

HOWARD COUNTY

Capital Project #D-1160

Beech Creek Drive Stormwater Management Retrofit Project

Storm Water Management Division
Bureau Of Environmental Services

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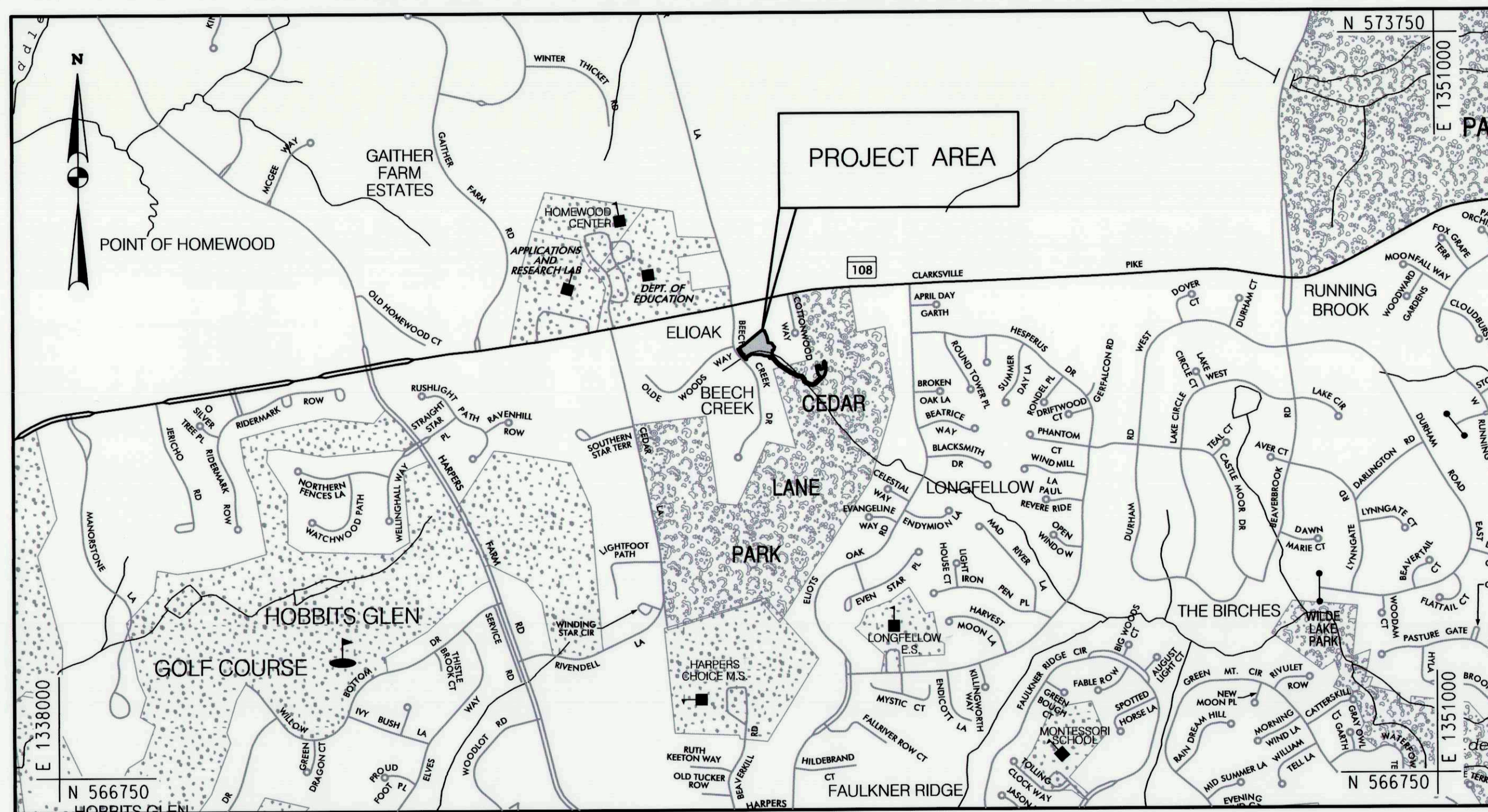
LEGEND

PROPOSED MEDIAN BARRIER	
ELECTRICAL HAND BOX - SIGNALS	
FLOW LINE	
STATE, COUNTY OR CITY LINES	
PROPOSED TRAFFIC BARRIER	
EXISTING TRAFFIC BARRIER	
PROPOSED FENCE LINE	
EXISTING FENCE LINE	
RIGHT OF WAY LINE	
EXISTING ROADWAY	
BASE OR SURVEY LINE	
TRAVERSE POINT	
APPROXIMATE LIMITS OF CUT AND/OR FILL	
PROPOSED MAJOR CONTOUR	
PROPOSED MINOR CONTOUR	
LIMIT OF DISTURBANCE	
EXISTING MAJOR CONTOURS	
EXISTING MINOR CONTOURS	
EXISTING PIPE/CULVERT	
EXISTING DROP INLET	
WETLAND	
HEDGE / TREE LINE	
BUSH / TREE	
CONIFEROUS TREE	
LIGHT POLE	

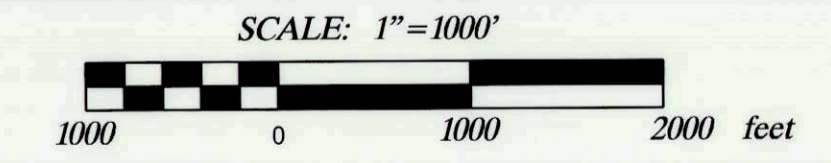
PERMITS / APPROVALS			
AGENCY	PERMIT #	DATE APPLIED	DATE APPROVED
MDE JOINT PERMIT APPLICATION	201761452	07 /27 /2017	09 /13 /2017
MDE DAM SAFETY	N/A	N/A	N/A
HOWARD SOIL CONSERVATION DISTRICT	EP-16-23	30% 02 /25 /2016 65% 11 /11 /2016 90% 5 /5 /2017 Final 10 /13 /2017	30% 04 /18 /2016 65% 11 /30 /2016 90% 09 /20 /2017 Final 10 /17 /2017
ROADSIDE TREE PERMIT INDIVIDUAL (RTI)	2017-0918	09 /13 /2017	10 /04 /2017

GENERAL NOTES

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST FIVE (5) WORKING DAYS PRIOR TO ANY WORK BEING DONE.
- THIS PLAN IS PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS /BUREAU OF ENGINEERING CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
- SURVEY OF THIS SITE WAS PERFORMED BY AB CONSULTANTS, INC - APRIL 2015
- THE COORDINATES SHOWN HEREON ARE BASED ON HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. BENCHMARKS SHOWN HEREON WERE PROVIDED BY MERCADO CONSULTANTS, INC.
- WETLANDS AND WATERS OF THE US WERE DELINEATED BY McCORMICK TAYLOR - FEB 2015.
- OBSTRUCTIONS SHOWN ON THIS DRAWING ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY AND McCORMICK TAYLOR DOES NOT WARRANT OR GUARANTEE THE CORRECTNESS OR COMPLETENESS OF THE INFORMATION GIVEN. THE CONTRACTOR MUST VERIFY SUCH INFORMATION TO HIS OWN SATISFACTION.
- THE EXISTING INFORMATION SHOWN ON THESE PLANS WAS TAKEN FROM THE BEST AVAILABLE SOURCES AND SHALL BE VERIFIED BEFORE STARTING CONSTRUCTION. HOWARD COUNTY DOES NOT GUARANTEE THE COMPLETENESS OR THE CORRECTNESS OF THE SHOWN INFORMATION.
- THE CONTRACTORS SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO THE CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY. ALL UTILITIES SHALL HAVE A CLEARANCE BY A MINIMUM OF 6 INCHES VERTICALLY AND A MINIMUM OF 5 FEET HORIZONTALLY.
- SHOULD THE CONTRACTOR DISCOVER DISCREPANCIES BETWEEN THE PLANS AND FIELD CONDITIONS, THE CONTRACTOR SHALL NOTIFY McCORMICK TAYLOR IMMEDIATELY TO RESOLVE THE SITUATION.
- ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS.
- THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, AND SAFETY PRECAUTIONS AND PROGRAMS.
- SITE DEVELOPMENT DETAILS ARE REFERENCED FROM THE AS-BUILT PLANS FOR BEECH CREEK (F-85-136).
- A JOINT PERMIT APPLICATION HAS BEEN SUBMITTED TO THE MARYLAND DEPARTMENT OF THE ENVIRONMENT FOR THIS PROJECT. (TRACKING NUMBER 201761452)
- PROJECT IMPACTS INCLUDE WORK IN A USE IV-P STREAM. WORK MAY NOT BE CONDUCTED DURING THE PERIOD BETWEEN MARCH 1 AND MAY 31. THE SITE IS LOCATED WITHIN THE LITTLE PATUXENT RIVER WATERSHED WHICH HAS NO TIER II STREAM SEGMENTS REQUIRING THE IMPLEMENTATION OF MARYLAND'S ANTI-DEGRADATION POLICY. HOWEVER, THE LITTLE PATUXENT RIVER WATERSHED HAS BEEN IDENTIFIED AS IMPAIRED AND IS CURRENTLY UNDER TMDL FOR SEDIMENT.
- OWNERS OF THE PROJECT SITE INCLUDE HOWARD COUNTY DEPT. OF RECREATION AND PARKS.



HORIZONTAL DATUM	NAD 83 /91
VERTICAL DATUM	NAVD 88



DEPARTMENT OF RECREATION AND PARKS, HOWARD COUNTY, MD
John Boyd
DIRECTOR OF RECREATION AND PARKS
DATE: 10/16/17

REVIEWED FOR HOWARD SOIL CONSERVATION DISTRICT AND MEETS TECHNICAL REQUIREMENTS.
THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
Glenn Selig
HOWARD SOIL CONSERVATION DISTRICT
DATE: 10/12/17

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
LICENSE NO. 32013, EXPIRATION DATE: 7/5/2019

AS-BUILT CERTIFICATION [1]
I CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND MEETS THE APPROVED PLANS AND SPECIFICATIONS.
DATE: 10/13/17

DESIGN CERTIFICATION
I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE/SHE MUST ENGAGE A REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION.
DATE: 10/13/17

Amy L. Hrisar
DESIGNER'S SIGNATURE
DATE: 10-13-17
MARYLAND REGISTRATION NUMBER: 32013
AMY L. HRISAR
PRINTED NAME

OWNER'S/DEVELOPER'S CERTIFICATION
I/WE HEREBY CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT THE RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF TRAINING AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION PRIOR TO BEGINNING THE PROJECT. I SHALL ENGAGE A MARYLAND REGISTERED PROFESSIONAL ENGINEER TO SUPERVISE POND CONSTRUCTION, AND PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

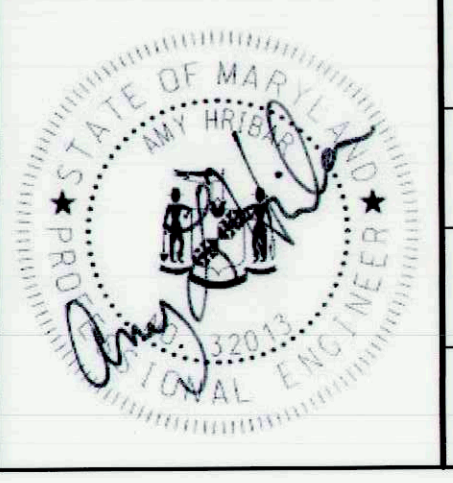
Holger Serrano
OWNER / DEVELOPER SIGNATURE
DATE: 10-13-17
Holger Serrano Assistant to the Director
PRINTED NAME AND TITLE



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND
Holger Serrano 10/17/17
DIRECTOR OF PUBLIC WORKS
Mark Richmond 10/13/17
CHIEF, STORMWATER MANAGEMENT DIVISION

McCORMICK TAYLOR
509 South Exeter Street
4th Floor
Baltimore, Maryland 21202
(410) 662-7400

Howard County MARYLAND
Storm Water Management Division
Bureau of Environmental Services
6751 Columbia Gateway Drive, Suite 514
Columbia, Maryland 21046-3143
(410) 313-6444

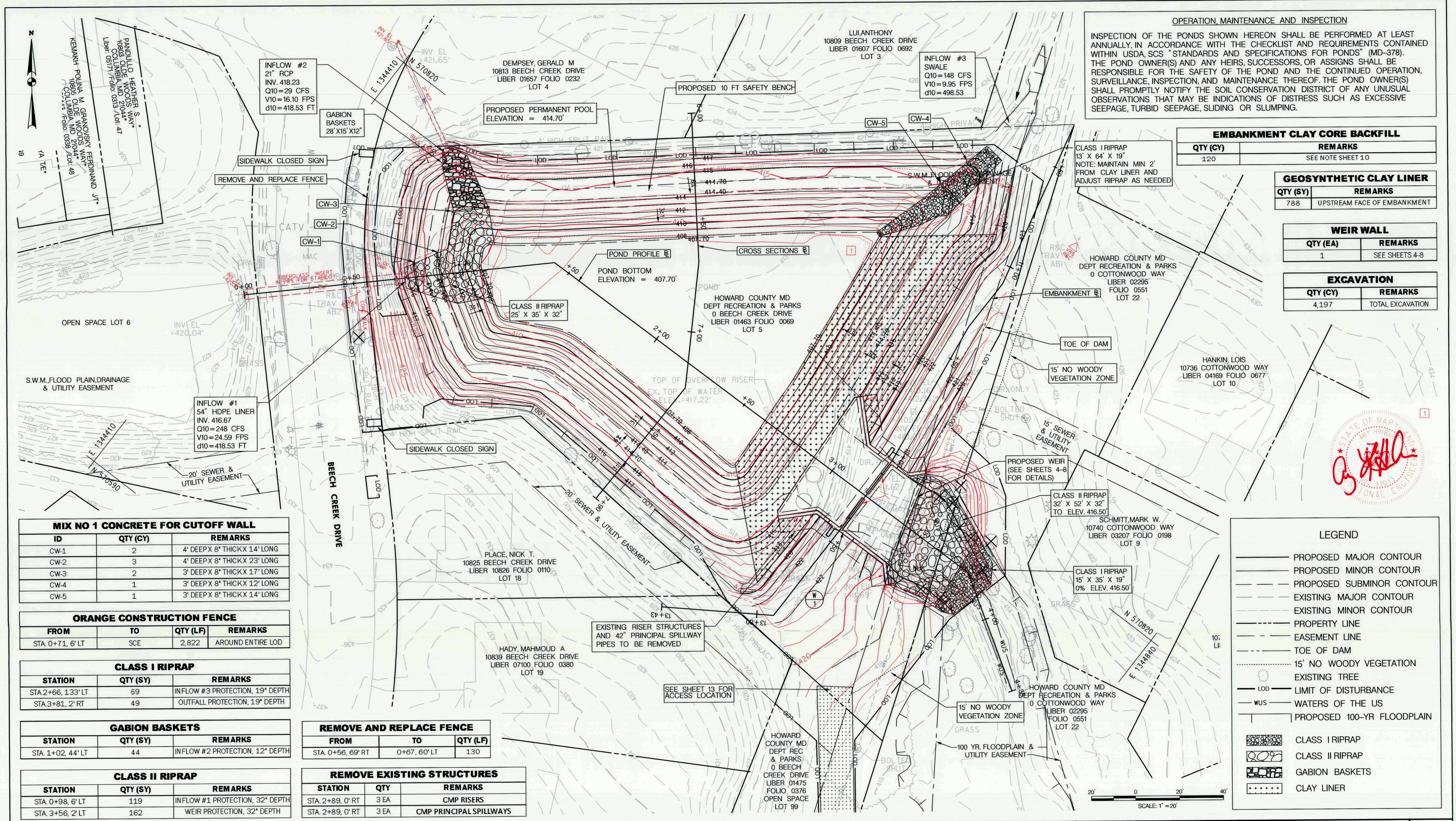


DES: CL	CLR	[1]	AS-BUILT SURVEY	8/21/18
DRN: MR				
CHK: AH				
DATE: 10/13/17	BY	NO.	REVISION	DATE

**BEECH CREEK DRIVE
STORMWATER MANAGEMENT RETROFIT PROJECT
CAPITAL PROJECT #D-1160
HOWARD COUNTY
HSCD #EP-16-23**

TITLE SHEET

SCALE AS SHOWN
SHEET 1 OF 21



OPERATION, MAINTENANCE AND INSPECTION
 INSPECTION OF THE PONDS SHOWN HEREON SHALL BE PERFORMED AT LEAST ANNUALLY, IN ACCORDANCE WITH THE CHECKLIST AND REQUIREMENTS CONTAINED WITHIN USDA, SCS "STANDARDS AND SPECIFICATIONS FOR PONDS" (MD-378). THE POND OWNER(S) AND ANY HEIRS, SUCCESSORS, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE SAFETY OF THE POND AND THE CONTINUED OPERATION, SURVEILLANCE, INSPECTION, AND MAINTENANCE THEREOF. THE POND OWNER(S) SHALL PROMPTLY NOTIFY THE SOIL CONSERVATION DISTRICT OF ANY UNUSUAL OBSERVATIONS THAT MAY BE INDICATIONS OF DISTRESS SUCH AS EXCESSIVE SEEPAGE, TURBID SEEPAGE, SLIDING OR SLUMPING.

EMBANKMENT CLAY CORE BACKFILL	
QTY (CY)	REMARKS
120	SEE NOTE SHEET 10

GEOSYNTHETIC CLAY LINER	
QTY (SY)	REMARKS
788	UPSTREAM FACE OF EMBANKMENT

WEIR WALL	
QTY (EA)	REMARKS
1	SEE SHEETS 4-8

EXCAVATION	
QTY (CY)	REMARKS
4,197	TOTAL EXCAVATION



LEGEND	
	PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR
	PROPOSED SUBMINOR CONTOUR
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	PROPERTY LINE
	EASEMENT LINE
	TOE OF DAM
	15' NO WOODY VEGETATION
	EXISTING TREE
	LIMIT OF DISTURBANCE
	WATERS OF THE US
	PROPOSED 100-YR FLOODPLAIN
	CLASS I RIPRAP
	CLASS II RIPRAP
	GABION BASKETS
	CLAY LINER

MIX NO 1 CONCRETE FOR CUTOFF WALL		
ID	QTY (CY)	REMARKS
CW-1	2	4' DEEP X 8" THICK X 14' LONG
CW-2	3	4' DEEP X 8" THICK X 23' LONG
CW-3	2	3' DEEP X 8" THICK X 17' LONG
CW-4	1	3' DEEP X 8" THICK X 12' LONG
CW-5	1	3' DEEP X 8" THICK X 14' LONG

ORANGE CONSTRUCTION FENCE			
FROM	TO	QTY (LF)	REMARKS
STA 0+71, 6' LT	SCE	2,822	AROUND ENTIRE LOD

CLASS I RIPRAP		
STATION	QTY (SY)	REMARKS
STA 2+66, 133' LT	69	INFLOW #3 PROTECTION, 19" DEPTH
STA 3+81, 2' RT	49	OUTFALL PROTECTION, 19" DEPTH

GABION BASKETS		
STATION	QTY (SY)	REMARKS
STA 1+02, 44' LT	44	INFLOW #2 PROTECTION, 12" DEPTH

CLASS II RIPRAP		
STATION	QTY (SY)	REMARKS
STA 0+98, 6' LT	119	INFLOW #1 PROTECTION, 32" DEPTH
STA 3+56, 2' LT	162	WEIR PROTECTION, 32" DEPTH

REMOVE AND REPLACE FENCE		
FROM	TO	QTY (LF)
STA 0+56, 69' RT	0+67, 60' LT	130

REMOVE EXISTING STRUCTURES		
STATION	QTY	REMARKS
STA 2+89, 0' RT	3 EA	CMP RISERS
STA 2+89, 0' RT	3 EA	CMP PRINCIPAL SPILLWAYS

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

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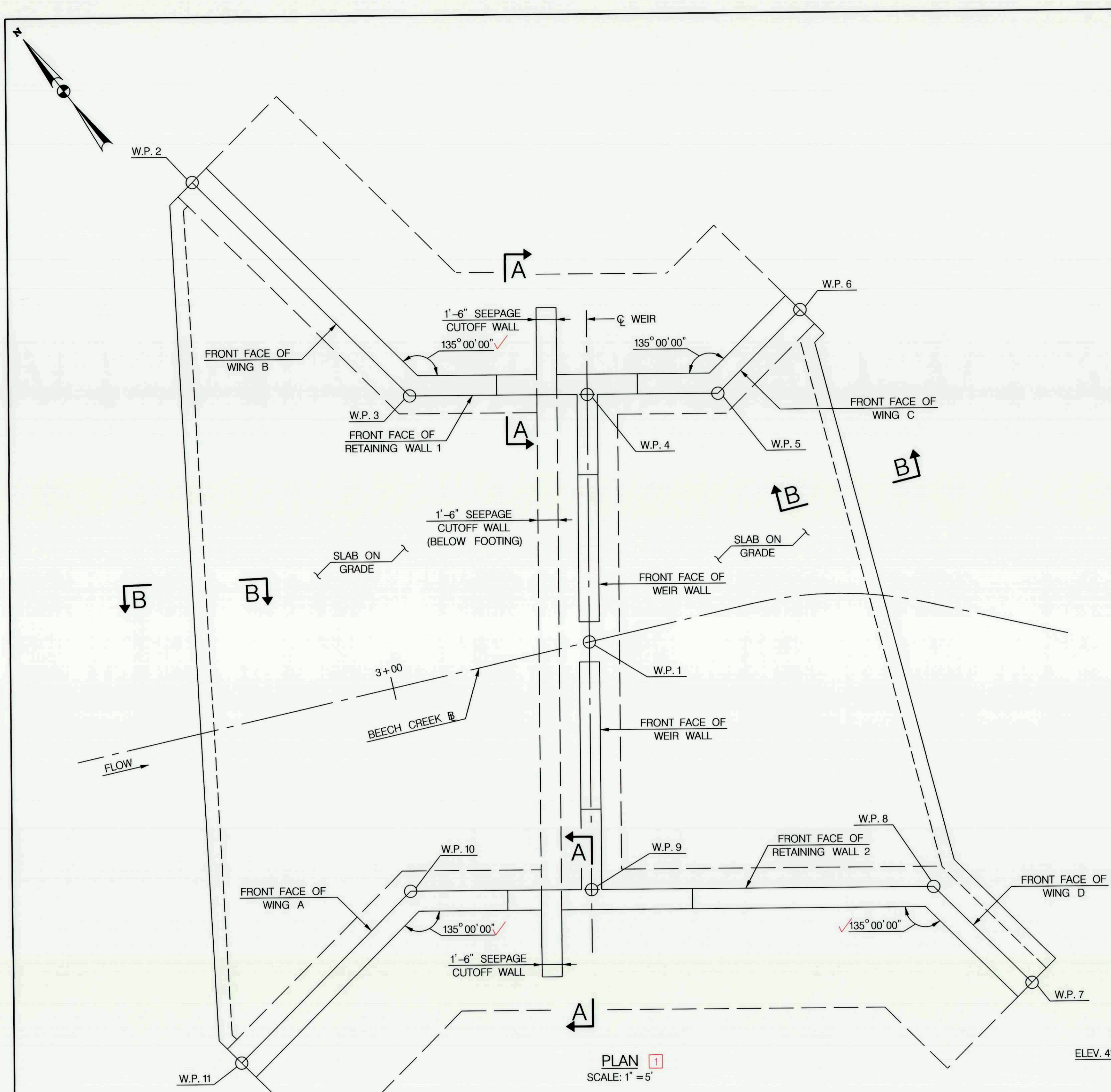


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BECH CREEK DRIVE
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CAPITAL PROJECT #D-1160
HOWARD COUNTY
HSCD #EP-16-23

SITE PLAN

SCALE
 1" = 20'
 SHEET
 3 OF 21



WORKING POINTS DATA				
W.P. NO.	STATION	OFFSET	NORTHING	EASTING
1	3+15.02	0.00'	570792.6390	1344697.1365
2	2+94.08	40.23' LT	570826.8399	1344667.3510
3	3+06.20	20.98' LT	570810.9645	1344683.6463
4	3+19.12	18.04' LT	570811.1375	1344696.8951
5	3+28.17	15.90' LT	570811.2647	1344706.6443
6	3+32.44	21.29' LT	570817.5321	1344712.7502
7	3+54.31	26.11' RT	570767.3207	1344730.2176
8	3+45.63	20.64' RT	570774.4734	1344722.8758
9	3+10.93	18.04' RT	570774.1406	1344697.3780
10	2+97.76	15.05' RT	570773.9644	1344683.8791
11	2+82.53	24.64' RT	570761.0715	1344671.3184

WORKING POINT NOTES:
 1. COORDINATES PRESENTED TO FOUR DECIMAL PLACES OF A FOOT ARE FOR COMPUTATIONAL PURPOSES ONLY AND DO NOT IMPLY ACCURACY BEYOND TWO DECIMAL PLACES.

1 WORKING POINTS ARE NOT EVALUATED IN AS-BUILT CONDITIONS

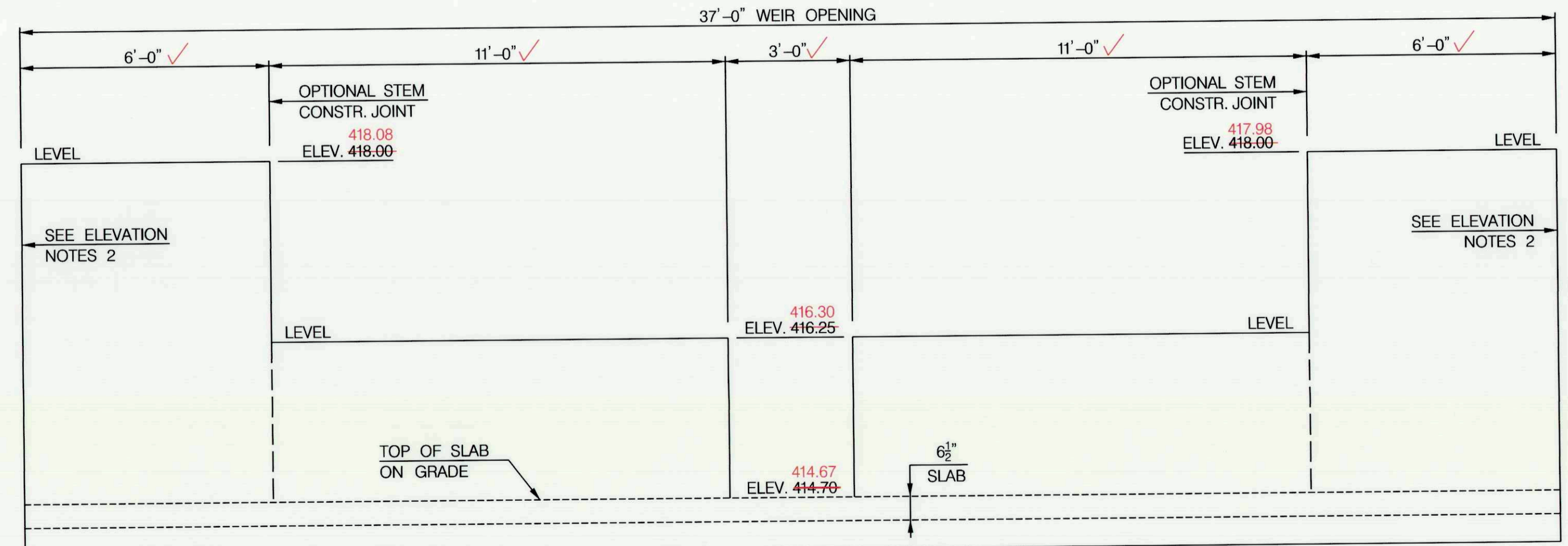
GENERAL NOTES: ✓

GENERAL:
 1. PROVIDE MATERIALS AND WORKMANSHIP IN ACCORDANCE WITH THE REQUIREMENTS OF MARYLAND STATE HIGHWAY ADMINISTRATION'S STANDARD SPECIFICATION FOR CONSTRUCTION AND MATERIALS.
 2. WEIR, RETAINING WALLS, AND SLAB ON GRADE SHALL ONLY BE CONSTRUCTED UNDER THE OBSERVATION OF A REGISTERED PROFESSIONAL ENGINEER AND A (NICET, W ACEL OR EQUIVALENT) CERTIFIED SOILS TECHNICIAN.
 3. THE REQUIRED BEARING PRESSURE BENEATH THE FOOTING OF THE WALLS SHALL BE VERIFIED IN THE FIELD BY A CERTIFIED SOILS TECHNICIAN. TESTING DOCUMENTATION MUST BE PROVIDED TO THE HOWARD COUNTY INSPECTOR PRIOR TO THE START OF CONSTRUCTION.
 4. THE SUITABILITY OF FILL MATERIAL SHALL BE CONFIRMED BY THE ON-SITE SOILS TECHNICIAN. EACH EIGHT INCH LIFT MUST BE COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR DENSITY AND THE TESTING REPORT SHALL BE MADE AVAILABLE TO THE HOWARD COUNTY INSPECTOR UPON COMPLETION OF CONSTRUCTION.
 5. BEFORE BEGINNING EXCAVATION, DIVERT ALL SURFACE WATER BY THE USE OF TEMPORARY SWALES OR OTHER MEANS. DO NOT ALLOW SURFACE WATER TO POND BEHIND THE WALLS DURING CONSTRUCTION.
 6. DEWATER THE EXCAVATION IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENT CONTROL PLAN. CONDUCT IN ACCORDANCE WITH ALL APPLICABLE REGULATORY REQUIREMENTS. REMOVE SEDIMENT PRIOR TO DISCHARGE.

DESIGN SPECIFICATIONS:
 1. DESIGN IS IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SEVENTH EDITION, 2014, AND HOWARD COUNTY DESIGN MANUAL, VOLUME III, CHAPTER 3.
 2. US ARMY CORPS OF ENGINEERS ENGINEERING MANUAL, EM 1110-2-2502, RETAINING AND FLOOD WALLS, DATED SEPTEMBER 1989.
 3. US ARMY CORPS OF ENGINEERS ENGINEERING MANUAL, EM 1110-2-2100, STABILITY ANALYSIS OF CONCRETE STRUCTURES, DATED DECEMBER 2005.

DESIGN LIVE LOAD:
 1. RETAINING WALL: DESIGN LIVE LOAD IS 2'-0" LIVE LOAD SURCHARGE LOADING.
 2. WINGWALL: DESIGN LIVE LOAD IS 1'-0" LIVE LOAD SURCHARGE LOADING.

CONCRETE:
 1. ALL STRUCTURE CONCRETE SHALL BE MIX NO. 3 (3500 PSI).
 2. REINFORCING STEEL SHALL BE DEFORMED, GRADE 60 BARS CONFORMING TO ASTM A615. ALL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH ASTM A775. TOUCH UP SCRATCHED OR DAMAGED EPOXY COATING IN THE FIELD PRIOR TO CLOSING UP FORM WORK AND PLACING CONCRETE. ALL FORM WORK, REINFORCING STEEL AND INSERTS WILL BE CHECKED AND APPROVED PRIOR TO CONCRETE PLACEMENT.
 3. MINIMUM COVER FOR ANY REINFORCING BAR SHALL BE 2" UNLESS OTHERWISE NOTED, WITH THE EXCEPTION OF BARS AT THE BOTTOM AND SIDES OF ALL FOOTINGS, WHICH SHALL HAVE 3" MINIMUM COVER.
 4. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.



ELEVATION NOTES: ✓
 1. WEIR FOOTING, SLAB SUBBASE, AND RETAINING WALLS NOT SHOWN FOR CLARITY.
 2. POUR WEIR WALL MONOLITHICALLY WITH RETAINING WALL. CONTRACTOR MAY POUR WEIR WALL AND RETAINING WALL AS SEPARATE POURS, AS LONG AS WATER TIGHTNESS IS MAINTAINED THROUGH THE INSTALLATION OF WATERSTOPS AND JOINT SEALERS. FOR STEM CONTRACTION JOINT DETAIL, SEE SHEET 8.

WEIR ELEVATION 1
 (LOOKING STATIONS AHEAD)
 HORIZONTAL SCALE: 1" = 2.5'
 VERTICAL SCALE: 1" = 1'

NOTES: ✓
 1. FOR FOOTING PLAN AND WEIR WALL TYPICAL SECTION, SEE SHEET 5.
 2. FOR SLAB PLAN, SEE SHEET 6.
 3. FOR RETAINING WALL ELEVATIONS, SEE SHEET 7.
 4. FOR RETAINING WALL TYPICAL SECTION, WING WALL TYPICAL SECTION, SECTION A-A, SECTION B-B, SEE SHEET 8.



DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

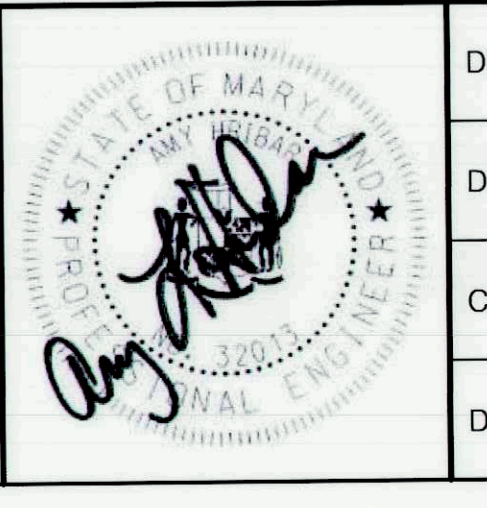
Mark DeLuca
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

10/16/17
 DATE

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 MARYLAND

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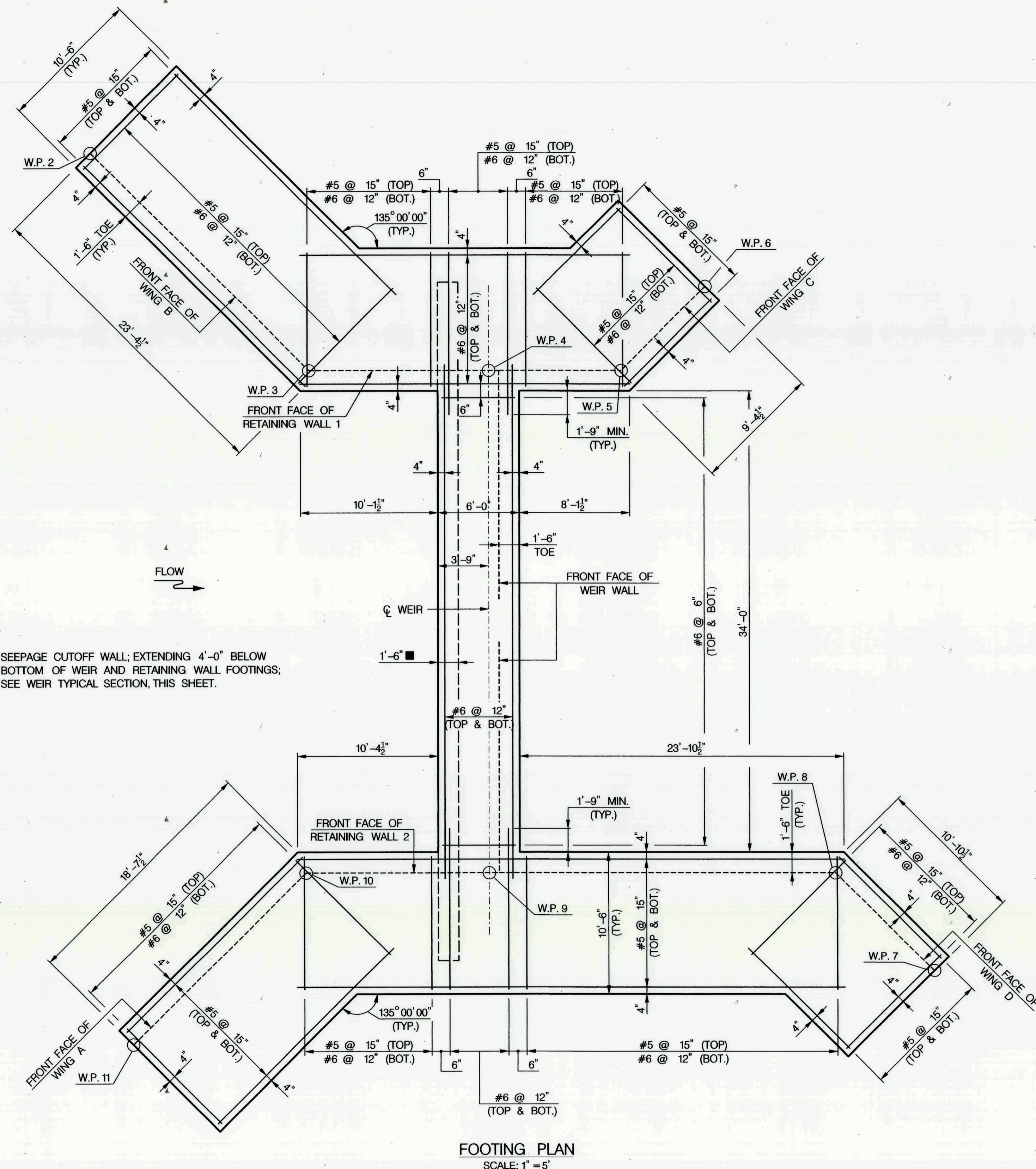


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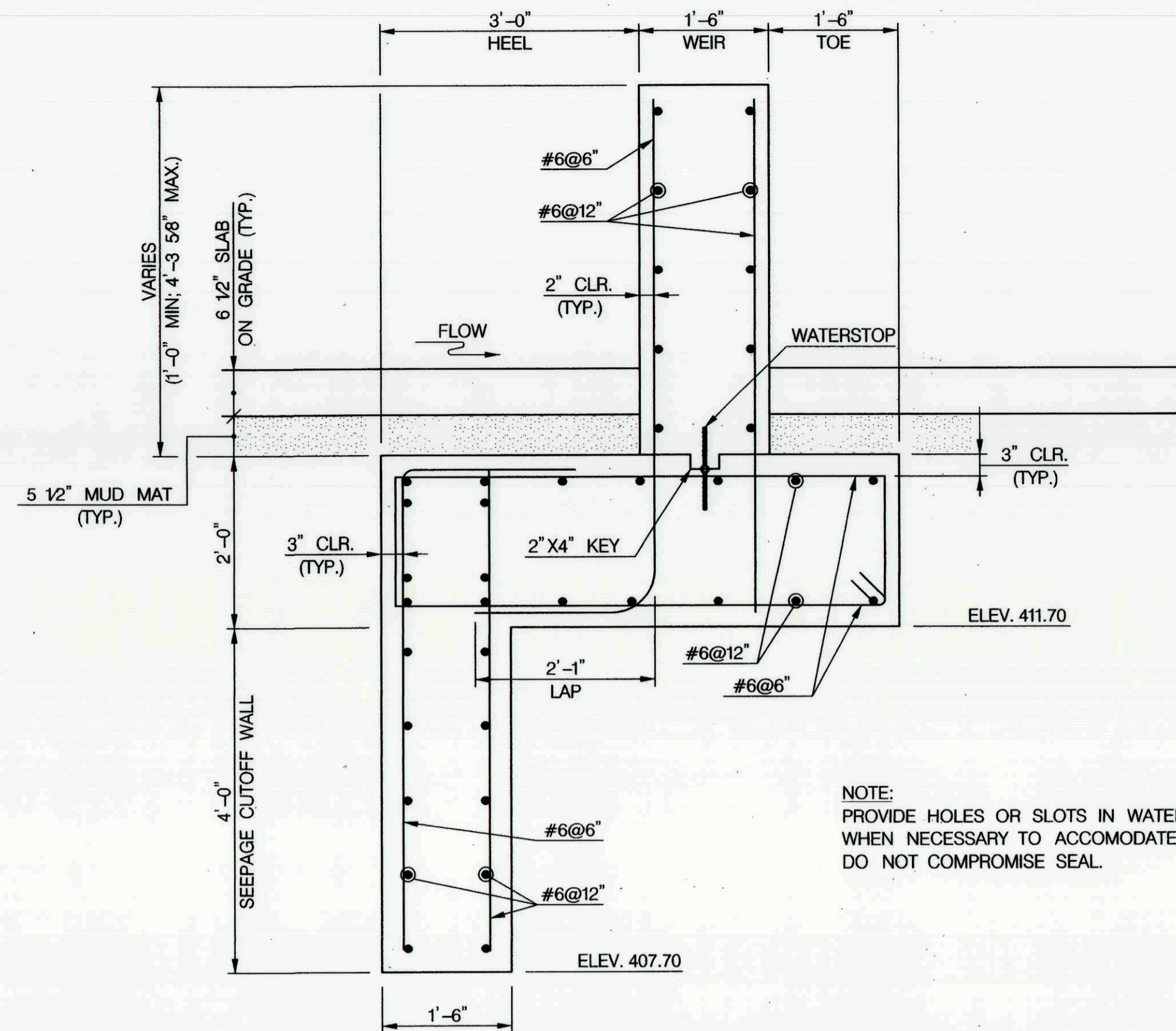
BEECH CREEK DRIVE
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HSCD #EP-16-23

WEIR WALL PLAN AND ELEVATION

SCALE
 AS SHOWN
 SHEET
 4 OF 21



FOOTING PLAN
SCALE: 1" = 5'



WIER WALL TYPICAL SECTION
SCALE: 3/4" = 1'-0"

NOTE:
PROVIDE HOLES OR SLOTS IN WATERSTOPS, AS REQUIRED, WHEN NECESSARY TO ACCOMMODATE REINFORCEMENT, BUT DO NOT COMPROMISE SEAL.

- NOTES:
1. FOR PLAN AND GENERAL NOTES, SEE SHEET 4.
 2. FOR SLAB PLAN, SEE SHEET 6.
 3. FOR RETAINING WALL ELEVATIONS, SEE SHEET 7.
 4. FOR RETAINING WALL AND WING WALL TYPICAL SECTIONS, SEE SHEET 8.

DEPARTMENT OF PUBLIC WORKS
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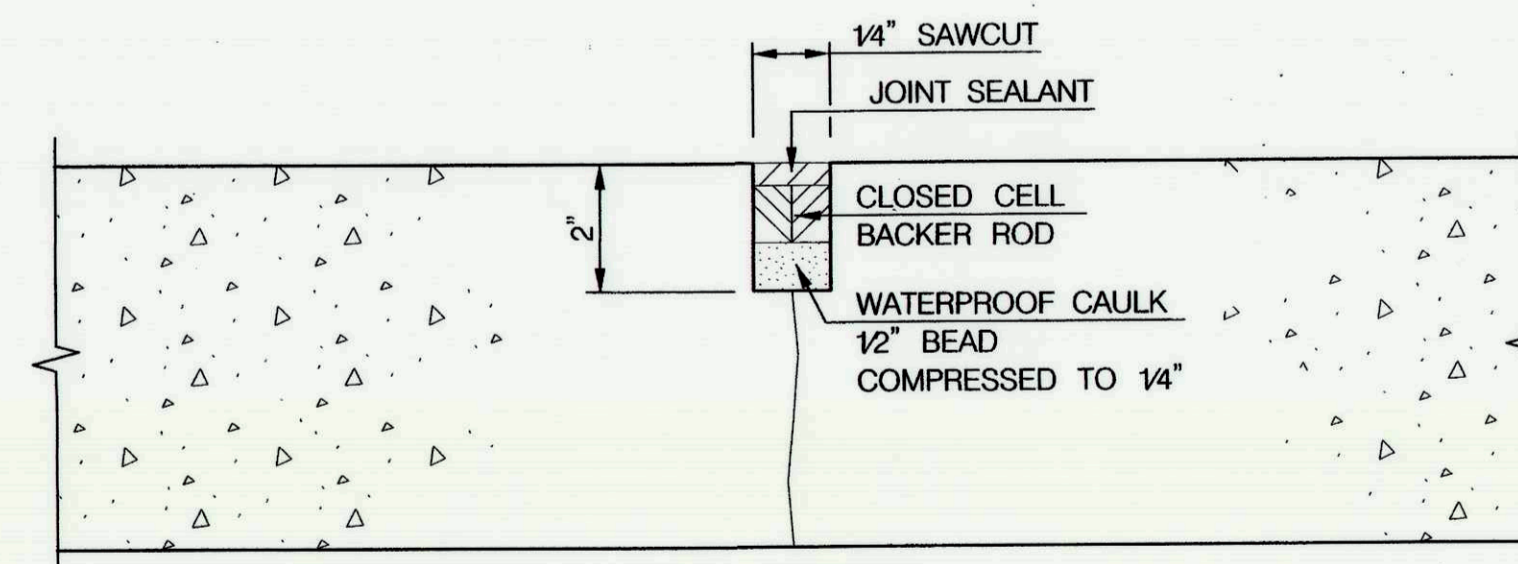
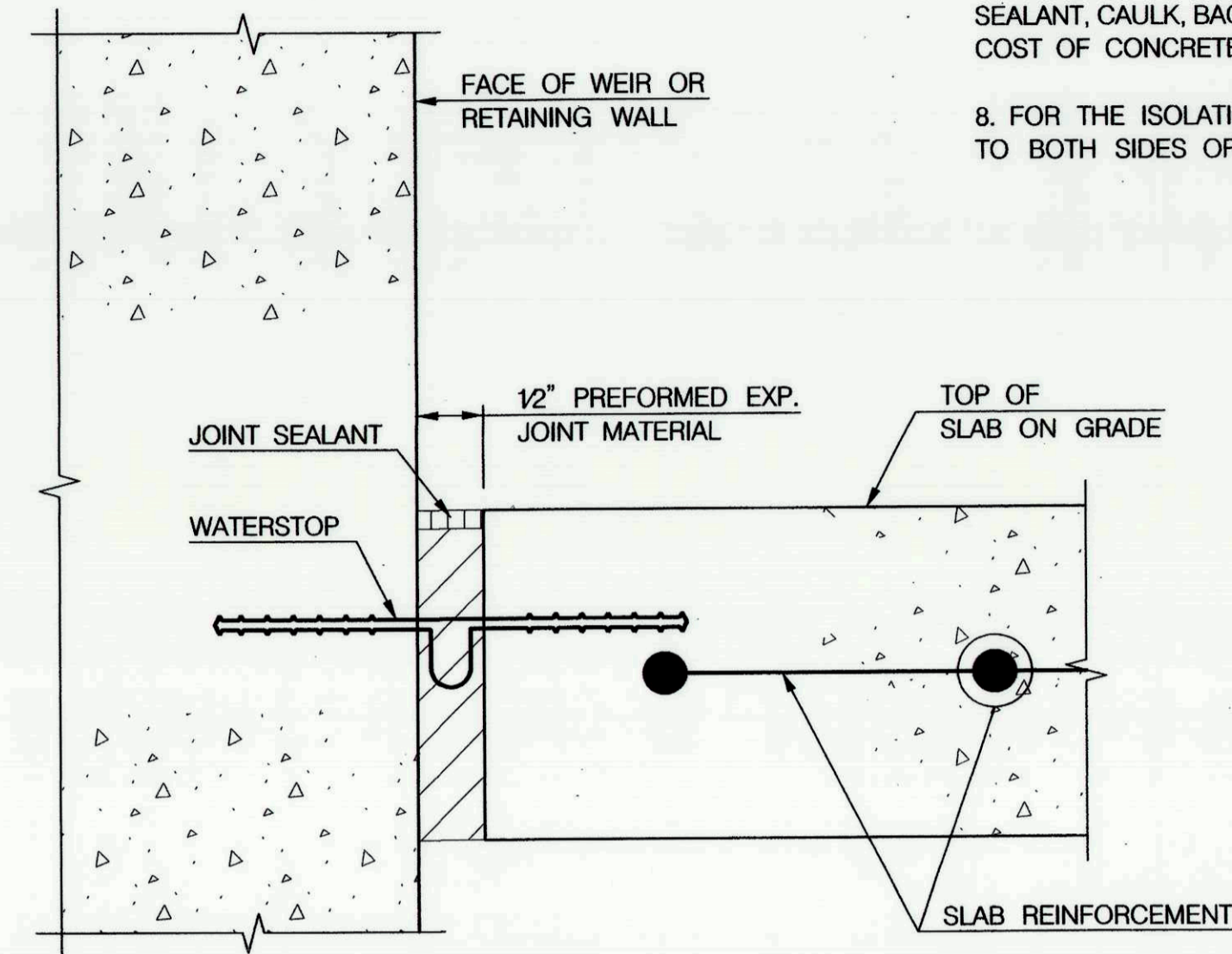
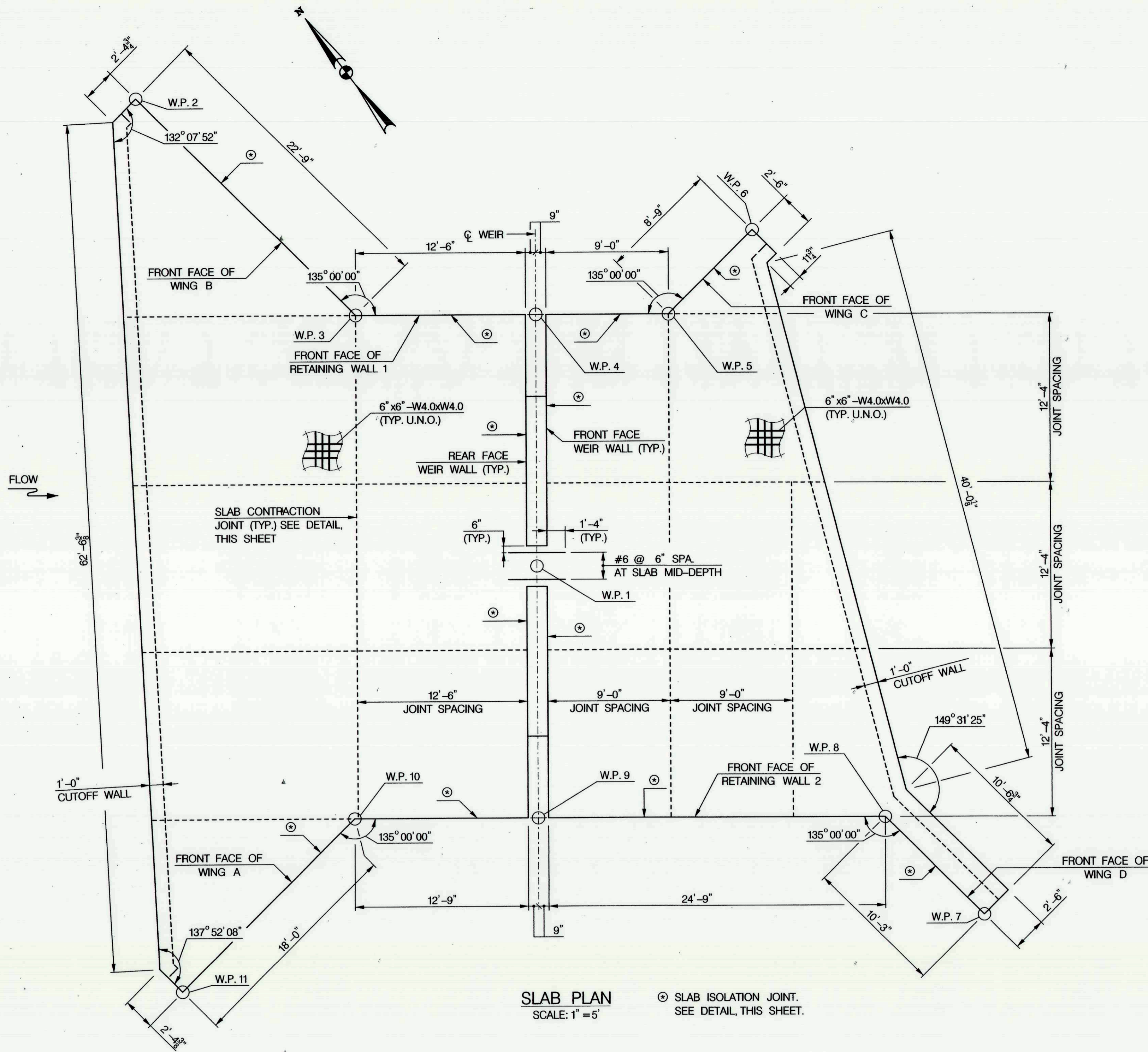
DES: JB					
DRN: MR					
CHK: AF					
DATE: 10/13/17	BY	NO.	REVISION	DATE	

BEECH CREEK DRIVE
STORMWATER MANAGEMENT RETROFIT PROJECT
CAPITAL PROJECT #D-1160
HOWARD COUNTY
HSCD #EP-16-23

FOOTING PLAN AND WIER WALL TYPICAL SECTION

SCALE
AS SHOWN
SHEET
5 OF 21

Handwritten signature
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES
10/14/17 DATE



- SLAB CONSTRUCTION NOTES:
- CUT EXPANSION JOINT MATERIAL TO CONFORM TO THE CROSS SECTION OF THE SLAB AND FURNISH IN STRIPS EQUAL TO THE WIDTH OF THE PAVEMENT SLAB. MAKE THE TOP SURFACE SMOOTH AND HAVE HOLES FOR THE WATERSTOP. PROVIDE A SNUG FIT WITHOUT A LOSS IN THICKNESS OF THE MATERIAL.
 - WATERSTOPS SHALL BE RUBBER OR POLYVINYL CHLORIDE.
 - CONSTRUCT ALL LONGITUDINAL JOINTS PERPENDICULAR TO THE CENTERLINE OF THE WEIR.
 - CONSTRUCT ALL TRANSVERSE JOINTS PERPENDICULAR TO THE FRONT FACE OF THE RETAINING WALL.
 - MAKE THE TOP OF THE JOINT SEALANT FROM 1/8" TO 1/4" BELOW THE SURFACE OF THE SLAB.
 - PROVIDE 2'-0" MINIMUM LAP FOR WELDED WIRE FABRIC REINFORCEMENT.
 - WATERSTOPS, SAWCUT, PREFORMING EXPANSION JOINT MATERIAL, JOINT SEALANT, CAULK, BACKER ROD, AND LABOR SHALL BE INCIDENTAL TO THE COST OF CONCRETE.
 - FOR THE ISOLATION JOINTS, THE CONTRACTOR SHALL APPLY LUBRICANT ADHESIVE TO BOTH SIDES OF THE EXPANSION JOINT MATERIAL PRIOR TO INSTALLATION.

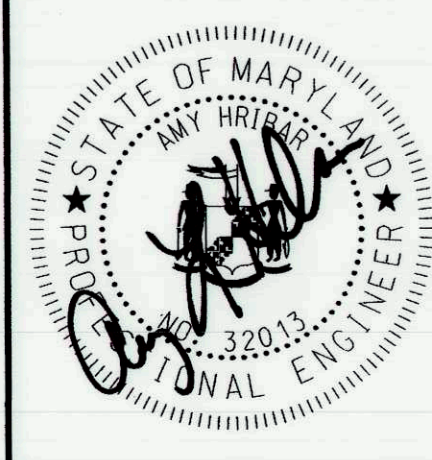
NOTE: SLAB REINFORCEMENT NOT SHOWN FOR CLARITY.

- NOTES:
- FOR PLAN AND GENERAL NOTES, SEE SHEET 4.
 - FOR FOOTING PLAN AND WEIR WALL TYPICAL SECTION, SEE SHEET 5.
 - FOR RETAINING WALL ELEVATIONS, SEE SHEET 7.
 - FOR RETAINING WALL AND WING WALL TYPICAL SECTION, SEE SHEET 8.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

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Storm Water Management Division
Bureau of Environmental Services
6751 Columbia Gateway Drive, Suite 514
Columbia, Maryland 21046-3143
(410) 313-6444



DES: JB					
DRN: MR					
CHK: AF					
DATE: 10/13/17	BY	NO.	REVISION	DATE	

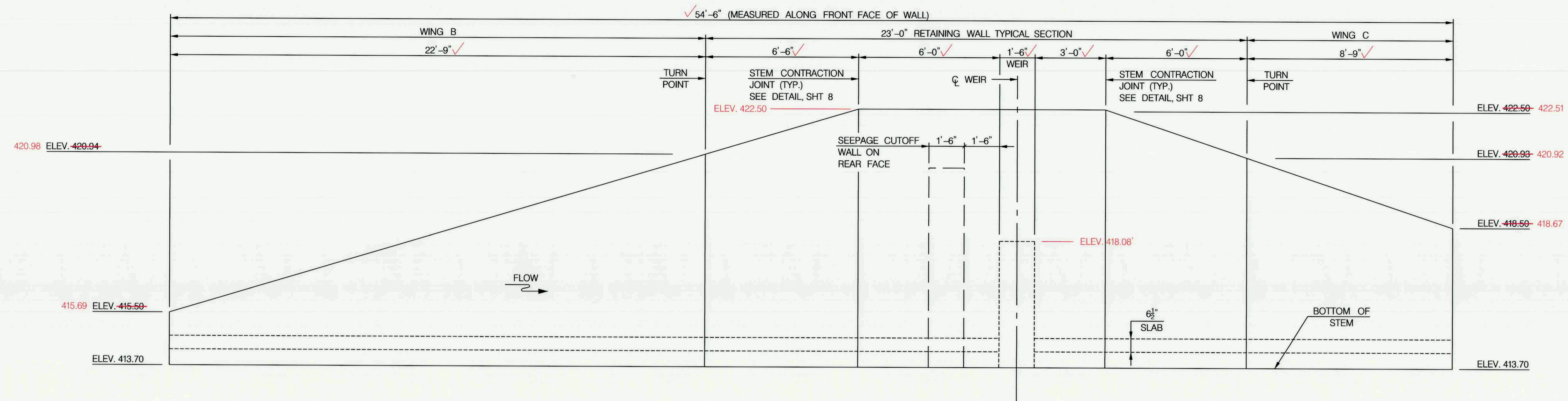
**BEECH CREEK DRIVE
STORMWATER MANAGEMENT RETROFIT PROJECT
CAPITAL PROJECT #D-1160
HOWARD COUNTY
HSCD #EP-16-23**

SLAB PLAN

SCALE
AS SHOWN
SHEET
6 OF 21

Mark DeLuca
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

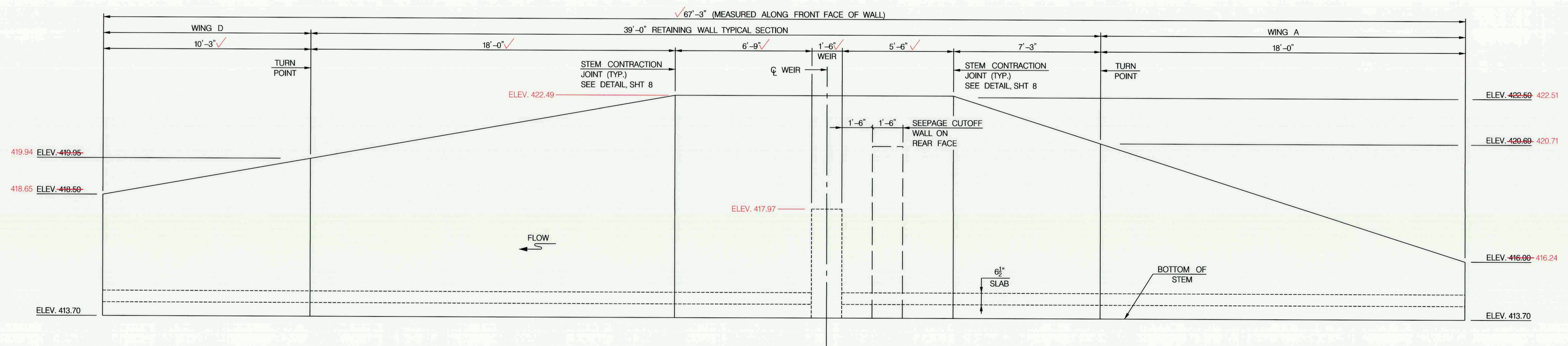
10/17 DATE



DEVELOPED RETAINING WALL 1 ELEVATION

NOTE:
1. WALL FOOTING AND SLAB SUBBASE NOT SHOWN FOR CLARITY.

HORIZONTAL SCALE: 1" = 2.5'
VERTICAL SCALE: 1" = 1'



DEVELOPED RETAINING WALL 2 ELEVATION

NOTE:
1. WALL FOOTING AND SLAB SUBBASE NOT SHOWN FOR CLARITY.

HORIZONTAL SCALE: 1" = 2.5'
VERTICAL SCALE: 1" = 1'

NOTES:
1. FOR PLAN AND GENERAL NOTES, SEE SHEET 4.
2. FOR FOOTING PLAN AND WEIR WALL TYPICAL SECTION, SEE SHEET 5.
3. FOR SLAB PLAN, SEE SHEET 6.
4. FOR RETAINING WALL AND WING WALL TYPICAL SECTIONS, SEE SHEET 8.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

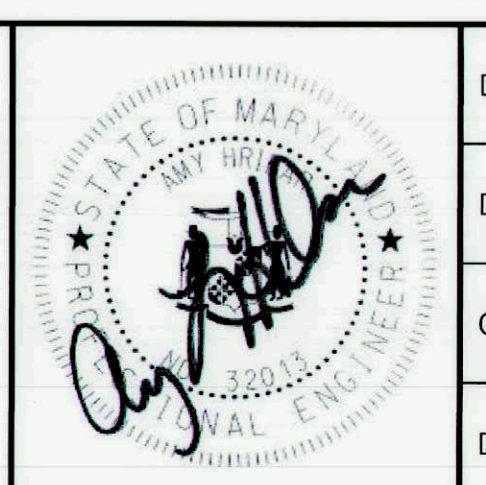
[Signature]
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

10/16/17
DATE

McCORMICK TAYLOR
509 South Exeter Street
4th Floor
Baltimore, Maryland 21202
(410) 662-7400

Howard County
MARYLAND

Storm Water Management Division
Bureau of Environmental Services
6751 Columbia Gateway Drive, Suite 514
Columbia, Maryland 21046-3143
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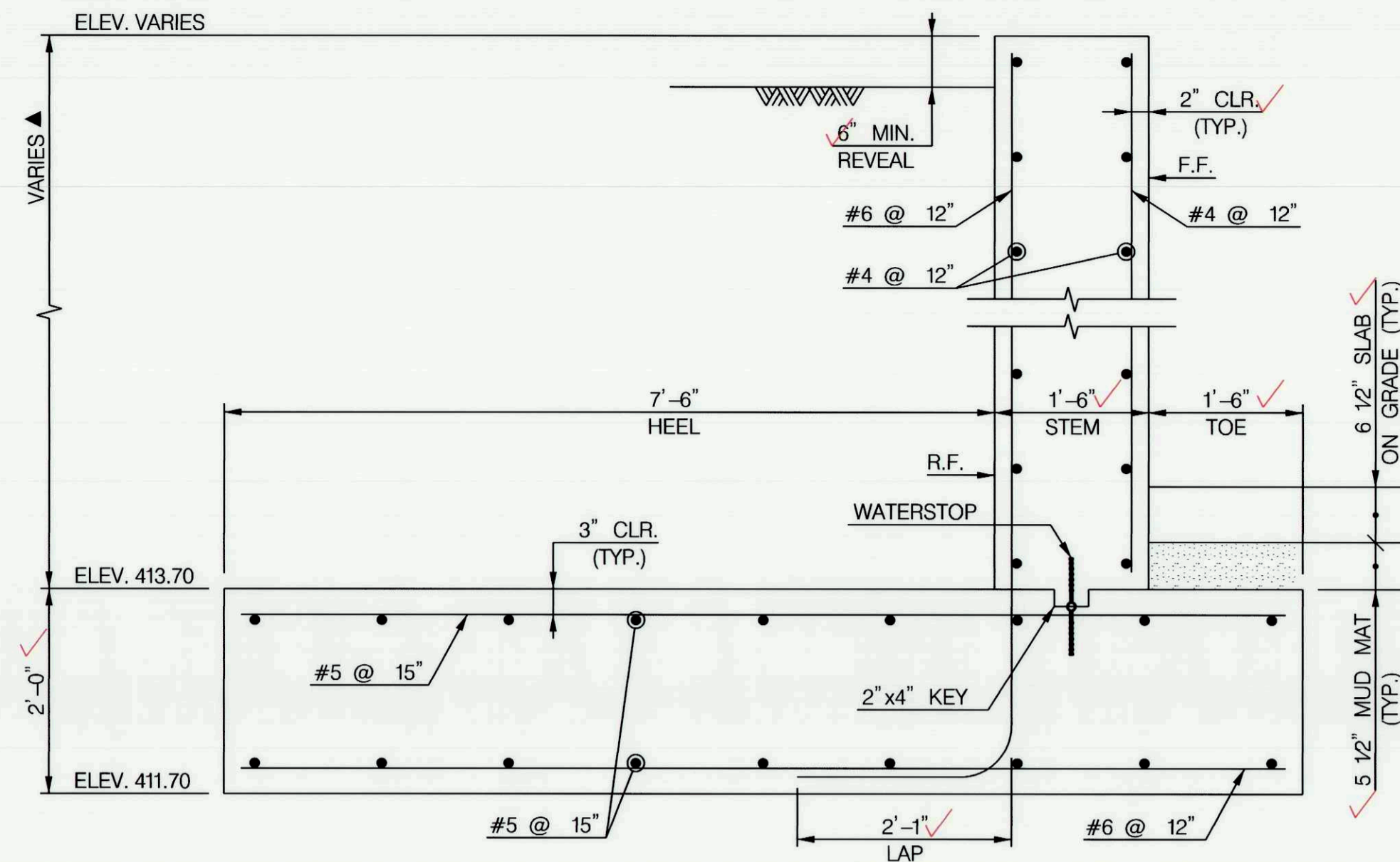
DES: JB	CLR	1	AS-BUILT SURVEY	3/23/18
DRN: MR				
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DATE: 10/13/17	BY	NO.	REVISION	DATE

BEECH CREEK DRIVE
STORMWATER MANAGEMENT RETROFIT PROJECT
CAPITAL PROJECT #D-1160
HOWARD COUNTY
HSCD #EP-16-23

RETAINING WALL ELEVATIONS

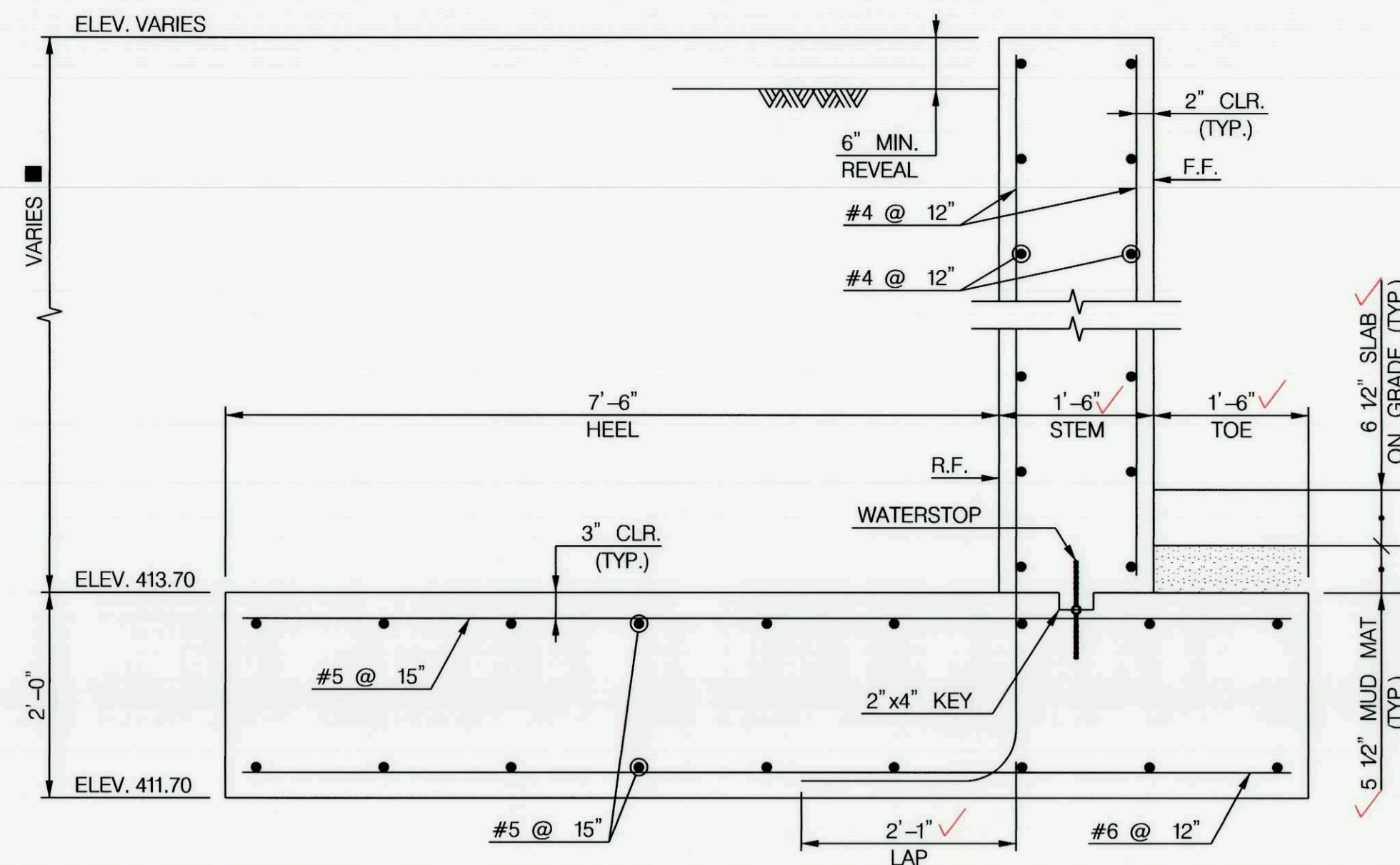
SCALE
AS SHOWN

SHEET
7 OF 21



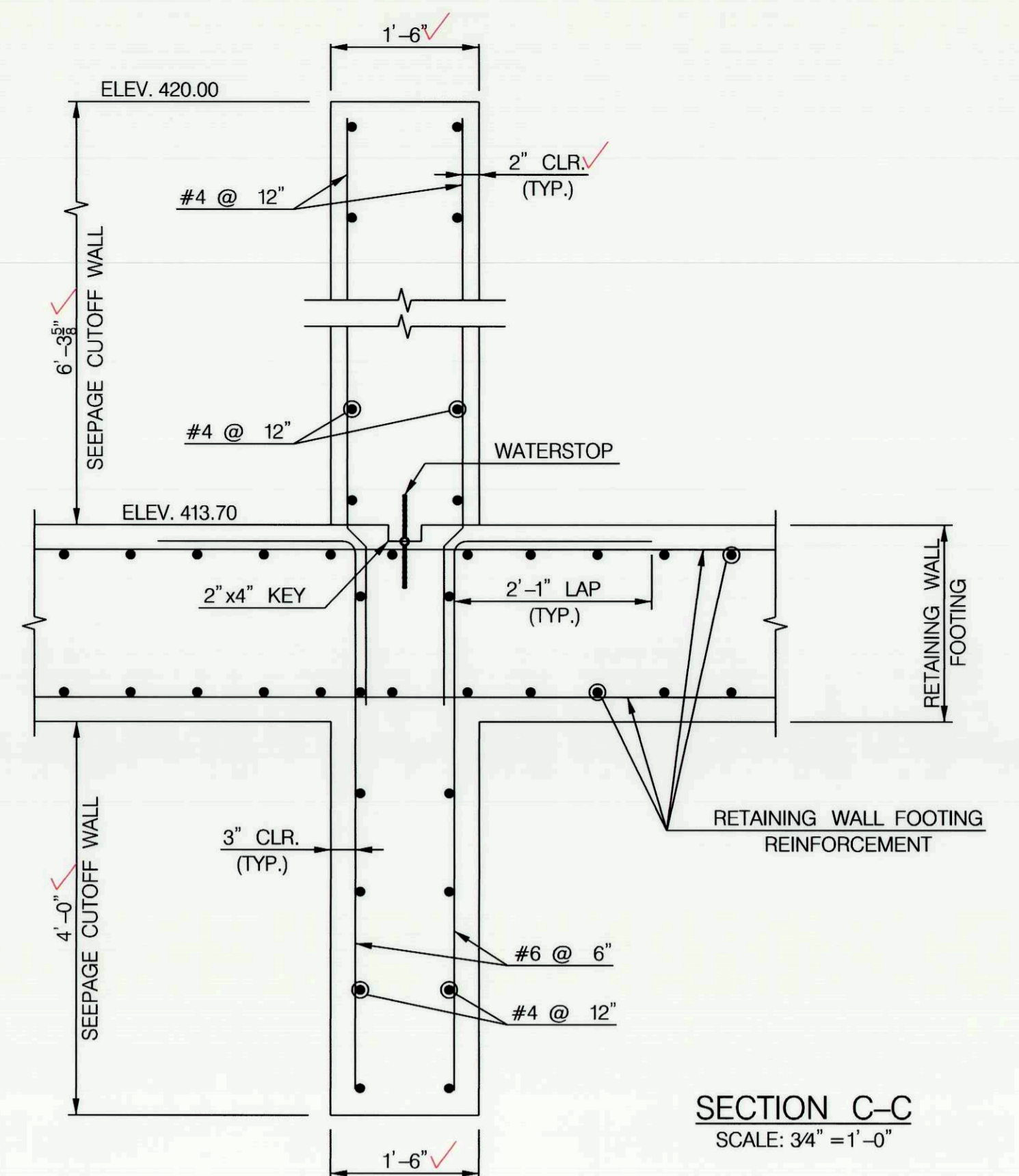
RETAINING WALL 1 TYPICAL SECTION
(RETAINING WALL 2 TYPICAL SECTION SIMILAR, OPPOSITE HAND)
SCALE: 3/4" = 1'-0"

- ▲ RETAINING WALL 1 VARIES 7'-2 3/8" TO 8'-9 5/8"
- RETAINING WALL 2 VARIES 6'-3" TO 8'-9 5/8"

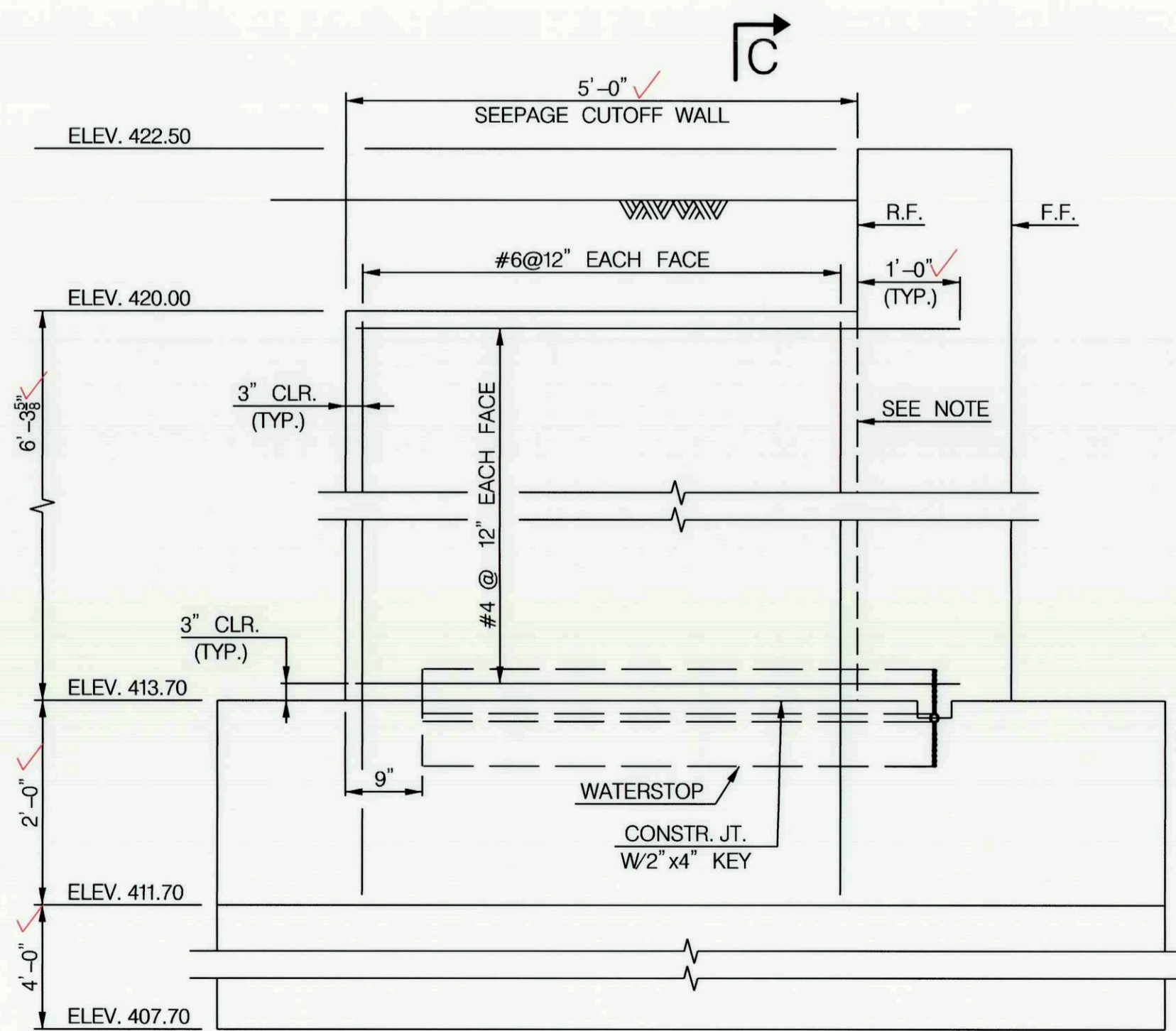


WING WALL TYPICAL SECTION
SCALE: 3/4" = 1'-0"

- WING A VARIES 2'-3 5/8" TO 6'-11 1/8"
- WING B VARIES 1'-9 5/8" TO 7'-2 3/8"
- WING C VARIES 4'-9 5/8" TO 7'-2 3/8"
- WING D VARIES 4'-9 5/8" TO 6'-3"

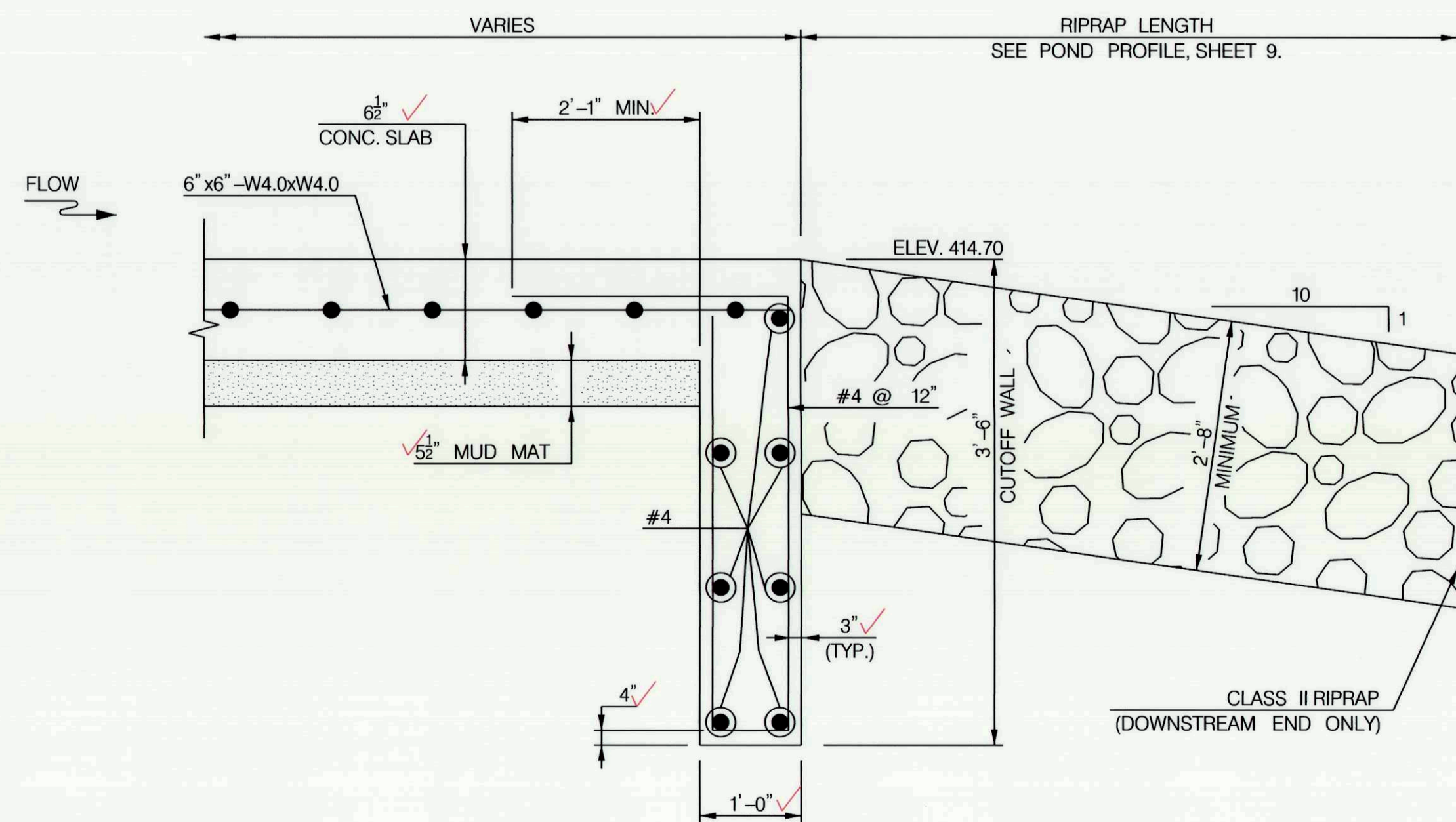


SECTION C-C
SCALE: 3/4" = 1'-0"

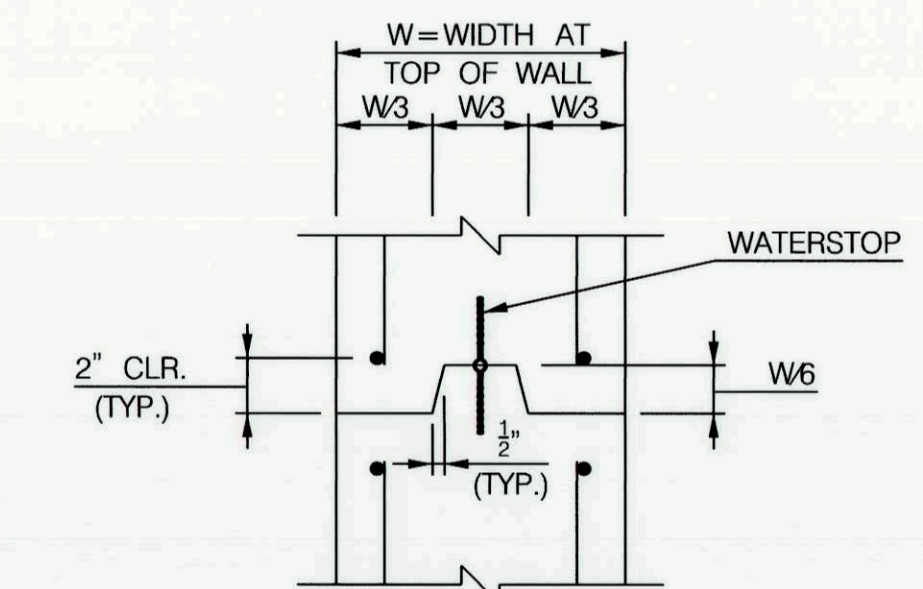


SECTION A-A
SEEPAGE CUTOFF WALL ABOVE FOOTING
SCALE: 3/4" = 1'-0"

NOTE: POUR SEEPAGE CUTOFF WALL MONOLITHICALLY WITH RETAINING WALL. CONTRACTOR MAY POUR SEEPAGE CUTOFF WALL AND RETAINING WALL AS SEPARATE POURS, AS LONG AS WATER TIGHTNESS IS MAINTAINED THROUGH THE INSTALLATION OF WATERSTOPS AND JOINT SEALERS.



SECTION B-B
NOT TO SCALE



- NOTE:
- JOINT LOCATIONS SHALL BE AS SHOWN ON CONTRACT DRAWINGS.
 - STOP KEY 9" BELOW TOP OF WALL.
 - STOP WATERSTOP 12" BELOW TOP OF WALL.
 - ALL KEYS ARE NOMINAL SIZE.
 - ONLY PLACE CONTRACTION JOINT IN STEM (DO NOT PROVIDE IN FOOTING).

STEM CONTRACTION JOINT
SCALE: 1 1/2" = 1'-0"

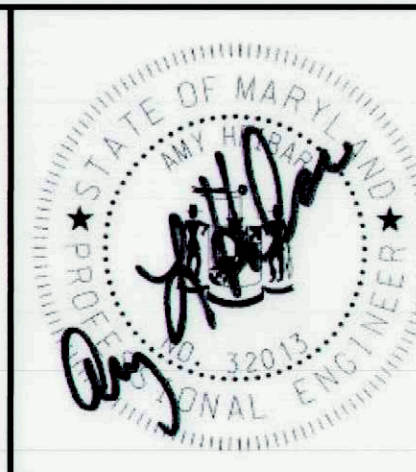
- NOTES:
- FOR PLAN AND GENERAL NOTES, SEE SHEET 4.
 - FOR FOOTING PLAN AND WEIR WALL TYPICAL SECTION, SEE SHEET 5.
 - FOR SLAB PLAN, SEE SHEET 6.
 - FOR RETAINING WALL ELEVATIONS, SEE SHEET 7.



DEPARTMENT OF PUBLIC WORKS
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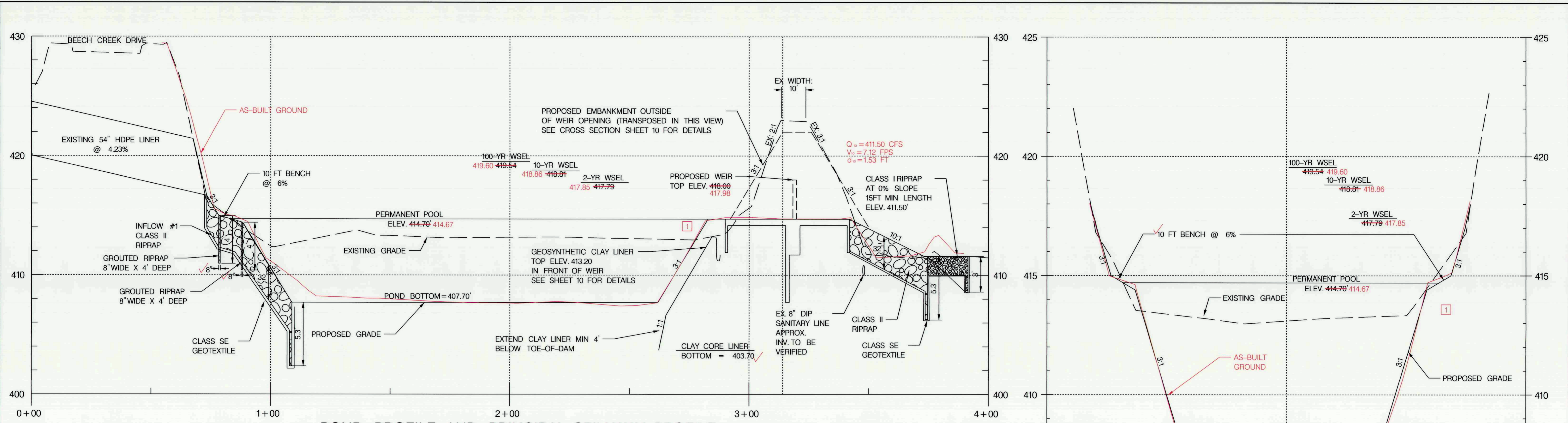


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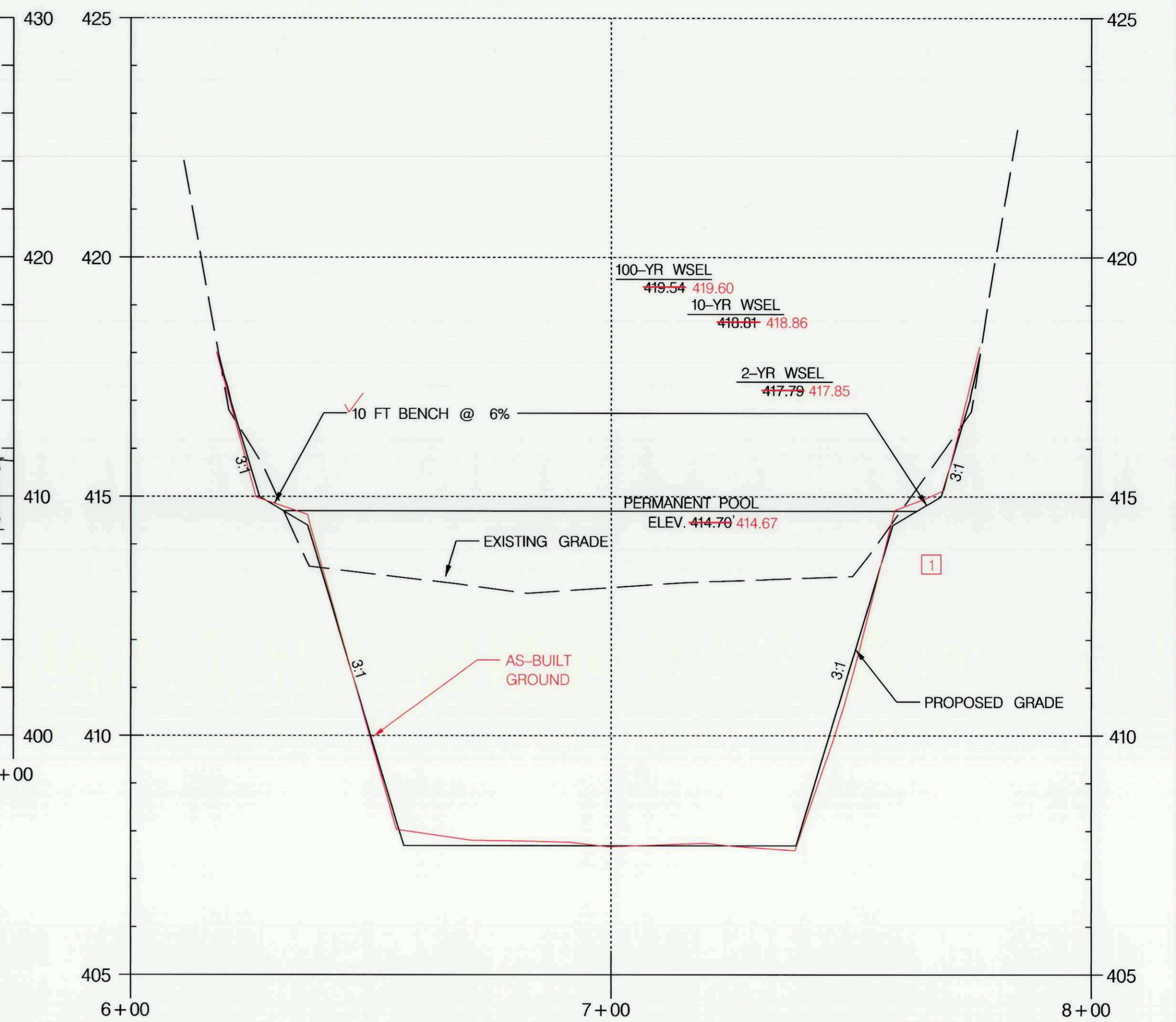
BEECH CREEK DRIVE
STORMWATER MANAGEMENT RETROFIT PROJECT
CAPITAL PROJECT #D-1160
HOWARD COUNTY
HSCD #EP-16-23
RETAINING WALL TYPICAL SECTION
AND MISCELLANEOUS DETAILS

SCALE
AS SHOWN
SHEET
8 OF 21

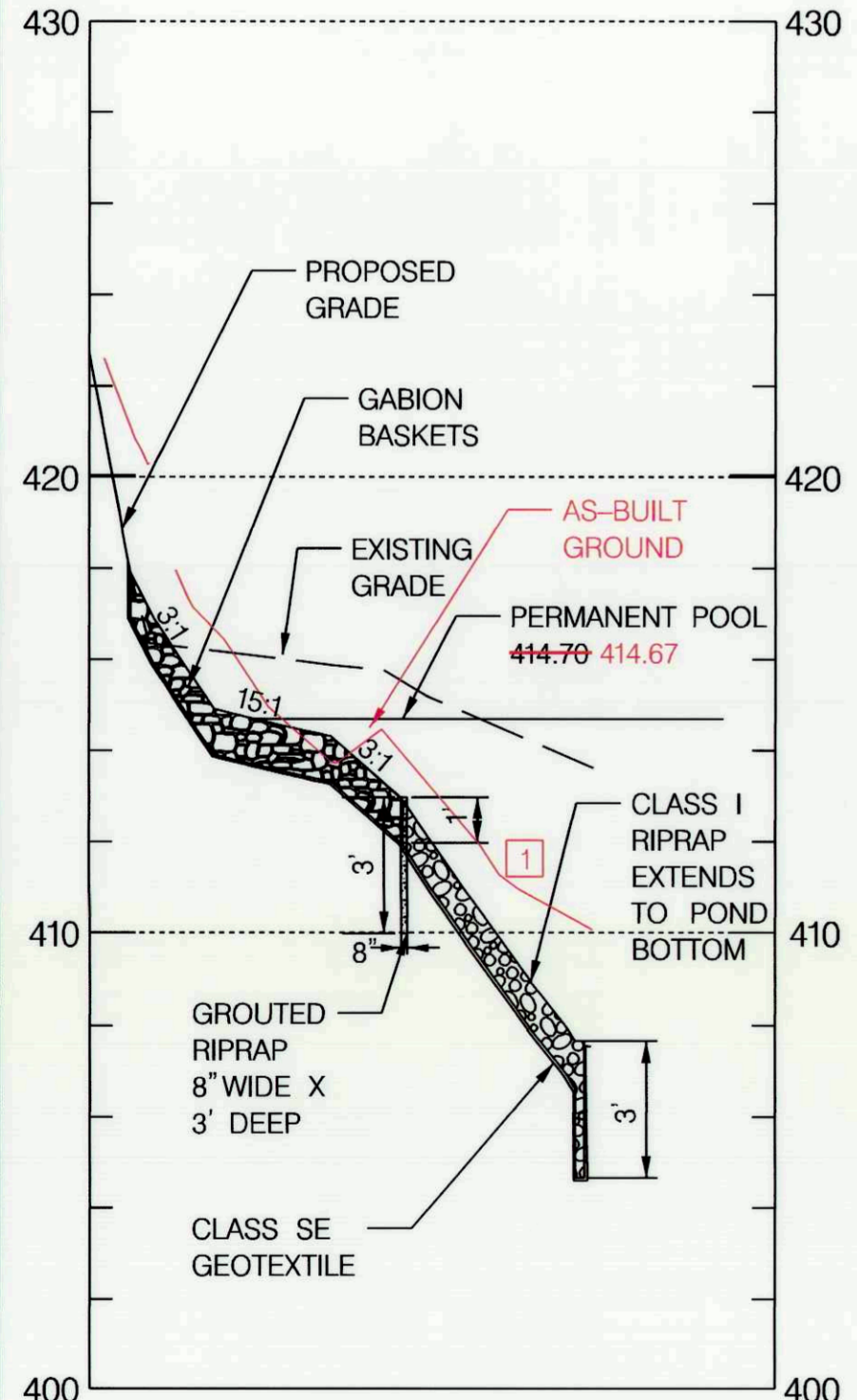
Mark D. ...
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES
DATE: 10/16/17



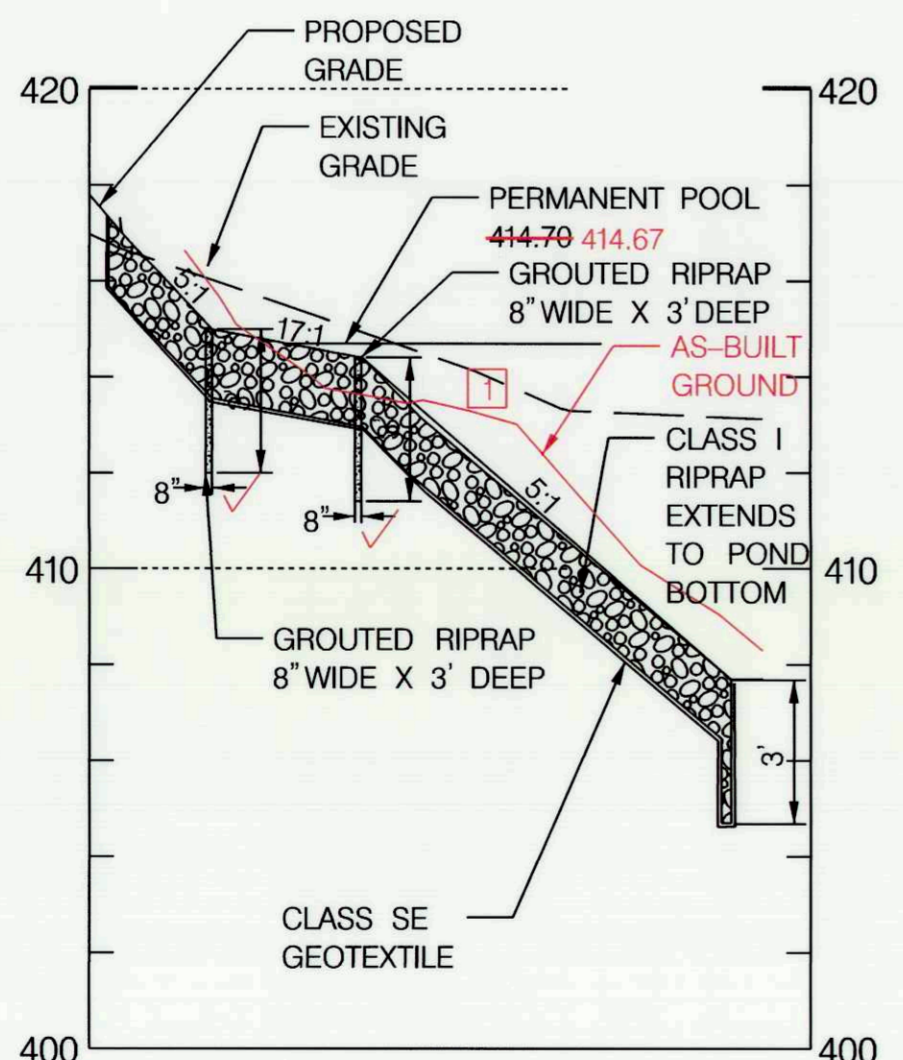
POND PROFILE AND PRINCIPAL SPILLWAY PROFILE
 (STA 0+00 TO STA 4+00)
 HORIZONTAL SCALE: 1" = 20'
 VERTICAL SCALE: 1" = 4'



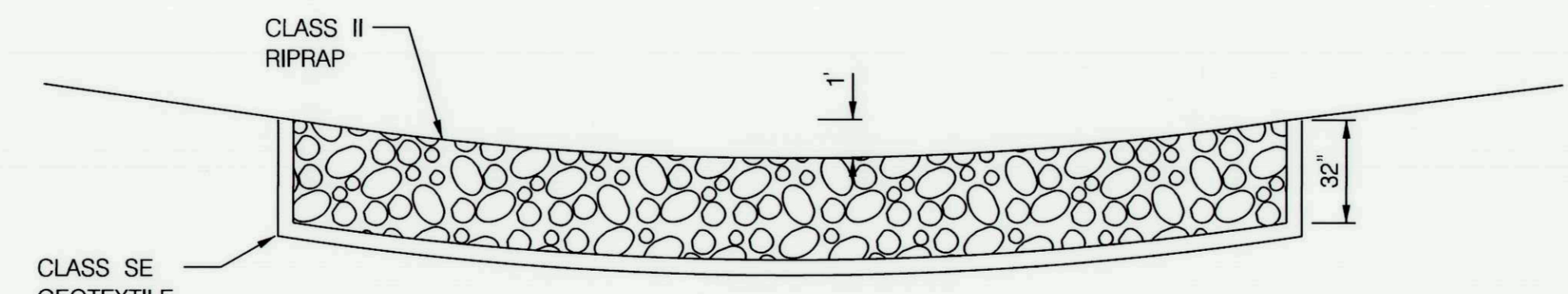
POND CROSS SECTION
 (STA 6+00 TO STA 8+00)
 HORIZONTAL SCALE: 1" = 20'
 VERTICAL SCALE: 1" = 2'



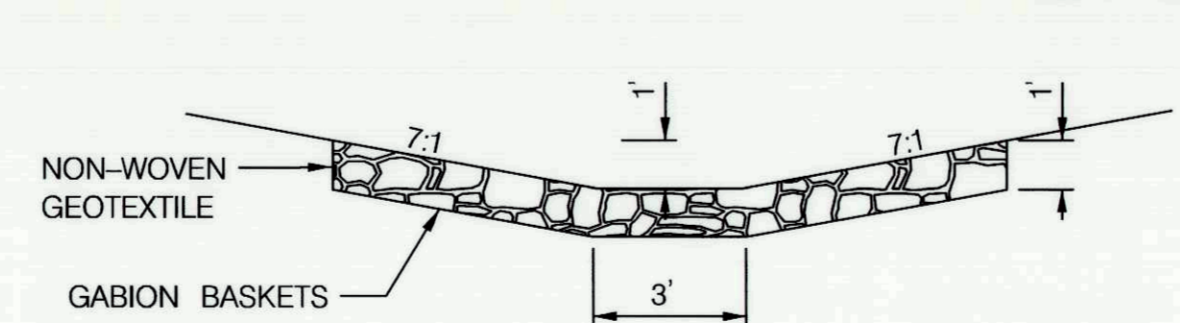
PROFILE INFLOW #2
 HORIZONTAL SCALE: 1" = 20'
 VERTICAL SCALE: 1" = 4'



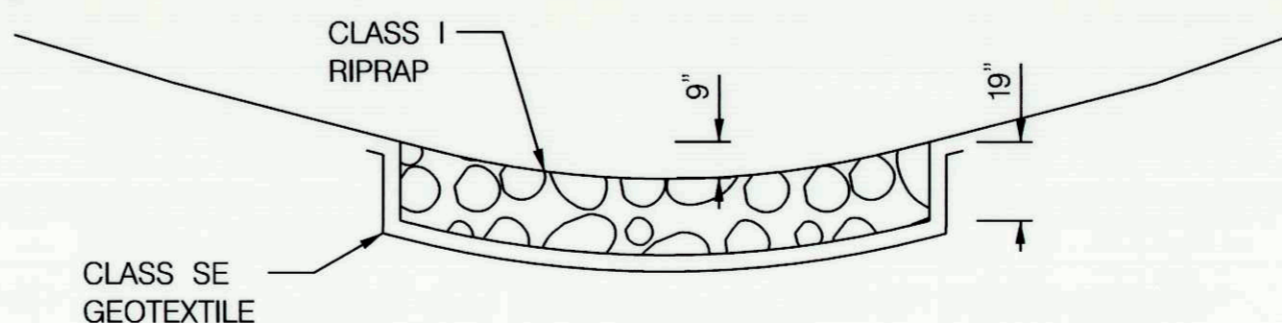
PROFILE INFLOW #3
 HORIZONTAL SCALE: 1" = 20'
 VERTICAL SCALE: 1" = 4'



INFLOW #1 CROSS SECTION
 SCALE: 1" = 5'
 Q10 = 248 cfs
 V10 = 20.59 fps
 d10 = 418.53 ft



INFLOW #2 CROSS SECTION
 SCALE: 1" = 5'
 Q10 = 29 cfs
 V10 = 16.10 fps
 d10 = 418.53 ft



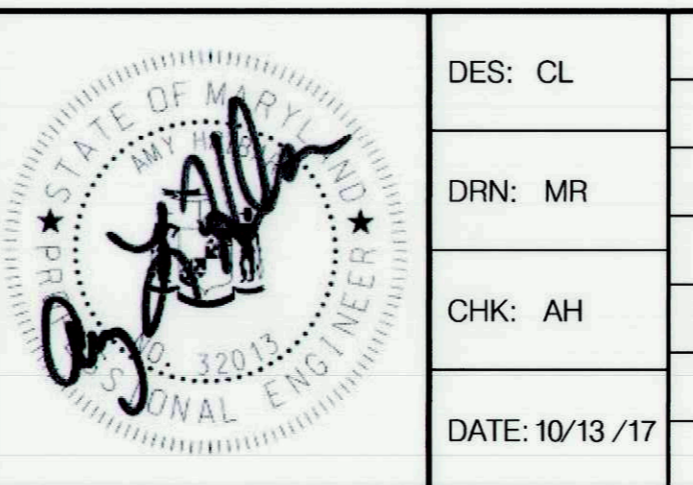
INFLOW #3 CROSS SECTION
 SCALE: 1" = 5'
 Q10 = 148 cfs
 V10 = 9.95 fps
 d10 = 418.53 ft



DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND
 Chief, Bureau of Environmental Services
 10/16/17 DATE

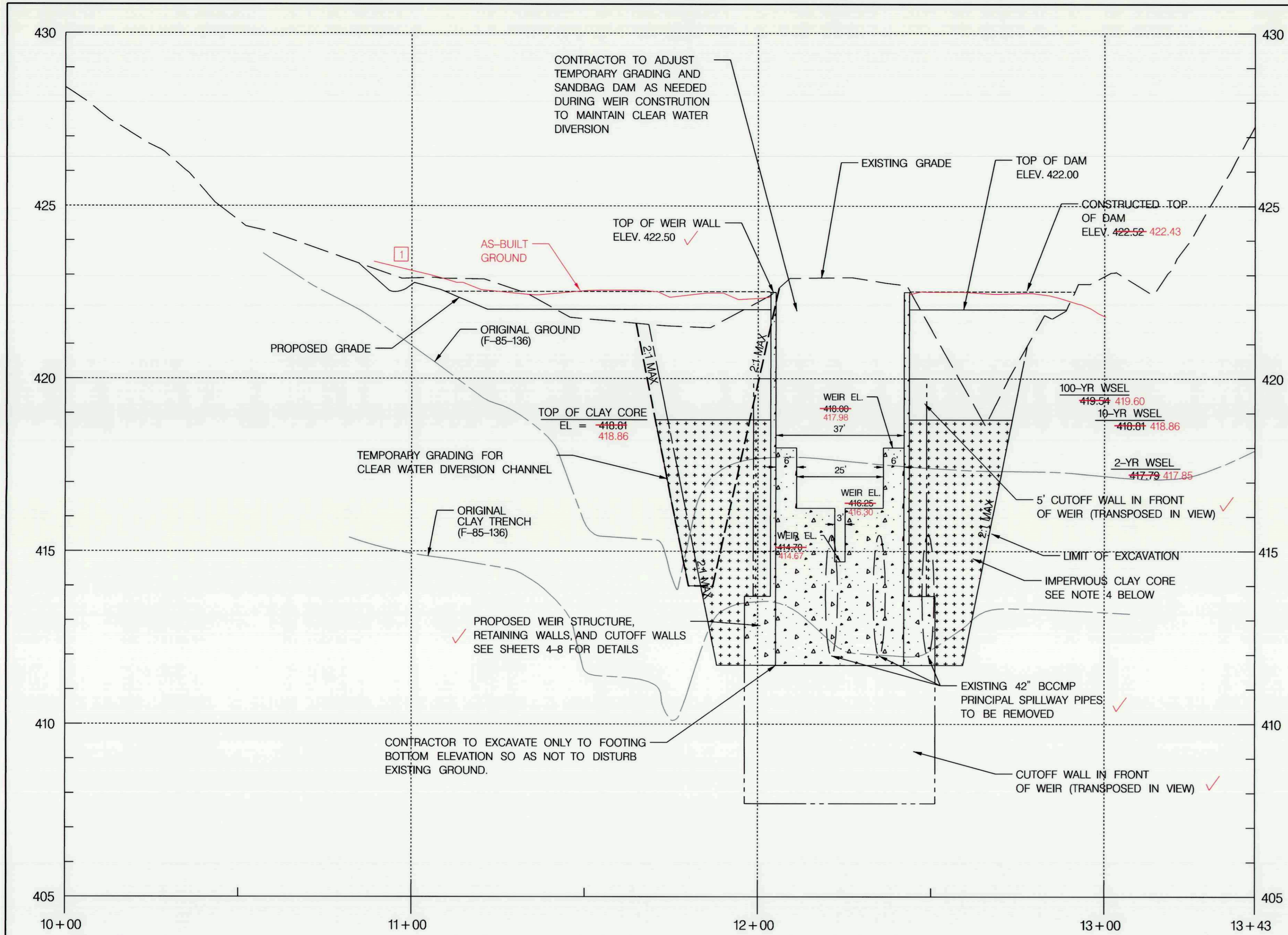
MCCORMICK TAYLOR
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 Baltimore, Maryland 21202
 (410) 662-7400

Howard County MARYLAND
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 6751 Columbia Gateway Drive, Suite 514
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DES: CL	CLR	1	AS-BUILT SURVEY	3/23/18
DRN: MR				
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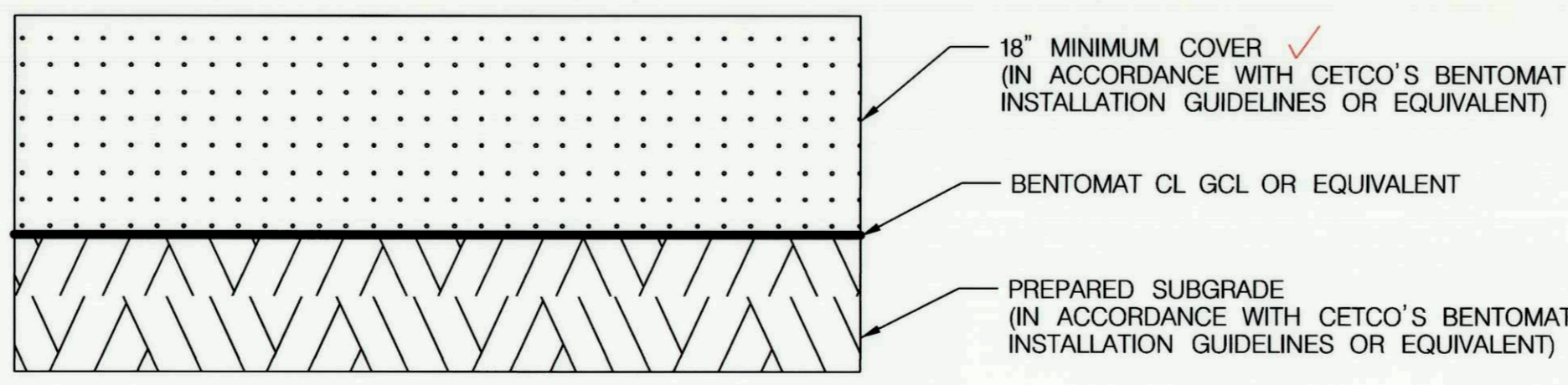
BEECH CREEK DRIVE STORMWATER MANAGEMENT RETROFIT PROJECT
 CAPITAL PROJECT #D-1160
 HOWARD COUNTY
 HSCD #EP-16-23
POND PROFILES
 SCALE AS SHOWN
 SHEET 9 OF 21



CENTERLINE OF EMBANKMENT PROFILE

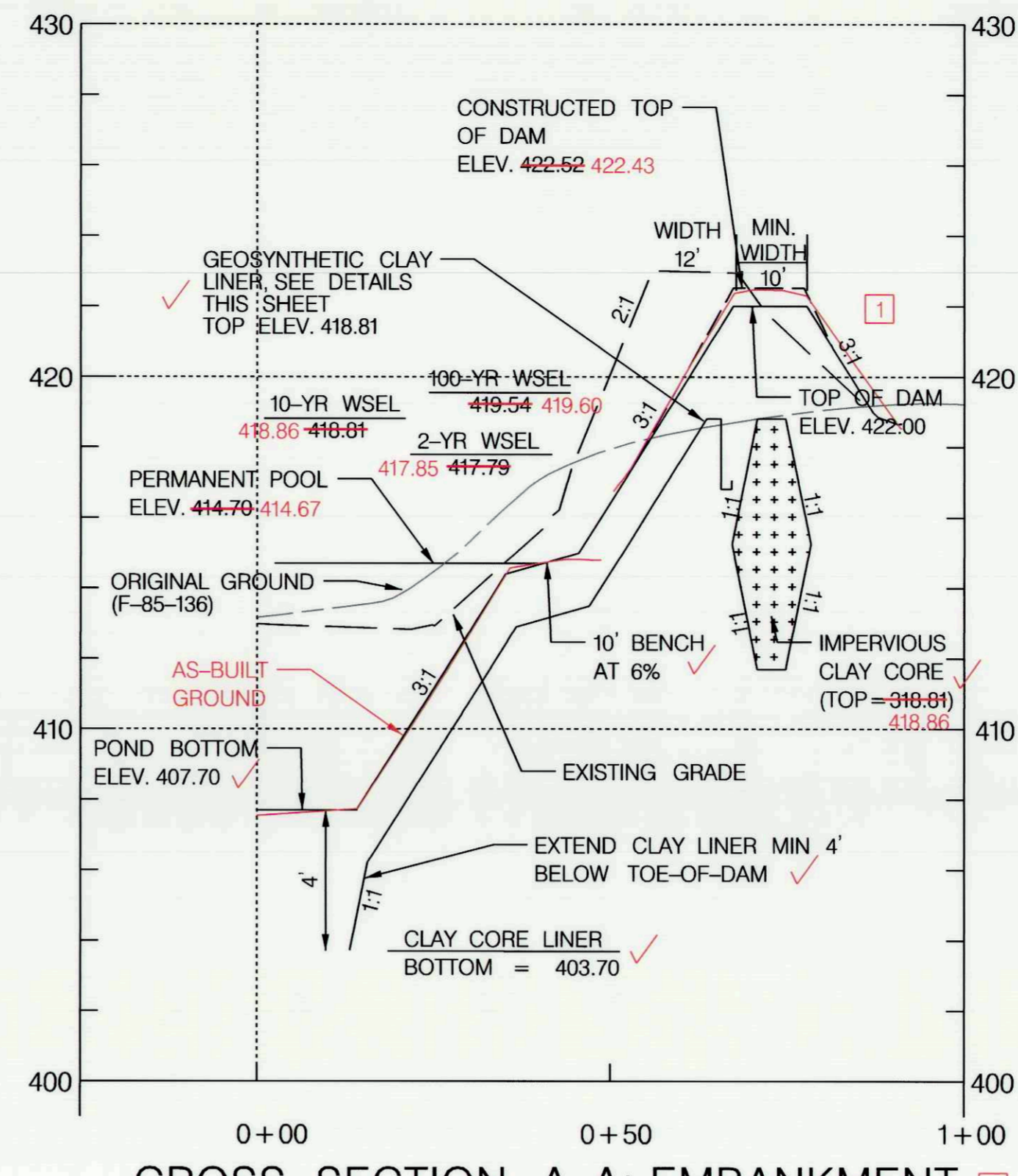
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 2'

- NOTES:
- CENTERLINE OF ORIGINAL AS-BUILT WAS PROJECTED FOR COMPARISON. LOCATION OF AS-BUILT CENTERLINE IS NOT IDENTICAL TO THE CENTERLINE SHOWN. (F-85-136)
 - 10-YR WATER SURFACE ELEVATION AS GENERATED WITH HOWARD COUNTY RAINFALL AND SCS TYPE II DISTRIBUTION WAS USED FOR EMBANKMENT SIZING AS IT IS MORE CONSERVATIVE THAN THE WATER SURFACE DETERMINED USING ATLAS 14 RAINFALL.
 - PROPOSED EMBANKMENT CENTERLINE IS SHIFTED FROM EXISTING EMBANKMENT CENTERLINE.
 - MATERIAL FOR CLAY CORE TO BE SALVAGED DURING EMBANKMENT EXCAVATION FROM EXISTING EMBANKMENT CLAY LAYER (SC) PER BORING LOGS (SHEET 18). ADDITIONAL EXCAVATED SOIL OUTSIDE OF CLAY LAYER TO BE SALVAGE FOR EMBANKMENT FILL OUTSIDE OF CLAY CORE, PER CODE 378.



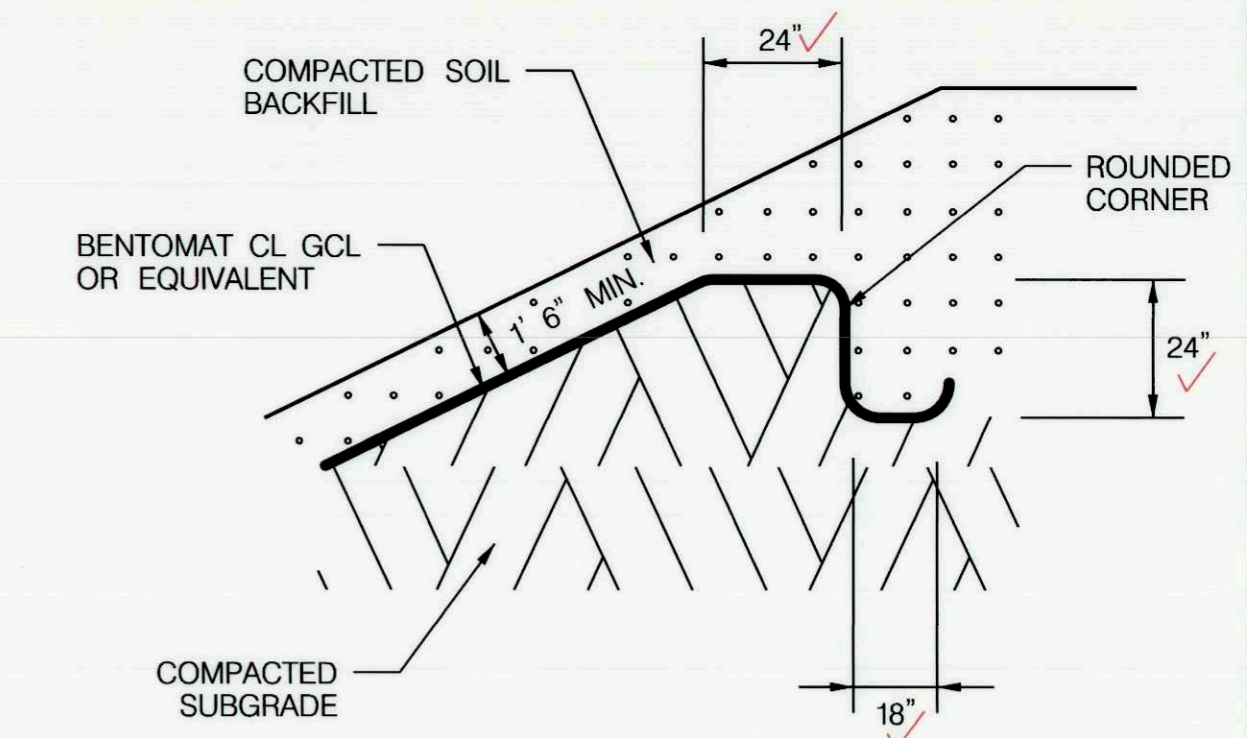
GEOSYNTHETIC CLAY LINER DETAIL

NOT TO SCALE



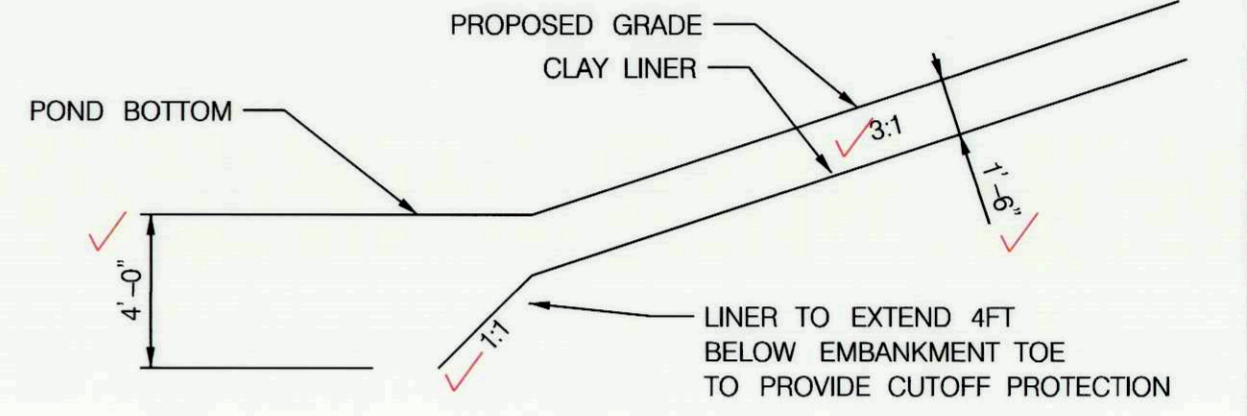
CROSS SECTION A-A: EMBANKMENT

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 4'



GEOSYNTHETIC CLAY LINER ANCHOR DETAIL

NOT TO SCALE



CLAY LINER TIE-IN DETAIL

NOT TO SCALE

GEOSYNTHETIC CLAY LINER SPECIFICATIONS

THE GEOSYNTHETIC CLAY LINER (GCL) SHALL BE BENTOMAT CL OR EQUIVALENT AND SHALL FOLLOW THE DETAILED GUIDELINES AND REQUIREMENTS SPECIFIED BY THE MANUFACTURER.
THE GCL SHALL HAVE THE FOLLOWING MINIMUM STRUCTURAL VALUES WHEN TESTED IN ACCORDANCE WITH THE NOTED METHODS.

MATERIAL PROPERTY	REQUIRED VALUES	TEST METHOD
BENTONITE SWELL INDEX	24mL/2g min.	ASTM D 5890
BENTONITE FLUID LOSS	18mL max.	ASTM D 5891
BENTONITE MASS/AREA	0.75 lb /ft2 min.	ASTM D 5993
GCL GRAB (TENSILE) STRENGTH	45 lbs /in MARV	ASTM D 6768
GCL PEEL STRENGTH	3.5 lbs /in min.	ASTM D 6496
GCL HYDRAULIC CONDUCTIVITY	5 x 10(-10) cm/sec max.	ASTM D 5887
GCL HYDRATED INTERNAL SHEAR STRENGTH	500 psf typ.	ASTM D 5321/6243

MATERIALS:

BENTONITE SHALL BE HIGH SWELLING WITH A MINIMUM SWELL INDEX OF 24 mL/2g AND A MAXIMUM FLUID LOSS OF 18 mL. BENTONITE SHALL BE OG-50 GRANULAR BENTONITE, MINE AND PROCESSED BY AMERICAN COLLOID COMPANY.

BENTONITE SHALL HAVE A GRANULAR CONSISTENCY OF (1 PERCENT MAX. PASSING A NO. 200 SIEVE) TO ENSURE UNIFORM DISTRIBUTION THROUGHOUT THE GCL.

STRUCTURAL REQUIREMENTS:

THE PRODUCT SHALL CONSIST OF A LAYER OF GRANULAR SODIUM BENTONITE BETWEEN TWO GEOTEXTILES NEEDLEPUNCHED TOGETHER. PRODUCT IS LAMINATED TO A THIN FLEXIBLE MEMBRANE LINER.

INSTALLATION:

THE EARTHEN SURFACE UPON WHICH THE GCL IS INSTALLED SHALL BE PREPARED AND COMPACTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND DRAWINGS. THE SURFACE SHALL BE SMOOTH, FIRM, UNYIELDING, AND FREE FROM VEGETATION, SHARP ROCKS, VOID SPACES, STANDING WATER, ABRUPT ELEVATION CHANGES, AND CRACKS LARGER THAN ONE INCH.

IMMEDIATELY PRIOR TO GCL DEPLOYMENT, SUBGRADE SHALL BE FINAL-GRADED AND SMOOTH-ROLLED TO PROVIDE BEST PRACTICABLE SURFACE FOR INSTALLATION. NO WHEEL RUTS, FOOTPRINTS OR OTHER IRREGULARITIES SHALL BE PRESENT. ALL PROTRUSIONS EXTENDING MORE THAN ONE-HALF INCH FROM THE SURFACE SHALL BE REMOVED OR PUNCHED IN THE SURFACE.

AT THE TOP OF THE SLOPED AREAS AN ANCHOR TRENCH FOR THE GCL SHALL BE EXCAVATED OR AN EQUIVALENT RUNOUT SHALL BE UTILIZED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.

MINIMIZE THE EXTENT TO WHICH THE GCL IS DRAGGED ACROSS THE SUBGRADE. A SLIP SHEET MAY BE USED TO REDUCE DAMAGE DURING PLACEMENT.

GCL PANELS SHALL BE PLACED PARALLEL TO THE DIRECTION OF THE SLOPE AND SHOULD LIE FLAT WITH NO WRINKLES OR FOLDS. GCL SHALL NOT BE LEFT UNCOVERED OVERNIGHT.

COVER SOIL SHALL BE FREE OF ANGULAR STONES OR OTHER DAMAGING FOREIGN MATTER. SOIL SHALL BE PLACED A MINIMUM OF 1.5 FOOT THICKNESS OVER THE GCL AND SHALL BE PUSHED UP SLOPES TO MINIMIZE TENSILE FORCE ON THE GCL.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Mark D. ...
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

10/16/17
DATE

MCCORMICK TAYLOR

509 South Exeter Street
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MARYLAND

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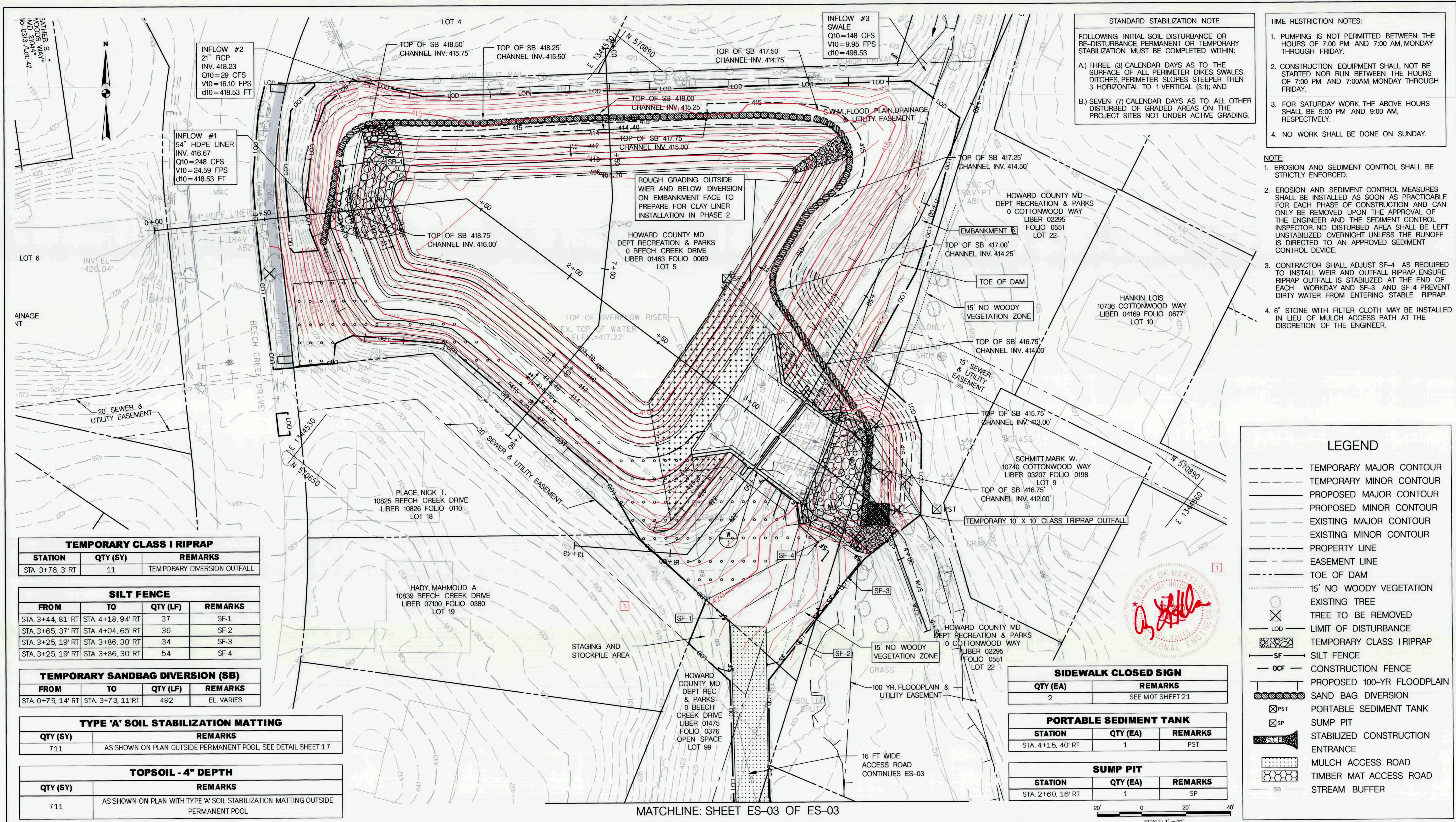


DES: CLR	CLR	1	AS-BUILT SURVEY	3/23/18
DRN: MR				
CHK: AH				
DATE: 10/13/17	BY	NO.	REVISION	DATE

BEECH CREEK DRIVE
STORMWATER MANAGEMENT RETROFIT PROJECT
CAPITAL PROJECT #D-1160
HOWARD COUNTY
HSCD #EP-16-23

POND PROFILES

SCALE
AS SHOWN
SHEET
10 OF 21



STANDARD STABILIZATION NOTE

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

A) THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES STEEPER THEN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND

B) SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OF GRADED AREAS ON THE PROJECT SITES NOT UNDER ACTIVE GRADING.

TIME RESTRICTION NOTES:

1. PUMPING IS NOT PERMITTED BETWEEN THE HOURS OF 7:00 PM AND 7:00 AM, MONDAY THROUGH FRIDAY.
2. CONSTRUCTION EQUIPMENT SHALL NOT BE STARTED NOR RUN BETWEEN THE HOURS OF 7:00 PM AND 7:00AM, MONDAY THROUGH FRIDAY.
3. FOR SATURDAY WORK, THE ABOVE HOURS SHALL BE 5:00 PM AND 9:00 AM, RESPECTIVELY.
4. NO WORK SHALL BE DONE ON SUNDAY.

NOTE:

1. EROSION AND SEDIMENT CONTROL SHALL BE STRICTLY ENFORCED.
2. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AS SOON AS PRACTICABLE FOR EACH PHASE OF CONSTRUCTION AND CAN ONLY BE REMOVED UPON THE APPROVAL OF THE ENGINEER AND THE SEDIMENT CONTROL INSPECTOR. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
3. CONTRACTOR SHALL ADJUST SF-4 AS REQUIRED TO INSTALL WEIR AND OUTFALL RIPRAP. ENSURE RIPRAP OUTFALL IS STABILIZED AT THE END OF EACH WORKDAY AND SF-3 AND SF-4 PREVENT DIRTY WATER FROM ENTERING STABLE RIPRAP.
4. 6" STONE WITH FILTER CLOTH MAY BE INSTALLED IN LIEU OF MULCH ACCESS PATH AT THE DISCRETION OF THE ENGINEER.

LEGEND

- TEMPORARY MAJOR CONTOUR
- TEMPORARY MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPERTY LINE
- EASEMENT LINE
- TOE OF DAM
- 15' NO WOODY VEGETATION
- ⊗ EXISTING TREE
- ⊗ TREE TO BE REMOVED
- LOD --- LIMIT OF DISTURBANCE
- TEMPORARY CLASS I RIPRAP
- SF --- SILT FENCE
- OCF --- CONSTRUCTION FENCE
- PROPOSED 100-YR FLOODPLAIN
- SAND BAG DIVERSION
- ⊗ PST --- PORTABLE SEDIMENT TANK
- ⊗ SP --- SUMP PIT
- STABILIZED CONSTRUCTION ENTRANCE
- MULCH ACCESS ROAD
- TIMBER MAT ACCESS ROAD
- SB --- STREAM BUFFER

TEMPORARY CLASS I RIPRAP

STATION	QTY (SY)	REMARKS
STA. 3+76, 3' RT	11	TEMPORARY DIVERSION OUTFALL

SILT FENCE

FROM	TO	QTY (LF)	REMARKS
STA 3+44, 81' RT	STA 4+18, 94' RT	37	SF-1
STA 3+65, 37' RT	STA 4+04, 65' RT	36	SF-2
STA 3+25, 19' RT	STA 3+86, 30' RT	34	SF-3
STA 3+25, 19' RT	STA 3+86, 30' RT	54	SF-4

TEMPORARY SANDBAG DIVERSION (SB)

FROM	TO	QTY (LF)	REMARKS
STA 0+75, 14' RT	STA 3+73, 11' RT	492	EL VARIES

TYPE 'A' SOIL STABILIZATION MATTING

QTY (SY)	REMARKS
711	AS SHOWN ON PLAN OUTSIDE PERMANENT POOL, SEE DETAIL SHEET 17

TOPSOIL - 4" DEPTH

QTY (SY)	REMARKS
711	AS SHOWN ON PLAN WITH TYPE 'A' SOIL STABILIZATION MATTING OUTSIDE PERMANENT POOL

SIDEWALK CLOSED SIGN

QTY (EA)	REMARKS
2	SEE MOT SHEET 21

PORTABLE SEDIMENT TANK

STATION	QTY (EA)	REMARKS
STA. 4+15, 40' RT	1	PST

SUMP PIT

STATION	QTY (EA)	REMARKS
STA 2+60, 16' RT	1	SP

MATCHLINE: SHEET ES-03 OF ES-03

SCALE: 1" = 20'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature]
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

10/16/17 DATE

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[Professional Engineer Seal]
Professional Engineer

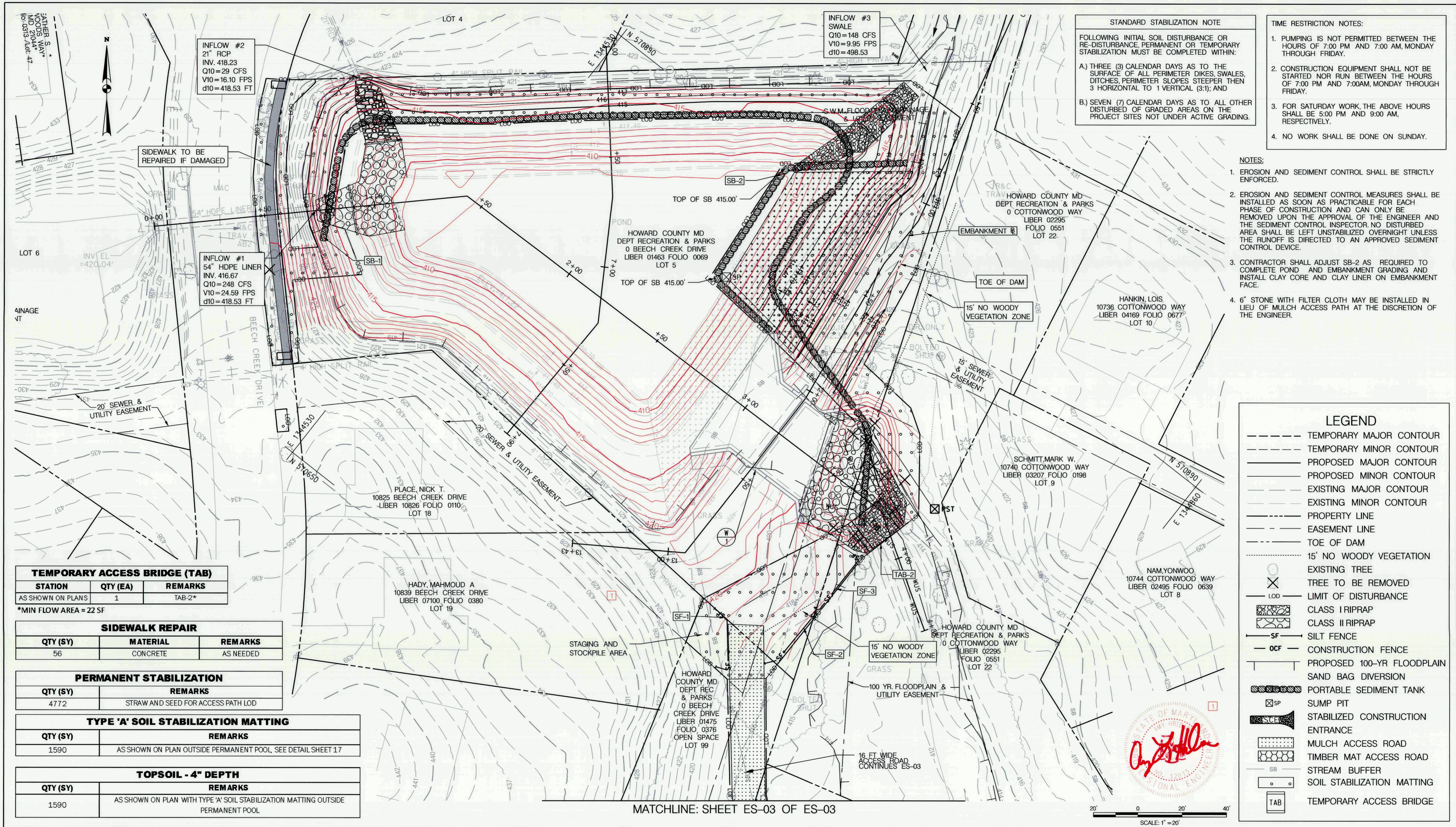
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BEECH CREEK DRIVE
STORMWATER MANAGEMENT RETROFIT PROJECT
CAPITAL PROJECT #D-1160
HOWARD COUNTY
HSCD #EP-16-23

EROSION AND SEDIMENT CONTROL PLAN
PHASE 1 ES-01 OF ES-03

SCALE
1" = 20'

SHEET
11 OF 21



STANDARD STABILIZATION NOTE

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NOTES:

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3. CONTRACTOR SHALL ADJUST SB-2 AS REQUIRED TO COMPLETE POND AND EMBANKMENT GRADING AND INSTALL CLAY CORE AND CLAY LINER ON EMBANKMENT FACE.
4. 6" STONE WITH FILTER CLOTH MAY BE INSTALLED IN LIEU OF MULCH ACCESS PATH AT THE DISCRETION OF THE ENGINEER.

LEGEND

- TEMPORARY MAJOR CONTOUR
- TEMPORARY MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPERTY LINE
- EASEMENT LINE
- TOE OF DAM
- 15' NO WOODY VEGETATION
- EXISTING TREE
- ⊗ TREE TO BE REMOVED
- LOD LIMIT OF DISTURBANCE
- ▨ CLASS I RIPRAP
- ▨ CLASS II RIPRAP
- SF SILT FENCE
- OCF CONSTRUCTION FENCE
- PROPOSED 100-YR FLOODPLAIN
- SAND BAG DIVERSION
- ▨ PORTABLE SEDIMENT TANK
- ⊗ SP SUMP PIT
- ▨ STABILIZED CONSTRUCTION ENTRANCE
- ▨ MULCH ACCESS ROAD
- ▨ TIMBER MAT ACCESS ROAD
- SB STREAM BUFFER
- ▨ SOIL STABILIZATION MATTING
- ▨ TAB TEMPORARY ACCESS BRIDGE

TEMPORARY ACCESS BRIDGE (TAB)		
STATION	QTY (EA)	REMARKS
AS SHOWN ON PLANS	1	TAB-2*
*MIN FLOW AREA = 22 SF		
SIDEWALK REPAIR		
QTY (SY)	MATERIAL	REMARKS
56	CONCRETE	AS NEEDED
PERMANENT STABILIZATION		
QTY (SY)	REMARKS	
4772	STRAW AND SEED FOR ACCESS PATH LOD	
TYPE 'A' SOIL STABILIZATION MATTING		
QTY (SY)	REMARKS	
1590	AS SHOWN ON PLAN OUTSIDE PERMANENT POOL, SEE DETAIL SHEET 17	
TOPSOIL - 4" DEPTH		
QTY (SY)	REMARKS	
1590	AS SHOWN ON PLAN WITH TYPE 'A' SOIL STABILIZATION MATTING OUTSIDE PERMANENT POOL	

MATCHLINE: SHEET ES-03 OF ES-03

SCALE: 1" = 20'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Mark D. ...
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

10/16/17 DATE

McCORMICK TAYLOR
509 South Exeter Street
4th Floor
Baltimore, Maryland 21202
(410) 662-7400

Storm Water Management Division
Bureau of Environmental Services
6751 Columbia Gateway Drive, Suite 514
Columbia, Maryland 21046-3143
(410) 313-6444

DES: CL	CLR	1	AS-BUILT SURVEY	8/21/18
DRN: MR				
CHK: AH				
DATE: 10/13/17	BY	NO.	REVISION	DATE

BEECH CREEK DRIVE
STORMWATER MANAGEMENT RETROFIT PROJECT
CAPITAL PROJECT #D-1160
HOWARD COUNTY
HSCD #EP-16-23

EROSION AND SEDIMENT CONTROL PLAN
PHASE 2 ES-02 OF ES-03

SCALE: 1" = 20'

SHEET: 12 OF 21

TIME RESTRICTION NOTES:

1. PUMPING IS NOT PERMITTED BETWEEN THE HOURS OF 7:00 PM AND 7:00 AM, MONDAY THROUGH FRIDAY.
2. CONSTRUCTION EQUIPMENT SHALL NOT BE STARTED NOR RUN BETWEEN THE HOURS OF 7:00 PM AND 7:00AM, MONDAY THROUGH FRIDAY.
3. FOR SATURDAY WORK, THE ABOVE HOURS SHALL BE 5:00 PM AND 9:00 AM, RESPECTIVELY.
4. NO WORK SHALL BE DONE ON SUNDAY.

STANDARD STABILIZATION NOTE

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

A.) THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES STEEPER THEN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND

B.) SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OF GRADED AREAS ON THE PROJECT SITES NOT UNDER ACTIVE GRADING.

NOTES:

1. EROSION AND SEDIMENT CONTROL SHALL BE STRICTLY ENFORCED.
2. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AS SOON AS PRACTICABLE FOR EACH PHASE OF CONSTRUCTION AND CAN ONLY BE REMOVED UPON THE APPROVAL OF THE ENGINEER AND THE SEDIMENT CONTROL INSPECTOR. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
3. CONTRACTOR SHALL STABILIZE DISTURBED AREAS WITHIN THE WORK AREA AT THE END OF EACH WORK DAY.
4. 6" STONE WITH FILTER CLOTH MAY BE INSTALLED IN LIEU OF MULCH ACCESS PATH AT THE DISCRETION OF THE ENGINEER.

TOPSOIL - 4" DEPTH		
QTY (SY)	REMARKS	
623	AS SHOWN ON PLAN WITH TYPE 'A' SOIL STABILIZATION MATTING	

SIDEWALK REPAIR		
QTY (SY)	MATERIAL	REMARKS
104	CONCRETE	AS NEEDED
140	ASPHALT	AS NEEDED

SILT FENCE			
FROM	TO	QTY (LF)	REMARKS
AS SHOWN ON PLANS	AS SHOWN ON PLANS	124	SF-5

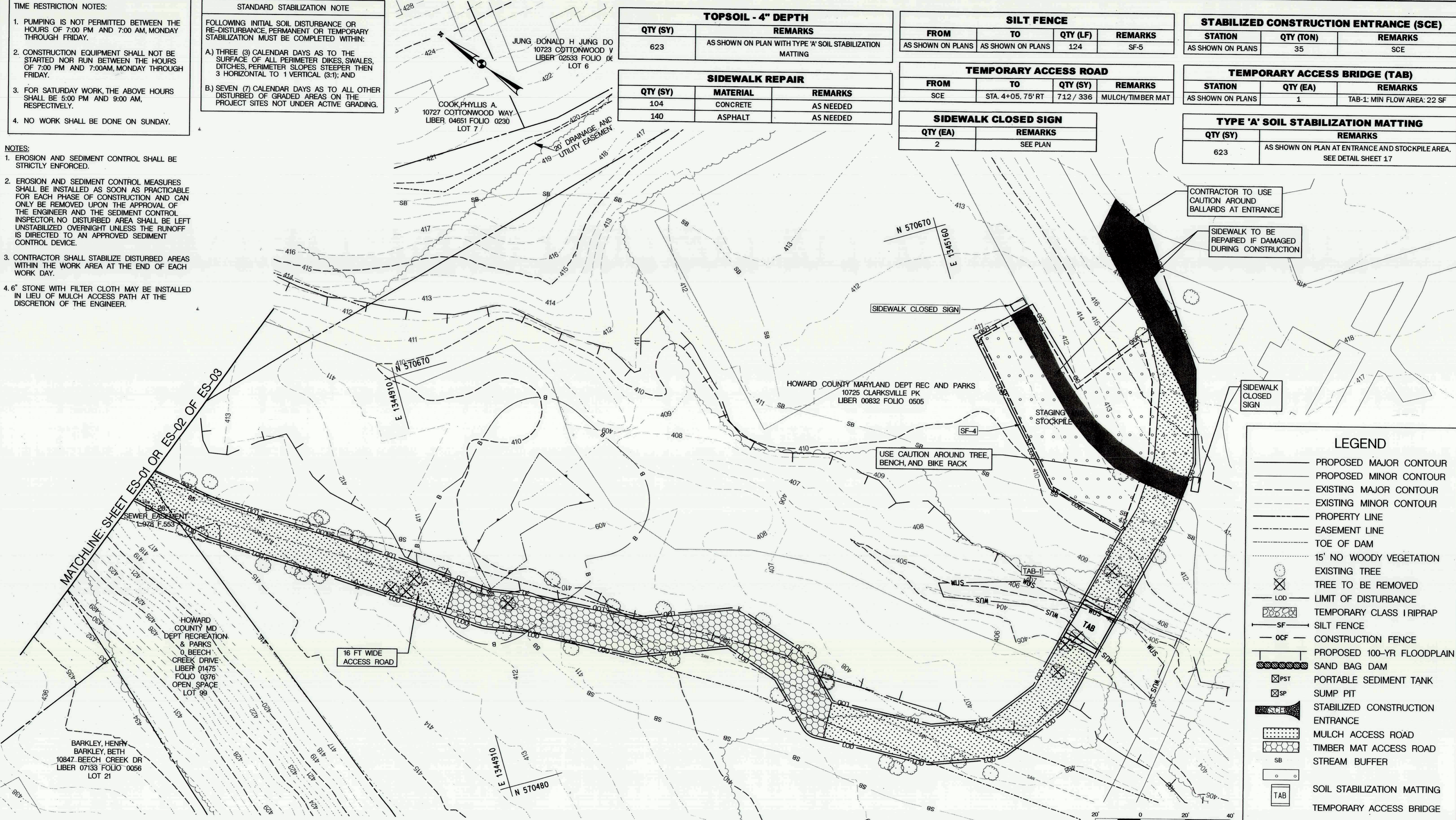
TEMPORARY ACCESS ROAD			
FROM	TO	QTY (SY)	REMARKS
SCE	STA. 4+05.75' RT	712 / 336	MULCH/TIMBER MAT

SIDEWALK CLOSED SIGN	
QTY (EA)	REMARKS
2	SEE PLAN

STABILIZED CONSTRUCTION ENTRANCE (SCE)		
STATION	QTY (TON)	REMARKS
AS SHOWN ON PLANS	35	SCE

TEMPORARY ACCESS BRIDGE (TAB)		
STATION	QTY (EA)	REMARKS
AS SHOWN ON PLANS	1	TAB-1: MIN FLOW AREA: 22 SF

TYPE 'A' SOIL STABILIZATION MATTING	
QTY (SY)	REMARKS
623	AS SHOWN ON PLAN AT ENTRANCE AND STOCKPILE AREA. SEE DETAIL SHEET 17



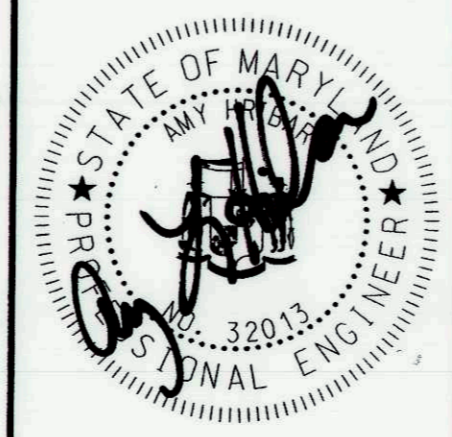
LEGEND

- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPERTY LINE
- EASEMENT LINE
- TOE OF DAM
- 15' NO WOODY VEGETATION
- EXISTING TREE
- TREE TO BE REMOVED
- LOD - LIMIT OF DISTURBANCE
- TEMPORARY CLASS I RIPRAP
- SF - SILT FENCE
- OCF - CONSTRUCTION FENCE
- PROPOSED 100-YR FLOODPLAIN
- SAND BAG DAM
- PST - PORTABLE SEDIMENT TANK
- SP - SUMP PIT
- SCE - STABILIZED CONSTRUCTION ENTRANCE
- MULCH ACCESS ROAD
- TIMBER MAT ACCESS ROAD
- STREAM BUFFER
- TAB - SOIL STABILIZATION MATTING
- TEMPORARY ACCESS BRIDGE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

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509 South Exeter Street
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(410) 682-7400

Howard County MARYLAND
Storm Water Management Division
Bureau of Environmental Services
6751 Columbia Gateway Drive, Suite 514
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DES: CL				
DRN: MR				
CHK: AH				
DATE: 10/13/17	BY	NO.	REVISION	DATE

**BEECH CREEK DRIVE
STORMWATER MANAGEMENT RETROFIT PROJECT
CAPITAL PROJECT #D-1160
HOWARD COUNTY
HSCD #EP-16-23**

**EROSION AND SEDIMENT CONTROL PLAN
PHASES 1 & 2 ES-03 OF ES-03**

SCALE
1" = 20'
SHEET
13 OF 21

[Signature]
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES
DATE: 10/16/17

SEQUENCE OF CONSTRUCTION

EROSION AND SEDIMENT CONTROL - GENERAL NOTES

- 1. INSTALL APPROPRIATE CONTROL AND SAFETY DEVICES AS SHOWN ON THE STANDARD DETAILS PROVIDED.
2. A MINIMUM 5-DAY DRY WEATHER FORECAST FROM THE NATIONAL WEATHER SERVICE WEATHER CENTER...
3. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST FIVE (5) DAYS PRIOR TO THE START OF WORK...
4. STAKEOUT LIMITS OF DISTURBANCE (LOD). ORANGE HIGH VISIBILITY FENCE SHALL BE MANUALLY INSTALLED AROUND THE PERIMETER OF THE LOD...
5. THE CONTRACTOR SHALL COORDINATE AN ON-SITE PRE-CONSTRUCTION MEETING WHICH SHALL INCLUDE, BUT NOT BE LIMITED TO, THE COUNTY PROJECT MANAGER, THE ENGINEER, A REPRESENTATIVE FROM HOWARD COUNTY CONSTRUCTION INSPECTION, A REPRESENTATIVE FROM RECREATION AND PARKS, AND THE CONTRACTOR...
6. MOBILIZE EQUIPMENT FOR CONSTRUCTION ACTIVITIES. INSTALL STABILIZED CONSTRUCTION ENTRANCE, MULCH ACCESS PATH, AND TEMPORARY ACCESS BRIDGE (TAB-1)...
7. DURING A 5 DAY DRY WEATHER FORECAST FROM THE NATIONAL WEATHER SERVICE AND WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, BEGIN EXCAVATION AND REMOVE EXISTING BCCMP RISERS AND 42" BCCMP SPILLWAY PIPES...
8. INSTALL CLASS II AND CLASS I RIPRAP OUTFALL PROTECTION AND CONSTRUCT CONCRETE WEIR...
9. DURING A 5 DAY DRY WEATHER FORECAST FROM THE NATIONAL WEATHER SERVICE, RE-ESTABLISH AND GRADE EMBANKMENT WITH CLAY CORE AND CLAY LINER AROUND WEIR AS SHOWN ON PHASE 1 PLAN...
10. DURING A 5 DAY DRY WEATHER FORECAST FROM THE NATIONAL WEATHER SERVICE AND WITH PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR, INSTALL TAB-2 AND CONVERT POND TO ONLINE...
11. COMPLETE GRADING OF EMBANKMENT AND INSTALLATION OF CLAY CORE AND CLAY LINER BETWEEN INFLOW #3 AND CONCRETE WEIR...
12. REMOVE TEMPORARY ACCESS BRIDGE (TAB-2) AND COMPLETE FINAL GRADING DOWNSTREAM OF EMBANKMENT...
13. WHEN AREAS ARE FULLY STABILIZED AND WITH PERMISSION FROM THE INSPECTOR, REMOVE THE REMAINING SEDIMENT CONTROL DEVICES...

HOWARD COUNTY CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

- 1. A PRE-CONSTRUCTION MEETING MUST OCCUR WITH THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION (CID) 410 313-1855 AFTER THE FUTURE LOD AND PROTECTED AREAS ARE MARKED CLEARLY IN THE FIELD...
2. PRIOR TO THE START OF EARTH DISTURBANCE...
3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN A 3 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES...
4. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE...
5. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR...
6. SITE ANALYSIS: TOTAL AREA OF SITE 1.60 ACRES, AREA TO BE ROOFED OR PAVED 0.00 ACRES, AREA TO BE VEGETATIVELY STABILIZED 0.85 ACRES...
7. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE...
8. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR...

HOWARD COUNTY CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

- 9. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORK DAY...
10. ANY MAJOR CHANGES OR REVISIONS TO THE SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE HSCD PRIOR TO PROCEEDING WITH CONSTRUCTION...
11. DISTURBANCE SHALL NOT OCCUR OUTSIDE THE L.O.D. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADABLE AND THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE...
12. WASH WATER FROM ANY EQUIPMENT, VEHICLES, WHEELS, PAVEMENT, AND OTHER SOURCES MUST BE TREATED IN A SEDIMENT BASIN OR OTHER APPROVED WASHOUT STRUCTURE...
13. TOPSOIL SHALL BE STOCKPILED AND PRESERVED ON-SITE FOR REDISTRIBUTION ONTO FINAL GRADE...
14. ALL SILT FENCE AND SUPER SILT FENCE SHALL BE PLACED ON-THE-CONTOUR, AND BE IMBRICATED AT 25 MINUTE INTERVALS WITH LOWER ENDS CURLED UPHILL BY 2' IN ELEVATION...
15. STREAM CHANNELS MUST NOT BE DISTURBED DURING THE FOLLOWING RESTRICTED TIME PERIODS (INCLUSIVE): USE I AND II MARCH 1 - JUNE 15, USE III AND IIIP OCTOBER 1 - APRIL 30, USE IV MARCH 1 - MAY 31...
16. A COPY OF THIS PLAN, THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND ASSOCIATED PERMITS SHALL BE ON-SITE AND AVAILABLE WHEN THE SITE IS ACTIVE...
17. OFFSITE WASTE / BORROW SITE SHALL HAVE AN APPROVED SEDIMENT CONTROL PLAN AND PERMIT.

B-4-2 SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

- A. SOIL PREPARATION
1. TEMPORARY STABILIZATION
A. SEEDBED PREPARATION CONSISTS OF LOOSENING SOIL TO A DEPTH OF 3 TO 5 INCHES BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT...
B. APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS...
C. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS...
2. PERMANENT STABILIZATION
A. A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE...
B. APPLICATION OF AMENDMENTS OR TOPSOIL IS REQUIRED IF ON-SITE SOILS DO NOT MEET THE ABOVE CONDITIONS...
C. GRADED AREAS MUST BE MAINTAINED IN A TRUE AND EVEN GRADE AS SPECIFIED ON THE APPROVED PLAN...
D. APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST...
E. MIX SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS...
B. TOPSOILING
1. TOPSOIL IS PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION...
2. TOPSOIL SALVAGED FROM AN EXISTING SITE MAY BE USED PROVIDED IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS...
3. TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:
A. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH...
B. THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS...
C. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH...
D. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE...
4. AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN...
A. TOPSOIL MUST BE A LOAM, SANDY LOAM, SILT LOAM, SANDY CLAY LOAM, OR LOAMY SAND...
B. TOPSOIL MUST BE FREE OF CONTRASTING TEXTURED SUBSOILS AND MUST CONTAIN LESS THAN 5 PERCENT BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1 INCH IN DIAMETER...
C. TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY...
6. TOPSOIL APPLICATION
A. EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING TOPSOIL...
B. UNIFORMLY DISTRIBUTE TOPSOIL IN A 5 TO 8 INCH LAYER AND LIGHTLY COMPACT TO A MINIMUM THICKNESS OF 4 INCHES...
C. TOPSOIL MUST BE PLACED IF THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION...
C. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)
1. SOIL TESTS MUST BE PERFORMED TO DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER ON SITES HAVING DISTURBED AREAS OF 5 ACRES OR MORE...
2. FERTILIZERS MUST BE UNIFORM IN COMPOSITION, FREE FLOWING AND SUITABLE FOR ACCURATE APPLICATION...
3. LIME MATERIALS MUST BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHEN HYDROSEEDING)...
4. LIME AND FERTILIZER ARE TO BE EVENLY DISTRIBUTED AND INCORPORATED INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS...
5. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, SPREAD GROUND LIMESTONE AT THE RATE OF 4 TO 8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.

B-4-3 SEEDING AND MULCHING

- A. SEEDING
1. SPECIFICATIONS
A. ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW...
B. MULCH ALONE MAY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES...
C. INOCULANTS: THE INOCULANT FOR TREATING LEGUME SEED IN THE SEED MIXTURES MUST BE A PURE CULTURE OF NITROGEN FIXING BACTERIA PREPARED SPECIFICALLY FOR THE SPECIES...
D. SOO OR SEED MUST NOT BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL...
2. APPLICATION
A. DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS...
B. DRILL OR CULTIPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL...
C. HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER)...
D. MULCHING
1. MULCH MATERIALS (IN ORDER OF PREFERENCE)
A. STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, RYE, OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR...
B. WOOD CELLULOSE FIBER MULCH (WCFFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE...
2. APPLICATION
A. APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING...
B. WHEN STRAW MULCH IS USED, SPREAD IT OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE TO A UNIFORM LOOSE DEPTH...
C. WOOD CELLULOSE FIBER MULCH AS MULCH MUST BE APPLIED AT A NET DRY WEIGHT OF 50 POUNDS PER ACRE...
3. ANCHORING
A. PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS BY WIND OR WATER...
B. A MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE...
C. WOOD CELLULOSE FIBER MULCH MAY BE USED FOR ANCHORING STRAW...
D. LIGHTWEIGHT PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER RECOMMENDATIONS...
NETTING IS USUALLY AVAILABLE IN ROLLS 4 TO 15 FEET WIDE AND 300 TO 3,000 FEET LONG.

B-4-4 TEMPORARY STABILIZATION

Table with columns: NO., SPECIES, APPLICATION RATE (LB/AC), SEEDING DATES, SEEDING DEPTHS, FERTILIZER RATE (10-20-20), LIME RATE. Rows include Annual Ryegrass and Foxtail Millet.

B-4-5 PERMANENT STABILIZATION

Table with columns: NO., SPECIES, APPLICATION RATE (LB/AC), SEEDING DATES, SEEDING DEPTHS, FERTILIZER RATE (N, P2O5, K2O), LIME RATE. Rows include Switch Grass, Creeping Red Fescue, Partridge Pea, Tall Fescue, Perennial Ryegrass, and White Clover.

*NOTE: MAY 16 TO JUNE 15 ARE ADDITIONAL PLANTING DATES DURING WHICH SUPPLEMENTAL WATERING MAY BE NEEDED TO ENSURE PLANT ESTABLISHMENT

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND. Includes signature of Chief, Bureau of Environmental Services and date 10/14/17.

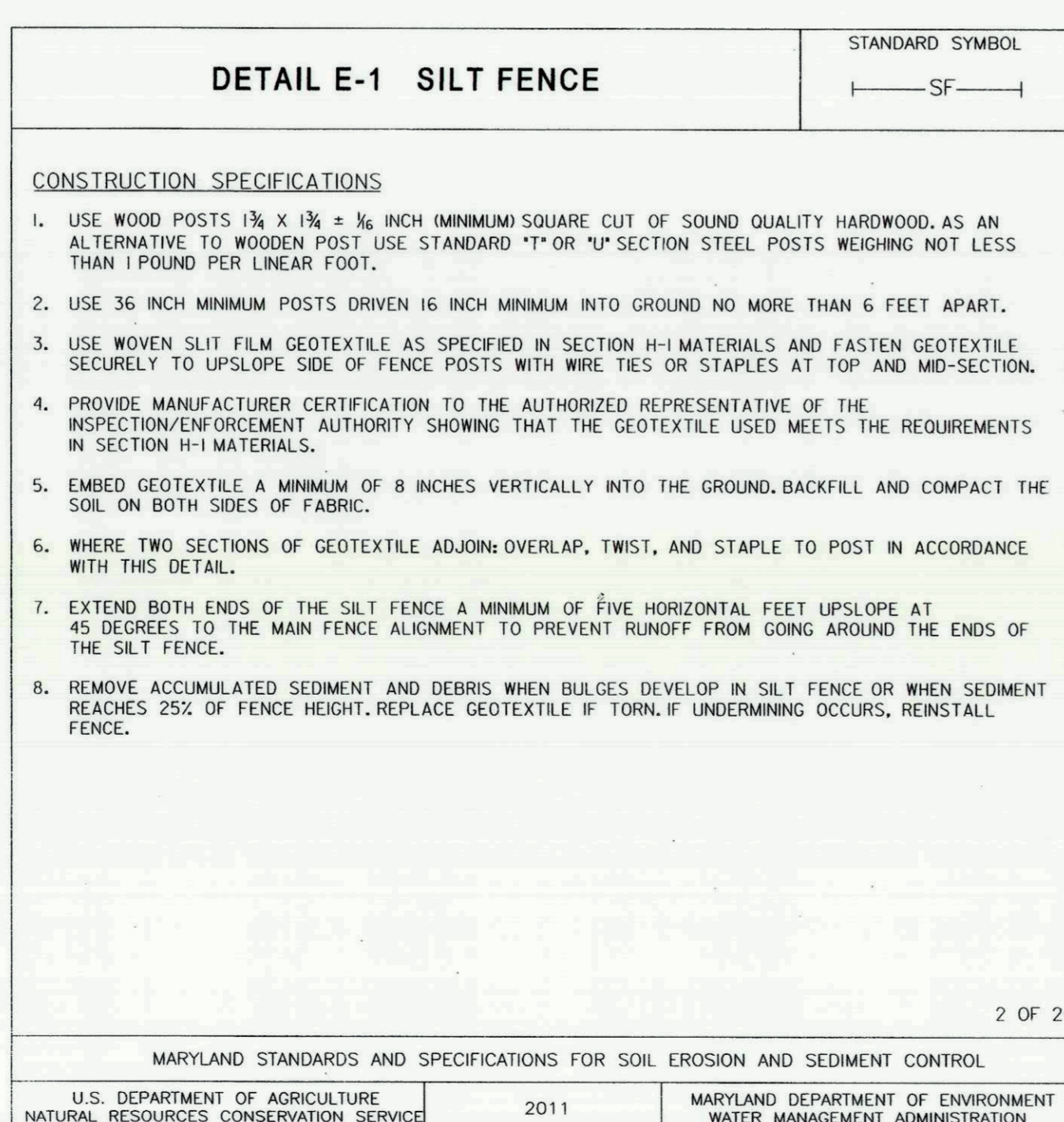
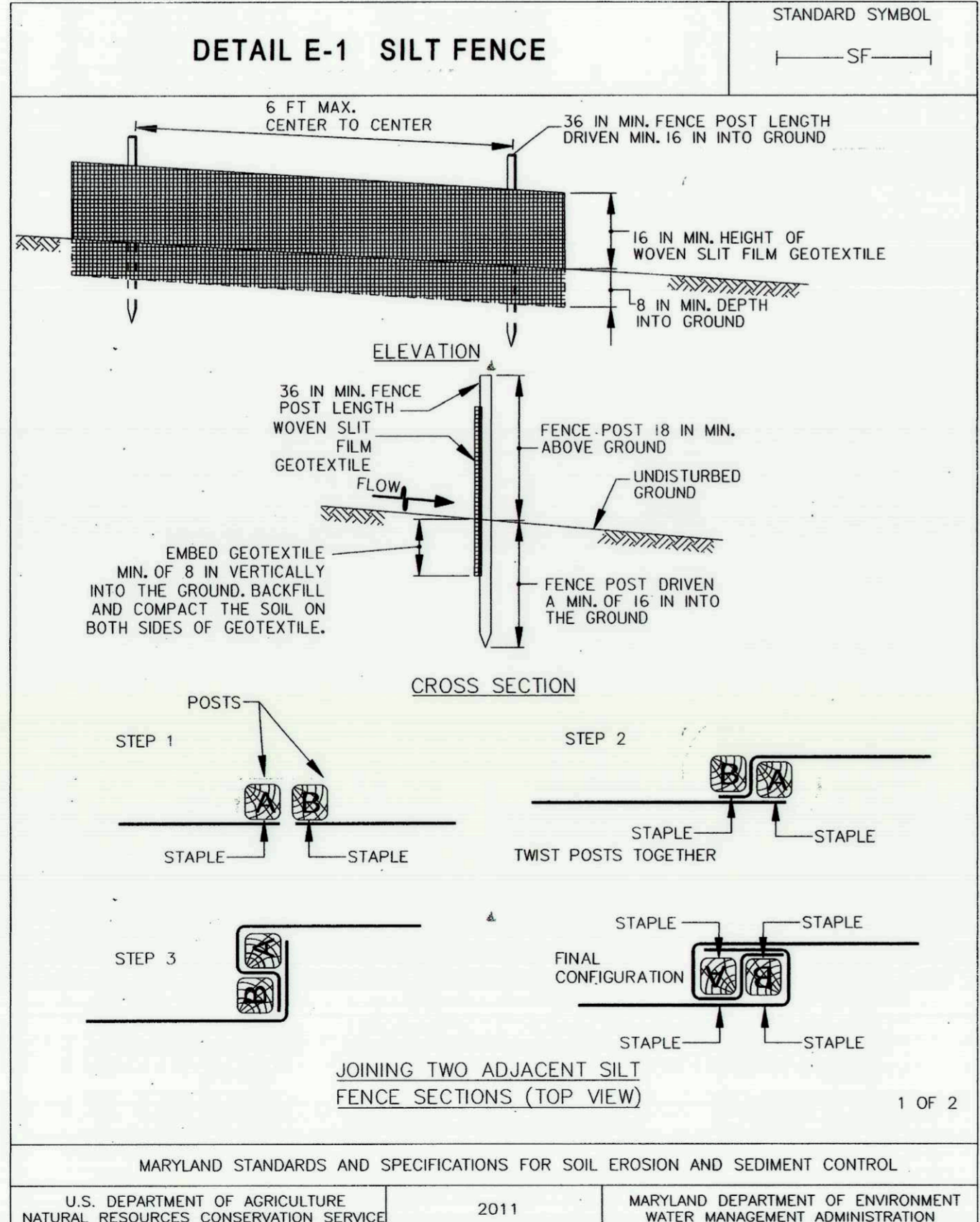
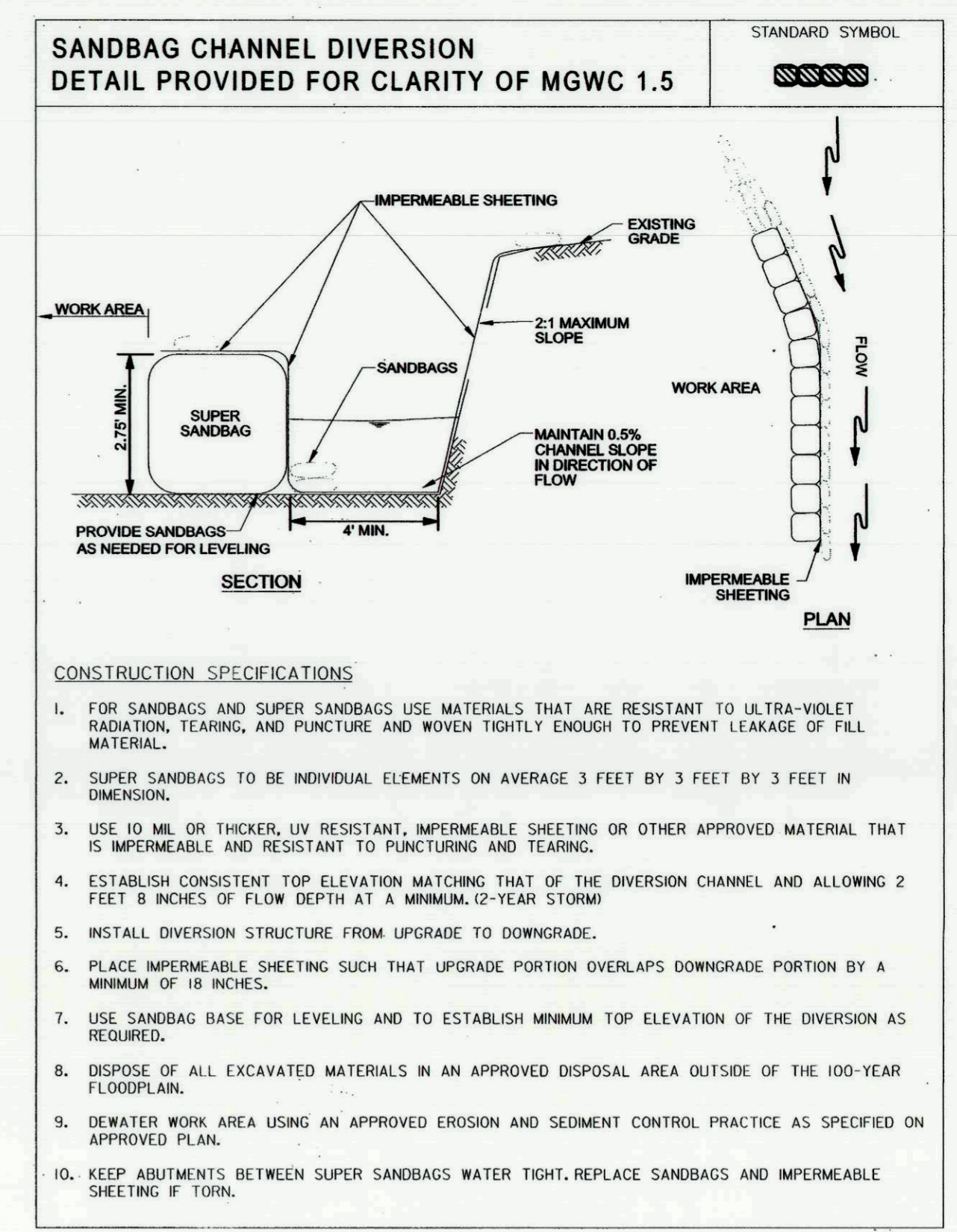
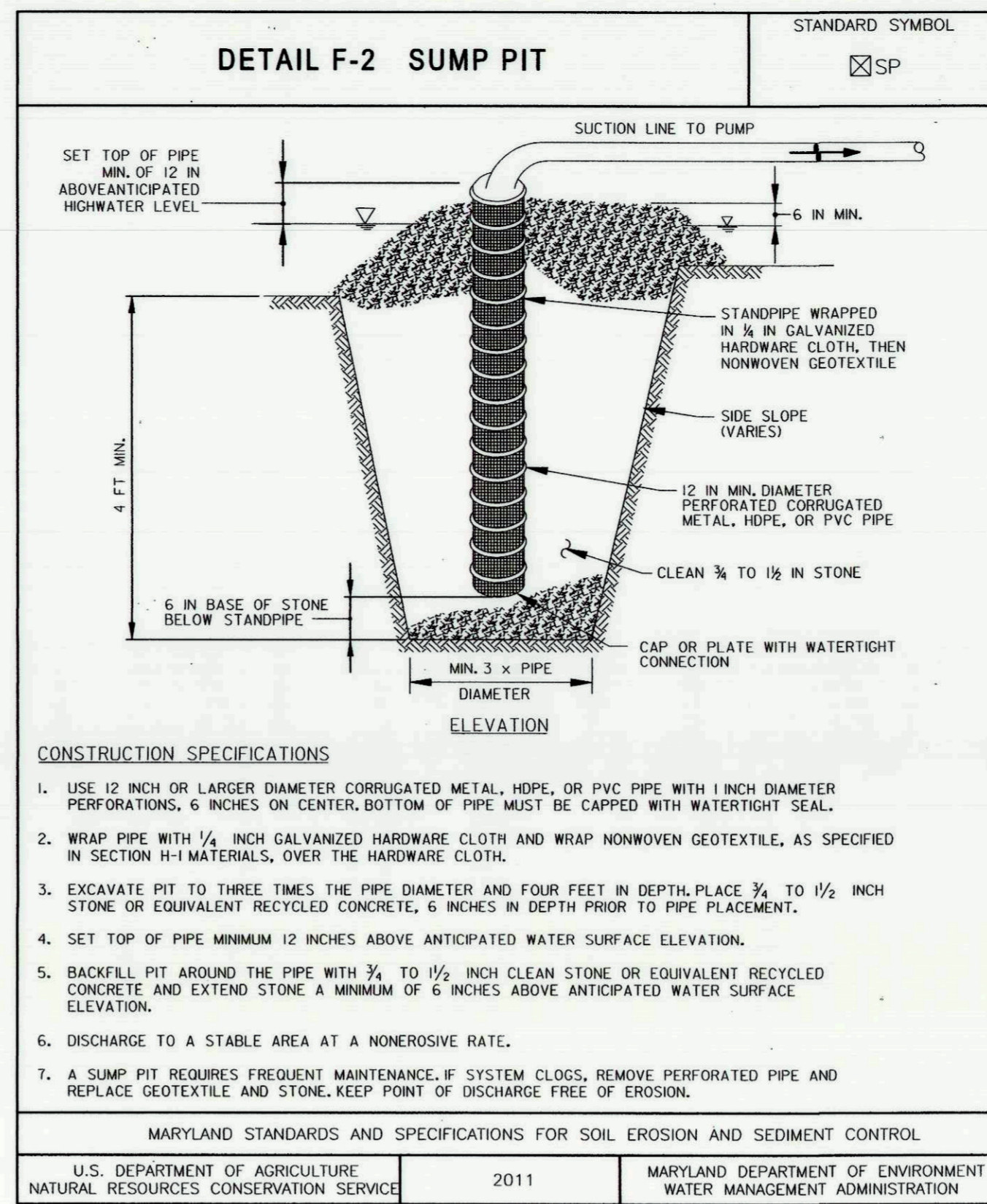
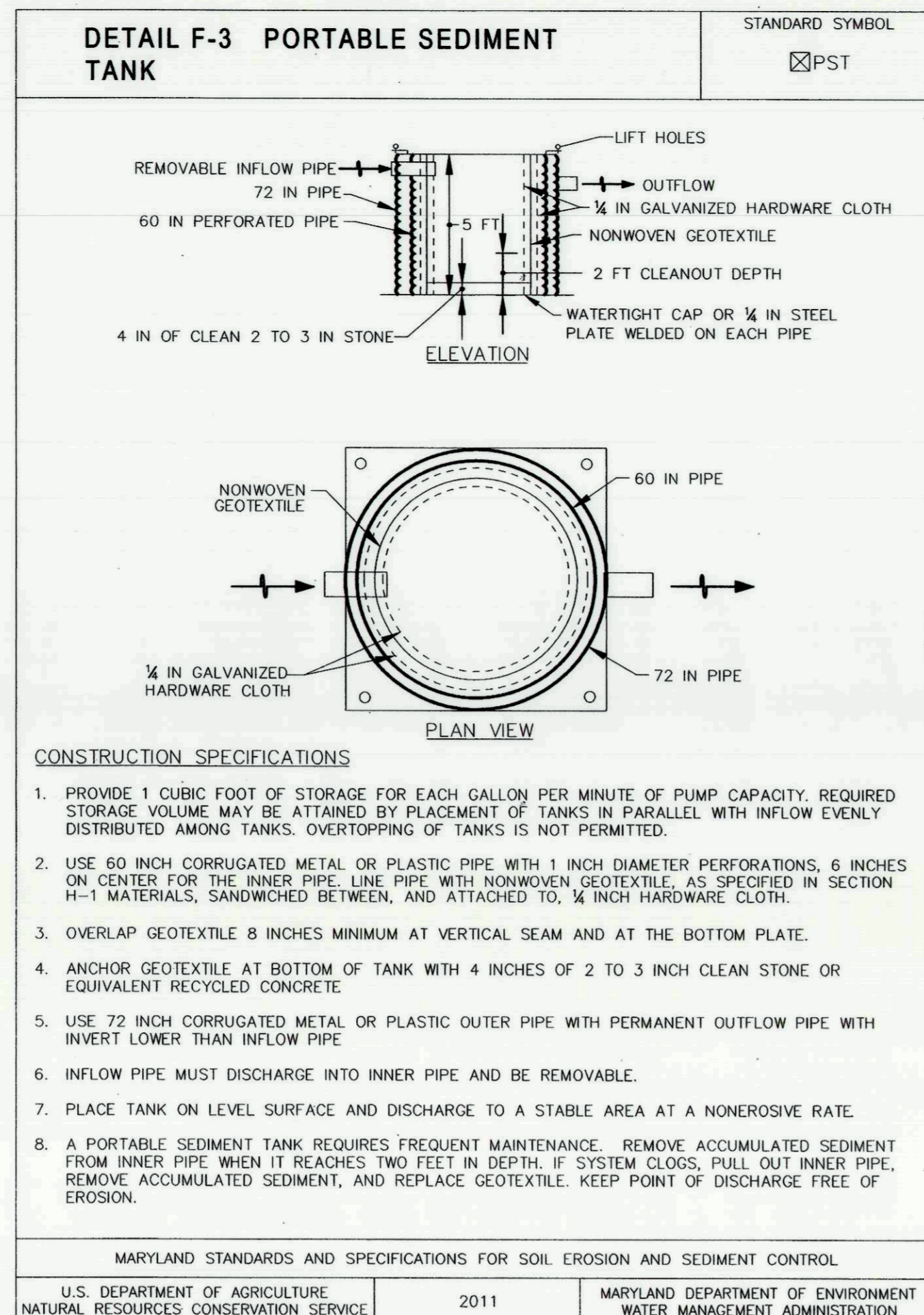
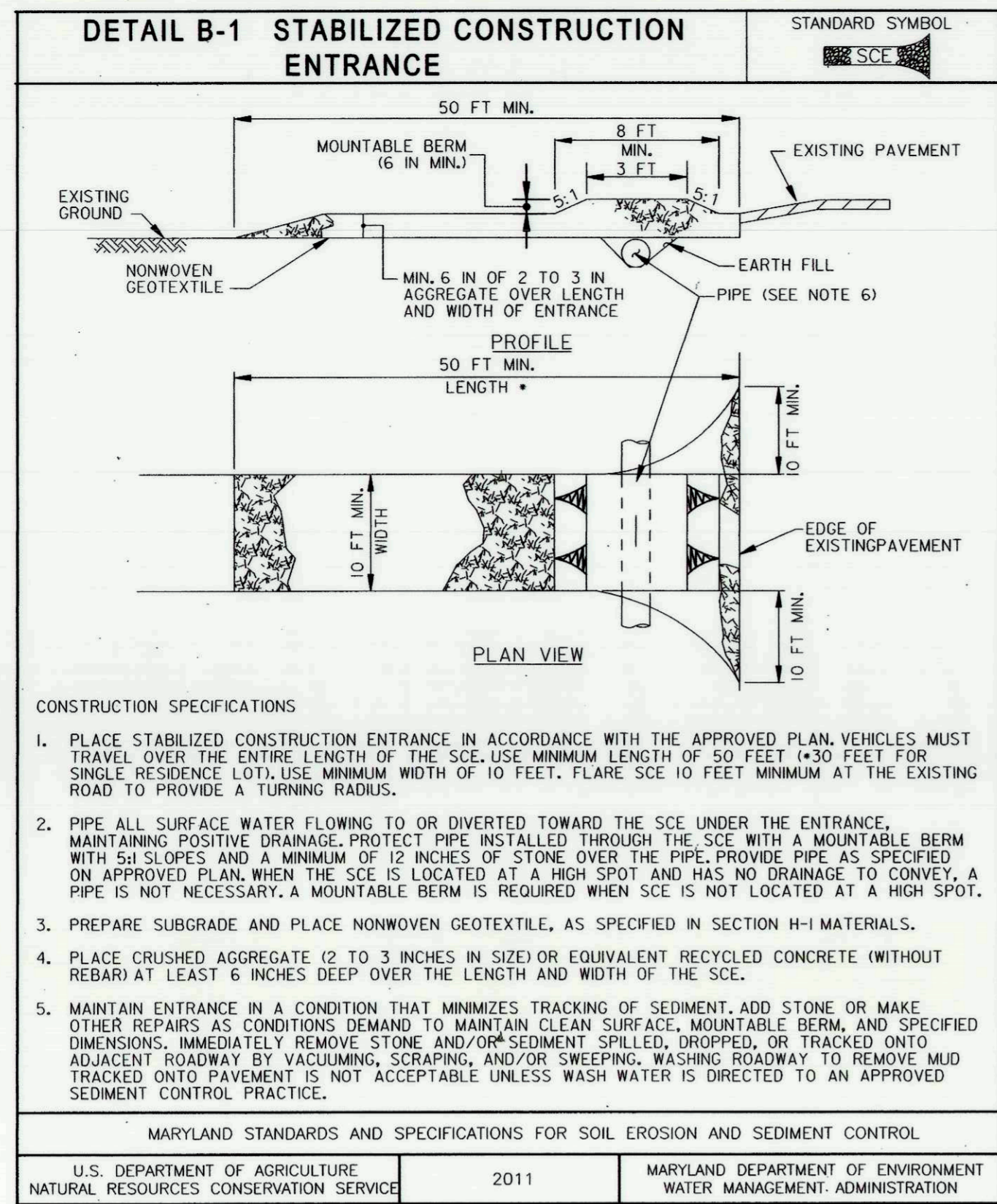
McCORMICK TAYLOR logo and address: 509 South Exeter Street, 4th Floor, Baltimore, Maryland 21202, (410) 662-7400.

Howard County MARYLAND logo and address: Storm Water Management Division, Bureau of Environmental Services, 6751 Columbia Gateway Drive, Suite 514, Columbia, Maryland 21046-3143, (410) 313-6444.

Professional Engineer seal for the State of Maryland, License No. 220213, dated 10/13/17.

Revision table with columns: DES, DRN, CHK, DATE, BY, NO., REVISION, DATE.

BEECH CREEK DRIVE STORMWATER MANAGEMENT RETROFIT PROJECT CAPITAL PROJECT #D-1160 HOWARD COUNTY HSCD #EP-16-23. Includes SCALE, NOT TO SCALE, SHEET, and 14 OF 21.



MGWC 1.5: SANDBAG/STONE CHANNEL DIVERSION

Temporary measure for dewatering in channel construction sites

DESCRIPTION
 The work should consist of installing sandbag or stone flow diversions for the purpose of erosion control when construction activities occur within the stream channel.

EFFECTIVE USES & LIMITATIONS
 Diversions are used to isolate work areas from flow during the construction of in-stream projects. Diversions which have an insufficient flow capacity can fail and severely erode the disturbed channel section under construction. Therefore, in-channel construction activities should occur only during periods of low rainfall. This temporary measure may not be practical in large channels.

MATERIAL SPECIFICATIONS
 Materials for sandbag and stone stream diversions should meet the following requirements:

- Riprap: Riprap should be washed and have a minimum diameter of 6 inches (0.15 meters).
- Sandbags: Sandbags should consist of materials which are resistant to ultra-violet radiation, tearing, and puncture and should be woven tightly enough to prevent leakage of the fill material (i.e., sand, fine gravel, etc.).
- Sheeting: Sheeting should consist of polyethylene or other materials which are impervious and resistant to puncture and tearing.

INSTALLATION GUIDELINES
 All erosion and sediment control devices, including dewatering basins, should be implemented as the first order of business according to a plan approved by the WMA or local authority. Installation should proceed from upstream to downstream during periods of low flow. If necessary, silt fence or straw bales should be installed around the perimeter of the work area.

Sandbag/stone diversions can be used independently or as components of other stream diversion techniques. Installation of this measure should proceed as follows (refer to Detail 1.5):

- The diversion structure should be installed from upstream to downstream.
- The height of the sandbag/stone diversion should be a function of the duration of the project in the stream reach. For projects with a duration less than 2 weeks, the height of the diversion should be one half the streambank height, measured from the channel bed, plus 1 foot (0.3 meters) or bankfull height, whichever is greater. For projects of longer duration, the top of the sandbag or stone diversion should correspond to bankfull height. For diversion structures utilizing sandbags, the stream bed should be hand prepared prior to placement of the base layer of sandbags in order to ensure a water tight fit. Additionally, it may be necessary to prepare the bank in a similar fashion.
- All excavated material should be deposited and stabilized in an approved area outside the 100-year floodplain unless otherwise authorized by the WMA.
- Sediment-laden water from the construction area should be pumped to a dewatering basin.

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

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Sandbag/stone diversions can be used independently or as components of other stream diversion techniques. Installation of this measure should proceed as follows (refer to Detail 1.5):

- The diversion structure should be installed from upstream to downstream.
- The height of the sandbag/stone diversion should be a function of the duration of the project in the stream reach. For projects with a duration less than 2 weeks, the height of the diversion should be one half the streambank height, measured from the channel bed, plus 1 foot (0.3 meters) or bankfull height, whichever is greater. For projects of longer duration, the top of the sandbag or stone diversion should correspond to bankfull height. For diversion structures utilizing sandbags, the stream bed should be hand prepared prior to placement of the base layer of sandbags in order to ensure a water tight fit. Additionally, it may be necessary to prepare the bank in a similar fashion.
- All excavated material should be deposited and stabilized in an approved area outside the 100-year floodplain unless otherwise authorized by the WMA.
- Sediment-laden water from the construction area should be pumped to a dewatering basin.

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

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

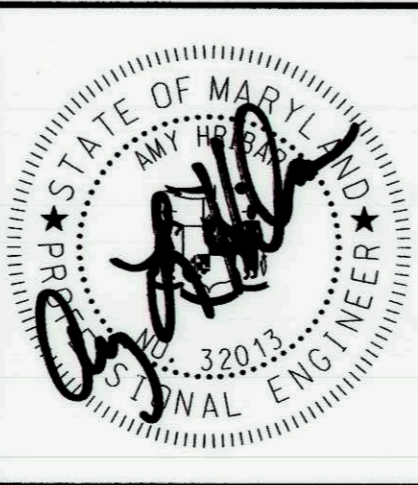
Mark D. ...
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

10/16/17
 DATE

McCORMICK TAYLOR
 509 South Exeter Street
 4th Floor
 Baltimore, Maryland 21202
 (410) 662-7400

Howard County
 MARYLAND

Storm Water Management Division
 Bureau of Environmental Services
 6751 Columbia Gateway Drive, Suite 514
 Columbia, Maryland 21046-3143
 (410) 313-6444



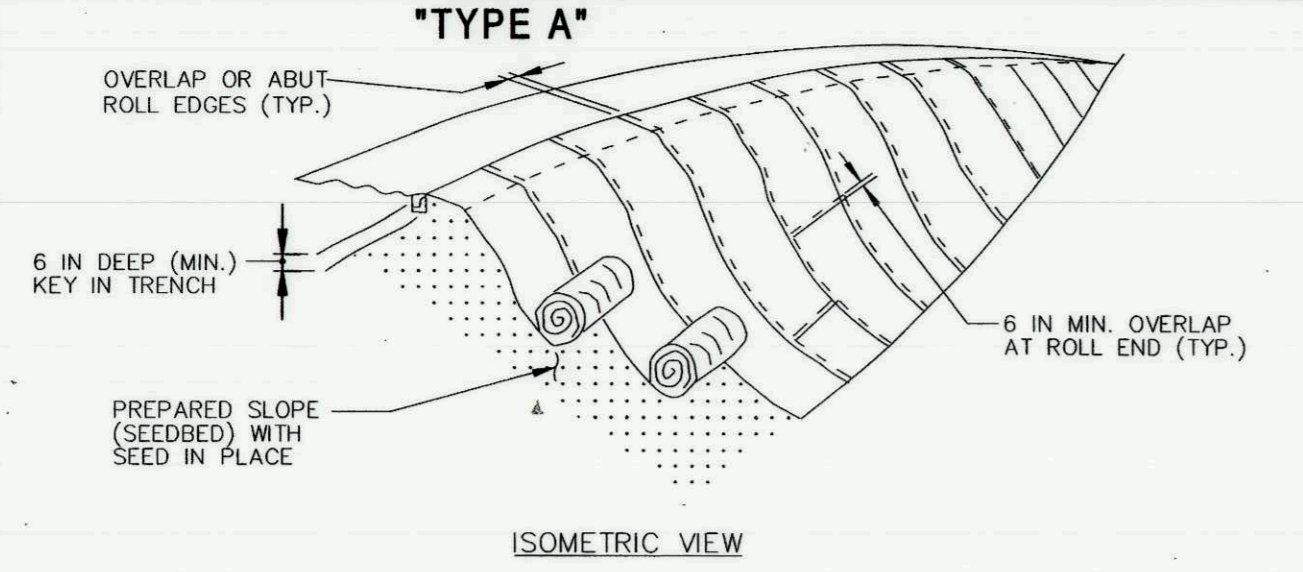
DES: CL					
DRN: MR					
CHK: AH					
DATE: 10/13/17	BY	NO.	REVISION	DATE	

BEECH CREEK DRIVE
 STORMWATER MANAGEMENT RETROFIT PROJECT
 CAPITAL PROJECT #D-1160
 HOWARD COUNTY
 HSCD #EP-16-23

EROSION AND SEDIMENT CONTROL DETAIL SHEET

SCALE: NOT TO SCALE
 SHEET: 16 OF 21

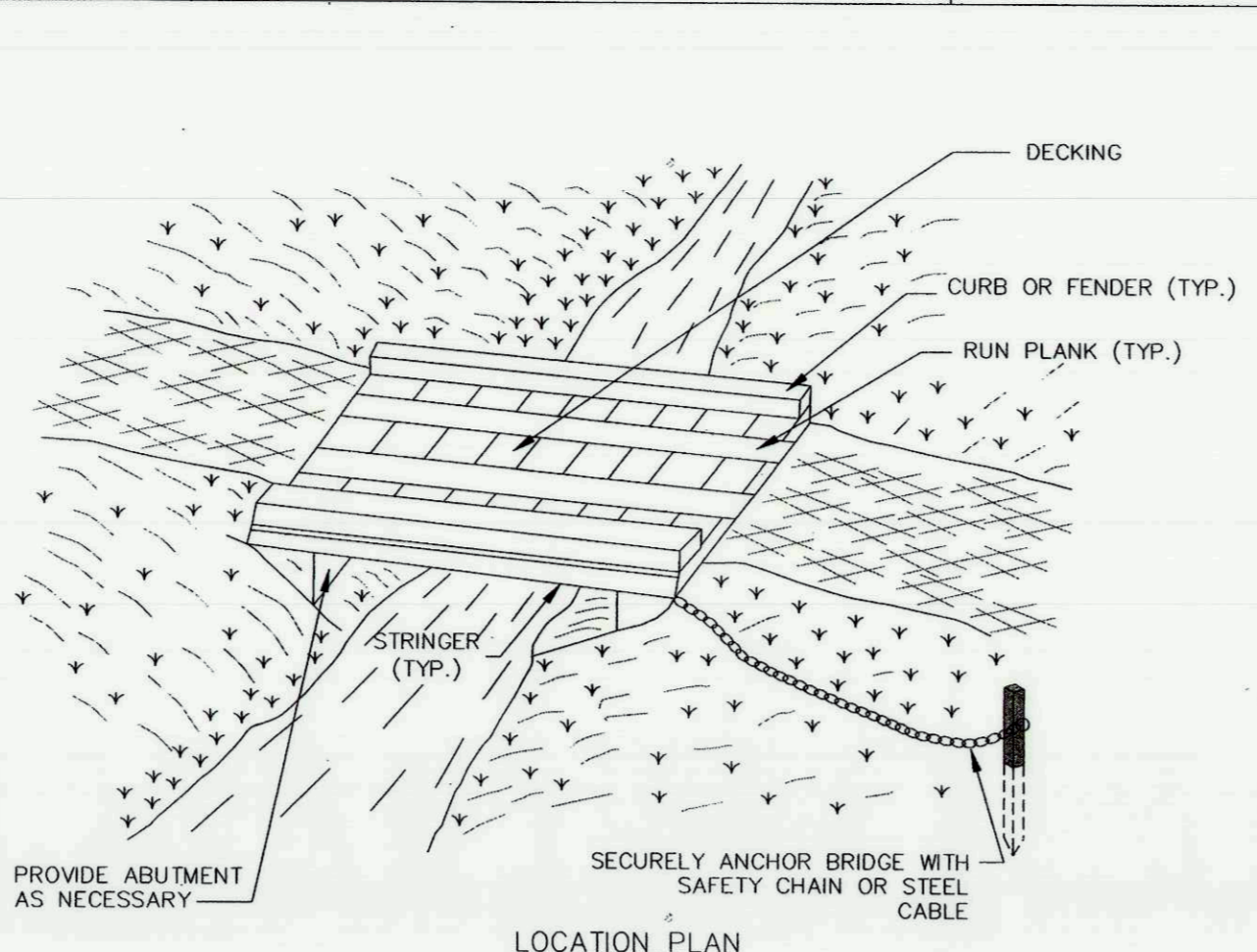
DETAIL B-4-6-B TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION
STANDARD SYMBOL
TSSMS - 2.0 BMP
(* INCLUDE SHEAR STRESS)



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

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

DETAIL H-4-1 TEMPORARY ACCESS BRIDGE
STANDARD SYMBOL
TB



- CONSTRUCTION SPECIFICATIONS**
- CONSTRUCT TEMPORARY BRIDGE STRUCTURE AT OR ABOVE THE BANK ELEVATION TO PREVENT IMPACTS FROM FLOATING MATERIALS AND DEBRIS.
 - PLACE ABUTMENTS PARALLEL TO, AND ON, STABLE BANKS.
 - CONSTRUCT BRIDGE TO SPAN ENTIRE CHANNEL UNLESS OTHERWISE INDICATED ON APPROVED PLAN.
 - USE STRINGERS CONSISTING OF LOGS, SAWN TIMBER, PRESTRESSED CONCRETE BEAMS, METAL BEAMS, OR OTHER APPROVED MATERIALS.
 - SELECT DECKING MATERIALS TO PROVIDE SUFFICIENT STRENGTH TO SUPPORT THE ANTICIPATED LOAD. PLACE ALL DECKING MEMBERS PERPENDICULAR TO THE STRINGERS, BUTT TIGHTLY, AND SECURELY FASTEN. DECKING MATERIALS MUST BE BUTTED TIGHTLY TO PREVENT ANY SOIL MATERIAL TRACKED ONTO THE BRIDGE FROM FALLING INTO THE WATERWAY BELOW.
 - SECURELY FASTEN OPTIONAL RUN PLANKING FOR THE LENGTH OF THE SPAN. PROVIDE A RUN PLANK FOR EACH TRACK OF THE EQUIPMENT WHEELS. ALTHOUGH RUN PLANKS ARE OPTIONAL, THEY MAY BE NECESSARY TO PROPERLY DISTRIBUTE LOADS.
 - INSTALL CURBS THE ENTIRE LENGTH OF THE OUTER SIDES OF THE DECK TO PREVENT SEDIMENT FROM ENTERING THE STREAM CHANNEL.
 - ANCHOR BRIDGE SECURELY AT ONLY ONE END USING STEEL CABLE OR CHAIN. ANCHORING AT ONLY ONE END WILL PREVENT CHANNEL OBSTRUCTION IN THE EVENT THAT FLOODWATERS FLOAT THE BRIDGE. ACCEPTABLE ANCHORS ARE LARGE TREES, LARGE BOULDERS, OR DRIVEN STEEL POSTS. ANCHOR MUST BE SUFFICIENT TO PREVENT THE BRIDGE FROM FLOATING DOWNSTREAM.
 - AREAS DISTURBED DURING BRIDGE INSTALLATION AND/OR REMOVAL MUST NOT BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
 - STABILIZE APPROACH TO BRIDGE AND KEEP FREE OF EROSION. CLEAN SEDIMENT FROM DECKING AND CURBS DAILY BY SCRAPING, SWEEPING, AND/OR VACUUMING. ENSURE THAT DECKING AND CURBS REMAIN TIGHTLY BUTTED WITHOUT GAPS. REMOVE DEBRIS TRAPPED BY BRIDGE. MAINTAIN AREAS ADJACENT TO CROSSING TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
 - AFTER THE TEMPORARY CROSSING IS NO LONGER NEEDED, REMOVE IT WITHIN 14 CALENDAR DAYS. IF SUBJECT TO THE USE DESIGNATION CLOSURE, REMOVE AT THE END OF CLOSURE PERIOD. PROTECT STREAM BANKS DURING BRIDGE REMOVAL AND STABILIZE ALL DISTURBED AREAS WITH EROSION CONTROL MATTING. ACCOMPLISH REMOVAL OF THE BRIDGE AND CLEAN UP OF THE AREA WITHOUT CONSTRUCTION EQUIPMENT WORKING IN THE WATERWAY CHANNEL. STORE ALL REMOVED MATERIALS IN AN APPROVED STAGING AREA.

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 H-4-1 TEMPORARY ACCESS BRIDGE
STANDARD SYMBOL
TB

- CONSTRUCTION SPECIFICATIONS**
- CONSTRUCT TEMPORARY BRIDGE STRUCTURE AT OR ABOVE THE BANK ELEVATION TO PREVENT IMPACTS FROM FLOATING MATERIALS AND DEBRIS.
 - PLACE ABUTMENTS PARALLEL TO, AND ON, STABLE BANKS.
 - CONSTRUCT BRIDGE TO SPAN ENTIRE CHANNEL UNLESS OTHERWISE INDICATED ON APPROVED PLAN.
 - USE STRINGERS CONSISTING OF LOGS, SAWN TIMBER, PRESTRESSED CONCRETE BEAMS, METAL BEAMS, OR OTHER APPROVED MATERIALS.
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 - AREAS DISTURBED DURING BRIDGE INSTALLATION AND/OR REMOVAL MUST NOT BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
 - STABILIZE APPROACH TO BRIDGE AND KEEP FREE OF EROSION. CLEAN SEDIMENT FROM DECKING AND CURBS DAILY BY SCRAPING, SWEEPING, AND/OR VACUUMING. ENSURE THAT DECKING AND CURBS REMAIN TIGHTLY BUTTED WITHOUT GAPS. REMOVE DEBRIS TRAPPED BY BRIDGE. MAINTAIN AREAS ADJACENT TO CROSSING TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
 - AFTER THE TEMPORARY CROSSING IS NO LONGER NEEDED, REMOVE IT WITHIN 14 CALENDAR DAYS. IF SUBJECT TO THE USE DESIGNATION CLOSURE, REMOVE AT THE END OF CLOSURE PERIOD. PROTECT STREAM BANKS DURING BRIDGE REMOVAL AND STABILIZE ALL DISTURBED AREAS WITH EROSION CONTROL MATTING. ACCOMPLISH REMOVAL OF THE BRIDGE AND CLEAN UP OF THE AREA WITHOUT CONSTRUCTION EQUIPMENT WORKING IN THE WATERWAY CHANNEL. STORE ALL REMOVED MATERIALS IN AN APPROVED STAGING AREA.

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

B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

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

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

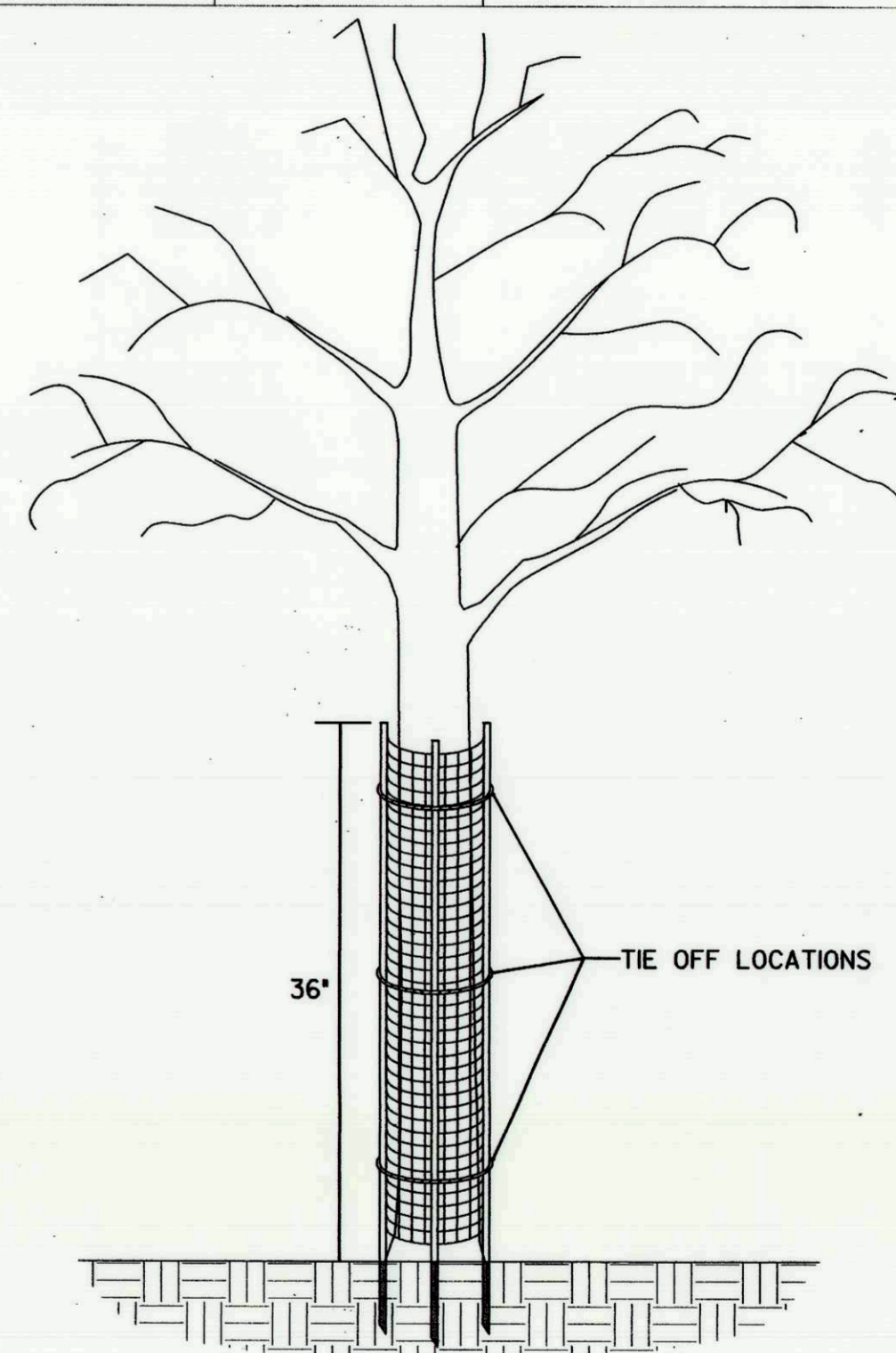
CONDITIONS WHERE PRACTICE APPLIES
STOCKPILE AREAS ARE UTILIZED WHEN IT IS NECESSARY TO SALVAGE AND STORE SOIL FOR LATER USE.

CRITERIA

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

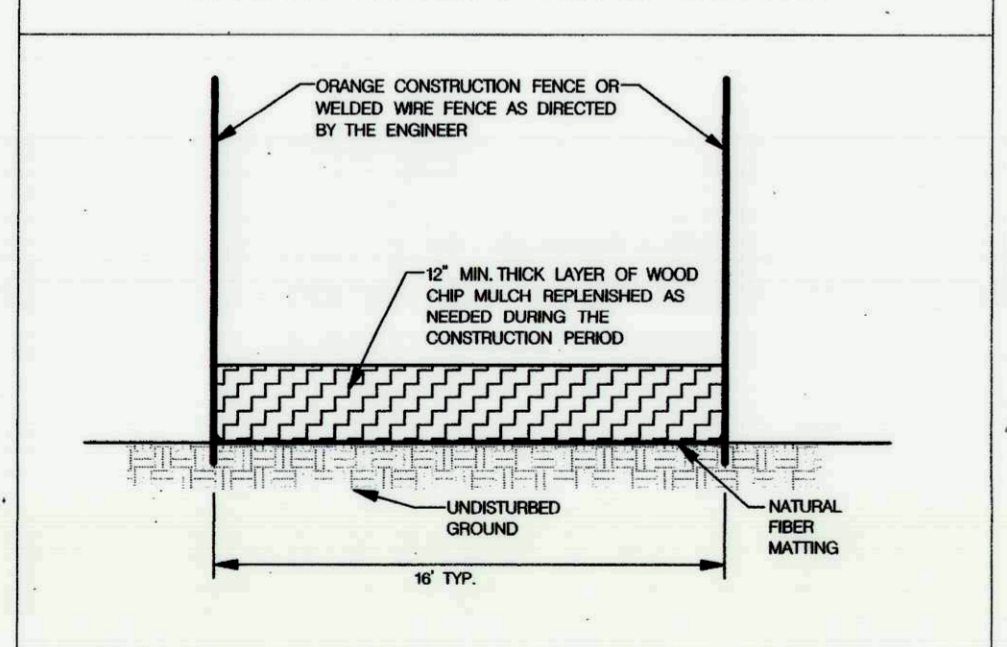
MAINTENANCE
THE STOCKPILE AREA MUST CONTINUOUSLY MEET THE REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. SIDE SLOPES MUST BE MAINTAINED AT NO STEEPER THAN A 2:1 RATIO. THE STOCKPILE AREA MUST BE KEPT FREE OF EROSION. IF THE VERTICAL HEIGHT OF A STOCKPILE EXCEEDS 20 FEET FOR 2:1 SLOPES, 30 FEET FOR 3:1 SLOPES, OR 40 FEET FOR 4:1 SLOPES, BENCHING MUST BE PROVIDED IN ACCORDANCE WITH SECTION B-3 LAND GRADING.

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



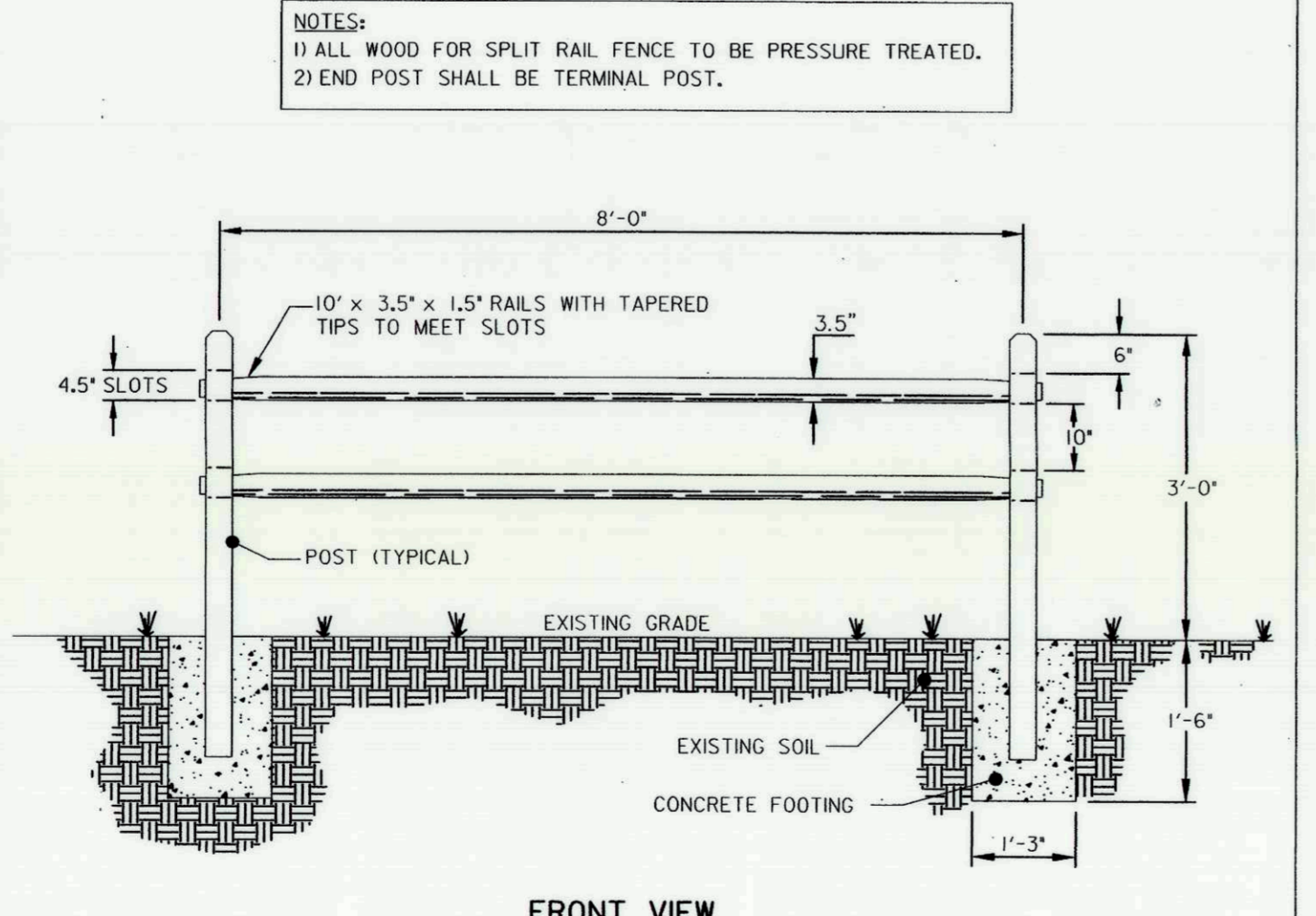
- INSTALLATION INSTRUCTIONS:**
- PLANT TREE ACCORDING TO STANDARD SPECIFICATIONS.
 - PLACE THE SHELTER AROUND THE TREE.
 - DRIVE LONGER STAKES INTO THE GROUND.
 - TIE-OFF ROPE ENDS AROUND TREE.
- PRODUCT NOTES:**
- TREE SHELTER SHALL BE A.M. LEONARD TREE BARK PROTECTOR OR APPROVED EQUAL.
 - TREE SHELTER MUST HAVE LONGER, HARDY STAKES FOR INSERTION INTO GROUND TO PROVIDE SUPPORT.
- TREE SHELTER DETAIL**
NOT TO SCALE

MULCH ACCESS ROAD DETAIL



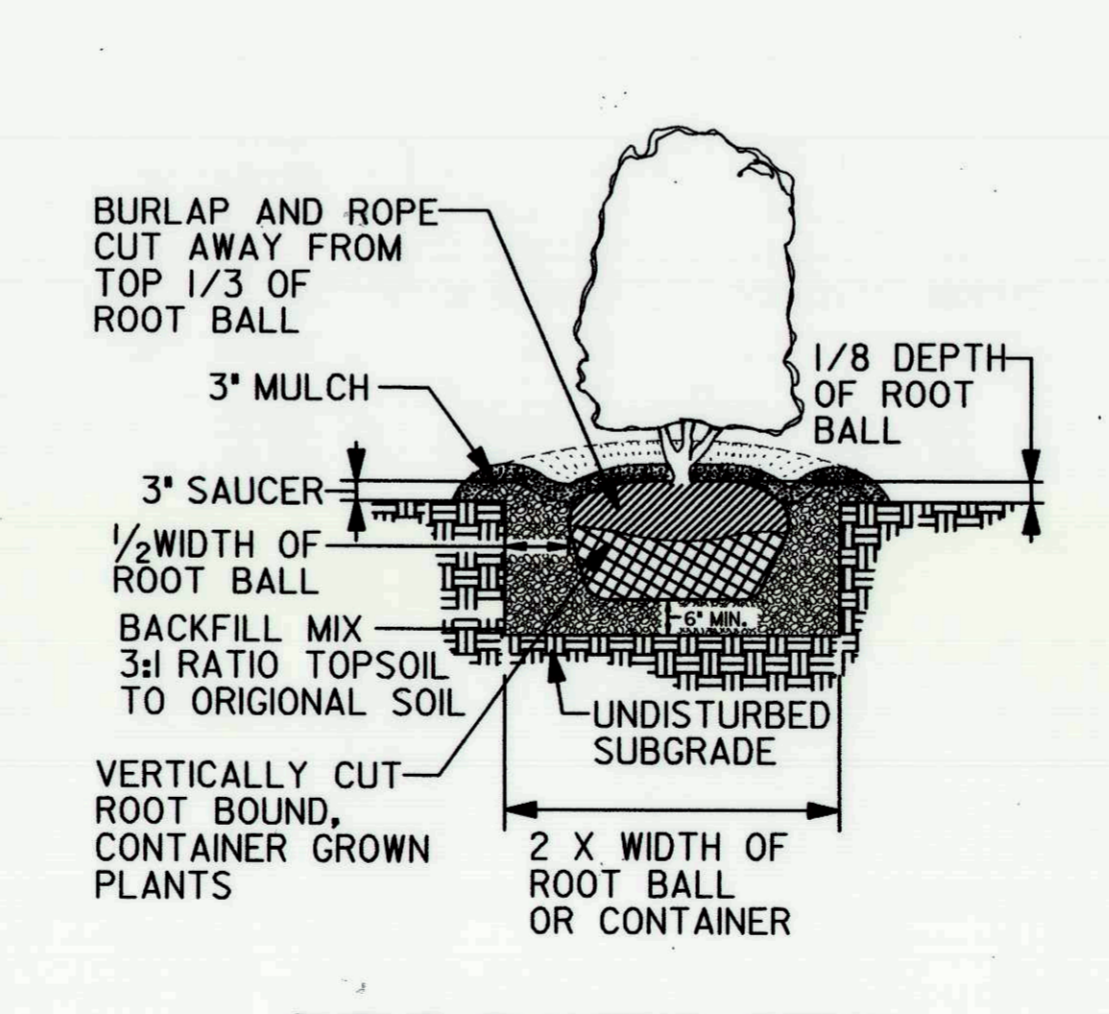
- NOTES:**
- ACCESS ROUTES TO BE VERIFIED BY ENGINEER AT PRE-CONSTRUCTION MEETING. REVISIONS TO THE ALIGNMENT THAT MINIMIZE TREE DISTURBANCE ARE ENCOURAGED AND REQUIRE REVIEW AND APPROVAL BY THE ENGINEER.
 - NATURAL FIBER MATTING SHALL BE PLACED WITH SEAMS PARALLEL TO THE FLOW OF TRAFFIC, OVERLAP FABRIC BY 18\"/>

STANDARD SPLIT-RAIL FENCE



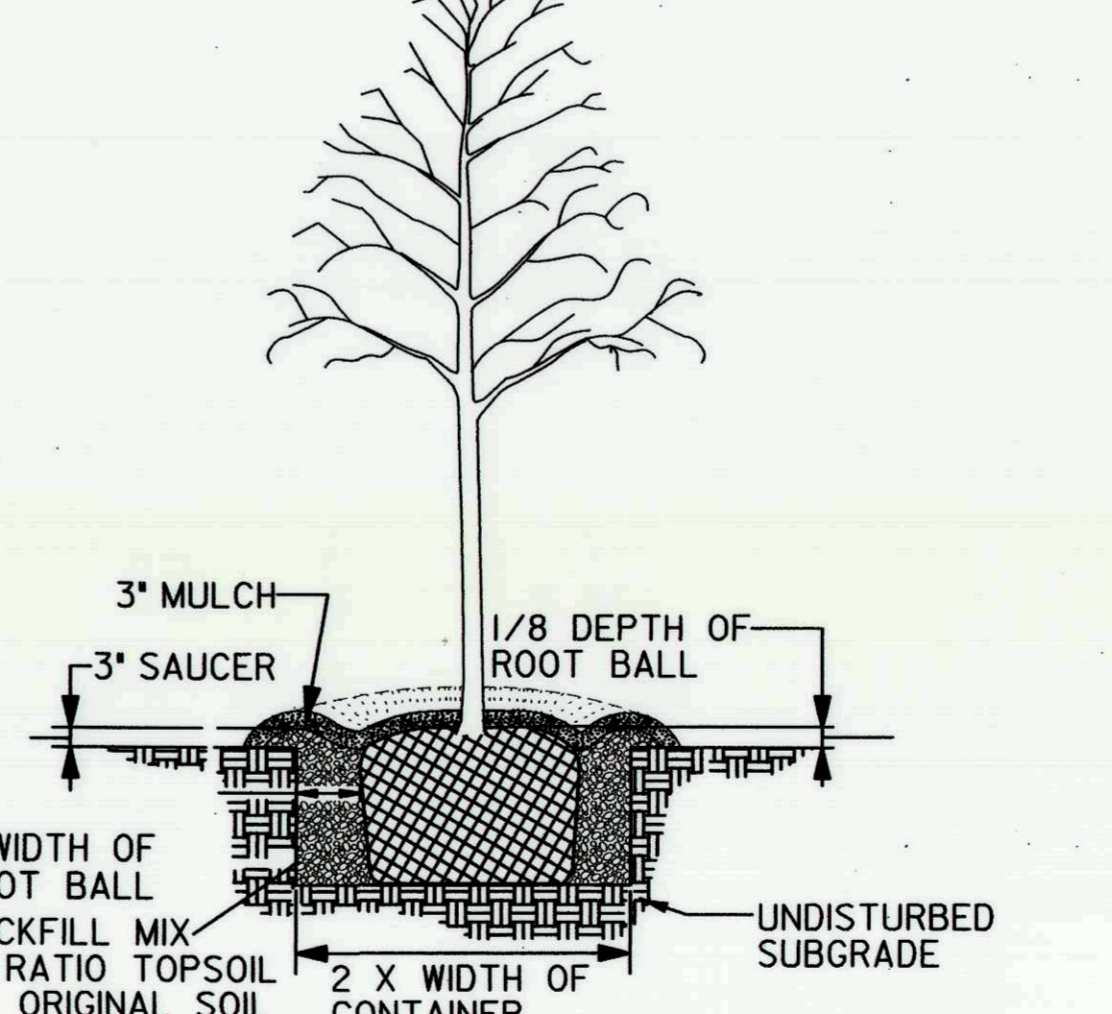
FRONT VIEW
STANDARD SPLIT-RAIL FENCE

SHRUB PLANTING DETAIL



SHRUB PLANTING DETAIL
B & B AND CONTAINER GROWN
NOT TO SCALE

DECIDUOUS TREE PLANTING DETAIL



DECIDUOUS TREE PLANTING DETAIL
B & B AND CONTAINER GROWN
NOT TO SCALE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature]
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

DATE: 10/16/17

McCORMICK TAYLOR
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MARYLAND

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DES: CL					
DRN: MR					
CHK: AH					
DATE: 10/13/17	BY	NO.	REVISION	DATE	

BEECH CREEK DRIVE
STORMWATER MANAGEMENT RETROFIT PROJECT
CAPITAL PROJECT #D-1160
HOWARD COUNTY
HSCD #EP-16-23

EROSION AND SEDIMENT CONTROL AND LANDSCAPE DETAIL SHEET

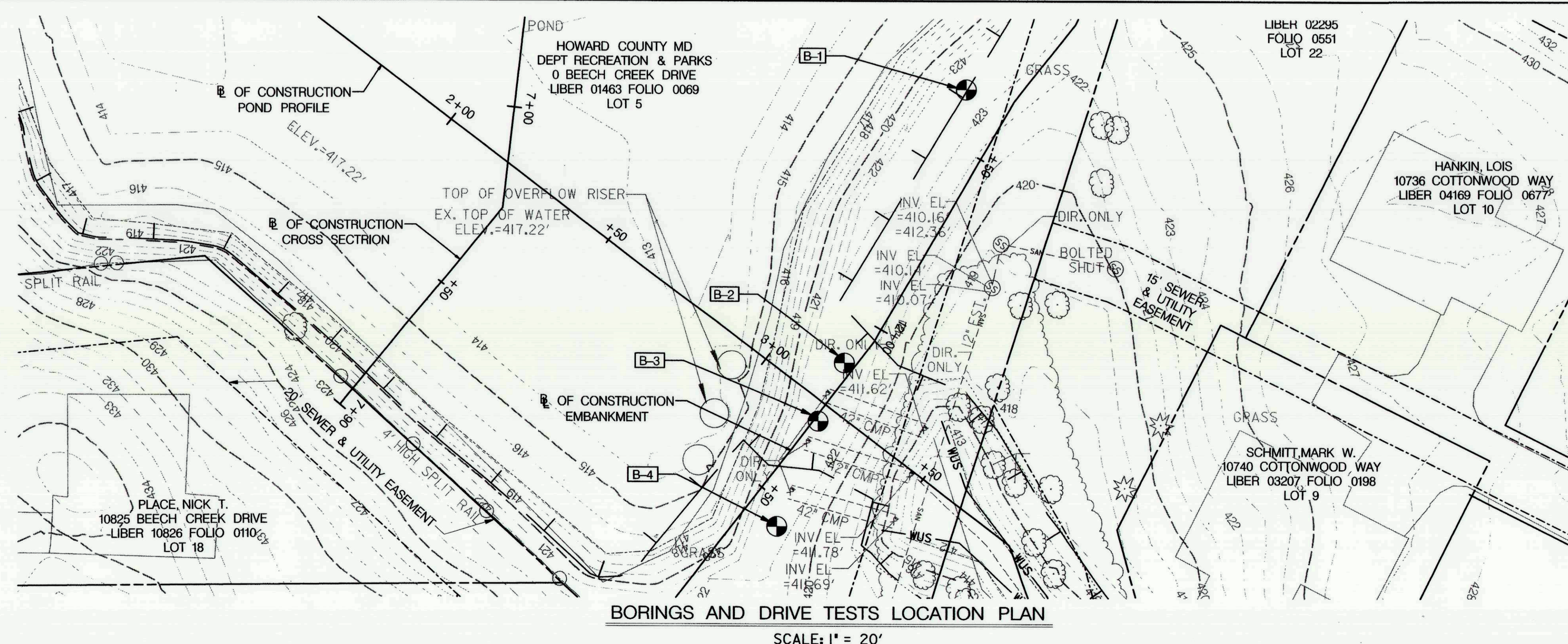
SCALE: NOT TO SCALE
SHEET: 17 OF 21

Project No. 2013055.45		LOG OF BOREHOLE B-1		Sheet 1 of 1	
CLIENT: McCormick Taylor, Inc		PROJECT: Beech Creek SWM Pond Retrofit			
ARCHITECT/ENGINEER:		SITE: Howard County, Maryland			
SURFACE ELEV.: 423.5 ft.		GRAPHIC LOG			
0.3-4" Topsoil		Medium dense brown and gray CLAYEY SAND (SC) with gravel and mica (Fill)			
5.5		Loose greenish gray SILTY SAND (SM) with mica and layers of clay (Possible Fill)			
8.0		Dense greenish gray SILTY SAND (SM) with gravel			
13.0		Very dense to medium dense greenish gray and brown SANDY SILT (ML) (Possible Decomposed Rock)			
20.0		End of Boring @ 20 ft			
Borehole was backfilled with bentonite mix after 24 hours water reading					
WATER LEVEL OBSERVATIONS		AB Consultants, Inc.		STARTED: 3/22/17 FINISHED: 3/22/17	
WL 8 @ Drilling	WL 11 @ 0 Hrs	WL 7 @ 24 Hrs	9450 Annapolis Road Lanham, MD 20706 Phone: 301-306-3091 Fax: 301-306-3092	DRILL CO.: ABC	DRILL PRG: CME-45
DRILLER: UP		ASST DRILLER:		LOGGED BY: APPROVED:	

Project No. 2013055.45		LOG OF BOREHOLE B-2		Sheet 1 of 1	
CLIENT: McCormick Taylor, Inc		PROJECT: Beech Creek SWM Pond Retrofit			
ARCHITECT/ENGINEER:		SITE: Howard County, Maryland			
SURFACE ELEV.: 422.5 ft.		GRAPHIC LOG			
0.3-4" Topsoil		Loose brown and gray SANDY SILT (ML) with mica (Fill)			
3.5		Medium dense brown and gray CLAYEY SAND (SC) with gravel and mica (Fill)			
12.0		Medium dense brown SILTY SAND (SM) with mica and gravel			
20.0		End of Boring @ 20 ft			
Borehole was backfilled with bentonite mix after 24 hours water reading					
WATER LEVEL OBSERVATIONS		AB Consultants, Inc.		STARTED: 3/22/17 FINISHED: 3/22/17	
WL 14 @ Drilling	WL 16 @ 0 Hrs	WL Dry, caved in 11 ft @ 24 Hrs	9450 Annapolis Road Lanham, MD 20706 Phone: 301-306-3091 Fax: 301-306-3092	DRILL CO.: ABC	DRILL PRG: CME-45
DRILLER: UP		ASST DRILLER:		LOGGED BY: APPROVED:	

Project No. 2013055.45		LOG OF BOREHOLE B-3		Sheet 1 of 1	
CLIENT: McCormick Taylor, Inc		PROJECT: Beech Creek SWM Pond Retrofit			
ARCHITECT/ENGINEER:		SITE: Howard County, Maryland			
SURFACE ELEV.: 422.5 ft.		GRAPHIC LOG			
0.3-4" Topsoil		Loose to medium dense brown and gray SILTY SAND (SM) with mica and trace of gravel (Fill)			
5.0		Loose to medium dense brown and gray CLAYEY FINE SAND (SC) with mica and trace of gravel (Fill)			
13.0		Loose brown and gray SILTY FINE SAND (SM)			
18.0		Very dense tan and brown SILTY FINE SAND (SM) (Possible Decomposed Rock)			
20.0		End of Boring @ 20 ft			
Borehole was backfilled with bentonite mix after 24 hours water reading					
WATER LEVEL OBSERVATIONS		AB Consultants, Inc.		STARTED: 3/22/17 FINISHED: 3/22/17	
WL 12 @ Drilling	WL 16 @ 0 Hrs	WL 12 @ 24 Hrs	9450 Annapolis Road Lanham, MD 20706 Phone: 301-306-3091 Fax: 301-306-3092	DRILL CO.: ABC	DRILL PRG: CME-45
DRILLER: UP		ASST DRILLER:		LOGGED BY: APPROVED:	

Project No. 2013055.45		LOG OF BOREHOLE B-4		Sheet 1 of 1	
CLIENT: McCormick Taylor, Inc		PROJECT: Beech Creek SWM Pond Retrofit			
ARCHITECT/ENGINEER:		SITE: Howard County, Maryland			
SURFACE ELEV.: 422.5 ft.		GRAPHIC LOG			
0.3-4" Topsoil		Loose brown and gray SILTY SAND (SM) with mica (Fill)			
5.0		Firm brown and gray FINE SANDY CLAY (CL) with mica (Fill)			
8.5		Medium dense brown SILTY SAND (SM)			
17.0		Dense brown, gray and tan SILTY SAND (SM) (Possible Decomposed Rock)			
20.0		End of Boring @ 20 ft			
Borehole was backfilled with bentonite mix after 24 hours water reading					
WATER LEVEL OBSERVATIONS		AB Consultants, Inc.		STARTED: 3/22/17 FINISHED: 3/22/17	
WL 13 @ Drilling	WL 9 @ 0 Hrs	WL 8 @ 24 Hrs	9450 Annapolis Road Lanham, MD 20706 Phone: 301-306-3091 Fax: 301-306-3092	DRILL CO.: ABC	DRILL PRG: CME-45
DRILLER: UP		ASST DRILLER:		LOGGED BY: APPROVED:	



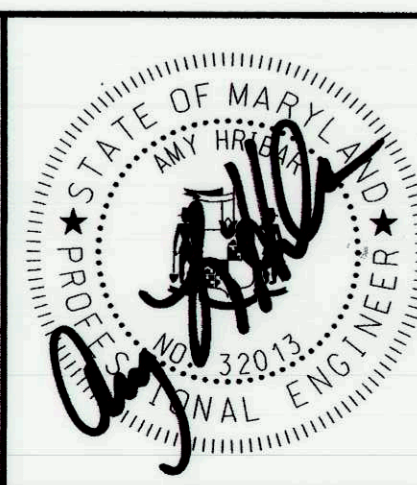
- NOTES:
1. THE BORINGS WERE TAKEN IN MARCH, 2017 BY AB CONSULTANTS. THE LOCATIONS OF THE BORINGS ARE APPROXIMATE
 2. THE SOIL SYMBOLS REFLECT ONLY THE MAJOR SOIL CONSTITUENT, FOR MORE COMPLETE SOIL CHARACTERISTIC REFER TO THE SOIL DESCRIPTIVE TEXT.
 3. THE FIELD BORING LOGS RECORD SAMPLE SPOON RECOVERY. THE LOGS ARE AVAILABLE UPON REQUEST.
 4. N = BLOWS ON A 2 INCH OD SAMPLING SPOON BY 140 LB. DRIVE-WEIGHT FALLING 30 INCHES. THE BLOWS REQUIRED TO ADVANCE THE SAMPLING SPOON TO A SPECIFIED DISTANCE ARE REPORTED AS THE PENETRATING RESISTANCE VALUES.
 5. BORINGS AND SAMPLINGS CONFORM TO AASHTO DESIGNATIONS T-206 AND T-306.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Mark D. P.
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES
DATE: 10/16/17

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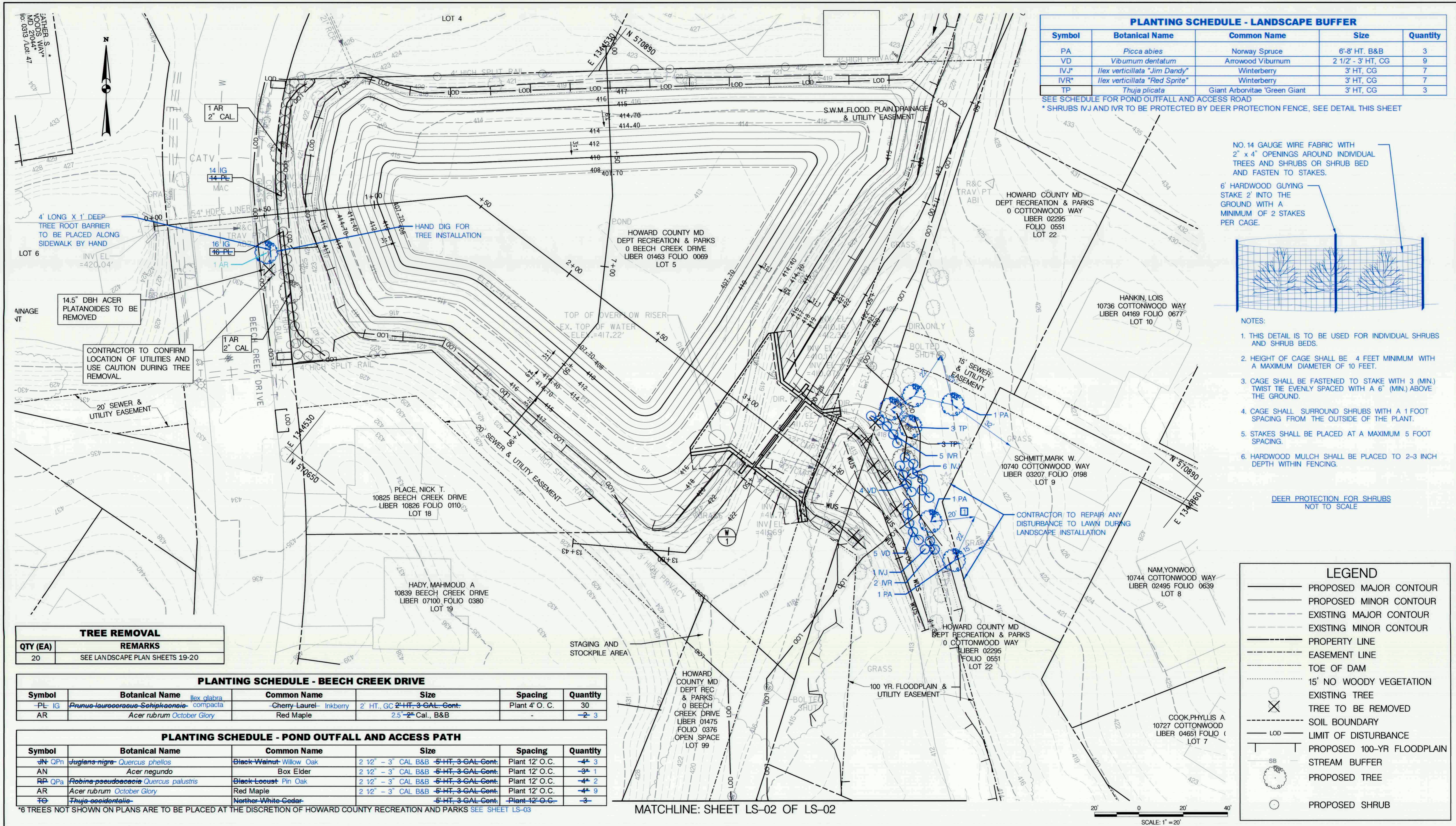


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**BEECH CREEK DRIVE
STORMWATER MANAGEMENT RETROFIT PROJECT
CAPITAL PROJECT #D-1160
HOWARD COUNTY
HSCD #EP-16-23**

SOIL BORING AND DRIVE TESTS

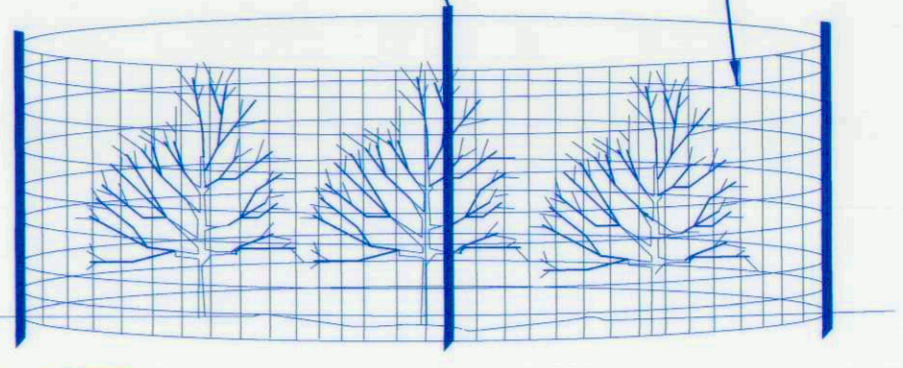
SCALE AS SHOWN
SHEET 18 OF 21



Symbol	Botanical Name	Common Name	Size	Quantity
PA	<i>Picea abies</i>	Norway Spruce	6'-8' HT. B&B	3
VD	<i>Viburnum dentatum</i>	Arrowwood Viburnum	2 1/2' - 3' HT. CG	9
IVJ*	<i>Ilex verticillata</i> "Jim Dandy"	Winterberry	3' HT. CG	7
IVR*	<i>Ilex verticillata</i> "Red Sprite"	Winterberry	3' HT. CG	7
TP	<i>Thuja plicata</i>	Giant Arborvitae "Green Giant"	3' HT. CG	3

SEE SCHEDULE FOR POND OUTFALL AND ACCESS ROAD
 * SHRUBS IVJ AND IVR TO BE PROTECTED BY DEER PROTECTION FENCE, SEE DETAIL THIS SHEET

NO. 14 GAUGE WIRE FABRIC WITH 2" x 4" OPENINGS AROUND INDIVIDUAL TREES AND SHRUBS OR SHRUB BED AND FASTEN TO STAKES.
 6" HARDWOOD GUYING STAKE 2" INTO THE GROUND WITH A MINIMUM OF 2 STAKES PER GAGE.



- NOTES:
1. THIS DETAIL IS TO BE USED FOR INDIVIDUAL SHRUBS AND SHRUB BEDS.
 2. HEIGHT OF CAGE SHALL BE 4 FEET MINIMUM WITH A MAXIMUM DIAMETER OF 10 FEET.
 3. CAGE SHALL BE FASTENED TO STAKE WITH 3 (MIN.) TWIST TIE EVENLY SPACED WITH A 6" (MIN.) ABOVE THE GROUND.
 4. CAGE SHALL SURROUND SHRUBS WITH A 1 FOOT SPACING FROM THE OUTSIDE OF THE PLANT.
 5. STAKES SHALL BE PLACED AT A MAXIMUM 5 FOOT SPACING.
 6. HARDWOOD MULCH SHALL BE PLACED TO 2-3 INCH DEPTH WITHIN FENCING.

DEER PROTECTION FOR SHRUBS NOT TO SCALE

TREE REMOVAL	
QTY (EA)	REMARKS
20	SEE LANDSCAPE PLAN SHEETS 19-20

PLANTING SCHEDULE - BEECH CREEK DRIVE					
Symbol	Botanical Name	Common Name	Size	Spacing	Quantity
PL IG	<i>Prunus laurocerasus-Schipkaensis compacta</i>	Cherry-Laurel-Inkberry	2' HT. GC 2'-HT. 3'-CAL. Cont.	Plant 4' O. C.	30
AR	<i>Acer rubrum</i> October Glory	Red Maple	2.5"-2" Cal., B&B	-	2-3

PLANTING SCHEDULE - POND OUTFALL AND ACCESS PATH					
Symbol	Botanical Name	Common Name	Size	Spacing	Quantity
JN QPh	<i>Juglans nigra-Quercus phellos</i>	Black Walnut-Willow Oak	2 1/2" - 3" CAL B&B 5'-HT. 3'-CAL. Cont.	Plant 12' O.C.	4-3
AN	<i>Acer negundo</i>	Box Elder	2 1/2" - 3" CAL B&B 5'-HT. 3'-CAL. Cont.	Plant 12' O.C.	3-4
RP QPa	<i>Robinia pseudoacacia-Quercus palustris</i>	Black Locust-Pin Oak	2 1/2" - 3" CAL B&B 5'-HT. 3'-CAL. Cont.	Plant 12' O.C.	4-2
AR	<i>Acer rubrum</i> October Glory	Red Maple	2 1/2" - 3" CAL B&B 5'-HT. 3'-CAL. Cont.	Plant 12' O.C.	4-9
TP	<i>Thuja occidentalis</i>	Northern White Cedar	5'-HT. 3'-CAL. Cont.	Plant 12' O.C.	3

*6 TREES NOT SHOWN ON PLANS ARE TO BE PLACED AT THE DISCRETION OF HOWARD COUNTY RECREATION AND PARKS SEE SHEET LS-03

LEGEND	
	PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	PROPERTY LINE
	EASEMENT LINE
	TOE OF DAM
	15' NO WOODY VEGETATION
	EXISTING TREE
	TREE TO BE REMOVED
	SOIL BOUNDARY
	LIMIT OF DISTURBANCE
	PROPOSED 100-YR FLOODPLAIN
	STREAM BUFFER
	PROPOSED TREE
	PROPOSED SHRUB

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

10/16/13
 DATE

McCORMICK TAYLOR

509 South Exeter Street
 4th Floor
 Baltimore, Maryland 21202
 (410) 662-7400

Howard County
 MARYLAND

Storm Water Management Division
 Bureau of Environmental Services
 6751 Columbia Gateway Drive, Suite 514
 Columbia, Maryland 21046-3143
 (410) 313-6444

DES: CL					
DRN: MR					
CHK: AH					
DATE: 10/13/17	ADM	LANDSCAPING REVISION	4/13/18		
	BY	NO.	REVISION	DATE	

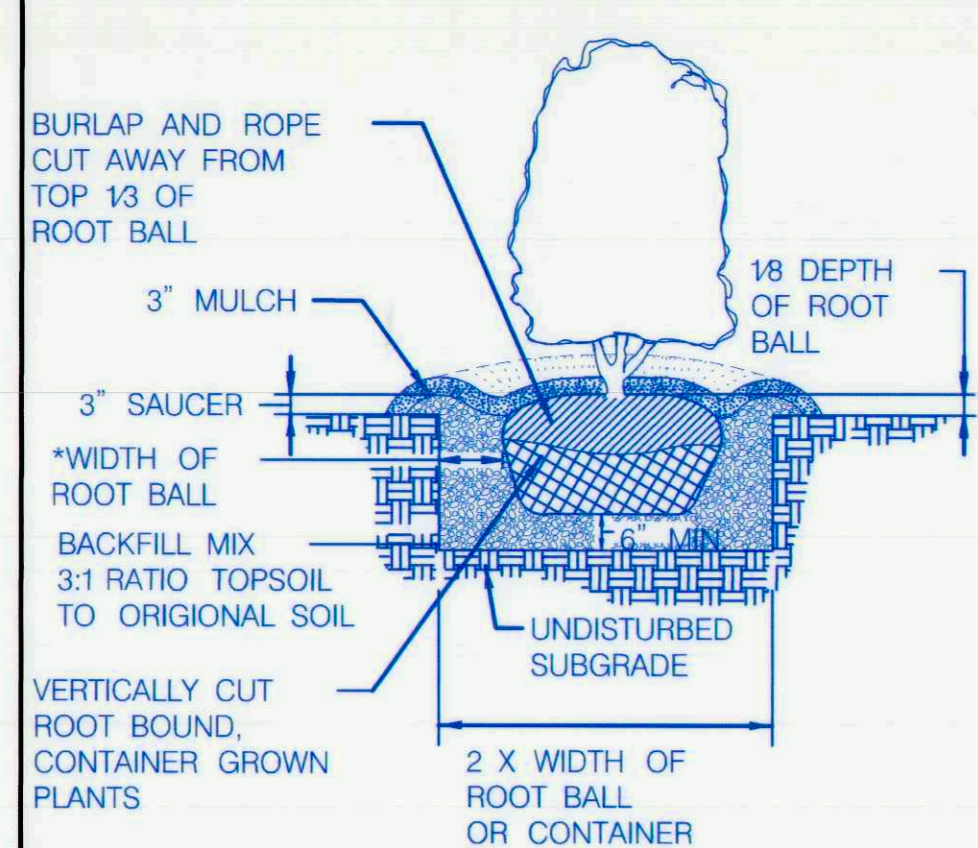
SCALE: 1" = 20'

BEECH CREEK DRIVE
STORMWATER MANAGEMENT RETROFIT PROJECT
CAPITAL PROJECT #D-1160
HOWARD COUNTY
HSCD #EP-16-23

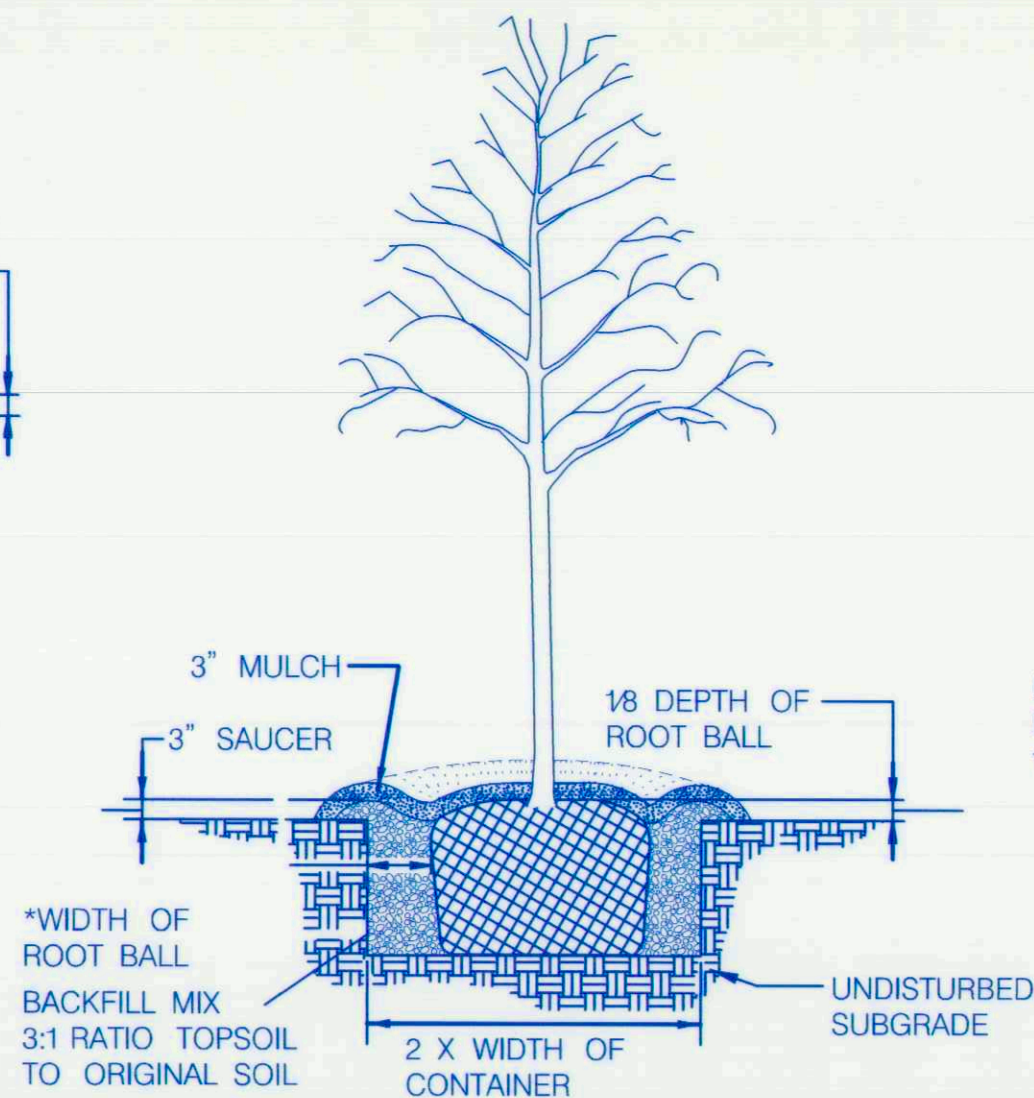
LANDSCAPE PLAN
LS-01 OF LS-02

SCALE: 1" = 20'

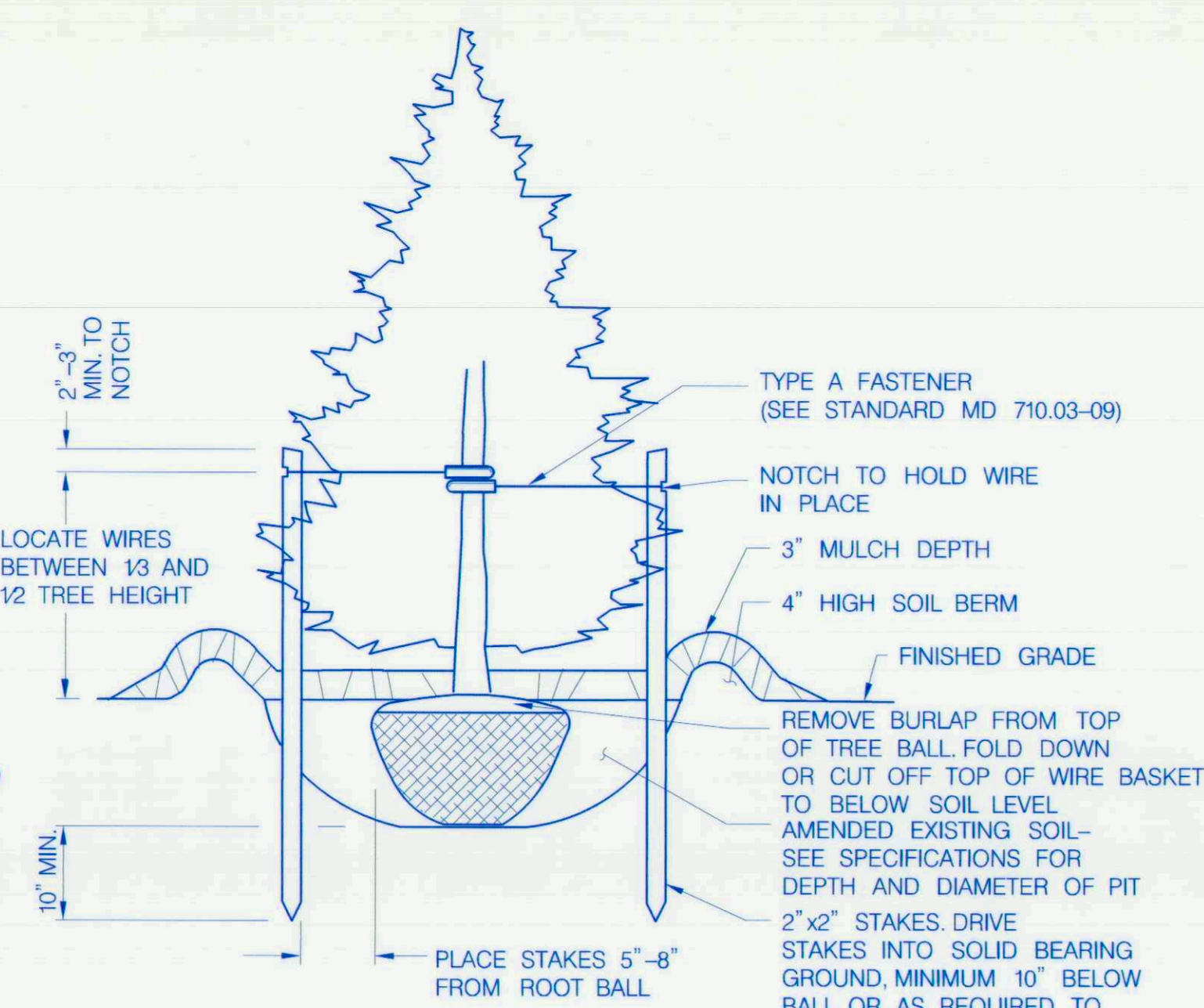
SHEET: 19 OF 21



SHRUB PLANTING DETAIL
B & B AND CONTAINER GROWN
NOT TO SCALE

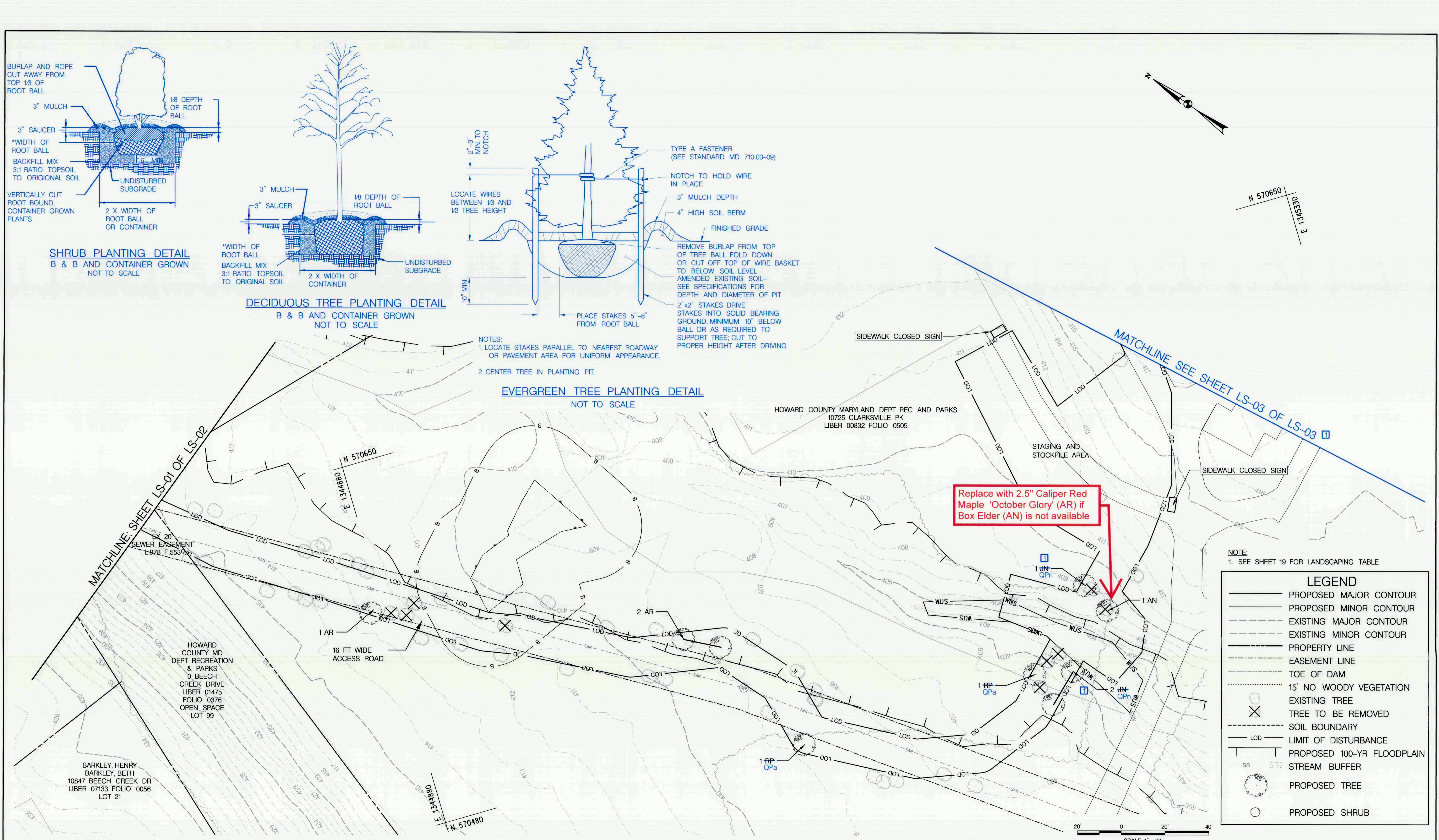


DECIDUOUS TREE PLANTING DETAIL
B & B AND CONTAINER GROWN
NOT TO SCALE



EVERGREEN TREE PLANTING DETAIL
NOT TO SCALE

- NOTES:
1. LOCATE STAKES PARALLEL TO NEAREST ROADWAY OR PAVEMENT AREA FOR UNIFORM APPEARANCE.
2. CENTER TREE IN PLANTING PIT.



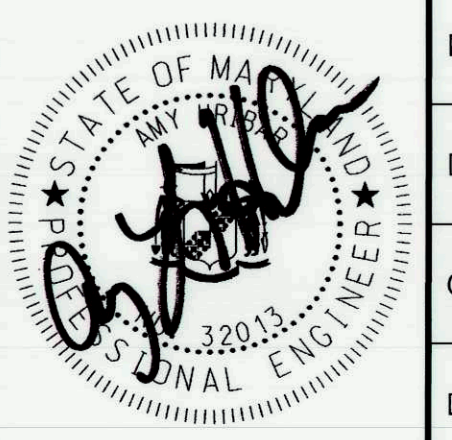
NOTE:
1. SEE SHEET 19 FOR LANDSCAPING TABLE

LEGEND	
	PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	PROPERTY LINE
	EASEMENT LINE
	TOE OF DAM
	15' NO WOODY VEGETATION
	EXISTING TREE
	TREE TO BE REMOVED
	SOIL BOUNDARY
	LIMIT OF DISTURBANCE
	PROPOSED 100-YR FLOODPLAIN
	STREAM BUFFER
	PROPOSED TREE
	PROPOSED SHRUB

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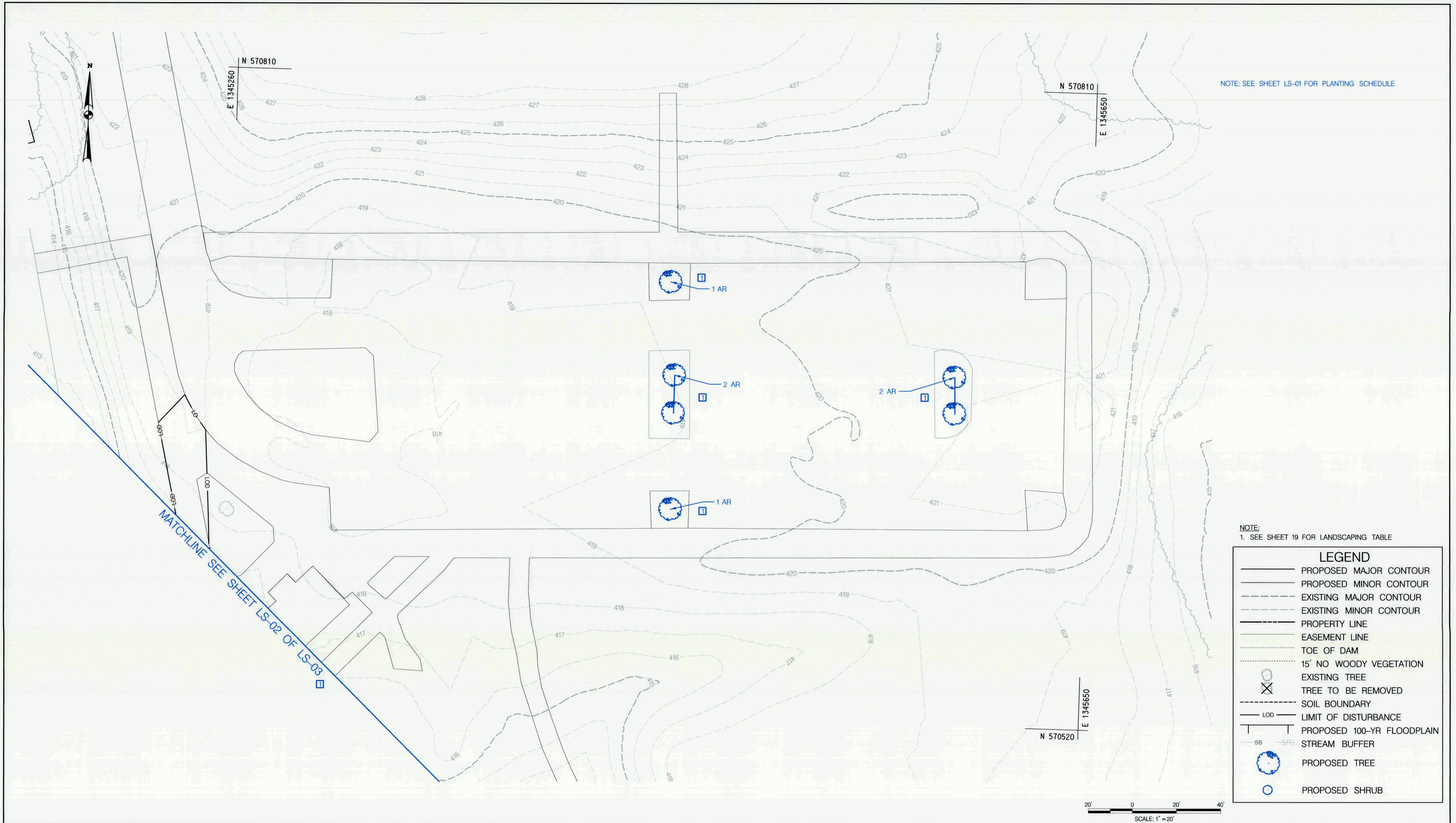


DES: CL					
DRN: MR					
CHK: AH					
DATE: 10/13/17	ADM	1	LANDSCAPING REVISION	4/13/18	
BY	NO.		REVISION	DATE	

BEECH CREEK DRIVE
STORMWATER MANAGEMENT RETROFIT PROJECT
CAPITAL PROJECT #D-1160
HOWARD COUNTY
HSCD #EP-16-23
LANDSCAPE PLAN
LS-02 OF LS-02

SCALE
1" = 20'
SHEET
20 OF 21

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES
10/16/17 DATE



NOTE: SEE SHEET LS-01 FOR PLANTING SCHEDULE

NOTE:
1. SEE SHEET 19 FOR LANDSCAPING TABLE

LEGEND	
	PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	PROPERTY LINE
	EASEMENT LINE
	TOE OF DAM
	15' NO WOODY VEGETATION
	EXISTING TREE
	TREE TO BE REMOVED
	SOIL BOUNDARY
	LIMIT OF DISTURBANCE
	PROPOSED 100-YR FLOODPLAIN
	STREAM BUFFER
	PROPOSED TREE
	PROPOSED SHRUB

SCALE: 1" = 20'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES _____ DATE _____

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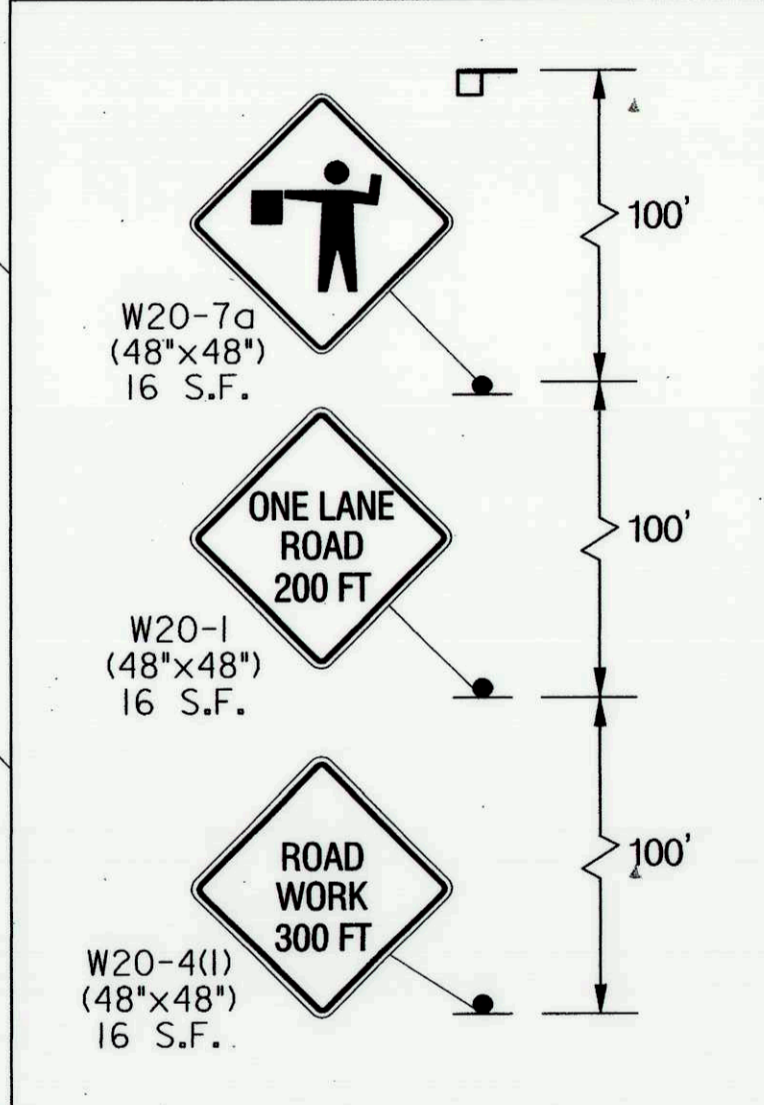
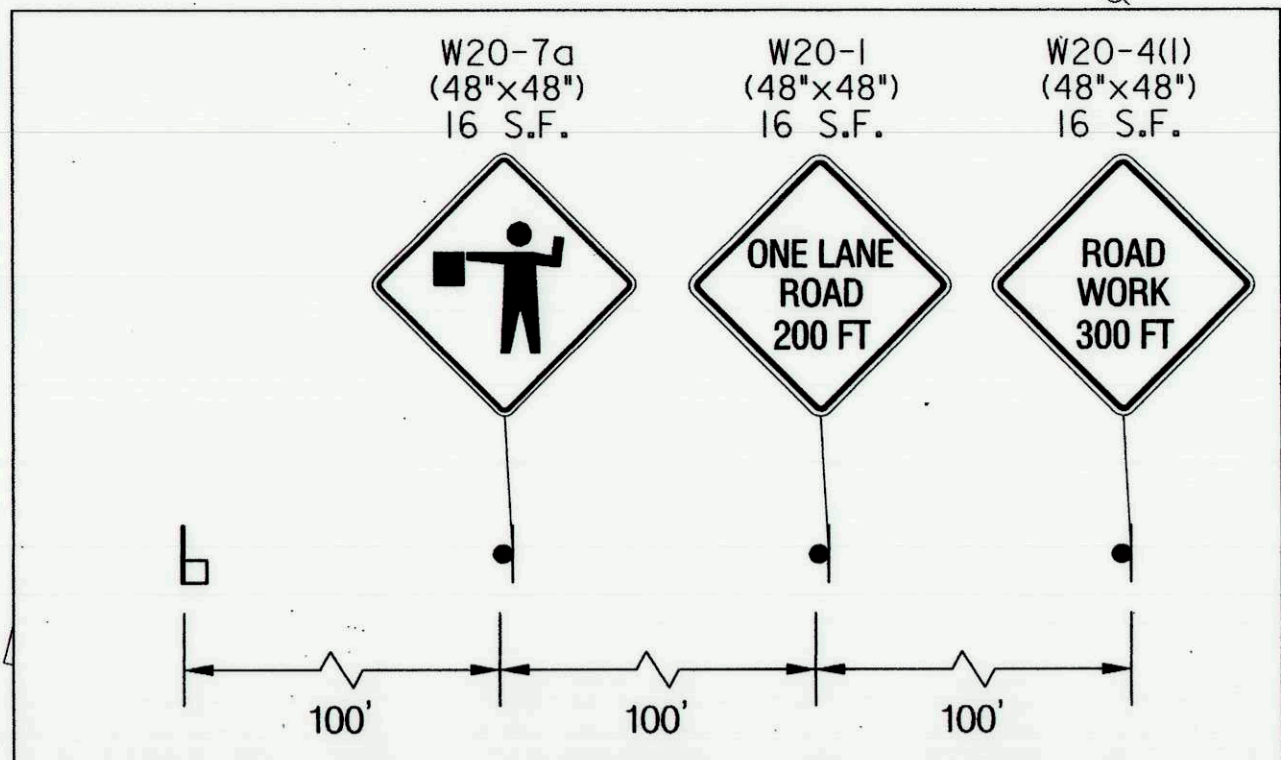
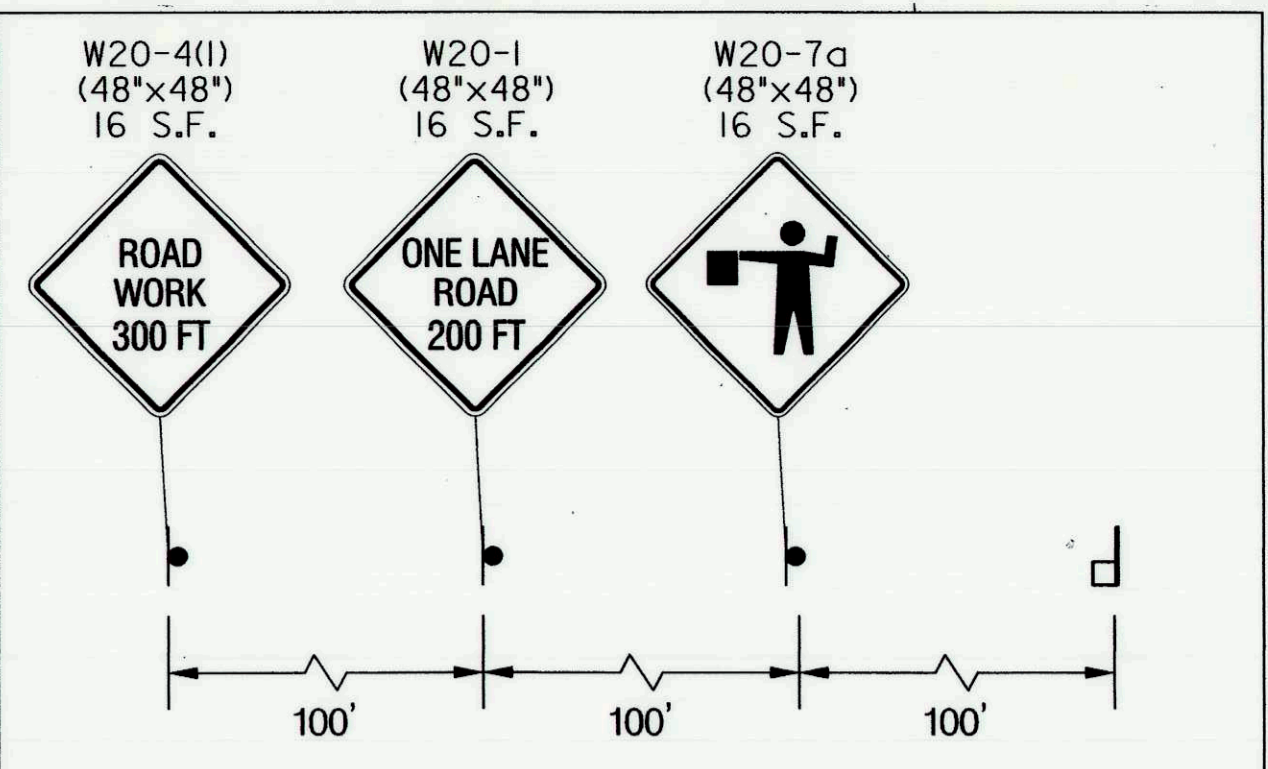
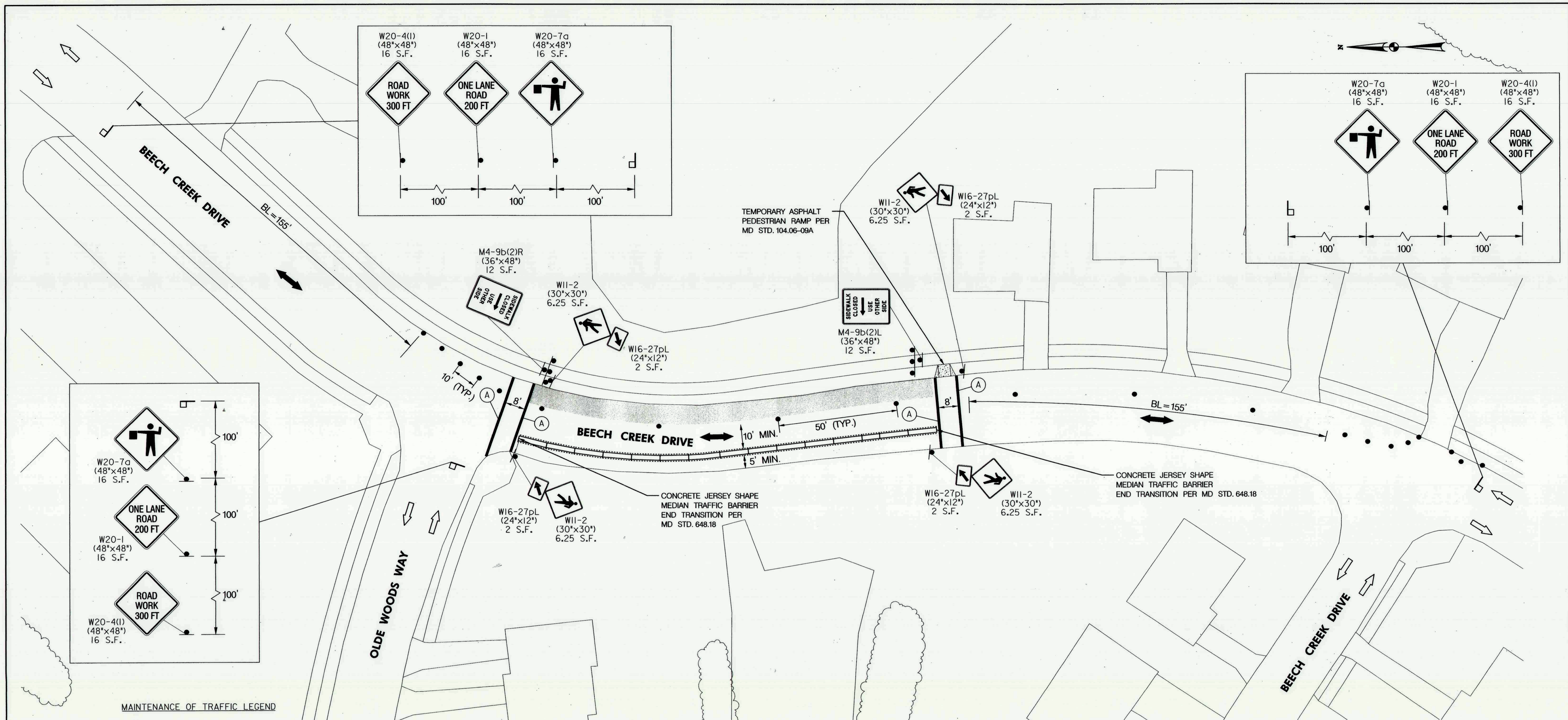
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DRN: MR					
CHK: AH					
DATE: 10/13/17	ADM	<input checked="" type="checkbox"/>	LANDSCAPING REVISION	4/13/18	
	BY	NO.	REVISION	DATE	

BEECH CREEK DRIVE
STORMWATER MANAGEMENT RETROFIT PROJECT
CAPITAL PROJECT #D-1160
HOWARD COUNTY
HSCD #EP-16-23

PARKING LOT LANDSCAPE PLAN
LS-03

SCALE
1" = 20'

SHEET
20A OF 21



MAINTENANCE OF TRAFFIC LEGEND

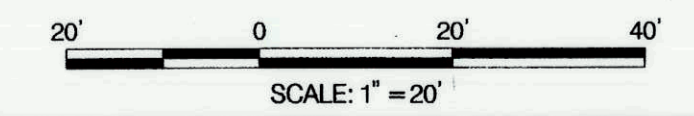
- TEMPORARY CONSTRUCTION SIGN AND SUPPORT(S)
- TEMPORARY CONCRETE BARRIER
- TYPE III BARRICADE
- TEMPORARY TRAFFIC MOVEMENT
- EXISTING TRAFFIC MOVEMENT
- WORK AREA
- CHANNELIZING DEVICE
- FLAGGER LOCATION
- TEMPORARY ASPHALT PEDESTRIAN RAMP

NOTES:

1. PEDESTRIAN DETOUR TO BE ESTABLISHED ON THE SOUTHBOUND SIDE OF BEECH CREEK DRIVE PER MD STD. 104.06-09A AND MD STD. 104.06-09C.
2. PROVIDE TOP AND SIDE BARRIER MARKERS AS PER MD STD. 104.01-25
3. FLAGGING OPERATION IS ALLOWED BETWEEN THE HOURS OF 9 AM AND 3 PM
4. FLAGGERS MUST HAVE THEIR FLAGGER CARDS IN THEIR POSSESSION DURING FLAGGING OPERATIONS

TEMPORARY PAVEMENT MARKING LEGEND

- (A) 12 INCH SOLID WHITE REMOVABLE PAVEMENT MARKING TAPE



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Mark D. P...
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

10/16/17 DATE

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BEECH CREEK DRIVE
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MAINTENANCE OF TRAFFIC PLAN
MT-01 OF MT-01

SCALE
1" = 20'
SHEET
21 OF 21