

# HOWARD COUNTY

## Capital Project #D-1159

# Junction Industrial Park Principal Spillway Replacement Project

Storm Water Management Division  
Bureau Of Environmental Services

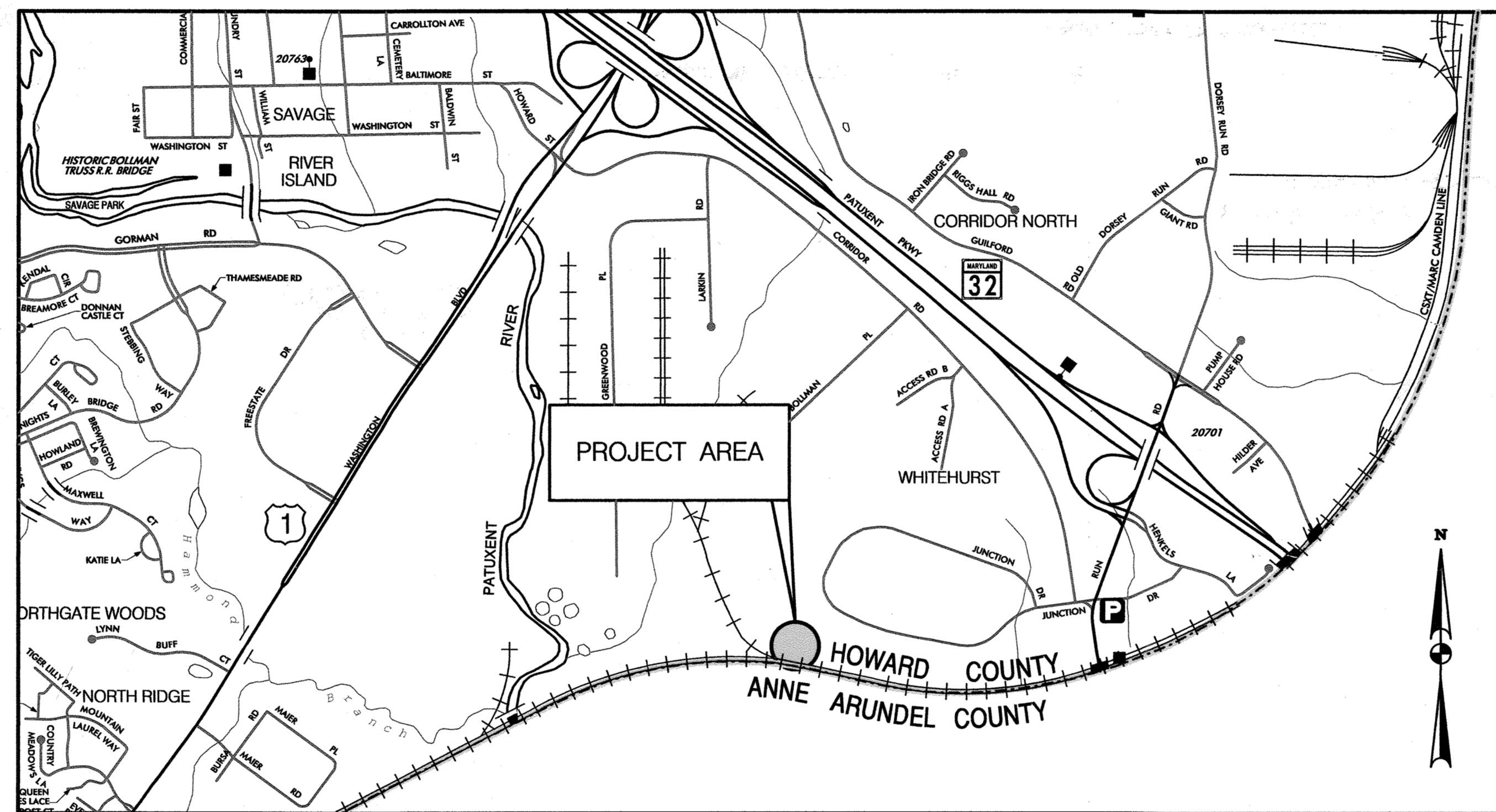
PERMITS/APPROVALS			
AGENCY	PERMIT #	DATE APPLIED	DATE APPROVED
MDE JOINT PERMIT APPLICATION	201661779	10 /25 /2016	3 /27 /2017
MDE DAM SAFETY	N /A	N /A	N /A
HOWARD SOIL CONSERVATION DISTRICT	EP-12-29	90% 10 /26 /2016 Final 09 /26 /2017	90% 11 /29 /2016 Final 10 /04 /2017

INDEX OF SHEETS	
SHEET NO.	TITLE
1	TITLE SHEET
2	GEOMETRY SHEET
3	SITE PLAN
4	STORMDRAIN PROFILE SHEET
5	POND DETAIL SHEET
6	POND DETAIL SHEET
7	RISER DETAIL SHEET
8	EROSION AND SEDIMENT CONTROL PLAN
9	EROSION AND SEDIMENT CONTROL NOTES
10	POND CONSTRUCTION SPECIFICATIONS
11	EROSION AND SEDIMENT CONTROL DETAIL SHEET
12	EROSION AND SEDIMENT CONTROL DETAIL SHEET

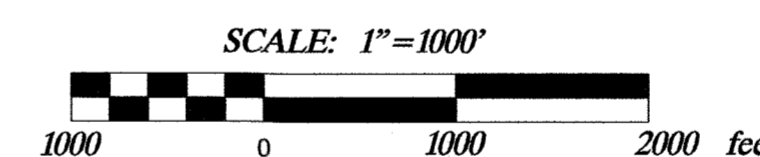
### GENERAL NOTES

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST FIVE (5) WORKING DAYS PRIOR TO ANY WORK BEING DONE.
- THIS PLAN IS PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS /BUREAU OF ENGINEERING CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
- SURVEY OF THIS SITE WAS PERFORMED BY AB CONSULTANTS, INC-DECEMBER 2011.
- 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.
- WATERS OF THE US WERE DELINEATED BY McCORMICK TAYLOR JANUARY 2012.
- OBSTRUCTIONS SHOWN ON THIS DRAWING ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY AND McCORMICK TAYLOR DOES NOT WARRANT OR GUARANTEE THE CORRECTNESS OR COMPLETENESS OF THE INFORMATION GIVEN. THE CONTRACTOR MUST VERIFY SUCH INFORMATION TO HIS OWN SATISFACTION.
- THE EXISTING INFORMATION SHOWN ON THESE PLANS WAS TAKEN FROM THE BEST AVAILABLE SOURCES AND SHALL BE VERIFIED BEFORE STARTING CONSTRUCTION. HOWARD COUNTY DOES NOT GUARANTEE THE COMPLETENESS OR THE CORRECTNESS OF THE SHOWN INFORMATION.
- THE CONTRACTORS SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO THE CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY. ALL UTILITIES SHALL HAVE A CLEARANCE BY A MINIMUM OF 6 INCHES VERTICALLY AND A MINIMUM OF 5 FEET HORIZONTALLY.
- SHOULD THE CONTRACTOR DISCOVER DISCREPANCIES BETWEEN THE PLANS AND FIELD CONDITIONS, THE CONTRACTOR SHALL NOTIFY McCORMICK TAYLOR IMMEDIATELY TO RESOLVE THE SITUATION.
- ALL PIPE ELEVATIONS SHOWN ARE INVERT ELEVATIONS.
- THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, AND SAFETY PRECAUTIONS AND PROGRAMS.
- SITE DEVELOPMENT DETAILS ARE REFERENCED FROM THE AS-BUILT PLANS FOR JUNCTION INDUSTRIAL PARK, SECTION 2 (F-86-126).
- A JOINT PERMIT APPLICATION HAS BEEN SUBMITTED TO THE MARYLAND DEPARTMENT OF THE ENVIRONMENT FOR THIS PROJECT. (TRACKING NUMBER 201661779)
- THE PROJECT IS LOCATED WITHIN A USE 1 WATERWAY; IN-STREAM WORK MAY NOT BE CONDUCTED FROM MARCH 1 THROUGH JUNE 15 INCLUSIVE, OF ANY YEAR. THE PROJECT IS LOCATED WITHIN THE LITTLE PATUXENT RIVER WATERSHED WHICH IS UNDER A TMDL FOR SEDIMENT BUT THE PROJECT IS NOT WITHIN A TIER II CATCHMENT.
- CONTRACTORS SHALL PROVIDE STRUCTURAL SHOP DRAWINGS FOR PRECAST AND PREFABRICATED STRUCTURES FOR ENGINEERS APPROVAL PRIOR TO CONSTRUCTION.

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



### PROFESSIONAL CERTIFICATION

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

### AS-BUILT CERTIFICATION

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

### DESIGN CERTIFICATION

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

9/25/17  
MARYLAND REGISTRATION NUMBER 32013

DESIGNER'S SIGNATURE  
AMY L. HRIBAR  
PRINTED NAME

### OWNER'S/DEVELOPER'S CERTIFICATION

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

9/29/17  
DATE

OWNER'S/DEVELOPER'S SIGNATURE  
JAMES M. IRVIN  
PRINTED NAME AND TITLE



**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.

**HOWARD SCD SIGNATURE BLOCK**

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

HOWARD SOIL CONSERVATION DISTRICT

10/4/17  
DATE

**DEPARTMENT OF PUBLIC WORKS**  
HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS DATE 9/27/17

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE 9/27/17

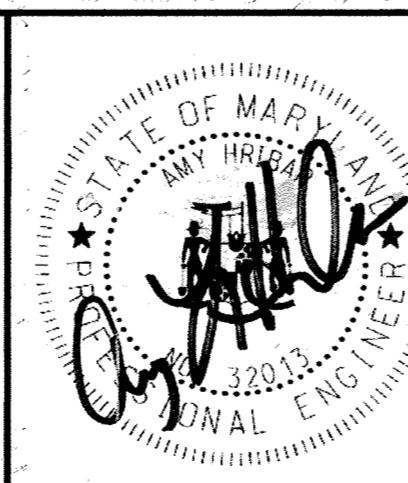
CHIEF, STORMWATER MANAGEMENT DIVISION DATE 9/27/17

**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



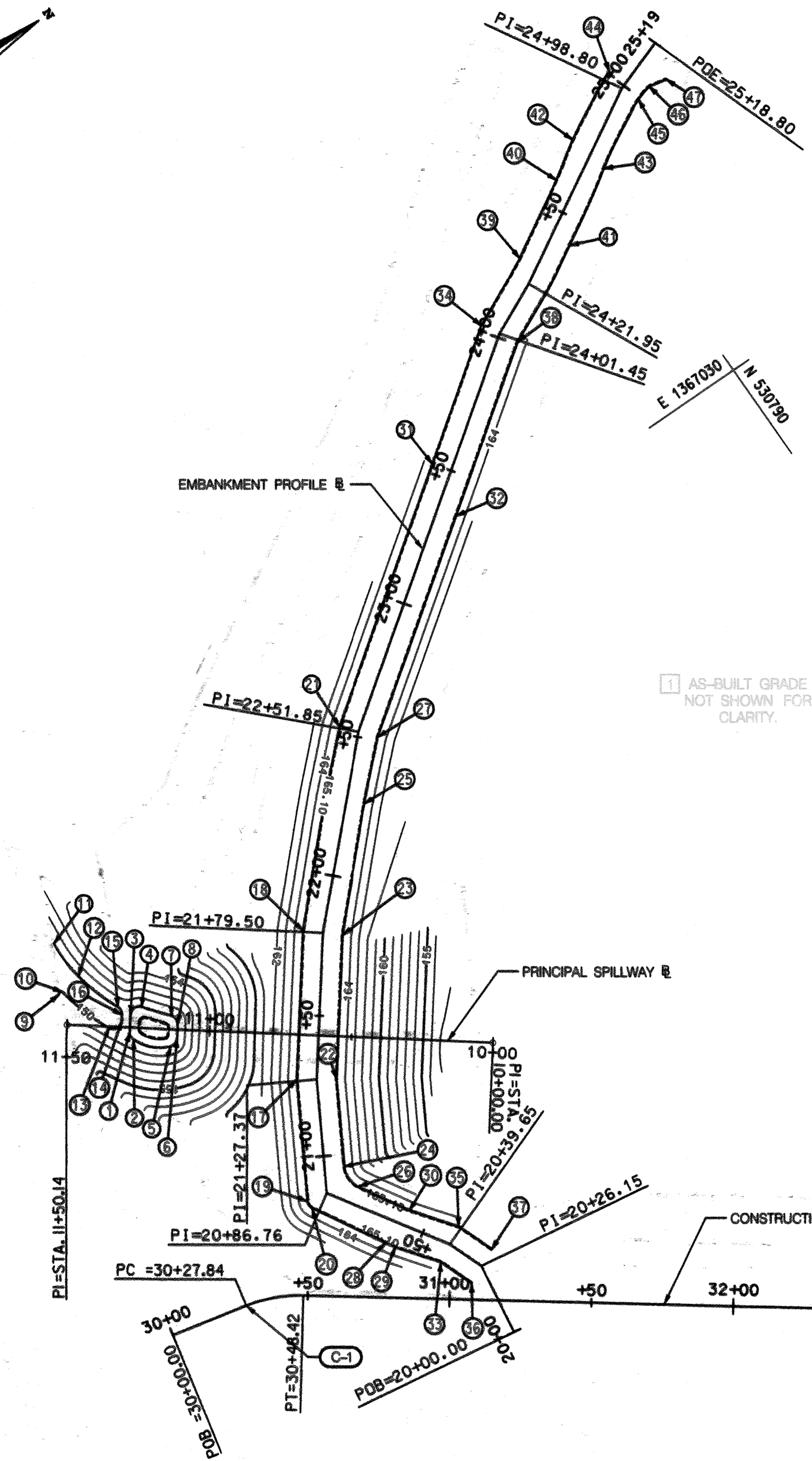
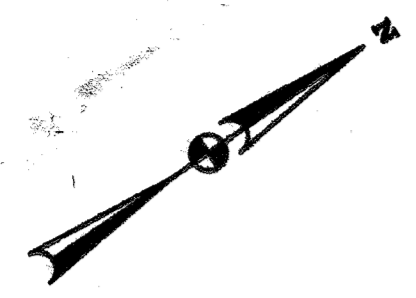
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DRN: MR				
CHK: AH				
DATE: 09/20/17	BY	NO.	REVISION	DATE

**JUNCTION INDUSTRIAL PARK**  
**PRINCIPAL SPILLWAY REPLACEMENT PROJECT**  
**CAPITAL PROJECT #D-1159**  
**HOWARD COUNTY**  
**HCSD#: EP-12-29**

**TITLE SHEET**

SCALE AS SHOWN

SHEET 1 OF 12

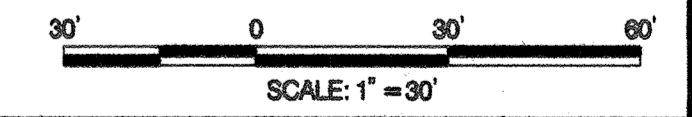


BASELINE GEOMETRY CONTROL COORDINATES						
BASILINE	POINT	NORTHING	EASTING	STATION	BEARING AH	RADIUS
PRINCIPAL SPILLWAY BL	POB	330354.6737	1367178.1262	10+00.00	N 36°59'43.33" E	
	POE	330464.7614	1367087.7773	11+30.14		
EMBANKMENT PROFILE BL	POB	330332.2534	1367266.9464	20+00.00	N 81°19'40.71" W	
	PI	330336.1978	1367241.0986	20+26.13	N 69°22'49.51" E	
	PI	330331.4407	1367228.4538	20+39.63	N 37°19'31.78" E	
	PI	330306.0097	1367188.8041	20+56.76	N 60°20'05.17" W	
	PI	330326.1066	1367133.5193	21+27.37	N 32°35'59.34" W	
	PI	330337.4910	1367111.8964	21+79.30	N 43°17'04.12" W	
	PI	330605.3976	1367060.4616	22+51.55	N 35°35'20.12" W	
	PI	330729.4700	1366972.6071	24+01.43	N 23°17'02.02" W	
	PI	330748.0023	1366963.8533	24+21.95	N 30°02'34.37" W	
	PI	330814.5339	1366923.3748	24+58.50	N 19°13'19.75" W	
POE	330833.4132	1366918.7798	25+18.80			
CONSTRUCTION BL	POB	330432.7628	1367199.3607	30+00.00	N 12°30'23.01" E	
	PC	330439.9420	1367203.3596	30+27.54	N 12°30'23.01" E	
	PI	330470.1320	1367207.8300	30+39.28	N 36°03'22.79" E	
	CC	330449.1141	1367234.4031			30.00'
	PT	330478.5667	1367213.9983	30+48.42	N 36°03'22.79" E	
	POE	330913.4273	1367332.4420	35+59.02		

BASELINE CURVE DATA								
CURVE NO.	DELTA	Dc	R	T	L	E	CENTER OF CURVE	
							NORTHING	EASTING
C-1	23°34'37.78"	114°33'29.61"	30.0000'	10.4377'	20.3798'	1.0778	330449.1141	1367234.403

TRAVERSE CONTROL COORDINATES			
POINT	NORTHING	EASTING	ELEVATION
1	330361.3059	1367124.4360	161.99
2	330389.3690	1367362.2910	163.29
100	330963.8933	1367383.4463	161.73

GRADING TABLE					
POINT	STATION	OFFSET	NORTHING	EASTING	ELEVATION
1	30+26.30	103.29 LT	330481.4338	1367102.3102	130.00
2	30+26.75	102.33 LT	330481.0465	1367103.4349	130.00
3	30+28.23	111.03 LT	330485.2272	1367097.4734	130.00
4	30+29.65	112.24 LT	330489.9446	1367097.3603	130.00
5	30+31.32	95.78 LT	330490.3095	1367114.6210	130.00
6	30+32.34	97.76 LT	330493.9421	1367113.6110	130.00
7	30+32.49	106.02 LT	330496.9013	1367103.8784	130.00
8	30+32.59	102.32 LT	330496.9762	1367109.3840	130.00
9	30+08.42	127.03 LT	330468.4893	1367077.3711	130.00
10	30+09.54	127.33 LT	330469.9630	1367077.1633	130.00
11	30+13.39	144.31 LT	330477.3228	1367061.4208	130.00
12	30+17.23	130.33 LT	330477.8721	1367073.8441	130.00
13	30+20.31	109.30 LT	330476.3005	1367097.0591	130.00
14	30+23.40	110.11 LT	330481.4019	1367097.3671	130.00
15	30+23.99	113.22 LT	330483.0903	1367092.6991	130.00
16	30+26.33	112.18 LT	330482.7623	1367093.7613	130.00
17	30+46.73	76.61 LT	330320.2466	1367149.6643	163.00
18	30+47.48	129.37 LT	330332.1391	1367107.3408	165.00
19	30+49.05	93.30 LT	330498.8116	1367187.2981	163.00
20	30+50.78	31.11 LT	330498.7950	1367190.2435	165.00
21	30+36.10	202.23 LT	330603.8933	1367035.1014	163.00
22	30+38.22	77.21 LT	330331.9665	1367137.3748	163.00
23	30+39.03	128.46 LT	330362.8232	1367116.4516	163.00
24	30+61.70	46.27 LT	330316.3340	1367184.4348	165.00
25	30+63.33	173.13 LT	330393.3660	1367082.3419	163.00
26	30+66.87	99.10 LT	330316.3131	1367193.2707	163.00
27	30+69.72	198.84 LT	330612.9016	1367063.8622	163.00
28	30+77.03	19.39 LT	330313.1072	1367213.1871	163.00
29	30+80.49	17.94 LT	330313.0462	1367218.3918	163.00
30	30+85.12	31.18 LT	330326.5660	1367210.4200	163.00
31	30+86.31	296.17 LT	330689.8039	1366997.1008	163.00
32	30+95.31	277.89 LT	330680.1479	1367017.0347	163.00
33	30+96.70	13.03 LT	330323.2399	1367231.9062	163.00
34	31+02.32	343.64 LT	330723.8882	1366966.3374	163.00
35	31+02.39	23.92 LT	330337.6036	1367224.9630	163.00
36	31+07.63	3.86 LT	330329.8631	1367244.1436	163.00
37	31+14.46	18.12 LT	330342.6061	1367238.2329	163.00
38	31+13.44	340.08 LT	330733.0318	1366978.6569	163.00
39	31+13.30	369.91 LT	330730.6743	1366954.3679	163.00
40	31+27.66	397.98 LT	330777.0346	1366939.0672	163.00
41	31+32.93	374.89 LT	330767.6833	1366960.8288	163.00
42	31+33.07	412.40 LT	330759.8941	1366930.3992	163.00
43	31+44.24	402.34 LT	330793.1170	1366943.1331	163.00
44	31+43.40	436.93 LT	330814.3092	1366918.0384	163.00
45	31+53.84	427.42 LT	330817.1490	1366931.8761	163.00
46	31+59.49	432.08 LT	330822.8422	1366930.2398	163.00
47	31+63.31	434.77 LT	330829.2831	1366931.6313	163.00



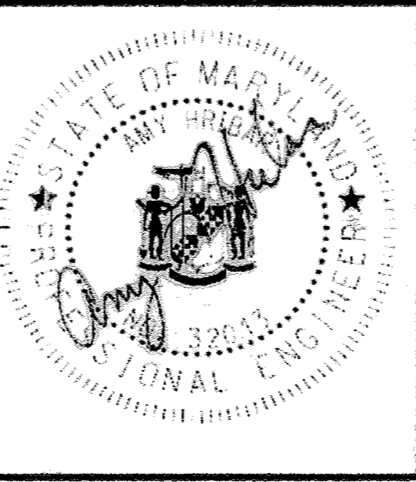
DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*[Signature]*  
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

DATE: 8/21/17

**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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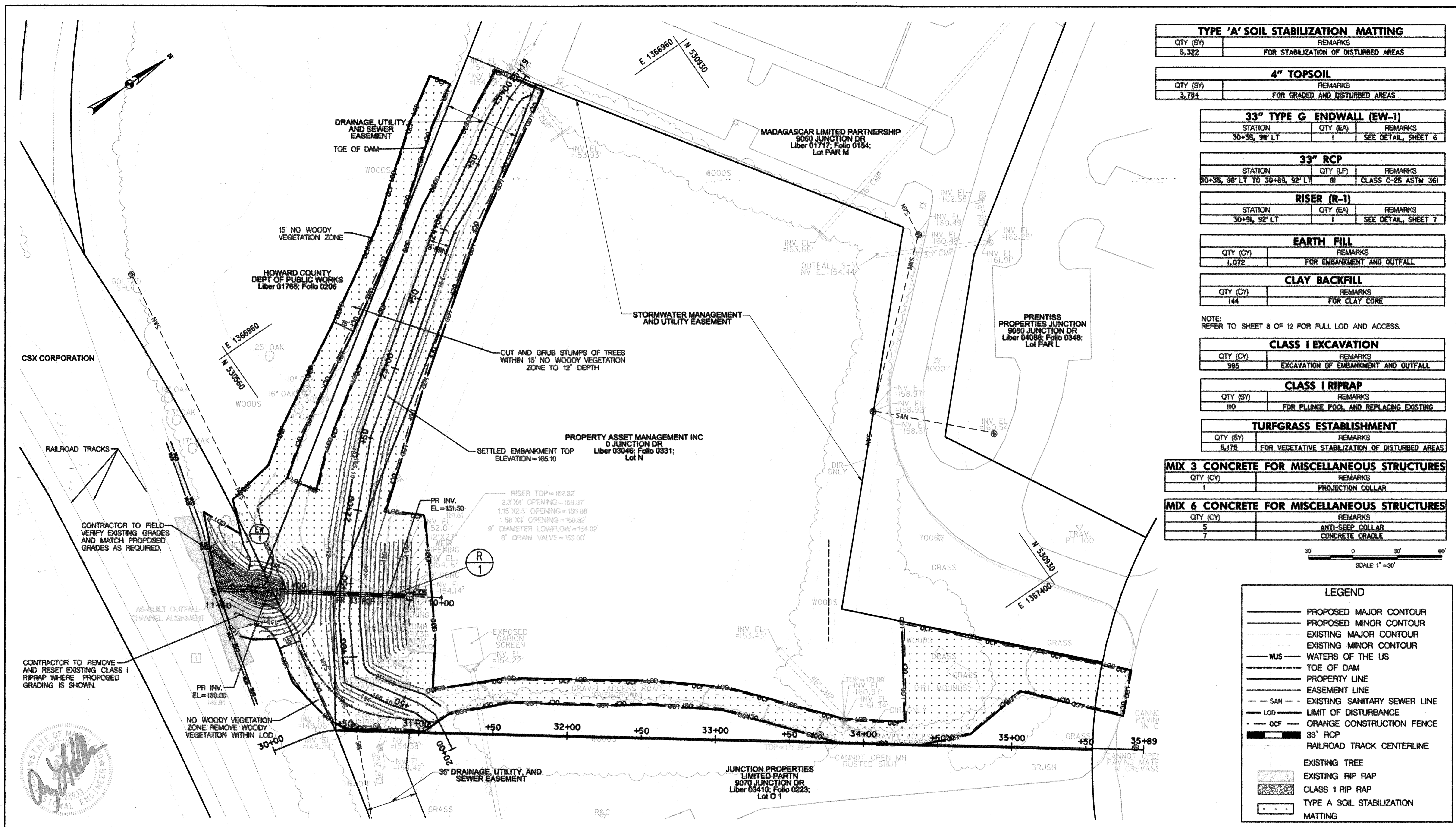
DES: AM	ADM	<input checked="" type="checkbox"/>	AS-BUILT SURVEY	05/15/16
DRN: MR				
CHK: CB				
DATE: 09/20/17	BY	NO.	REVISION	DATE

JUNCTION INDUSTRIAL PARK  
PRINCIPAL SPILLWAY REPLACEMENT PROJECT  
CAPITAL PROJECT #D-1159  
HOWARD COUNTY  
HSCD#: EP-12-29

**GEOMETRY SHEET**

SCALE: 1" = 30'

SHEET 2 OF 12



TYPE 'A' SOIL STABILIZATION MATTING	
QTY (SY)	REMARKS
5,322	FOR STABILIZATION OF DISTURBED AREAS

4" TOPSOIL	
QTY (SY)	REMARKS
3,784	FOR GRADED AND DISTURBED AREAS

33" TYPE G ENDWALL (EW-1)		
STATION	QTY (EA)	REMARKS
30+35, 98' LT	1	SEE DETAIL, SHEET 6

33" RCP		
STATION	QTY (LF)	REMARKS
30+35, 98' LT TO 30+89, 92' LT	81	CLASS C-25 ASTM 361

RISER (R-1)		
STATION	QTY (EA)	REMARKS
30+91, 92' LT	1	SEE DETAIL, SHEET 7

EARTH FILL	
QTY (CY)	REMARKS
1,072	FOR EMBANKMENT AND OUTFALL

CLAY BACKFILL	
QTY (CY)	REMARKS
144	FOR CLAY CORE

NOTE: REFER TO SHEET 8 OF 12 FOR FULL LOD AND ACCESS.

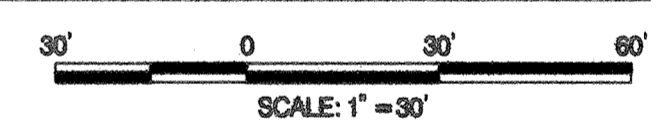
CLASS I EXCAVATION	
QTY (CY)	REMARKS
985	EXCAVATION OF EMBANKMENT AND OUTFALL

CLASS I RIPRAP	
QTY (SY)	REMARKS
110	FOR PLUNGE POOL AND REPLACING EXISTING

TURFGRASS ESTABLISHMENT	
QTY (SY)	REMARKS
5,175	FOR VEGETATIVE STABILIZATION OF DISTURBED AREAS

MIX 3 CONCRETE FOR MISCELLANEOUS STRUCTURES	
QTY (CY)	REMARKS
1	PROJECTION COLLAR

MIX 6 CONCRETE FOR MISCELLANEOUS STRUCTURES	
QTY (CY)	REMARKS
5	ANTI-SEEP COLLAR
7	CONCRETE GRADLE



LEGEND	
	PROPOSED MAJOR CONTOUR
	PROPOSED MINOR CONTOUR
	EXISTING MAJOR CONTOUR
	EXISTING MINOR CONTOUR
	WATERS OF THE US
	TOE OF DAM
	PROPERTY LINE
	EASEMENT LINE
	EXISTING SANITARY SEWER LINE
	LIMIT OF DISTURBANCE
	ORANGE CONSTRUCTION FENCE
	33" RCP
	RAILROAD TRACK CENTERLINE
	EXISTING TREE
	EXISTING RIP RAP
	CLASS 1 RIP RAP
	TYPE A SOIL STABILIZATION MATTING

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

*[Signature]*  
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

8/29/17 DATE

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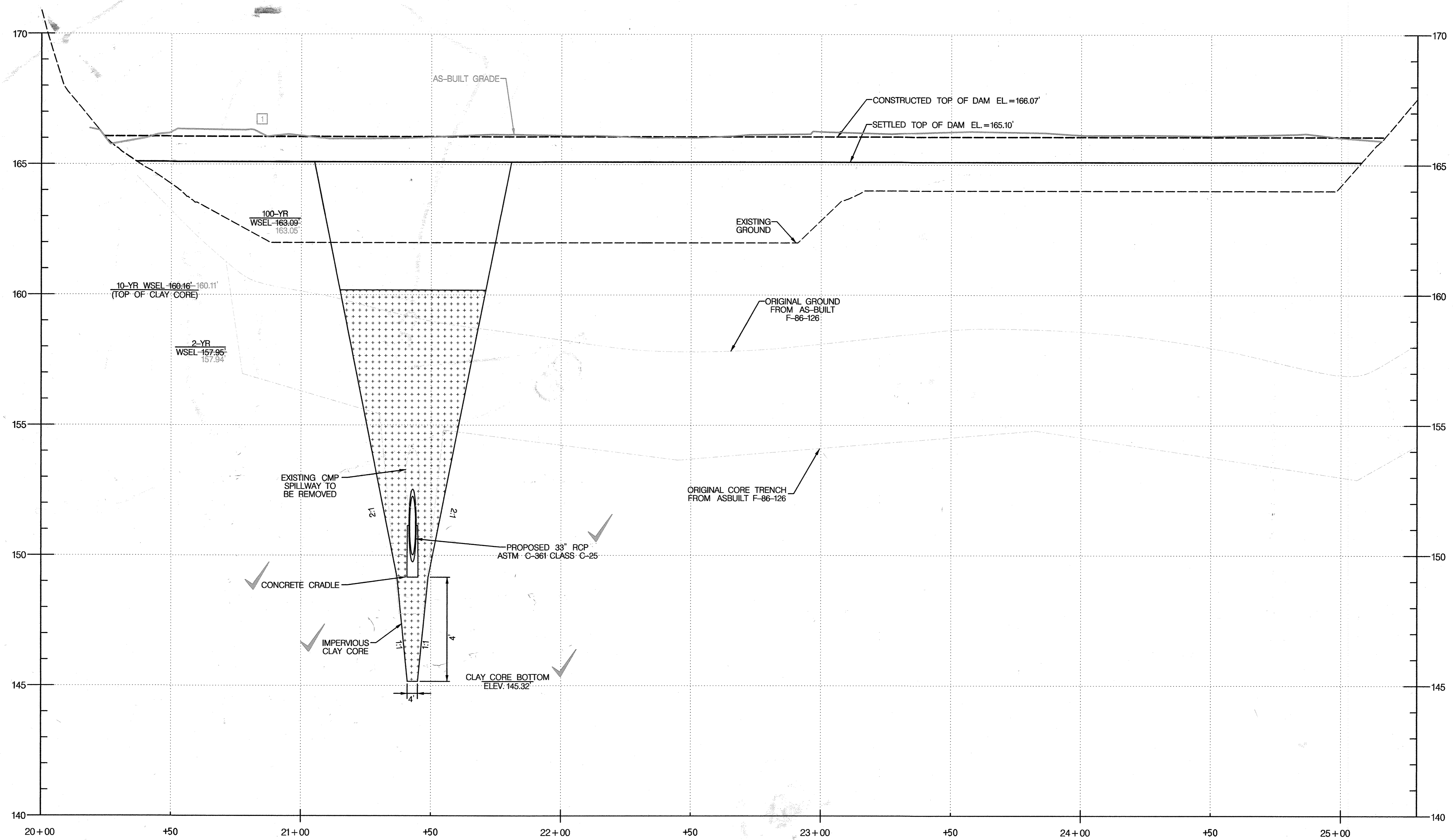
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DES: AM	ADM	<input checked="" type="checkbox"/>	AS-BUILT SURVEY	05/16/16
DRN: MR				
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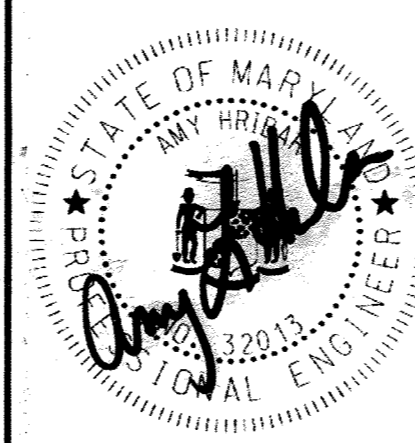
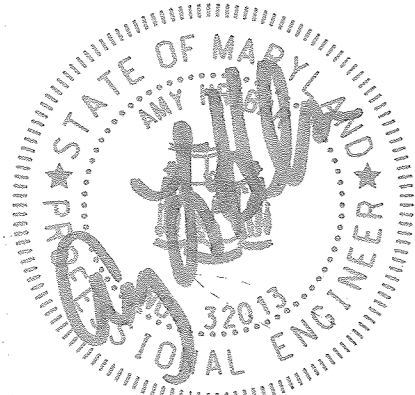
JUNCTION INDUSTRIAL PARK  
PRINCIPAL SPILLWAY REPLACEMENT PROJECT  
CAPITAL PROJECT #D-1159  
HOWARD COUNTY  
HSCD#: EP-12-29

**SITE PLAN**

SCALE: 1" = 30'  
SHEET: 3 OF 12



**EMBANKMENT PROFILE**  
 HORIZONTAL SCALE: 1" = 20'  
 VERTICAL SCALE: 1" = 2'



DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

*[Signature]*  
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

9/27/17  
 DATE

**MCCORMICK TAYLOR**  
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 4th Floor  
 Baltimore, Maryland 21202  
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 MARYLAND

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 Bureau of Environmental Services  
 6751 Columbia Gateway Drive, Suite 514  
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 (410) 313-6444

DES: AM	ADM	1	AS-BUILT SURVEY	05/15/18
DRN: MR				
CHK: CB				
DATE: 09/20/17	BY	NO.	REVISION	DATE

JUNCTION INDUSTRIAL PARK  
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**STORMDRAIN PROFILE SHEET**

SCALE  
 AS SHOWN

SHEET  
 4 OF 12

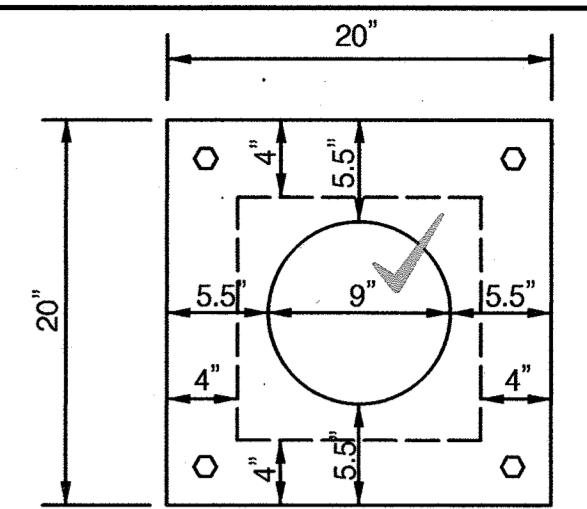




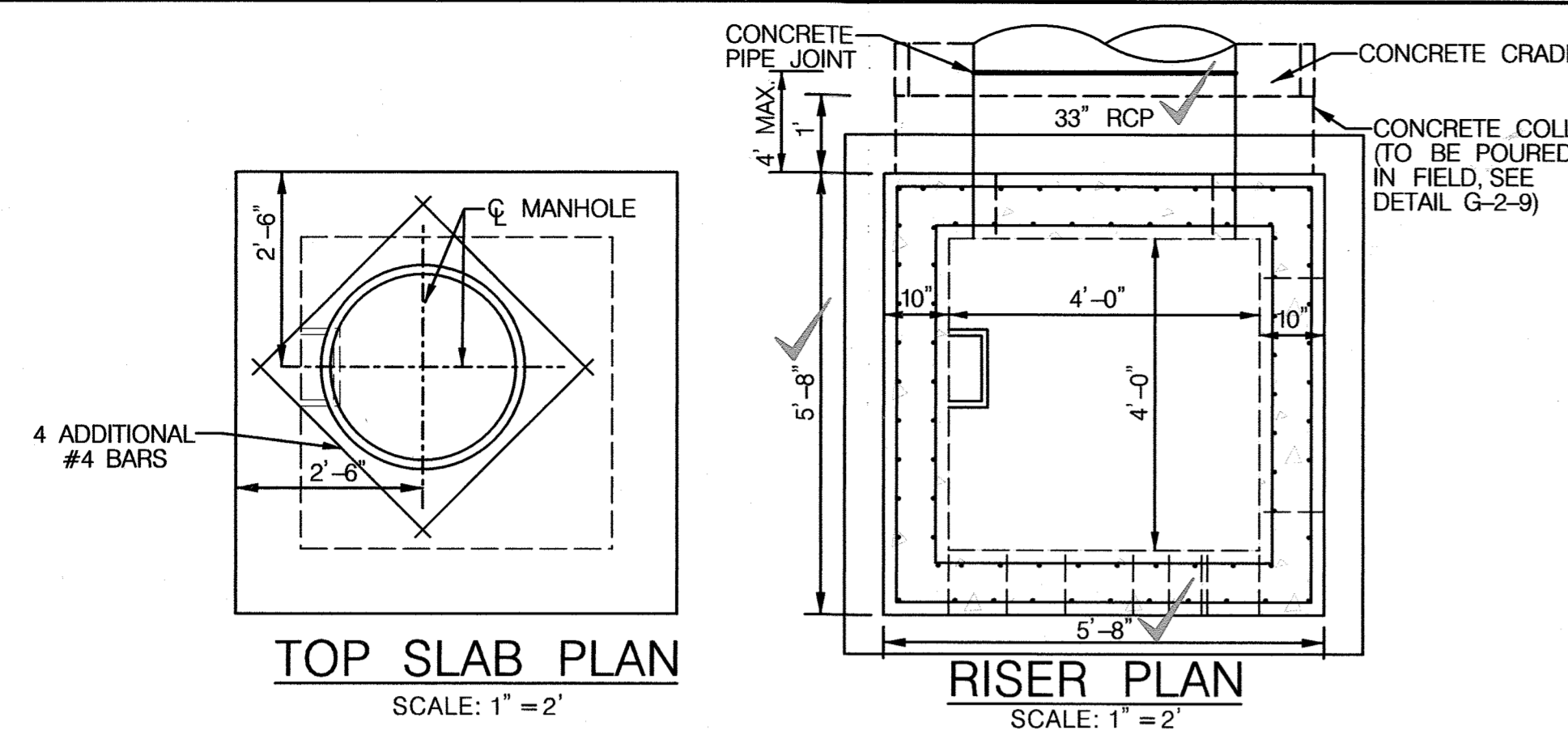
**RISER CONSTRUCTION NOTES:**

- RISER STEPS SHALL FOLLOW DETAIL G-5.21 FOR MANHOLE AND INLET STEPS
- SHA MIX NO. 3 CONCRETE SHALL BE USED AND SHALL CONFORM TO THE REQUIREMENTS OF LATEST EDITION OF ACI 301 AND ACI 318.
- RISER STRUCTURE SHALL BE DESIGNED IN ACCORDANCE TO LOADING SPECIFIED IN LATEST EDITIONS OF ASTM C857 AND ASTM C890.
- RISER STRUCTURE SHALL CONFORM TO THE REQUIREMENTS OF LATEST EDITIONS OF ASTM C858 AND MARYLAND NRCS POND CODE MD-378.
- RESILIENT CONNECTORS BETWEEN MANHOLE STRUCTURES, PIPES, AND LATERALS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF LATEST EDITIONS OF ASTM C923.
- INVERT SHALL BE APPROVED PRECAST PLAIN MIX NO. 3 CONCRETE. INVERT TO SLOPE DOWN TOWARD SHOWN ON PLAN OR AS OUTLET AT THE RATE OF 2" PER FOOT, OR AS DIRECTED.
- REFER TO DETAIL D-3.91 SIDEWALK FRAME AND COVER FOR MANHOLE COVER.
- FIRST BARREL JOINT OF CONCRETE PIPE SHALL HAVE A WATERTIGHT CONNECTION AND BE PLACED NO MORE THAN 4' FROM RISER.
- A 6" DRAIN VALVE SHALL BE INSTALLED AT THE LOCATION SHOWN ON THE RISER.
- VALVE STEM SHALL BE ANCHORED TO THE CONTROL STRUCTURE AND EXTEND TO THE TOP OF THE RISER FOR MAINTENANCE ACCESS.
- ENSURE WATERTIGHT SEAL AROUND VALVE.
- REFER TO DETAIL G-2-9 FOR CONCRETE PROJECTION COLLAR.
- CONSTRUCT CONCRETE COLLARS TO ENSURE WATERTIGHT SEALS AT RISER AND PIPE CONNECTIONS.
- 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.
- 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 COLLAR, TRASH RACKS, DRAIN VALVES, VALVE STEMS AND FOR ALL MATERIAL, LABOR, EQUIPMENT, TOOLS, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK.

- ORIFICE PLATE NOTES:**
- 20" X 20" X 1/2" GALVANIZED STEEL ORIFICE PLATE.
  - ORIFICE PLATE WITH 9" DIA. OPENING TO BE BOLTED TO THE INSIDE DOWN STREAM FACE OF CONCRETE RISER USING 1/2" STAINLESS STEEL CONCRETE ANCHORS.

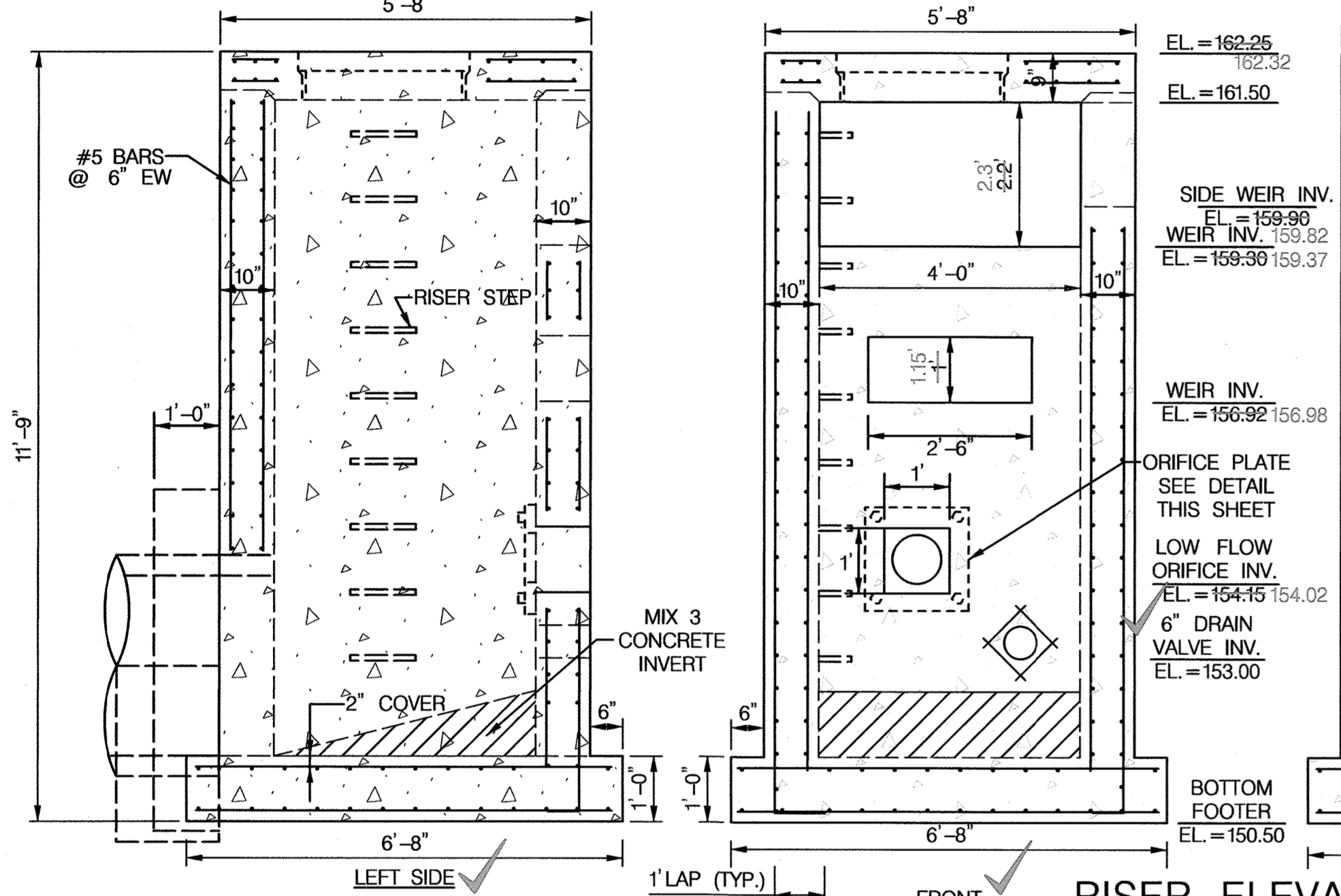


**ORIFICE PLATE**  
NOT TO SCALE

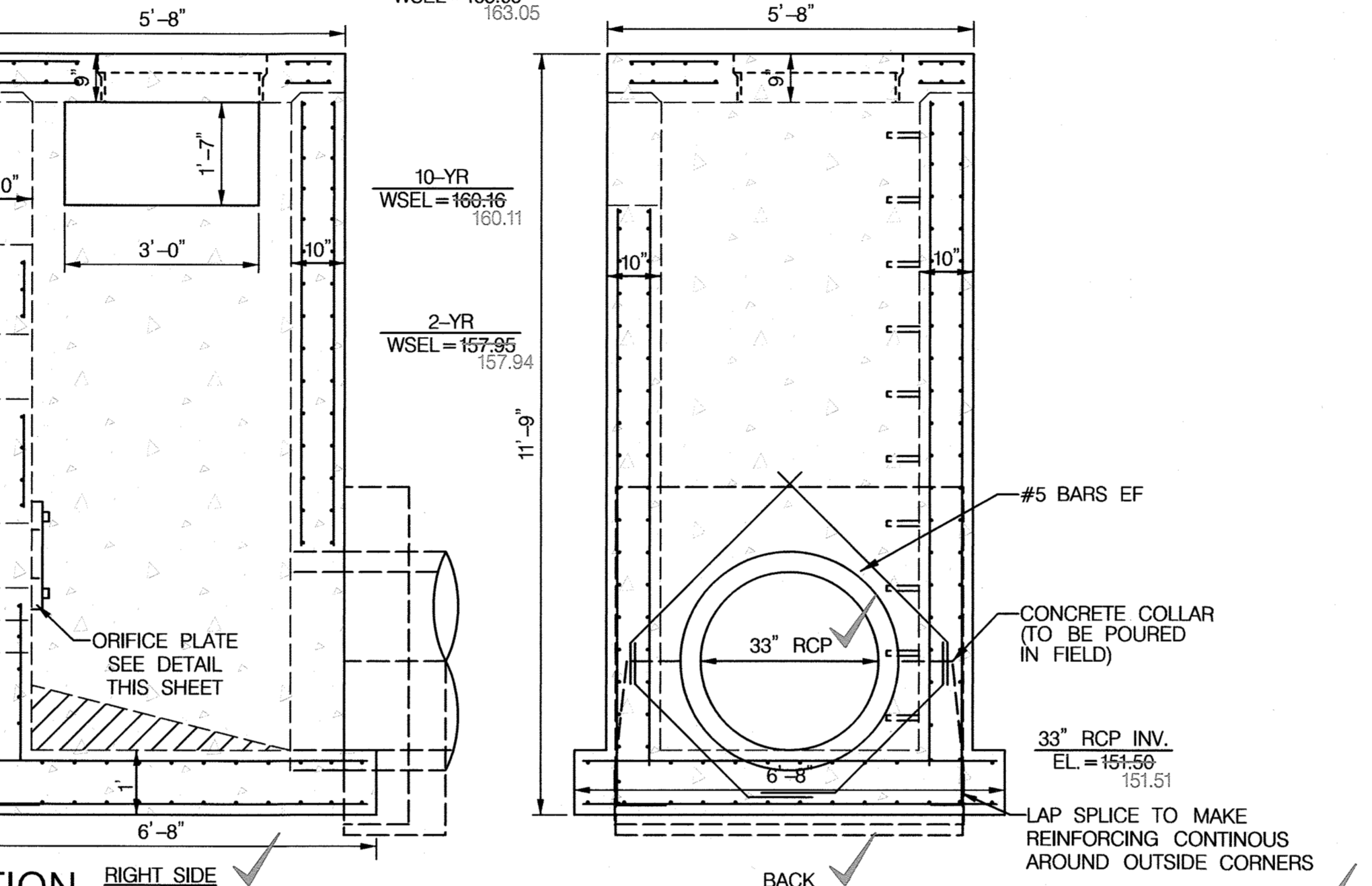


**TOP SLAB PLAN**  
SCALE: 1" = 2'

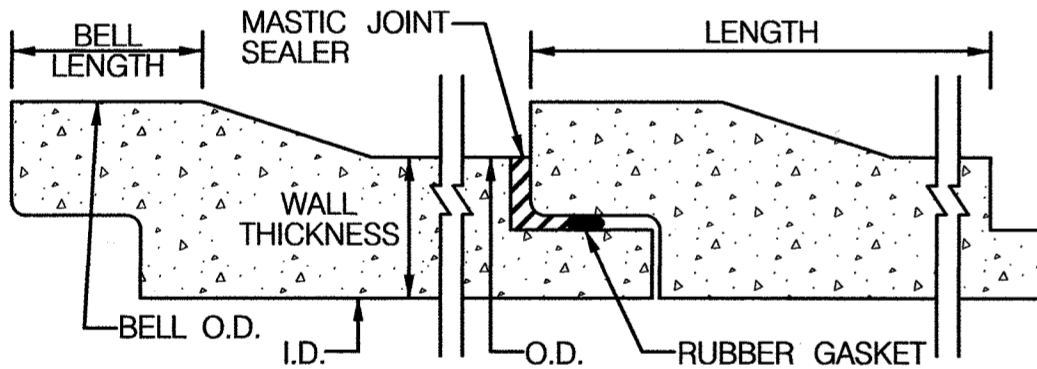
**RISER PLAN**  
SCALE: 1" = 2'



**RISER ELEVATION**  
SCALE: 1" = 2'



**RISER ELEVATION**  
SCALE: 1" = 2'

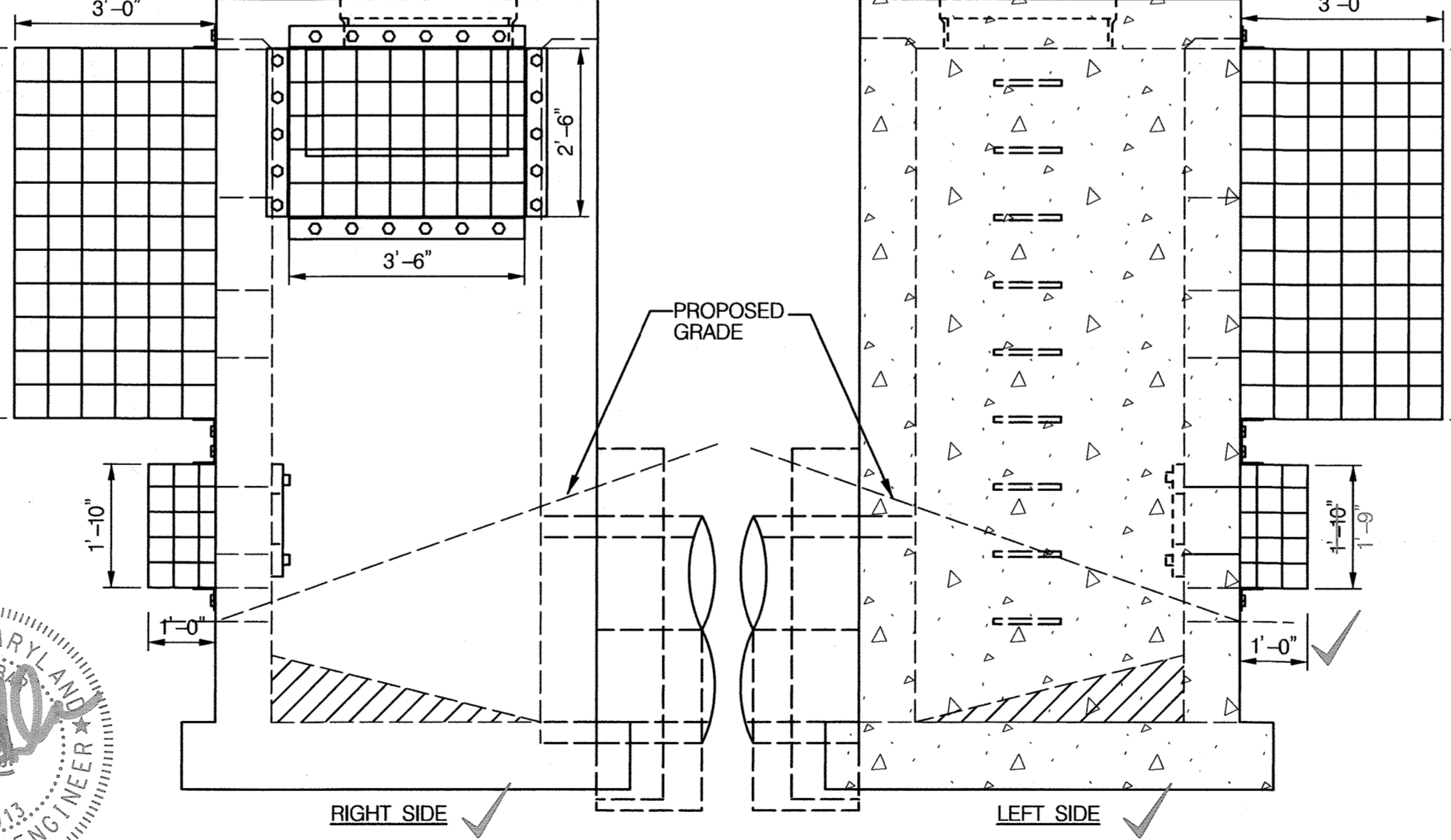
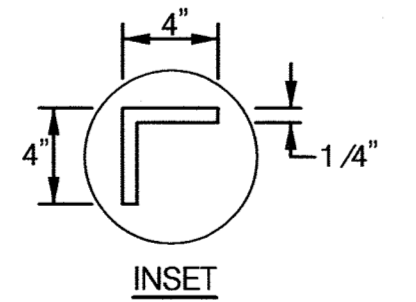


- BARREL JOINT SEALER NOTES:**
- MASTIC JOINT SEALER TO BE APPLIED ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
  - JOINT SEALER SHOULD HAVE WATERTIGHT CONNECTION.
  - THE SEALER SHALL BE A MIXTURE OF ASPHALT, MINERAL FILLER, AND PETROLEUM SOLVENTS AND SHALL HAVE ADHESIVE AND COHESIVE PROPERTIES.
- THE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

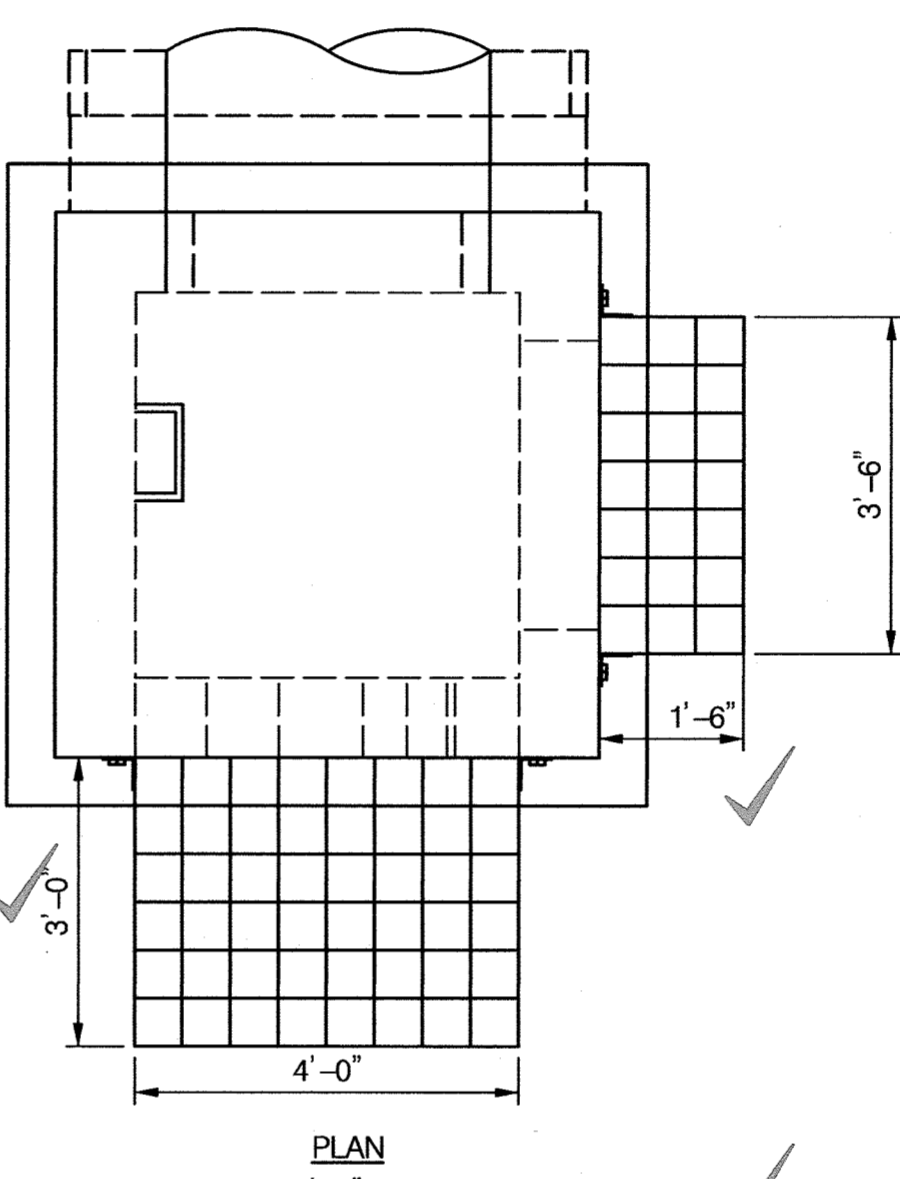
TEST AND METHOD	SPECIFICATION LIMITS
RESIDUES BY EVAPORATION, NONVOLATILE MATTER, D 2939, % MIN.	70
INORGANIC FILLER ON IGNITION, ASH CONTENT, D 2939, %	15-45

**BARREL JOINT SEAL DETAIL**  
NOT TO SCALE

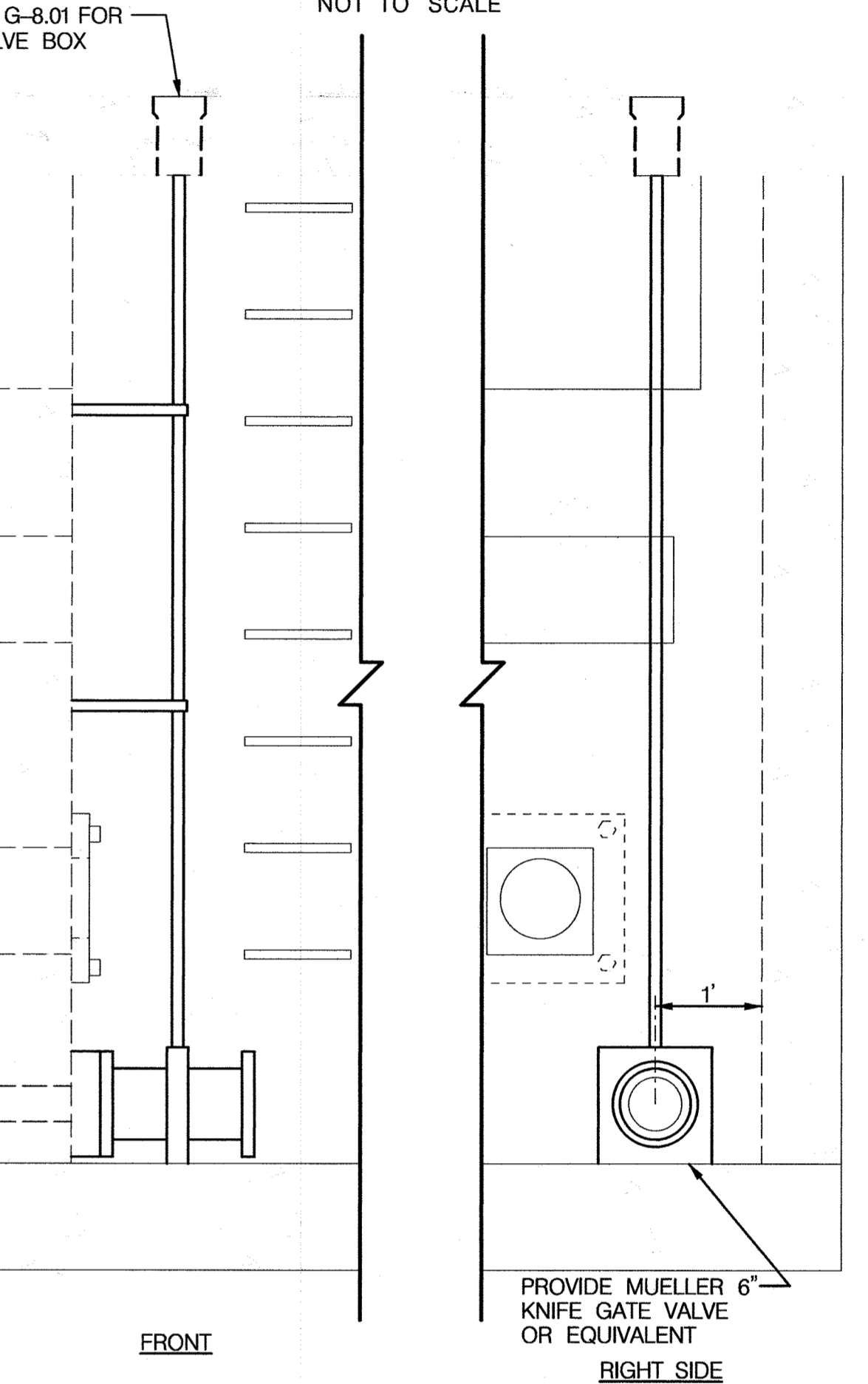
- TRASH RACK CONSTRUCTION NOTES:**
- FRAME SHALL BE CONSTRUCTED OF 4" X 4" X 1/4" STEEL ANGLE WITH THE CORNERS MITRED AND BUTT WELDED.
  - THE FRAME SHALL BE PAINTED WITH TWO COATS OF COLD GALVANIZED COMPOUND IN "BATTLESHIP GREY".
  - TOP TRASH RACK BARS SHALL BE #6 REBAR AT 6" CC EACH WAY, HOT-DIPPED GALVANIZED AND FILLET WELDED TO THE ANGLE FRAME.
  - LOW FLOW TRASH RACK BARS SHALL BE #6 REBAR AT 4" CC EACH WAY, HOT-DIPPED GALVANIZED AND FILLET WELDED TO THE ANGLE FRAME.
  - ALL STEEL SHALL BE ASTM A-36.
  - 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.



**TRASH RACK DETAIL**  
SCALE: 1" = 2'



**PLAN**  
4'-0"



**GATE VALVE DETAIL**  
NOT TO SCALE

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

**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: AM	ADM	1	AS-BUILT SURVEY	05/15/18
DRN: MR				
CHK: CB				
DATE: 09/20/17	BY	NO.	REVISION	DATE

**JUNCTION INDUSTRIAL PARK  
PRINCIPAL SPILLWAY REPLACEMENT PROJECT  
CAPITAL PROJECT #D-1159  
HOWARD COUNTY  
HSCD#: EP-12-29  
RISER DETAIL SHEET**

SCALE  
AS SHOWN  
SHEET  
7 OF 12

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES  
9/22/17 DATE

**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 7:00 AM, 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**

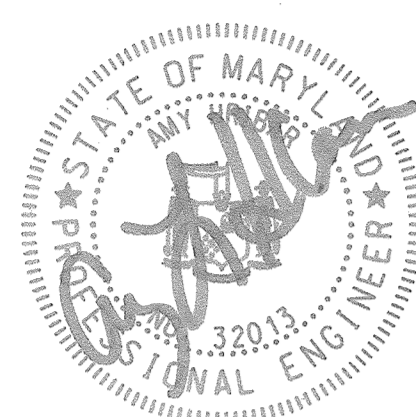
FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION MUST BE COMPLETED WITHIN:

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

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

**NOTE:**

1. EROSION AND SEDIMENT CONTROL SHALL BE STRICTLY ENFORCED.
2. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AS SOON AS PRACTICABLE FOR EACH PHASE OF CONSTRUCTION AND CAN ONLY BE REMOVED UPON THE APPROVAL OF THE ENGINEER AND THE SEDIMENT CONTROL INSPECTOR. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.



SUMP PIT		
STATION	QTY (EA)	REMARKS
30+99, 86' LT	1	

STABILIZED CONSTRUCTION ENTRANCE	
QTY (EA)	REMARKS
50 TONS - 1 EA	

CLEAR WATER PUMP		
STATION	QTY (EA)	REMARKS
31+17, 78' LT	1	INSIDE POND

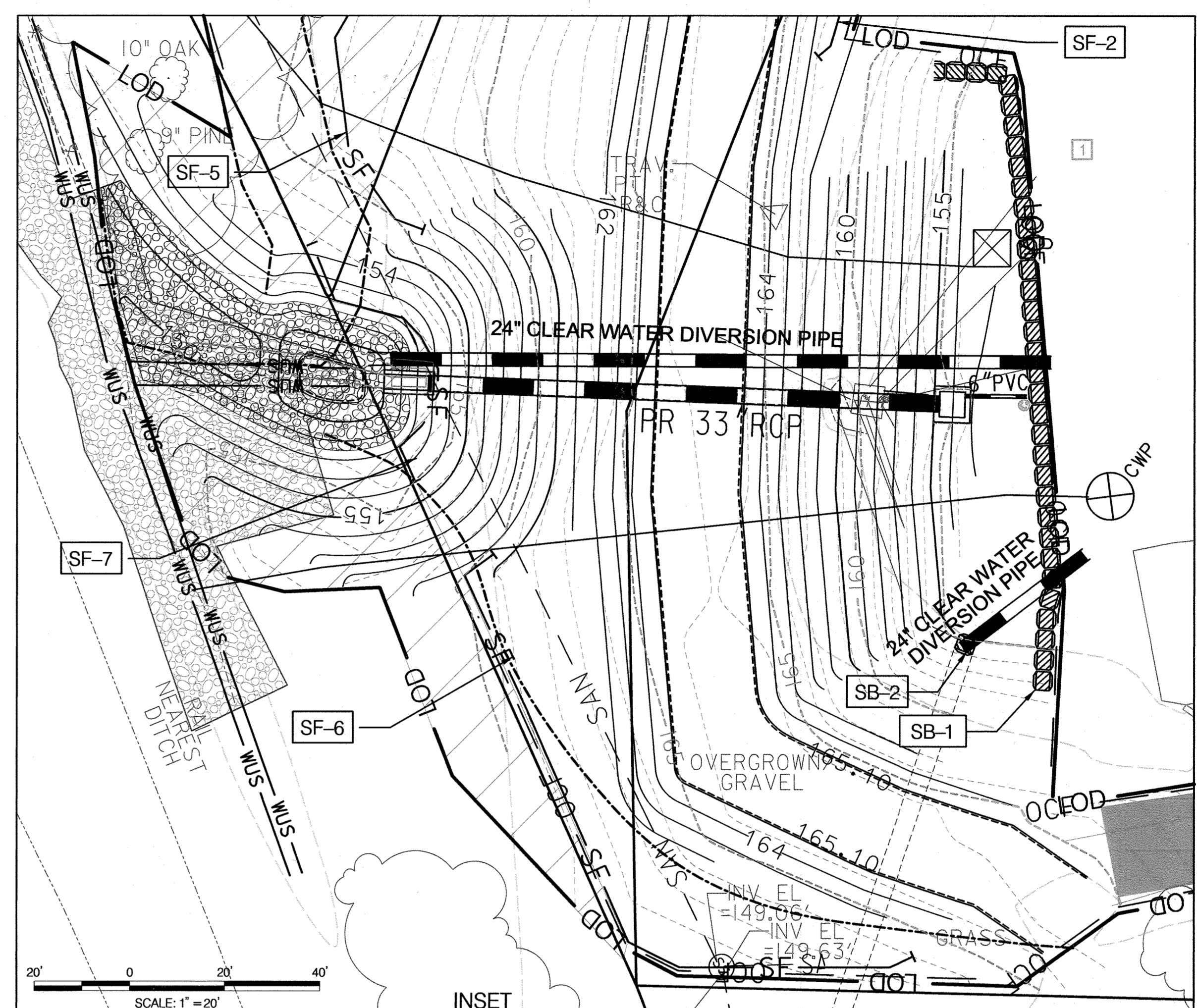
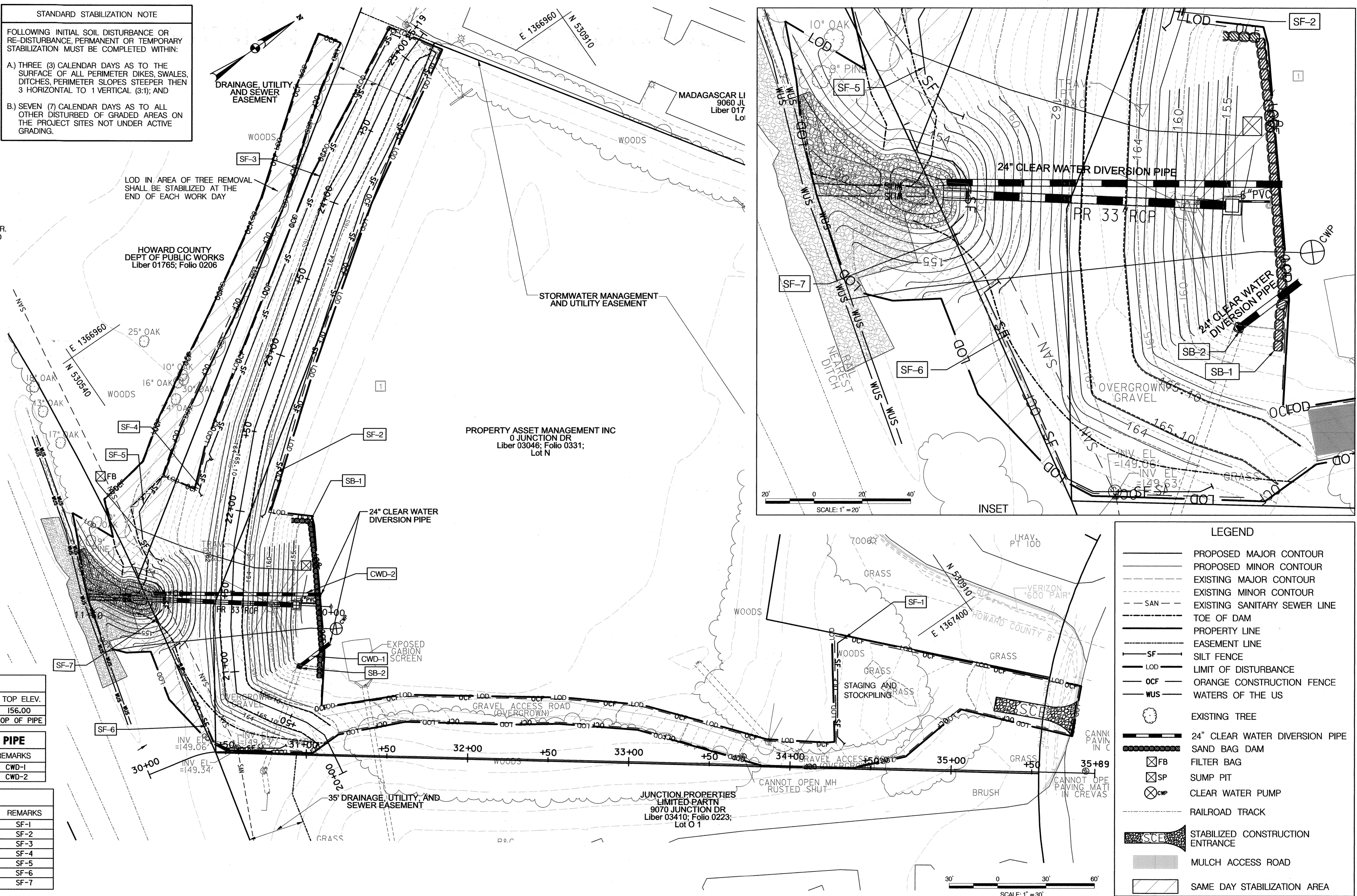
FILTER BAG		
STATION	QTY (EA)	REMARKS
30+30, 154' LT	1	FROM SUMP PIT

ORANGE CONSTRUCTION FENCE	
QTY (LF)	REMARKS
2,243	LOD PERIMETER

SANDBAG DAM (SB)					
FROM	TO	QTY (LF)	REMARKS	TOP ELEV.	
30+87, 144' LT	31+01, 49' LT	105	SB-1	156.00	
30+92, 55' LT	30+96, 54' LT	3	SB-2	TOP OF PIPE	

24" CLEAR WATER DIVERSION PIPE			
FROM	TO	QTY (LF)	REMARKS
30+94, 54' LT	31+07, 65' LT	18	CWD-1
30+32, 105' LT	31+06, 99' LT	108	CWD-2

SILT FENCE (SF)			
FROM	TO	QTY (LF)	REMARKS
34+32, 80' LT	34+33, 15' LT	70	SF-1
31+5, 438' LT	30+72, 144' LT	313	SF-2
31+47, 445' LT	30+46, 181' LT	294	SF-3
30+46, 181' LT	30+44, 159' LT	25	SF-4
30+36, 122' LT	30+40, 173' LT	65	SF-5
30+36, 70' LT	30+87, 5' LT	115	SF-6
30+31, 125' LT	30+33, 84' LT	51	SF-7



**LEGEND**

- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- SAN - EXISTING SANITARY SEWER LINE
- TOE OF DAM
- PROPERTY LINE
- EASEMENT LINE
- SF - SILT FENCE
- LOD - LIMIT OF DISTURBANCE
- OCF - ORANGE CONSTRUCTION FENCE
- WUS - WATERS OF THE US
- EXISTING TREE
- 24" CLEAR WATER DIVERSION PIPE
- SANDBAG DAM
- FB - FILTER BAG
- SP - SUMP PIT
- CWP - CLEAR WATER PUMP
- RAILROAD TRACK
- STABILIZED CONSTRUCTION ENTRANCE
- MULCH ACCESS ROAD
- SAME DAY STABILIZATION AREA

**DEPARTMENT OF PUBLIC WORKS**  
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

**McCORMICK TAYLOR**  
509 South Exeter Street  
4th Floor  
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**JUNCTION INDUSTRIAL PARK**  
**PRINCIPAL SPILLWAY REPLACEMENT PROJECT**  
**CAPITAL PROJECT #D-1159**  
**HOWARD COUNTY**  
**HSCD#: EP-12-29**

**EROSION AND SEDIMENT CONTROL PLAN**

SCALE: AS SHOWN  
SHEET: 8 OF 12



**B-4-3 SEEDING AND MULCHING**

**EROSION AND SEDIMENT CONTROL - GENERAL NOTES**

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

- B. MULCHING**
- MULCH MATERIALS (IN ORDER OF PREFERENCE)
    - STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, RYE, OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR. STRAW IS TO BE FREE OF NOXIOUS WEED SEEDS AS SPECIFIED IN THE MARYLAND SEED LAW AND NOT MUSTY, MOLDY, CAKED, DECAYED, OR EXCESSIVELY DUSTY. NOTE: USE ONLY STERILE STRAW MULCH IN AREAS WHERE ONE SPECIES OF GRASS IS DESIRED.
    - WOOD CELLULOSE FIBER MULCH (WCFFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE.
      - WCFFM IS TO BE GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORMLY SPREAD SLURRY.
      - WCFFM, INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS.
      - WCFFM MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED, FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL MUST FORM A BLOTTER-LIKE GROUND COVER, ON APPLICATION, HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND MUST COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS.
      - WCFFM MATERIAL MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE PHYTO-TOXIC.
      - WCFFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH OF APPROXIMATELY 1 MILLIMETERS, DIAMETER APPROXIMATELY 1 MILLIMETER, PH RANGE OF 4.0 TO 8.5, ASH CONTENT OF 1.6 PERCENT MAXIMUM AND WATER HOLDING CAPACITY OF 90 PERCENT MINIMUM.
  - 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 A MULCH ANCHORING TOOL, INCREASE THE APPLICATION RATE 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 OIL (AGRO-TACK), DCA-70, PETROSET, TERRA TAX II, TERRA TACK 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 APPLIED 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.

**HOWARD SOIL CONSERVATION DISTRICT  
STANDARD SEDIMENT CONTROL NOTES**

- A PRE-CONSTRUCTION MEETING MUST OCCUR WITH THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION (CID), 410-313-1880 AFTER THE FUTURE LOD AND PROTECTED AREAS ARE MARKED 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 INSPECTOR ON BEHALF OF THE 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 SPECIFICATIONS 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 21% OR GREATER FILL STOCKPILES (SEC. B-4-8) IN EXCESS OF 20'. MUST BE BLENCHED 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 PERMITS FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
- SITE ANALYSIS:
 

TOTAL AREA OF SITE	1.14 ACRES
AREA TO BE PROTECTED OR PAVED	0.14 ACRES
AREA TO BE VEGETATIVELY STABILIZED	1.14 ACRES
TOTAL CUT	985 CY
TOTAL FILL	072 CY
OFFSITE WASTE/BORROW AREA LOCATION	SEE NOTE #17
- 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 OF THE INSPECTION, MADE AVAILABLE UPON REQUEST IS PART OF EVERY INSPECTION AND SHALL INCLUDE ITEMS LISTED AT HOWARDCSD.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 IIIIP 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.

**SEQUENCE OF CONSTRUCTION**

- EROSION AND SEDIMENT CONTROL SHALL BE STRICTLY ENFORCED.
- NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
- A MINIMUM 5-DAY CLEAR WEATHER (NO PRECIPITATION) FORECAST FROM THE NATIONAL WEATHER SERVICE AND PERMISSION FROM THE INSPECTOR SHALL BE GRANTED PRIOR TO PROCEEDING WITH ANY WORK. OBTAIN MDE PERMIT (# 201661779) 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) 313-1880 A MINIMUM OF 5 DAYS PRIOR TO THE START OF ANY CONSTRUCTION. THE CONTRACTOR SHALL ALSO NOTIFY THE HOWARD COUNTY BUREAU OF UTILITIES (410) 313-4900 AND MARYLAND DEPARTMENT OF THE ENVIRONMENT INSPECTOR AT (301) 665-2850, FIVE(5) DAYS BEFORE ANY LAND DISTURBING ACTIVITY. (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)
- MOBILIZE EQUIPMENT. DURING A 5 DAY DRY WEATHER FORECAST FROM THE NATIONAL WEATHER SERVICE. INSTALL STABILIZED CONSTRUCTION ENTRANCE, ORANGE CONSTRUCTION FENCE (OCF), MULCH ACCESS ROAD, SAND BAGS, CLEAR WATER PUMP, SILT FENCE, CLEAR WATER DIVERSION PIPE (CWD-1), SUMP PIT, AND FILTER BAG AS SHOWN ON THE PLANS. (4 DAYS)
- CLEAR AND GRUB SITE AS SHOWN ON THE PLANS (2 DAYS).
- WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR BEFORE PROCEEDING AND DURING A 3-DAY DRY FORECAST FROM THE NATIONAL WEATHER SERVICE, GRADE OUTFALL AS SHOWN ON THE PLANS AND INSTALL CLASS I RIPRAP PLUNGE POOL FROM DOWNSTREAM TO UPSTREAM. REMOVE EXISTING ENDWALL AND 12 FT OF THE EXISTING PRINCIPAL SPILLWAY PIPE TO COMPLETE OUTFALL INSTALLATION. UTILIZE SAME DAY STABILIZATION PRACTICES AT PRINCIPAL. INSTALL SF-7 AROUND STABILIZED OUTFALL. (3 DAYS)
- WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR BEFORE PROCEEDING AND DURING A 5-DAY DRY WEATHER FORECAST FROM THE NATIONAL WEATHER SERVICE, EXCAVATE EMBANKMENT AND REMOVE REMAINDER OF EXISTING PRINCIPAL SPILLWAY AND RISER. INSTALL CLEAR WATER DIVERSION ALONGSIDE PROPOSED SPILLWAY TO DIVERT CLEAR WATER AND ADJUST DIVERSION PIPE AS NECESSARY TO COMPLETE WORK DIVERTING THROUGH COMPLETED SECTIONS OF PRINCIPAL SPILLWAY PIPE. INSTALL EW-1 AND PROPOSED SPILLWAY PIPE. ADJUST SF-7 AS NEEDED TO PREVENT DIRTY WATER FROM FLOWING INTO RIPRAP OUTFALL. CONSTRUCT RISER, INSTALL CLAY CORE AND ANTI-SEEP COLLAR. USE CLEAR WATER PUMP AND SUMP PIT/FILTER BAG TO DEWATER POND AND WORK AREA AS NEEDED (10 DAYS)
- RAISE EMBANKMENT AS SHOWN ON THE PLANS. INSTALL TRASH RACKS AND ORIFICE PLATE. (4 DAYS)
- STABILIZE AREAS WITH SOIL STABILIZATION MATTING, TOPSOIL AND VEGETATIVE ESTABLISHMENT AS SHOWN ON THE PLANS (4 DAYS)
- WHEN AREAS ARE FULLY STABILIZED AND WITH PERMISSION FROM THE INSPECTOR, REMOVE THE REMAINING SEDIMENT CONTROL DEVICES AND MULCH ACCESS ROAD. STABILIZE ANY REMAINING DISTURBED AREAS WITH SEED AND MULCH. DEMOBILIZE EQUIPMENT (4 DAYS).

**B-4-4 TEMPORARY STABILIZATION**

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

**B-4-5 PERMANENT STABILIZATION**



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

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

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

**B-4-3 SEEDING AND MULCHING**

- SEEDING
  - SEEDS 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 REQUESTED FROM 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 IN THE SEED TREATING LEGUME SEED IN THE SEED MIXTURES MUST BE A PURE CULTURE OF NITROGEN FIXING BACTERIA PREPARED SPECIFICALLY FOR THE SPECIES. INOCULANTS MUST NOT BE USED LATER THAN THE DATE INDICATED ON THE CONTAINER. ADD FRESH INOCULANTS AS DIRECTED ON THE PACKAGE. USE FOUR TIMES THE RECOMMENDED RATE WHEN HYDROSEEDING. NOTE: IT IS VERY IMPORTANT TO KEEP INOCULANT AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75 TO 80 DEGREES FAHRENHEIT CAN WEAKEN BACTERIA AND MAKE THE INOCULANT LESS EFFECTIVE.
  - SOD OR SEED MUST NOT BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.
- APPLICATION
  - DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS.
    - INCORPORATE SEED INTO THE SUBSOIL AT THE RATES DESCRIBED 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 SEEDED 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 HYDROSEEDER (SLURRY INCLUDES SEED 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; P205 (PHOSPHORUS), 200 POUNDS PER ACRE; K2O (POTASSIUM), 200 POUNDS PER ACRE.
    - 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 BURNED 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.

<p><b>DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND</b></p>  <p>509 South Exeter Street 4th Floor Baltimore, Maryland 21202 (410) 662-7400</p>	<p><b>Howard County MARYLAND</b></p> <p>Storm Water Management Division Bureau of Environmental Services 6751 Columbia Gateway Drive, Suite 514 Columbia, Maryland 21046-3143 (410) 313-6444</p>		DES: AM					<p><b>JUNCTION INDUSTRIAL PARK PRINCIPAL SPILLWAY REPLACEMENT PROJECT CAPITAL PROJECT #D-1159 HOWARD COUNTY HSCD#: EP-12-29</b></p> <p><b>EROSION AND SEDIMENT CONTROL NOTES</b></p>	SCALE
			DRN: MR						
			CHK: CB						SHEET
			DATE: 09/20/17	BY	NO.	REVISION	DATE		9 OF 12

# SWM POND CONSTRUCTION SPECIFICATIONS (MARYLAND CODE 378 POND - JANUARY 2000)

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

## SITE PREPARATION

AREAS 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 Tired OR VIBRATORY ROLLER. FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SUCH THAT THE REQUIRED DEGREE OF COMPACTION WILL BE OBTAINED WITH THE EQUIPMENT USED. THE FILL MATERIAL SHALL CONTAIN SUFFICIENT MOISTURE SO THAT IF FORMED INTO A BALL IT WILL NOT CRUMBLE, YET NOT BE SO WET THAT WATER CAN BE SQUEEZED OUT.

WHEN REQUIRED BY THE REVIEWING AGENCY THE MINIMUM REQUIRED DENSITY SHALL NOT BE LESS THAN 95% OF MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT WITHIN +/- 2% OF THE OPTIMUM. EACH LAYER OF FILL SHALL BE COMPACTED AS NECESSARY TO OBTAIN THAT DENSITY, AND IS TO BE CERTIFIED BY THE ENGINEER AT THE TIME OF CONSTRUCTION. ALL COMPACTION IS TO BE DETERMINED BY AASHTO METHOD T-99 (STANDARD PROCTOR).

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

**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.

## EARTH FILL (CONTINUED)

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 COAT 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 ANNUAL 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

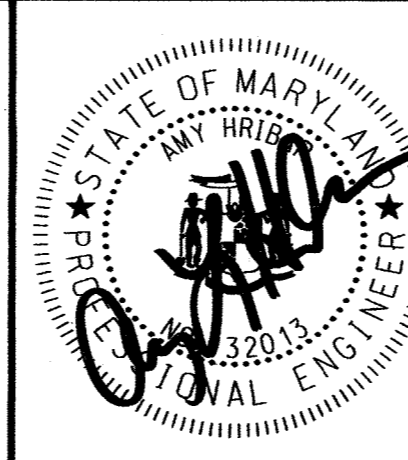
CONSTRUCTION OPERATIONS WILL BE CARRIED OUT IN SUCH A MANNER THAT EROSION WILL BE CONTROLLED AND WATER AND AIR POLLUTION MINIMIZED. STATE AND LOCAL LAWS CONCERNING POLLUTION ABATEMENT WILL BE FOLLOWED. CONSTRUCTION PLANS SHALL DETAIL EROSION AND SEDIMENT CONTROL MEASURES.

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

DEPARTMENT OF PUBLIC WORKS  
HOWARD COUNTY, MARYLAND

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Bureau of Environmental Services  
6751 Columbia Gateway Drive, Suite 514  
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(410) 313-6444



DES: AM

DRN: MR

CHK: CB

DATE: 09/20/17

BY	NO.	REVISION	DATE

JUNCTION INDUSTRIAL PARK  
PRINCIPAL SPILLWAY REPLACEMENT PROJECT  
CAPITAL PROJECT #D-1159  
HOWARD COUNTY  
HSCD#: EP-12-29

POND CONSTRUCTION SPECIFICATIONS

SCALE

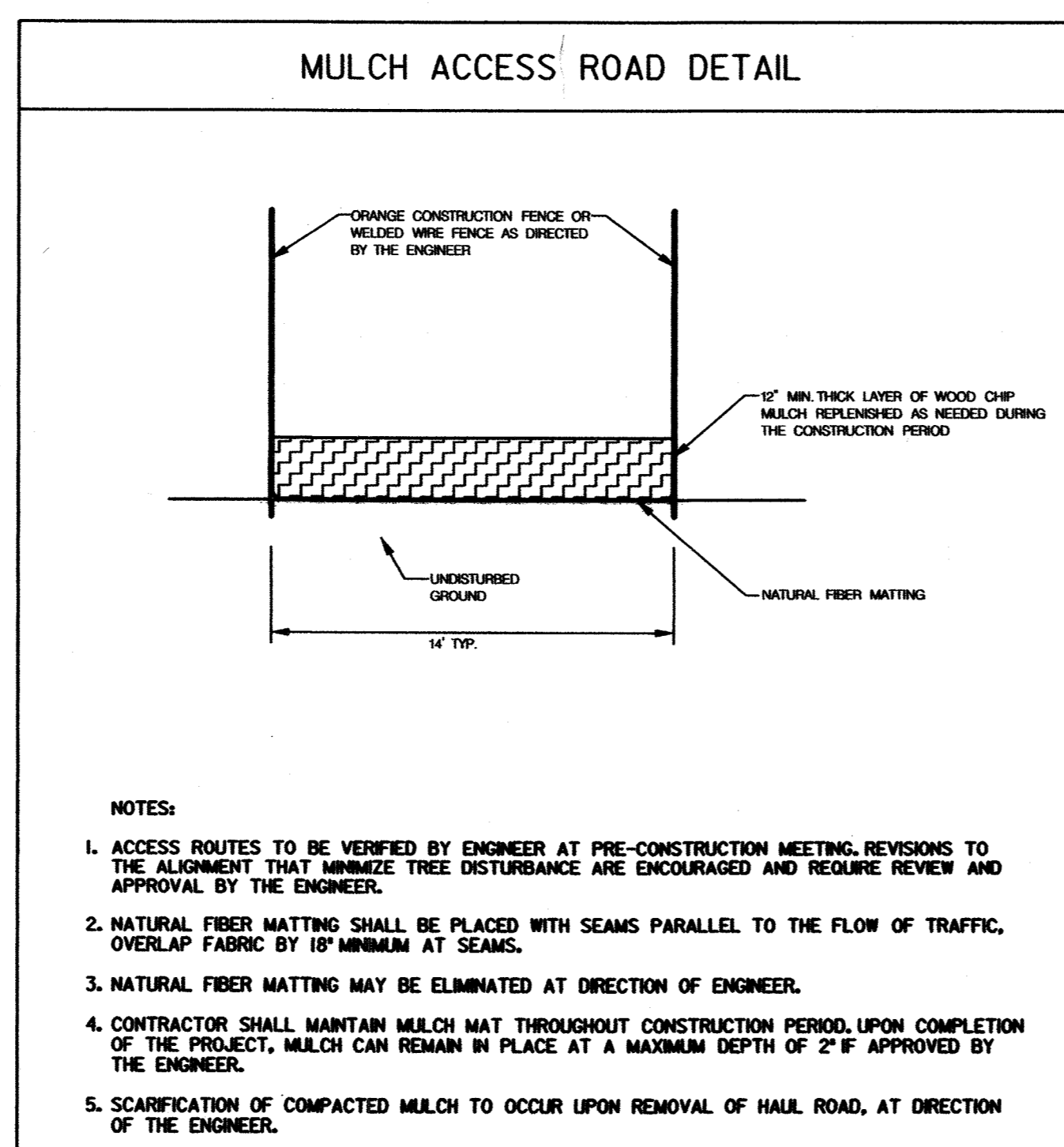
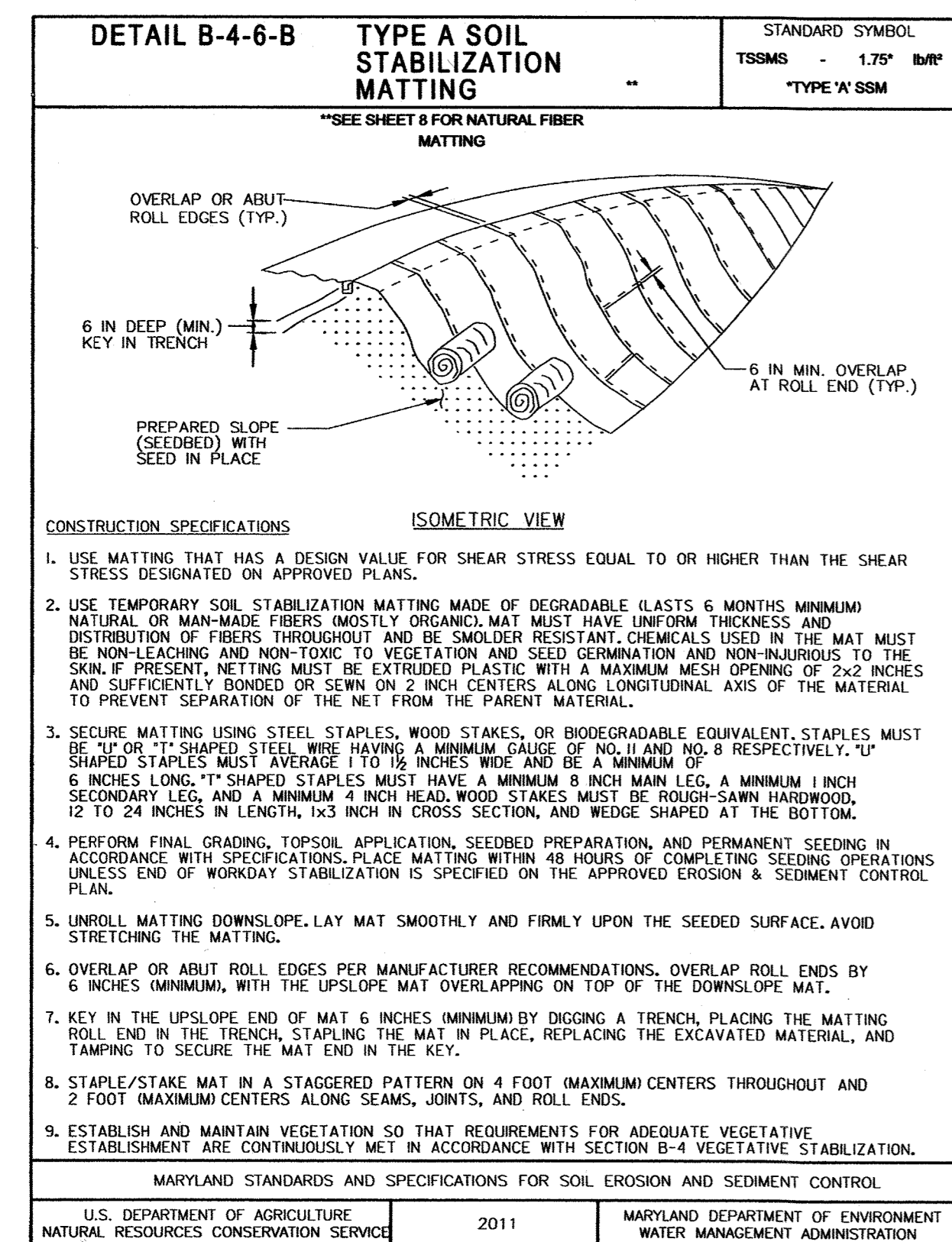
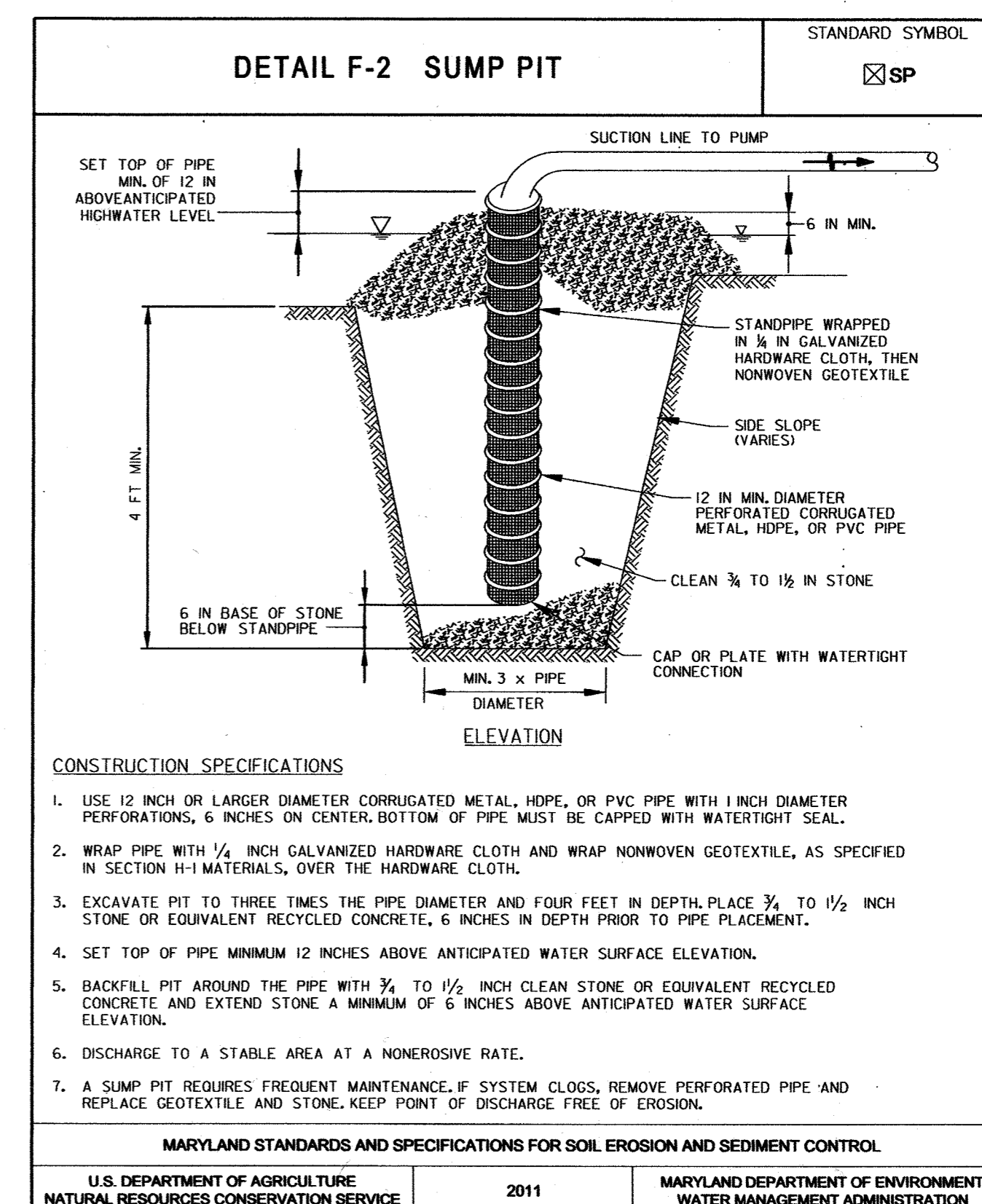
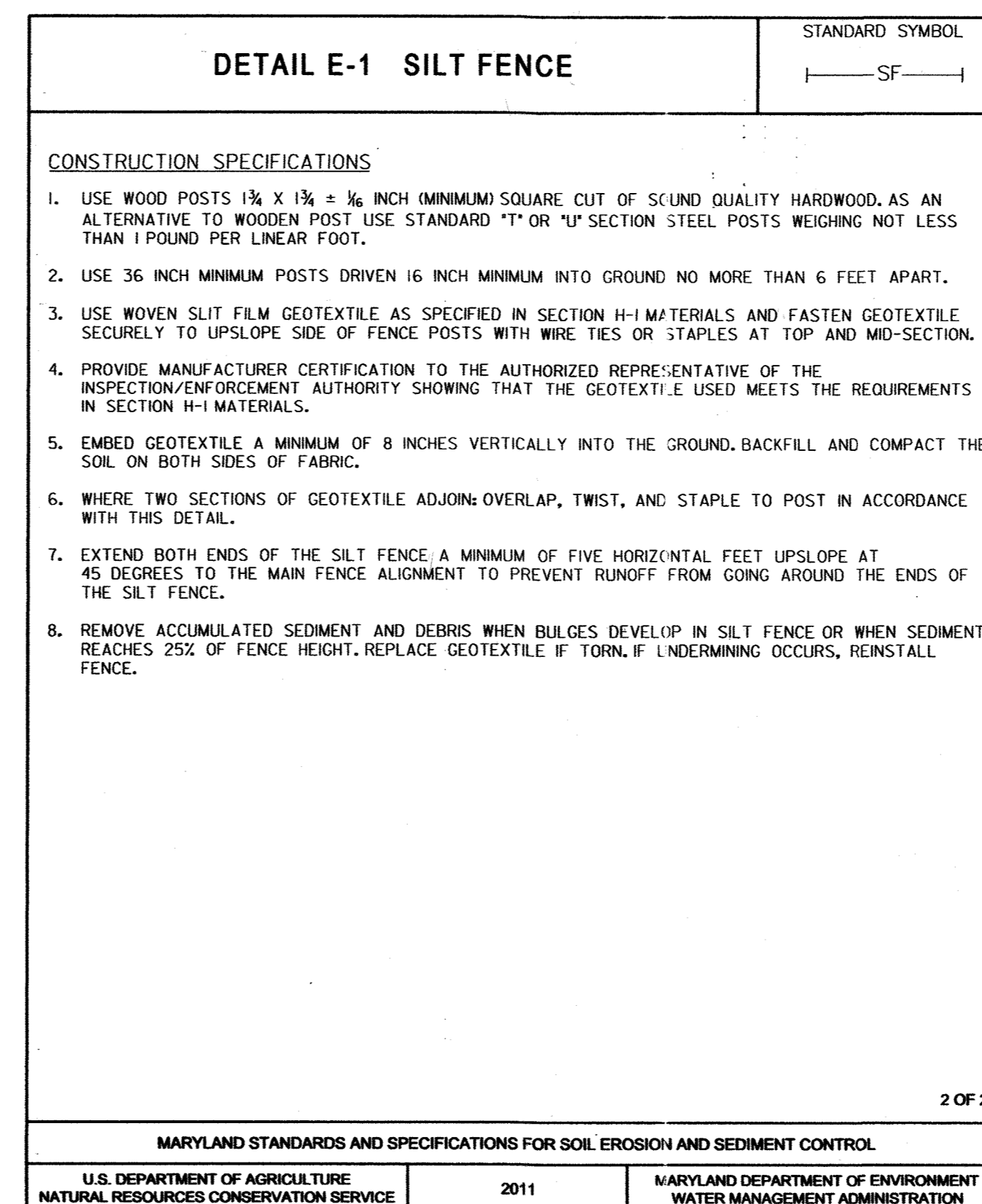
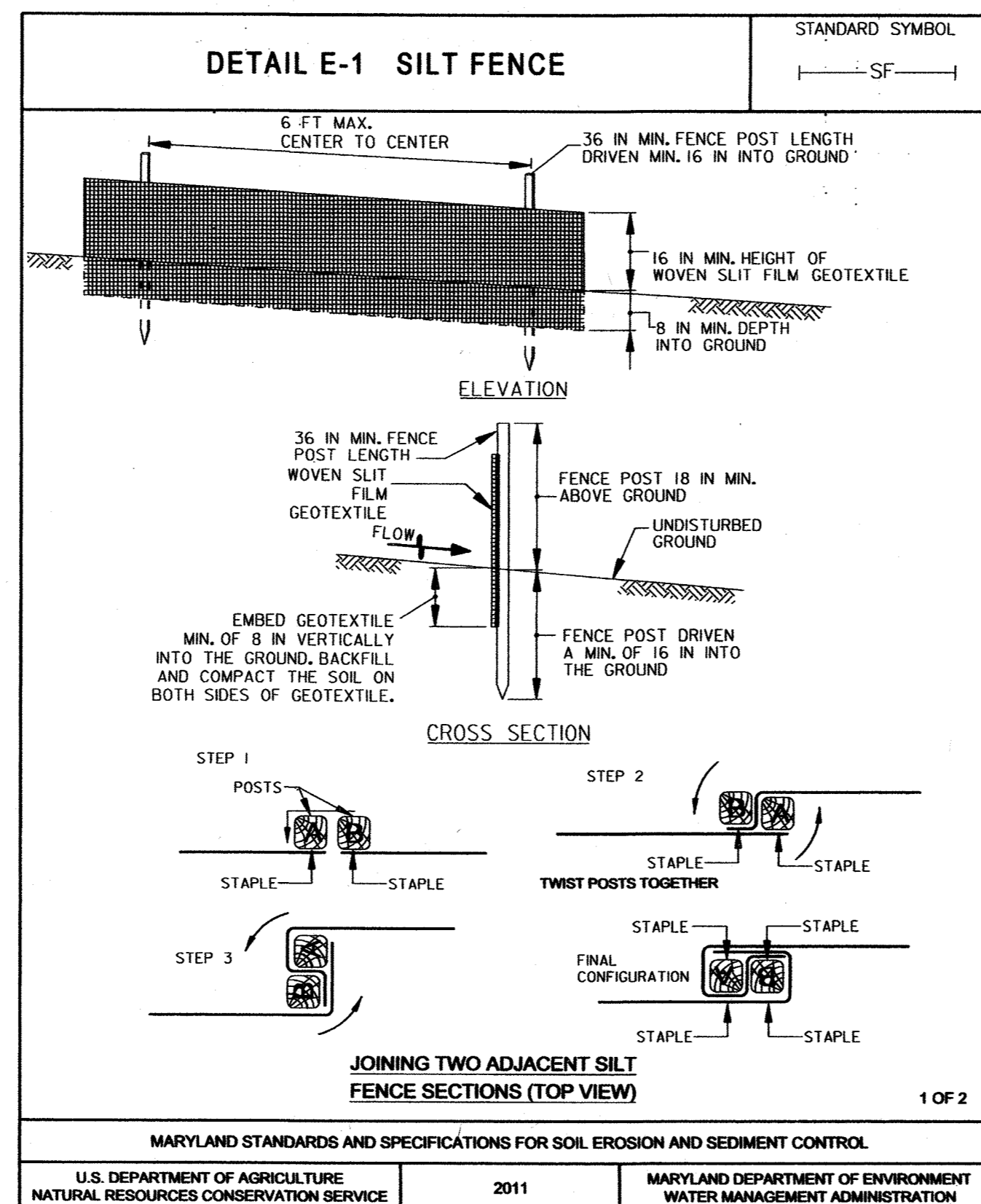
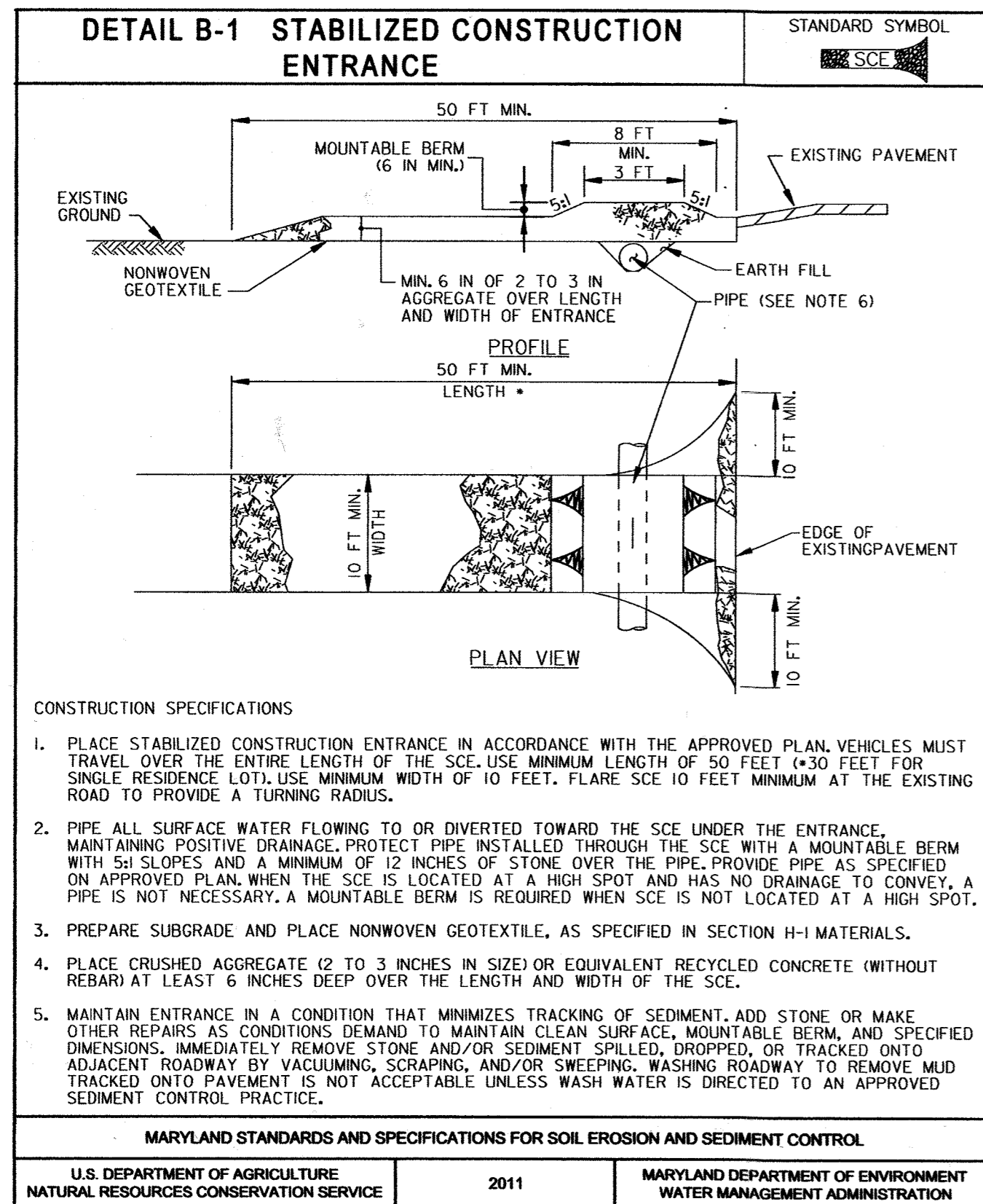
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SHEET

10 OF 12

*[Signature]*  
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

8/24/15 DATE



DEPARTMENT OF PUBLIC WORKS  
 HOWARD COUNTY, MARYLAND

*[Signature]*  
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

9/27/15  
 DATE

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STATE OF MARYLAND  
 PROFESSIONAL ENGINEER  
 2013


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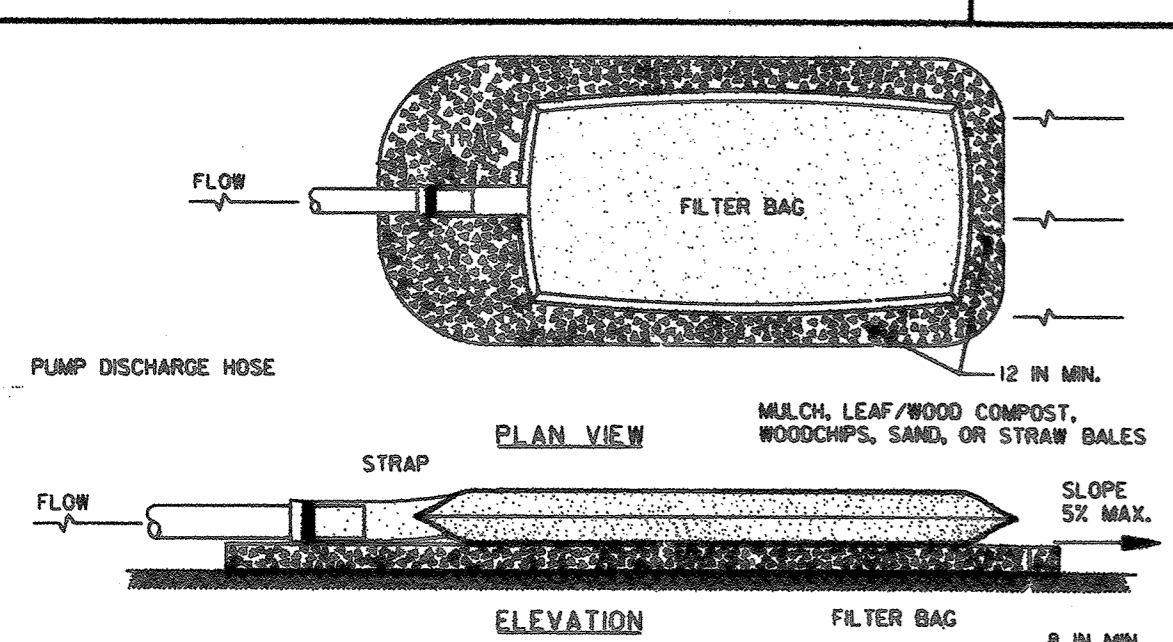
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**EROSION AND SEDIMENT CONTROL DETAIL SHEET**

SCALE: NOT TO SCALE  
 SHEET: 11 OF 12

### DETAIL F-4 FILTER BAG

STANDARD SYMBOL 



**CONSTRUCTION SPECIFICATIONS**

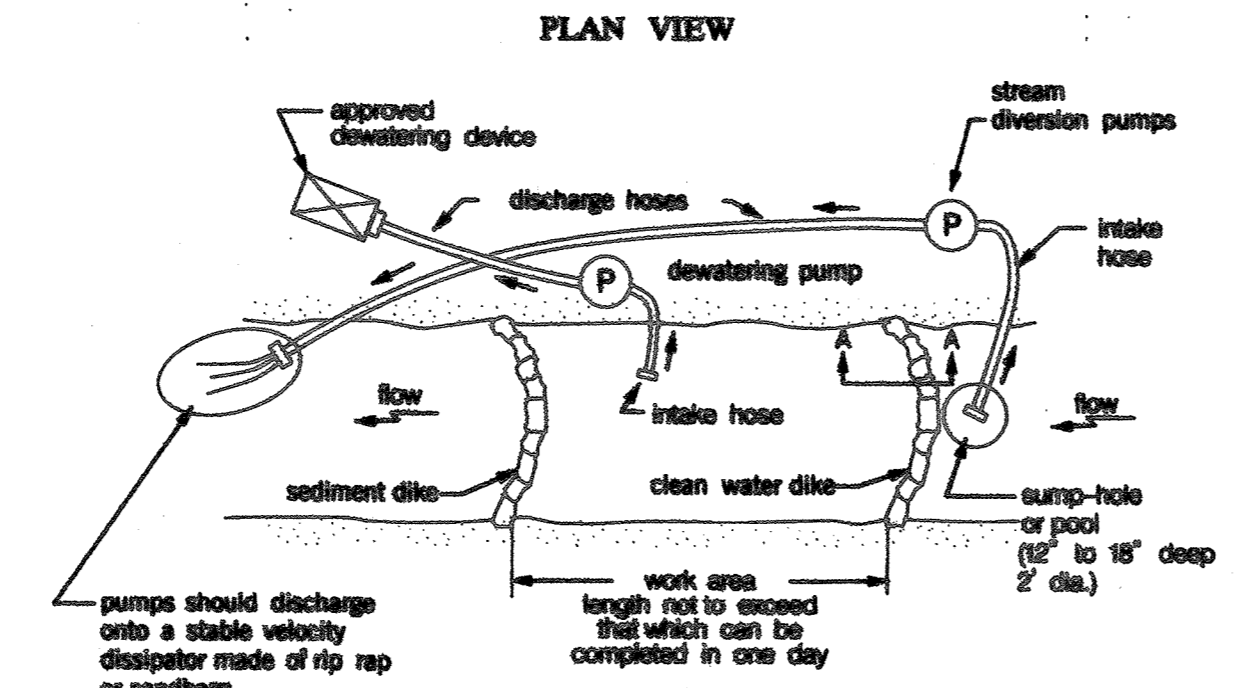
- TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
- PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAF/WOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE DISCHARGE TO A STABILIZED AREA. EXTEND BASE A MINIMUM OF 12 INCHES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

GRAB TENSILE	250 LB	ASTM D-4632
PUNCTURE	150 LB	ASTM D-4633
FLOW RATE	70 GAL/MIN/FT	ASTM D-4931
PERMITTIVITY (SEC <sup>-1</sup> )	1.2 SEC <sup>-1</sup>	ASTM D-4931
UV RESISTANCE	70% STRENGTH @ 500 HOURS	ASTM D-4757
APPARENT OPENING SIZE (AOS)	0.075-0.15 MM	ASTM D-4632
SEAM STRENGTH	90%	ASTM D-4632
- REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

**MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL**

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

### Maryland's Guidelines To Waterway Construction DETAIL 1.2: PUMP-AROUND PRACTICE



**PLAN VIEW**

approved dewatering device, discharge hoses, stream diversion pumps, intake hose, dewatering pump, clean water dike, sump-hole or pool (12" to 18" deep (2' dia.)), work area, sediment dike, flow, pumps should discharge onto a stable velocity dissipator made of rip rap or sandbags.

**SECTION A-A**

work area, impervious sheeting, base flow + 1 foot (2 foot minimum), cross section of sandbag dike

TEMPORARY STREAM CONSTRUCTION MEASURES APPROVED NOVEMBER 2006 PAGE 12-2 MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

### Maryland's Guidelines To Waterway Construction DETAIL 1.2: PUMP-AROUND PRACTICE

**DESCRIPTION**

The work should consist of installing a temporary pump around and supporting measures to divert flow around stream construction sites.

**IMPLEMENTATION STEPS:**

1. Sediment control measures, pump-around practices, and associated channel and bank construction should be completed in the following sequence prior to start of work.

2. Construction activities including the installation of erosion and sediment control measures should not begin until all necessary permits and right-of-way have been acquired. All existing utilities should be located in the field prior to construction. The contractor is responsible for any damage to existing utilities that may result from construction and should repair the damage at their own expense to the county's or utility company's satisfaction.

3. The contractor should notify the Maryland Department of the Environment or M&D sediment control inspector or local environmental protection and resource management inspector and enforcement division and the local environmental protection and resource management inspector and enforcement division and the provider of local utility services of the plans and construction activities within the work area whenever possible.

4. Construction should not begin until all sediment and erosion control measures have been installed and approved by the engineer and the sediment control inspector. The contractor should stay within the limits of the disturbance as shown on the plans and whenever possible.

5. Upon installation of all sediment control measures and approval by the sediment control inspector and the local environmental protection and resource management inspector and enforcement division, the contractor should begin work on the upstream section and proceed downstream beginning with the establishment of stabilized construction entrances. In some cases, work may begin downstream if appropriate. The sequence of construction work shall be approved by the contractor prior to beginning work. For deviations from the M&D or local authority, the contractor should only begin work in an area which can be completed by the end of the day including grading adjacent to the channel. At the end of each work day, the work area must be stabilized and the pump around removed from the channel. Work should not be conducted in the channel during rain events.

6. Sandbag dikes should be situated at the upstream and downstream ends of the work area as shown on the plans, and stream flow should be passed around the work area. The pipe should discharge onto a cross velocity dissipator made of rip rap or sandbags.

7. Water from the work area should be pumped to a sediment filtering measure such as a dewatering basin, sediment bag, or other approved source. The measure should be located such that the water drains back into the channel below the downstream sandbag dike.

8. Traversing a channel reach with equipment within the work area where no work is proposed should be avoided. If equipment has to traverse such a reach for access to another area, then fiber mats or other measures should be used to minimize disturbance to the channel. Temporary stream crossings should be used only when necessary and only where noted on the plans or approved. See Section 4, Stream Crossings, Maryland Guidelines to Waterway Construction.

9. All stream restoration measures should be installed as indicated by the plans and at intervals in accordance with the grading plans and typical cross-sections. All grading must be stabilized at the end of each day with seed and sod or sod and sod as specified on the plans.

10. After an area is completed and stabilized, the clean water dike should be removed. After the first sediment trap, a rip rap water dike should be established upstream from the old sediment dike. Finally, upon establishment of a new sediment dike below the old one, the old sediment dike should be removed.

11. A pump around may be installed on any tributary or storm drain outlet which contributes baseflow to the work area. This should be accomplished by installing a sandbag dike at the downstream end of the tributary or storm drain outlet and pumping the excess flow around the work area. The water should discharge into the same velocity dissipator used for the main stem pump around.

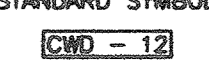
12. If a tributary is to be restored, construction should take place on the tributary before work on the main stem reaches the tributary confluence. Construction in the tributary, including pump around practices, should follow the same sequence for the main stem of the river or stream. When construction on the tributary is completed, work on the main stem should resume. Water from the tributary should continue to be diverted around the work area in the main stem.

13. The contractor is responsible for providing access to and maintaining all erosion and sediment control devices until the sediment control inspector approves their removal.

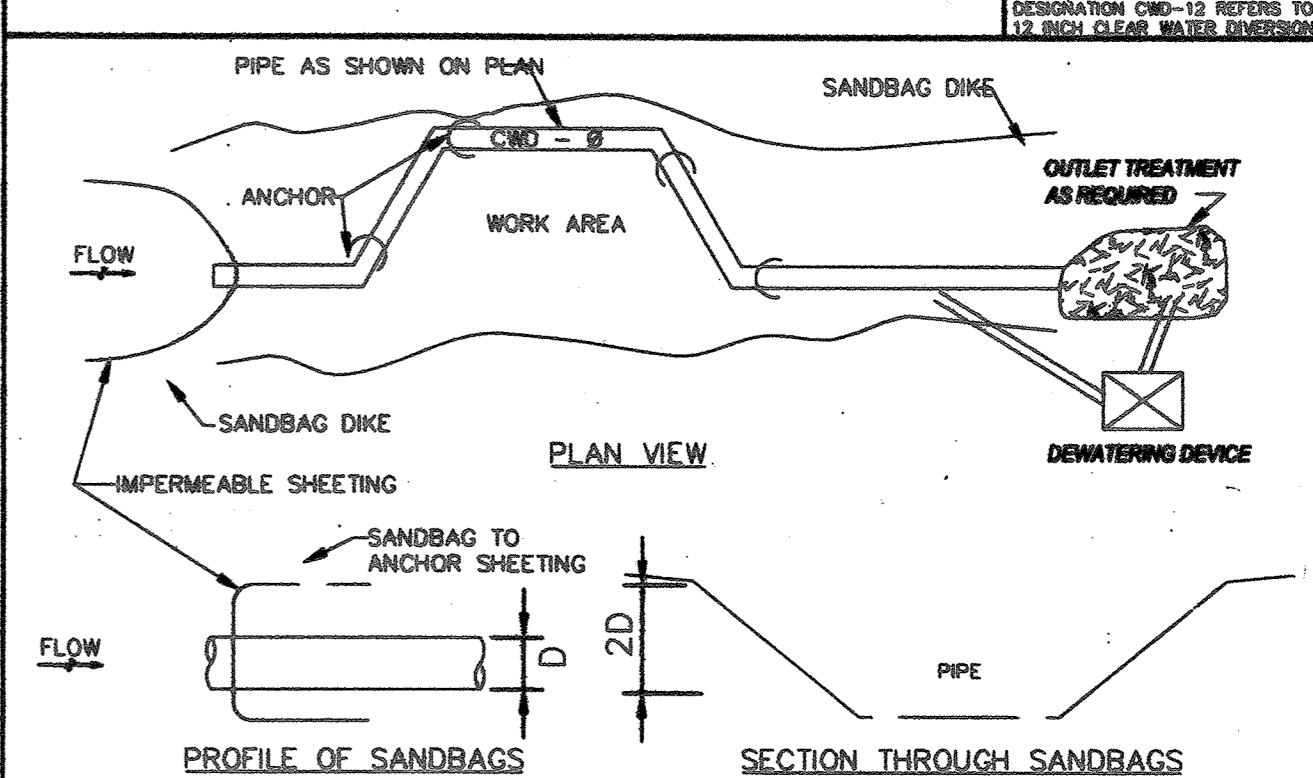
14. After construction, all disturbed areas should be regraded and revegetated as per the planting plan.

TEMPORARY STREAM CONSTRUCTION MEASURES APPROVED NOVEMBER 2006 PAGE 12-2 MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

### DETAIL C-6 CLEAR WATER DIVERSION PIPE

STANDARD SYMBOL 

DESCRIPTION CWD-12 REFERS TO 12 INCH CLEAR WATER DIVERSION



**CONSTRUCTION SPECIFICATIONS**

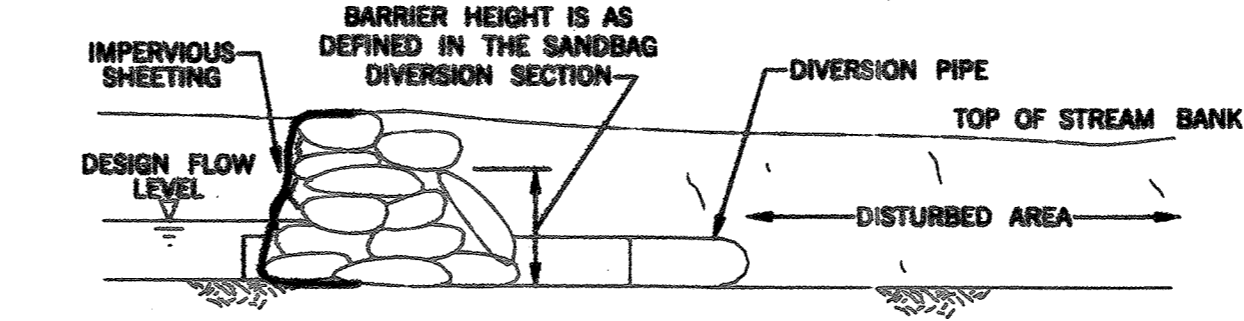
- FLEXIBLE PIPE IS PREFERRED. HOWEVER, CORRUGATED METAL PIPE OR EQUIVALENT PVC PIPE CAN BE USED. MAKE ALL JOINTS WATER TIGHT.
- FOR SANDBAGS USE MATERIALS THAT ARE RESISTANT TO ULTRA-VIOLENT RADIATION, TEARING, AND PUNCTURE AND MOVED TIGHTLY ENOUGH TO PREVENT LEAKAGE OF FILL MATERIAL.
- USE 10 MIL OR THICKER, UV RESISTANT IMPERMEABLE SHEETING OR OTHER APPROVED MATERIAL THAT IS IMPERMEABLE AND RESISTANT TO PUNCTURING AND TEARING.
- PLACE IMPERMEABLE SHEETING SUCH THAT UPGRADE PORTION OVERLAPS DOWNGRADE PORTION BY A MINIMUM OF 18 INCHES.
- SET HEIGHT OF SANDBAG DIKE AT TWICE THE PIPE DIAMETER. MAINTAIN HEIGHT ALONG LENGTH OF SANDBAG DIKE. PLACE DOUBLE ROW OF SANDBAGS.
- AT A MINIMUM, SECURELY ANCHOR DIVERSION PIPE AT EACH DOWNGRADE JOINT.
- SET OUTLET END OF DIVERSION PIPE LOWER THAN INLET END.
- PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
- DEWATER WORK AREA USING AN APPROVED EROSION AND SEDIMENT CONTROL PRACTICE AS SPECIFIED ON APPROVED PLAN.
- KEEP POINT OF DISCHARGE FREE OF EROSION. MAINTAIN WATER TIGHT CONNECTIONS AND POSITIVE DRAINAGE. REPLACE SANDBAGS AND IMPERMEABLE SHEETING IF TORN.

**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

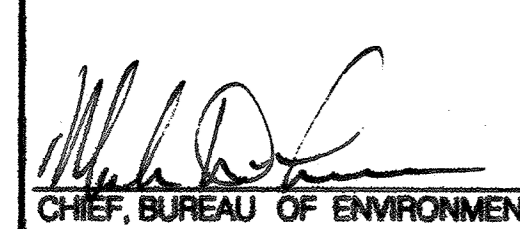
### SAND BAG DAM DETAIL

**LONGITUDINAL SECTION VIEW**



IMPERVIOUS SHEETING, BARRIER HEIGHT IS AS DEFINED IN THE SANDBAG DIVERSION SECTION, DIVERSION PIPE, TOP OF STREAM BANK, DESIGN FLOW LEVEL, DISTURBED AREA

DEPARTMENT OF PUBLIC WORKS  
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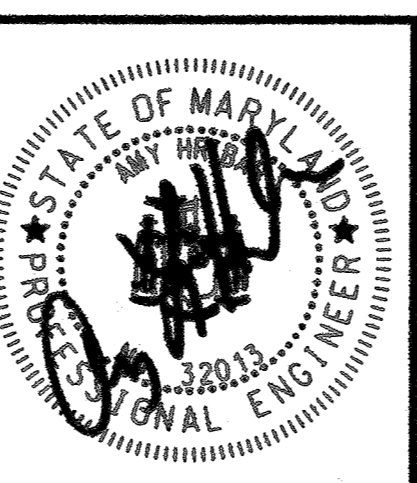
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12 OF 12