FALLSTON LIBRARY BIO–RETENTION PROFILE
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 5'



FOREBAY WEIR CROSS SECTION
SCALE: HORIZONTAL 1" = 20'
VERTICAL 1" = 5'

20' 0 20' 40'
SCALE: 1" = 20'

5'
0'
SCALE: 1" = 5'

S /C PLANS #59859
GRADING PERMIT #2818–2020
SWM PLAN #EG–SWMENG–000442–2019
SWM BILLING #97057

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BY:. arussell –

PLOTTED: Tuesday, November 10, 2020 AT 09:20 AM
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LICENSE NO. 25402
EXPIRATION DATE: 7 /17 /2022

REVISIONS

HARFORD COUNTY, MARYLAND

FALLSTON LIBRARY STORMWATER MANAGEMENT RETROFIT FINAL DESIGN
STORMWATER MANAGEMENT PROFILES (DP–01)

DRAWN BY : RG
DESIGNED BY : BA /CF
REVIEWED BY : BN
CONTRACT NO. :
SCALE : 1" = 20'
SHEET : 9 OF 14
DATE : 3 /18 /2020

ADC MAP : XXXX GRID: XX
TAX MAP : XXXX/XXX
HCG BILLING ID No.: 97057
HCG DWG ID No.: 20/8/15
SCALE: 1" = 1'

EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

HARFORD COUNTY EROSION AND SEDIMENT CONTROL

1. THE CONTRACTOR/OWNER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS. FURTHUR, NO CONSTRUCTION ACTIVITY SHALL TAKE PLACE UNTIL ALL REQUIRED PERMITS HAVE BEEN OBTAINED.
2. THE LIMITS OF DISTURBANCE SHALL BE CLEARLY DELINEATED IN THE FIELD PRIOR TO GRADING OF THE SITE TO ENSURE COMPLIANCE WITH APPROVED PLANS. ALL FOREST RETENTION AREAS WILL BE DELINEATED WITH BLAZE ORANGE FENCE AS WELL AS ANY SWM INFILTRATION PRACTICE PRIOR TO CLEARNING. WORK BEYOND THE LIMITS OF DISTURBANCE AND IN ANY AREA INSIDE THE FOREST RETENTION AND SWM INFILTRATION AREA IS CONSIDERED TO BE A VIOLATION OF THIS PLAN.
3. ALL SEDIMENT CONTROL PRACTICES MUST BE INSTALLED PRIOR TO ANY CONSTRUCTION ACTIVITY. UPON COMPLETION OF THE INSTALLATION OF PERIMETER SEDIMENT CONTROL PRACTICES THE SITE MUST BE INSPECTED BY THE DEPARTMENT OF PUBLIC WORKS (DPW). NO ADDITIONAL CONSTRUCTION ACTIVITY WILL BE AUTHORIZED WITHOUT THE APPROVAL FROM DPW.
4. ALL POINTS OF INGRESS AND EGRESS SHALL BE PROTECTD TO PREVENT TRACKING OF MUD INTO PUBLIC WAYS. DURING CONSTRUCTION, EVERY MEANS WILL BE TAKEN TO CONTROL SOIL EROSION AND SILTATION. IF NECESSARY A WASH RACK MAY NEED TO BE ESTABLISHED.
5. EARTH DIKES, SEDIMENT TRAPS, ETC. WILL BE LOCATED AS SHOWN ON THESE DRAWINGS. FIELD CHANGES AND MINOR ADJUSTMENTS ARE PERMISSIBLE AS LONG AS THE INSTALLATION FUNCTIONS AND CONFORMS TO SPECIFICATIONS. THE SITE INSPECTOR PRIOR TO INSTALLATION MUST APPROVE ALL SUCH CHANGES. MAJOR CHANGES TO THE APPROVED PLAN WILL REQUIRE RE-APPROVAL BY THE HARFORD SOIL CONSERVATION DISTRICT.
6. FOLLOWING INITIAL SOIL DISTURNACE OR RE-DISTRUBANCE PERMANENT OR TEMPORARY STABALIZATION SHALL BE COMPLETED WITHIN
   A) THREE CALENDAR DAYS ON SLOPES GREATER THAN 3:1, ALL WATERWAYS AND TO THE SURFACE OF ALL PERIMETER CONTROLS.
   B) SEVEN CALENDER DAYS AS TO ALL OTHER DISTRUBED OR GRADED AREAS OF THE PROJECT SITE
7. DUST CONTROL MUST BE MANAGED AS PART OF ALL SEDIMENT CONTROL PLANS. FAILURE TO DO SO IS A VIOLATION OF THIS PLAN.
8. SEDIMENT BASINS MUST BE BUILT TO DESIGN SPECIFICATIONS SHOWN ON THE PLAN. IF THE BASIN IS TO BE USED AS A FUTURE SWM FACILITY, THE BASIN WILL BE BUILT IN ACCORDANCE WITH THE LATEST MD-378 STANDARDS AND SPECIFICATIONS. SPECIFIED MATERIALS MUST BE USED. NO CHANGES OR MODIFICATIONS WILL BE MADE WITHOUT WRITTEN AUTHORIZATION OF THE HARFORD SOIL CONSERVATION DISTRICT.
9. TEMPORARY FENCING SHALL BE PLACED AROUND ALL SEDIMENT BASINS, TRAPS, AND PONDS DURING CONSTRUCTION AND SITE GRADING.
10. AT THE END OF EACH WORKING DAY ALL SEDIMENT CONTROL PRACTICES WILL BE INSPECTED AND LEFT OPERATIONAL. A WEEKLY LOG WILL BE KEPT IN ACCORDANCE WITH NOI-NPDES REGULATIONS. A COPY OF THE APPROVED SEDIMENT CONTROL PLANS SHALL BE AVAILABLE AT THE SITE AT ALL TIMES.
11. ENSURE POSITIVE DRAINAGE TO ALL ROAD INLETS DURING ALL PHASES OF ROAD CONSTRUCTION TO ENSURE POSITIVE FLOW TO TRAPS AND OR BASINS.
12. CUT AND/OR FILL SHALL BE DONE IN CONFORMANCE WITH 2011 EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS FOR LAND GRADING.
13. SURFACE FLOWS OVER CUT AND FILL SLOPES SHALL BE CONTROLLED BY EITHER REDIRECTING FLOWS FROM TRAVERSING THE SLOPES OR BY INSTALLING MECHANICAL DEVICES TO SAFELY CONVEY WATER DOWN SLOPES WITHOUT CAUSING EROSION.
14. OFF-SITE WASTE OR BORROW AREAS SHALL HAVE AN APPROVED EROSION AND SEDIMENT CONTROL PLAN PRIOR TO THE IMPORT OR EXPORT OF MATERIAL TO/FROM THE PROJECT SITE.
15. ALL MATERIAL ORIGINATING FROM THE DEVELOPMENT OF THE PROPERTY AND DEPOSITED ON THE PUBLIC RIGHT-OF-WAY SHALL BE IMMEDIATELY REMOVED.
16. STORM DRAIN INLETS AND OUTLETS SHALL BE PROTECTED PER 2011 EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS.
17. TOPSOIL, LIMING, FERTILIZING, SEEDING, MULCHING, SOD, ETC. ARE ALL ESSENTIAL PARTS OF THE SEDIMENT CONTROL PLAN AND MUST BE COMPLETED ALONG WITH ALL OTHER PRACTICES.
18. TRAPS TO BE REMOVED SHALL BE DEWATERED AS PER THE 2011 EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS.
19. PRIOR TO REMOVAL OF TRAPS OR CONVERSION OF SEDIMENT BASINS TO SWM FACILITIES, THE STORM DRAINS WILL BE FLUSHED.
20. SEDIMENT CONTROL PRACTICES WILL BE MAINTAINED UNTIL ALL DISTURBED AREAS FOR WHICH THE PRACTICES WERE INSTALLED HAVE BEEN STABILIZED. SEDIMENT CONTROL PRACTICES MAY BE REMOVED ONLY WITH THE AUTHORIZATION OF THE DPW INSPECTOR. ALL DISTURBED AREAS RESULTING FROM THE REMOVAL OF SEDIMENT CONTROL DEVICES SHALL BE STABILIZED IMMEDIATELY. REMOVAL PRIOR TO INSPECTOR'S APPROVAL CONSTITUTES A VIOLATION.

*SITE ANALYSIS:

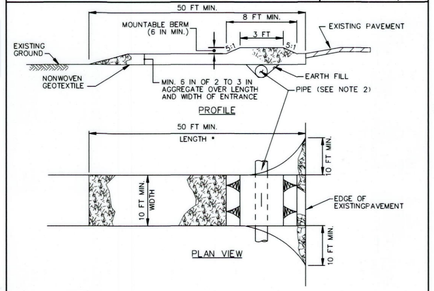
TOTAL SITE AREA:	172,933 /3.97	SQ. FT./AC.
TOTAL DISTURBED AREA:	27,157 /0.63	SQ. FT./AC.
AREA TO BE PAVED:	0 /0	SQ. FT./AC.
AREA TO BE STABILIZED:	27,157 /0.63	SQ. FT./AC.
CUT:	2,120	CU. YD.
FILL:	58	CU. YD.
TOPSOIL:	304	CU. YD.

NPDES ID PT. N: 677,207.93 E: 1,474,233.30

*EARTHWORK QUANTITIES ARE ESTIMATES ONLY AND NOT FOR BIDDING PURPOSES

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, MAINTAINING 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.

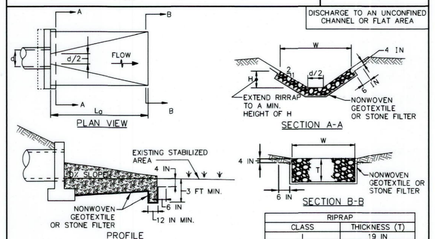
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

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

STANDARD SYMBOL: ROPIII

DISCHARGE TO AN UNCONFINED CHANNEL OR FLAT AREA



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

CONSTRUCTION SPECIFICATIONS

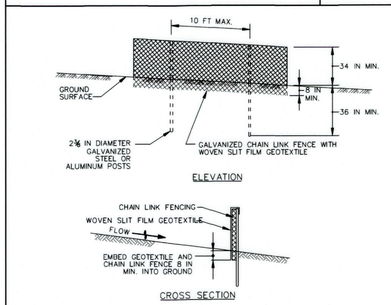
1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
2. USE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
3. 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.
4. EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPRAP.
5. 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 HOMOGENOUS 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.
6. 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.
7. CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
8. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND RIPRAP DISLODGED 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

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL: SSF



CONSTRUCTION SPECIFICATIONS

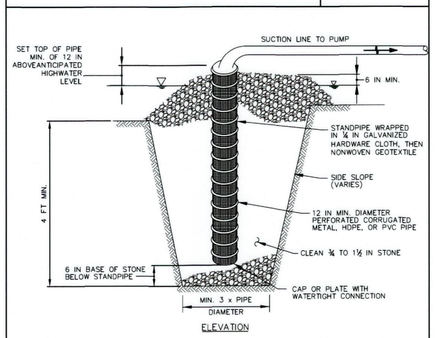
1. INSTALL 2¼ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH, SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2¼ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 90 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN, IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

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-2 SUMP PIT

STANDARD SYMBOL: SP



CONSTRUCTION SPECIFICATIONS

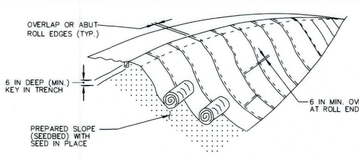
1. USE 12 INCH OR LARGER DIAMETER CORRUGATED METAL, HDPE, OR PVC PIPE WITH 1 INCH DIAMETER PERFORATIONS, 6 INCHES ON CENTER. BOTTOM OF PIPE MUST BE CAPPED WITH WATERTIGHT SEAL.
2. WRAP PIPE WITH ¼ INCH GALVANIZED HARDWARE CLOTH AND WRAP NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE HARDWARE CLOTH.
3. EXCAVATE PIT TO THREE TIMES THE PIPE DIAMETER AND FOUR FEET IN DEPTH. PLACE ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE, 6 INCHES IN DEPTH PRIOR TO PIPE PLACEMENT.
4. SET TOP OF PIPE MINIMUM 12 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
5. BACKFILL PIT AROUND THE PIPE WITH ¾ TO 1½ INCH CLEAN STONE OR EQUIVALENT RECYCLED CONCRETE AND EXTEND STONE A MINIMUM OF 6 INCHES ABOVE ANTICIPATED WATER SURFACE ELEVATION.
6. DISCHARGE TO A STABLE AREA AT A NONEROSIVE RATE.
7. A SUMP PIT REQUIRES FREQUENT MAINTENANCE. IF SYSTEM CLOGS, REMOVE PERFORATED PIPE AND REPLACE GEOTEXTILE AND STONE. KEEP POINT OF DISCHARGE FREE OF EROSION.

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/ft² (* INCLUDE SHEAR STRESS)



CONSTRUCTION SPECIFICATIONS

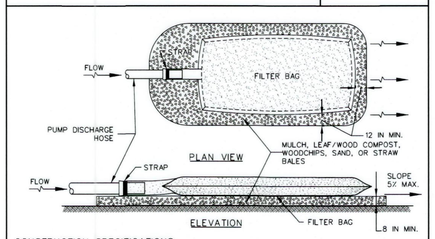
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE 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 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 ½ 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 SEEDED 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 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./FT²	ASTM D-4491
PERMITTIVITY (SEC⁻¹)	1.2 SEC⁻¹	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

S/C PLANS #59859
GRADING PERMIT #2818-2020
SWM PLAN #EG-SWMENG-000442-2019
SWM BILLING #97057

WHITNEY BAILEY COX & MAGNANI, LLC
300 East Joppa Road Suite 200
Baltimore, MD 21286
410.512.4500 www.wbcm.com
WBCM
Designing Infrastructure for Tomorrow ®

BY: arussell

ENGINEER'S CERTIFICATION

I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL AND STORMWATER MANAGEMENT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE 1994 MARYLAND STANDARD AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

ENGINEER Brian J. Hall DATE 3/18/2020

STATE OF MARYLAND — BRIAN SCOTT HALL — NO. 25402 — REGISTERED PROFESSIONAL ENGINEER

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND
LICENSE NO. 25402
EXPIRATION DATE: 7/17/2022

REVISIONS

HARFORD COUNTY, MARYLAND

FALLSTON LIBRARY STORMWATER MANAGEMENT RETROFIT
FINAL DESIGN
EROSION AND SEDIMENT CONTROL NOTES (EN-01)

DRAWN BY : RG
DESIGNED BY : BA /CF
REVIEWED BY : BN
CONTRACT NO. :
SCALE : NTS
SHEET : 10 OF 14
DATE : 3/18/2020

ADC MAP : XXXX GRID: XX
TAX MAP : XXXX/XXX
HCG BILLING ID No.: 97057
HCG DWG ID No.: 20816
SCALE 1:1000

PLOTTED: Tuesday, November 10, 2020 AT 09:21 AM
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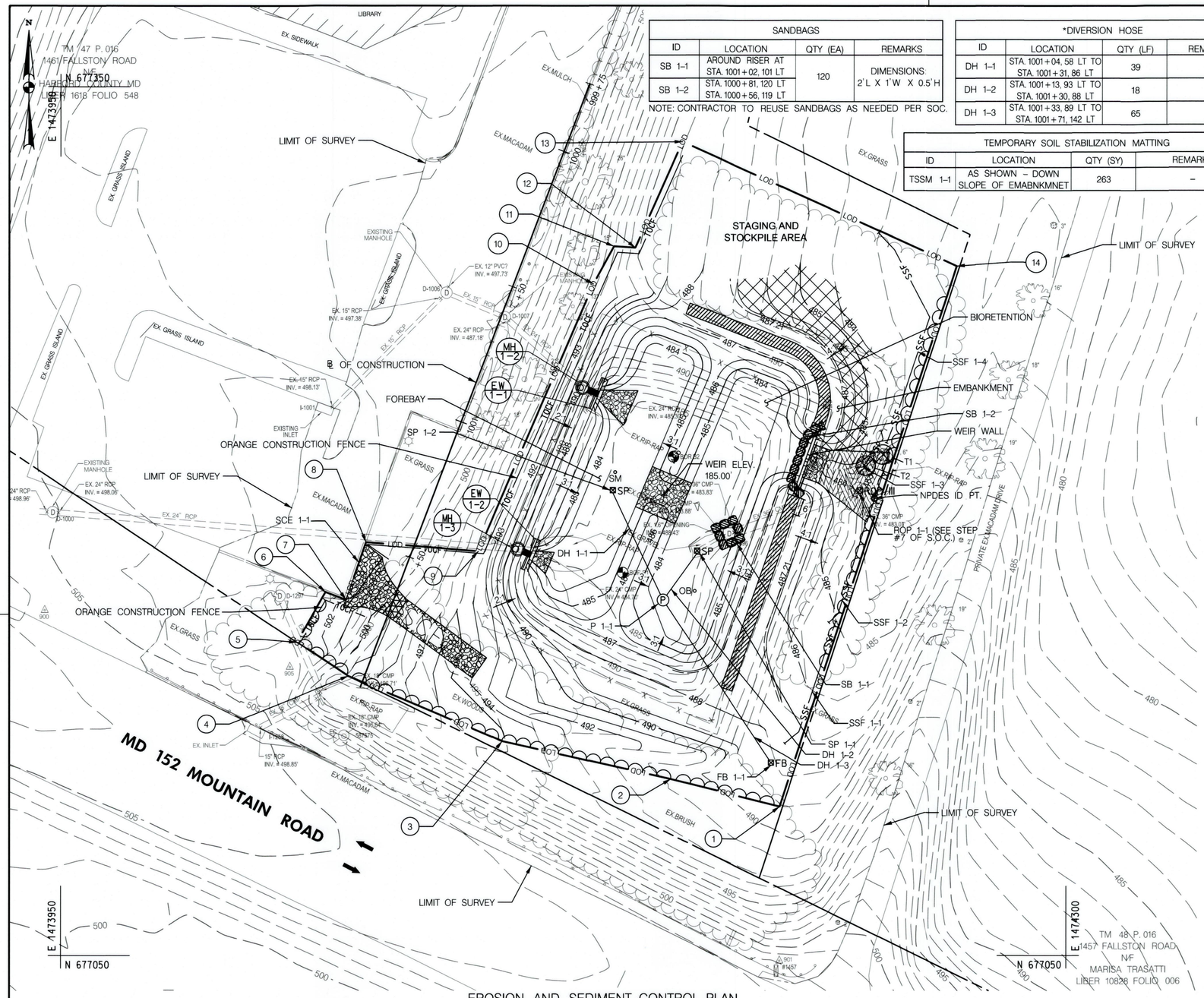

EROSION AND SEDIMENT CONTROL PLAN

SCALE: 1" = 20'

20' 0 20' 40'

SCALE: 1" = 20'

DATUM: NAD 83/91 Horizontal
NAVD 88 Vertical

LEGEND

100	EXISTING CONTOUR	PROPERTY LINE	OB○ OBSERVATION WELL
	EXISTING STORM DRAIN	100 PROPOSED CONTOUR	SM SEDIMENT MARKER
X X X	EXISTING FENCE	PROPOSED TREELINE	PROPOSED CLAY CORE CUT-OFF TRENCH
D 18"	EXISTING DRAINAGE STRUCTURES	CLASS I RIPRAP	Ⓟ PUMP
T1, 6"	EXISTING TREE	TYPE A SOIL STABILIZATION MATTING	TOCF TEMPORARY ORANGE CONSTRUCTION FENCE
	EXISTING TREE TO BE REMOVED	⊠SP SUMP PIT	
	EXISTING GUARDRAIL	⊠FB FILTER BAG	
LOD	LIMIT OF DISTURBANCE	DIVERSION HOSE	
SSF	SUPER SILT FENCE	SANDBAGS	
		⊠ROP III ROCK OUTFALL PROTECTION	
		TEMPORARY STABILIZATION MATTING	

SANDBAGS			
ID	LOCATION	QTY (EA)	REMARKS
SB 1–1	AROUND RISER AT STA. 1001+02, 101 LT	120	DIMENSIONS 2'L X 1'W X 0.5'H
SB 1–2	STA. 1000+81, 120 LT STA. 1000+56, 119 LT		

NOTE: CONTRACTOR TO REUSE SANDBAGS AS NEEDED PER SOC.

*DIVERSION HOSE			
ID	LOCATION	QTY (LF)	REMARKS
DH 1–1	STA. 1001+04, 58 LT TO STA. 1001+31, 86 LT	39	–
DH 1–2	STA. 1001+13, 93 LT TO STA. 1001+30, 88 LT	18	–
DH 1–3	STA. 1001+33, 89 LT TO STA. 1001+71, 142 LT	65	–

TEMPORARY SOIL STABILIZATION MATTING			
ID	LOCATION	QTY (SY)	REMARKS
TSSM 1–1	AS SHOWN – DOWN SLOPE OF EMABNKMNET	263	–

STABILIZED CONSTRUCTION ENTRANCE			
ID	LOCATION	QTY (EA)	REMARKS
SCE 1–1	STA. 1001+61, 16 RT TO STA. 1001+76, 37 LT	1	–

SUMP PIT			
ID	LOCATION	QTY (EA)	REMARKS
SP 1–1	STA. 1001+12, 93 LT	1	–
SP 1–2	STA. 1001+03, 58 LT	1	–

FILTER BAG			
ID	LOCATION	QTY (EA)	REMARKS
FB 1–1	STA. 1001+71, 143 LT	1	–

*PUMP			
ID	LOCATION	QTY (EA)	REMARKS
P 1–1	STA. 1001+32, 88 LT	1	–

RIPRAP FOR SEDIMENT CONTROL			
ID	LOCATION	QTY (TON)	REMARKS
ROP 1–1	STA. 1000+72, 138 LT	3	–

TREE REMOVAL SCHEDULE				
ID	LOCATION	SIZE (IN")	TYPE	CONDITION
T1	STA. 1000+54, 141 LT	6	–	UNKNOWN
T2	STA. 1000+64, 137 LT	8	–	UNKNOWN

LIMIT OF DISTURBANCE (LOD) TABLE		
NO.	NORTHING	EASTING
1	677101.4708	1474200.2365
2	677110.9006	1474162.2975
3	677123.9432	1474103.6496
4	677146.3914	1474050.0614
5	677158.1998	1474032.1864
6	677175.4355	1474042.0818
7	677172.7650	1474049.1927
8	677192.7526	1474056.2043
9	677189.6660	1474095.3106
10	677281.8128	1474135.3525
11	677294.8671	1474142.4999
12	677294.3951	1474149.9298
13	677330.9747	1474166.3197
14	677288.1523	1474261.9012

SUPER SILT FENCE			
ID	LOCATION	QTY (LF)	REMARKS
SSF 1–1	STA. 1001+63, 145 LT TO STA. 1001+18, 146 LT	48	–
SSF 1–2	STA. 1001+19, 144 LT STA. 1000+80, 144 LT	40	–
SSF 1–3	STA. 1000+65, 135 LT STA. 1000+51, 138 LT	16	–
SSF 1–4	STA. 1000+54, 141 LT STA. 999+87, 112 LT	80	–

*NOTE: THESE ITEMS ARE INCIDENTAL TO OTHER PERTINENT PAY ITEMS.

SEQUENCE OF CONSTRUCTION:

1. THE CONTRACTOR SHALL NOTIFY HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS DPW S /C INSPECTOR AT (410)–638–3127, EXT. 2434 AT LEAST SEVEN (7) DAYS BEFORE COMMENCING ANY LAND DISTURBING ACTIVITY AND, UNLESS WAIVED, SHALL BE REQUIRED TO HOLD A PRE–CONSTRUCTION MEETING BETWEEN PROJECT REPRESENTATIVES AND A REPRESENTATIVE OF HARFORD COUNTY.
2. LIMITS OF DISTURBANCE, ACCESS ROUTES, AND STAGING AREAS SHALL BE STAKED AND REVIEWED IN THE FIELD WITH THE ENGINEER PRIOR TO CONSTRUCTION TO ALLOW FOR ADJUSTMENTS. ANY ADJUSTMENT MUST BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
3. CLEAR AND GRUB FOR THE AREA REQUIRED FOR INSTALLATION OF THE STABILIZED CONSTRUCTION ENTRANCE (SCE), SUMP PIT (SP), FILTER BAG (FB), DIVERSION HOSE (DH), PUMP (P), SANDBAGS (SB), AND SUPER SILT FENCE (SSF).
4. INSTALL EROSION AND SEDIMENT CONTROL DEVICES INCLUDING THE SCE, SP, FB, DH, P, SUPER SILT FENCE, AND SANDBAGS AROUND THE RISER STRUCTURE.
5. THE CONTRACTOR SHALL STABILIZE ALL DISTURBED AREAS THAT DO NOT DRAIN TO AN APPROVED SEDIMENT CONTROL DEVICE BY THE END OF EACH WORK DAY.
6. REMOVE ENTIRE EXISTING FENCE.
7. EXCAVATE EMBANKMENT TO ELEVATION SUFFICIENT TO CONSTRUCT WEIR WALL STRUCTURE. REMOVE ENDWALL AND PORTION OF SPILLWAY PIPE AS NEEDED WHILE MAINTAINING POSITIVE FLOW. INSTALL TEMPORARY OUTFALL PROTECTION (ROP 1–1) DOWNSTREAM OF EXISTING SPILLWAY PIPE FOR STABLE CONVEYANCE TO OUTFALL CONTRACTOR SHALL TAKE PRECAUTION TO PROTECT THE STRUCTURAL INTEGRITY OF THE EXISTING 36" SPILLWAY PIPE DURING CONSTRUCTION OF THE WEIR WALL AND LOWERING OF THE EMBANKMENT
8. COMPLETE DOWNSTREAM GRADING IN OUTFALL CHANNEL AND INSTALL PERMANENT RIPRAP AT OUTFALL.
9. REMOVE SANDBAGS FROM AROUND RISER STRUCTURE AND INSTALL AROUND NEWLY CONSTRUCTED WEIR WALL.
10. DEMOLISH AND REMOVE EXISTING RISER STRUCTURE AND REMAINING SPILLWAY PIPE. FILL EXISTING RISER FOOTPRINT AND EXISTING SPILLWAY PIPE TRENCH TO PROPOSED GRADE AND STABILIZE USING SAME DAY STABILIZATION.
11. REMOVE HEADWALLS FROM BOTH INFLOWS. ENSURE EXISTING INFLOW PIPES TO REMAIN ARE NOT DAMAGED AND DO NOT BECOME SEPARATED FROM UPSTREAM PIPE LENGTHS.
12. GRADE REMAINDER OF SITE. DEWATER USING THE FB AS NECESSARY THROUGHOUT CONSTRUCTION. PROVIDE STABILIZATION OVER THE ENTIRE GRADED AREA PER THE LANDSCAPE PLAN.
13. EXCAVATE BIORETENTION MEDIA AREA TO SUBGRADE. INSTALL BIORETENTION MEDIA. OVERLAP GEOTEXTILE FROM SIDES OF THE MEDIA TO COVER THE TOP OF THE MEDIA UNTIL UPLAND AREAS ARE PERMANENTLY STABILIZED.
14. CONSTRUCT ENDWALLS AND ADD RIPRAP AT BOTH INFLOWS AS SHOWN ON THE PLANS.
15. REMOVE SCE. ROTOTILL ALL REMAINING DISTURBED SOILS FROM THE SCE. REPAIR ANY DAMAGE TO CURB.
16. UPON FINAL PERMANENT STABILIZATION AND WITH THE APPROVAL OF THE HARFORD COUNTY DPW S /C INSPECTOR, REMOVE ALL REMAINING EROSION AND SEDIMENT CONTROL DEVICES AND STABILIZE AREAS DISTURBED BY THE PROCESS.
17. AFTER THE SITE IS COMPLETELY STABILIZED AND WITH HARFORD COUNTY DPW S /C INSPECTOR, WRITTEN APPROVAL, REMOVE GEOTEXTILE FROM THE TOP OF THE BIORETENTION MEDIA AND INSTALL LANDSCAPING IN BIORETENTION MEDIA AND ON REMAINDER OF SITE.

CONSTRUCTION NOTES:

1. BEFORE MATERIAL CAN LEAVE THE SITE, ALL OFF–SITE STOCKPILING MUST BE APPROVED BY THE HARFORD COUNTY DPW AND MUST HAVE AN EXISTING GRADING PERMIT AND APPROVED S /C PLAN FOR THAT STOCK PILE AREA.
2. AT THE END OF EACH WORK DAY THE CONTRACTOR SHALL STABILIZE ANY DISTURBED AREA NOT DIRECTED TO AN EROSION AND SEDIMENT CONTROL DEVICE AND AS NOTED NEEDING SAME DAY STABILIZATION.

S /C PLANS #59859
GRADING PERMIT #2818–2020
SWM PLAN #EG–SWMENG–000442–2019
SWM BILLING #97057

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LICENSE NO. 25402
EXPIRATION DATE: 7 /17 /2022

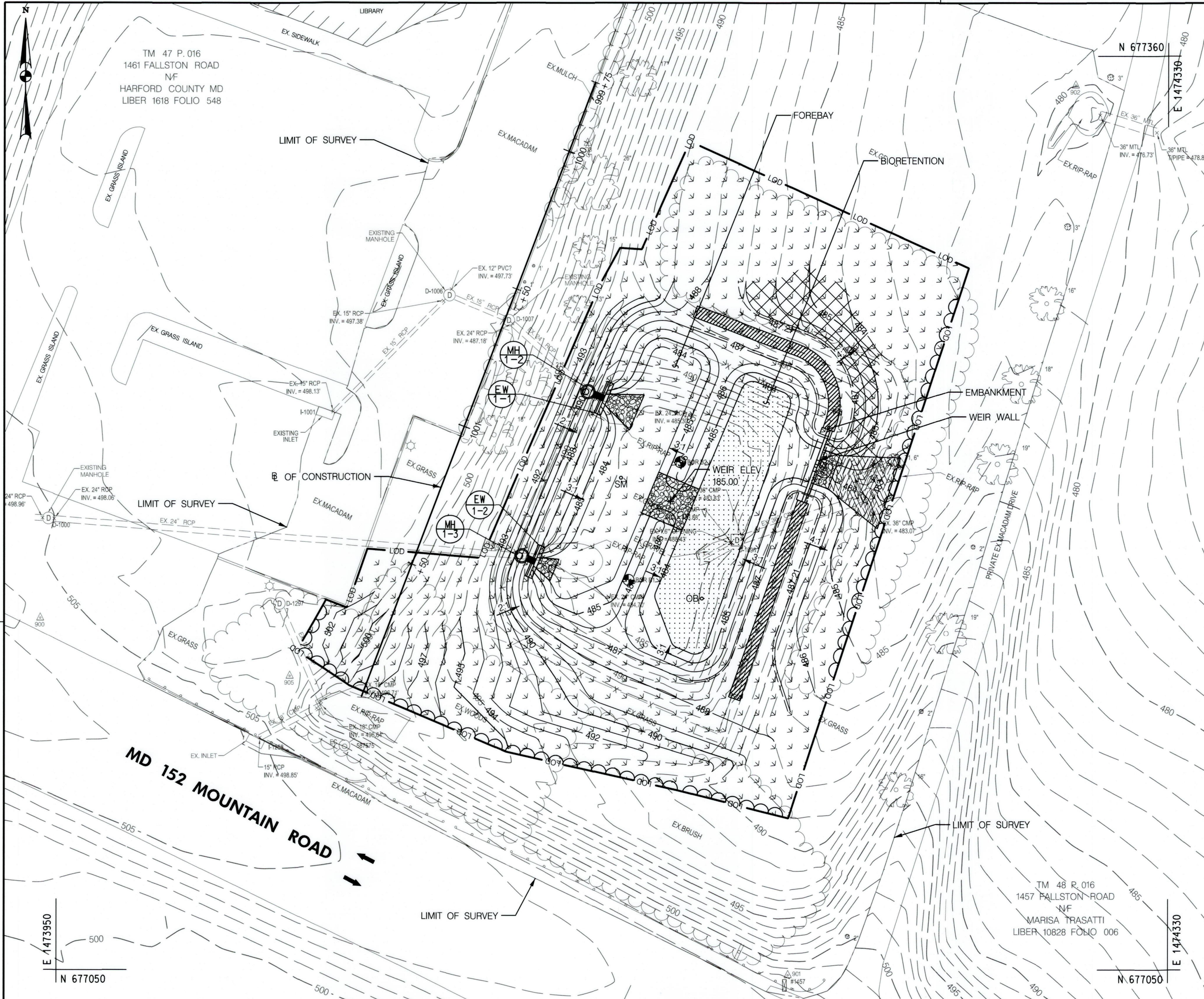
REVISIONS

HARFORD COUNTY, MARYLAND

FALLSTON LIBRARY STORMWATER MANAGEMENT RETROFIT
FINAL DESIGN
EROSION AND SEDIMENT CONTROL PLAN SHEET (ES–01)

DRAWN BY : RG
DESIGNED BY : BA /CF
REVIEWED BY : BN
CONTRACT NO. :
SCALE : 1" = 20'
SHEET : 11 OF 14
DATE : 3 /18 /2020

TAX MAP : XXXX/XXXX ADC MAP : XXXX GRID: XX
HCG BILLING ID No.: 97057
HCG DWG ID No.: 20817
BY: arussell –
PLOTTED: Tuesday, November 10, 2020 AT 09:22 AM
FILE: P:\2016\16095605\Drawings\20-EWR\pES-P001_FallstonLibrary .dgn



LANDSCAPE PLAN
SCALE: 1" = 20'

SCALE: 1" = 20'

DATUM: NAD 83/91 Horizontal
NAVD 88 Vertical

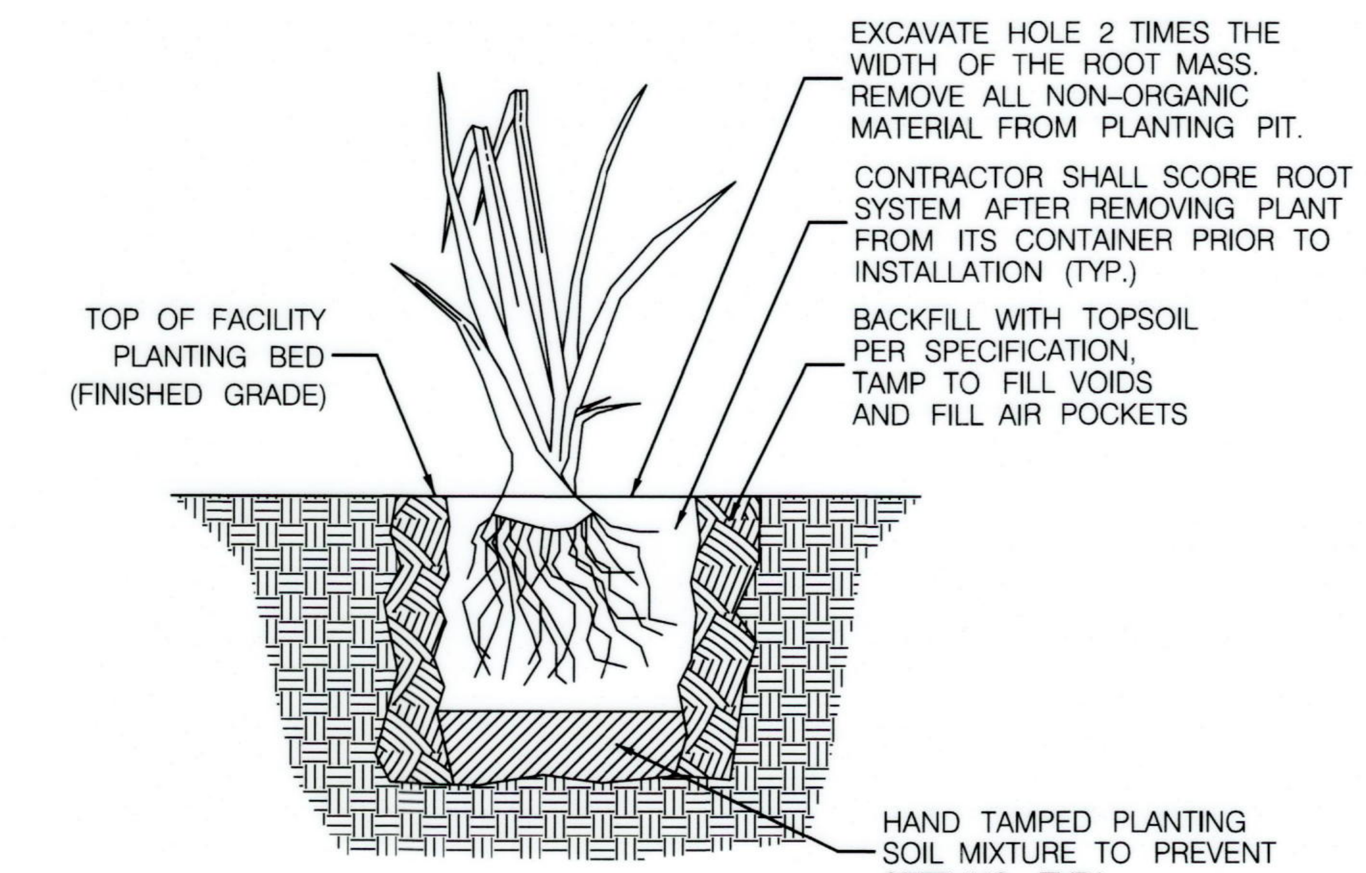
SHREDDED HARDWOOD BARK (SHB) MULCHING 3" DEPTH		
LOCATION	QTY (SY)	REMARKS
FACILITY SURFACE	202	–

PLACING FURNISHED TOPSOIL 4" DEPTH		
LOCATION	QTY (SY /CY)	REMARKS
ALL DISTURBED AREA OUTSIDE FACILITY	1,408 /155	–

TURFGRASS ESTABLISHMENT		
LOCATION	QTY (SY)	REMARKS
SITE	2,816	–

PLANTING SCHEDULE						
PLANT KEY	BOTANICAL /COMMON NAME	SIZE	FORM	SPACING	QUANTITY	NATIVE
	HERBACEOUS PLANTING (1,815 SF)			TOTAL QUANTITY 931 PLUGS		
PVSD	*Panicum virgatum / Shenandoah Switchgrass	2" x 5"	PLUGS	18" O.C.	310 PLUGS	YES
ED	*Eqpatorium perpurea / Joe Pye Weed	2" x 5"	PLUGS	18" O.C.	311 PLUGS	YES
HM	*Hibiscus mosheutos / Crimsoneyed Rosemallow	2" x 5"	PLUGS	18" O.C.	310 PLUGS	YES

*OWNER CAN SELECT APPROVED EQUAL PLANTS



HERBACEOUS PLANTING – PLUG

NOT TO SCALE

LEGEND

EXISTING CONTOUR	EXISTING GUARDRAIL
EXISTING STORM DRAIN	PROPOSED CONTOUR
EXISTING FENCE	LIMIT OF DISTURBANCE
EXISTING DRAINAGE STRUCTURES	PROPERTY LINE
EXISTING TREE	PROPOSED TREELINE
	CLASS I RIPRAP
TYPE A SOIL STABILIZATION MATTING	
TEMPORARY STABILIZATION MATTING	
TURFGRASS ESTABLISHMENT	
BIORETENTION MIX	

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S /C PLANS #59859
GRADING PERMIT #2818-2020
SWM PLAN #EG-SWMENG-000442-2019
SWM BILLING #97057

REVISIONS

HARFORD COUNTY, MARYLAND

FALLSTON LIBRARY STORMWATER MANAGEMENT RETROFIT
FINAL DESIGN
LANDSCAPE PLAN SHEET (LD-01)

DRAWN BY : RG
DESIGNED BY : BA /CF
REVIEWED BY : BN
CONTRACT NO. :
SCALE : 1" = 20'
SHEET : 12 OF 14
DATE : 3 /18 /2020

ADC MAP : XXXX GRID: XX
TAX MAP : XXXX/XXX
HCG BILLING ID No.: 97057
HCG DWG ID No.: 2018/8

BY: arussell

PLOTTED: Tuesday, November 10, 2020 AT 09:23 AM
FILE: P:\2016\16095605\Drawings\20-EWR\pLD-P001_FallstonLibrary.dgn

PLANTING HERBACEOUS PLUG

DESCRIPTION:

The work under this section consists of furnishing, installing and maintenance of the herbaceous plants as specified in the Contract Documents; and all planting operations necessary to complete the work as specified. Transporting and installation of plant material shall take place March 1 to June 15 or September 15 to December 15.

Prior to the start of work on this item, the Contractor shall submit a proposed planting schedule, including source of plant material to the Project Manager for review. No work shall be performed until the Project Manager approves this schedule.

MATERIALS:

Plant Material

All plant material shall conform to the current issue of the American Standard for Nursery Stock published by the American Association of Nurserymen.
Plant materials must be selected from certified nurseries that have been inspected by state and/or federal agencies. Nursery inspection certificates shall be furnished to the Engineer upon request.
Plant material collected from the *wild* is prohibited.
Container grown and plug stock shall have been grown in a container long enough for the root system to have developed sufficiently to hold its soil. Roots shall visibly extend to the inside face of the growing container. All container plants shall be grouped and watered daily until they are planted.
The Engineer may reject plants damaged in handling or transport.

Substitute Plant Material

If a substitute is selected, it must be native to the Maryland region in which it is being planted and of the same size, value, and quality as the original plant. The Contractor shall submit a revised planting schedule for substitute plant materials, including source of plant material to the Project Manager for review and approval. No work substitute plant materials shall be installed until Project Manager approves the revised planting schedule.

Preparation

The live plant material shall be transported to the construction site within three (3) calendar days of delivery from the nursery.
Live plant materials must be protected against drying out and overheating beforeduring transport (e.g. they shall be covered transported in unheated vehicles, moistened, kept in soak pits) and on-site prior to installation (e.g. by storing in controlled conditions, storing in shade, covering with evergreen branches or plastic, placing in moist soil, or spraying with anti-transpirant chemicals). Live materials shall receive continuous shade, shall be sheltered from the wind.

CONSTRUCTION METHODS:

Planting

The Contractor shall refer to the Plant Schedules and Details on the Contract Documents for specific species and spacing requirements.
The Contractor is not required to stake out each individual planting pit. However, upon planting a typical 50-foot by 50-foot area, the Contractor shall have the Harford County representative inspect and approve plant spacing and planting techniques prior to proceeding. The contractor shall relocate plants at the discretion of the inspector at no additional cost to the County.

Plant Establishment

Inspection of installed plants shall be made by the Project Manager and the Contractor within two weeks of written notification from the Contractor that the plantings are complete. An 85% survival rate will be required at the end of the one-year maintenance period following Installation Phase acceptance.

The Contractor is responsible for replanting all areas not meeting 85% survival.
The Contractor will not be responsible for plant material that has been damaged by vandalism, fire, flooding, or other activities beyond the Contractors* control.

Clean Up

During planting all areas shall be kept neat, clean and free of all trash and debris, and all reasonable precautions shall be taken to avoid damage to existing plants, turf, structures and private property.
Remove all tags, labels, strings, and wire from the plant materials, unless otherwise directed by the Engineer. Final cleanup shall be the responsibility of the Contractor and consist of removing all trash and materials incidental to the project and disposing of them off-site.

Installation Phase Acceptance

Installation Phase acceptance shall be granted when all installation phase requirements are met.

MEASUREMENT AND PAYMENT:

Planting Herbaceous Plug will be paid for at the unit price bid per each plant installed, regardless of species. The payment will be full compensation for furnishing, storing, soaking, watering, and planting, and for all materials, labor, equipment, tools and incidentals necessary to complete the work specified in the Contract Documents, or by the County. No separate payment will be made for the replacement of plants during installation or the oneyear warranty period.

TURFGRASS ESTABLISHMENT

DESCRIPTION:

All work to be performed under this item shall be in accordance with Sections 705 and 920 of the Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials, dated July 2020 and all revisions hereto.

This item involves the placement of seed, mulch and fertilizer on disturbed areas above the permanent pool elevation, within the work area upon completion of grading and disturbance, for the purpose of permanent turf grass establishment.

Within the perimeter of the pond, seed, fertilizer and wood cellulose fiber mulch shall be applied using the hydroseed method. NO STRAW MULCH WILL BE ALLOWED within the perimeter of the stormwater ponds. Turfgrass must achieve a minimum of 85% coverage.

MEASUREMENT AND PAYMENT:

This item will be measured and paid for at the Contract unit price per square yard. The payment will be full compensation for preparing soil, preparing seed bed, applying fertilizer, mulch, seed mixes, seed additives, overseeding, reseeding, and repairing unacceptable areas, and all material, labor, equipment, tools and incidentals necessary to complete the work.

TEMPORARY SEED

DESCRIPTION:

All work to be performed under this item shall be in accordance with Section 704 Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials, dated July 2020 and all revisions hereto.

MEASUREMENT AND PAYMENT:

Temporary Seed will be measured and paid for at the Contract unit price per square yard. The payment will be full compensation for all material, labor, equipment, tools, disposal fees and incidentals necessary to complete the work.

TEMPORARY MULCH

DESCRIPTION:

All work to be performed under this item shall be in accordance with Section 704 Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials, dated July 2020 and all revisions hereto.

NO STRAW MULCH WILL BE ALLOWED within the perimeter of the stormwater pond.

MEASUREMENT AND PAYMENT:

Temporary Mulch will be measured and paid for at the Contract unit price per square yard, applied as either temporary matted straw mulch or cellulose fiber mulch. The payment will be full compensation for all material, labor, equipment, tools, disposal fees and incidentals necessary to complete the work.

SHREDDED HARDWOOD BARK MULCHING 3-INCH DEPTH

DESCRIPTION:

All work to be performed under this item shall be in accordance with Section 710 Maryland Department of Transportation State Highway Administration Standard Specifications for Construction and Materials, dated July 2020 and all revisions hereto.

MEASUREMENT AND PAYMENT:

Shredded Hardwood Bark Mulching will be measured and paid for at the Contract unit price per square yard placed. The payment will be full compensation for all material, fasteners, certification, labor, equipment, tools, and incidentals necessary to complete the work. The payment will include the cost of repair or replacement until Final Acceptance.

ADC MAP : XXXX GRID: XX

TAX MAP : XXXX/XXX

HCG BILLING ID No.: 97057

HCG DWG ID No.: 20181 9

SCALE: 1 inch

BY: arussell –

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LICENSE NO. 25402
EXPIRATION DATE: 7 /17 /2022

S /C PLANS #59859
GRADING PERMIT #2818-2020
SWM PLAN #EG-SWMENG-000442-2019
SWM BILLING #97057

REVISIONS

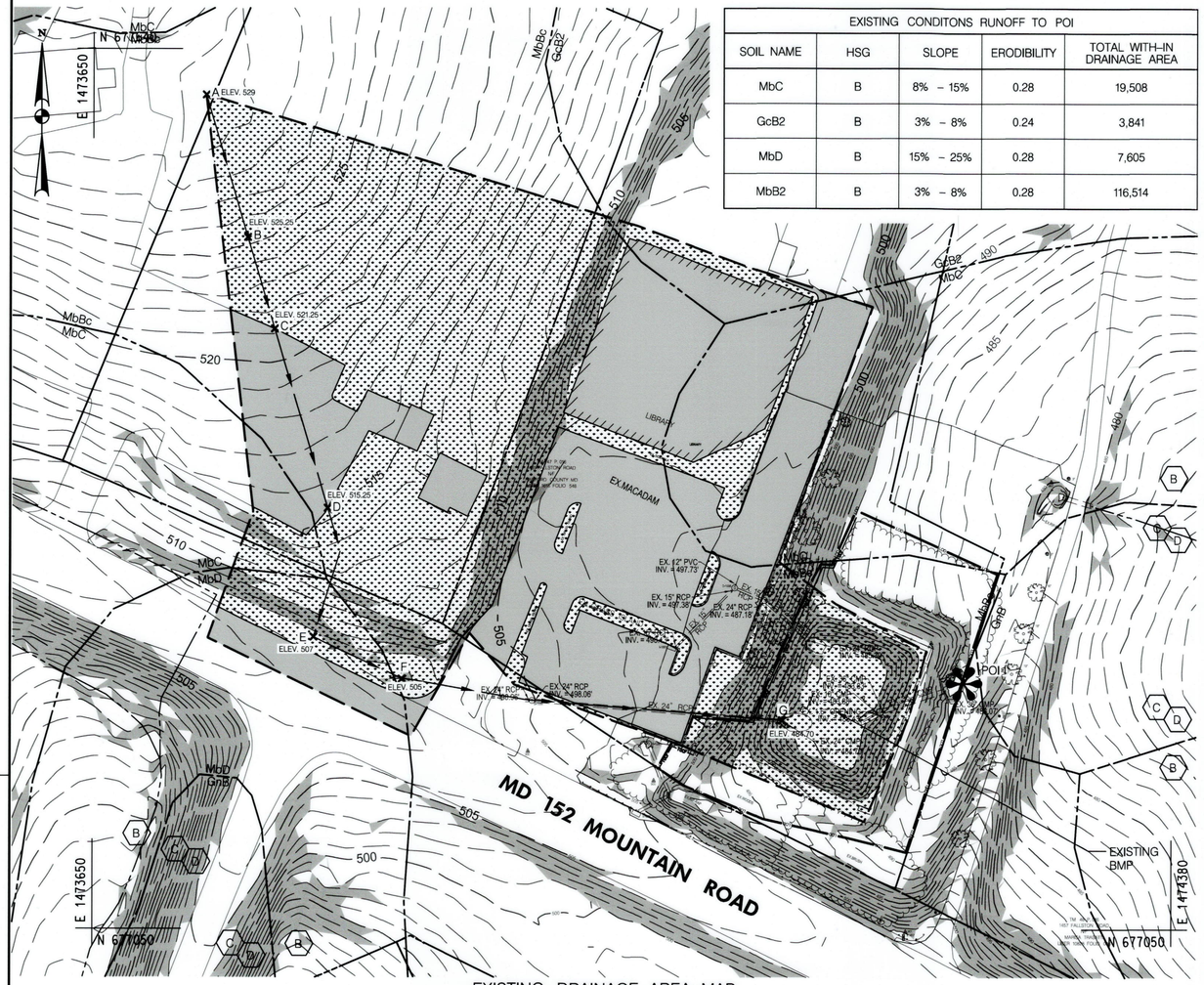
HARFORD COUNTY, MARYLAND

FALLSTON LIBRARY STORMWATER MANAGEMENT RETROFIT
FINAL DESIGN
LANDSCAPE NOTE (LD-02)

DRAWN BY : RG
DESIGNED BY : BA /CF
REVIEWED BY : BN

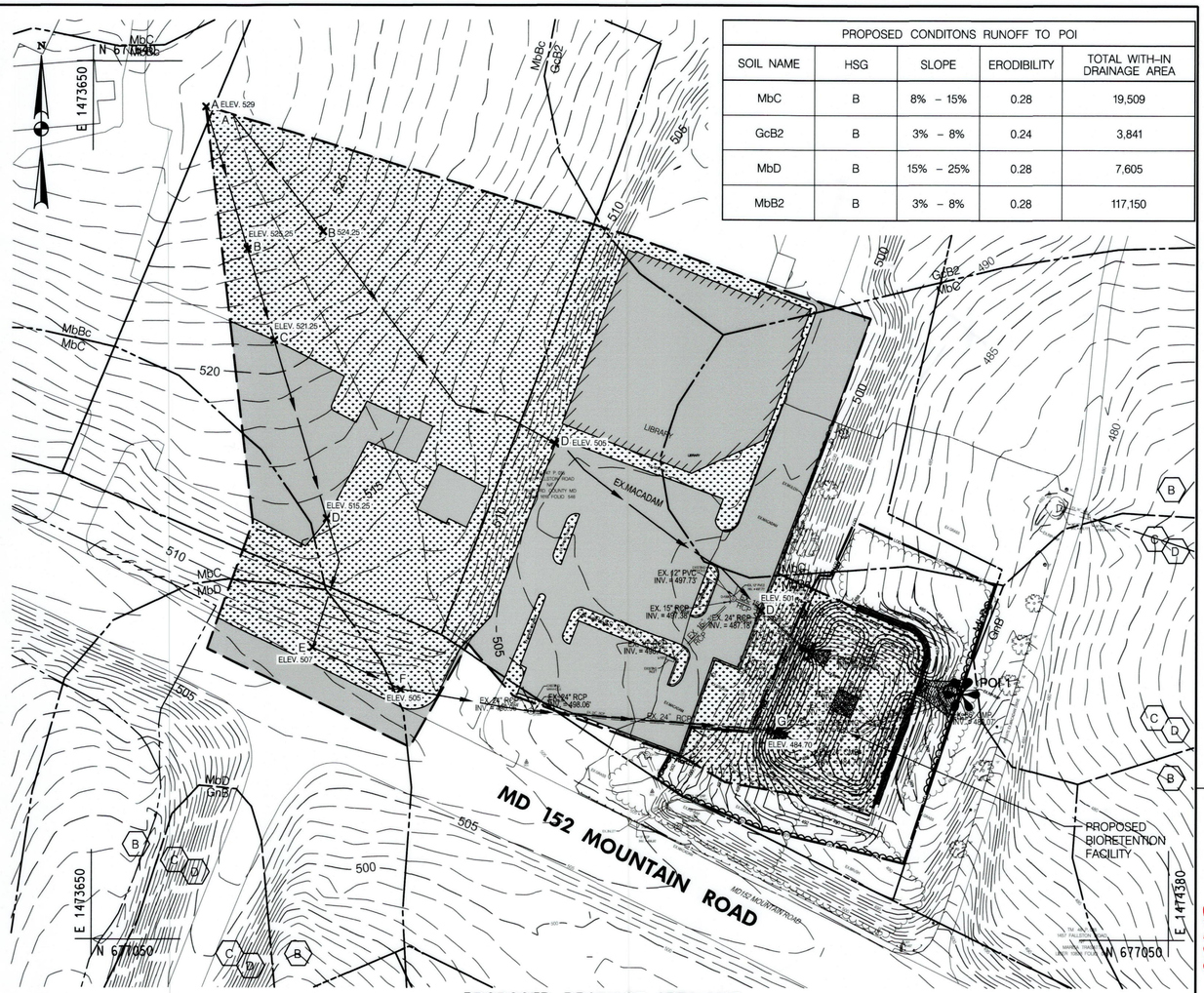
CONTRACT NO. :
SCALE : NTS
SHEET : 13 OF 14
DATE : 3 /18 /2020

EXISTING CONDITONS RUNOFF TO POI				
SOIL NAME	HSG	SLOPE	ERODIBILITY	TOTAL WITH-IN DRAINAGE AREA
MbC	B	8% – 15%	0.28	19,508
GcB2	B	3% – 8%	0.24	3,841
MbD	B	15% – 25%	0.28	7,605
MbB2	B	3% – 8%	0.28	116,514



EXISTING DRAINAGE AREA MAP
SCALE: 1" = 50'

PROPOSED CONDITONS RUNOFF TO POI				
SOIL NAME	HSG	SLOPE	ERODIBILITY	TOTAL WITH-IN DRAINAGE AREA
MbC	B	8% – 15%	0.28	19,509
GcB2	B	3% – 8%	0.24	3,841
MbD	B	15% – 25%	0.28	7,605
MbB2	B	3% – 8%	0.28	117,150



PROPOSED DRAINAGE AREA MAP
SCALE: 1" = 50'

EXISTING CONDITONS RUNOFF TO POI						
POINT OF INVESTIGATION	DRAINAGE AREA (AC.)	IMPERVIOUS AREA (AC.)	OPEN SPACE AREA (AC.)	TIME OF CONCENTRATION (HR)	CURVE NUMBER	DESCRIPTION
POI 1	3.39	1.47	1.92	0.22	77	DA DISCHARGES THROUGH EXISTING SWM OUTFALL PIPE TO EXISTING DS CHANNEL

PROPOSED CONDITONS RUNOFF TO POI						
POINT OF INVESTIGATION	DRAINAGE AREA (AC.)	IMPERVIOUS AREA (AC.)	OPEN SPACE AREA (AC.)	TIME OF CONCENTRATION (HR)	CURVE NUMBER	DESCRIPTION
POI 1	3.40	1.47	1.93	0.22	77	DA DISCHARGES THROUGH PROPOSED SWM WEIR TO EXISTING DS CHANNEL

PROVIDED ESD MANAGEMENT								
POINT OF INVESTIGATION	TYPE OF PRACTICE	TREATED IMP. AREA ON-SITE OR INSIDE ROW (AC.)	PERVIOUS AREA INCLUDING FACILITY FOOTPRINT (AC.)	R_v REQUIRED BY PRATICE (INCHES)	REQUIRED ESD_v (CUBIC FEET)	R_v TREATED BY PRACTICE (INCHES)	PROVIDED ESD_v (CUBIC FEET)	PROVIDED RE_v (CUBIC FEET)
POI 1	BIORETENTION	1.47	1.93	N /A	N /A	1.09	5,923	1,540

QUANTITY MANAGEMENT SUMMARY TABLE						
POINT OF INVESTIGATION	1–YR STORM EVENT (c.f.s.)		2–YR STORM EVENT (c.f.s.)		10–YR STORM EVENT (c.f.s.)	
	EXISTING CONDITIONS	DEVELOPED CONDITIONS WITHOUT SWM	EXISTING CONDITIONS	DEVELOPED CONDITIONS WITHOUT SWM	EXISTING CONDITIONS	DEVELOPED CONDITIONS WITHOUT SWM
POI 1	2.92	2.92	4.36	4.36	9.28	9.29

50' 0 50' 100'
SCALE: 1" = 50'

DATUM: NAD 83/91 Horizontal
NAVD 88 Vertical

LEGEND

- DRAINAGE AREA BOUNDARY
- LIMIT OF DISTURBANCE (LOD)
- POINT OF INVESTIGATION
- PROPERTY LINE
- STEEP SLOPES 15% ≤
- SOIL BOUNDARY
- SUBSOIL BOUNDARY (HSG TYPE / HSG TYPE)
- IMPERVIOUS AREA
- GRASS, OPEN SPACE

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STATE OF MARYLAND
BRIAN SCOTT KOLL
NO. 25402
PROFESSIONAL ENGINEER

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LICENSE NO. 25402
EXPIRATION DATE: 7 /17 /2022

REVISIONS

HARFORD COUNTY, MARYLAND

FALLSTON LIBRARY STORMWATER MANAGEMENT RETROFIT
FINAL DESIGN
DRAINAGE AREA MAPS (DA-01)

DRAWN BY : RG
DESIGNED BY : BA /CF
REVIEWED BY : BN

CONTRACT NO. :
SCALE : 1" = 50'
SHEET : 14 OF 14
DATE : 3 /18 /2020

S /C PLANS #59859
GRADING PERMIT #2818-2020
SWM PLAN #EG-SWMENG-000442-2019
SWM BILLING #97057

ADC MAP : XXXX GRID: XX
TAX MAP : XXXX/XXX
HCG BILLING ID No.: 97057
HCG DWG ID No.: 201820
SCALE: 1 inch

BY: arussell

PLOTTED: Tuesday, November 10, 2020 AT 09:26 AM
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