

HOWARD COUNTY

Capital Project #D-1159 Velvet Path Pond

Principal Spillway Replacement and Channel Stabilization Project

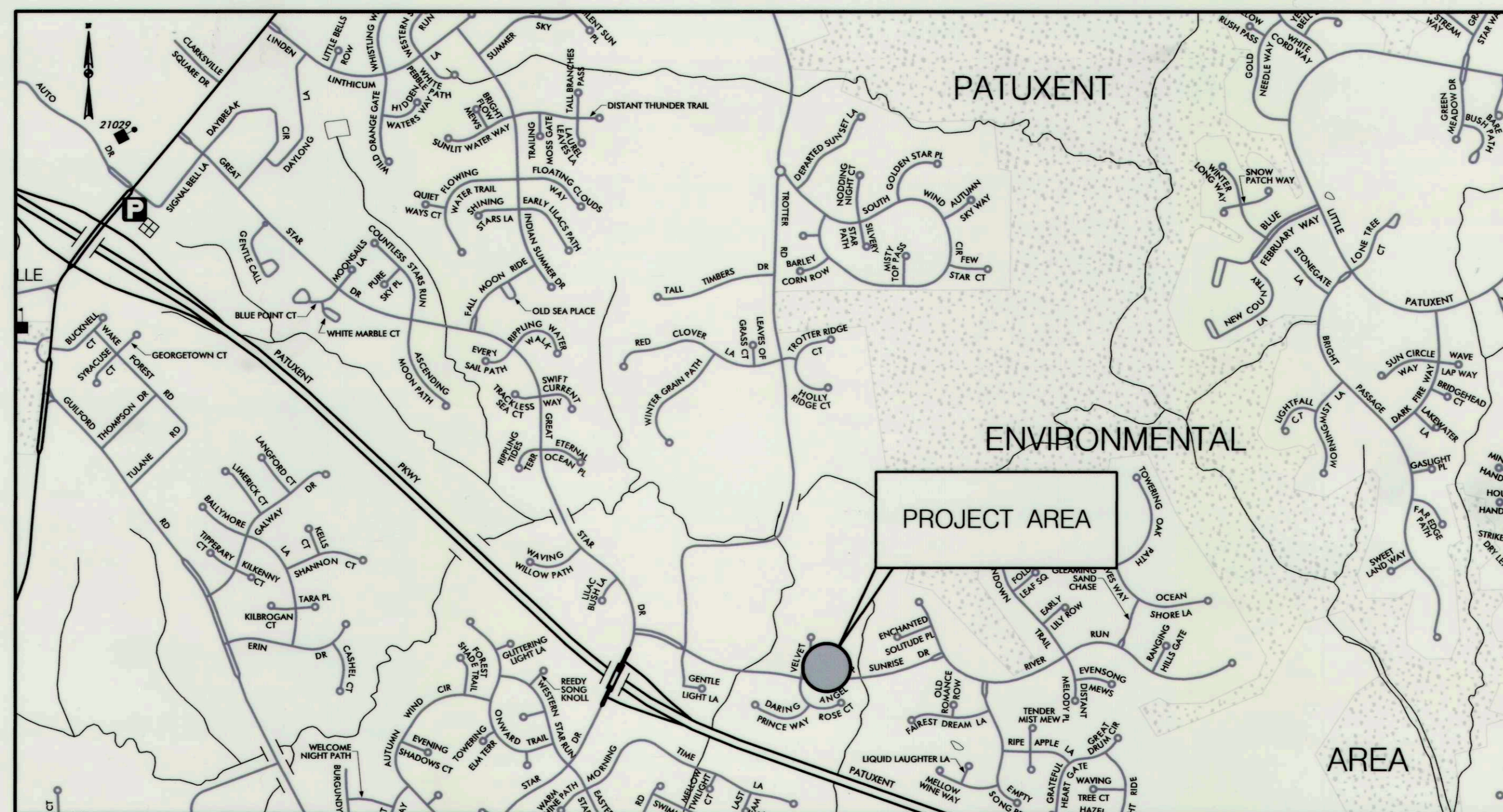
Storm Water Management Division
Bureau Of Environmental Services

GENERAL NOTES

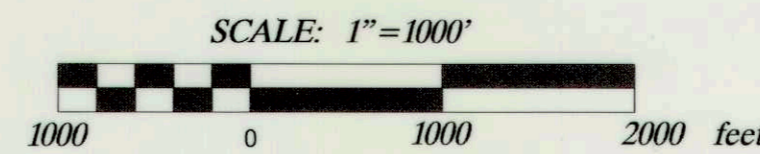
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MDSA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST FIVE (5) WORKING DAYS PRIOR TO ANY WORK BEING DONE.
- THIS PLAN IS PREPARED 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) 313-1855 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
- SURVEY OF THIS SITE WAS PERFORMED BY AB CONSULTANTS, INC - JUNE 2014
- 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 AB CONSULTANTS INC.
- WETLANDS AND WATERS OF THE US WERE DELINEATED BY McCORMICK TAYLOR- JUNE 2014.
- 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 CONTRACTORS'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 VILLAGE OF RIVER HILL SECTION 2 AREA 1. (F-93-018)
- A JOINT PERMIT APPLICATION HAS BEEN APPROVED BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT FOR THIS PROJECT. (TRACKING NUMBER 201561643)
- PROJECT IMPACTS INCLUDE WORK IN A USE IV-P STREAM. WORK MAY NOT BE CONDUCTED DURING THE PERIOD BETWEEN MARCH 1 AND MAY 31, INCLUSIVE, DURING ANY YEAR. THE PROJECT IS LOCATED WITHIN THE MIDDLE PATUXENT RIVER WATERSHED WHICH RECEIVED WQZ APPROVAL FOR SEDIMENT (2012). THE PROJECT IS NOT LOCATED WITHIN A TIER II WATERSHED.
- CONTRACTOR SHALL PROVIDE STRUCTURAL SHOP DRAWINGS OF ALL PRECAST OR PRE-FABRICATED STRUCTURES FOR ENGINEER'S APPROVAL PRIOR TO CONSTRUCTION.

INDEX OF SHEETS	
SHEET NO.	TITLE
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13-14	EROSION AND SEDIMENT CONTROL DETAIL SHEETS
15	PLANTING PLAN
16	STABILIZATION DETAILS
17	LANDSCAPE DETAILS
18-19	CROSS SECTIONS

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	



HORIZONTAL DATUM	NAD 83 /91
VERTICAL DATUM	NAVD 88



PERMITS /APPROVALS			
AGENCY	#	DATE APPLIED	DATE APPROVED
MDE JOINT PERMIT APPLICATION	201561643	10 /15 /2015	01 /25 /2016
HOWARD SOIL CONSERVATION DISTRICT	EP-16-05	08 /19 /2015	08 /31 /2016
MDE DAM SAFETY	16-XP-0025	EXEMPT	EXEMPT

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: 7/5/2017

AS-BUILT CERTIFICATION

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.

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.

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 (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

HOWARD SCD SIGNATURE BLOCK

THIS PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SOIL CONSERVATION DISTRICT
DATE: 8/24/16
EP-16-05

8-24-16
DATE

DESIGNER'S SIGNATURE
MARYLAND REGISTRATION NUMBER: 32013
AMY L. HRIBAR
PRINTED NAME

8/24/16
DATE

OWNER /DEVELOPER SIGNATURE
Mark S. Richmond Chief SWM Division
PRINTED NAME AND TITLE

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS DATE: 8/24/16

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE: 8/19/16

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: LN/AM	ADM	<input checked="" type="checkbox"/>	AS-BUILT PLANS	7-26-17
DRN: MR				
CHK: AH				
DATE: 8 /19 /16	BY	NO.	REVISION	DATE

VELVET PATH POND PRINCIPAL SPILLWAY REPLACEMENT
AND CHANNEL STABILIZATION PROJECT
CAPITAL PROJECT #D-1159
HOWARD COUNTY
HSCD # EP-16-05
TITLE SHEET

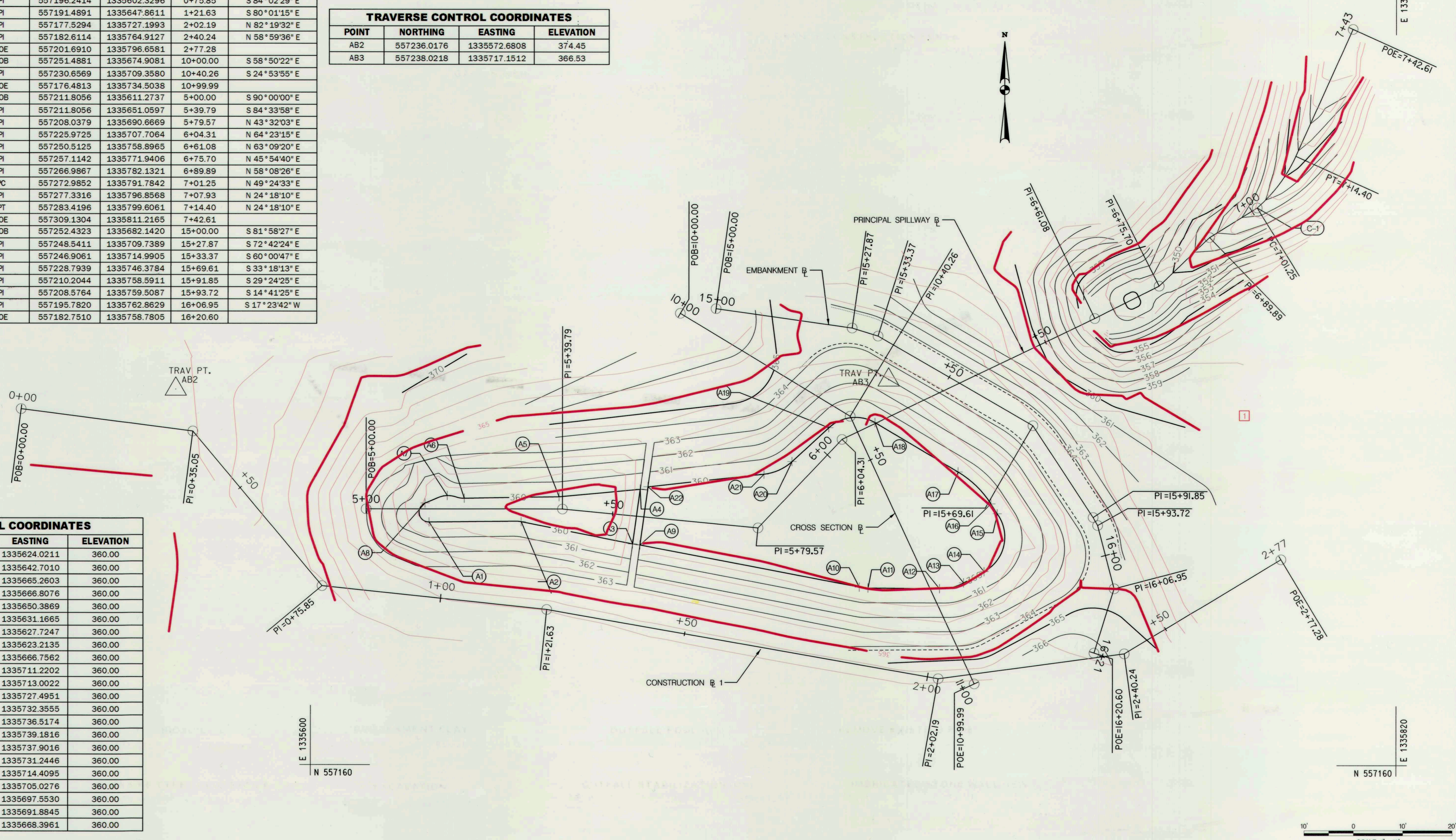
SCALE AS SHOWN
SHEET 1 OF 19

BASELINE GEOMETRY CONTROL COORDINATES					
BASELINE	POINT	NORTHING	EASTING	STATION	BEARING AH
CONSTRUCTION BL 1	POB	557232.0382	1335541.3886	0+00.00	S 82° 37' 22" E
	PI	557227.5376	1335576.1499	0+35.05	S 39° 54' 47" E
	PI	557196.2414	1335602.3296	0+75.85	S 84° 02' 29" E
	PI	557191.4891	1335647.8611	1+21.63	S 80° 01' 15" E
	PI	557177.5294	1335727.1993	2+02.19	N 82° 19' 32" E
	PI	557182.6114	1335764.9127	2+40.24	N 58° 59' 36" E
POE	557201.6910	1335796.6581	2+77.28		
CROSS SECTION BL	POB	557251.4881	1335674.9081	10+00.00	S 58° 50' 22" E
	PI	557230.6569	1335709.3580	10+40.26	S 24° 53' 55" E
	POE	557176.4813	1335734.5038	10+99.99	
PRINCIPAL SPILLWAY BL	POB	557211.8056	1335611.2737	5+00.00	S 90° 00' 00" E
	PI	557211.8056	1335651.0597	5+39.79	S 84° 33' 58" E
	PI	557208.0379	1335690.6669	5+79.57	N 43° 32' 03" E
	PI	557225.9725	1335707.7064	6+04.31	N 64° 23' 15" E
	PI	557290.5125	1335758.8965	6+61.08	N 63° 09' 20" E
	PI	557257.1142	1335771.9406	6+75.70	N 45° 54' 40" E
	PI	557266.9867	1335782.1321	6+89.89	N 58° 08' 26" E
	PC	557272.9852	1335791.7842	7+01.25	N 49° 24' 33" E
	PI	557277.3316	1335796.8568	7+07.93	N 24° 18' 10" E
	PT	557283.4196	1335799.6061	7+14.40	N 24° 18' 10" E
POE	557309.1304	1335811.2165	7+42.61		
EMBANKMENT BL	POB	557252.4323	1335682.1420	15+00.00	S 81° 58' 27" E
	PI	557248.5411	1335709.7389	15+27.87	S 72° 42' 24" E
	PI	557246.9061	1335714.9905	15+33.37	S 60° 00' 47" E
	PI	557228.7939	1335746.3784	15+69.61	S 33° 18' 13" E
	PI	557210.2044	1335758.5911	15+91.85	S 29° 24' 25" E
	PI	557208.5764	1335759.5087	15+93.72	S 14° 41' 25" E
	PI	557195.7820	1335762.8629	16+06.95	S 17° 23' 42" W
	POE	557182.7510	1335758.7805	16+20.60	

PRINCIPAL SPILLWAY PROFILE BASELINE CURVE DATA									
CURVE NO.	DELTA	Dc	R	T	L	E	CENTER OF CURVE		
							NORTH	EAST	
C-1	25° 06' 23"	0° 00' 00"	30.00'	6.68'	13.15'	0.73	557295.7664	1335772.2646	

TRAVERSE CONTROL COORDINATES			
POINT	NORTHING	EASTING	ELEVATION
AB2	557236.0176	1335572.6808	374.45
AB3	557238.0218	1335717.1512	366.53

POND CONTROL COORDINATES			
POINT	NORTHING	EASTING	ELEVATION
A1	557209.1522	1335624.0211	360.00
A2	557209.2395	1335642.7010	360.00
A3	557204.7736	1335665.2603	360.00
A4	557215.8174	1335666.8076	360.00
A5	557214.2963	1335650.3869	360.00
A6	557213.9773	1335631.1665	360.00
A7	557214.5255	1335627.7247	360.00
A8	557212.9907	1335623.2135	360.00
A9	557204.5577	1335666.7562	360.00
A10	557196.0523	1335711.2202	360.00
A11	557195.8747	1335713.0022	360.00
A12	557195.7343	1335727.4951	360.00
A13	557196.9414	1335732.3555	360.00
A14	557199.1962	1335736.5174	360.00
A15	557210.9284	1335739.1816	360.00
A16	557212.9371	1335737.9016	360.00
A17	557219.3872	1335731.2446	360.00
A18	557229.3817	1335714.4095	360.00
A19	557228.3314	1335705.0276	360.00
A20	557221.4709	1335697.5530	360.00
A21	557218.8981	1335691.8845	360.00
A22	557216.3145	1335668.3961	360.00



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Mark Wilson
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

8/19/16
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: LN/AM	ADM	1	AS-BUILT SURVEY	7-26-17
DRN: MR				
CHK: AH				
DATE: 8/19/16	BY	NO.	REVISION	DATE

VELVET PATH POND PRINCIPAL SPILLWAY REPLACEMENT
AND CHANNEL STABILIZATION PROJECT
CAPITAL PROJECT #D-1159
HOWARD COUNTY
HSCD # EP-16-05

GEOMETRY SHEET

SCALE
1" = 10'
SHEET
2 OF 19

CLEANOUTS AND OBSERVATION WELL		
STATION	QTY (LF)	REMARKS
STA. 1+83.03, 38.37' LT	6	4" PVC CLEANOUT
STA. 1+91.30, 26.44' LT	6	4" PVC CLEANOUT
STA. 1+82.08, 21.14' LT	6	6" OBSERVATION WELL

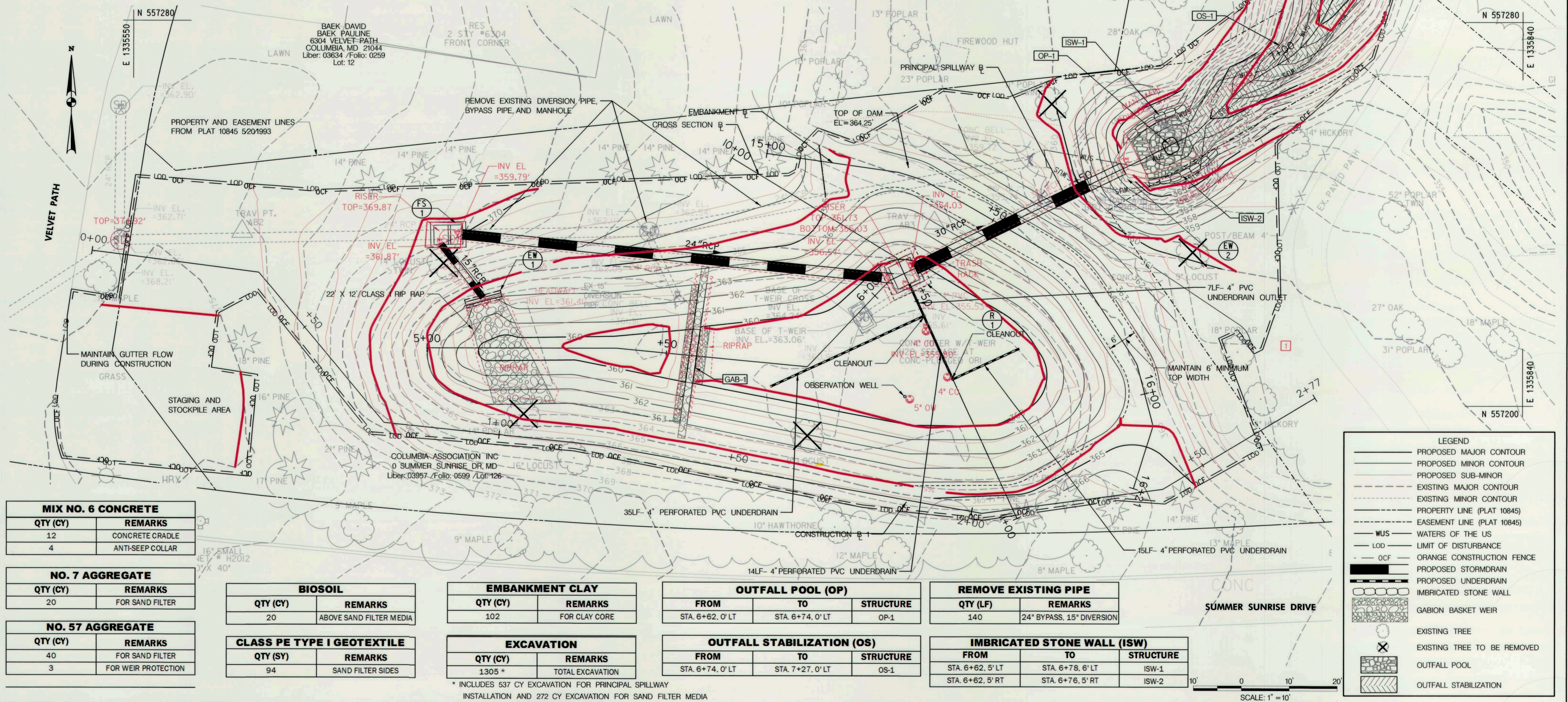
CLASS I RIP RAP		
STATION	QTY (SY)	REMARKS
STA. 0+97.8, 19' LT	225	19" DEPTH
STA. 1+38.0, 23' LT	3	WEIR PROTECTION, 12" DEPTH

PIPE SCHEDULE				
FROM	TO	DIA. (IN)	LENGTH (LF)	REMARKS
STA. 0+55.00, 33' LT	STA. 0+93.47, 29' LT	15	14	CLASS B-25 ASTM 361
STA. 0+56.24, 38' LT	STA. 1+74.04, 44' LT	24	90	CLASS B-25 ASTM 361
STA. 1+80.03, 48' LT	STA. 2+67.57, 62' LT	30	48	CLASS B-25 ASTM 361
STA. 1+78.88, 44' LT	STA. 1+82.88, 39' LT	4	7	PVC UNDERDRAIN OUTLET
STA. 1+54.06, 18' LT	STA. 1+83.03, 38' LT	4	35	PERFORATED PVC UNDERDRAIN
STA. 1+91.30, 26' LT	STA. 1+83.03, 38' LT	4	14	PERFORATED PVC UNDERDRAIN
STA. 2+14.40, 33' LT	STA. 1+91.30, 26' LT	4	15	PERFORATED PVC UNDERDRAIN

GABION WEIR				
FROM	TO	LENGTH	HEIGHT	REMARKS
STA. 1+36.35, 40' LT	STA. 1+37.69, 5' LT	36	VARIABLES	GAB-1. SEE DETAIL SHEET 7

DRAINAGE STRUCTURES			
ID	STATION	QTY	REMARKS
FS-1	STA. 0+54.39, 35' LT	9 CY	SEE DETAIL, SHEET 7
R-1	STA. 1+77.45, 46' LT	9 CY	SEE DETAIL, SHEET 6
EW-1	STA. 0+93.91, 27' LT	1 EA	STD. TYPE "C" DETAIL D-5.21
EW-2	STA. 2+67.57, 32' LT	1EA	STD. TYPE "B" DETAIL D-5.11

ORANGE CONSTRUCTION FENCE			
FROM	TO	QTY (LF)	REMARKS
STA. 0+00.00, 1' RT	STA. 0+00.00, 16' LT	733	AROUND ENTIRE LOD



MIX NO. 6 CONCRETE	
QTY (CY)	REMARKS
12	CONCRETE CRADLE
4	ANTI-SEEP COLLAR

NO. 7 AGGREGATE	
QTY (CY)	REMARKS
20	FOR SAND FILTER

NO. 57 AGGREGATE	
QTY (CY)	REMARKS
40	FOR SAND FILTER
3	FOR WEIR PROTECTION

BIOSOIL	
QTY (CY)	REMARKS
20	ABOVE SAND FILTER MEDIA

CLASS PE TYPE I GEOTEXTILE	
QTY (SY)	REMARKS
94	SAND FILTER SIDES

EMBANKMENT CLAY	
QTY (CY)	REMARKS
102	FOR CLAY CORE

EXCAVATION	
QTY (CY)	REMARKS
1305 *	TOTAL EXCAVATION

OUTFALL POOL (OP)		
FROM	TO	STRUCTURE
STA. 6+62, 0' LT	STA. 6+74, 0' LT	OP-1

OUTFALL STABILIZATION (OS)		
FROM	TO	STRUCTURE
STA. 6+74, 0' LT	STA. 7+27, 0' LT	OS-1

REMOVE EXISTING PIPE	
QTY (LF)	REMARKS
140	24" BYPASS, 15" DIVERSION

IMBRICATED STONE WALL (ISW)		
FROM	TO	STRUCTURE
STA. 6+62, 5' LT	STA. 6+78, 6' LT	ISW-1
STA. 6+62, 5' RT	STA. 6+76, 5' RT	ISW-2

LEGEND

- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED SUB-MINOR
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPERTY LINE (PLAT 10845)
- EASEMENT LINE (PLAT 10845)
- WUS
- WATERS OF THE US
- LOD
- LIMIT OF DISTURBANCE
- OCF
- ORANGE CONSTRUCTION FENCE
- PROPOSED STORMDRAIN
- PROPOSED UNDERDRAIN
- IMBRICATED STONE WALL
- GABION BASKET WEIR
- EXISTING TREE
- EXISTING TREE TO BE REMOVED
- OUTFALL POOL
- OUTFALL STABILIZATION

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Manuel...
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

DATE: 8/21/16

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: LN/AM ADM [1] AS-BUILT SURVEY 7-26-17

DRN: MR

CHK: AH

DATE: 8/19/16

BY NO. REVISION DATE

DESIGN REVISIONS

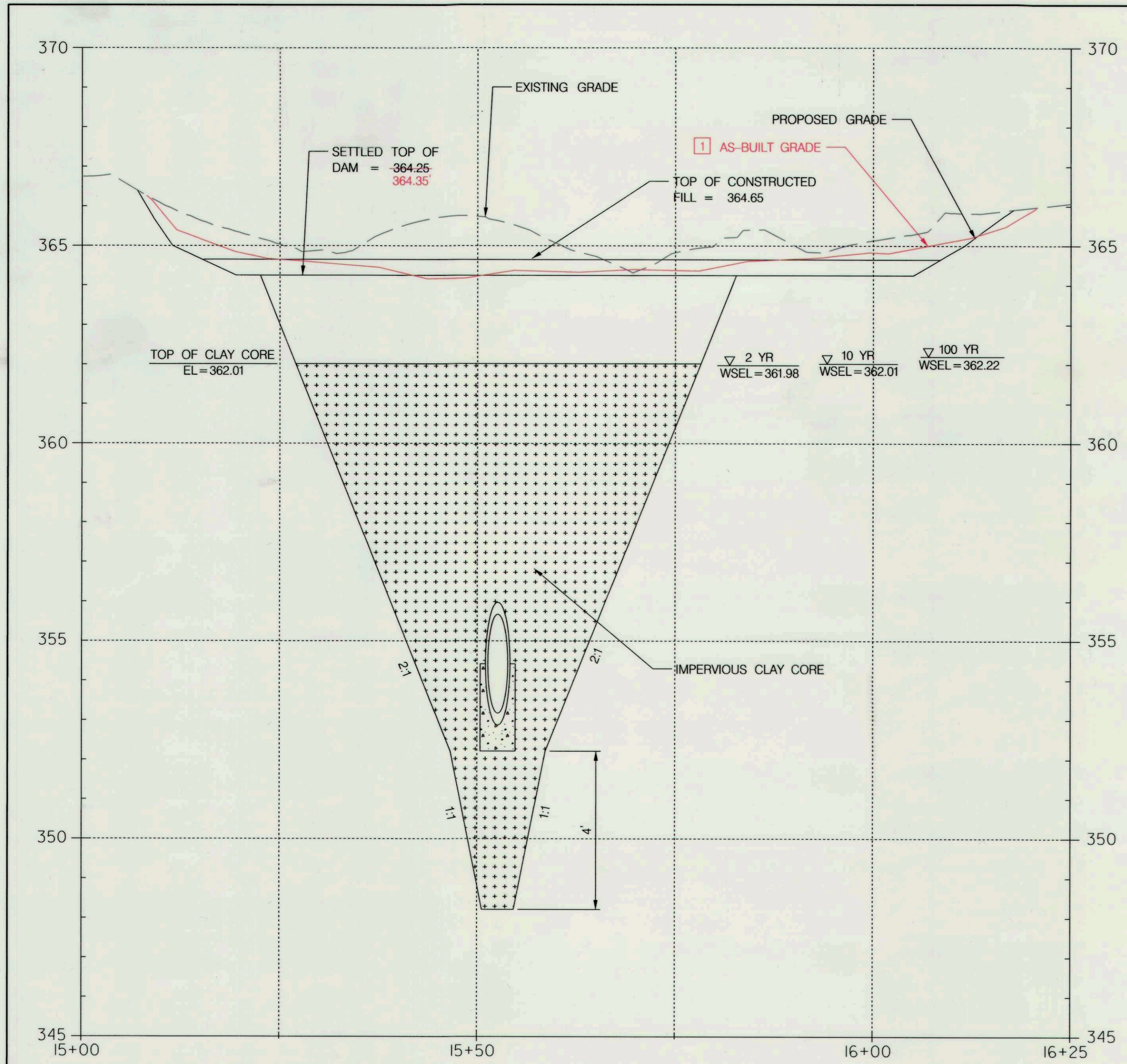
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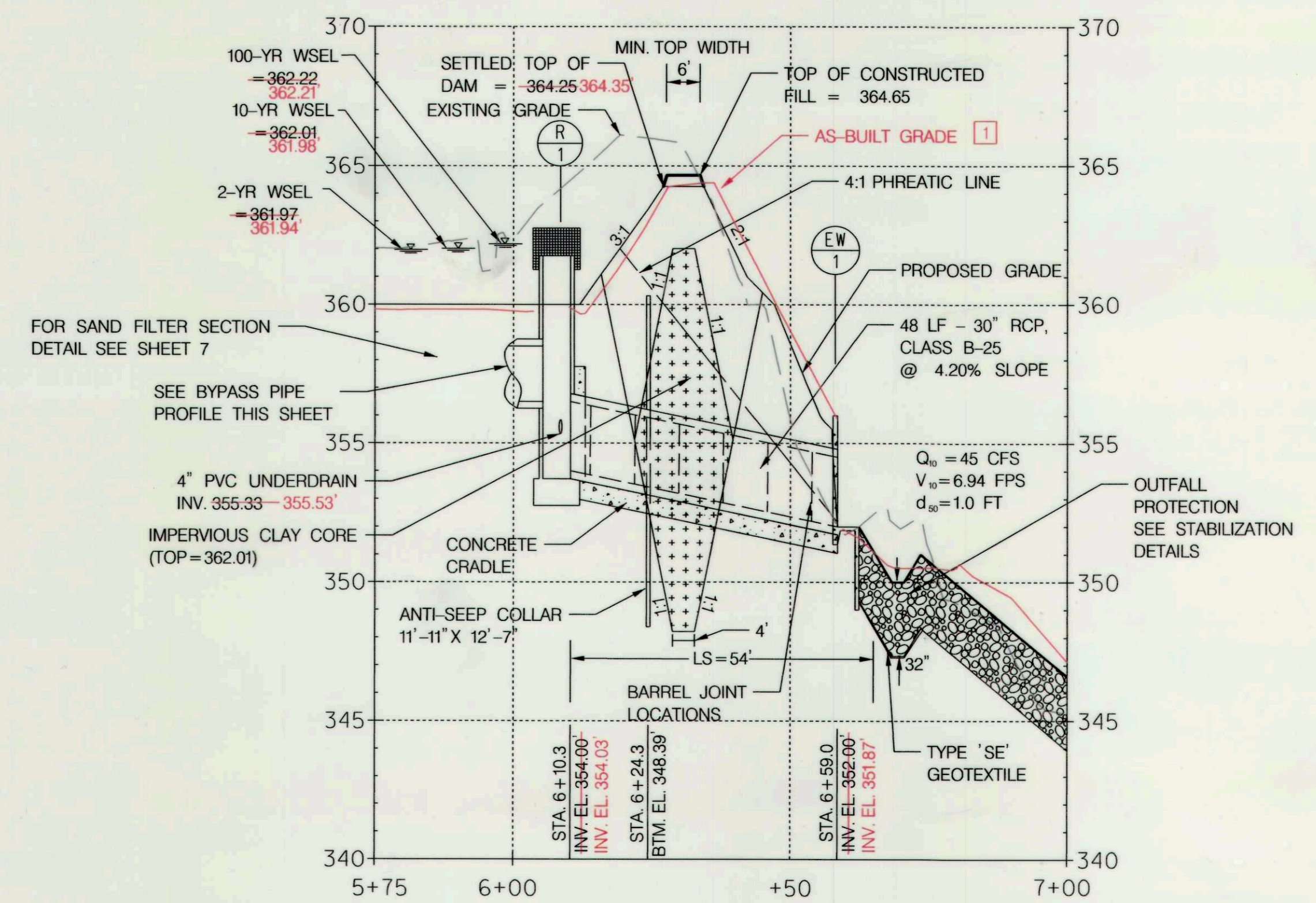
SITE PLAN

SCALE: 1" = 10'

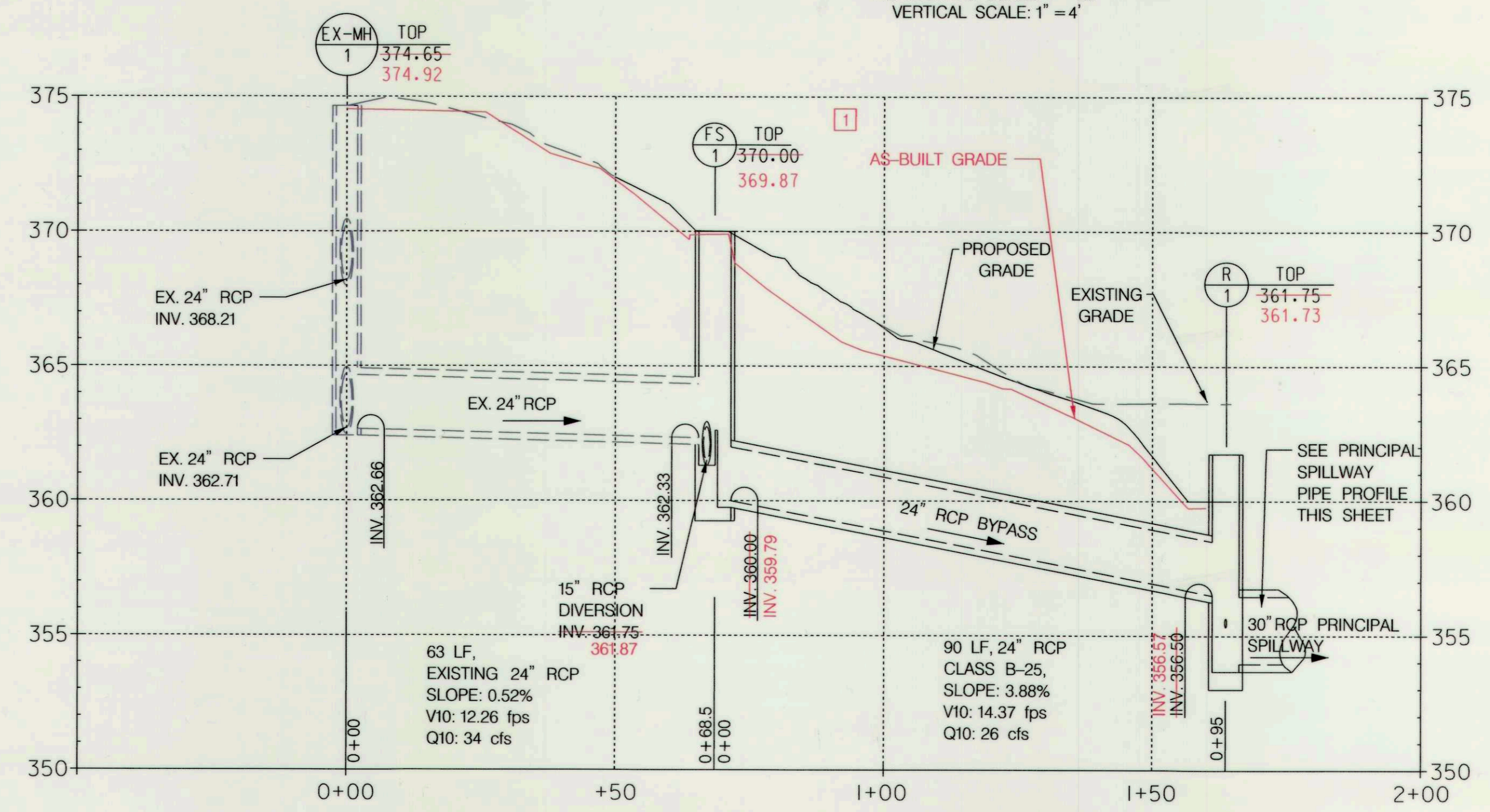
SHEET 3 OF 19



CENTERLINE OF EMBANKMENT PROFILE
 HORIZONTAL SCALE: 1" = 10'
 VERTICAL SCALE: 1" = 2'



PRINCIPAL SPILLWAY PIPE PROFILE
 HORIZONTAL SCALE: 1" = 20'
 VERTICAL SCALE: 1" = 4'



BYPASS PIPE PROFILE
 HORIZONTAL SCALE: 1" = 20'
 VERTICAL SCALE: 1" = 4'

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

Mark Wilson
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

8/24/16
 DATE

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

Howard County
 MARYLAND

Storm Water Management Division
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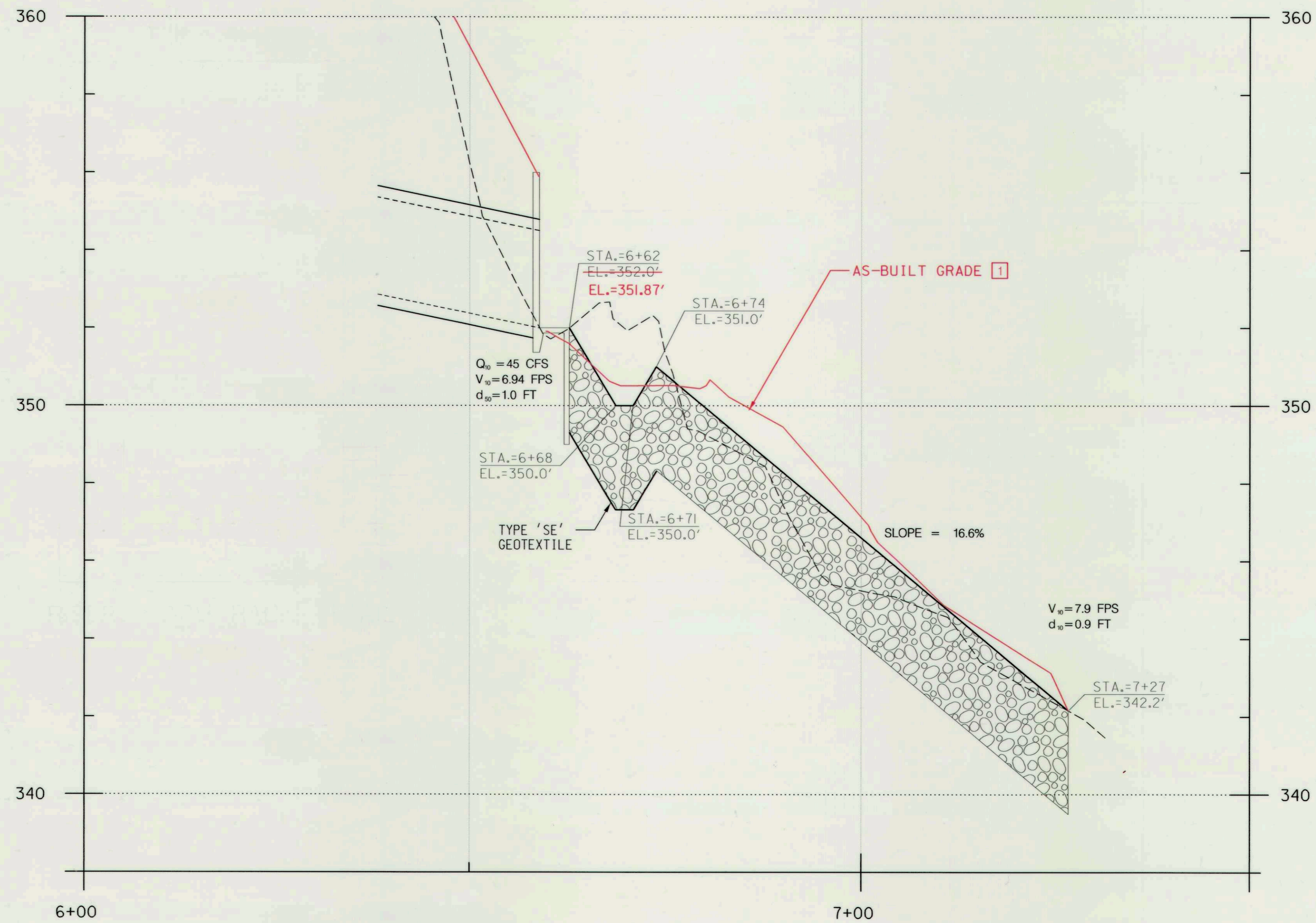


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VELVET PATH POND PRINCIPAL SPILLWAY REPLACEMENT
 AND CHANNEL STABILIZATION PROJECT
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 HOWARD COUNTY
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PROFILE SHEET

SCALE
 AS SHOWN
 SHEET
 4 OF 19



CHANNEL STABILIZATION PROFILE
 HORIZONTAL SCALE: 1" = 10'
 VERTICAL SCALE: 1" = 2'

LEGEND	
-----	EXISTING
—————	PROPOSED

DEPARTMENT OF PUBLIC WORKS
 HOWARD COUNTY, MARYLAND

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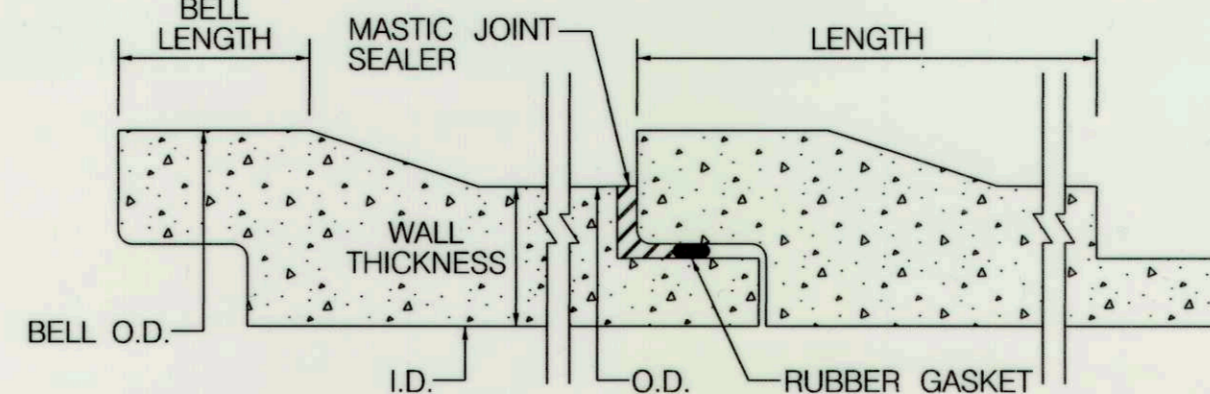
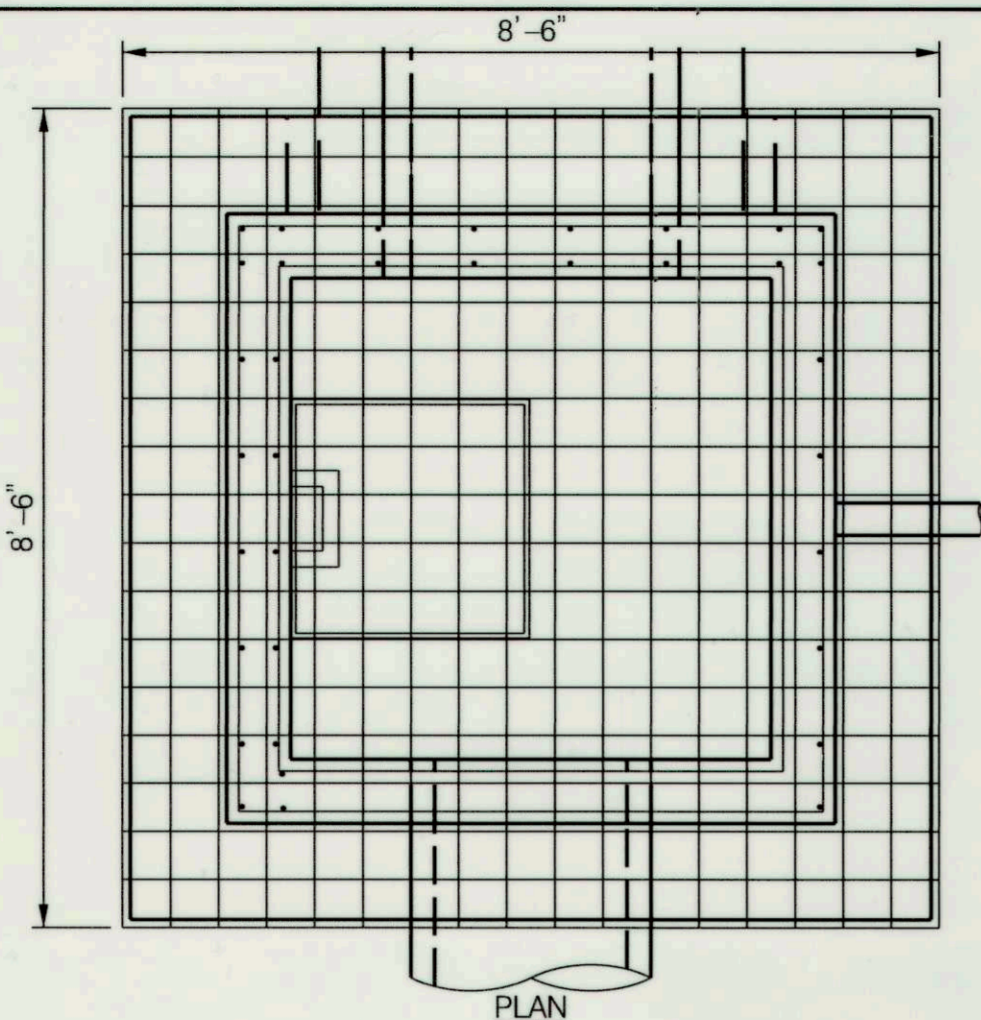
CHANNEL STABILIZATION PROFILE SHEET

SCALE
 AS SHOWN
 SHEET
 5 OF 19

Michael DeLuca
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES
 8/24/16
 DATE

TRASH RACK CONSTRUCTION NOTES:

1. FRAME SHALL BE CONSTRUCTED OF 4" X 4" X 3/16" STEEL ANGLE WITH THE CORNERS MITRED AND BUTT WELDED.
2. THE FRAME SHALL BE PAINTED WITH TWO COATS OF COLD GALVANIZED COMPOUND IN "BATTLESHIP GREY".
3. BARS SHALL BE #6 REBAR AT 6" CC EACH WAY, HOT-DIPPED GALVANIZED AND FILLET WELDED TO THE ANGLE FRAME.
4. ALL STEEL SHALL BE ASTM A-36.
5. TRASH RACK SHALL BE BOLTED ONTO THE OUTSIDE FACE OF THE RISER USING 3/8" DIA. STAINLESS STEEL EXPANSION BOLTS, @ 11" CC MIN. 4" FROM EDGE OF CONCRETE RISER DRILL ANGLE FRAME TO ALLOW PASSAGE OF BOLTS.
6. ENSURE A 1' CLEARANCE BETWEEN TRASH RACK AND DAM EMBANKMENT SLOPE.
7. PROVIDE LOCKABLE HINGED ACCESS HATCH IN TOP OF TRASH RACK OVER EXISTING LADDER RUNGS.

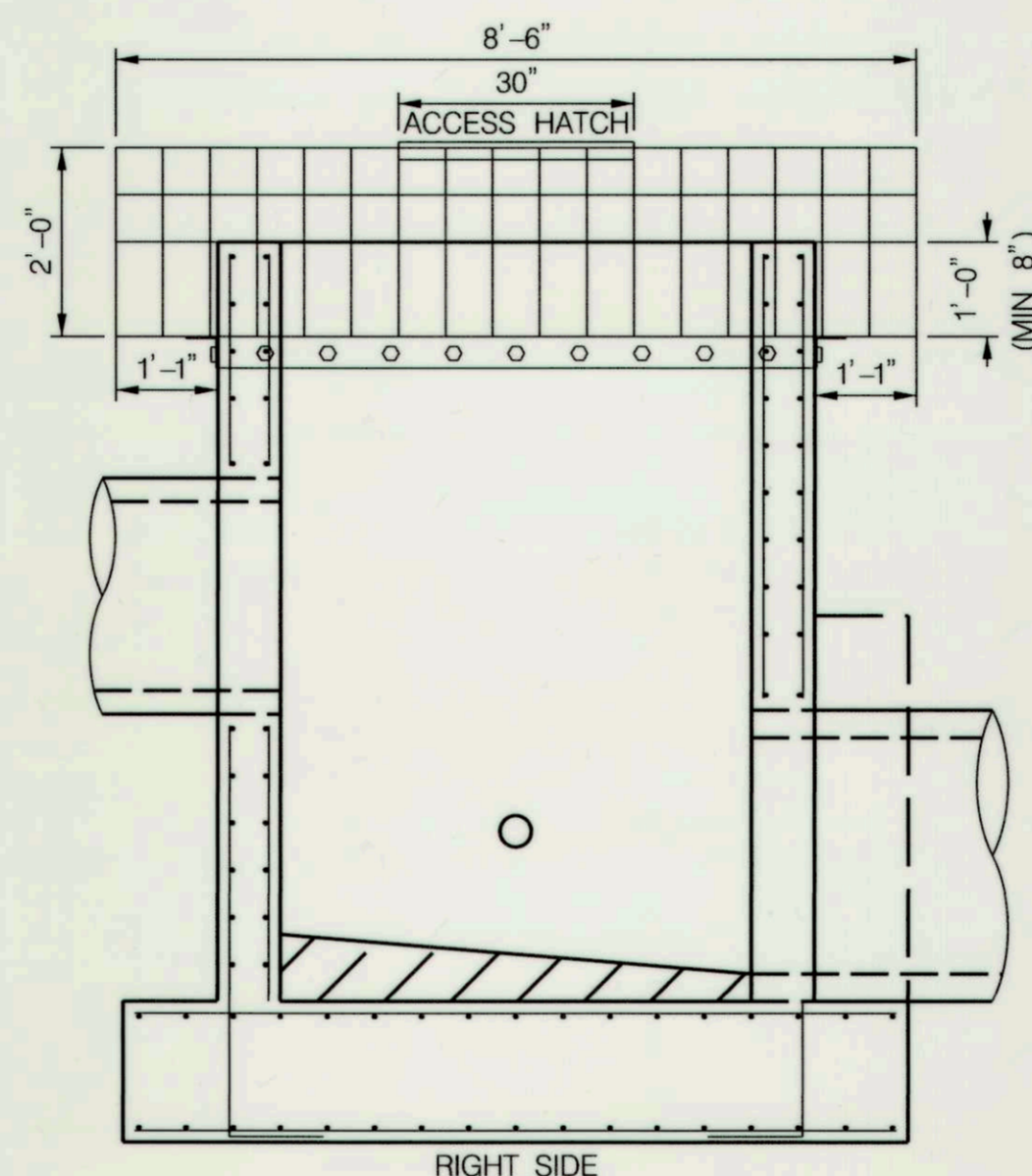
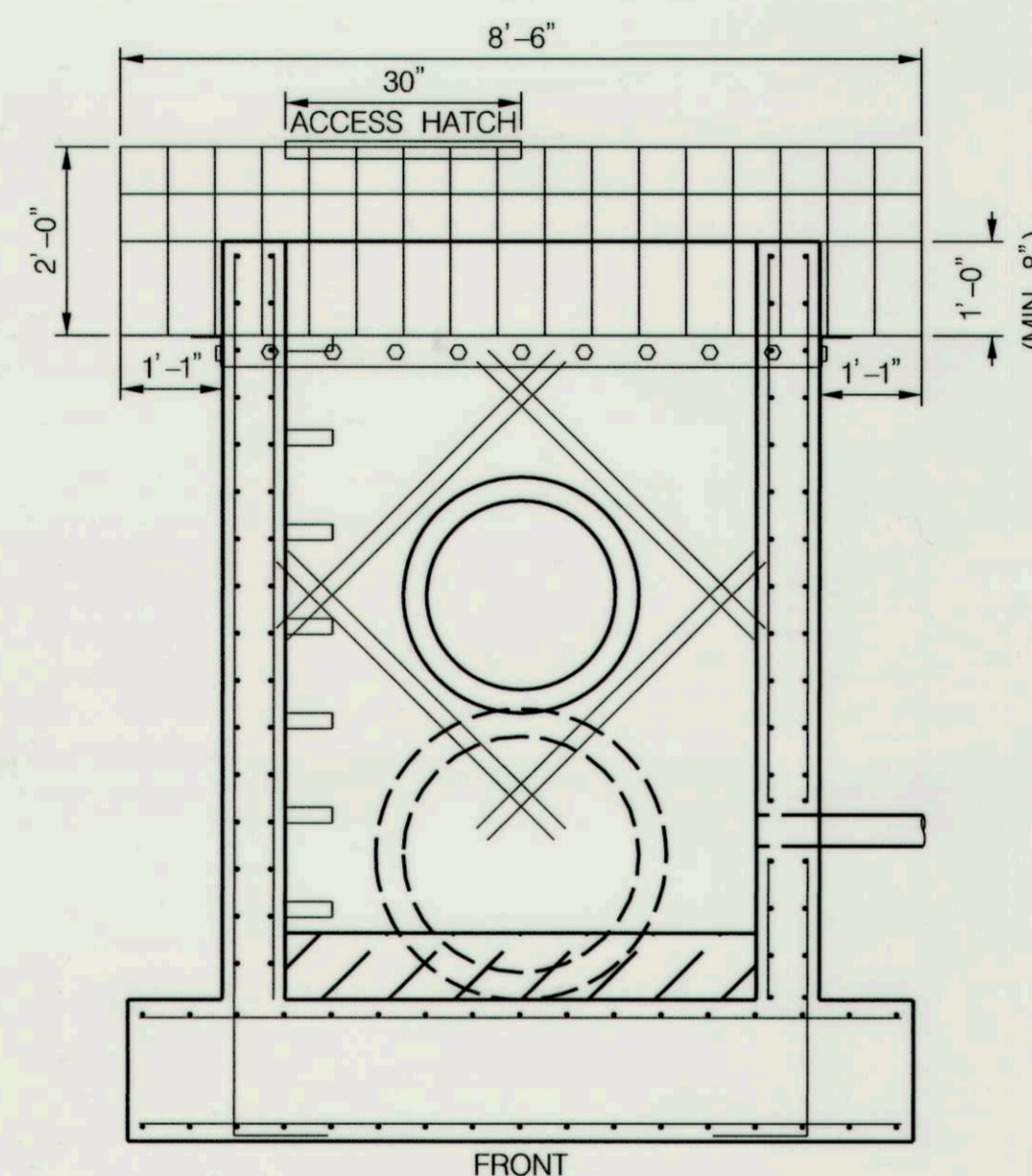
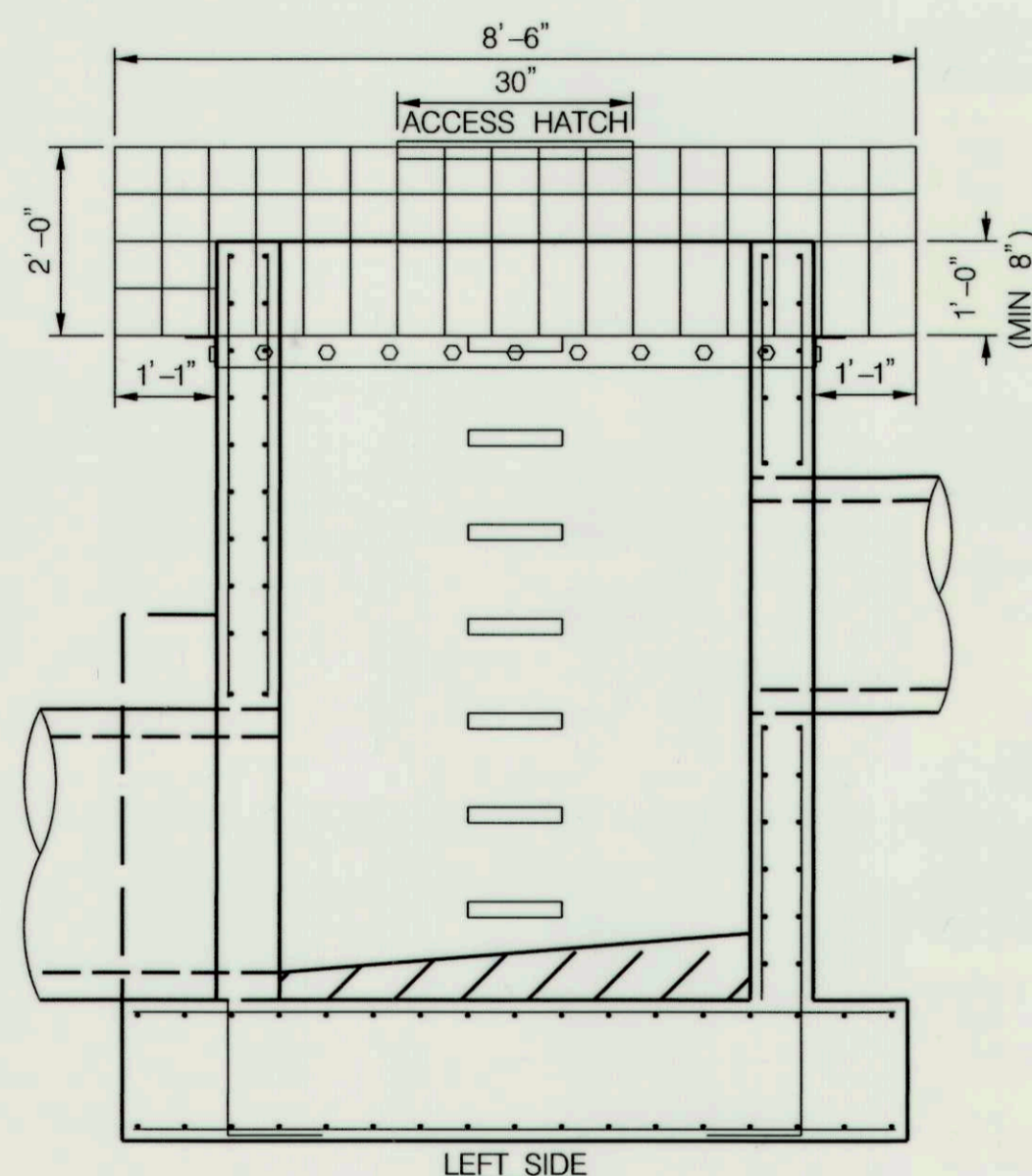


BARREL JOINT SEAL DETAIL
NOT TO SCALE

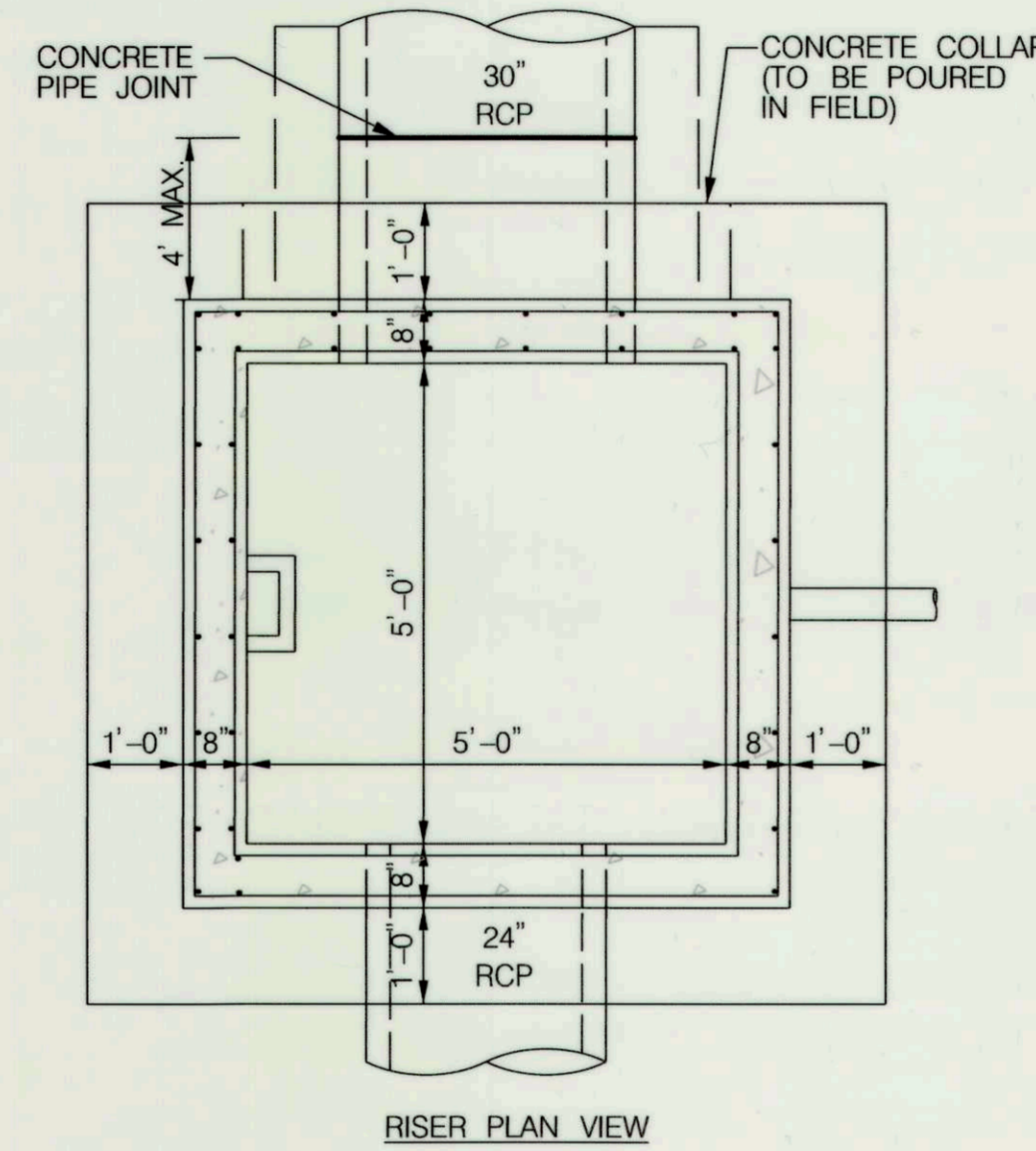
- BARREL JOINT SEALER NOTES:**
1. MASTIC JOINT SEALER TO BE APPLIED ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
 2. JOINT SEALER SHOULD HAVE WATERTIGHT CONNECTION.
 3. THE SEALER SHALL BE A MIXTURE OF ASPHALT, MINERAL FILLER, AND PETROLEUM SOLVENTS AND SHALL HAVE ADHESIVE AND COHESIVE PROPERTIES.

THE SEALER SHALL CONFORM TO THE FOLLOWING:

TEST AND METHOD	SPECIFICATION LIMITS
RESIDUES BY EVAPORATION, NONVOLATILE MATTER, D 2939, % MIN.	70
INORGANIC FILLER ON IGNITION, ASH CONTENT, D 2939, %	15-45

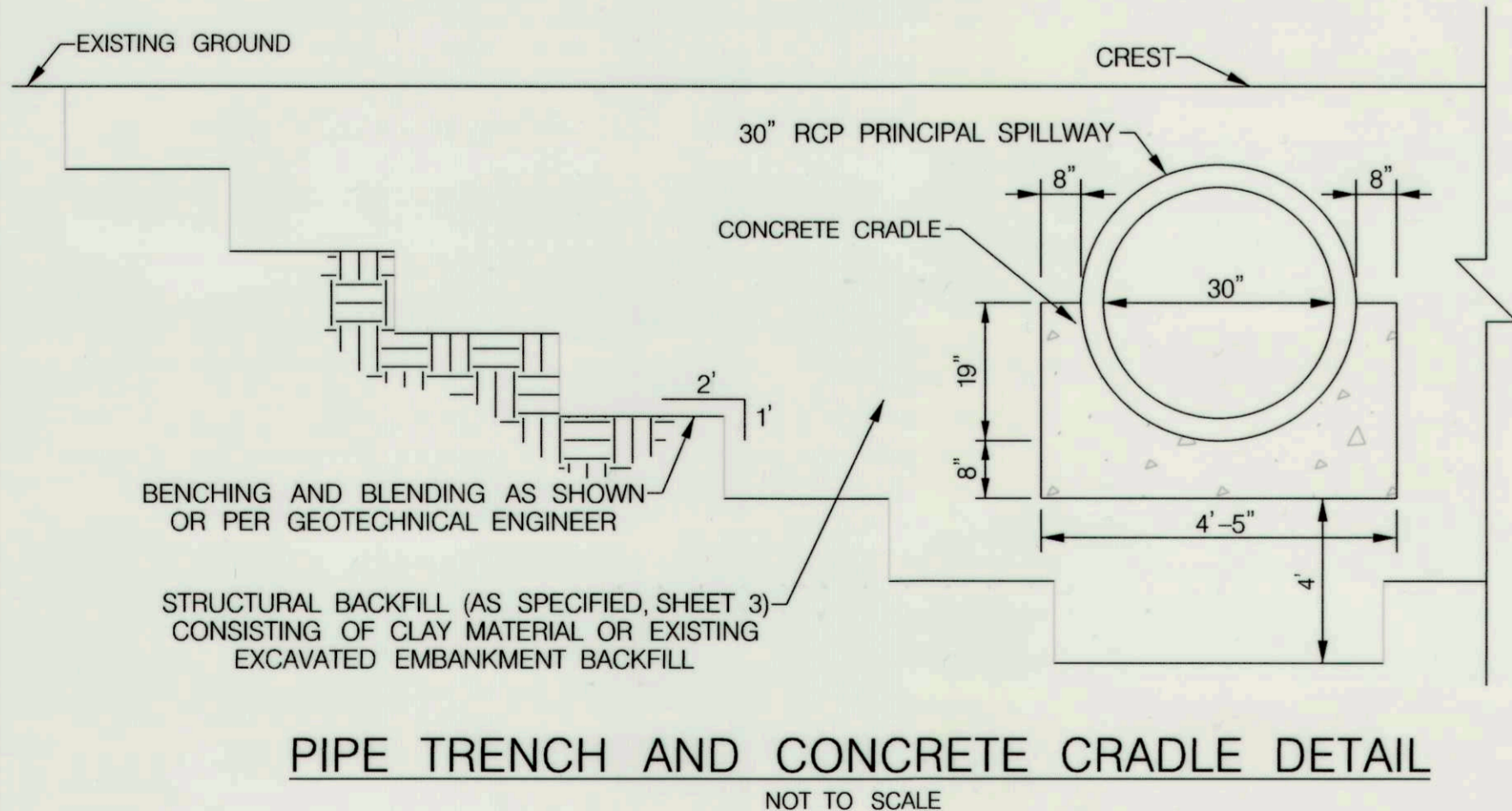


RISER TRASH RACK DETAIL
SCALE: 1" = 2'

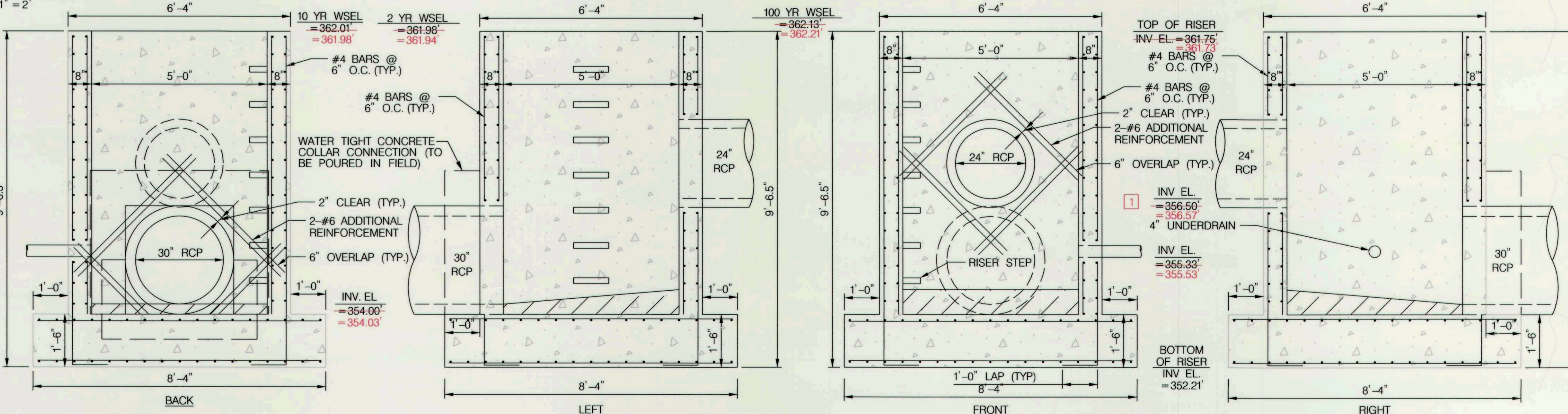


RISER CONSTRUCTION NOTES:

1. RISER STEPS SHALL FOLLOW DETAIL G-5.21 FOR MANHOLE AND INLET STEPS
2. SHA MIX NO. 3 CONCRETE SHALL BE USED AND SHALL CONFORM TO THE REQUIREMENTS OF LATEST EDITION OF ACI 301 AND ACI 318.
3. RISER STRUCTURE SHALL BE CAST IN PLACE AND DESIGNED IN ACCORDANCE TO LOADING SPECIFIED IN LATEST EDITIONS OF ASTM C857 AND ASTM C890.
4. RISER STRUCTURE SHALL CONFORM TO THE REQUIREMENTS OF LATEST EDITIONS OF ASTM C858 AND MARYLAND NRCS POND CODE MD-378.
5. RESILIENT CONNECTORS BETWEEN MANHOLE STRUCTURES, PIPES AND LATERALS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF LATEST EDITIONS OF ASTM C923.
6. INVERT SHALL BE APPROVED SHA MIX NO. 3 CONCRETE. INVERT TO SLOPE DOWN TOWARD OUTLET AS SHOWN ON PLAN, OR AS DIRECTED.
7. REFER TO DETAIL D-4.10 FOR REBAR PLACEMENT AROUND OPENINGS.
8. REFER TO DETAIL G-2-9 FOR CONCRETE PROJECTION COLLAR.
9. CONSTRUCT CONCRETE COLLARS TO ENSURE WATERTIGHT SEALS AT RISER AND PIPE CONNECTIONS.
10. CONTRACTOR TO ENSURE A SUITABLE SUBBASE IS PROVIDED FOR THE RISER. NO GRAVEL SHALL BE USED FOR THE RISER SUBBASE. LEAN CONCRETE IS RECOMMENDED TO IMPROVE SUBBASE STABILITY IF NECESSARY.
11. TRASH RACK STRUCTURAL SHOP DRAWINGS SHALL BE SUBMITTED TO AND APPROVED BY THE ENGINEER BEFORE CONSTRUCTION.
12. THE RISER WILL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE PER EACH RISER. THE PAYMENT WILL BE FULL COMPENSATION FOR ALL EXCAVATION, CONCRETE, MASONRY, SPECIAL OR PRECAST UNITS, REINFORCEMENT, LADDER RUNGS, DRIP STONES, AGGREGATE, UNDERDRAIN, STUBS, FRAMES, GRATES AND COVERS, GRADE AND SLOPE ADJUSTMENTS, BACKFILL, GASKET, WATERTIGHT SEALS, PROJECTION COLLARS, TRASH RACKS, DRAIN VALVES, VALVE STEMS AND FOR ALL MATERIAL, LABOR, EQUIPMENT, TOOLS, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.



PIPE TRENCH AND CONCRETE CRADLE DETAIL
NOT TO SCALE



RISER ELEVATION
SCALE: 1" = 2'

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Handwritten signature
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

DATE

McCORMICK TAYLOR

509 South Exeter Street
4th Floor
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(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: LN/AM	ADM	1	AS-BUILT SURVEY	7-26-17
DRN: MR				
CHK: AH				
DATE: 8/19/16	BY	NO.	REVISION	DATE

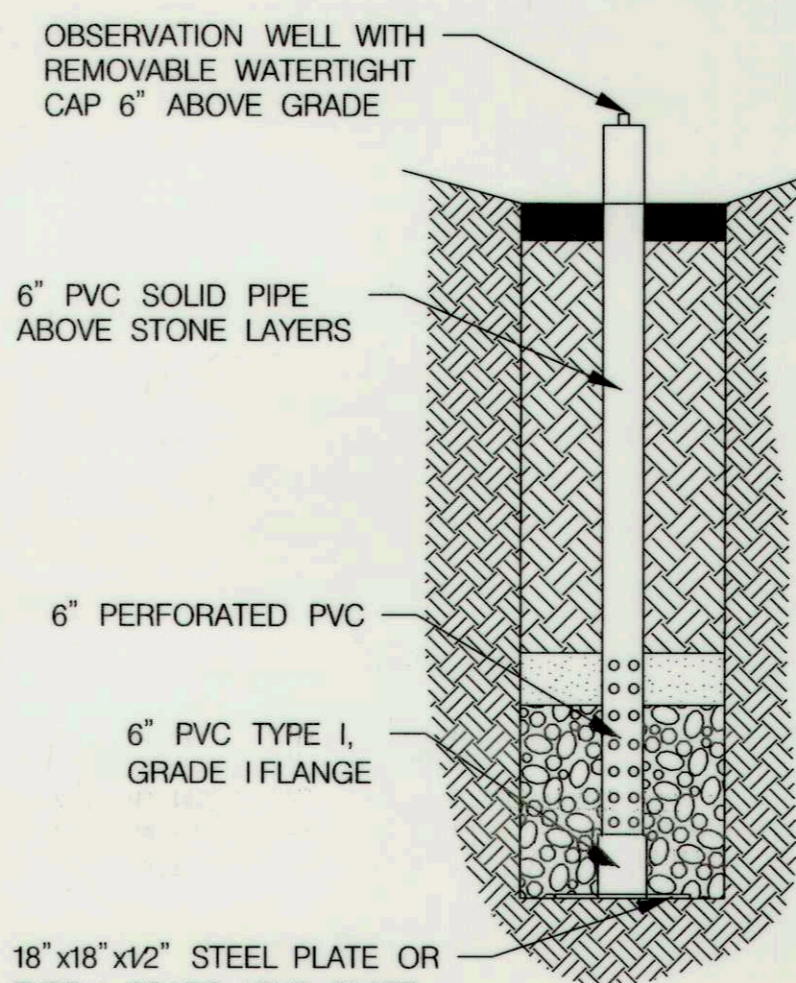
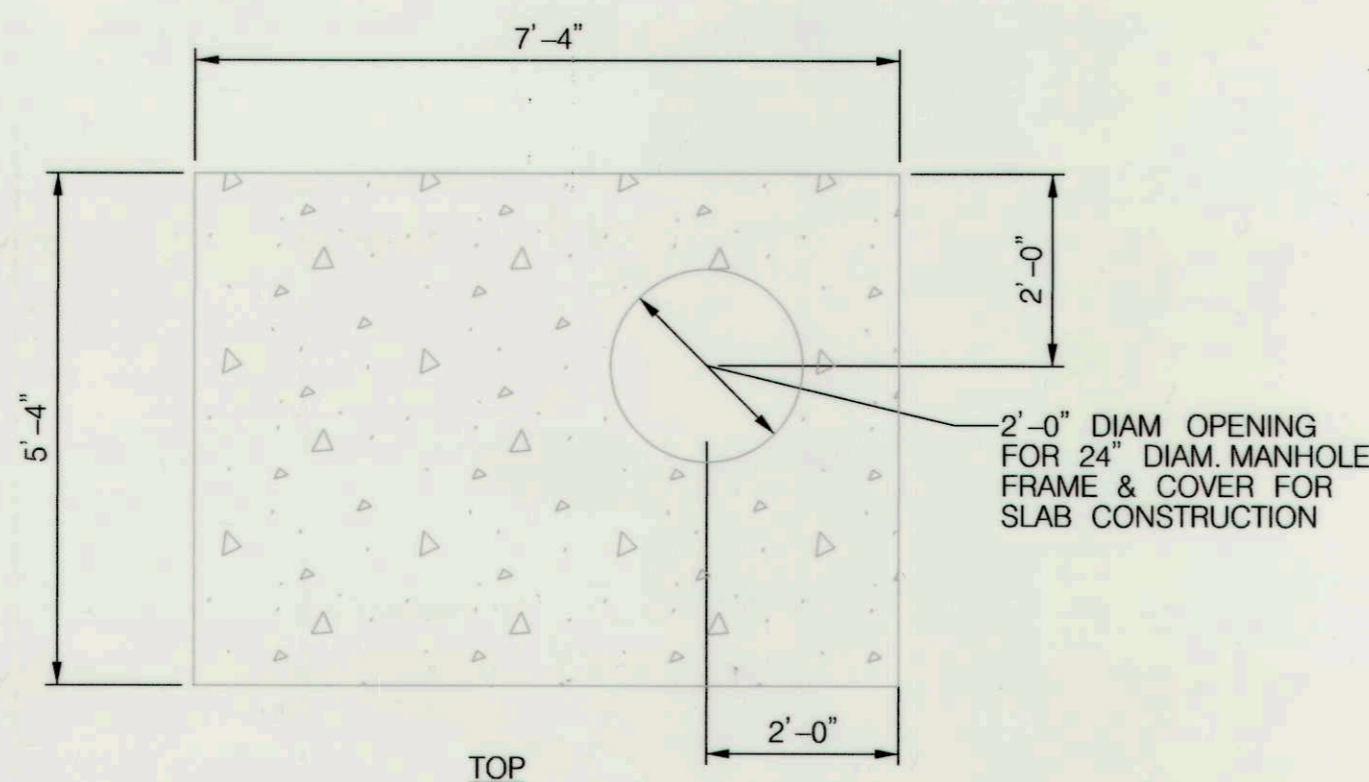
VELVET PATH POND PRINCIPAL SPILLWAY REPLACEMENT AND CHANNEL STABILIZATION PROJECT
CAPITAL PROJECT #D-1159
HOWARD COUNTY
HSCD # EP-16-05

RISER AND TRASH RACK DETAILS

SCALE
AS SHOWN
SHEET
6 OF 19

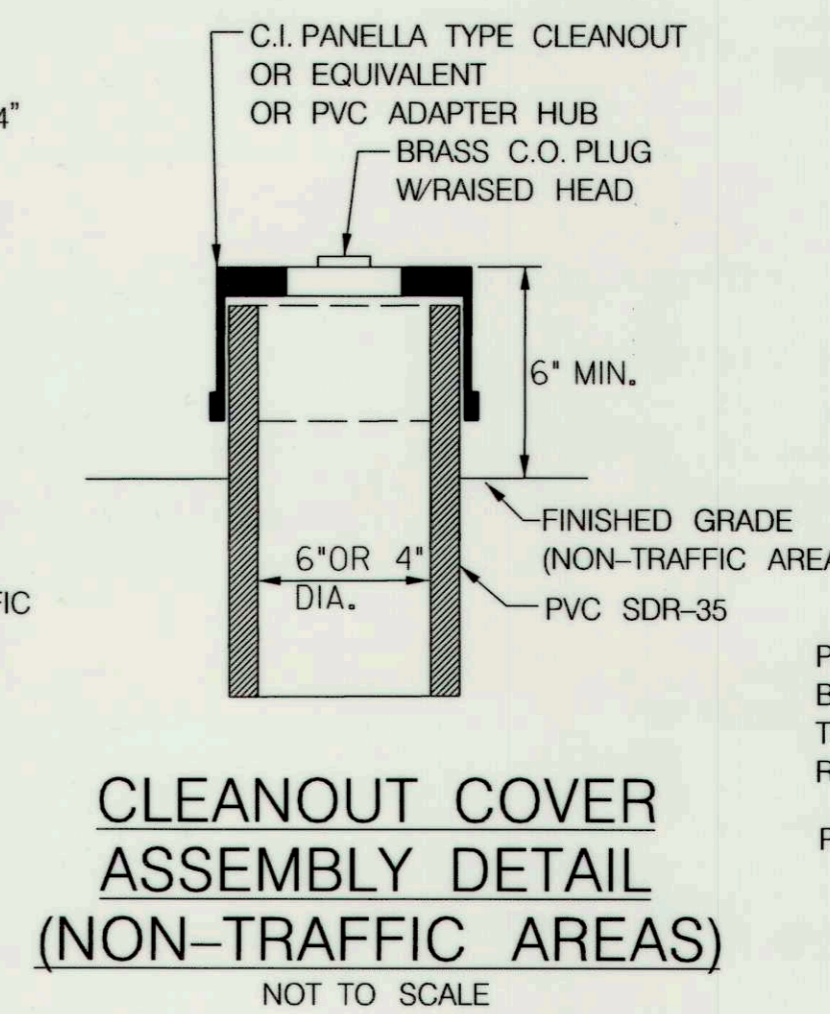
FLOW SPLITTER CONSTRUCTION NOTES:

1. RISER STEPS SHALL FOLLOW DETAIL G-5.21 FOR MANHOLE AND INLET STEPS
2. SHA MIX NO.3 CONCRETE SHALL BE USED AND SHALL CONFORM TO THE REQUIREMENTS OF LATEST EDITION OF ACI 301 AND ACI 318.
3. FLOW SPLITTER STRUCTURE SHALL BE DESIGNED IN ACCORDANCE TO LOADING SPECIFIED IN LATEST EDITIONS OF ASTM C857 AND ASTM C890.
4. FLOW SPLITTER STRUCTURE SHALL CONFORM TO THE REQUIREMENTS OF LATEST EDITIONS OF ASTM C858.
5. RESILIENT CONNECTORS BETWEEN MANHOLE STRUCTURES, PIPES AND LATERALS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF LATEST EDITIONS OF ASTM C923.
6. INVERT SHALL BE APPROVED SHA MIX NO.3 CONCRETE. INVERT TO SLOPE DOWN TOWARD OUTLET AT THE RATE OF 1/2" PER FOOT AS SHOWN ON PLAN, OR AS DIRECTED.
7. REFER TO DETAIL D-4.10 FOR REBAR PLACEMENT AROUND OPENINGS.
8. CONTRACTOR TO ENSURE A SUITABLE SUBBASE IS PROVIDED FOR THE FLOW SPLITTER.
9. STRUCTURE WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR MIX 3 CONCRETE FOR MISCELLANEOUS STRUCTURES.

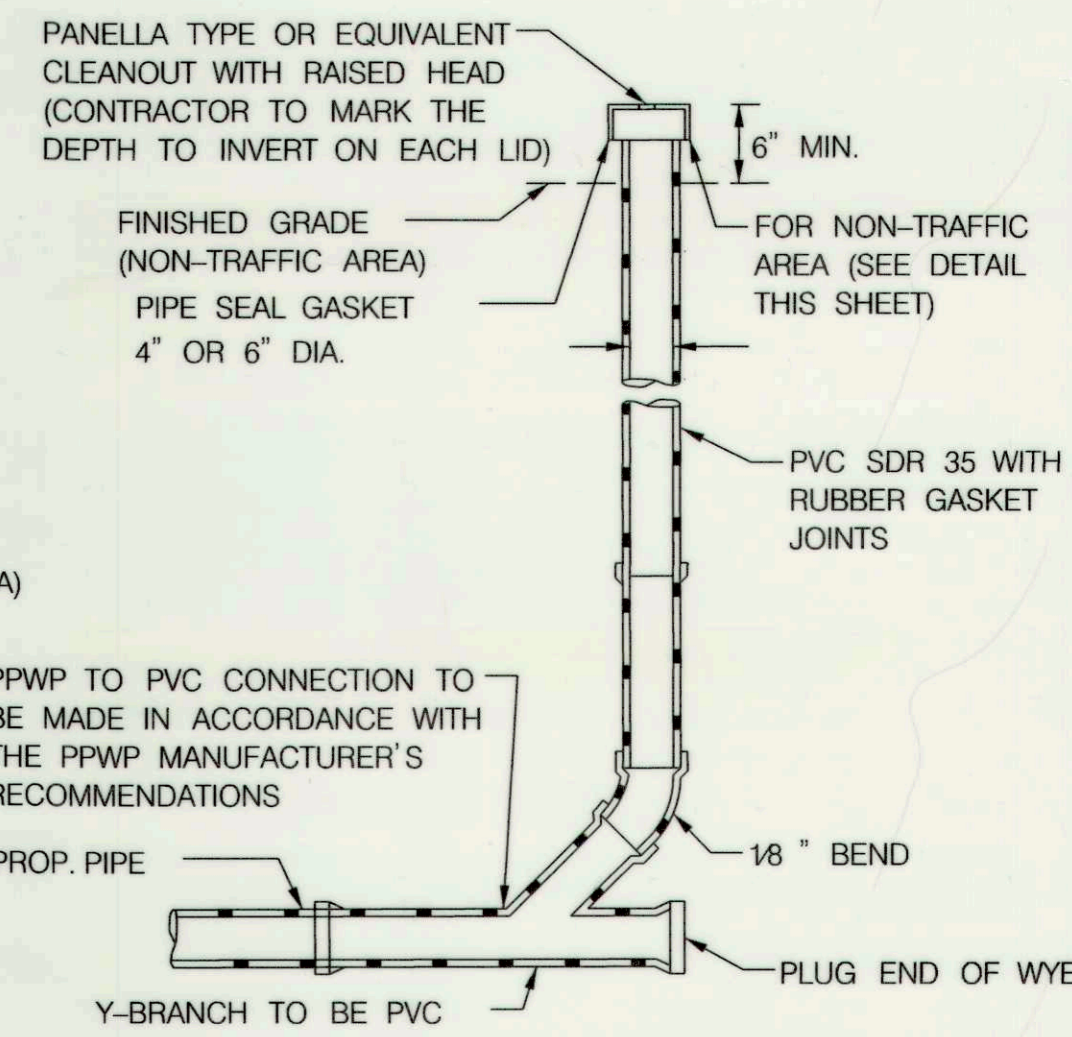


OBSERVATION WELL DETAILS
NOT TO SCALE

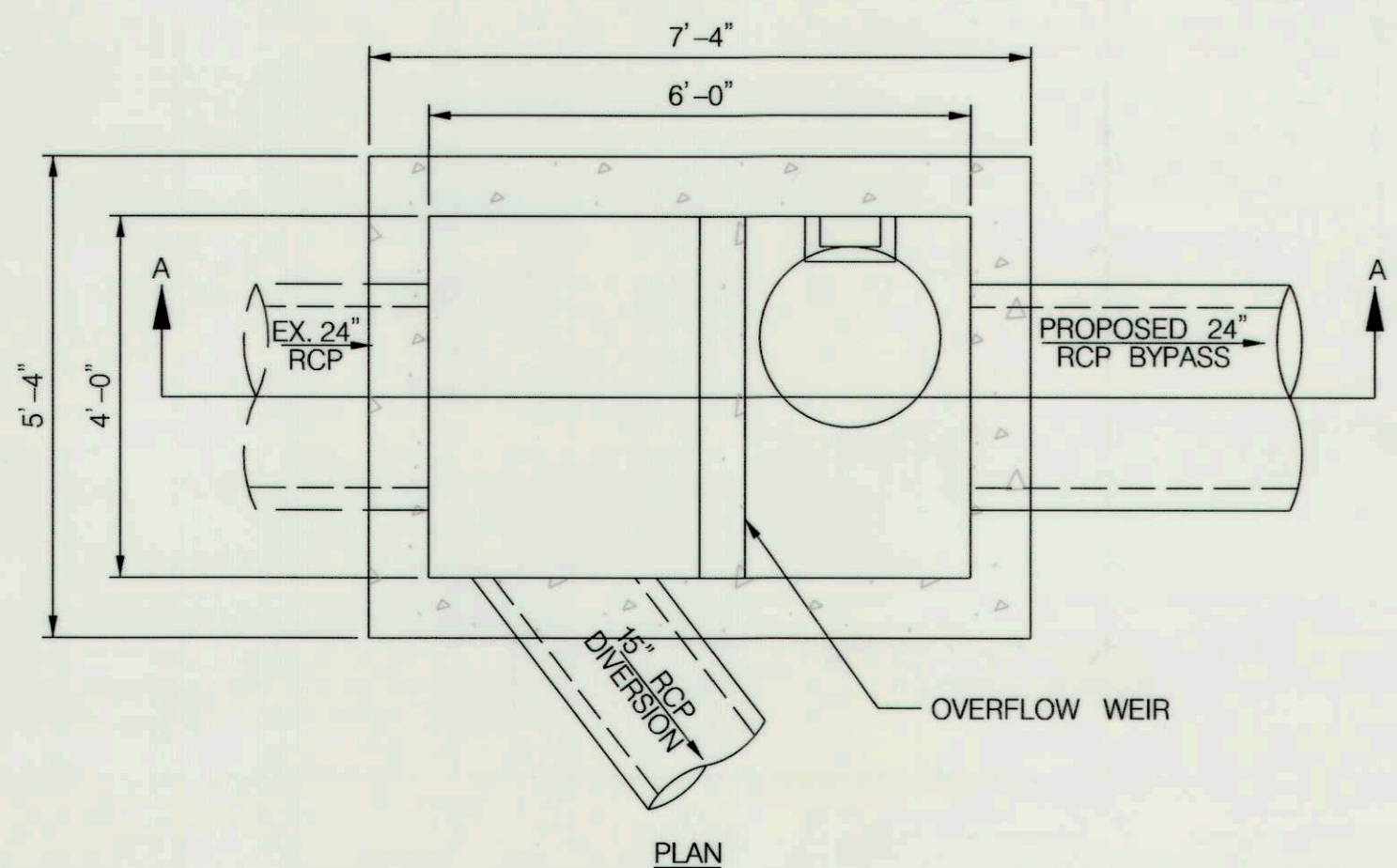
- OBSERVATION WELL NOTES:**
1. ALL PVC TO BE SCHEDULE 40. PERFORATIONS SHALL BE 3/8" DIA. @ 4" OC 90° ALL AROUND PIPE.
 2. INSTALL REMOVABLE WATER TIGHT PVC CAP ON TOP OF 6" PVC.
 3. BOTTOM EXCAVATION IS TO BE IN NATURAL UNCOMPACTED EARTH.
 4. THREE HOLES SHOULD BE DRILLED INTO THE BOTTOM PLATE TO ALLOW WATER TO DRAIN FROM THE OBSERVATION WELL.
 5. REFER TO BMP PROFILE FOR SPECIFIC STONE AND PLANTING MEDIA DEPTHS AND ELEVATIONS.
 6. PVC PIPE SHALL BE ATTACHED TO THE FLANGE WITH SOLVENT CEMENT PER THE MANUFACTURER'S SPECIFICATIONS.



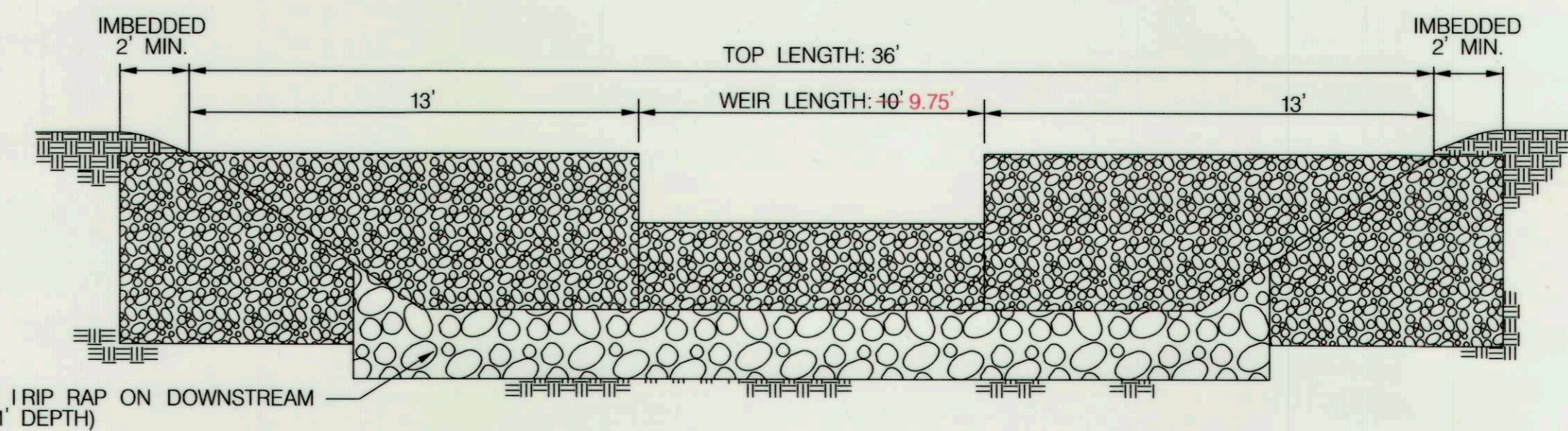
CLEANOUT COVER ASSEMBLY DETAIL (NON-TRAFFIC AREAS)
NOT TO SCALE



STANDARD CLEANOUT DETAIL (NON-TRAFFIC AREAS)
NOT TO SCALE

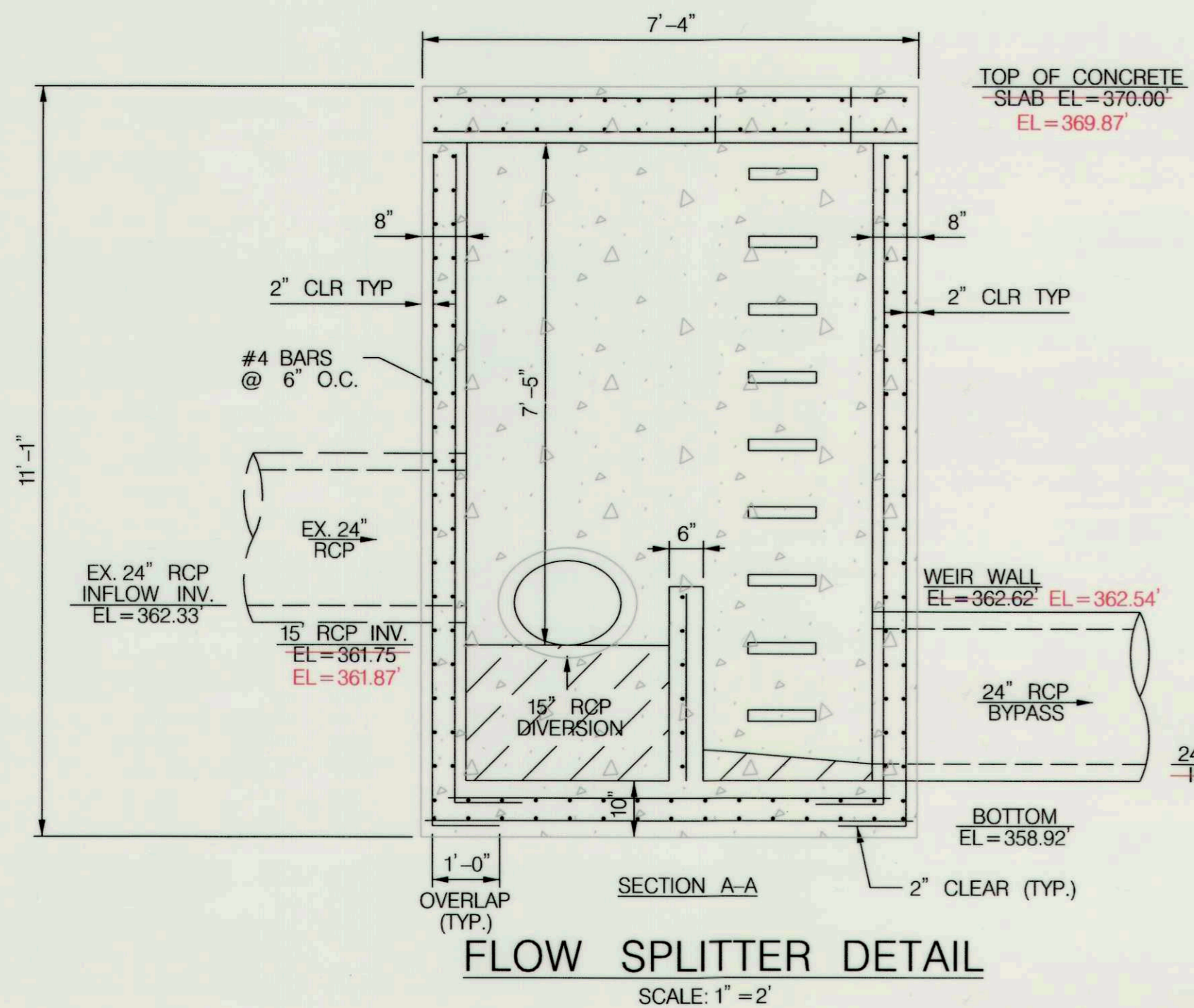


PLAN

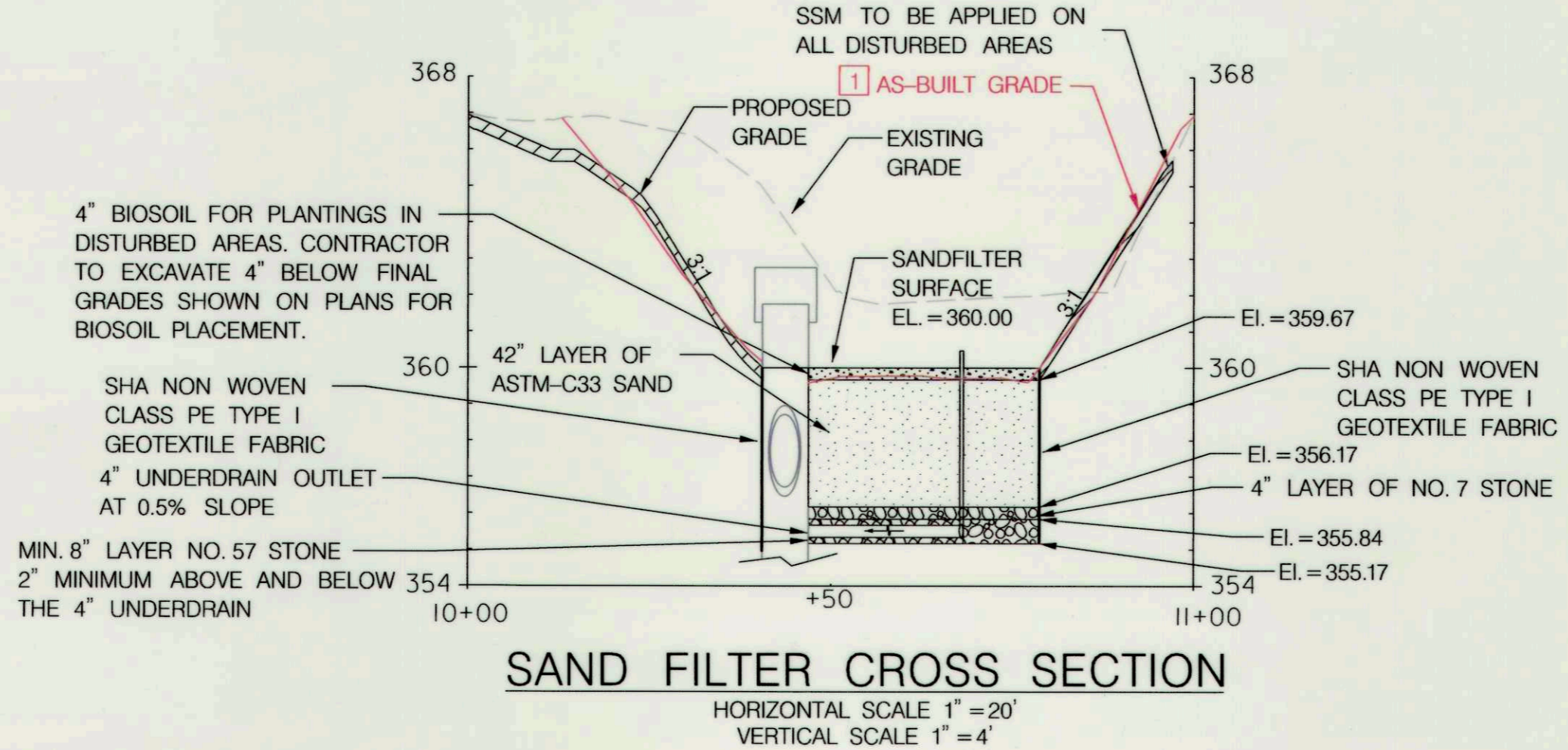


GABION BASKET WEIR WALL CROSS SECTION

- TOP OF STRUCTURE: ELEV. 363.50' 363.15'
- CREST: ELEV. 362.50' 362.15'
- BOTTOM OF SAND FILTER AND FOREBAY: ELEV. 360.00'
- BOTTOM OF GABION STRUCTURE: ELEV. 359.00'



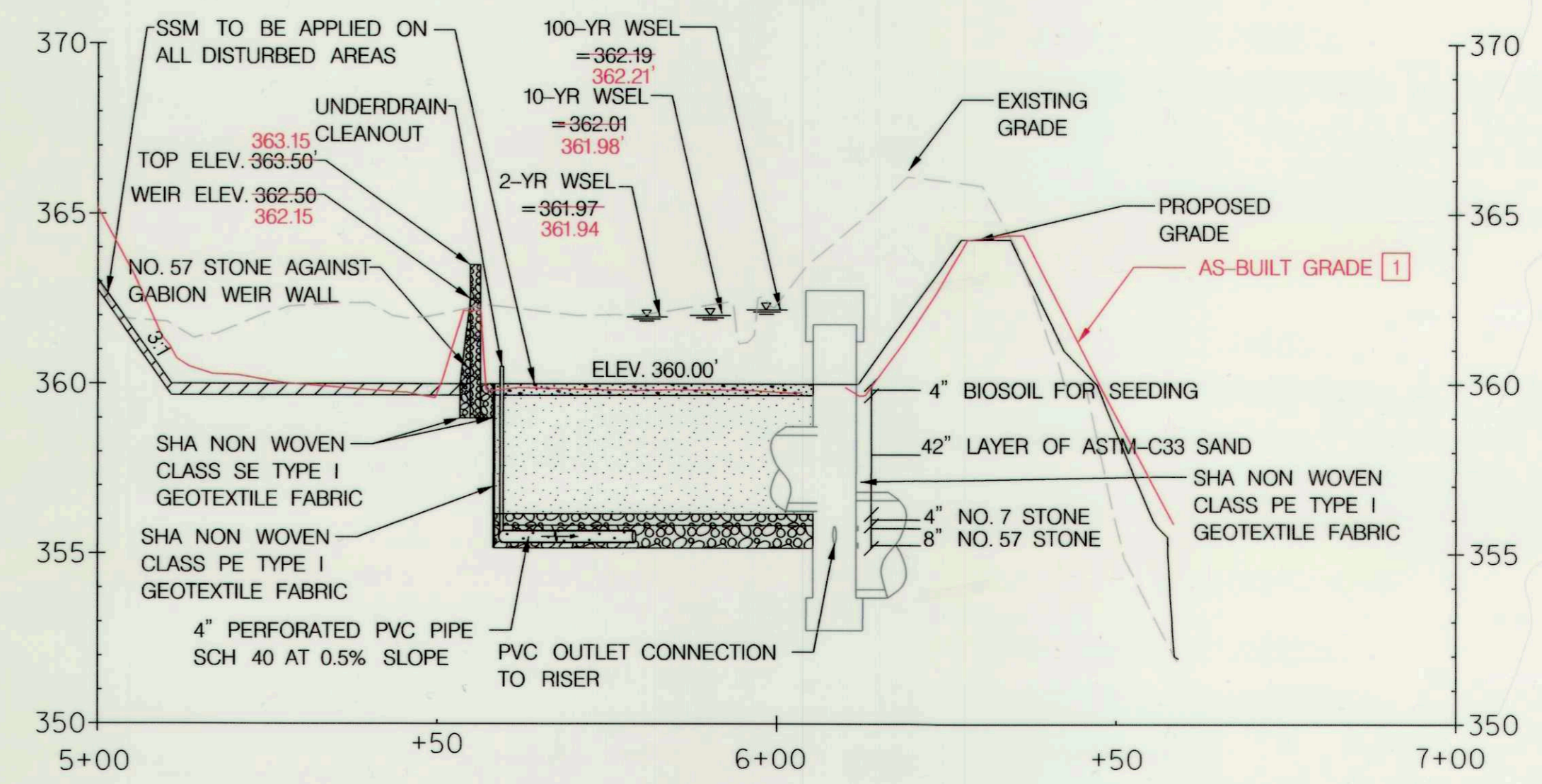
FLOW SPLITTER DETAIL
SCALE: 1" = 2'



SAND FILTER CROSS SECTION
HORIZONTAL SCALE 1" = 20'
VERTICAL SCALE 1" = 4'

SAND FILTER CONSTRUCTION NOTES:

1. PERFORATED PVC PIPE SHALL FOLLOW THE SPECIFICATIONS BELOW:
SLOT WIDTH: 1/8" (3mm)
TOTAL COMBINED SLOT LENGTH: MAX 2" (50mm)
DISTANCE BETWEEN SLOTS: MIN 1" (25mm) C/C
PERFORATED PIPE SHALL CONFORM TO AASHTO M 304
2. UNDERDRAIN OUTLET AND CLEANOUTS SHALL CONSIST OF 4" DIAMETER PVC SCH. 40 PIPE. OUTLET TO MAINTAIN MINIMUM 0.5% SLOPE TOWARDS RISER.
3. ALL SLOPES TO BE COVERED WITH SOIL STABILIZATION MATTING BEFORE INSTALLATION OF SAND FILTER MEDIA.
4. FACILITY SHALL NOT BE PLACED IN SERVICE UNTIL ALL OF THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED. HEAVY EQUIPMENT AND TRAFFIC SHALL BE RESTRICTED FROM THE PROPOSED SAND FILTER AREA TO MINIMIZE DISTURBANCE TO FILTER MEDIA.



GABION BASKET WEIR AND SAND FILTER PROFILE
HORIZONTAL SCALE 1" = 20'
VERTICAL SCALE 1" = 4'

GABION BASKET WEIR CONSTRUCTION NOTES:

1. USE BASKETS MADE OF 11 GAUGE WIRE OR EQUIVALENT.
2. TYPICAL GABION BASKET DIMENSIONS 6FT X 3FT X 3FT.
3. FILL GABION BASKETS WITH CLEAN 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE WITHOUT REBAR OR WIRE MESH.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Mark C. Lewis
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

DATE: 8/26/16

McCORMICK TAYLOR
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(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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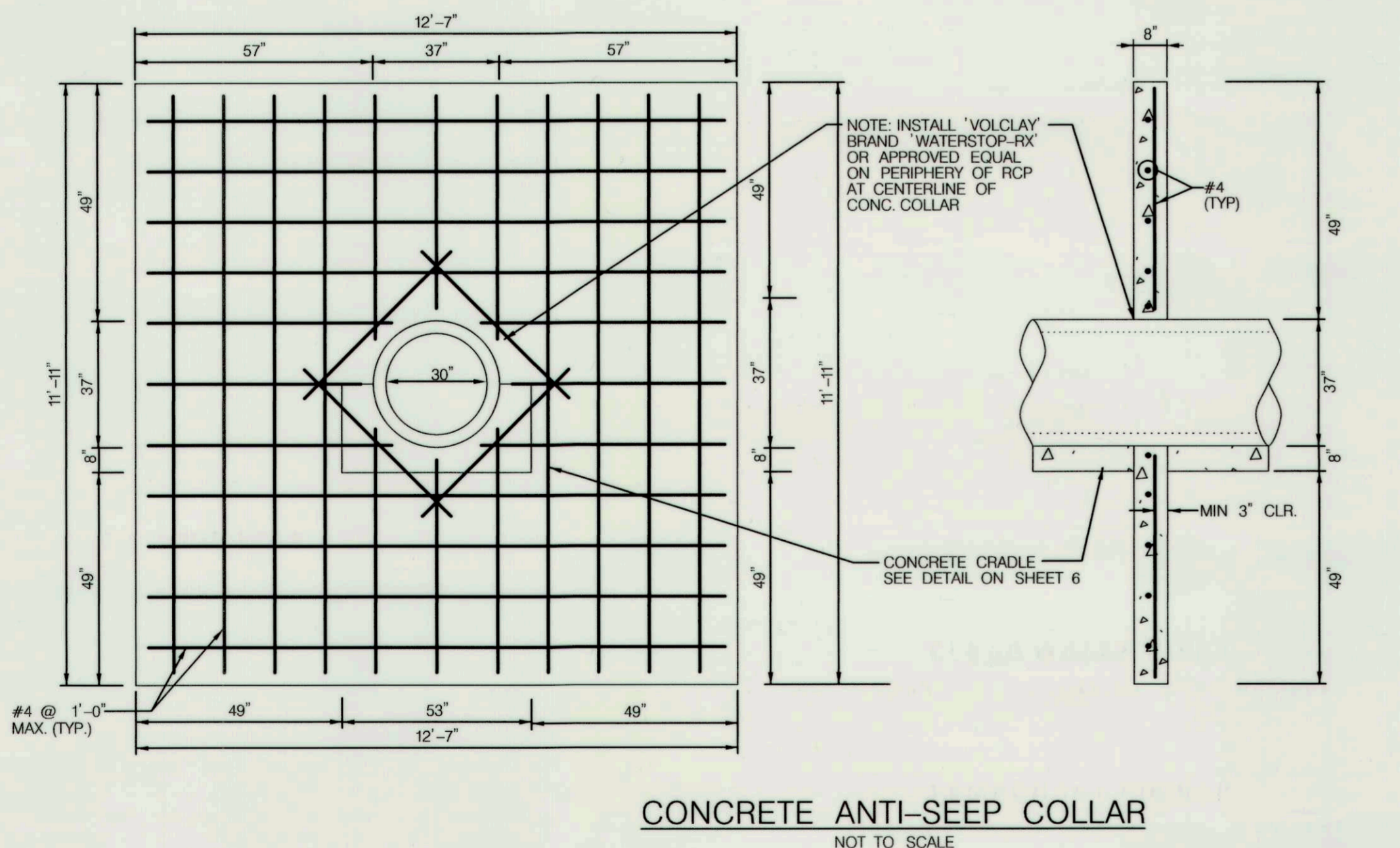
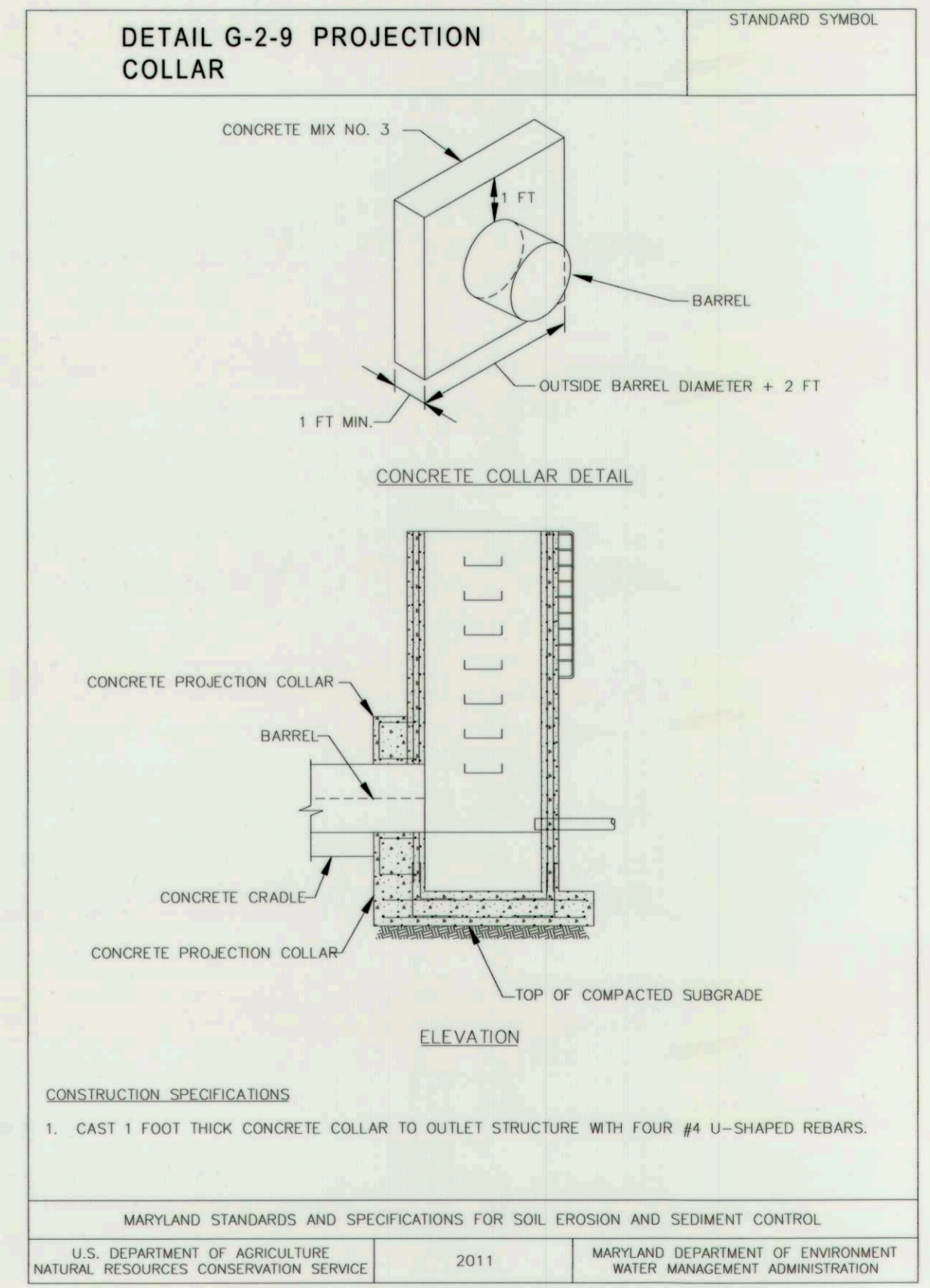
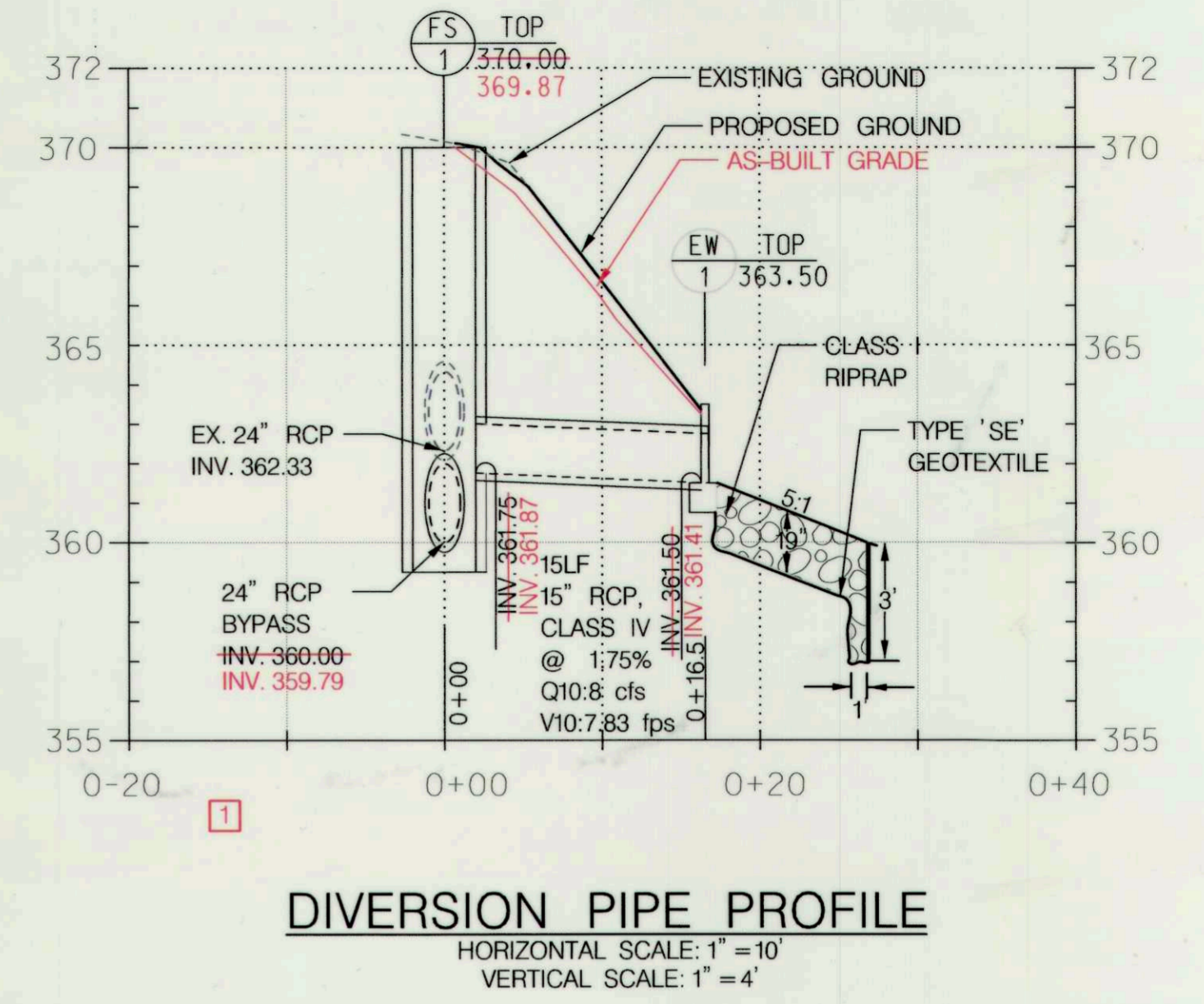
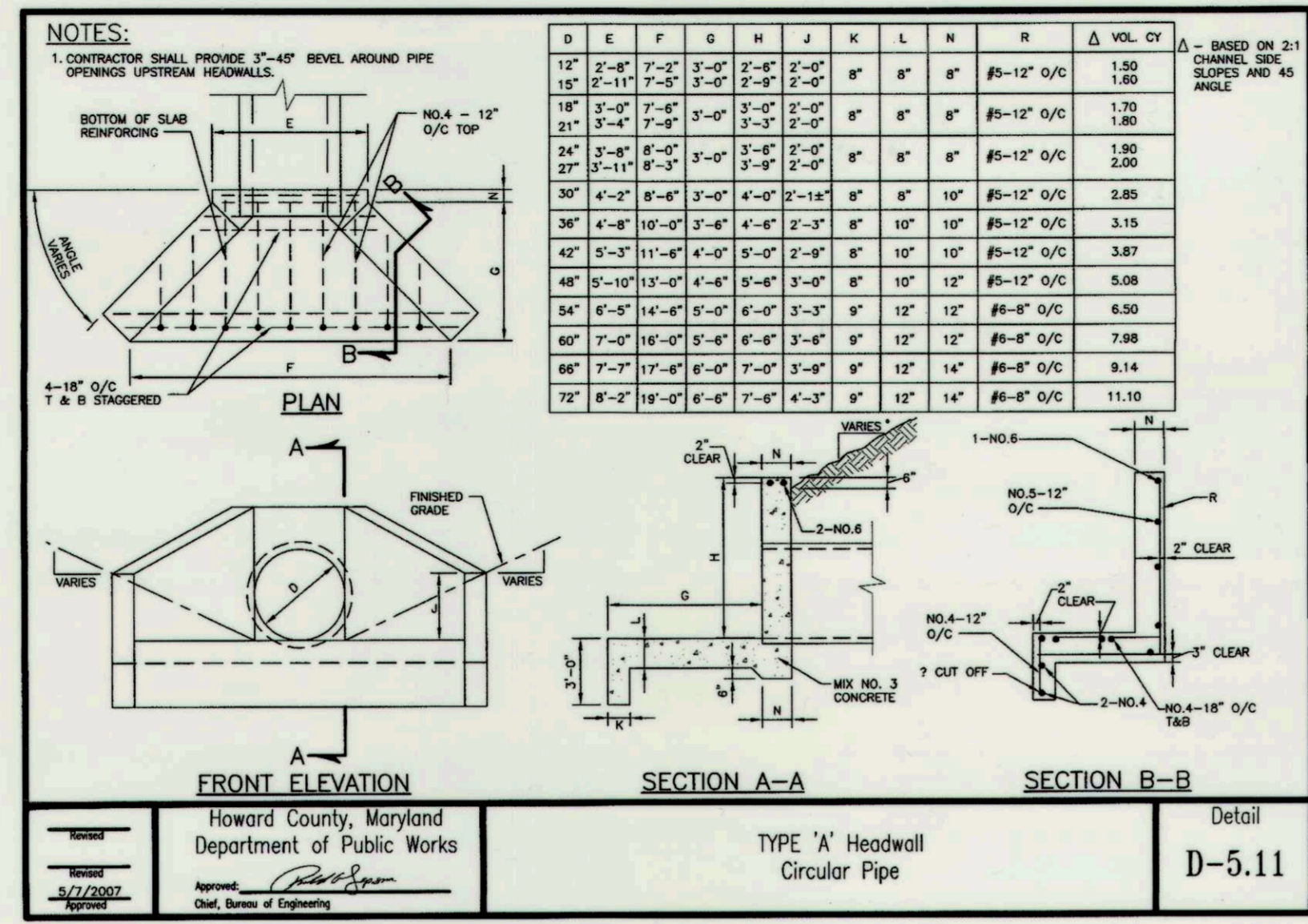
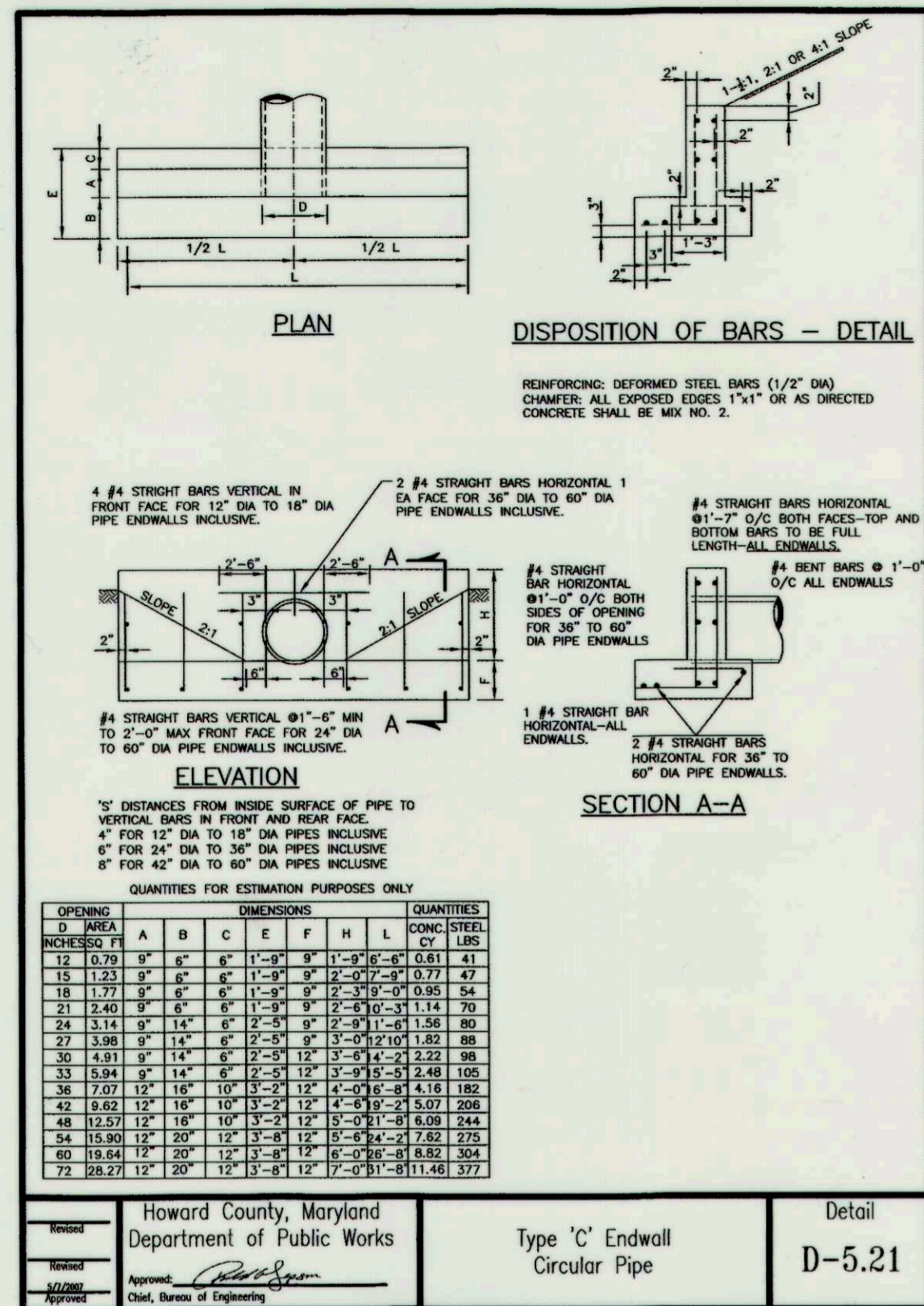


DES: LN/AM	ADM	1	AS-BUILT SURVEY	7-26-17
DRN: MR				
CHK: AH				
DATE: 8/19/16	BY	NO.	REVISION	DATE

VELVET PATH POND PRINCIPAL SPILLWAY REPLACEMENT AND CHANNEL STABILIZATION PROJECT
CAPITAL PROJECT #D-1159
HOWARD COUNTY
HSCD # EP-16-05

BMP DETAIL SHEET

SCALE: AS SHOWN
SHEET: 7 OF 19



- ANTI-SEEP COLLAR CONSTRUCTION NOTES:**
- PROVIDE MINIMUM 3" CLEAR COVER FOR ALL REINFORCEMENT, EXCEPT AS NOTED.
 - USE MIX NO. 6 CEMENT CONCRETE (f'c = 4500 psi) FOR ANTI-SEEP COLLAR AND CONCRETE CRADLE.
 - USE GRADE 60 REINFORCING STEEL BARS THAT MEET THE REQUIREMENTS OF ASTM A615/A615M, A616/A616M, A617/A617M AND A706/A706M. DO NOT WELD REINFORCING STEEL BARS UNLESS SPECIFIED.
 - BARREL JOINTS SHALL BE LOCATED A MINIMUM OF 2' FROM THE CONCRETE ANTI-SEEP COLLAR.
 - ANTI-SEEP COLLAR SHALL BE PAID FOR AT THE CONTRACT UNIT PRICE PER CUBIC YARDS OF MIX NO. 6 CONCRETE FOR MISCELLANEOUS STRUCTURES. PAYMENT WILL BE FULL COMPENSATION FOR ALL MIX NO. 6 CONCRETE, WELDED WIRE FABRIC, REINFORCEMENT, EXCAVATION, LABOR, EQUIPMENT, TOOLS, AND INCIDENTALS REQUIRED TO SATISFACTORILY COMPLETE THE WORK.

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF ENVIRONMENTAL SERVICES	 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	 AMY HINKLEY PROFESSIONAL ENGINEER No. 32013	DES: LN/AM	ADM	AS-BUILT SURVEY	7-26-17	VELVET PATH POND PRINCIPAL SPILLWAY REPLACEMENT AND CHANNEL STABILIZATION PROJECT CAPITAL PROJECT #D-1159 HOWARD COUNTY HSCD # EP-16-05 STORMWATER MANAGEMENT DETAILS	SCALE AS SHOWN
				DRN: MR	CHIK: AH	DATE: 8/19/16	BY		NO.

TIME RESTRICTION NOTES:

- PUMPING IS NOT PERMITTED BETWEEN THE HOURS OF 7:00 PM AND 7:00 AM, MONDAY THROUGH FRIDAY.
- CONSTRUCTION EQUIPMENT SHALL NOT BE STARTED NOR RUN BETWEEN THE HOURS OF 7:00 PM AND 7:00AM, MONDAY THROUGH FRIDAY.
- FOR SATURDAY WORK, THE ABOVE HOURS SHALL BE 5:00 PM AND 9:00 AM, RESPECTIVELY.
- 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 OR GRADED AREAS ON THE PROJECT SITES NOT UNDER ACTIVE GRADING.

STABILIZED CONSTRUCTION ENTRANCE (SCE)

STATION	QTY (TON)	REMARKS
0+00.00	35	SCE

DIVERSION FENCE

FROM	TO	QTY (LF)	REMARKS
STA. 0+09.17, 14' LT	STA. 1+78.80, 82' LT	171	DF-1

SILT FENCE

FROM	TO	QTY (LF)	REMARKS
STA. 0+00.00, 29' RT	STA. 0+26.90, 10' RT	94	SF-1

MULCH ACCESS ROAD

FROM	TO	QTY (SY)	REMARKS
STA. 0+36.24, 11' LT	STA. 1+57.57, 56' LT	169	

SAND BAGS

FROM	TO	QTY (LF)	REMARKS
STA. 1+22.49, 44' LT	STA. 1+23.20, 48' LT	11	SB-1
STA. 7+30.92, 9' LT	STA. 7+32.75, 8' RT	17	SB-2
STA. 1+79.68, 79' LT	STA. 1+79.44, 85' RT	13	SB-3

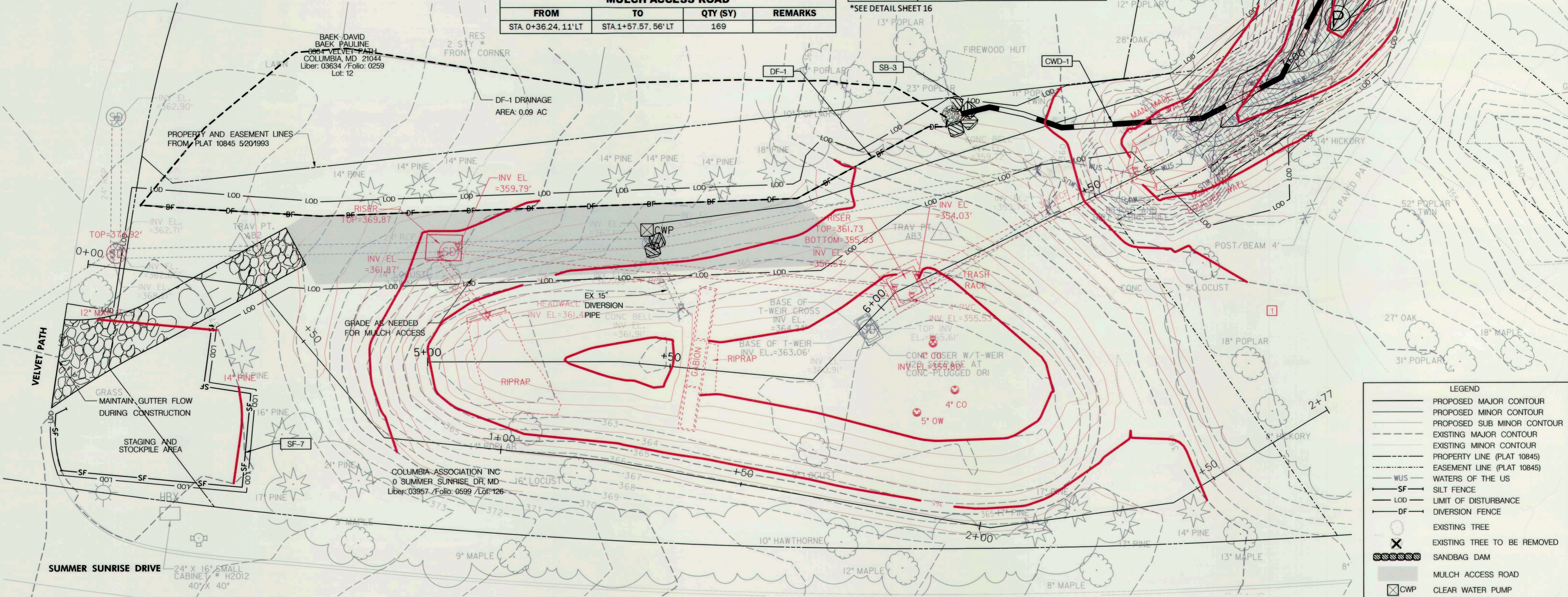
TOPSOIL - 4" DEPTH

QTY (SY)	REMARKS
39	ON ALL GRADED AREAS OUTSIDE SAND FILTER

NATURAL FIBER MATTING

QTY (SY)	REMARKS
51	ON ALL DISTURBED STREAMBANKS*

*SEE DETAIL SHEET 16



CLEAR WATER PUMP

STATION	QTY (EA)	REMARKS
STA. 1+21.98, 49' LT	1	CWP

TEMPORARY RIP RAP

STATION	QTY (SF)	REMARKS
STA. 1+74.51, 85' LT	9	CLASS I
STA. 7+35.60, 5' LT	9	CLASS I

FILTER BAG

STATION	QTY (EA)	REMARKS
STA. 7+36.92, 7' RT	1	FB-1

DEWATERING PUMP

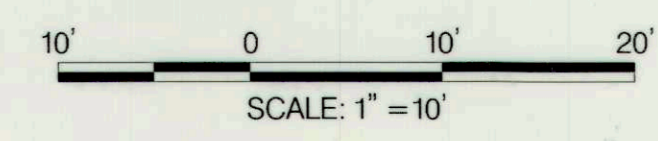
STATION	QTY (EA)	REMARKS
STA. 7+13.04, 1' LT	1	P

CLEARWATER DIVERSION PIPE

QTY (LF)	FROM	TO	DIA. (IN)	REMARKS
106	STA 6+32.39, 27' LT	STA 7+34.17, 4' LT	12	CWD-1

LEGEND

- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED SUB MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPERTY LINE (PLAT 10845)
- EASEMENT LINE (PLAT 10845)
- WUS OF THE US
- SILT FENCE
- LIMIT OF DISTURBANCE
- DIVERSION FENCE
- EXISTING TREE
- EXISTING TREE TO BE REMOVED
- SANDBAG DAM
- MULCH ACCESS ROAD
- CWP CLEAR WATER PUMP
- FB DEWATERING FILTER BAG
- P DEWATERING PUMP
- NATURAL FIBER MATTING
- TYPE 'A' SOIL STABILIZATION MATTING
- STABILIZED CONSTRUCTION ENTRANCE
- CLEAR WATER DIVERSION PIPE



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Mark B. L...
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

8/24/16
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: LN/AM	ADM	1	AS-BUILT SURVEY	7-26-17
DRN: MR				
CHK: AH				
DATE: 8/19/16	BY	NO.	REVISION	DATE

VELVET PATH POND PRINCIPAL SPILLWAY REPLACEMENT AND CHANNEL STABILIZATION PROJECT
CAPITAL PROJECT #D-1159
HOWARD COUNTY
HSCD # EP-16-05

EROSION AND SEDIMENT CONTROL PLAN
PHASE 1

SCALE
1" = 10'
SHEET
9 OF 19

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 OR GRADED AREAS ON THE PROJECT SITES NOT UNDER ACTIVE GRADING.

NOTE:
SEE DETAIL E-4 ON SHEET 14 FOR SF-5 CROSSING CWD PIPE

SILT FENCE				
FROM	TO	QTY (LF)	REMARKS	
STA. 1+54.02, 72' LT	STA. 1+58.01, 71' LT	5	SF-2	
STA. 1+75.88, 79' LT	STA. 1+82.32, 76' LT	8	SF-3	
STA. 1+87.24, 85' LT	STA. 1+22.58, 65' LT	23	SF-4	
STA. 6+78.29, 12' LT	STA. 6+85.86, 12' RT	69	SF-5	
STA. 6+68.91, 23' RT	STA. 6+75.48, 27' RT	13	SF-6	
STA. 2+63.50, 19' LT	STA. 2+60.42, 3' RT	24	SF-7	

CLEARWATER DIVERSION PIPE				
QTY (LF)	FROM	TO	DIA. (IN)	REMARKS
35	STA. 6+42.68, 10' LT	STA. 6+77.82, 3' LT	24	CWD-2

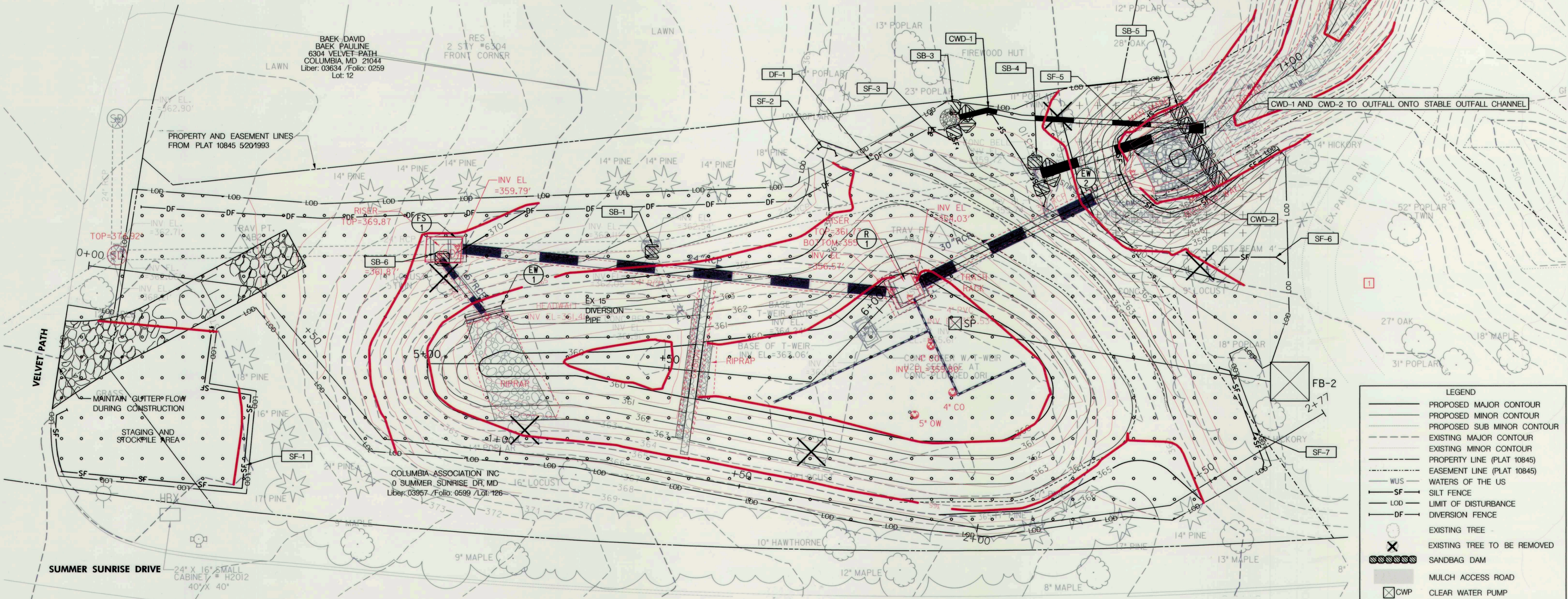
TOPSOIL - 4" DEPTH	
QTY (SY)	REMARKS
812	ON ALL GRADED AREAS OUTSIDE SAND FILTER

NATURAL FIBER MATTING	
QTY (SY)	REMARKS
109	ON ALL DISTURBED STREAMBANKS*

*SEE DETAIL SHEET 16

TYPE 'A' SOIL STABILIZATION	
QTY (SY)	REMARKS
1577	ON ALL DISTURBED EARTH AREAS+

+SEE DETAIL SHEET 14



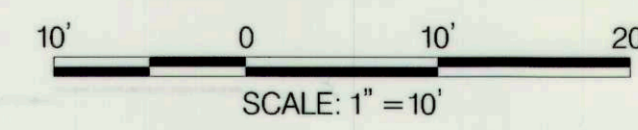
SUMP PIT		
STATION	QTY (EA)	REMARKS
STA. 1+77.13, 34' LT	1	SP

FILTER BAG		
STATION	QTY (EA)	REMARKS
STA. 1+88.14, 41' LT	1	FB-2

SAND BAGS				
FROM	TO	QTY (LF)	REMARKS	
STA. 1+22.37, 44' LT	STA. 1+25.26, 45' LT	3	SB-1	
STA. 2+20.37, 74' LT	STA. 2+21.20, 68' LT	16	SB-4	
STA. 6+73.86, 10' LT	STA. 6+75.19, 10' RT	20	SB-5	
STA. 0+53.96, 32' LT	STA. 0+56.26, 34' LT	4	SB-6	

LEGEND

- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED SUB MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPERTY LINE (PLAT 10845)
- EASEMENT LINE (PLAT 10845)
- WATERS OF THE US
- WUS
- SF SILT FENCE
- LOD LIMIT OF DISTURBANCE
- DF DIVERSION FENCE
- EXISTING TREE
- EXISTING TREE TO BE REMOVED
- SANDBAG DAM
- MULCH ACCESS ROAD
- CWP CLEAR WATER PUMP
- FB DEWATERING FILTER BAG
- P DEWATERING PUMP
- NATURAL FIBER MATTING
- TYPE 'A' SOIL STABILIZATION MATTING
- STABILIZED CONSTRUCTION ENTRANCE
- CLEAR WATER DIVERSION PIPE



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

[Signature]
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

8/29/16
DATE

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Howard County
MARYLAND

Storm Water Management Division
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DES: LN/AM	ADM	AS-BUILT SURVEY	7-26-17
DRN: MR			
CHK: AH			
DATE: 8/19/16	BY	NO.	REVISION

VELVET PATH POND PRINCIPAL SPILLWAY REPLACEMENT AND CHANNEL STABILIZATION PROJECT
CAPITAL PROJECT #D-1159
HOWARD COUNTY
HSCD # EP-16-05

**EROSION AND SEDIMENT CONTROL PLAN
PHASE 2**

SCALE: 1" = 10'
SHEET: 10 OF 19

EROSION AND SEDIMENT CONTROL - GENERAL NOTES

SEQUENCE OF CONSTRUCTION

- A MINIMUM 5-DAY DRY WEATHER FORECAST FROM THE NATIONAL WEATHER SERVICE WEATHER CENTER, AND PERMISSION FROM THE INSPECTOR SHALL BE GRANTED PRIOR TO PROCEEDING WITH ANY WORK. OBTAIN MOE (#201561643) AND GRADING PERMIT.(1 DAY)
 - THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST FIVE (5) DAYS PRIOR TO THE START OF WORK. THE CONTRACTOR SHALL NOTIFY THE HOWARD COUNTY CONSTRUCTION INSPECTION DIVISION (410) 313-1855 A MINIMUM OF 24 HOURS PRIOR TO THE START OF ANY CONSTRUCTION. (1 DAY)
 - STAKEOUT LIMITS OF DISTURBANCE (LOD). ORANGE HIGH VISIBILITY FENCE SHALL BE MANUALLY INSTALLED AROUND THE PERIMETER OF THE LOD. THIS SHALL BE COMPLETED BY AND INSPECTED AT THE PRE-CONSTRUCTION MEETING. (1 DAY)
 - 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, AND THE CONTRACTOR. (1 DAY)
- PHASE 1
- MOBILIZE EQUIPMENT. CONSTRUCT THE FOLLOWING PERIMETER CONTROLS SHOWN ON THE PLANS: STABILIZED CONSTRUCTION ENTRANCE, DF-1, TEMPORARY RIPRAP, AND SF-1 CLEARING ONLY THE AREA NEEDED TO INSTALL THE E&S CONTROLS FOR PHASE 1. (1 DAYS)
 - WITH PERMISSION OF SEDIMENT CONTROL INSPECTOR, INSTALL SANDBAG DAM SB-1 TO BLOCK EXISTING 24" RCP BYPASS AND 15" RCP DIVERSION. INSTALL CLEAR WATER PUMP AND DEWATERING HOSE. DEWATER AS NEEDED. (2 DAYS)
 - DURING A 5 DAY DRY WEATHER FORECAST FROM THE NATIONAL SERVICE WEATHER CENTER, COMMENCE IN-STREAM CONSTRUCTION AND GRADING. STABILIZE ALL DISTURBED AREAS AT THE END OF EACH WORK DAY. DEWATER STORM DRAIN SYSTEM AS NEEDED. COMPLETE CHANNEL GRADING FROM STA 6+73 TO 7+27 AND INSTALL OUTFALL PROTECTION UP TO THE OUTFALL POOL FROM DOWNSTREAM TO UPSTREAM. (5 DAYS)
 - GRADE TO FINAL ELEVATIONS AROUND CHANNEL. INSTALL PERMANENT SEEDING AND SOIL STABILIZATION MATTING TO STABILIZE DISTURBED AREAS. (1 DAY)
- PHASE 2
- WITH PERMISSION OF SEDIMENT CONTROL INSPECTOR, REMOVE PUMPS AND DEWATERING HOSE. INSTALL REMAINING CONTROLS AS SHOWN ON PHASE 2 PLANS: SF-2 THROUGH SF-7, SANDBAG DAMS, TEMPORARY RIPRAP, SUMP PIT, FILTER BAG, AND CLEAR WATER DIVERSION (CWD-1) PIPE. CLEARING ONLY THE AREA NEEDED TO INSTALL THE E&S CONTROLS. UNBLOCK EXISTING 24" RCP BYPASS ONLY (SB-1), DIVERTING FLOW TO CLEAR WATER DIVERSION. REMOVE TREES AS SHOWN ON THE PLAN. (2 DAYS)
 - DURING A 5 DAY DRY WEATHER FORECAST FROM THE NATIONAL WEATHER SERVICE CENTER, REMOVE EXISTING END SECTION AND RISER. EXCAVATE TRENCH FOR PROPOSED SPILLWAY PIPE AND REMOVE EXISTING SPILLWAY PIPE AND 24" RCP BYPASS PIPE. NEW PRINCIPAL SPILLWAY PIPE MUST BE ON-SITE BEFORE EXISTING RISER AND PIPE CAN BE REMOVED. INSTALL TYPE "B" HEADWALL (EW-2), 30" PRINCIPAL SPILLWAY PIPE, R-1, CONCRETE CRADLE, ANTI-SEEP COLLAR, AND CLAY CORE. GRADE AND INSTALL OUTFALL POOL AND IMBRICATED STONE WALLS. DEWATER WORK AREAS AS NEEDED TO FILTER BAG. CWD-1 TO BE ADJUSTED TO FS-1 WHEN EXISTING 24" BYPASS IS REMOVED. (10 DAYS)
 - DURING A 3 DAY DRY WEATHER FORECAST FROM THE NATIONAL WEATHER SERVICE CENTER, INSTALL FS-1 AND PROPOSED 24" BYPASS. REMOVE EXISTING STORM DRAIN PIPES, END SECTION, AND MANHOLE AS NOTED ON PLANS. WHEN FS-1 IS COMPLETE, BLOCK 15" OPENING (SB-4) AND MAINTAIN CLEAR WATER DIVERSION THROUGH FLOW SPLITTER AND NEW 24" BYPASS. (3 DAYS)
 - INSTALL REMAINING CLAY CORE, GRADE, AND STABILIZE EMBANKMENT. (3 DAYS)
 - INSTALL GABION WEIR, TYPE 'C' HEADWALL (EW-1), 15" DIVERSION PIPE, AND CLASS I RIPRAP. GRADE SAND FILTER AS SHOWN ON THE PLANS. INSTALL SAND FILTER MEDIA WHEN CONTRIBUTING AREAS HAVE BEEN STABILIZED. DEWATER TO THE FILTER BAG AS NECESSARY. (5 DAYS)
 - INSTALL LANDSCAPING PER PLAN. (1 DAY)
 - WHEN AREAS ARE FULLY STABILIZED AND WITH PERMISSION FROM THE INSPECTOR, REMOVE THE REMAINING SEDIMENT CONTROL DEVICES. UNBLOCK 15" DIVERSION PIPE TO PUT SAND FILTER INTO PERMANENT SERVICE. REMOVE STABILIZED CONSTRUCTION ENTRANCE. STABILIZE ANY REMAINING DISTURBED AREAS WITH SEED AND SOIL STABILIZATION MATTING. DEMOBILIZE EQUIPMENT. (2 DAYS)

HOWARD CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

- 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. A MINIMUM OF 48 HOUR NOTICE TO CID MUST BE GIVEN AT THE FOLLOWING STAGES:
 - PRIOR TO THE START OF EARTH DISTURBANCE.
 - UPON COMPLETION OF THE INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER DISTURBANCE OR GRADING.
 - PRIOR TO THE START OF ANOTHER PHASE OF CONSTRUCTION OR OPENING OF ANOTHER GRADING UNIT.
 - PRIOR TO THE REMOVAL OR MODIFICATION OF SEDIMENT CONTROL PRACTICES.
- OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE. OTHER RELATED STATE AND FEDERAL PERMITS SHALL BE REFERENCED, TO ENSURE COORDINATION AND TO AVOID CONFLICTS WITH THIS PLAN.
- ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATION FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.
- 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, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1. B) 7 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATION FOR SOIL EROSION AND SEDIMENT CONTROL FOR TOPSOIL (SEC. B-4-2), PERMANENT SEEDING (SEC. B-4-5), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-3). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES IF THE GROUND IS FROZEN. INCREMENTAL STABILIZATION (SEC. B-4-1) SPECIFICATIONS SHALL BE ENFORCED IN AREAS WITH >15% OF CUT AND/OR FILL. STOCKPILES (SEC. B-4-8) IN EXCESS OF 20' MUST BE BENCHED WITH STABLE OUTLET. ALL CONCENTRATED FLOW, STEEP SLOPE, AND HIGHLY ERODIBLE AREAS SHALL RECEIVE SOILS STABILIZATION MATTING (SEC. B-4-6).
- 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.
- SITE ANALYSIS:

TOTAL AREA OF SITE	0.40 ACRES
AREA DISTURBED	0.40 ACRES
AREA TO BE ROOFED OR PAVED	0.00 ACRES
AREA TO BE VEGETATIVELY STABILIZED	0.38 ACRES
TOTAL CUT	424 CY
TOTAL FILL	70 CY
OFFSITE WASTE/BORROW AREA LOCATION	SEE NOTE #17

HOWARD CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

- ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, THE SITE AND ALL CONTROLS SHALL BE INSPECTED BY THE CONTRACTOR WEEKLY; AND THE NEXT DAY AFTER EACH RAIN EVENT. A WRITTEN REPORT BY THE CONTRACTOR, MADE AVAILABLE UPON REQUEST IS PART OF EVERY INSPECTION AND SHALL INCLUDE ITEMS LISTED AT HOWARDCD.ORG.
- 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, WHICHEVER IS SHORTER.
- ANY MAJOR CHANGES OR REVISIONS TO THE SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE HSCD PRIOR TO PROCEEDING WITH CONSTRUCTION. MINOR REVISIONS MAY BE ALLOWED BY THE CID PER THE LIST OF HSCD-APPROVED FIELD CHANGES.
- DISTURBANCE SHALL NOT OCCUR OUTSIDE THE L.O.D. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 20 AC. PER GRADING UNIT) AT A TIME; WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE CID. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE CID, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.
- WASH WATER FROM ANY EQUIPMENT, VEHICLES, WHEELS, PAVEMENT, AND OTHER SOURCES MUST BE TREATED IN A SEDIMENT BASIN OR OTHER APPROVED WASHOUT STRUCTURE.
- TOPSOIL SHALL BE STOCKPILED AND PRESERVED ON-SITE FOR REDISTRIBUTION ONTO FINAL GRADE.
- ALL SILT FENCE AND SUPER SILT FENCE SHALL BE PLACED ON THE-CONTOUR, AND BE IMBRICATED AT 25 MINIMUM INTERVALS, WITH LOWER ENDS CURLED UPHILL BY 2" IN ELEVATION.
- STREAM CHANNELS MUST NOT BE DISTURBED DURING THE FOLLOWING RESTRICTED TIME PERIODS (INCLUSIVE): USE I AND IP MARCH 1 - JUNE 15 USE III AND IIIP OCTOBER 1 - APRIL 30 USE IV MARCH 1 - MAY 31
- 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.
- OFFSITE WASTE / BORROW SITE SHALL HAVE AN APPROVED SEDIMENT CONTROL PLAN AND PERMIT.

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

- SOIL PREPARATION
 - TEMPORARY STABILIZATION
 - SEEDBED PREPARATION CONSISTS OF LOOSENING SOIL TO A DEPTH OF 3 TO 5 INCHES BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT, SUCH AS DISC HARROWS OR CHISEL PLOWS OR RIPPER MOUNTED ON CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSENEED, IT MUST NOT BE ROLLED OR DRAGGED SMOOTH BUT LEFT IN THE ROUGHENED CONDITION. SLOPES 3:1 OR FLATTER ARE TO BE TRACKED WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE.
 - APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS.
 - INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.
 - PERMANENT STABILIZATION
 - A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:
 - SOIL PH BETWEEN 6.0 AND 7.0.
 - SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM).
 - SOIL CONTAINS LESS THAN 40 PERCENT CLAY BUT ENOUGH FINE GRAINED MATERIAL (GREATER THAN 30 PERCENT SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE. AN EXCEPTION: IF LOVEGRASS WILL BE PLANTED, THEN A SANDY OR SANDY SILT (PLUS CLAY) WOULD BE ACCEPTABLE.
 - SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT.
 - SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.
 - APPLICATION OF AMENDMENTS OR TOPSOIL IS REQUIRED IF ON-SITE SOILS DO NOT MEET THE ABOVE CONDITIONS.
 - GRADED AREAS MUST BE MAINTAINED IN A TRUE AND EVEN GRADE AS SPECIFIED ON THE APPROVED PLAN, THEN SCARIFIED OR OTHERWISE LOOSENEED TO A DEPTH OF 3 TO 5 INCHES.
 - APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST.
 - MIX SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. RAKE LAWN AREAS TO SMOOTH THE SURFACE. REMOVE LARGE OBJECTS LIKE STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. LOOSEN SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT TO ROUGHEN THE SURFACE WHERE SITE CONDITIONS WILL NOT PERMIT NORMAL SEEDBED PREPARATION. TRACK SLOPES 3:1 OR FLATTER WITH TRACKED EQUIPMENT LEAVING THE SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. LEAVE THE TOP 1 TO 3 INCHES OF SOIL LOOSE AND FRIABLE. SEEDBED LOOSENING MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.
- TOPSOILING
 - TOPSOIL IS PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION. THE PURPOSE IS TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOIL OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.
 - TOPSOIL SALVAGED FROM AN EXISTING SITE MAY BE USED PROVIDED IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-NRCS.
 - TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:
 - THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
 - 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.
 - THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
 - THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIME/STONE IS NOT FEASIBLE.
 - AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN.
 - TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:
 - TOPSOIL MUST BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, OR LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. TOPSOIL MUST NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND MUST CONTAIN LESS THAN 5 PERCENT BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1 INCH IN DIAMETER.
 - TOPSOIL MUST BE FREE OF NOXIOUS PLANTS OR PLANT PARTS SUCH AS BERBERIS GRASS, QUACK GRASS, JOHNSON GRASS, NUT SEDGE, POISON Ivy, THELLE, OR OTHERS AS SPECIFIED.
 - TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL.
 - TOPSOIL APPLICATION
 - EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING TOPSOIL.
 - UNIFORMLY DISTRIBUTE TOPSOIL IN A 5 TO 8 INCH LAYER AND LIGHTLY COMPACT TO A MINIMUM THICKNESS OF 4 INCHES. SPREADING IS TO BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS MUST BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.
 - TOPSOIL MUST NOT BE PLACED IF THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.
- SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)
 - SOIL TESTS MUST BE PERFORMED TO DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER ON SITES HAVING DISTURBED AREAS OF 5 ACRES OR MORE. SOIL ANALYSIS MAY BE PERFORMED BY A RECOGNIZED PRIVATE OR COMMERCIAL LABORATORY. SOIL SAMPLES TAKEN FOR ENGINEERING PURPOSES MAY ALSO BE USED FOR CHEMICAL ANALYSES.
 - FERTILIZERS MUST BE UNIFORM IN COMPOSITION, FREE FLOWING AND SUITABLE FOR ACCURATE APPLICATION BY APPROPRIATE EQUIPMENT. MANURE MAY BE SUBSTITUTED FOR FERTILIZER WITH PRIOR APPROVAL FROM THE APPROPRIATE APPROVAL AUTHORITY. FERTILIZERS MUST ALL BE DELIVERED TO THE SITE FULLY LABELED ACCORDING TO THE APPLICABLE LAWS AND MUST BEAR THE NAME, TRADE NAME OR TRADEMARK AND WARRANTY OF THE PRODUCER.
 - LIME MATERIALS MUST BE GROUND LIME/STONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHEN HYDROSEEDING) WHICH CONTAINS AT LEAST 50 PERCENT TITAN DIOXIDE (CALCIUM OXIDE PLUS MAGNESIUM OXIDE). LIME/STONE MUST BE GROUND TO SUCH FINENESS THAT AT LEAST 50 PERCENT WILL PASS THROUGH A #100 MESH SIEVE AND 98 TO 100 PERCENT WILL PASS THROUGH A #20 MESH SIEVE.
 - 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.
 - WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, SPREAD GROUND LIME/STONE 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

- SEEDING
 - SPECIFICATIONS
 - ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED USED MUST HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON ANY PROJECT. REFER TO TABLE B.4 REGARDING THE QUALITY OF SEED. SEED TAGS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY TYPE OF SEED AND SEEDING RATE.
 - MULCH ALONE MAY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES ONLY IF THE GROUND IS FROZEN. THE APPROPRIATE SEEDING MIXTURE MUST BE APPLIED WHEN THE GROUND THAWS.
 - INOCULANTS: THE INOCULANT FOR TREATING LEGUME SEED IN THE SEED MIXTURES MUST BE A PURE CULTURE OF NITROGEN FIXING BACTERIA PREPARED SPECIFICALLY FOR THE SPECIES. INOCULANTS MUST NOT BE USED LATER THAN THE DATE INDICATED ON THE CONTAINER. ADD FRESH INOCULANTS AS DIRECTED ON THE PACKAGE. USE FOUR TIMES THE RECOMMENDED RATE WHEN HYDROSEEDING. NOTE: IT IS VERY IMPORTANT TO KEEP INOCULANT AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75 TO 90 DEGREES FAHRENHEIT CAN WEAKEN BACTERIA AND MAKE THE INOCULANT LESS EFFECTIVE.
 - SOD OR SEED MUST NOT BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WOOD CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.
 - APPLICATION
 - DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS.
 - INCORPORATE SEED INTO THE SUBSOIL AT THE RATES PRESCRIBED ON TEMPORARY SEEDING TABLE B.1, PERMANENT SEEDING TABLE B.3, OR SITE-SPECIFIC SEEDING SUMMARIES.
 - APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION. ROLL THE SEEDING AREA WITH A WEIGHTED ROLLER TO PROVIDE GOOD SEED TO SOIL CONTACT.
 - DRILL OR CULTIPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL.
 - CULTIPACKING SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 1/4 INCH OF SOIL COVERING. SEEDBED MUST BE FIRM AFTER PLANTING.
 - APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION.
 - HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDING SLURRY (INCLUDES SLURRY AND FERTILIZER).
 - IF FERTILIZER IS BEING APPLIED AT THE TIME OF SEEDING, THE APPLICATION RATES SHOULD NOT EXCEED THE FOLLOWING: NITROGEN, 100 POUNDS PER ACRE TOTAL OF SOLUBLE NITROGEN; P2O5 (PHOSPHORUS), 200 POUNDS PER ACRE;
 - LIME WHEN HYDROSEEDING.
 - LIME: USE ONLY GROUND AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE MAY BE APPLIED BY HYDROSEEDING). NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME WHEN HYDROSEEDING.
 - MIX SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION.
 - WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.
- MULCHING
 - MULCH MATERIALS (IN ORDER OF PREFERENCE)
 - A STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, RYE, OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR. STRAW IS TO BE FREE OF NOXIOUS WEED SEEDS AS SPECIFIED IN THE MARYLAND SEED LAW AND NOT MUSTY, MOULDY, CAKED, DECAYED, OR EXCESSIVELY DUSTY. NOTE: USE ONLY STERILE STRAW MULCH IN AREAS WHERE ONE IS DESIRED.
 - WOOD CELLULOSE FIBER MULCH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE.
 - WCFM IS TO BE DYED GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORMLY SPREAD SLURRY.
 - WCFM, INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS.
 - WCFM MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED, FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL MUST FORM A BLOTTER-LIKE GROUND COVER, ON APPLICATION, ON PROPERTIES AND MUST COVER AND MUST COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS.
 - WCFM MATERIAL MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE PHYTO-TOXIC.
 - WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH OF APPROXIMATELY 1 MILLIMETER; DIAMETER APPROXIMATELY 1 MILLIMETER; PH RANGE OF 4.0 TO 8.5; ASH CONTENT OF 1.5 PERCENT MAXIMUM AND WATER HOLDING CAPACITY OF 90 PERCENT MINIMUM.
 - APPLICATION
 - APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.
 - WHEN STRAW MULCH IS USED, SPREAD IT OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE TO A UNIFORM LOOSE DEPTH OF 1 TO 2 INCHES. APPLY MULCH TO ACHIEVE A UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED. WHEN USING ANCHORING MULCH, APPLY ANCHORING MULCH AT THE RATE OF 2 TO 2.5 TONS PER ACRE.
 - WOOD CELLULOSE FIBER USED AS MULCH MUST BE APPLIED AT A NET DRY WEIGHT OF 1500 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER TO ATTAIN A MIXTURE WITH A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
 - ANCHORING
 - PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS (LISTED BY PREFERENCE), DEPENDING UPON THE SIZE OF THE AREA AND EROSION HAZARD:
 - A MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE A MINIMUM OF 2 INCHES. THIS PRACTICE IS MOST EFFECTIVE ON LARGE AREAS, BUT IS LIMITED TO FLATTER SLOPES WHERE EQUIPMENT CAN OPERATE SAFELY. IF USED ON SLOPING LAND, THIS PRACTICE SHOULD FOLLOW THE CONTOUR.
 - WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER AT A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
 - SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRO-TACK), DCA-70, PETROSEED, TERRA TACK II, TERRA TACK AR OR OTHER APPROVED EQUAL MAY BE USED. FOLLOW APPLICATION RATES AS SPECIFIED BY THE MANUFACTURER. APPLICATION OF LIQUID BINDERS NEEDS TO BE HEAVIER AT THE EDGES WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF BANKS. USE OF ASPHALT BINDERS IS STRICTLY PROHIBITED.
 - 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

NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	HARDINESS ZONE (FROM FIGURE B.3)			FERTILIZER RATE (10-20-20)	LIME RATE
					6B	SEE BELOW	SEE BELOW		
	ANNUAL RYEGRASS	40	MAR. 1 TO MAY 15; AUG. 1 TO OCT 15	0.5			436 LB/AC (10 LB/ 1000 SF)	2 TON/AC (90 LB/ 1000 SF)	
	FOXTAIL MILLET	30	MAY 16 TO JULY 31	0.5					

B-4-5 PERMANENT STABILIZATION

NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	HARDINESS ZONE (FROM FIGURE B.3)			FERTILIZER RATE (10-20-20)			LIME RATE
					6B	1	SEE BELOW	N	P ₂ O ₅	K ₂ O	
1	SWITCH GRASS	10	MAR. 1 TO MAY 15; MAY 16 TO JUNE 15	1/4-1/2 IN.			45 LB/AC (1.0 LB/ 1000 SF)	90 LB/AC (2.0 LB/ 1000 SF)	90 LB/AC (2.0 LB/ 1000 SF)	2 TON/AC (90 LB/ 1000 SF)	
	CREeping RED FESCUE	15	MAR. 1 TO MAY 15; MAY 16 TO JUNE 15	1/4-1/2 IN.			45 LB/AC (1.0 LB/ 1000 SF)	90 LB/AC (2.0 LB/ 1000 SF)	90 LB/AC (2.0 LB/ 1000 SF)	2 TON/AC (90 LB/ 1000 SF)	
	PARTRIDGE PEA	4	MAR. 1 TO MAY 15; MAY 16 TO JUNE 15	1/4-1/2 IN.			45 LB/AC (1.0 LB/ 1000 SF)	90 LB/AC (2.0 LB/ 1000 SF)	90 LB/AC (2.0 LB/ 1000 SF)	2 TON/AC (90 LB/ 1000 SF)	

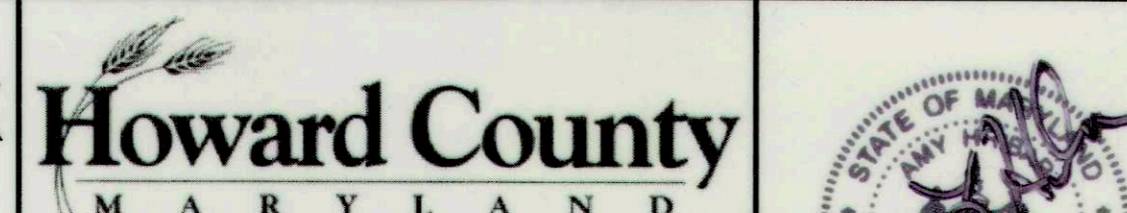
NOTE: MAY 16 TO JUNE 15 ARE ADDITIONAL PLANTING DATES DURING WHICH SUPPLEMENTAL WATERING MAY BE NEEDED TO ENSURE PLANT ESTABLISHMENT

NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	HARDINESS ZONE (FROM FIGURE B.3)			FERTILIZER RATE (10-20-20)			LIME RATE
					6B	SEE BELOW	SEE BELOW	N	P ₂ O ₅	K ₂ O	
6	TALL FESCUE	40	MAR. 1 TO MAY 15; AUG. 1 TO OCT. 15	1/4-1/2 IN.			45 LB/AC (1.0 LB/ 1000 SF)	90 LB/AC (2.0 LB/ 1000 SF)	90 LB/AC (2.0 LB/ 1000 SF)	2 TON/AC (90 LB/ 1000 SF)	
	PERENNIAL RYEGRASS	25	MAR. 1 TO MAY 15; AUG. 1 TO OCT. 15	1/4-1/2 IN.			45 LB/AC (1.0 LB/ 1000 SF)	90 LB/AC (2.0 LB/ 1000 SF)	90 LB/AC (2.0 LB/ 1000 SF)	2 TON/AC (90 LB/ 1000 SF)	
	WHITE CLOVER	5	MAR. 1 TO MAY 15; AUG. 1 TO OCT. 15	1/4-1/2 IN.							

DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND



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6751 Columbia Gateway Drive, Suite 514
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(410) 313-6444

DES: LN/AM

DRN: MR

CHK: AH

DATE: 8/19/16

BY NO. REVISION

VELVET PATH POND PRINCIPAL SPILLWAY REPLACEMENT AND CHANNEL STABILIZATION PROJECT CAPITAL PROJECT #D-1159 HOWARD COUNTY HSCD # EP-16-05

EROSION AND SEDIMENT CONTROL NOTES

SCALE

NOT TO SCALE

SHEET

11 OF 19

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

8/29/16 DATE

SWM POND CONSTRUCTION SPECIFICATIONS

EARTH FILL (CONTINUED)

THE PROPOSED FACILITY IS NOT A MD-378 POND, HOWEVER THESE SPECIFICATIONS ARE APPROPRIATE FOR CONSTRUCTION. ANY DEVIATIONS FROM THESE SPECIFICATIONS MUST BE APPROVED BY THE ENGINEER. ALL REFERENCES TO ASTM AND AASHTO SPECIFICATIONS APPLY TO THE MOST RECENT VERSION.

SITE PREPARATION

AREAS DESIGNATED FOR BORROW AREAS, EMBANKMENT, AND STRUCTURAL WORKS SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL. ALL TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED. CHANNEL BANKS AND SHARP BREAKS SHALL BE SLOPED TO NO STEEPER THAN 1:1. ALL TREES SHALL BE CLEARED AND GRUBBED WITHIN 15 FEET OF THE TOE OF THE EMBANKMENT.

AREAS TO BE COVERED BY THE RESERVOIR WILL BE CLEARED OF ALL TREES, BRUSH, LOGS, FENCES, RUBBISH AND OTHER OBJECTIONABLE MATERIAL UNLESS OTHERWISE DESIGNATED ON THE PLANS. TREES, BRUSH, AND STUMPS SHALL BE CUT APPROXIMATELY LEVEL WITH THE GROUND SURFACE. FOR DRY STORMWATER MANAGEMENT PONDS, A MINIMUM OF A 25-FOOT RADIUS AROUND THE INLET STRUCTURE SHALL BE CLEARED.

ALL CLEARED AND GRUBBED MATERIAL SHALL BE DISPOSED OF OUTSIDE AND BELOW THE LIMITS OF THE DAM AND RESERVOIR AS DIRECTED BY THE OWNER OR HIS REPRESENTATIVE. WHEN SPECIFIED, A SUFFICIENT QUANTITY OF TOPSOIL WILL BE STOCKPILED IN A SUITABLE LOCATION FOR USE ON THE EMBANKMENT AND OTHER DESIGNATED AREAS.

EARTH FILL

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 CUTOFF 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 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 TIERED 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).

CUT OFF TRENCH: - THE CUTOFF TRENCH SHALL BE EXCAVATED INTO IMPERVIOUS MATERIAL ALONG OR PARALLEL TO THE CENTERLINE OF THE EMBANKMENT AS SHOWN ON THE PLANS. THE BOTTOM WIDTH OF THE TRENCH SHALL BE COVERED 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 IMPERMEABILITY. IN ADDITION, THE CORE SHALL BE PLACED CONCURRENTLY WITH THE OUTER SHELL OF THE EMBANKMENT.

BACKFILL ADJACENT TO PIPES OR STRUCTURES SHALL BE OF THE TYPE AND QUALITY CONFORMING TO THAT SPECIFIED FOR THE ADJOINING FILL MATERIAL. THE FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED FOUR INCHES IN THICKNESS AND COMPACTED BY HAND TAMPERS OR OTHER MANUALLY DIRECTED COMPACTION EQUIPMENT. THE MATERIAL NEEDS TO FILL COMPLETELY ALL SPACES UNDER AND ADJACENT TO THE PIPE. AT NO TIME DURING THE BACKFILLING OPERATION SHALL DRIVEN EQUIPMENT BE ALLOWED TO OPERATE CLOSER THAN FOUR FEET, MEASURED HORIZONTALLY, TO ANY PART OF A STRUCTURE. UNDER NO CIRCUMSTANCES SHALL EQUIPMENT BE DRIVEN OVER ANY PART OF A CONCRETE STRUCTURE OR PIPE, UNLESS THERE IS A COMPACTED FILL OF 24" OR GREATER OVER THE STRUCTURE OR PIPE.

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

PIPE CONDUITS

ALL PIPES SHALL 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 ON 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 BARREL CONNECTION TO THE RISER SHALL BE WELDED ALL AROUND WHEN THE PIPE AND RISER ARE METAL. ANTI-SEEP COLLARS SHALL BE CONNECTED TO THE PIPE IN SUCH A MANNER AS TO BE COMPLETELY WATERTIGHT. DIMPLE BANDS ARE NOT CONSIDERED TO BE WATERTIGHT.

ALL CONNECTIONS SHALL USE A RUBBER OR NEOPRENE GASKET WHEN JOINING PIPE SECTIONS. THE END OF EACH PIPE SHALL BE RE-ROLLED AN ADEQUATE NUMBER OF CORRUGATIONS TO ACCOMMODATE THE BANDWIDTH.

PIPE CONDUITS (CONTINUED)

THE FOLLOWING TYPE CONNECTIONS ARE ACCEPTABLE FOR PIPES LESS THAN 24 INCHES IN DIAMETER: FLANGES ON BOTH ENDS OF THE PIPE WITH A CIRCULAR 3/8 INCH CLOSED CELL NEOPRENE GASKET, PRE-PUNCHED TO THE FLANGE BOLT CIRCLE, SANDWICHED BETWEEN ADJACENT FLANGES; A 12 INCH WIDE STANDARD LAP TYPE BAND WITH 12 INCH WIDE BY 3/8 INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET; AND A 12 INCH WIDE HUGGER TYPE BAND WITH 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, 2 ON EACH CONNECTING PIPE END. A 24 INCH WIDE BY 3/8 INCH THICK CLOSED CELL CIRCULAR NEOPRENE GASKET WILL BE INSTALLED WITH 12 INCHES ON THE END OF EACH PIPE. FLANGED JOINTS WITH 3/8 INCH CLOSED CELL GASKETS THE FULL WIDTH OF THE FLANGE IS ALSO ACCEPTABLE.

HELICALLY CORRUGATED PIPE SHALL HAVE EITHER CONTINUOUSLY WELDED SEAMS OR HAVE LOCK SEAMS WITH INTERNAL CAULKING OR A NEOPRENE BEAD.

4. BEDDING - THE PIPE SHALL BE FIRMLY AND UNIFORMLY BEDDED THROUGHOUT ITS ENTIRE LENGTH. WHERE ROCK OR SOFT, SPONGY OR OTHER UNSUITABLE 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 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. MATERIAL - 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 CONFORM 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 UNSUITABLE 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.

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

CONCRETE

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

ROCK RIPRAP

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

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

CARE OF WATER DURING CONSTRUCTION

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

STABILIZATION

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

EROSION AND SEDIMENT CONTROL

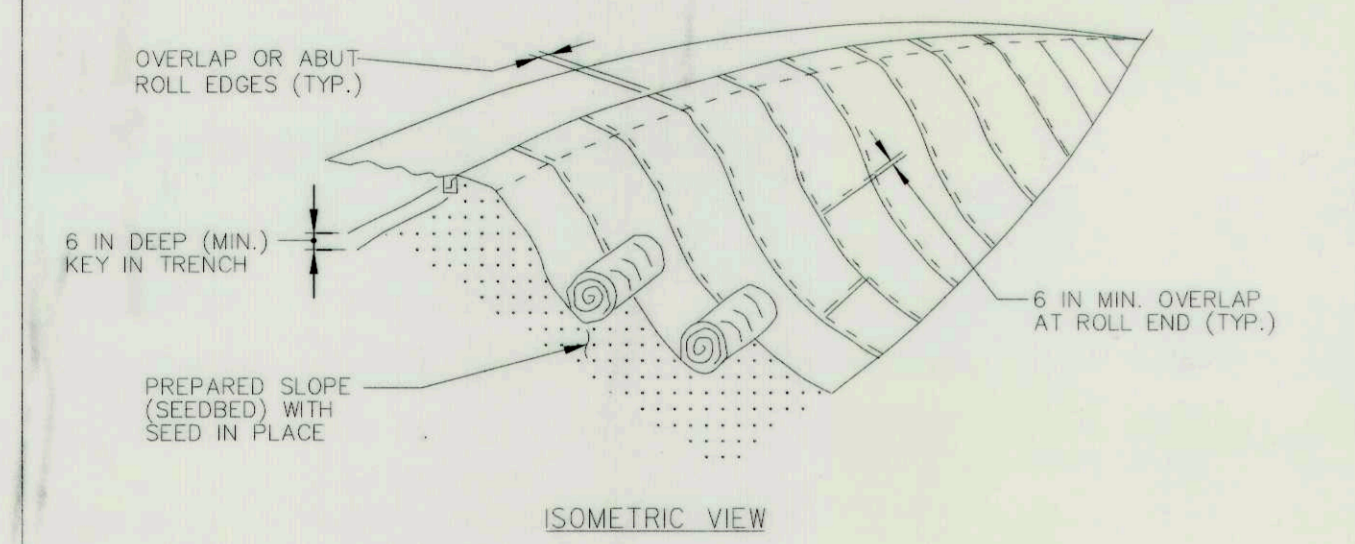
CONSTRUCTION OPERATIONS WILL BE CARRIED OUT IN SUCH A MANNER THAT EROSION WILL BE CONTROLLED AND WATER AND AIR POLLUTION MINIMIZED. STATE AND LOCAL LAWS CONCERNING POLLUTION ABATEMENT WILL BE FOLLOWED. CONSTRUCTION PLANS SHALL DETAIL EROSION AND SEDIMENT CONTROL MEASURES.

SEE EROSION AND SEDIMENT CONTROL SHEETS FOR DETAILED SEQUENCE OF CONSTRUCTION.

<p>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND</p> <p>CHIEF, BUREAU OF ENVIRONMENTAL SERVICES</p>	<p>McCormick Taylor 509 South Exeter Street 4th Floor Baltimore, Maryland 21202 (410) 662-7400</p>	<p>Howard County MARYLAND Storm Water Management Division Bureau of Environmental Services 6751 Columbia Gateway Drive, Suite 514 Columbia, Maryland 21046-3143 (410) 313-6444</p>		<p>DES: LN/AM</p> <p>DRN: MR</p> <p>CHK: AH</p> <p>DATE: 8/19/16</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>BY</td><td>NO.</td><td>REVISION</td><td>DATE</td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table>	BY	NO.	REVISION	DATE																	<p>VELVET PATH POND PRINCIPAL SPILLWAY REPLACEMENT AND CHANNEL STABILIZATION PROJECT CAPITAL PROJECT #D-1159 HOWARD COUNTY HSCD # EP-16-05</p> <p>POND CONSTRUCTION SPECIFICATIONS</p>	<p>SCALE</p> <p>NOT TO SCALE</p> <p>SHEET</p> <p>12 OF 19</p>
BY	NO.	REVISION	DATE																								

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

STANDARD SYMBOL
TSSMS - 2.0 lb/ft²
(* INCLUDE SHEAR STRESS)



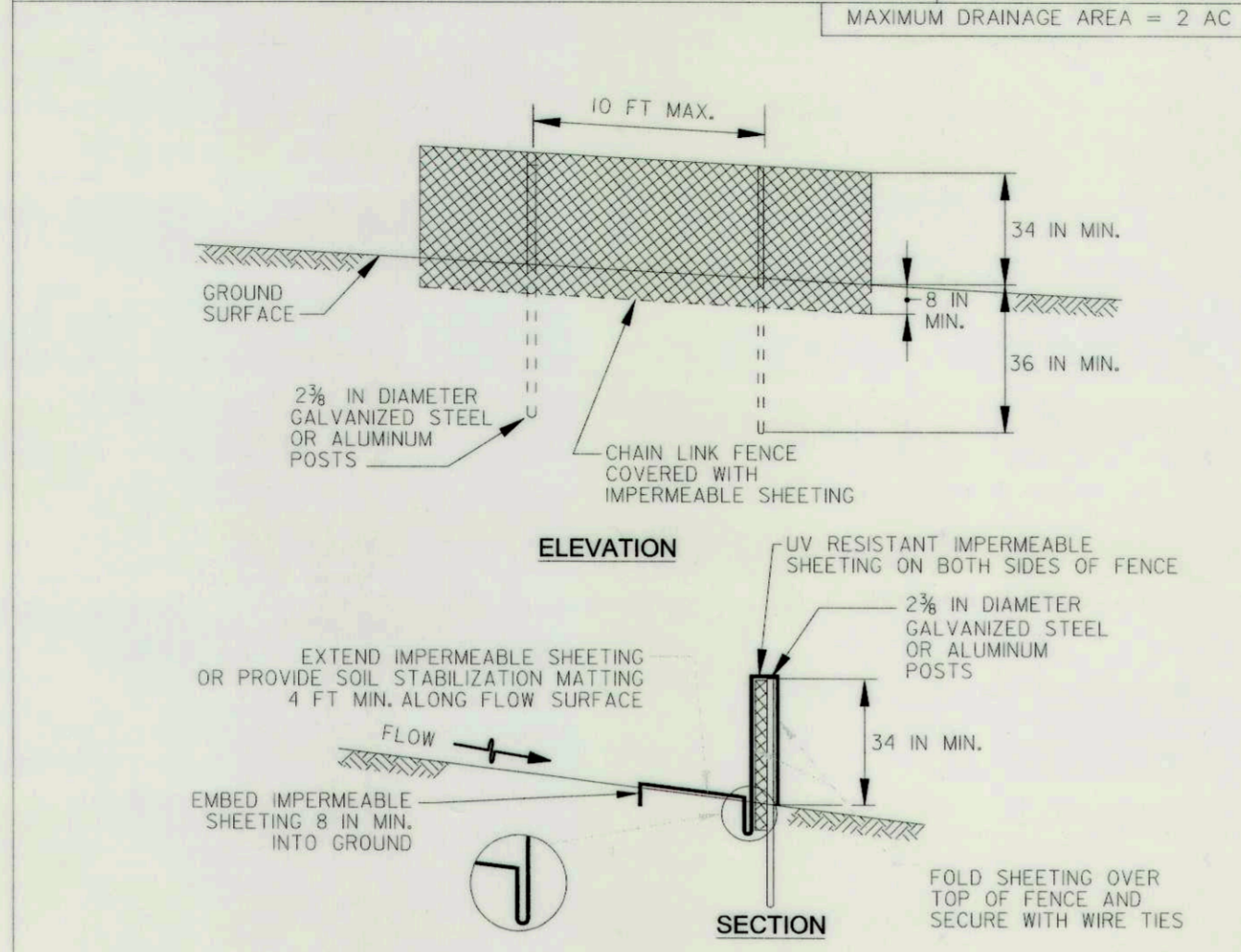
ISOMETRIC VIEW

- CONSTRUCTION SPECIFICATIONS**
- USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
 - USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN, IF PRESENT. NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 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 "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 1/2 INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
 - 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 C-9 DIVERSION FENCE

STANDARD SYMBOL
DF

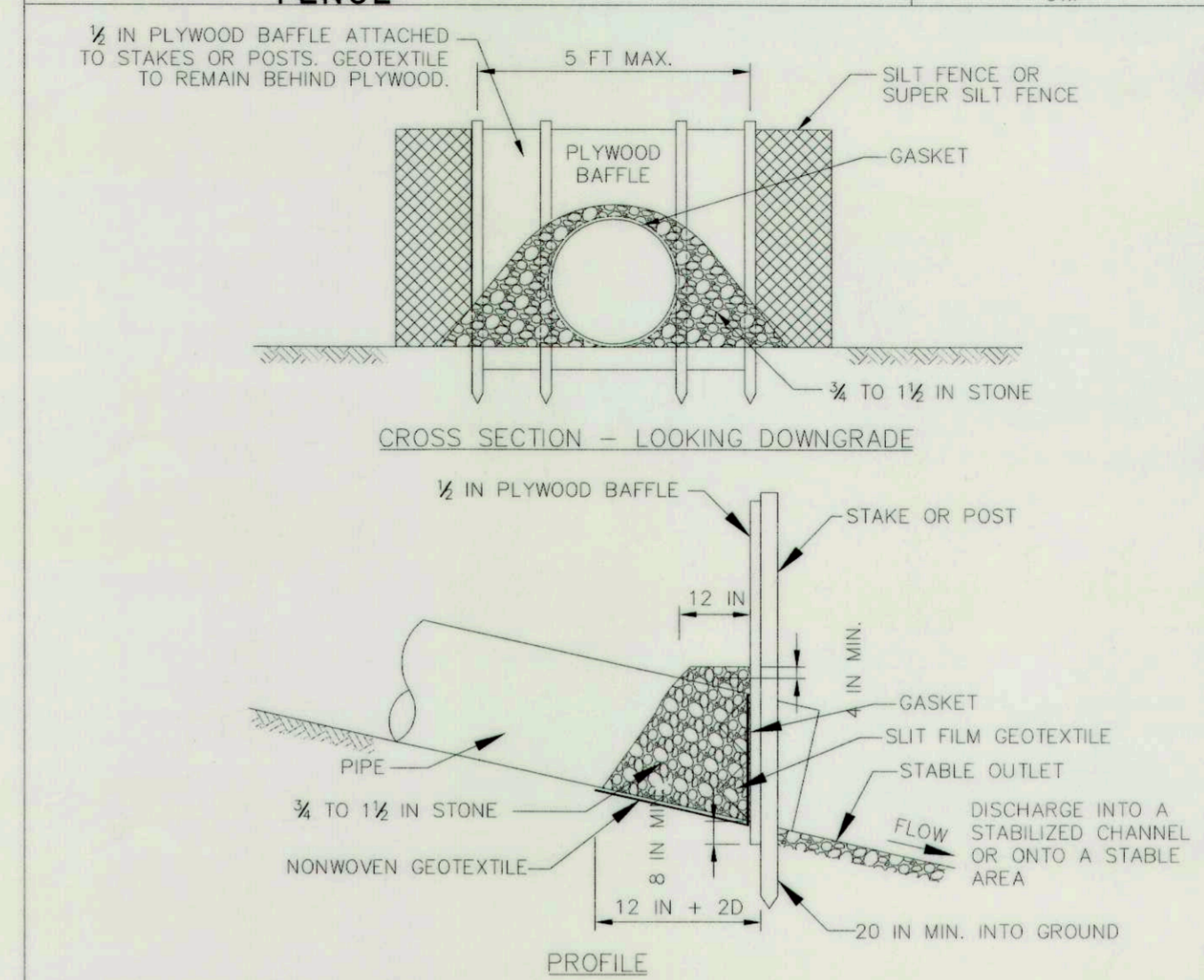


- CONSTRUCTION SPECIFICATIONS**
- USE 42 INCH HIGH, 9 GAUGE OR THICKER CHAIN LINK FENCING (2 3/8 INCH MAXIMUM OPENING).
 - USE 2 3/8 INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. THE POSTS DO NOT NEED TO BE SET IN CONCRETE.
 - FASTEN CHAIN LINK FENCE SECURELY TO THE FENCE POSTS WITH WIRE TIES.
 - SECURE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING TO CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT TOP, MID SECTION, AND BELOW GROUND SURFACE.
 - EXTEND SHEETING A MINIMUM OF 4 FEET ALONG FLOW SURFACE AND EMBED END A MINIMUM OF 8 INCHES INTO GROUND. SOIL STABILIZATION MATTING MAY BE USED IN LIEU OF IMPERMEABLE SHEETING ALONG FLOW SURFACE.
 - WHEN TWO SECTIONS OF SHEETING ADJOIN EACH OTHER, OVERLAP BY 6 INCHES AND FOLD WITH SEAM FACING DOWNSLOPE.
 - KEEP FLOW SURFACE ALONG DIVERSION FENCE AND POINT OF DISCHARGE FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE. REPLACE IMPERMEABLE SHEETING IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

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-4 CLEAR WATER PIPE THROUGH SILT FENCE OR SUPER SILT FENCE

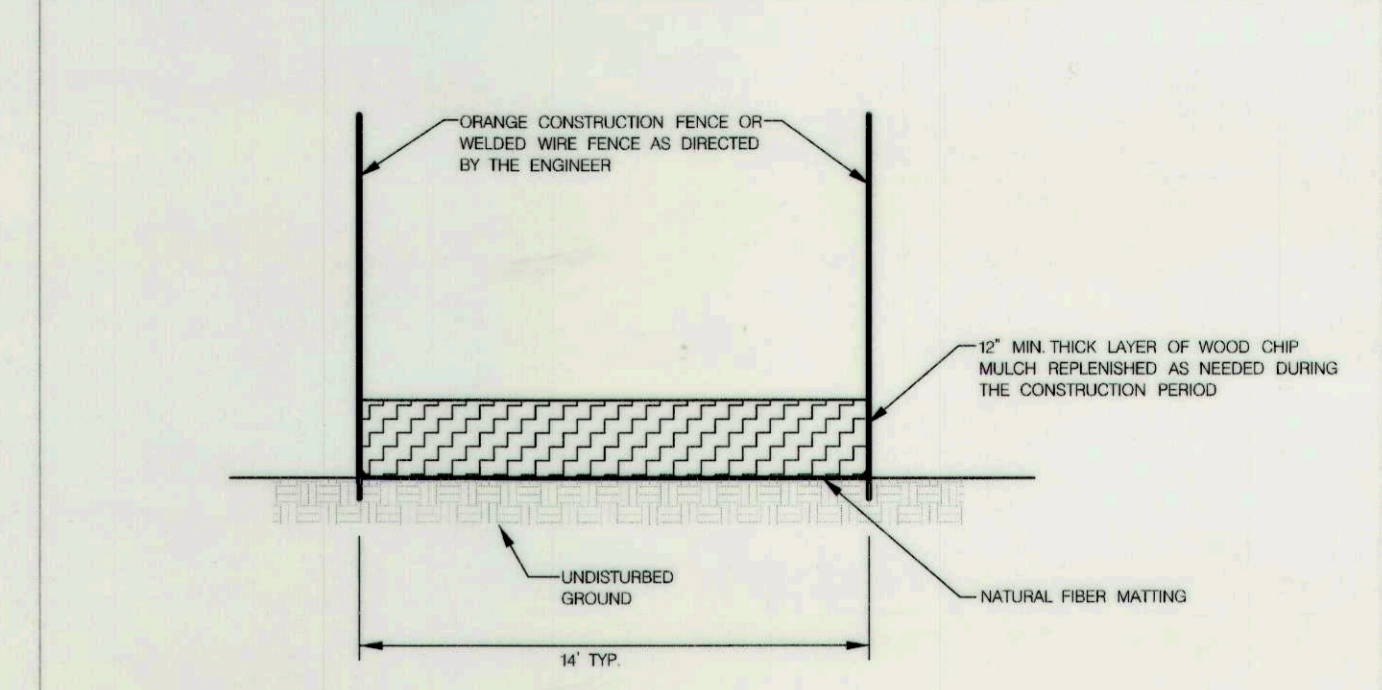
STANDARD SYMBOL
CWP



- CONSTRUCTION SPECIFICATIONS**
- INSTALL SILT FENCE OR SUPER SILT FENCE IN ACCORDANCE WITH DETAIL E-1 OR DETAIL E-2.
 - AT THE PIPE LOCATION, CUT AND PULL BACK THE WOVEN SLIT FILM GEOTEXTILE AND CHAIN LINK FENCING. SECURE GEOTEXTILE TO PIPE WITH GASKET. INSTALL ADDITIONAL STAKES OR POSTS IF NECESSARY TO ACCOMMODATE THE INSTALLATION OF THE BAFFLE BOARD.
 - TRENCH 1/2 INCH PLYWOOD BAFFLE A MINIMUM OF 8 INCHES AND SECURE TO THE UPGRADE SIDE OF THE FENCE STAKES OR POSTS. BAFFLE SHOULD BE AT LEAST THE HEIGHT OF THE FENCE.
 - PLACE 1/4 TO 1/2 INCH STONE OR EQUIVALENT RECYCLED CONCRETE BEHIND THE PLYWOOD BAFFLE ON NONWOVEN GEOTEXTILE AND EXTEND 12 INCH MIN. ALONG TOP OF PIPE AND TO A HEIGHT OF 4 INCHES ABOVE THE TOP OF PIPE.
 - USE NONWOVEN AND WOVEN SLIT FILM GEOTEXTILES AS SPECIFIED IN SECTION H-1 MATERIALS.
 - REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN SEDIMENT REACHES 6 INCHES IN HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL BAFFLE, CHAIN LINK, AND GEOTEXTILE. REPLACE STONE IF DISPLACED. KEEP POINT OF DISCHARGE FREE OF EROSION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
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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" MINIMUM AT SEAMS.
 - NATURAL FIBER MATTING MAY BE ELIMINATED AT DIRECTION OF ENGINEER.
 - CONTRACTOR SHALL MAINTAIN MULCH MAT THROUGHOUT CONSTRUCTION PERIOD. UPON COMPLETION OF THE PROJECT, MULCH CAN REMAIN IN PLACE AT A MAXIMUM DEPTH OF 2".
 - SCARIFICATION OF COMPACTED MULCH TO OCCUR UPON REMOVAL OF HAIL ROAD, AT DIRECTION OF THE ENGINEER.

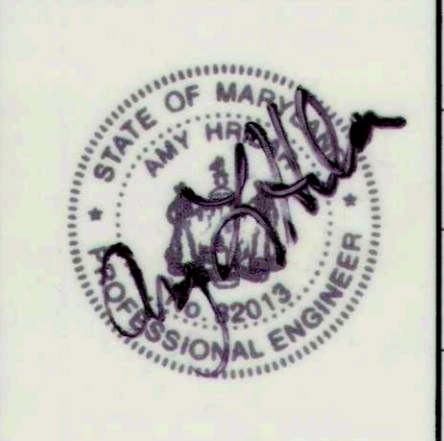
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

M. DeLuca
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

stasilo
DATE

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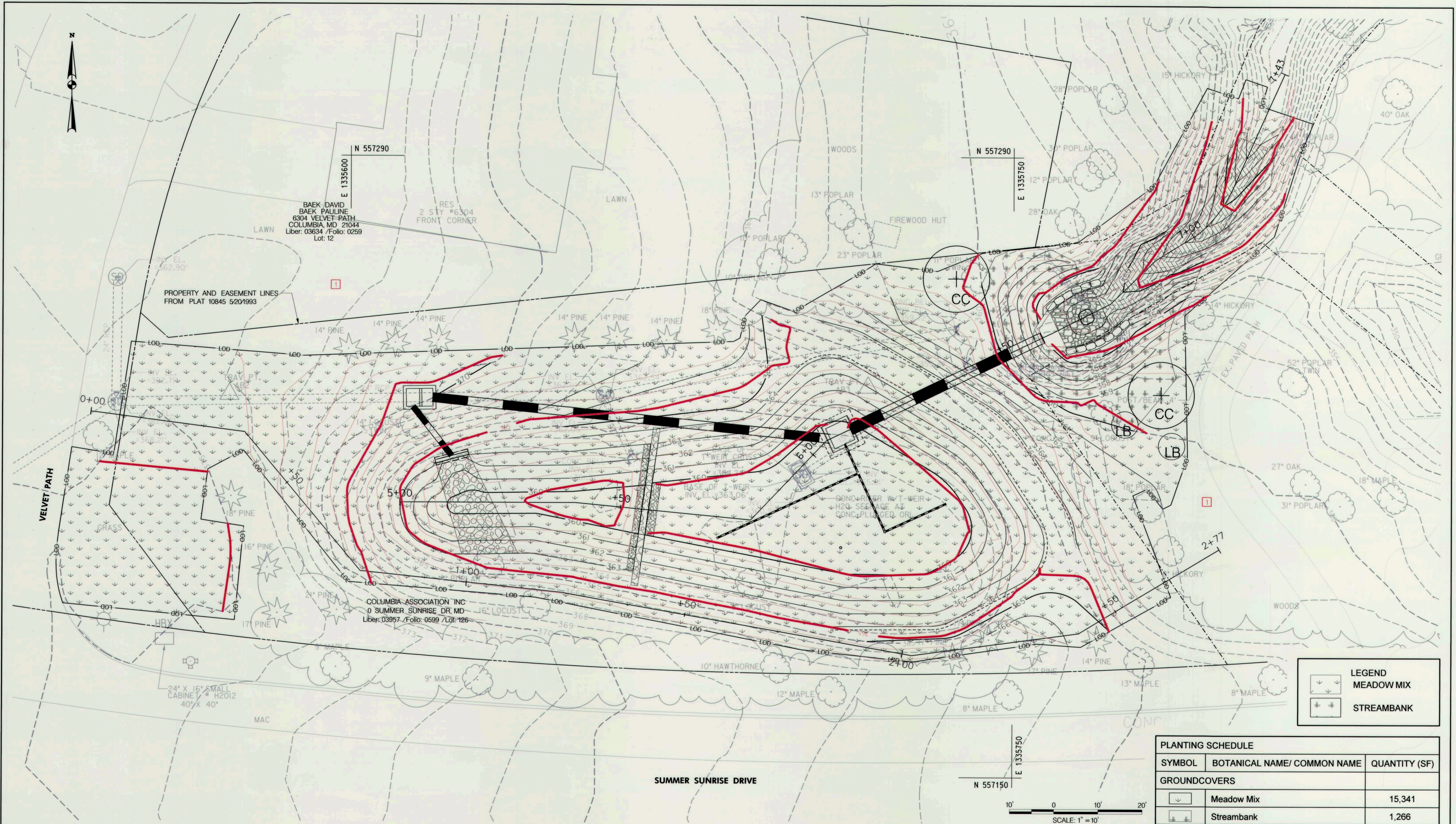


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CHK: AH					
DATE: 8/19/16					
BY	NO.	REVISION	DATE		

VELVET PATH POND PRINCIPAL SPILLWAY REPLACEMENT
AND CHANNEL STABILIZATION PROJECT
CAPITAL PROJECT #D-1159
HOWARD COUNTY
HSCD # EP-16-05

EROSION AND SEDIMENT CONTROL DETAIL SHEET

SCALE
NOT TO SCALE
SHEET
14 OF 19



LEGEND	
	MEADOW MIX
	STREAMBANK

PLANTING SCHEDULE		
SYMBOL	BOTANICAL NAME/ COMMON NAME	QUANTITY (SF)
GROUNDCOVERS		
	Meadow Mix	15,341
	Streambank	1,266

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Michael D. Lee
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

8/23/16 DATE

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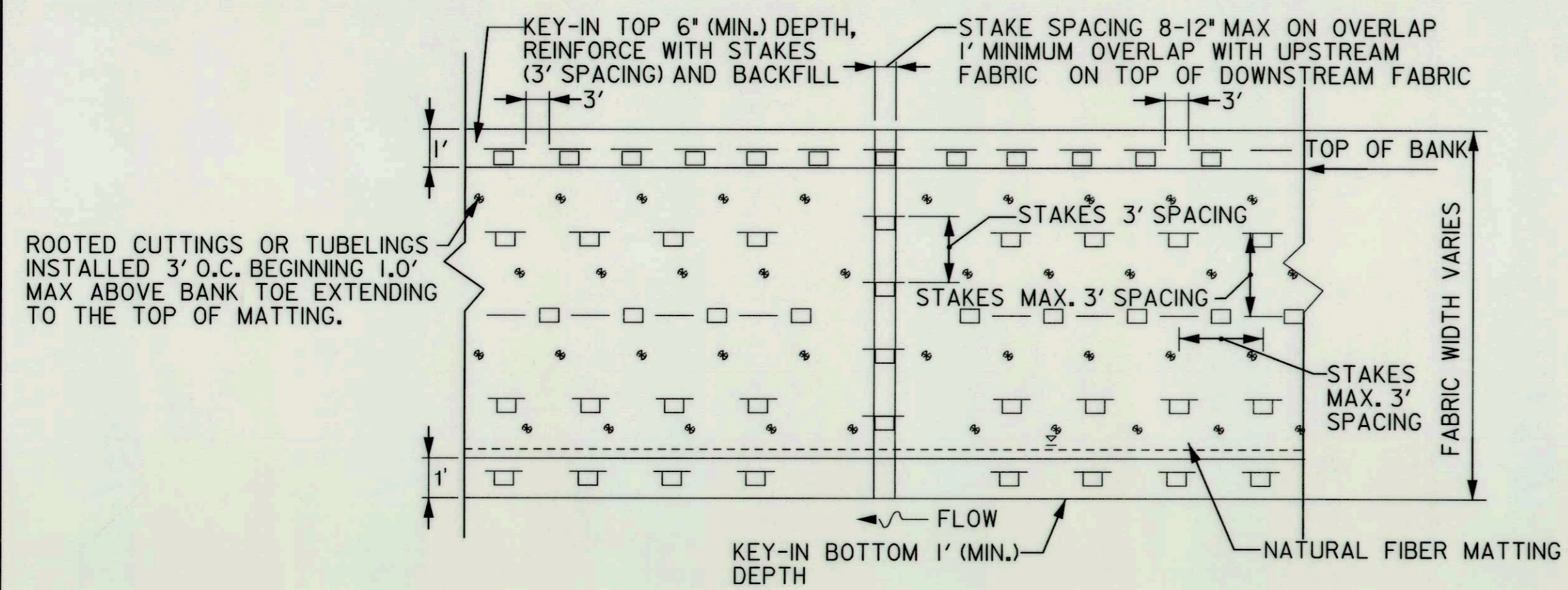
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DRN: MR				
CHK: AH				
DATE: 8/19/16	BY	NO.	REVISION	DATE

VELVET PATH POND PRINCIPAL SPILLWAY REPLACEMENT AND CHANNEL STABILIZATION PROJECT
CAPITAL PROJECT #D-1159
HOWARD COUNTY
HSCD # EP-16-05

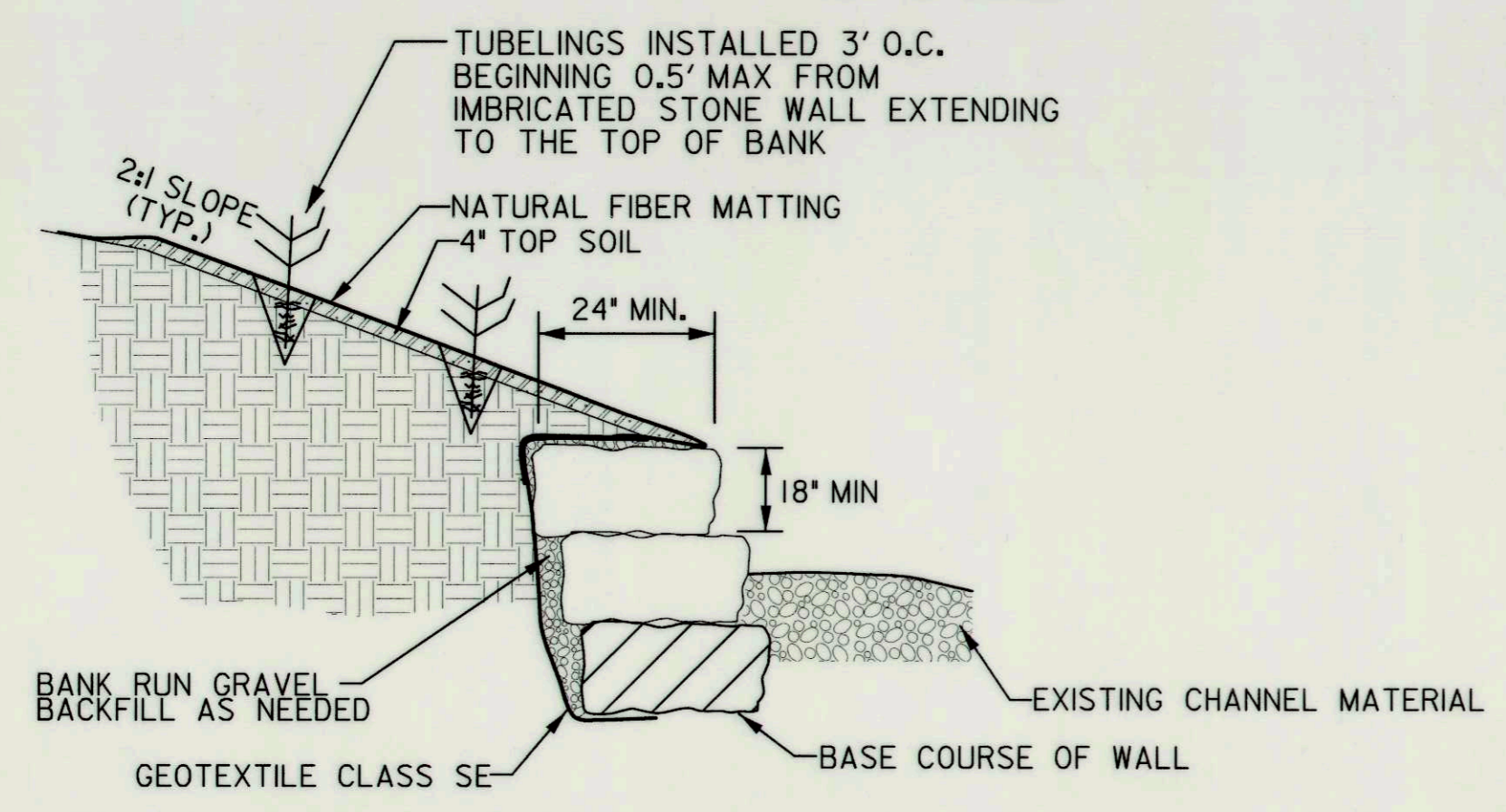
PLANTING PLAN

SCALE
1" = 10'

SHEET
15 OF 19

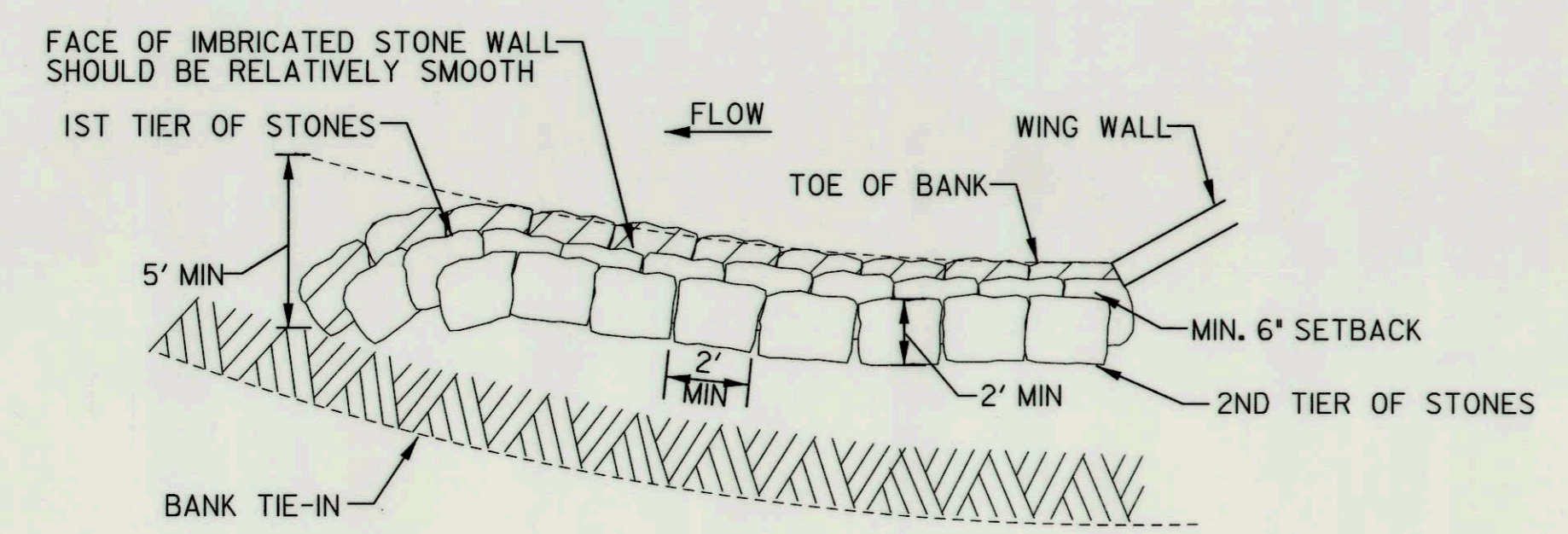


NATURAL FIBER MATTING - PLAN VIEW
NOT TO SCALE



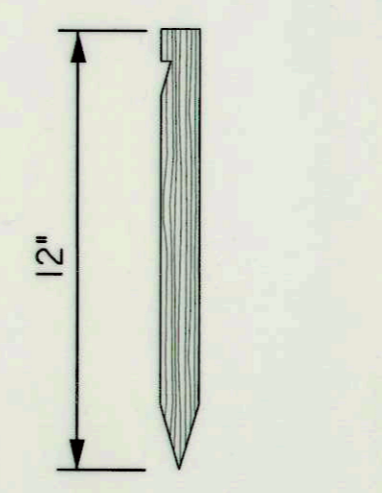
IMBRICATED STONE WALL - SECTION VIEW
NOT TO SCALE

NOTE: HEIGHT OF EACH WALL SECTION VARIES. SEE SPECIFIC CROSS SECTIONS FOR HEIGHT OF EACH WALL APPLICATION.



IMBRICATED STONE WALL - PLAN VIEW
NOT TO SCALE

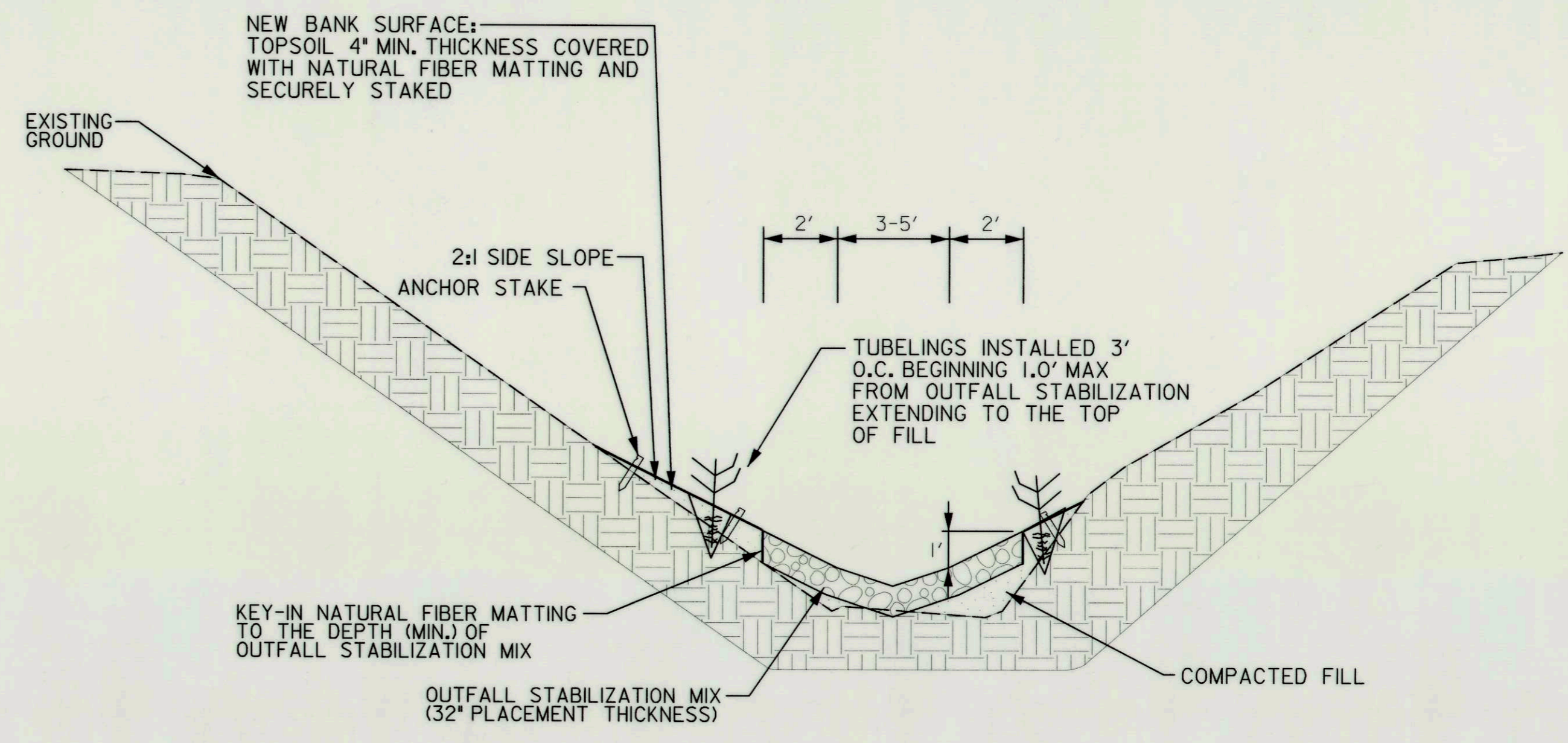
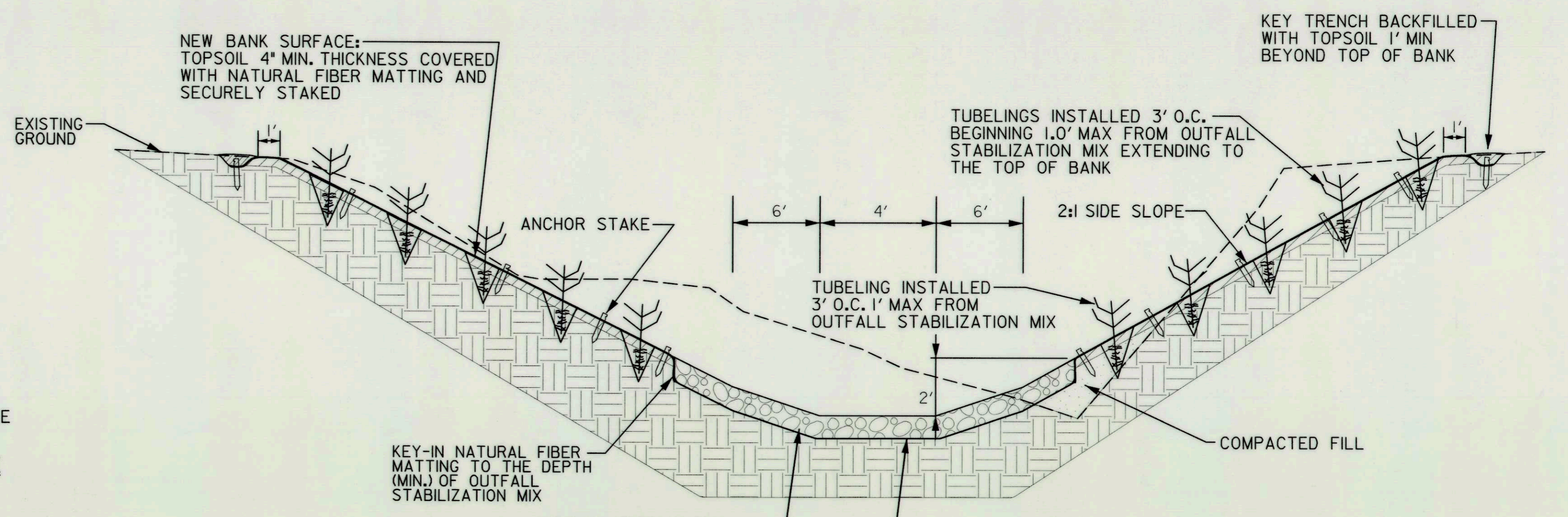
STA 6+62.5 TO STA 6+78.6



USE NEDIA KOIR MAT 700 TYPE MATTING, ECO MESH CM 700, GEOCOIR DEKOWE 900 TYPE MATTING, OR AN EQUIVALENT MATTING CONSISTING OF MACHINE PRODUCED MATTING MEETING THE FOLLOWING MINIMUM SPECIFICATIONS.

MATERIAL	WOVEN COIR MATTING
THICKNESS	0.3 IN.
WEIGHT	20 OZ/SY
WATER VELOCITY	12 FT/SEC
OPEN AREA	50%
TRACTIVE FORCE	4.5 LBS/SQ FT

OUTFALL STABILIZATION MIX	
AMOUNT OF STONE (% VOL)	TYPE
30	SHA CLASS 0
30	SHA CLASS 1
40	SHA CLASS 2
100	TOTAL



10-YEAR DESIGN INFORMATION
d10 = 1.0 f+
v10 = 8.7 f+/s

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

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VELVET PATH POND PRINCIPAL SPILLWAY REPLACEMENT
AND CHANNEL STABILIZATION PROJECT
CAPITAL PROJECT #D-1159
HOWARD COUNTY
HSCD # EP-16-05

STABILIZATION DETAILS

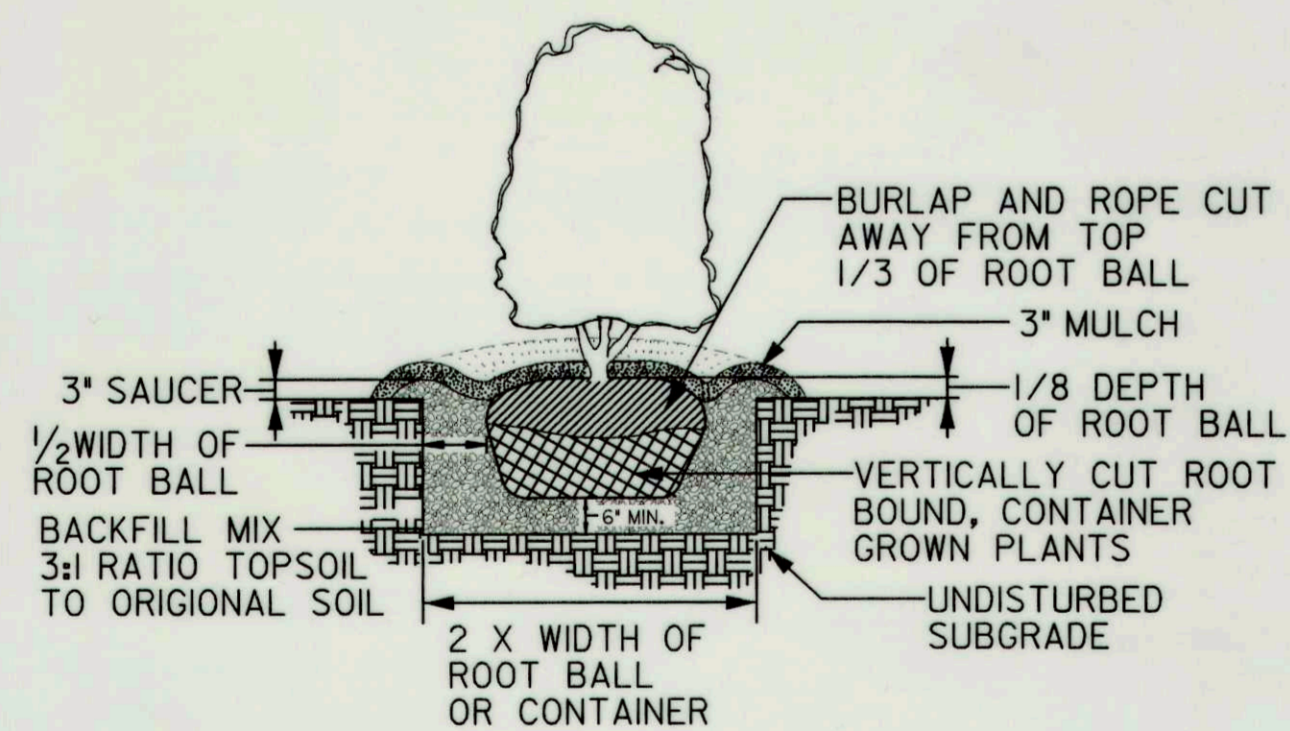
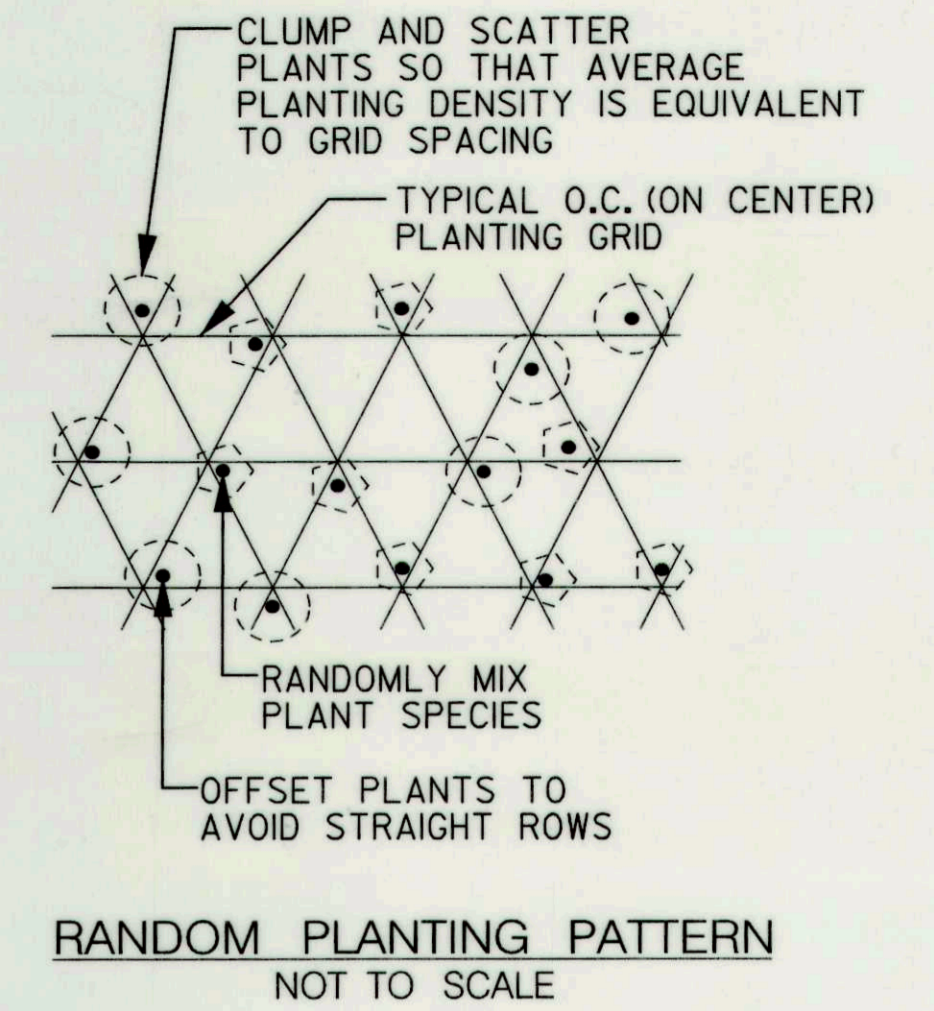
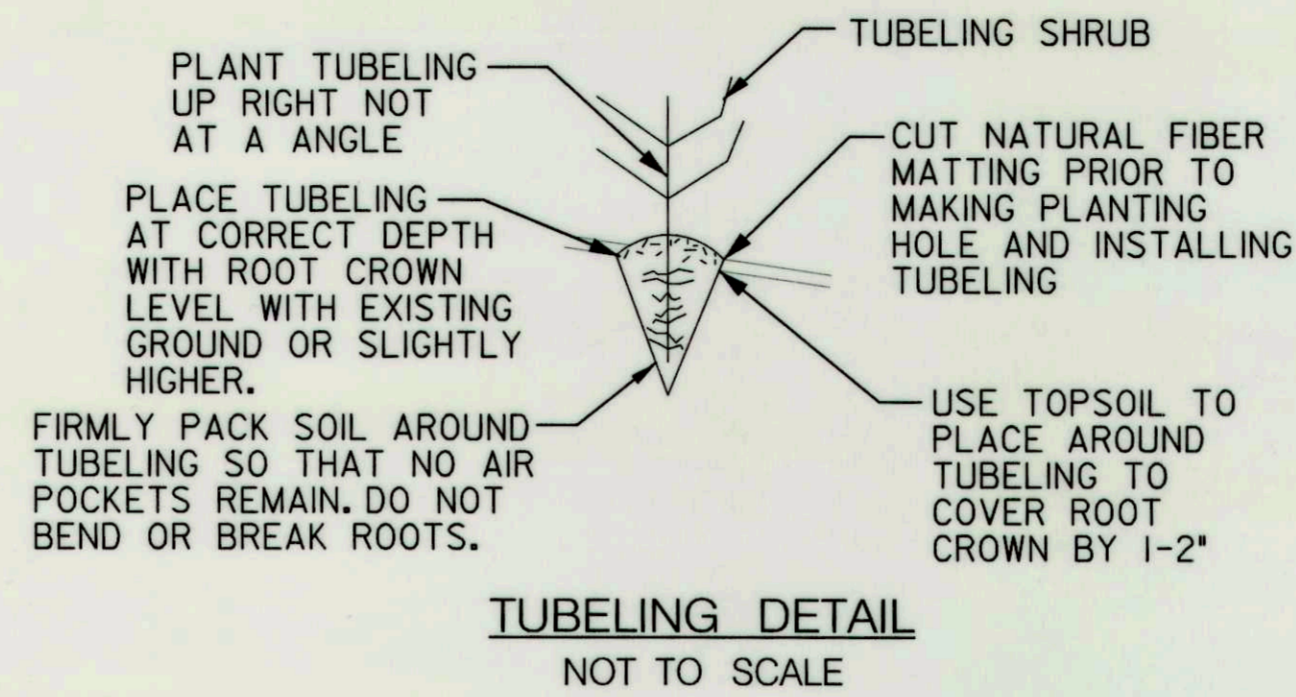
SCALE
AS SHOWN
SHEET
16 OF 19

Michael D. Lee
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES
DATE: 8/22/16

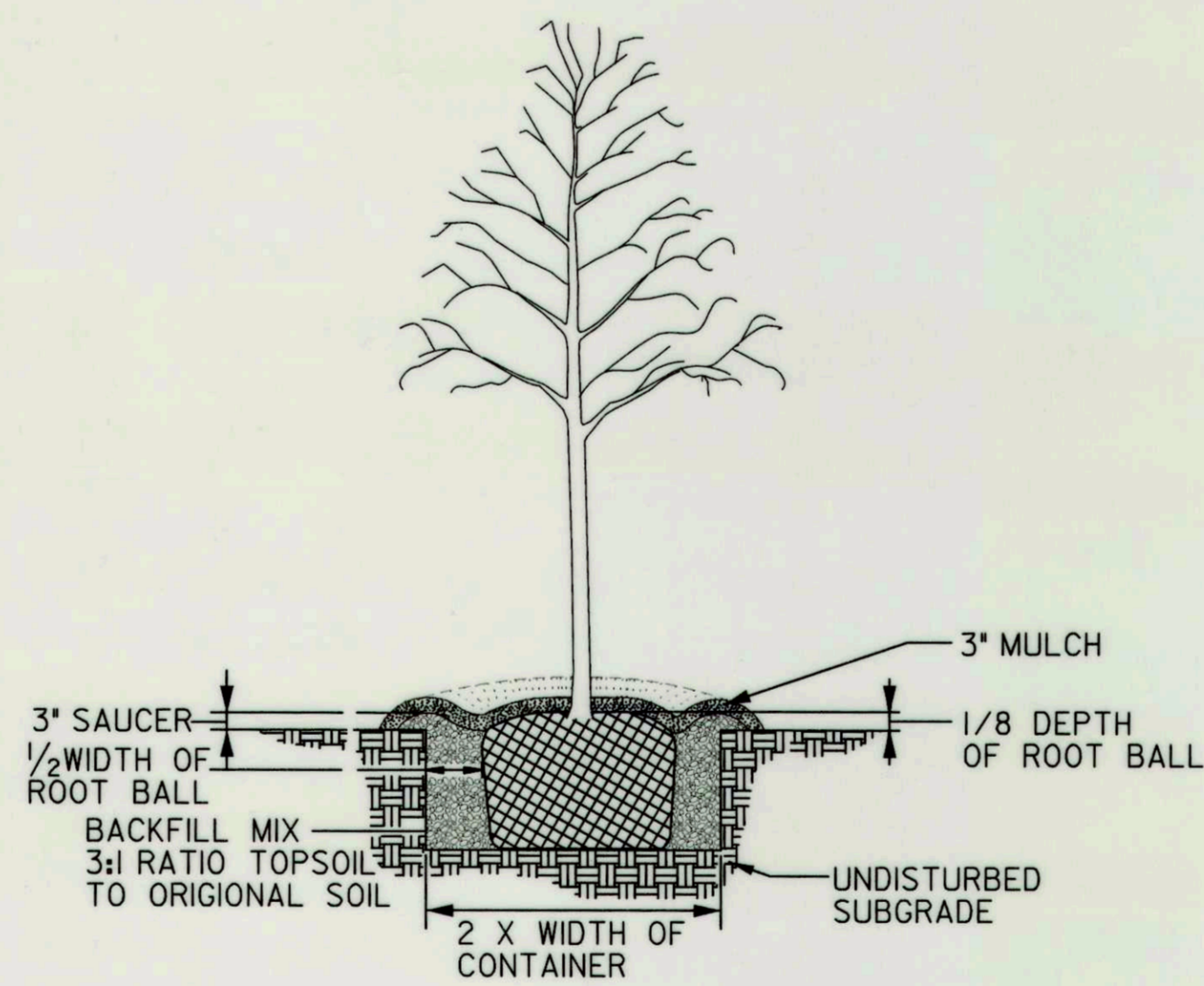
Planting Schedule					
Zone	Botanical Name	Common Name	Size	Comment	Quantity
Streambank	<i>Cornus sericea</i>	Red Osier Dogwood	1" Dia. X 8-12" Deep Tubeling	Plant 3' O. C.	47
Streambank	<i>Viburnum dentatum</i>	Southern Arrowwood	1" Dia. X 8-12" Deep Tubeling	Plant 3' O. C.	47
Streambank	<i>Salix sericea</i>	Silky Willow	1" Dia. X 8-12" Deep Tubeling	Plant 3' O. C.	47

Riparian Seed Mix					
Zone	Botanical Name	Common Name	Percent Mix	Seeding Rate	Quantity (lbs.)
Streambank	<i>Elymus virginicus</i>	Virginia Wildrye	5	30 lbs per acre	
Streambank	<i>Agrostis alba</i>	Redtop	5	30 lbs per acre	
Streambank	<i>Poa compressa</i>	Canada Bluegrass	5	30 lbs per acre	
Streambank	<i>Festuca arundinacea</i>	Trident tall Fescue	10	30 lbs per acre	
Streambank	<i>Sorghastrum nutans</i>	Indian Grass	5	30 lbs per acre	
Streambank	<i>Lolium multiflorum</i>	Annual Ryegrass	25	30 lbs per acre	
Streambank	<i>Elymus sp.</i>	Saint Perennial Ryegrass	20	30 lbs per acre	
Streambank	<i>Festuca rubra</i>	Creeping Red Fescue	25	30 lbs per acre	
TOTAL MIX					0.9

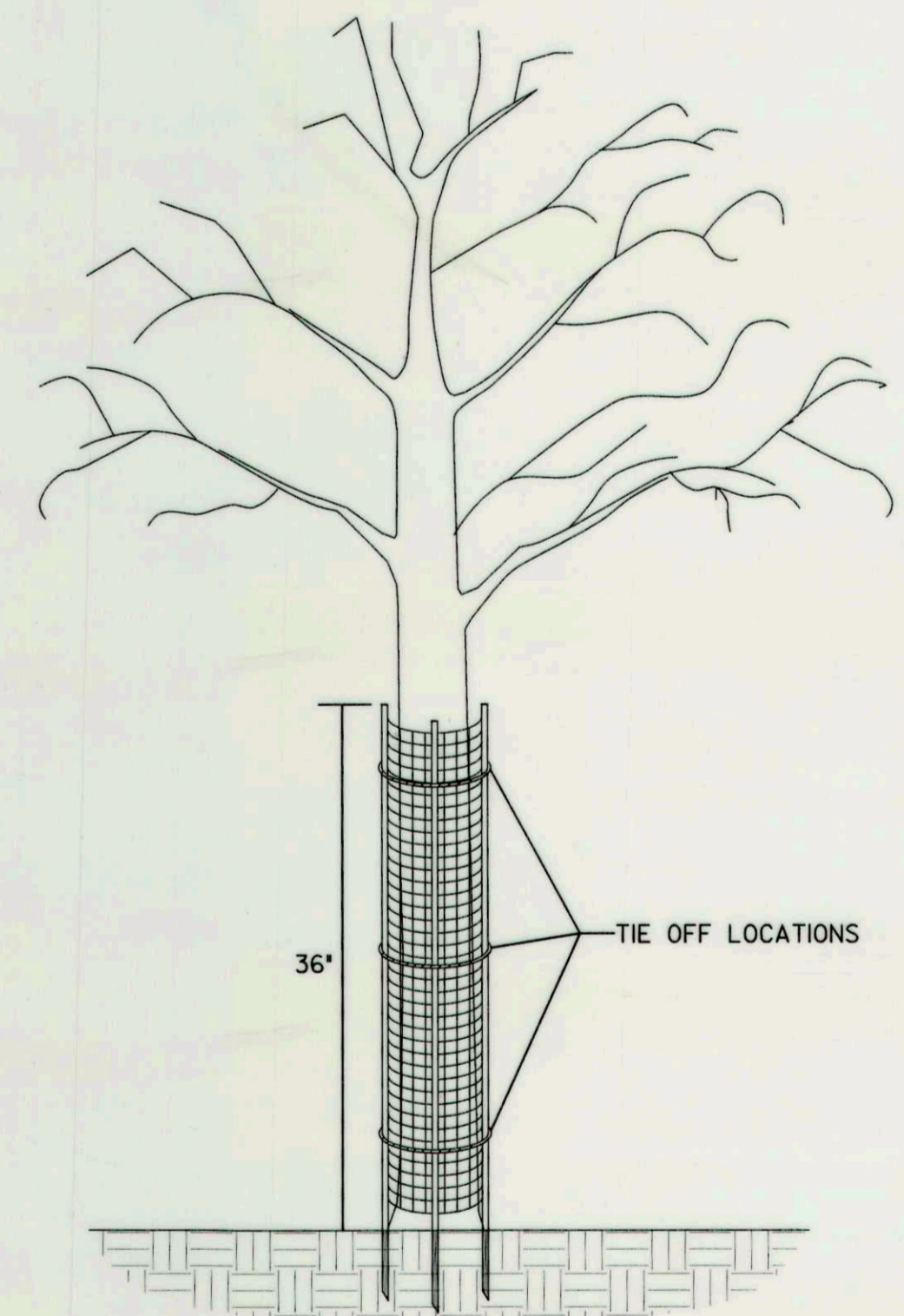
TREE AND SHRUB PLANTING SCHEDULE				
MAJOR DECIDUOUS TREES				
SYMBOL	SPECIES	SPACING	SIZE	QUANTITY
CC	<i>Cercis canadensis</i> / Eastern Redbud	12' O.C.	5' HT, 3 GAL. Cont.	2
SHRUBS				
SYMBOL	SPECIES	SPACING	SIZE	QUANTITY
LB	<i>Lindera benzoin</i> / Northern Spicebush	8' O.C.	2' HT, 3 GAL. Cont.	2



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



DECIDUOUS TREE PLANTING DETAIL
CONTAINER GROWN
NOT TO SCALE



- INSTALLATION INSTRUCTIONS:
1. PLANT TREE ACCORDING TO STANDARD SPECIFICATIONS.
 2. PLACE THE SHELTER AROUND THE TREE.
 3. DRIVE LONGER STAKES INTO THE GROUND.
 4. TIE-OFF ROPE ENDS AROUND TREE.

PRODUCT NOTES:

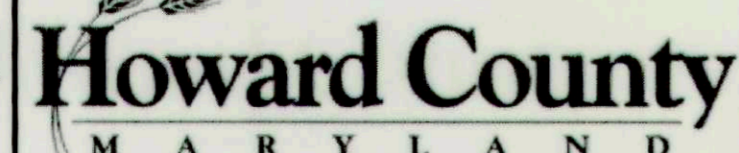
1. TREE SHELTER SHALL BE A.M. LEONARD TREE BARK PROTECTOR OR APPROVED EQUAL.
2. TREE SHELTER MUST HAVE LONGER, HARDY STAKES FOR INSERTION INTO GROUND TO PROVIDE SUPPORT.

TREE SHELTER DETAIL
NOT TO SCALE

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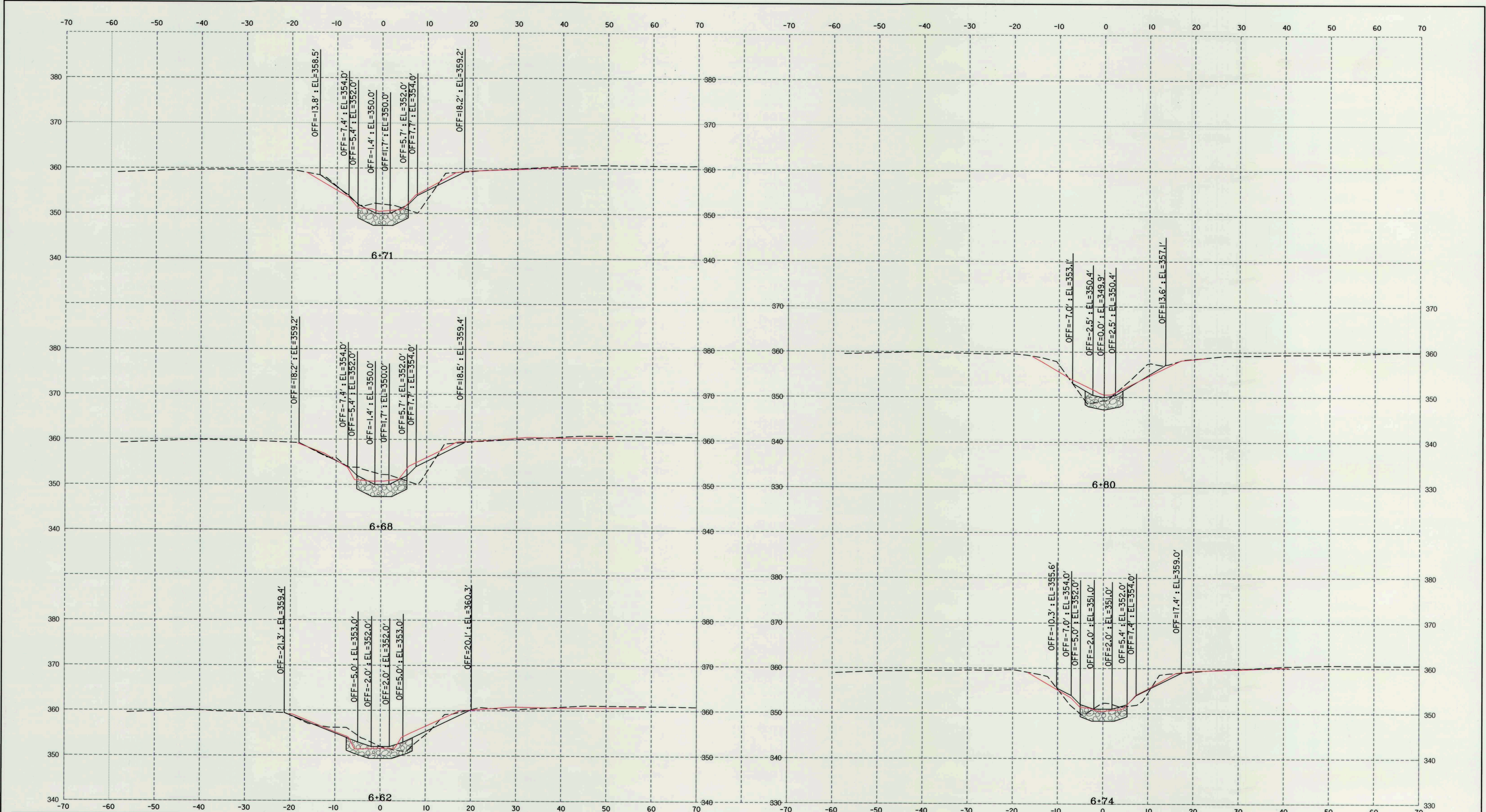
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VELVET PATH POND PRINCIPAL SPILLWAY REPLACEMENT
AND CHANNEL STABILIZATION PROJECT
CAPITAL PROJECT #D-1159
HOWARD COUNTY
HSCD # EP-16-05

LANDSCAPE DETAILS

SCALE
AS SHOWN
SHEET
17 OF 19

Mark D. Lewis
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES
8/22/16
DATE



SCALE
HORIZONTAL: 1"=10' VERTICAL: 1" = 10'

LEGEND
— AS-BUILT GRADE
- - - EXISTING — PROPOSED

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Mark DeLuca
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

8/24/16
DATE

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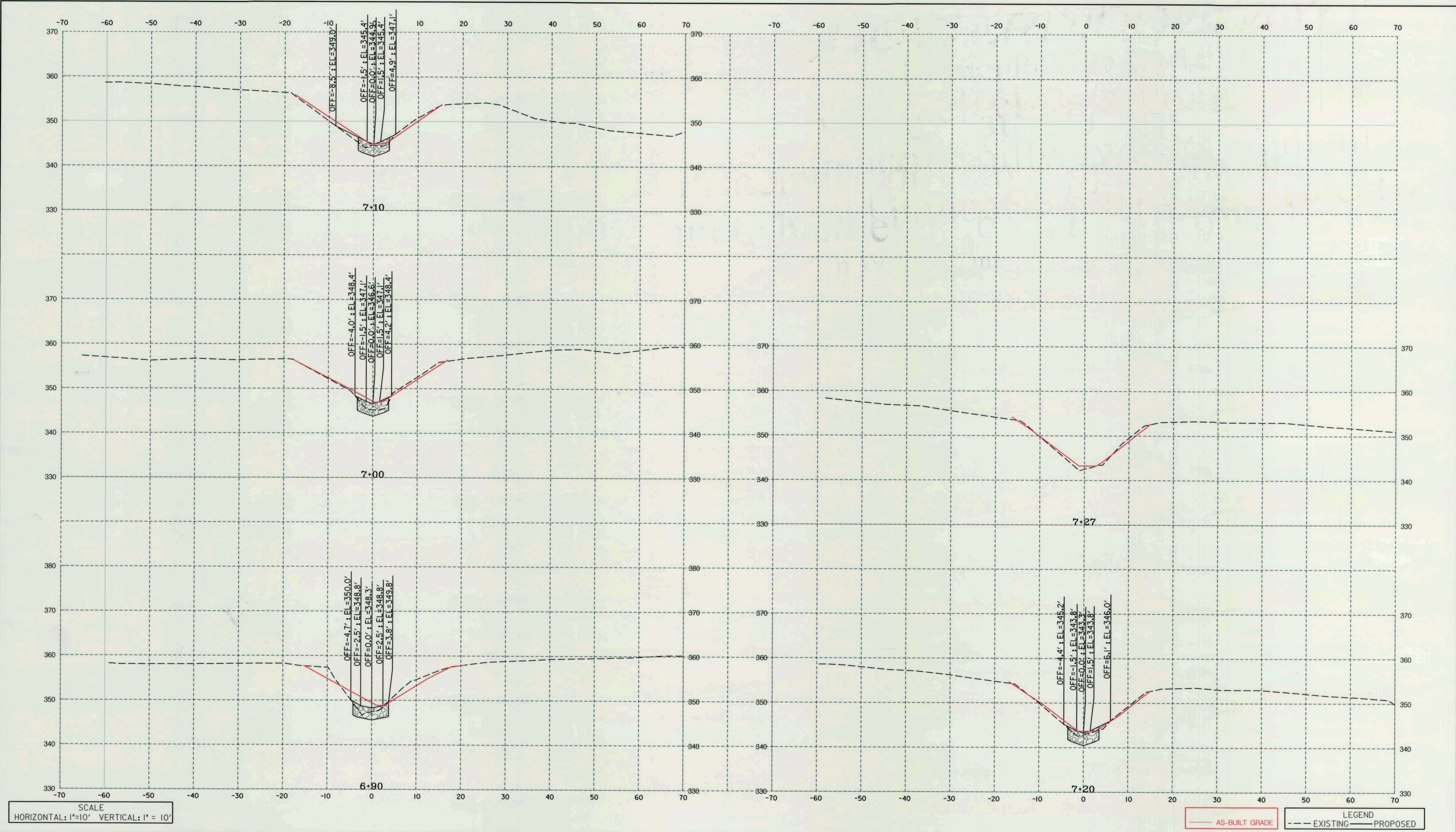


DES: LN/AM	ADM	<input checked="" type="checkbox"/>	AS-BUILT SURVEY	7-26-17
DRN: MR				
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DATE: 8/19/16	BY	NO.	REVISION	DATE

VELVET PATH POND
PRINCIPAL SPILLWAY REPLACEMENT AND
CHANNEL STABILIZATION PROJECT
CAPITAL PROJECT #D-1159
HOWARD COUNTY
HSCD # EP-16-05

CROSS SECTIONS

SCALE
AS SHOWN
SHEET
18 OF 19



SCALE
HORIZONTAL: 1"=10' VERTICAL: 1"= 10'

LEGEND
— AS-BUILT GRADE
- - - EXISTING
— PROPOSED

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Michael J. ...
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

8/29/16
DATE

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DES: LN/AM	ADM	<input checked="" type="checkbox"/>	AS-BUILT SURVEY	7-26-17
DRN: MR				
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SCALE
AS SHOWN
SHEET
19 OF 19

**VELVET PATH POND
PRINCIPAL SPILLWAY REPLACEMENT AND
CHANNEL STABILIZATION PROJECT
CAPITAL PROJECT #D-1159
HOWARD COUNTY
HSCD # EP-16-05**

CROSS SECTIONS