

HOWARD COUNTY

Capital Project #D-1160

Garand Road Principal Spillway Replacement and SWM Retrofit Project

Storm Water Management Division
Bureau Of Environmental Services

INDEX OF SHEETS

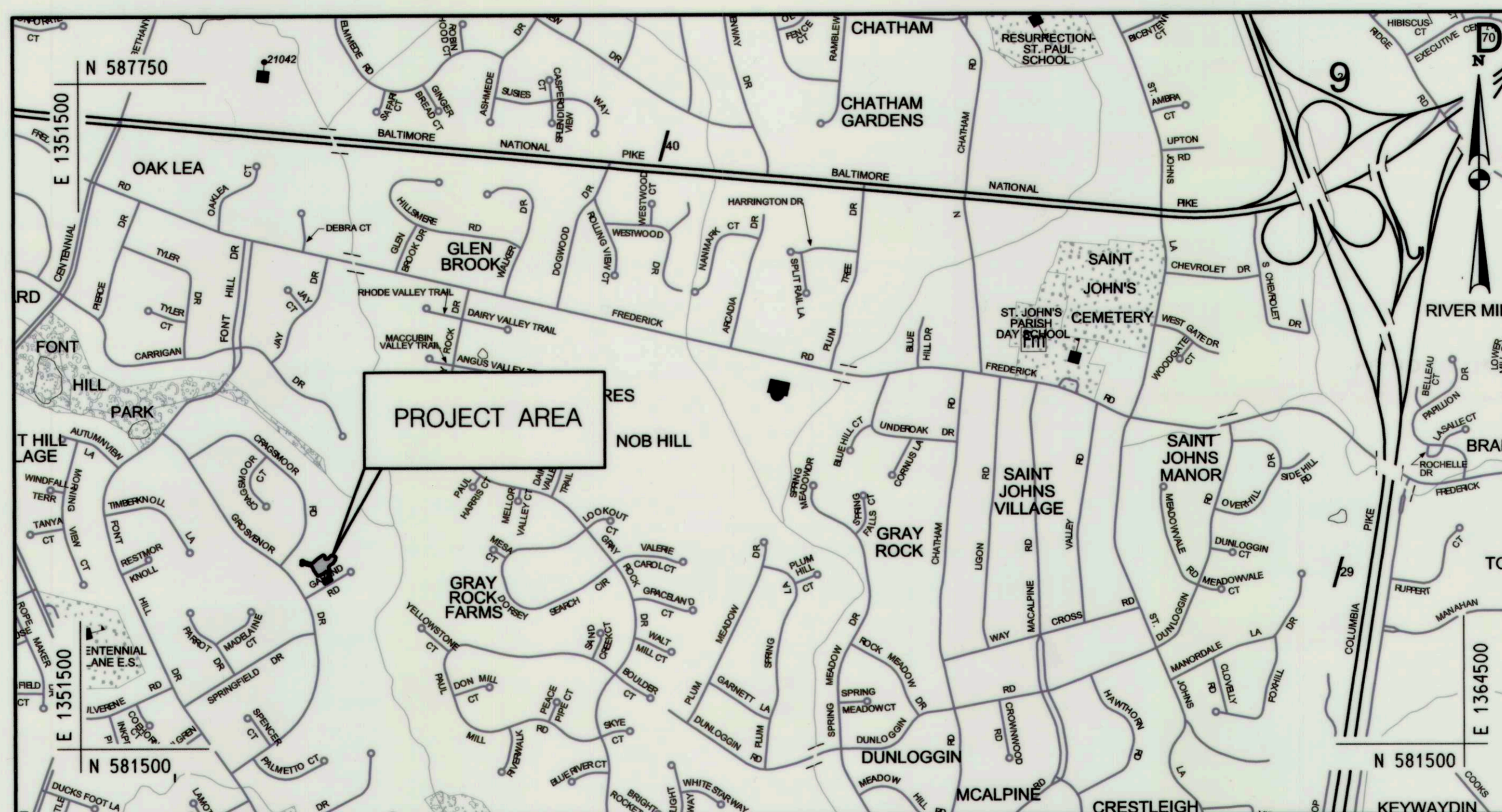
SHEET NO.	TITLE
1	TITLE SHEET
2	GEOMETRY SHEET
3	SITE PLAN
4	POND PROFILE & CROSS SECTIONS SHEET
5	RISER DETAIL SHEET
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LEGEND

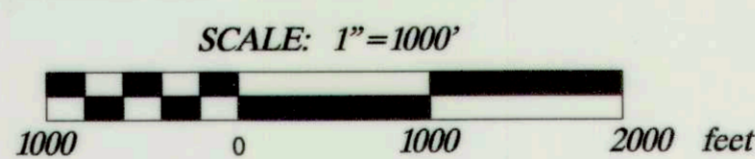
PROPOSED MEDIAN BARRIER	
ELECTRICAL HAND BOX - SIGNALS	
FLOW LINE	
STATE, COUNTY OR CITY LINES	
EXISTING TRAFFIC BARRIER	
PROPOSED FENCE LINE	
EXISTING FENCE LINE	
PROPERTY LINE	
EASEMENT LINE	
EXISTING ROADWAY	
BASE OR SURVEY LINE	
TRAVERSE POINT	
APPROXIMATE LIMITS OF CUT AND/OR FILL	
PROPOSED MAJOR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

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 - MARCH 2016
- 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 - FEBRUARY 2016.
- 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 FONT HILL VILLAGE SECTION FOUR AREA TWO (F-87-036) APPROVED JUNE 17, 1990.
- A JOINT PERMIT APPLICATION HAS BEEN SUBMITTED TO THE MARYLAND DEPARTMENT OF THE ENVIRONMENT FOR THIS PROJECT. (TRACKING NUMBER 201661694)
- PROJECT IMPACTS INCLUDE WORK IN A USE IV-P STREAM. WORK MAY NOT BE CONDUCTED DURING THE PERIOD BETWEEN MARCH 1 AND MAY 31. THE SITE IS LOCATED WITHIN THE LITTLE PATUXENT RIVER WATERSHED WHICH HAS NO TIER II STREAM SEGMENTS REQUIRING THE IMPLEMENTATION OF MARYLAND'S ANTI-DEGRADATION POLICY. HOWEVER, THE LITTLE PATUXENT RIVER WATERSHED HAS BEEN IDENTIFIED AS IMPAIRED AND IS CURRENTLY UNDER A TMDL FOR SEDIMENT.
- CONTRACTOR SHALL PROVIDE STRUCTURAL SHOP DRAWINGS FOR ALL PRECAST OR PRE-FABRICATED STRUCTURES FOR ENGINEER'S APPROVAL PRIOR TO CONSTRUCTION.



HORIZONTAL DATUM	NAD 83 /91
VERTICAL DATUM	NAVD 88



APPROVALS/PERMITS			
AGENCY	#	DATE APPLIED	DATE APPROVED
MDE JOINT PERMIT APPLICATION	201661694	10/2/2016	11/29/2016
MDE DAM SAFETY	17-XP-0024	10/2/2016	EXEMPT
HOWARD SOIL CONSERVATION DISTRICT	EP-16-29	30% 05 /09 /2016	30% 06 /02 /2016
		65% 07 /27 /2016	65% 08 /15 /2016
		90% 10 /12 /2016	90% 11 /04 /2016
		95% 01 /30 /2017	95% 02 /21 /2017
		Final 03 /13 /2017	Final 05 /03 /2017

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. 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.

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.

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
5/3/17 DATE

3/13/17 DATE

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

5/16/17 DATE

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



DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND

DIRECTOR OF PUBLIC WORKS
5/5/17 DATE

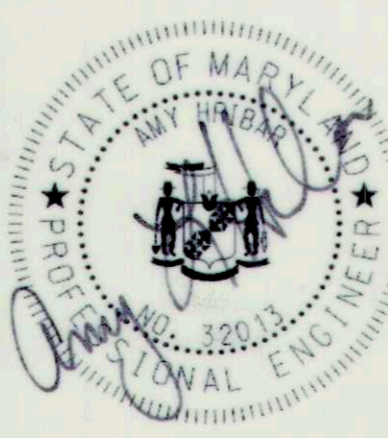
CHIEF, STORMWATER MANAGEMENT DIVISION
4/26/17 DATE



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



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



DES: ADM			
DRN: ADM			
CHK: AH	ADM	3	AS-BUILT SURVEY
	ADM	2	SEQUENCE REVISION
	ADM	1	SEQUENCE REVISION AND E&S DETAILS
DATE: 09/13/17	BY	NO.	REVISION
			DATE

GARAND ROAD PRINCIPAL SPILLWAY REPLACEMENT AND SWM RETROFIT PROJECT CAPITAL PROJECT #D-1160 HOWARD COUNTY HSCD #: EP-16-29

TITLE SHEET

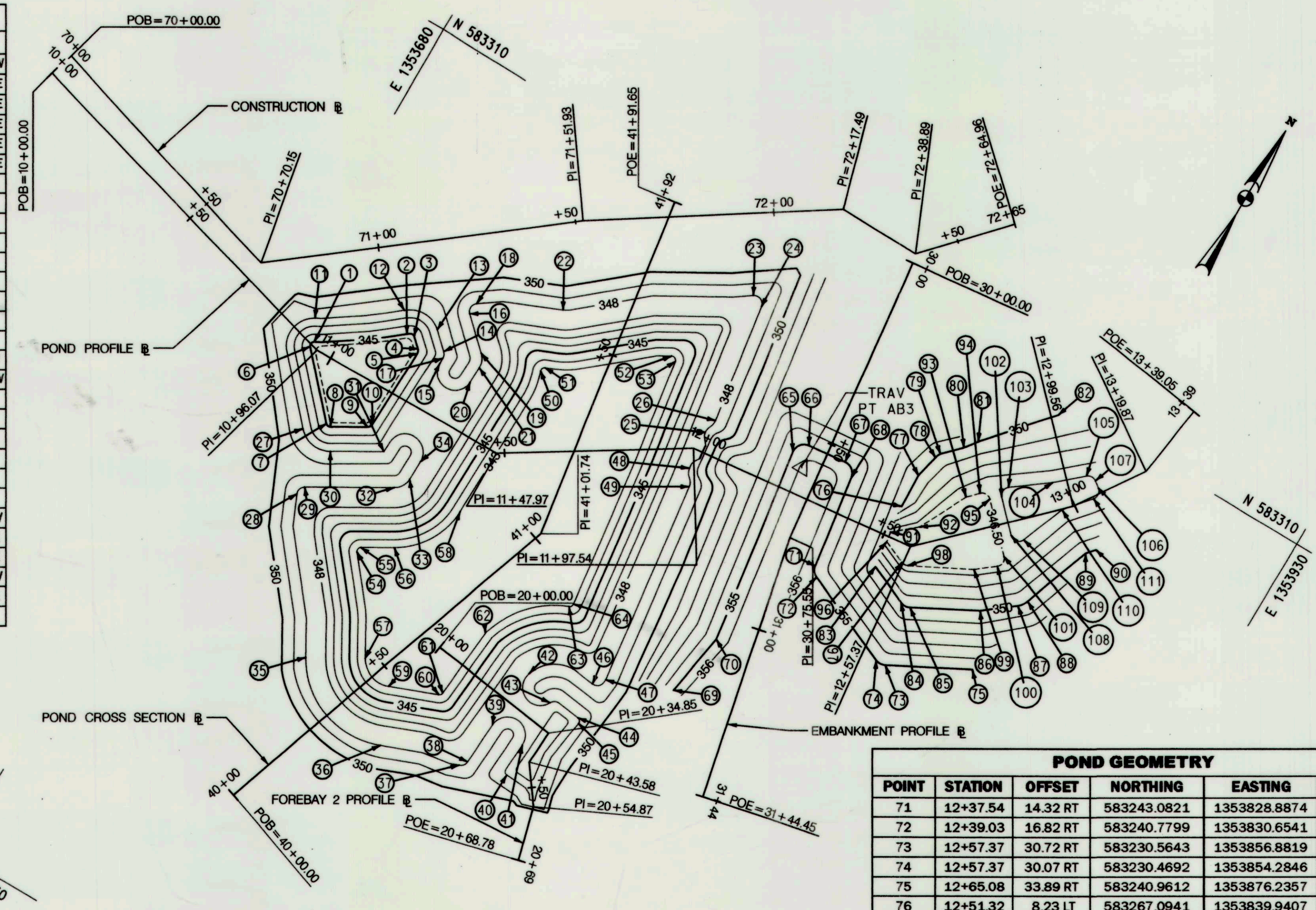
SCALE
AS SHOWN

SHEET

1 OF 11

BASELINE GEOMETRY CONTROL COORDINATES					
BASELINE	POINT	NORTHING	EASTING	STATION	BEARING AH
POND PROFILE BL	POB	583250.2257	1353601.0735	10+00.00	N 74°42'58.58" W
	PI	583224.9015	1353693.7464	10+96.07	N 88°42'21.10" E
	PI	583226.0736	1353745.6277	11+47.97	N 57°36'21.32" E
	PI	583252.6338	1353787.4895	11+97.54	N 83°17'29.67" E
	PI	583259.6231	1353846.9108	12+57.37	N 45°17'10.53" E
	PI	583289.3056	1353876.8914	12+99.56	N 33°51'19.16" E
POE	583306.1725	1353888.2064	13+19.87	N 7°58'09.24" E	
POE	583325.1603	1353890.8646	13+39.05		
FOREBAY 2 PROFILE BL	POB	583176.7886	1353758.4244	20+00.00	S 82°40'31" E
	PI	583172.3455	1353792.9893	20+34.85	S 3°15'37" W
	PI	583163.6247	1353792.4925	20+43.58	S 36°25'22" E
	PI	583154.5401	1353799.1958	20+54.87	S 14°49'47" E
POE	583141.0983	1353802.7547	20+68.78		
EMBANKMENT PROFILE BL	POB	583320.9636	1353811.1120	30+00.00	N 6°34'53.90" W
	PI	583245.9077	1353819.7719	30+75.55	N 12°16'53.68" W
	POE	583178.5870	1353834.4275	31+44.45	
POND CROSS SECTION BL	POB	583118.1715	1353732.9040	40+00.00	N 18°41'30" E
	PI	583214.5489	1353765.5102	41+01.74	N 8°46'17" W
	POE	583303.3999	1353751.8006	41+91.65	
CONSTRUCTION BL	POB	583256.2641	1353603.0723	70+00.00	N 73°41'42.14" W
	PI	583236.5699	1353670.3993	70+70.15	N 51°28'25.94" E
	PI	583287.5064	1353734.3753	71+51.93	N 56°33'52.48" E
	PI	583323.6330	1353789.0906	72+17.49	N 89°16'17.13" W
	PI	583323.3609	1353810.4858	72+38.89	N 42°12'36.31" E
POE	583342.8714	1353828.0017	72+64.96		

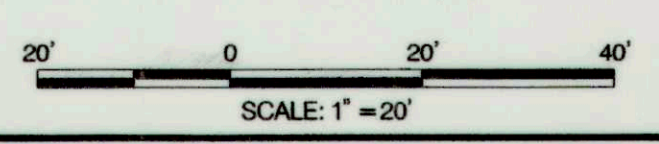
TRAVERSE CONTROL COORDINATES			
POINT	NORTHING	EASTING	ELEVATION
AB1	583062.3953	1353852.2470	374.50
AB2	582945.6861	1353618.0338	376.70
AB3	583262.5329	1353813.3563	356.37



POND GEOMETRY					
POINT	STATION	OFFSET	NORTHING	EASTING	ELEVATION
1	10+94.07	0.62 LT	583226.3732	1353692.0476	345.00
2	11+13.89	14.05 LT	583240.1536	1353711.0097	345.00
3	11+15.83	14.35 LT	583240.5385	1353712.9400	345.00
4	11+17.51	12.10 LT	583238.3470	1353715.3380	345.00
5	11+18.01	10.96 LT	583237.1988	1353715.8255	345.00
6	10+94.19	0.95 RT	583224.8208	1353691.7968	345.00
7	11+06.73	15.54 RT	583210.2714	1353705.2018	345.00
8	11+07.97	15.78 RT	583210.0892	1353706.4478	345.00
9	11+16.24	11.36 RT	583214.8811	1353714.5175	345.00
10	11+17.55	10.11 RT	583216.1300	1353715.2511	345.00
11	10+90.02	5.05 LT	583231.6215	1353689.1399	348.00
12	11+10.48	19.00 LT	583244.9454	1353707.3873	348.00
13	11+19.12	18.73 LT	583244.9674	1353716.9878	348.00
14	11+23.40	14.87 LT	583241.0796	1353721.2417	348.00
15	11+24.03	11.96 LT	583238.1643	1353721.8540	348.00
16	11+24.05	26.43 LT	583252.6356	1353721.9525	348.00
17	11+24.06	13.34 LT	583239.5488	1353721.8918	348.00
18	11+24.22	29.52 LT	583255.7304	1353722.1483	348.00
19	11+31.65	19.46 LT	583245.6282	1353729.5220	348.00
20	11+33.07	11.79 LT	583237.9438	1353730.8911	348.00
21	11+33.12	16.07 LT	583242.2280	1353730.9639	348.00
22	11+65.66	35.52 LT	583265.5953	1353741.6212	348.00
23	11+97.45	41.20 LT	583293.2967	1353780.8296	348.00
24	11+98.53	39.44 LT	583291.9346	1353783.9604	348.00
25	11+98.57	4.81 LT	583257.5404	1353788.0464	348.00
26	11+99.75	8.53 LT	583261.3788	1353788.7753	348.00
27	11+02.14	19.40 RT	583206.2059	1353700.7892	348.00
28	11+08.48	34.50 RT	583191.4127	1353707.8119	348.00
29	11+09.41	32.01 RT	583193.9354	1353708.6225	348.00
30	11+10.79	21.07 RT	583204.9302	1353709.5113	348.00
31	11+23.46	14.38 RT	583211.8333	1353721.1362	348.00
32	11+30.40	20.70 RT	583205.4679	1353728.0437	348.00
33	11+32.58	16.92 RT	583209.2391	1353730.2450	348.00
34	11+32.66	11.77 RT	583214.3888	1353730.3470	348.00
35	11+33.45	68.95 RT	583157.2091	1353730.8157	348.00
36	11+47.87	79.17 RT	583147.9226	1353758.2647	348.00
37	11+47.87	79.03 RT	583153.8907	1353777.8099	348.00
38	11+47.87	77.98 RT	583155.6871	1353779.1985	348.00
39	11+47.87	68.31 RT	583166.9374	1353779.8110	348.00
40	11+48.26	80.97 RT	583157.9093	1353789.3319	348.00
41	11+52.38	73.47 RT	583166.4481	1353788.7977	348.00
42	11+54.49	55.67 RT	583182.6121	1353781.0440	348.00
43	11+59.65	63.03 RT	583179.1665	1353789.3390	348.00
44	11+66.53	67.00 RT	583179.4980	1353797.2760	348.00
45	11+66.65	68.42 RT	583178.3633	1353798.1375	348.00
46	11+70.43	58.56 RT	583188.7087	1353796.0496	348.00
47	11+73.79	57.57 RT	583191.3435	1353798.3573	348.00
48	11+96.31	4.93 RT	583247.8645	1353789.1720	348.00
49	12+00.38	9.20 RT	583243.8434	1353791.4815	348.00
50	11+59.55	20.33 LT	583249.4990	1353744.5978	343.00
51	11+60.69	21.13 LT	583250.7866	1353745.1353	343.00
52	11+92.62	23.29 LT	583269.7118	1353770.9404	343.00
53	11+93.50	21.89 LT	583268.9988	1353772.4296	343.00
54	11+30.65	39.40 RT	583186.7712	1353728.1861	343.00
55	11+30.91	37.91 RT	583188.2638	1353728.4498	343.00
56	11+38.13	33.56 RT	583192.5704	1353735.7024	343.00
57	11+46.38	61.35 RT	583164.7356	1353743.7907	343.00
58	11+47.58	17.16 RT	583208.9123	1353745.2415	343.00
59	11+47.87	64.69 RT	583161.7359	1353752.4133	343.00
60	11+47.87	62.50 RT	583166.4279	1353764.3136	343.00
61	11+47.87	61.89 RT	583167.2794	1353764.9437	343.00
62	11+47.87	45.22 RT	583185.9210	1353766.4164	343.00
63	11+65.10	38.86 RT	583202.4871	1353780.9944	343.00
64	11+66.18	38.30 RT	583203.5410	1353781.6057	343.00
65	12+20.76	9.46 LT	583264.7457	1353809.4388	355.00
66	12+23.76	12.56 LT	583268.1734	1353812.0614	355.00
67	12+33.77	12.54 LT	583269.3203	1353822.0015	355.00
68	12+36.76	9.64 LT	583266.7875	1353825.3118	355.00
69	12+17.84	57.58 RT	583197.8228	1353814.3736	355.00
70	12+22.42	41.42 RT	583214.4060	1353817.0318	355.00

POND GEOMETRY					
POINT	STATION	OFFSET	NORTHING	EASTING	ELEVATION
71	12+37.54	14.32 RT	583243.0821	1353828.8874	355.00
72	12+39.03	16.82 RT	583240.7799	1353830.6541	355.00
73	12+57.37	30.72 RT	583230.5643	1353856.8819	355.00
74	12+57.37	30.07 RT	583230.4692	1353854.2846	355.00
75	12+65.08	33.89 RT	583240.9612	1353876.2357	355.00
76	12+51.32	8.23 LT	583267.0941	1353839.9407	350.00
77	12+63.65	16.71 LT	583275.9150	1353839.6096	350.00
78	12+68.88	20.06 LT	583281.9684	1353840.9746	350.00
79	12+70.30	20.67 LT	583283.4102	1353841.5536	350.00
80	12+76.43	20.81 LT	583287.8174	1353845.8142	350.00
81	12+80.29	21.37 LT	583290.9347	1353848.1628	350.00
82	13+05.94	22.18 LT	583306.9594	1353862.0294	350.00
83	12+51.41	8.27 RT	583250.7109	1353841.9539	350.00
84	12+57.37	14.32 RT	583246.2780	1353852.1134	350.00
85	12+57.37	15.38 RT	583246.3730	1353854.7107	350.00
86	12+70.58	19.89 RT	583254.7836	1353870.2864	350.00
87	12+80.04	20.96 RT	583260.6770	1353877.7694	350.00
88	12+82.71	20.45 RT	583262.9188	1353879.3049	350.00
89	12+99.56	12.11 RT	583280.8292	1353885.5369	350.00
90	13+00.10	12.23 RT	583282.9416	1353887.3442	350.00
91	12+51.29	1.22 LT	583260.1252	1353840.7279	346.50
92	12+60.77	4.20 LT	583265.0028	1353846.3713	346.50
93	12+73.96	8.59 LT	583277.4023	1353852.6550	346.50
94	12+77.58	8.70 LT	583280.0226	1353855.1527	346.50
95	12+79.64	6.70 LT	583280.0520	1353858.0195	346.50
96	12+51.43	1.34 RT	583257.5988	1353841.1667	346.50
97	12+57.06	4.54 RT	583255.0760	1353847.1283	346.50
98	12+57.37	4.87 RT	583255.1482	1353848.8394	346.50
99	12+71.55	9.43 RT	583262.8932	1353863.6168	346.50
100	12+77.47	10.01 RT	583266.6496	1353868.2328	346.50
101	12+79.66	8.01 RT	583269.6102	1353868.3895	346.50
102	12+82.64	6.44 LT	583281.9740	1353860.3388	346.00
103	12+84.90	8.42 LT	583284.9732	1353860.5445	346.00

POND GEOMETRY					
POINT	STATION	OFFSET	NORTHING	EASTING	ELEVATION
104	12+95.98	6.99 LT	583291.7513	1353869.4252	346.00
105	13+05.84	5.42 LT	583297.5424	1353875.8899	346.00
106	13+07.21	1.37 LT	583296.4198	1353880.0156	346.00
107	13+07.35	3.35 LT	583297.6336	1353878.4495	346.00
108	12+82.66	3.27 RT	583275.0891	1353867.1764	346.00
109	12+85.47	5.09 RT	583275.7688	1353870.4576	346.00
110	12+96.68	0.13 RT	583287.1841	1353874.9303	346.00
111	13+04.99	0.48 RT	583293.5467	1353880.3169	346.00



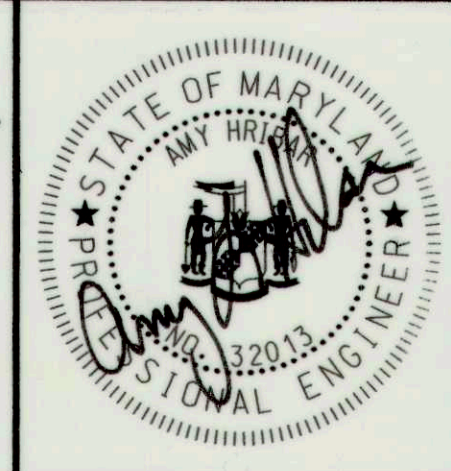
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND



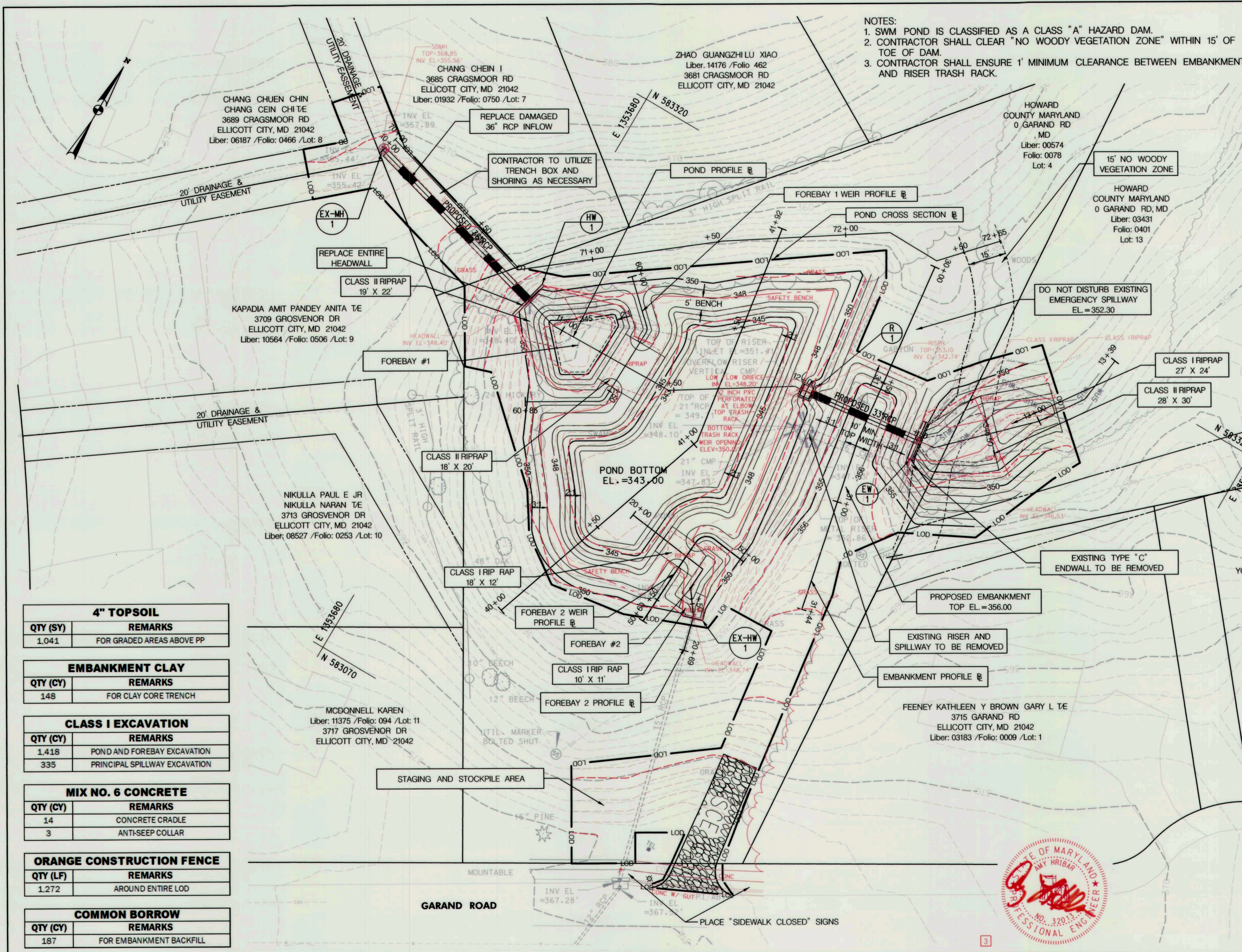
509 South Exeter Street
4th Floor
Baltimore, Maryland 21202
(410) 662-7400



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



DES: ADM				
DRN: ADM				
CHK: AH				
DATE: 09/				



NOTES:
 1. SWM POND IS CLASSIFIED AS A CLASS "A" HAZARD DAM.
 2. CONTRACTOR SHALL CLEAR "NO WOODY VEGETATION ZONE" WITHIN 15' OF TOE OF DAM.
 3. CONTRACTOR SHALL ENSURE 1' MINIMUM CLEARANCE BETWEEN EMBANKMENT AND RISER TRASH RACK.

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

PIPE SCHEDULE				
FROM	TO	DIA. (IN)	QTY (LF)	REMARKS
R-1	EW-1	33	47	ASTM 361, CLASS B-25
EX-MH-1	HW-1	36	82	RCP, CLASS V
SEE LOW FLOW DETAIL SHEET 5 OF 11		12	8	PERFORATED PVC SCH 80
		12	8	PVC SCH 80
		12	3	DUCTILE IRON PIPE

DRAINAGE STRUCTURES			
ID	STATION	QTY	REMARKS
R-1	71+82	1 EA	SEE DETAIL, SHEET 5
EW-1	72+39	1 EA	STD. TYPE "C" FOR 33", DETAIL MD 354.01
HW-1	70+73	1 EA	STD. TYPE "C" FOR 36", DETAIL MD 354.01

CLASS I RIP RAP			
FROM	TO	QTY (SY)	REMARKS
71+20, 137' RT	71+20, 145' RT	8	FOREBAY INFLOW #2 19" DEPTH
71+11, 114' RT	71+25, 125' RT	22	WEIR PROTECTION #2, 19" DEPTH
12+52, 0' RT	12+80, 0' RT	72	OUTFALL DOWNSTREAM, 19" DEPTH

CLASS II RIP RAP			
FROM	TO	QTY (SY)	REMARKS
70+74, 13' RT	70+81, 23' RT	28	FOREBAY INFLOW #1, 32" DEPTH
71+02, 39' RT	71+16, 50' RT	42	WEIR PROTECTION #1, 32" DEPTH
12+80, 0' RT	13+16, 0' RT	74	OUTFALL PROTECTION, 32" DEPTH

MIX NO 1 CONCRETE FOR CUTOFF WALL		
STATION	QTY (CY)	REMARKS
70+76, 16.85' RT	2	4' DEEP X 8" THICK X 13.5' LONG
71+20, 140.19' RT	1	3' DEEP X 8" THICK X 7.5' LONG

4" TOPSOIL	
QTY (SY)	REMARKS
1,041	FOR GRADED AREAS ABOVE PP

EMBANKMENT CLAY	
QTY (CY)	REMARKS
148	FOR CLAY CORE TRENCH

CLASS I EXCAVATION	
QTY (CY)	REMARKS
1,418	POND AND FOREBAY EXCAVATION
335	PRINCIPAL SPILLWAY EXCAVATION

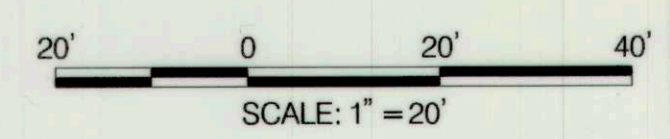
MIX NO. 6 CONCRETE	
QTY (CY)	REMARKS
14	CONCRETE CRADLE
3	ANTI-SEEP COLLAR

ORANGE CONSTRUCTION FENCE	
QTY (LF)	REMARKS
1,272	AROUND ENTIRE LOD

COMMON BORROW	
QTY (CY)	REMARKS
187	FOR EMBANKMENT BACKFILL

LEGEND

- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED SUB MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- WOODS
- PROPERTY LINE
- EASEMENT BOUNDARY
- WUS
- WATERS OF THE US
- EMBANKMENT TOE
- EXISTING SANITARY SEWER
- LOD
- LIMIT OF DISTURBANCE
- EXISTING TREE
- EXISTING TREE TO BE REMOVED
- PROPOSED RISER
- PROPOSED 33" RCP
- PROPOSED 36" RCP
- PROPOSED ENDWALL
- RIPRAP
- STABILIZED CONSTRUCTION ENTRANCE

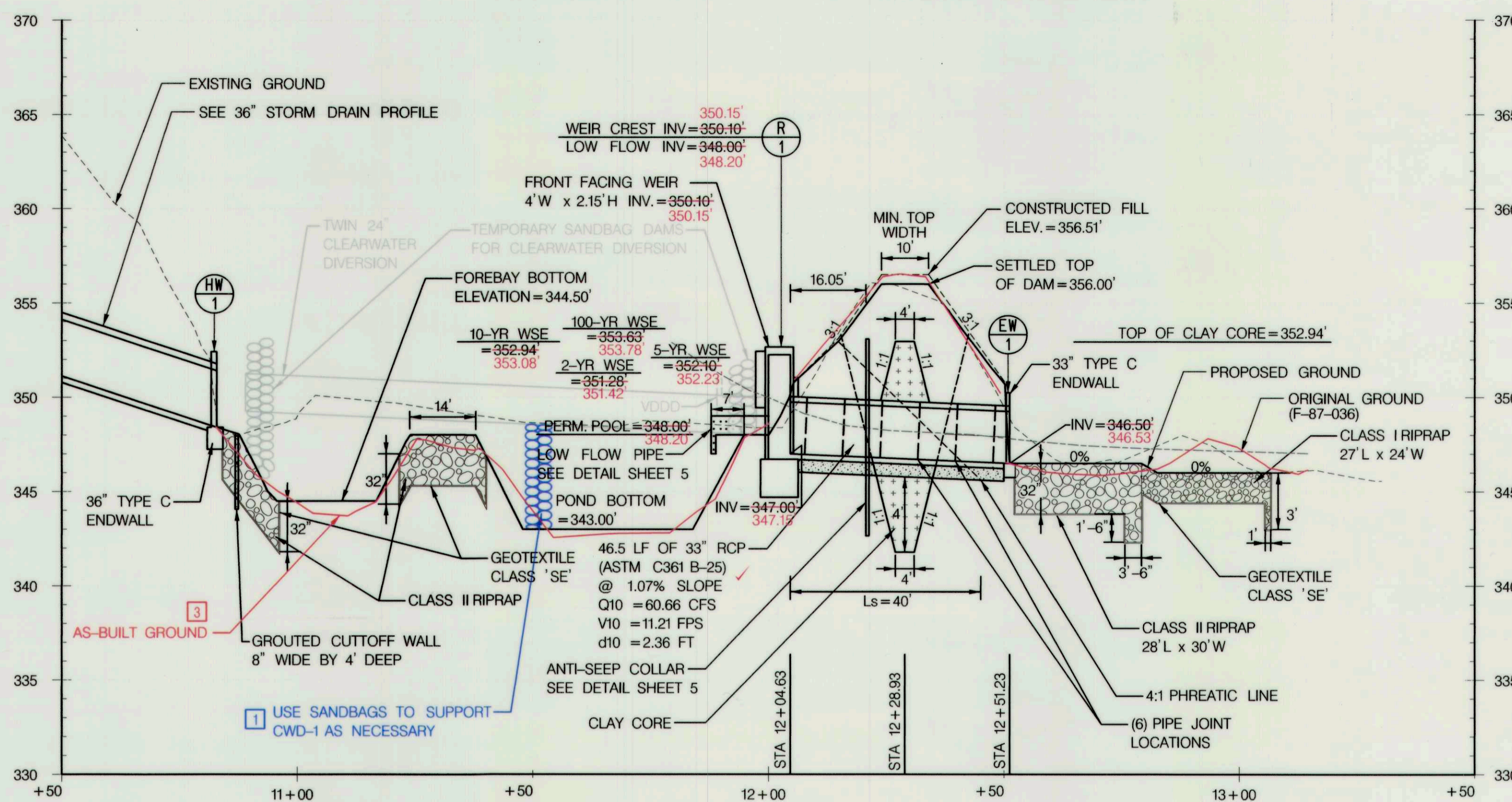


DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND CHIEF, BUREAU OF ENVIRONMENTAL SERVICES	 509 South Exeter Street 4th Floor Baltimore, Maryland 21202 (410) 662-7400	 Storm Water Management Division Bureau of Environmental Services 6751 Columbia Gateway Drive, Suite 514 Columbia, Maryland 21046-3143 (410) 313-6444	DES: ADM				
			DRN: ADM				
			CHK: AH				
			DATE: 03/13/17	ADM	3	AS-BUILT SURVEY	4/25/18
			BY	NO.		REVISION	DATE

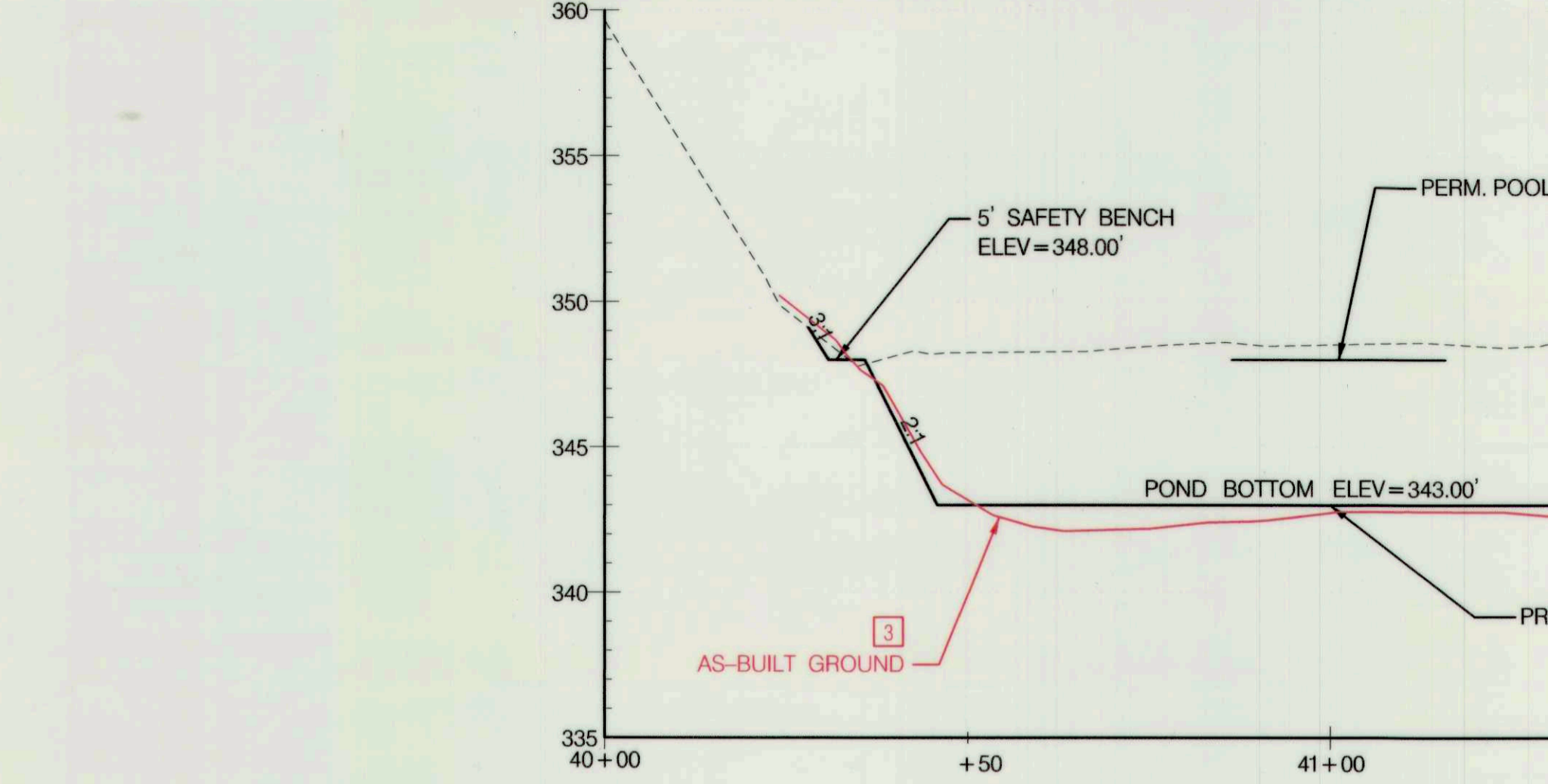
GARAND ROAD PRINCIPAL SPILLWAY REPLACEMENT AND SWM POND RETROFIT PROJECT
 CAPITAL PROJECT #D-1160
 HOWARD COUNTY
 HSCD #: EP-16-29

SITE PLAN

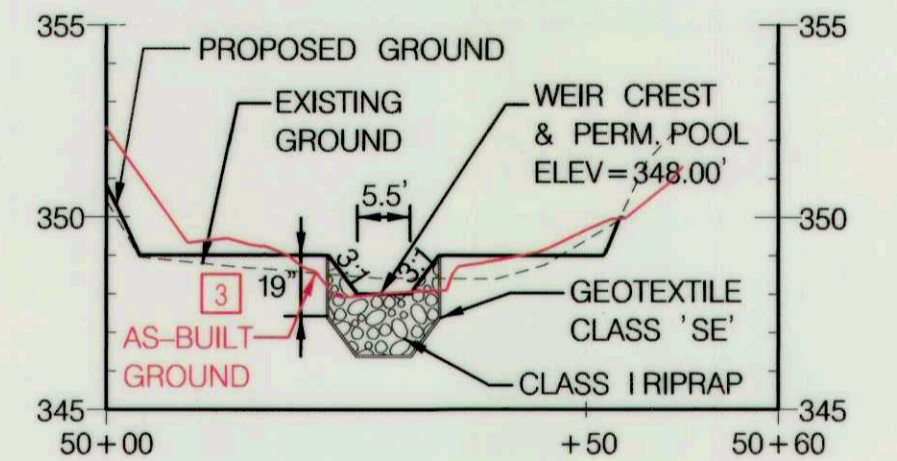
SCALE	1" = 20'
SHEET	3 OF 11



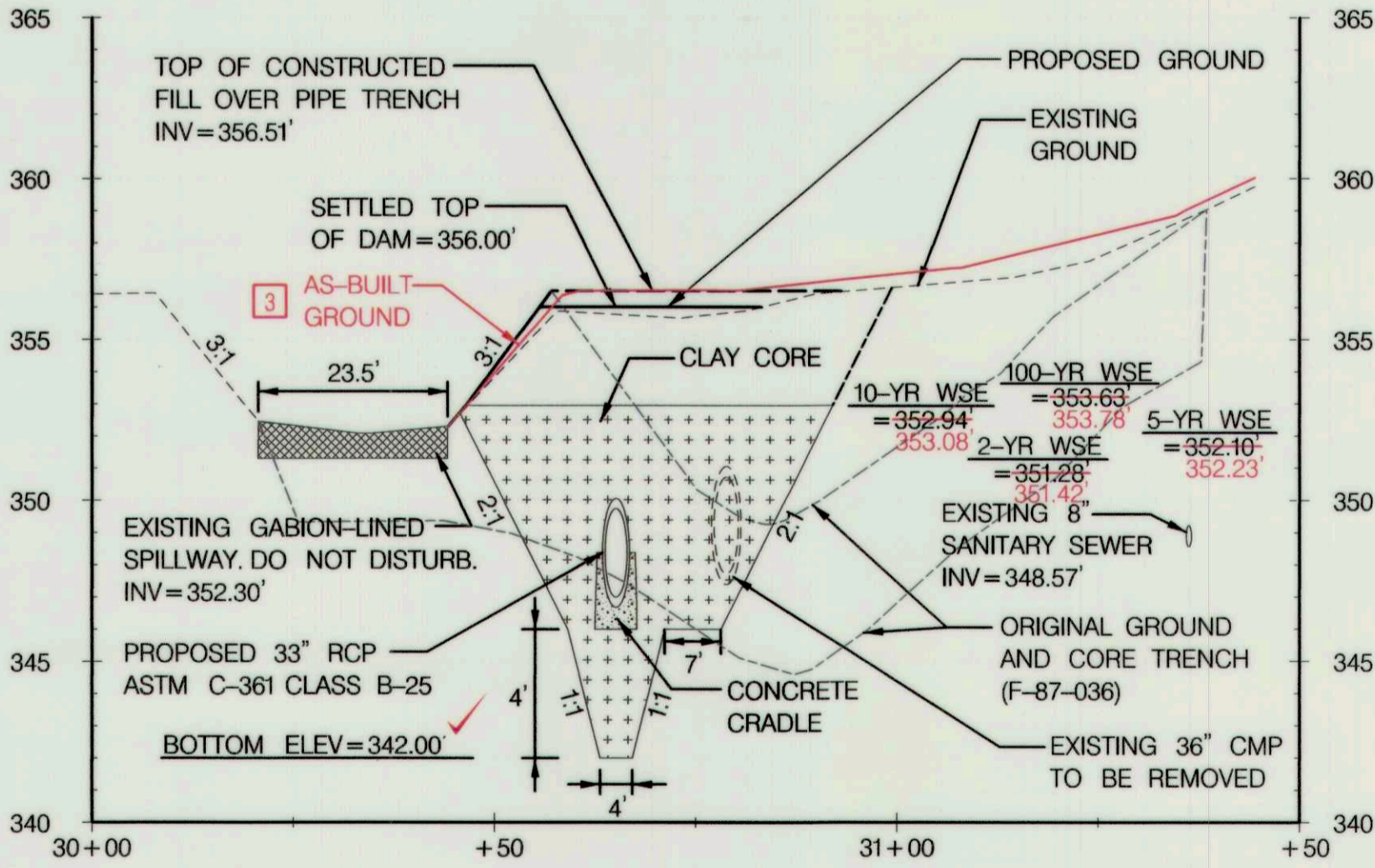
POND PROFILE
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'



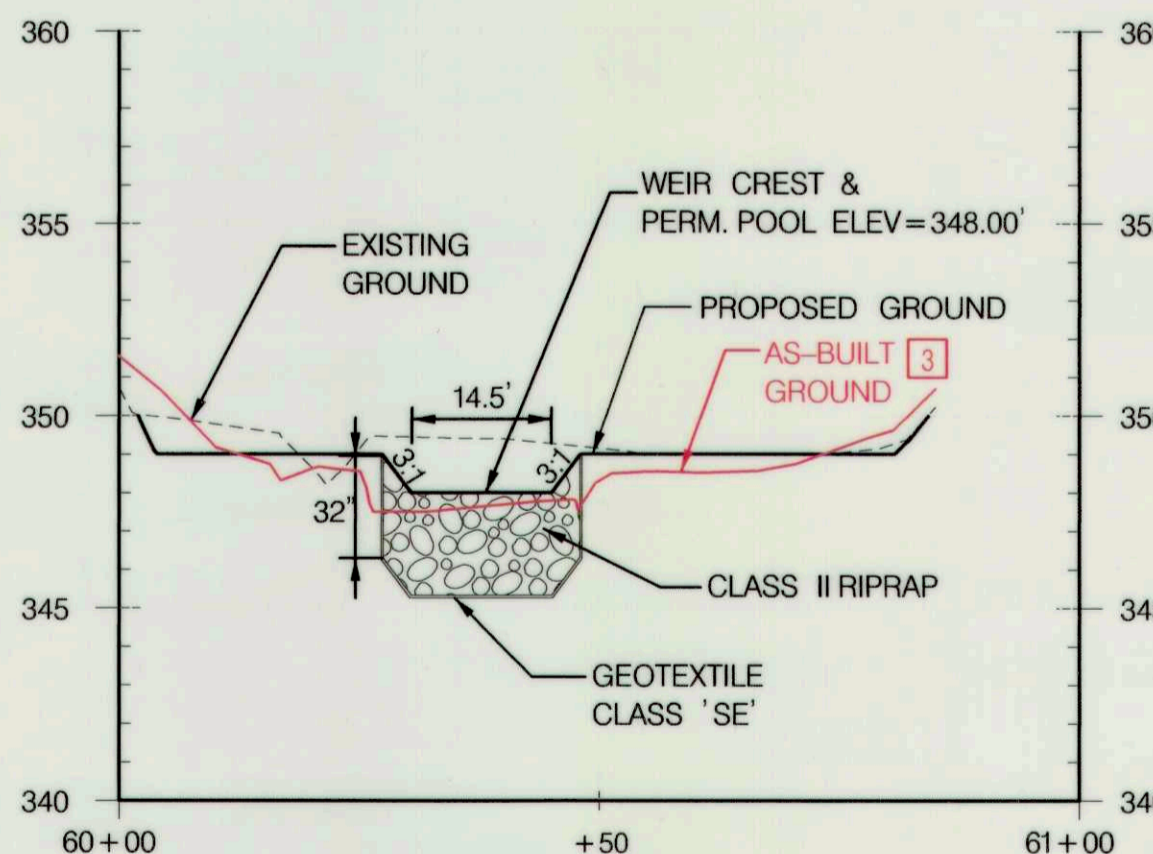
POND CROSS SECTION
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'



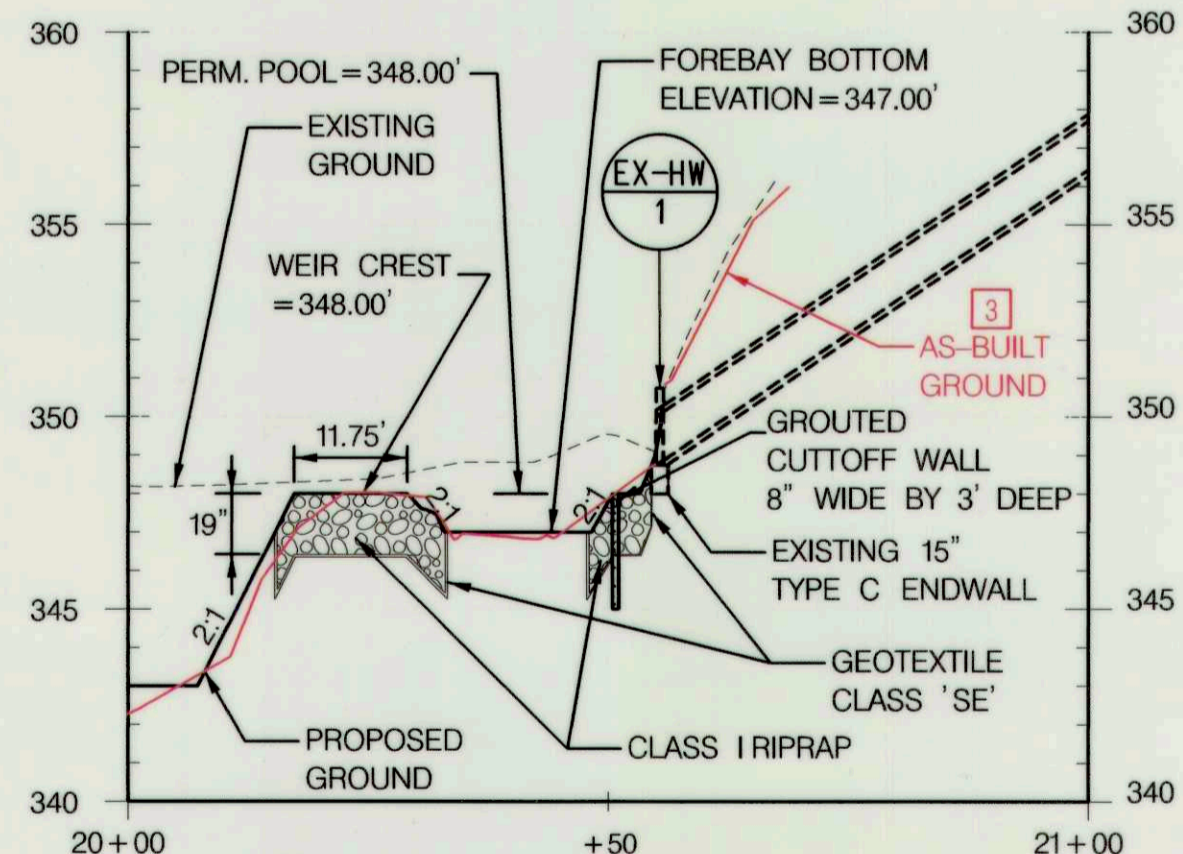
FOREBAY #2 WEIR PROFILE
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'



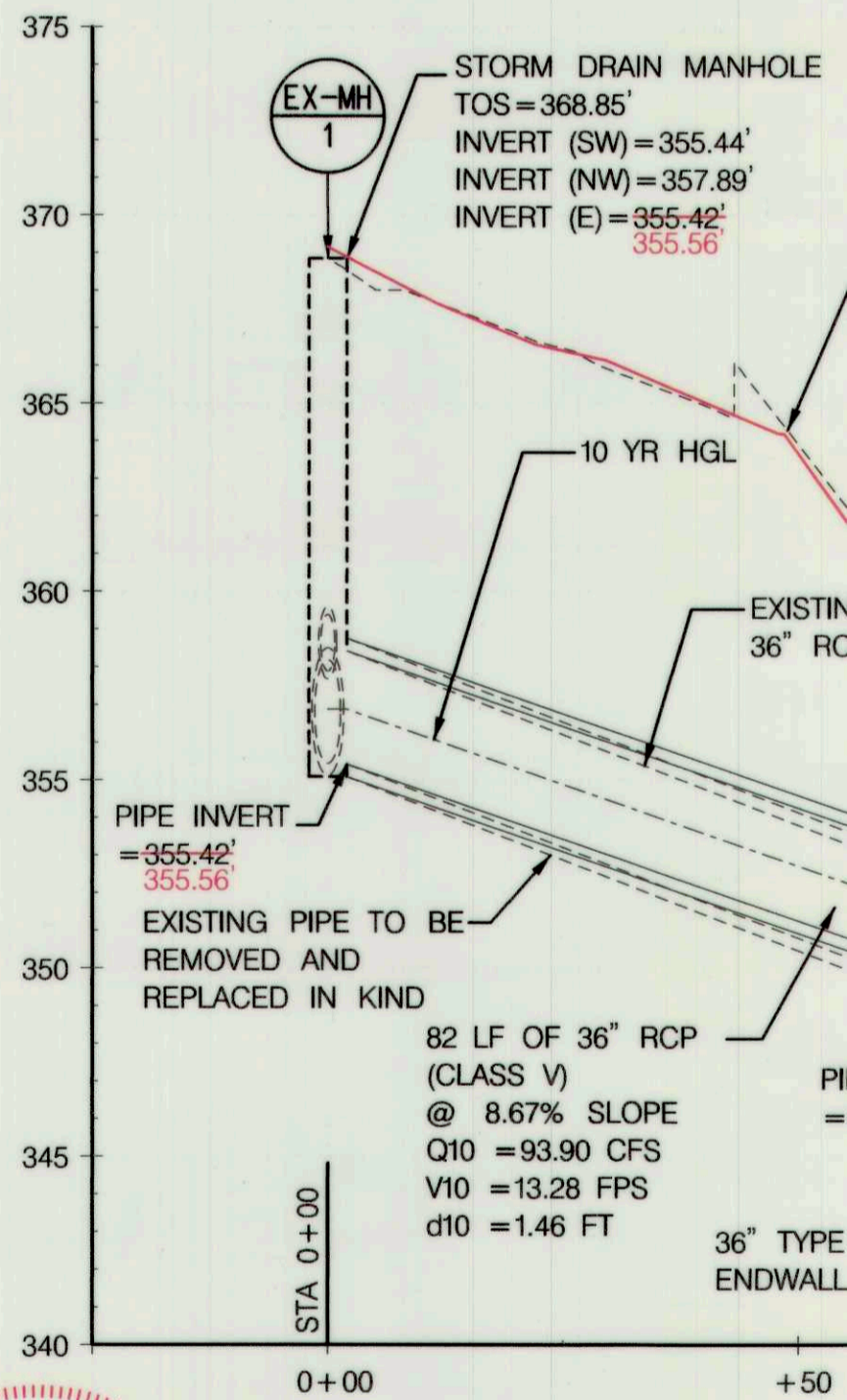
EMBANKMENT PROFILE
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'



FOREBAY WEIR #1 PROFILE
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'



FOREBAY #2 PROFILE
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'



36" STORM DRAIN
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 5'



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

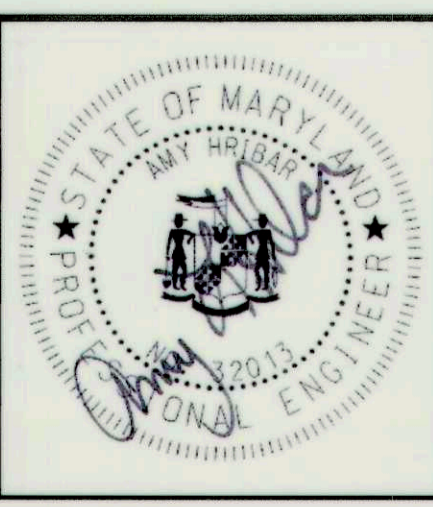
Mark DeLuca
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

DATE: 5/2/17

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

Howard County
MARYLAND

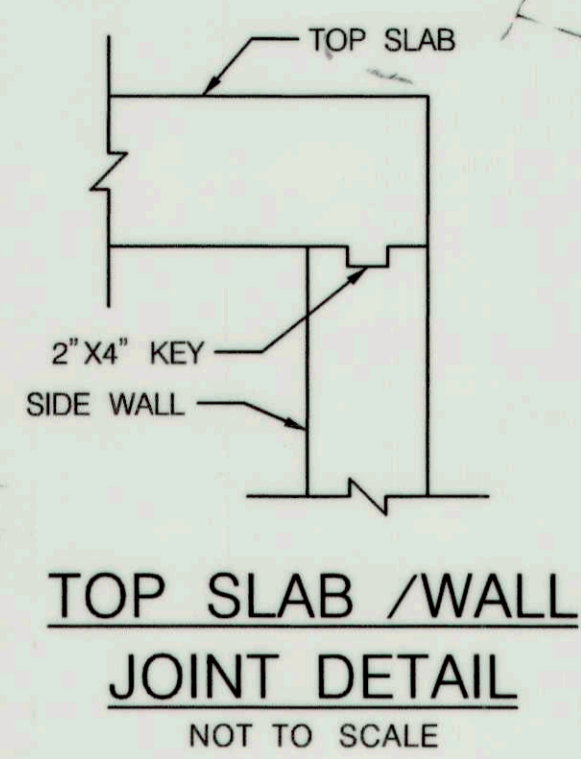
Storm Water Management Division
Bureau of Environmental Services
6751 Columbia Gateway Drive, Suite 514
Columbia, Maryland 21046-3143
(410) 313-6444



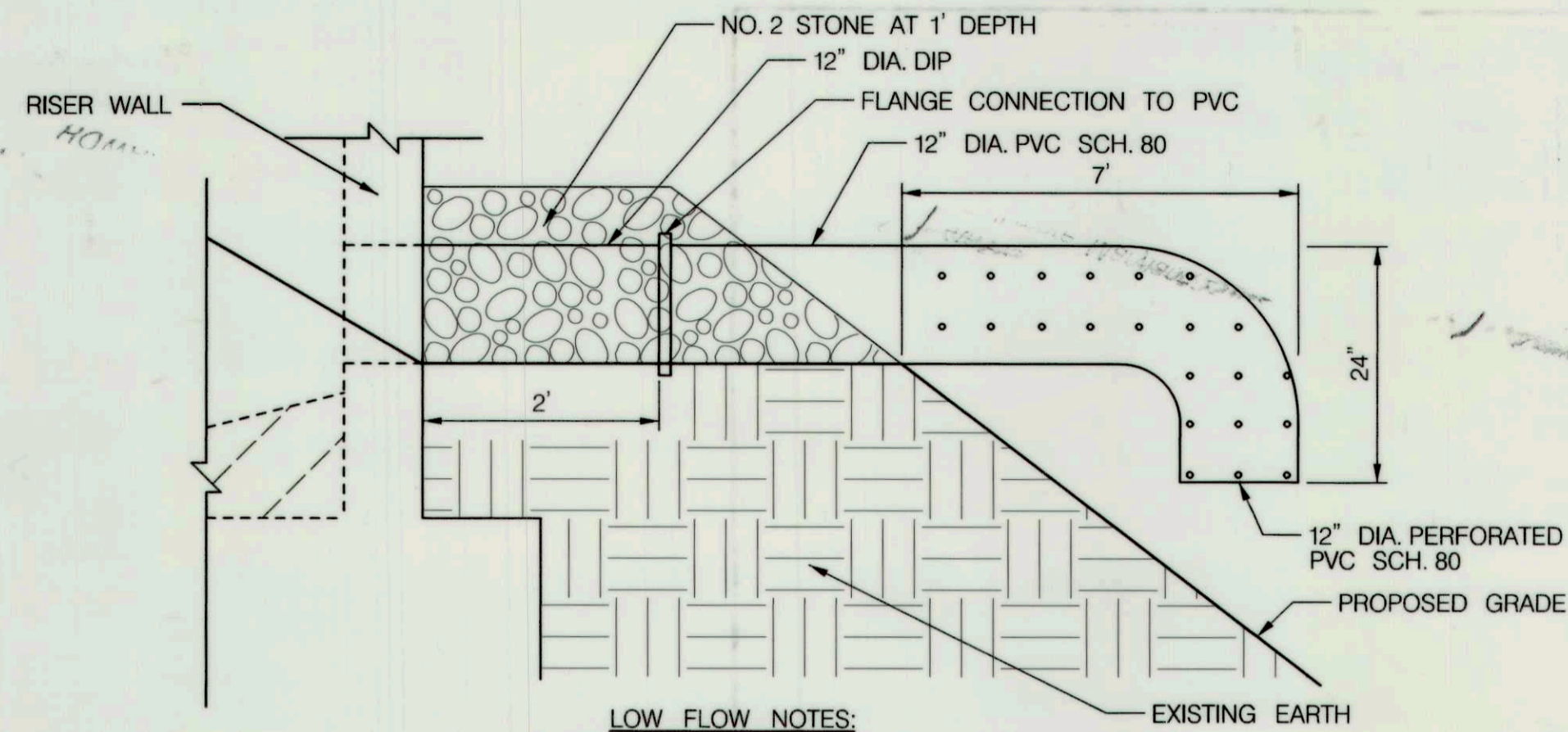
DES: ADM				
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DATE: 03/13/17	ADM	1	SEQUENCE REVISION AND E&S DETAILS	11/27/17
	BY	NO.	REVISION	DATE

**GARAND ROAD PRINCIPAL S
AND SWM RETRO
CAPITAL PROJEC
HOWARD CO
HSCD #: EP**

**POND PROFI
CROSS SECTION**

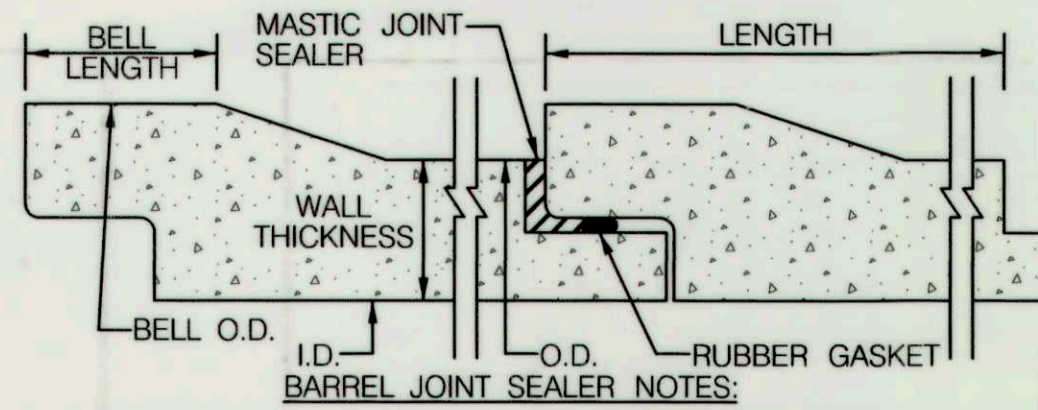


TOP SLAB / WALL
JOINT DETAIL
NOT TO SCALE



LOW FLOW NOTES:
1. PERFORATIONS SHALL BE 3/8" DIA. @ 4" O.C. ALL AROUND FINAL 8 LF OF PIPE

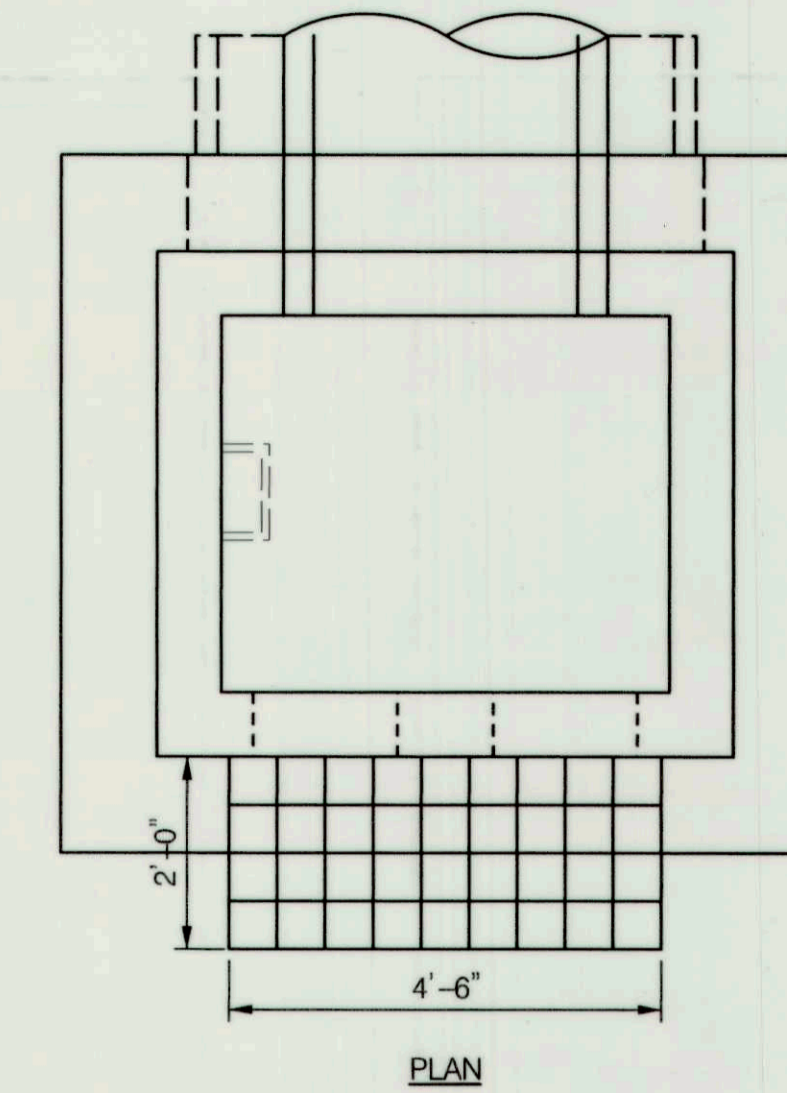
LOW FLOW DETAIL
NOT TO SCALE



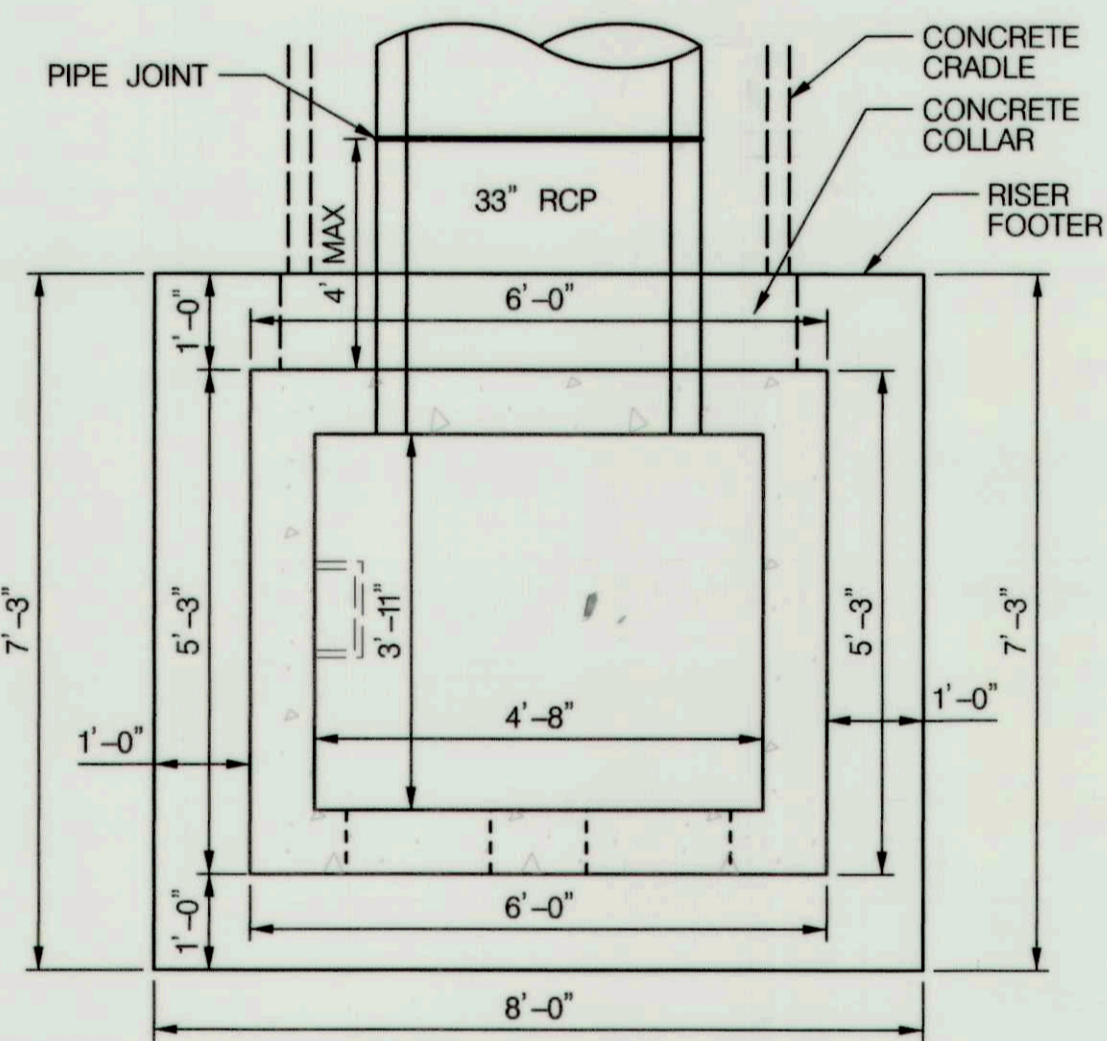
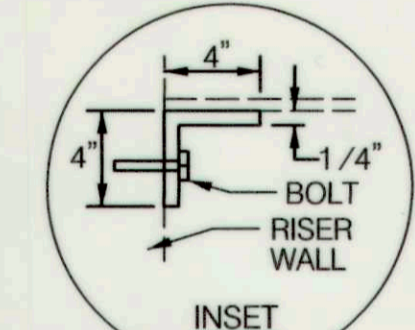
- BARREL JOINT SEALER NOTES:
1. MASTIC JOINT SEALER TO BE APPLIED ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
 2. JOINT SEALER SHOULD HAVE WATERTIGHT CONNECTION.
 3. THE SEALER SHALL BE A MIXTURE OF ASPHALT, MINERAL FILLER AND PETROLEUM SOLVENTS AND SHALL HAVE ADHESIVE AND COHESIVE PROPERTIES.
- THE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

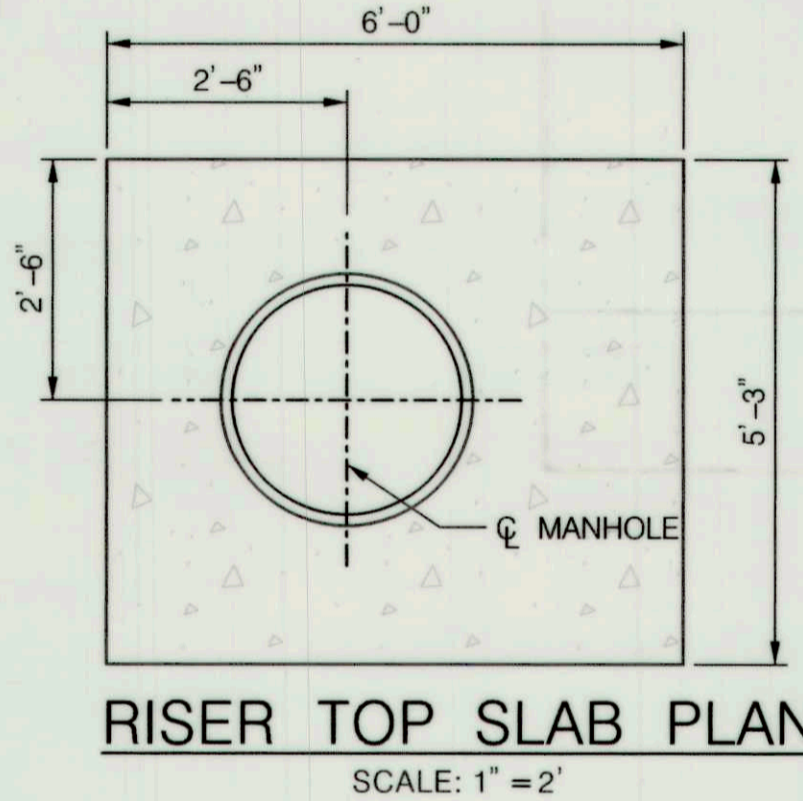
BARREL JOINT SEALER DETAIL
NOT TO SCALE



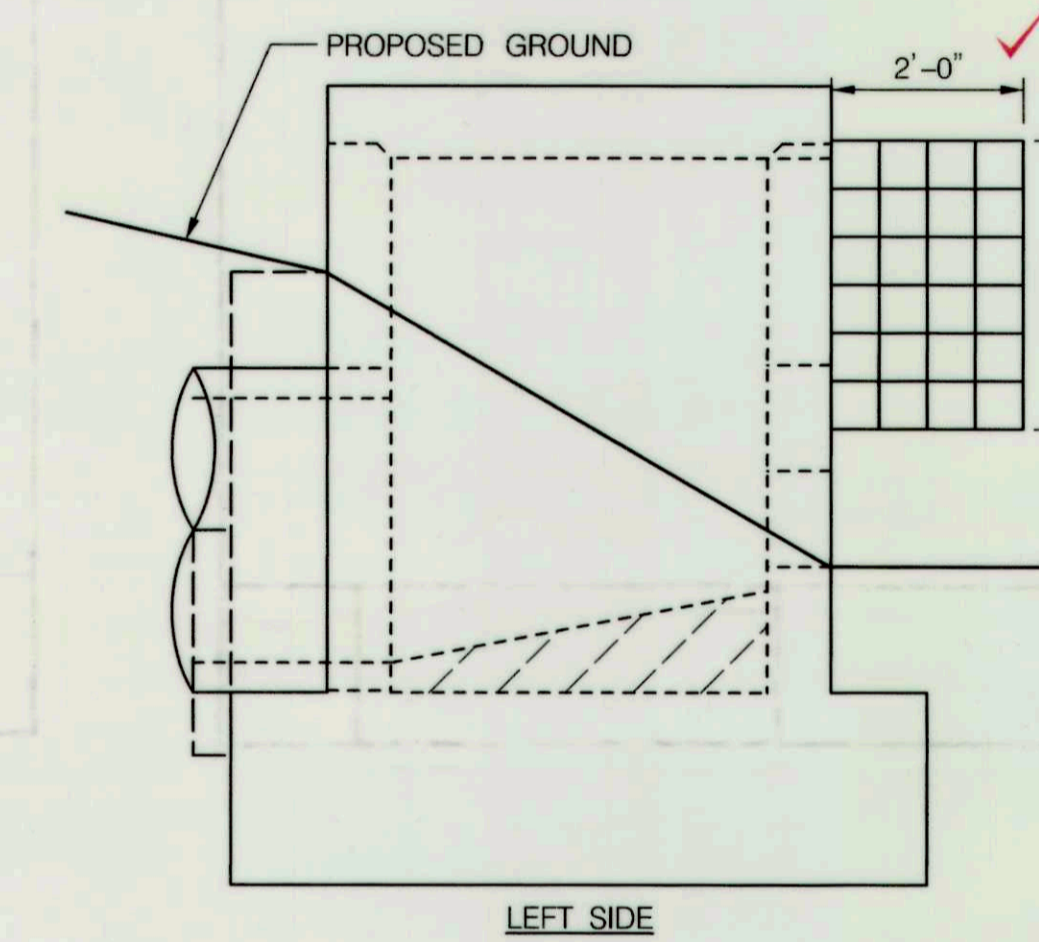
- TRASH RACK CONSTRUCTION NOTES:
1. FRAME SHALL BE CONSTRUCTED OF 4" X 4" X 1/4" STEEL ANGLE WITH THE CORNERS MITRED AND BUTT WELDED.
 2. THE FRAME SHALL BE PAINTED WITH TWO COATS OF COLD GALVANIZED COMPOUND IN "BATTLESHIP GREY".
 3. BARS SHALL BE #6 ROUNDED REBAR AT 6" CC EACH WAY, HOT-DIPPED GALVANIZED 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. TRASH RACK STRUCTURAL SHOP DRAWINGS SHALL BE SUBMITTED TO AND APPROVED BY THE ENGINEER BEFORE CONSTRUCTION.



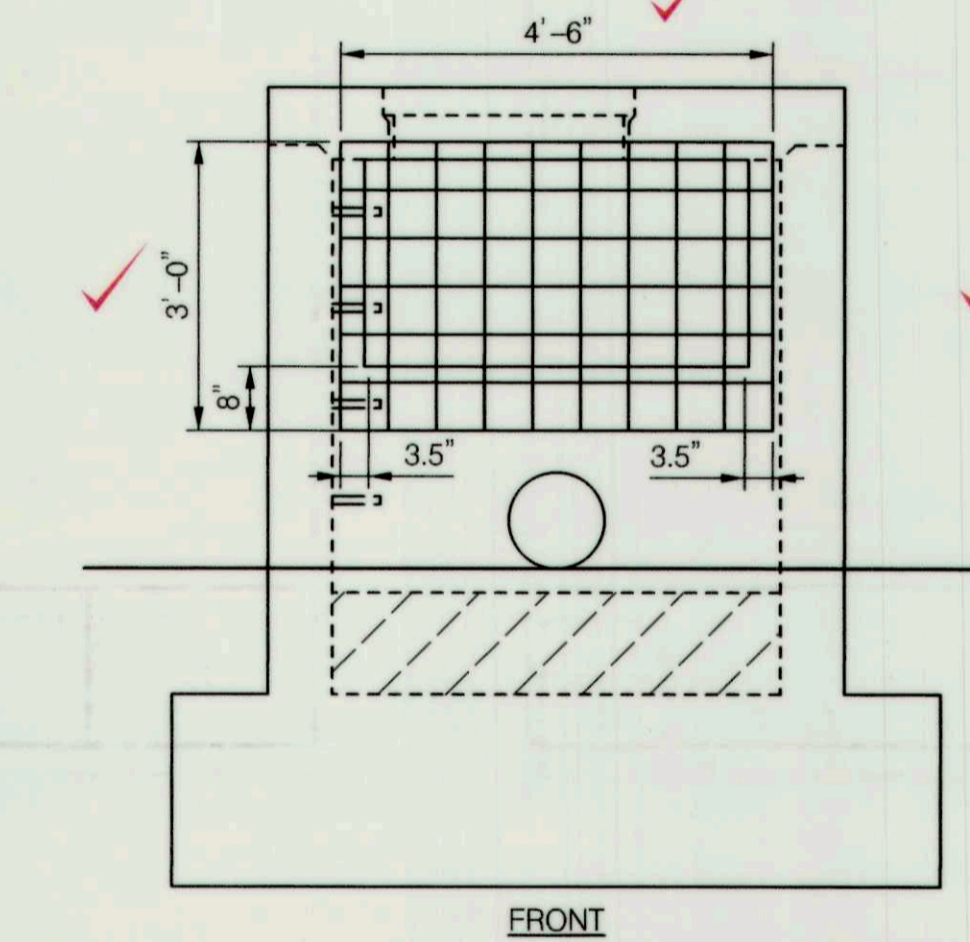
RISER PLAN
SCALE: 1" = 2"



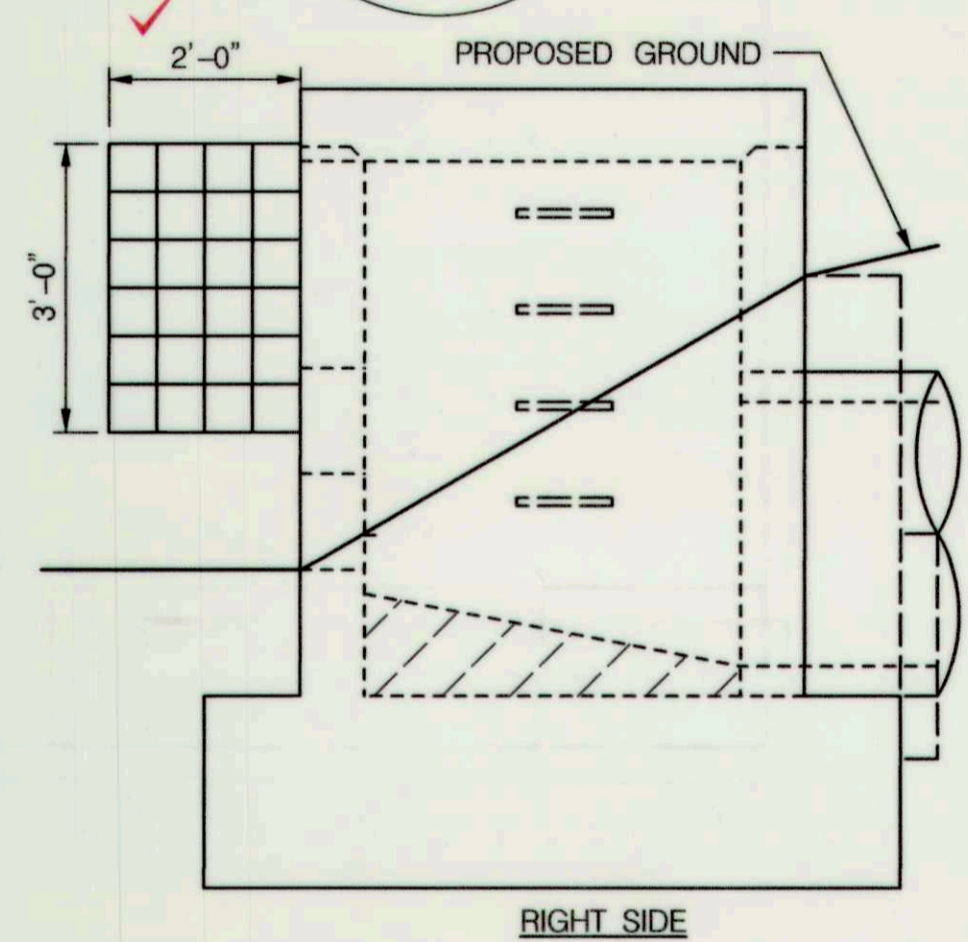
RISER TOP SLAB PLAN
SCALE: 1" = 2"



LEFT SIDE

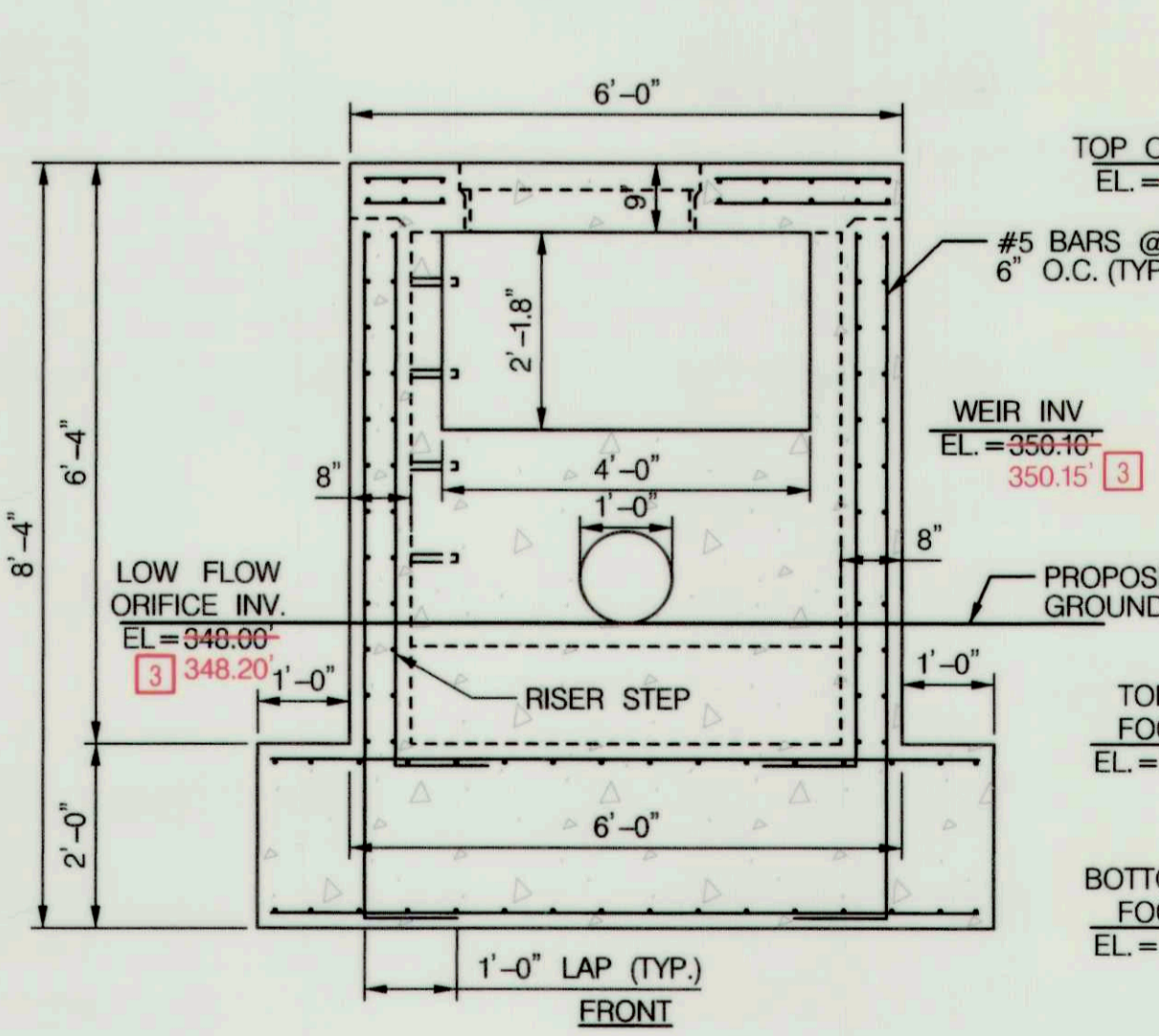


FRONT

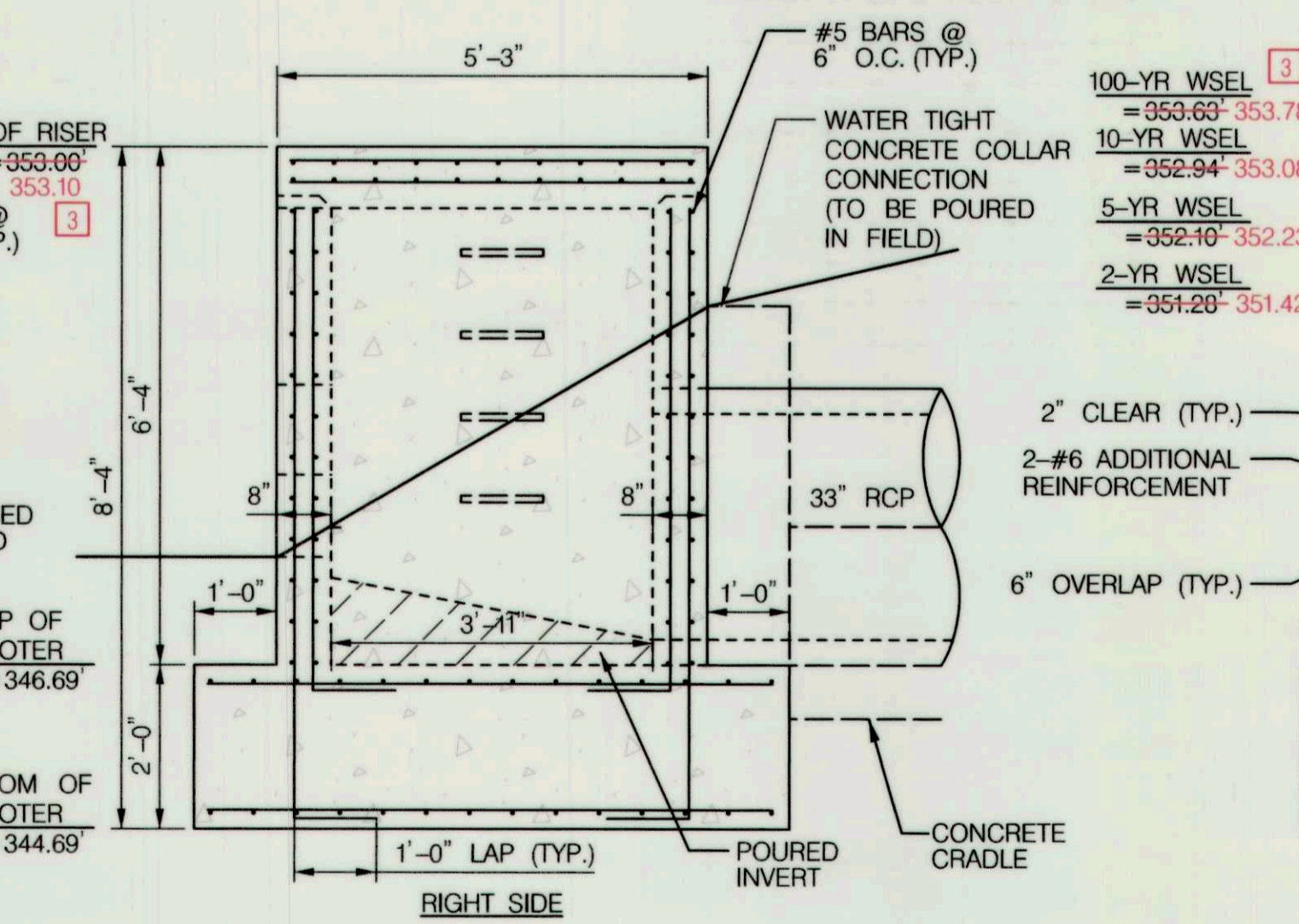


RIGHT SIDE

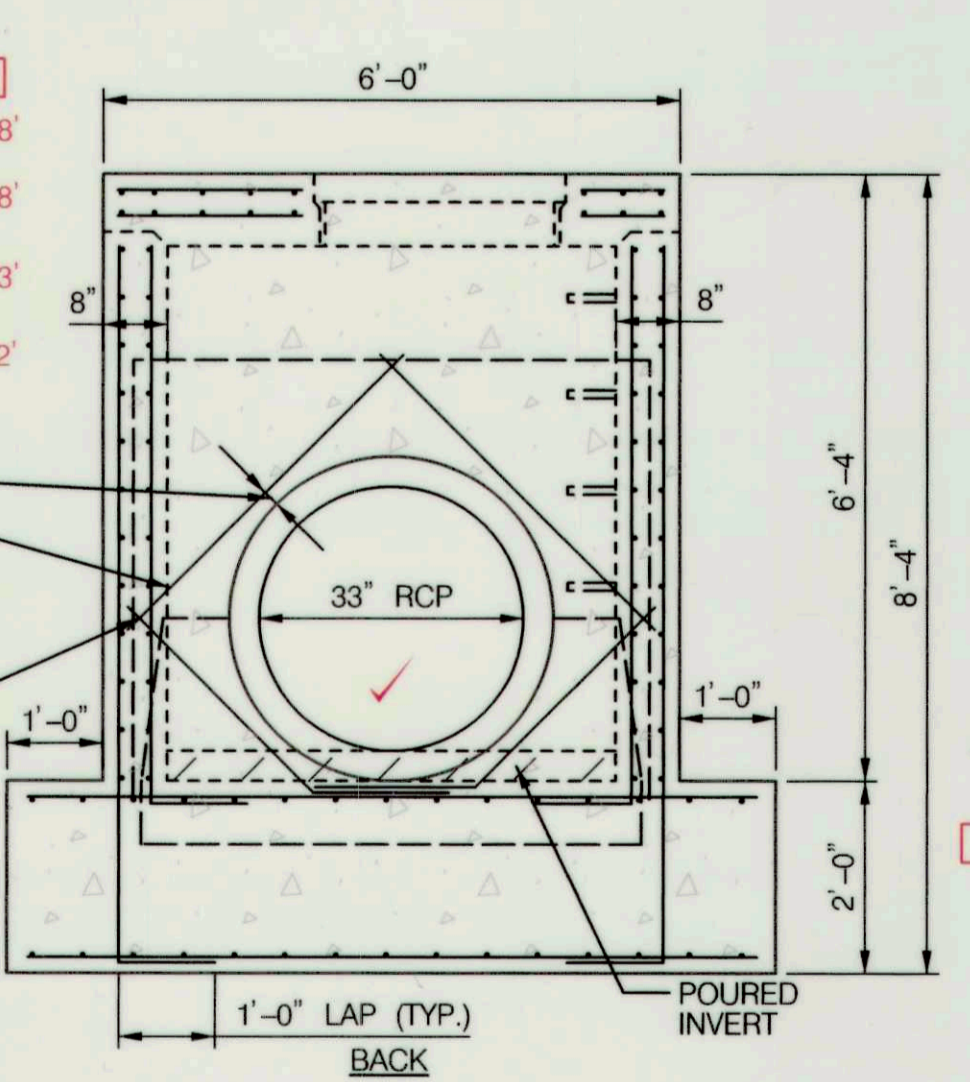
TRASH RACK DETAIL
SCALE: 1" = 2"



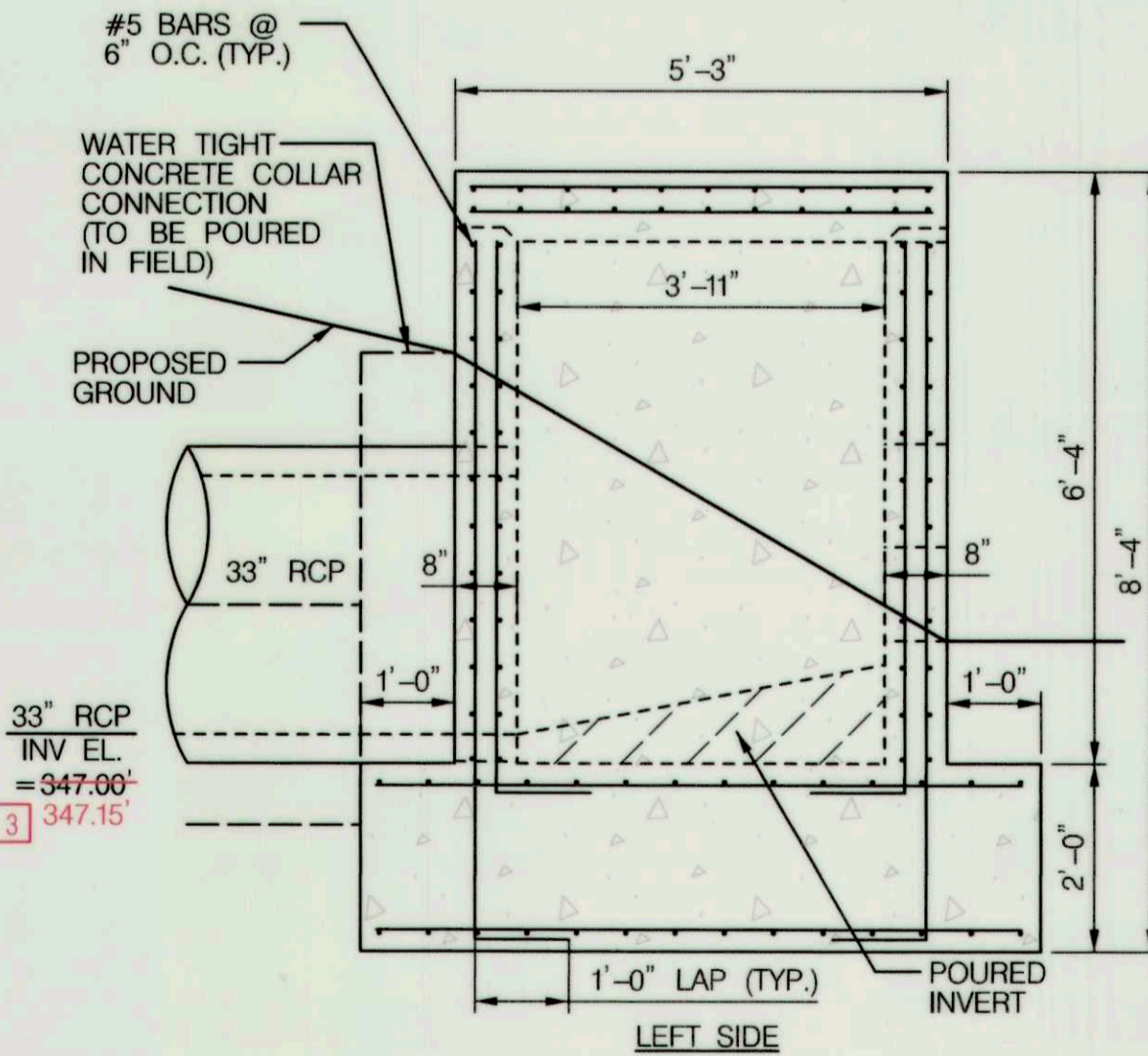
FRONT



RIGHT SIDE



BACK



LEFT SIDE

RISER ELEVATION
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 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-376.
 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 G-2-9 FOR CONCRETE PROJECTION COLLAR.
 8. CONSTRUCT CONCRETE COLLARS TO ENSURE WATERTIGHT SEALS AT RISER AND PIPE CONNECTIONS.
 9. 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.
 10. 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.

DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Manuel...
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

5/2/17
DATE

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

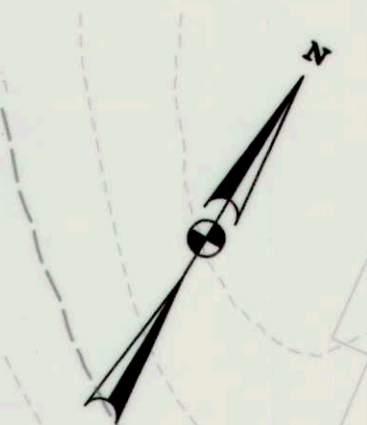
Howard County
MARYLAND
Storm Water Management Division
Bureau of Environmental Services
6751 Columbia Gateway Drive, Suite 514
Columbia, Maryland 21046-3143
(410) 313-6444

DES: ADM			
DRN: ADM			
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DATE: 03/13/17	ADM	AS-BUILT SURVEY	4/25/18
BY	NO.	REVISION	DATE

GARAND ROAD PRINCIPAL SPILLWAY REPLACEMENT
AND SWM RETROFIT PROJECT
CAPITAL PROJECT #D-1160
HOWARD COUNTY
HSCD #: EP-16-29

RISER DETAIL SHEET

SCALE
AS SHOWN
SHEET
5 OF 11



TYPE 'A' SOIL STABILIZATION MATTING

STATION	QTY (SY)	REMARKS
ALL DISTURBED EARTH AREAS ABOVE PP MINUS RIPRAP	2107	SEE DETAIL SHEET 9

STABILIZED CONSTRUCTION ENTRANCE (SCE)

STATION	QTY (TON)	REMARKS
11+51.197' RT	35	SCE

FILTER BAG

STATION	QTY (EA)	REMARKS
13+32.26' LT	1	FB-1

SUMP PIT

STATION	QTY (EA)	REMARKS
11+75.3' LT	1	SP-1

MULCH ACCESS ROAD

FROM	TO	QTY (SY)	REMARKS
12.37.143' RT	12+37.143' RT	107	14 FT WIDTH

SILT FENCE

FROM	TO	QTY (LF)	REMARKS
11+48.172' RT	11+61.147' RT	148	SF-1
12+43.21' LT	12+57.29' RT	63	SF-2
10+80.16' RT	10+83.15' LT	31	SF-3
10+85.14' RT	11+03.34' RT	39	SF-4

SAND BAGS

MIN. TOP HEIGHT	FROM	TO	QTY (LF)	REMARKS
353.25	10+82.13' RT	10+83.14' LT	27	SB-1
349.25	11+51.88' RT	11+58.91' RT	12	SB-2
352.00	12+12.21' RT	12+12.8' RT	30	SB-3

CLEARWATER DIVERSION PIPE, TYPE S

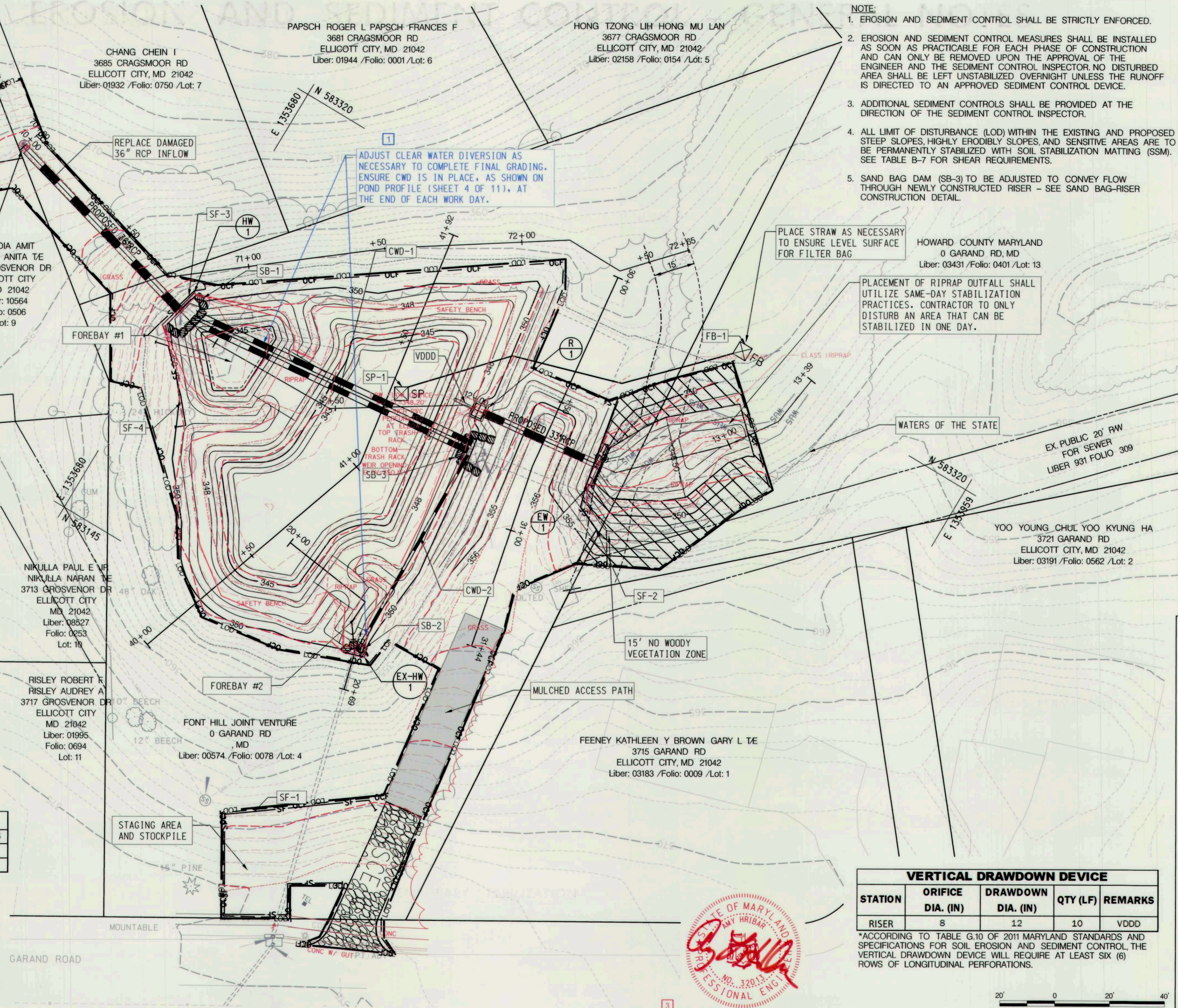
FROM	TO	LENGTH	DIA. (IN)	US INVERT	REMARKS
SB-1	SB-3	112'	24 X 2	349.25'	CWD-1
SB-2	SB-3	80'	12	349.00'	CWD-2

STANDARD STABILIZATION NOTE

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

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

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



- NOTE:**
1. EROSION AND SEDIMENT CONTROL SHALL BE STRICTLY ENFORCED.
 2. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AS SOON AS PRACTICABLE FOR EACH PHASE OF CONSTRUCTION AND CAN ONLY BE REMOVED UPON THE APPROVAL OF THE ENGINEER AND THE SEDIMENT CONTROL INSPECTOR. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
 3. ADDITIONAL SEDIMENT CONTROLS SHALL BE PROVIDED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR.
 4. ALL LIMIT OF DISTURBANCE (LOD) WITHIN THE EXISTING AND PROPOSED STEEP SLOPES, HIGHLY ERODIBLE SLOPES, AND SENSITIVE AREAS ARE TO BE PERMANENTLY STABILIZED WITH SOIL STABILIZATION MATTING (SSM). SEE TABLE B-7 FOR SHEAR REQUIREMENTS.
 5. SAND BAG DAM (SB-3) TO BE ADJUSTED TO CONVEY FLOW THROUGH NEWLY CONSTRUCTED RISER - SEE SAND BAG-RISER CONSTRUCTION DETAIL.

- 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.

PLACE STRAW AS NECESSARY TO ENSURE LEVEL SURFACE FOR FILTER BAG

HOWARD COUNTY MARYLAND
0 GARAND RD, MD
Liber: 03431 / Folio: 0401 / Lot: 13

PLACEMENT OF RIPRAP OUTFALL SHALL UTILIZE SAME-DAY STABILIZATION PRACTICES. CONTRACTOR TO ONLY DISTURB AN AREA THAT CAN BE STABILIZED IN ONE DAY.

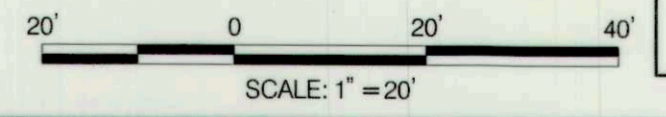
LEGEND

- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPERTY LINE
- WUS - WATERS OF THE US
- WTS - WATERS OF THE STATE
- LOD - LIMIT OF DISTURBANCE
- EASEMENT BOUNDARY
- WOODS LINE
- RIPPRAP
- EXISTING TREE
- EXISTING TREE TO BE REMOVED
- SF - SILT FENCE
- OCF - ORANGE CONSTRUCTION FENCE
- 12" CLEAR WATER DIVERSION PIPE
- 24" CLEAR WATER DIVERSION PIPE
- SAND BAG DAM
- FB - FILTER BAG
- SP - SUMP PIT
- MULCH ACCESS PATH
- STABILIZED CONSTRUCTION ENTRANCE
- SAME DAY STABILIZATION

VERTICAL DRAWDOWN DEVICE

STATION	ORIFICE DIA. (IN)	DRAWDOWN DIA. (IN)	QTY (LF)	REMARKS
RISER	8	12	10	VDDD

*ACCORDING TO TABLE G.10 OF 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, THE VERTICAL DRAWDOWN DEVICE WILL REQUIRE AT LEAST SIX (6) ROWS OF LONGITUDINAL PERFORATIONS.



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Mark A. Lucas
5/2/17
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
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(410) 313-6444

DES: ADM				
DRN: ADM				
CHK: AH	ADM	3	AS-BUILT SURVEY	4/25/18
DATE: 03/13/17	ADM	1	SEQUENCE REVISION AND E&S DETAILS	11/27/17
BY	NO.		REVISION	DATE

GARAND ROAD PRINCIPAL SPILLWAY REPLACEMENT AND SWM RETROFIT PROJECT
CAPITAL PROJECT #D-1160
HOWARD COUNTY
HSCD #: EP-16-29

EROSION AND SEDIMENT CONTROL PLAN

SCALE: 1" = 20'
SHEET: 7 OF 11

EROSION AND SEDIMENT CONTROL – GENERAL NOTES

HOWARD COUNTY CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

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.
- OBTAIN GRADING PERMIT AND MDE PERMIT (TRACKING NUMBER 201661694/16-NT-3282).
- 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)
- STAKEOUT LOD AS SHOWN ON THE PLANS AND INSTALL ORANGE CONSTRUCTION FENCE (OCF) 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)
- INSTALL THE FOLLOWING PERIMETER CONTROLS AS SHOWN ON THE PLAN: STABILIZED CONSTRUCTION ENTRANCE, MULCH ACCESS ROAD, AND SILT FENCE AROUND STOCKPILE AREA, CLEARING ONLY THE AREA NEEDED TO INSTALL THE EAS CONTROLS. CONSTRUCT THE FOLLOWING STREAM DIVERSION AND DEWATERING CONTROLS AS SHOWN ON THE PLANS: SB-1, SB-2, SB-3, CWD-1, CWD-2, FB-1, SP-1, AND ASSOCIATED HOSES. DIVERT CWD-1 AND CWD-2 THROUGH EXISTING PRINCIPAL SPILLWAY PIPE. INSTALL CLEAR WATER DIVERSION PIPES FROM DOWNSTREAM TO UPSTREAM. (5 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 PLANS AND INSTALL CLASS 1 AND II RIPRAP FROM DOWNSTREAM TO UPSTREAM USING SAME-DAY STABILIZATION PRACTICES. INSTALL SF-2 AROUND STABILIZED RIPRAP OUTFALL AT TOE OF EMBANKMENT. (3 DAYS)
- WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR BEFORE PROCEEDING AND DURING A 5 DAY DRY FORECAST FROM THE NATIONAL WEATHER SERVICE, EXCAVATE TRENCH FOR PROPOSED SPILLWAY PIPE AND INSTALL ENDWALL (EW-1). 33" RCP PRINCIPAL SPILLWAY PIPE, CLAY CORE BOTTOM, ANTI-SEEP COLLAR, AND RISER (R-1). INSTALL VERTICAL DRAINAGE DEVICE (VDD). (10 DAYS)
- ADJUST SB-3, CWD-1, AND CWD-2 TO DIVERT CLEAR WATER THROUGH R-1. ADJUST SF-2 AROUND EW-1 TO ACCOMMODATE SHIFT IN CLEAR WATER DIVERSION LOCATION. REMOVE EXISTING RISER AND PRINCIPAL SPILLWAY. INSTALL CLAY CORE, BACKFILL AND COMPACT EMBANKMENT. (3 DAY) FINAL GRADE EMBANKMENT AND POND AREA. ADJUST CLEAR WATER DIVERSION AS NECESSARY DURING DRY WEATHER FOR FINAL GRADING. ENSURE CLEAR WATER DIVERSION IS IN PLACE AT THE END OF EACH WORK DAY.
- EXCAVATE AND GRADE THE POND AS SHOWN ON THE PLANS. INSTALL AND ADJUST SILT FENCES AROUND FOREBAY #1 AS SHOWN ON THE PLAN. INSTALL RIPRAP PROTECTION AT EACH INFLOW AND FOREBAY WEIR. ADJUST CLEAR WATER DIVERSION PIPES AND DEWATER TO FILTER BAG AS NEEDED TO GRADE POND. (10 DAYS)
- DURING A 5-DAY CLEAR WEATHER FORECAST, REMOVE AND REPLACE DAMAGED SECTION OF 36" RCP INFLOW. INSTALLING PIPE FROM DOWNSTREAM TO UPSTREAM. ONLY REMOVING AS MUCH PIPE AS CAN BE REPLACED IN ONE DAY. ADJUST SILT FENCE AS NECESSARY TO PREVENT DIRTY WATER FROM ENTERING CLEAR WATER DIVERSION.
- STABILIZE AREAS WITH SOIL STABILIZATION MATTING, TOPSOIL AND LANDSCAPING AS SHOWN ON THE PLAN. (4 DAYS)
- WHEN AREAS ARE FULLY STABILIZED AND WITH PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR, REMOVE THE EROSION AND SEDIMENT CONTROLS. MULCH FROM ACCESS ROAD MAY BE SPREAD OUT AND REMAIN IN PLACE AT THE DIRECTION OF THE COUNTY PROJECT MANAGER. STABILIZE ANY REMAINING DISTURBED AREAS WITH PERMANENT STABILIZATION AS SHOWN ON THE PLANS. DEMOBILIZE EQUIPMENT (3 DAYS).

HOWARD COUNTY 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 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 START OF ANY 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 25% OR MORE CUT AND/OR FILL. STOCKPILES (SEC. B-4-6) MUST BE BENCH WITH STABLE OUTFALL. 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	0.6907 ACRES
AREA DISTURBED	0.6907 ACRES
AREA TO BE ROOFED OR PAVED	0.0000 ACRES
AREA TO BE VEGETATIVELY STABILIZED	0.6907 ACRES
TOTAL CUT	1398 CY
TOTAL FILL	136 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 BY THE CONTRACTOR, MADE AVAILABLE UPON REQUEST IS PART OF EVERY INSPECTION AND SHALL INCLUDE ITEMS LISTED AT HOWARDSCD.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 SEDIMENT BASIN OR OTHER APPROVED WASHOUT STRUCTURE.
- TOPSOIL SHALL BE STOCKPILED AND PRESERVED ON-SITE OR 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 UP HILL BY 2 IN ELEVATION.
- STREAM CHANNELS MUST NOT BE DISTURBED DURING THE FOLLOWING RESTRICTED TIME PERIODS (INCLUSIVE): USE I AND II MARCH 1 – JUNE 15 USE III AND IIIP OCTOBER 1 – APRIL 30 USE IV MARCH 1 – MAY 31
- 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 SOIL (LESS THAN 30 PERCENT SILT PLUS CLAY) WOULD BE ACCEPTABLE.
 - SOIL CONTAINS 9 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 OTHER METHODS 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 SOIL 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. SOILS 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 LIMESTONE IS NOT FEASIBLE.
 - AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN.
 - TOPSOIL SPECIFICATIONS 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, THISTLE, 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 ON THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MOIST 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.
 - FERTILIZER 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 OR MANUFACTURER AND WARRANTY OF THE PRODUCER.
 - LIME MATERIALS MUST BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHEN HYDROSEEDING) WHICH CONTAINS AT LEAST 50 PERCENT TOTAL OXIDES (CALCIUM OXIDE PLUS MAGNESIUM OXIDE). LIMESTONE 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 LIMESTONE AT THE RATE OF 4 TO 8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.

B-4-4 TEMPORARY STABILIZATION

HARDINESS ZONE (FROM FIGURE B.3)		6B		SEE BELOW		FERTILIZER RATE (10-20-20)		LIME RATE	
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS					
	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-4-3 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 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 STABILIZERS 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 PRESCRIBED ON TEMPORARY SEEDING TABLE B.1. PERMANENT SEEDING TABLE B.3.
 - 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 (PHOSPHOROUS), 200 POUNDS PER ACRE;
 - K2O (POTASSIUM), 200 POUNDS PER ACRE.
 - 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)
 - 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 SPECIES OF GRASS 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 MATERIAL IS 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.
 - 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 10 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.
 - 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 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 DLR (AGRO-TACK), DCA-70, PETROSET, 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-4-5 PERMANENT STABILIZATION

HARDINESS ZONE (FROM FIGURE B.3)		6B		FERTILIZER RATE (10-20-20)		LIME RATE		
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	N	P ₂ O ₅	K ₂ O	
	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.				

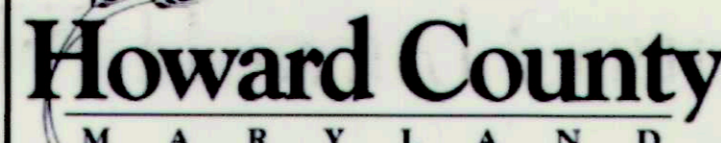
NOTE: MAY 16 TO JUNE 15 ARE ADDITIONAL PLANTING DATES DURING WHICH SUPPLEMENTAL WATERING MAY BE NEEDED TO ENSURE PLANT ESTABLISHMENT

HARDINESS ZONE (FROM FIGURE B.3)		6B		FERTILIZER RATE (10-20-20)		LIME RATE		
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	N	P ₂ O ₅	K ₂ O	
	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.				

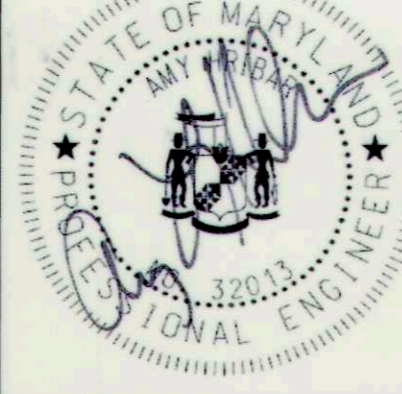
DEPARTMENT OF PUBLIC WORKS HOWARD COUNTY, MARYLAND



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



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



DES: ADM

DRN: ADM

CHK: AH

DATE: 03/13/17

BY

NO.

REVISION

DATE

GARAND ROAD PRINCIPAL SPILLWAY REPLACEMENT
AND SWM RETROFIT PROJECT
CAPITAL PROJECT #D-1160
HOWARD COUNTY
HSCD #: EP-16-29

EROSION AND SEDIMENT CONTROL NOTES

SCALE

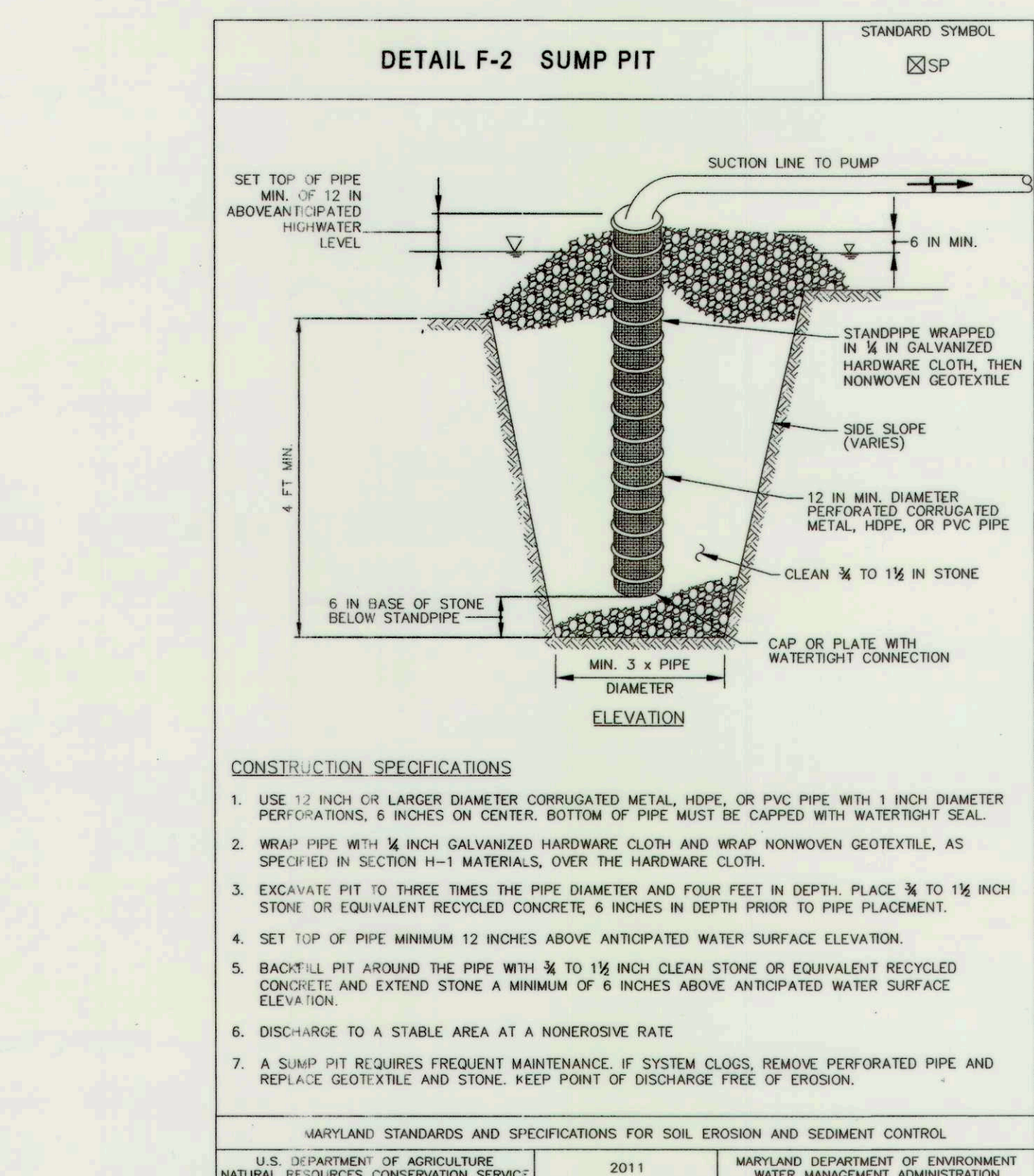
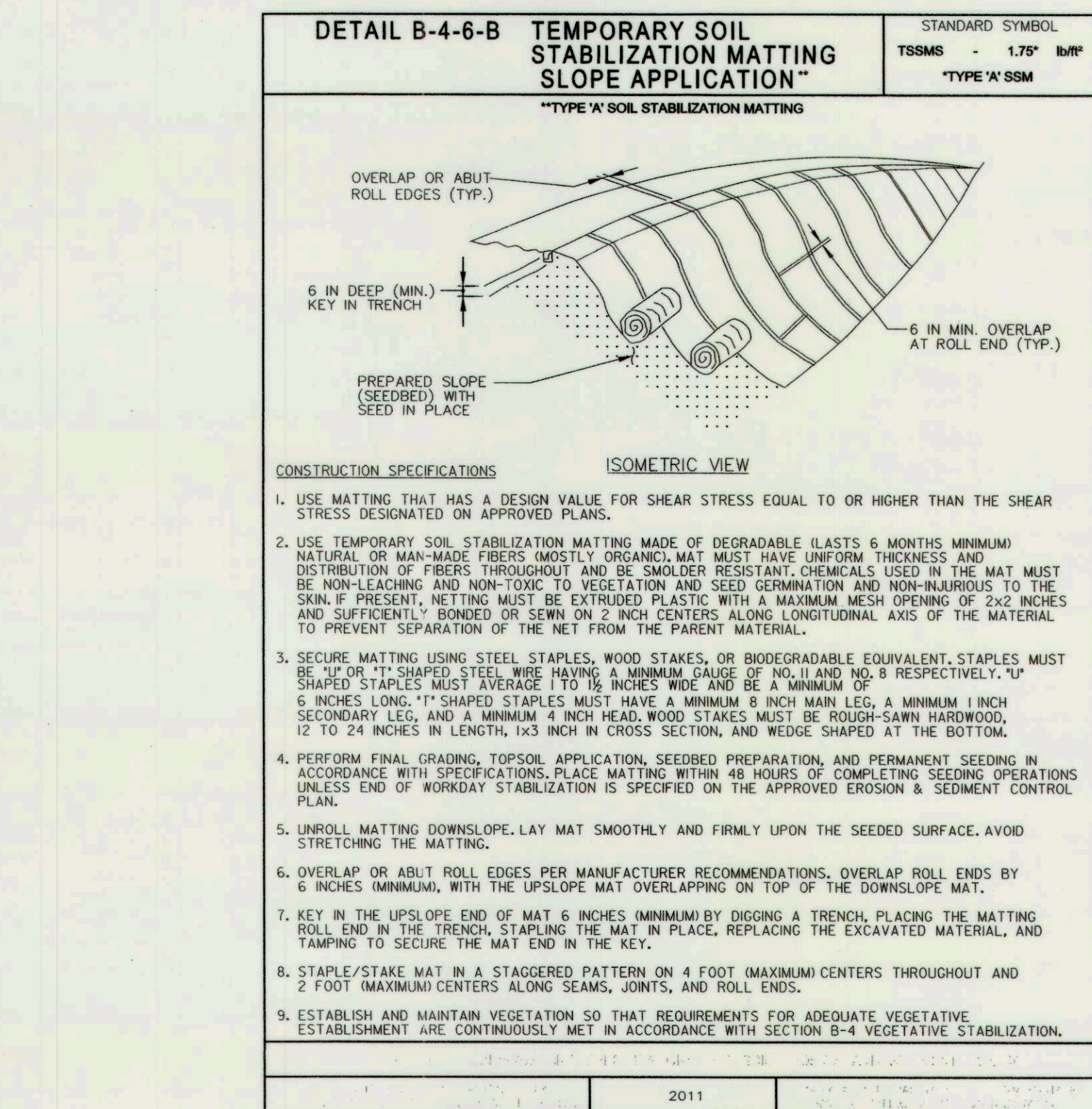
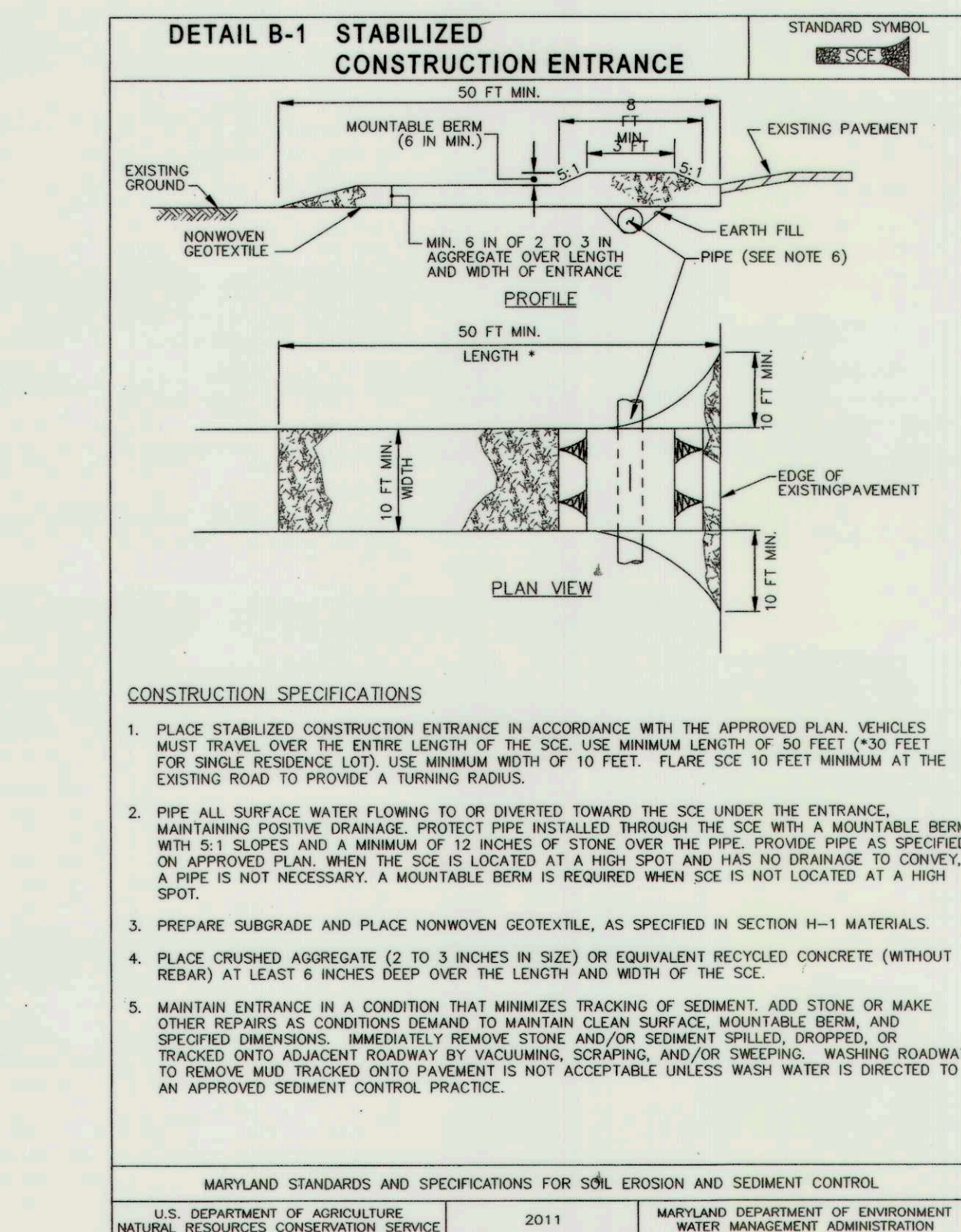
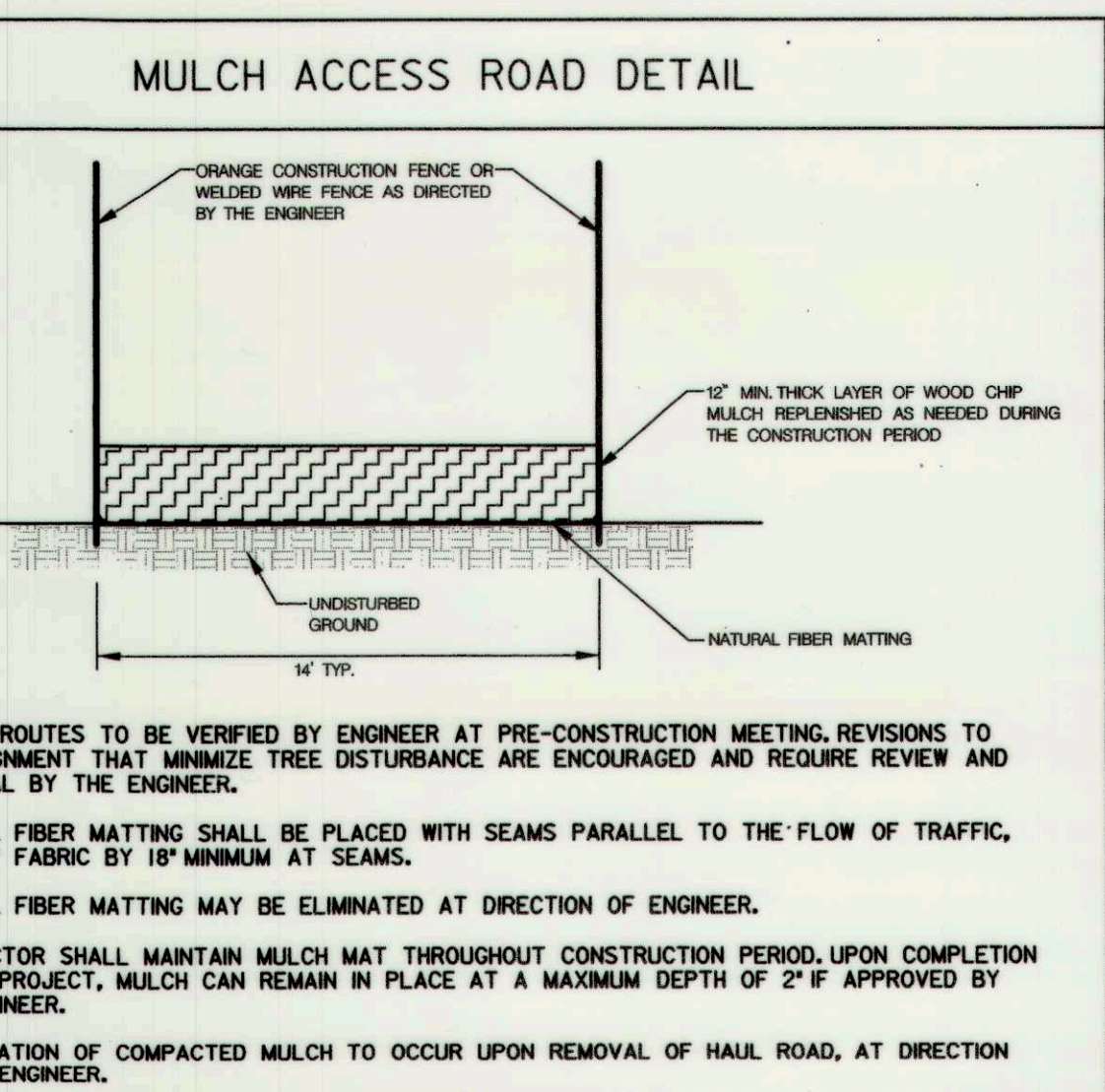
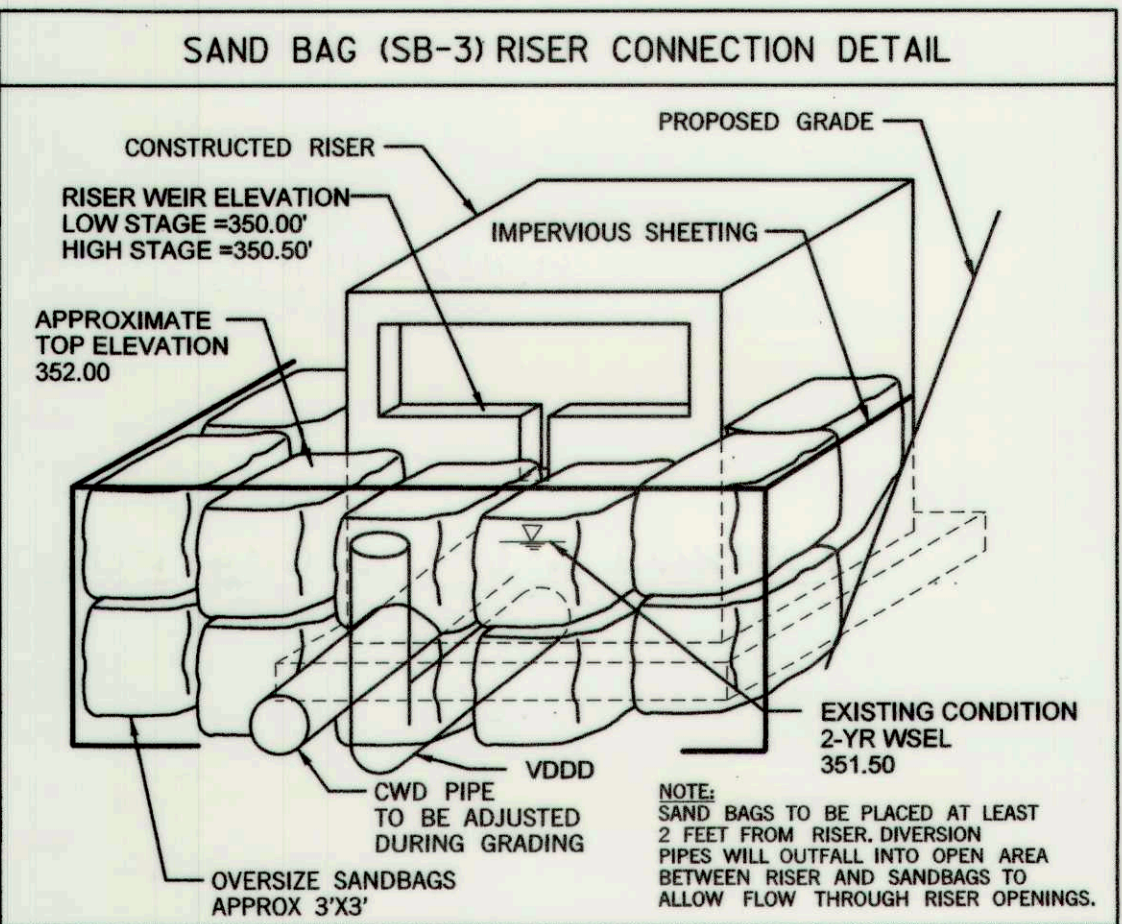
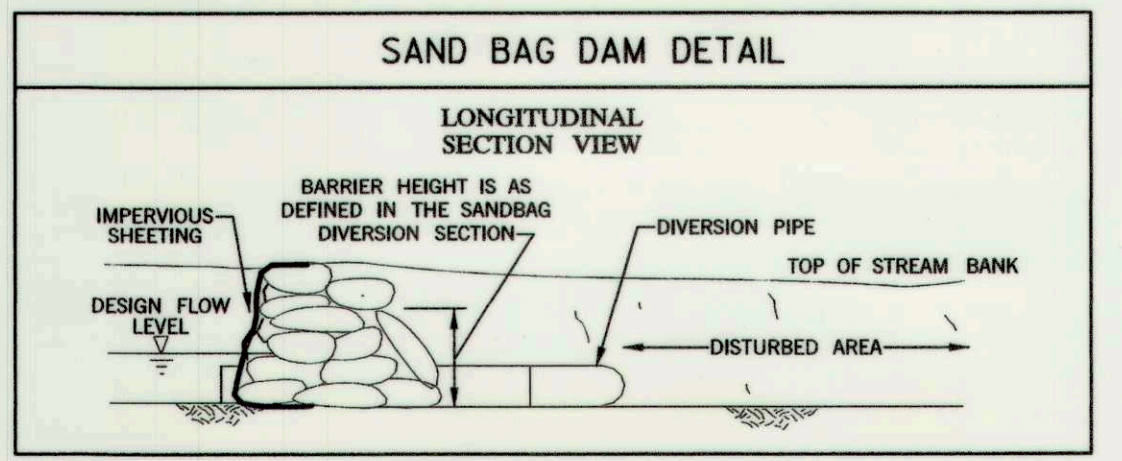
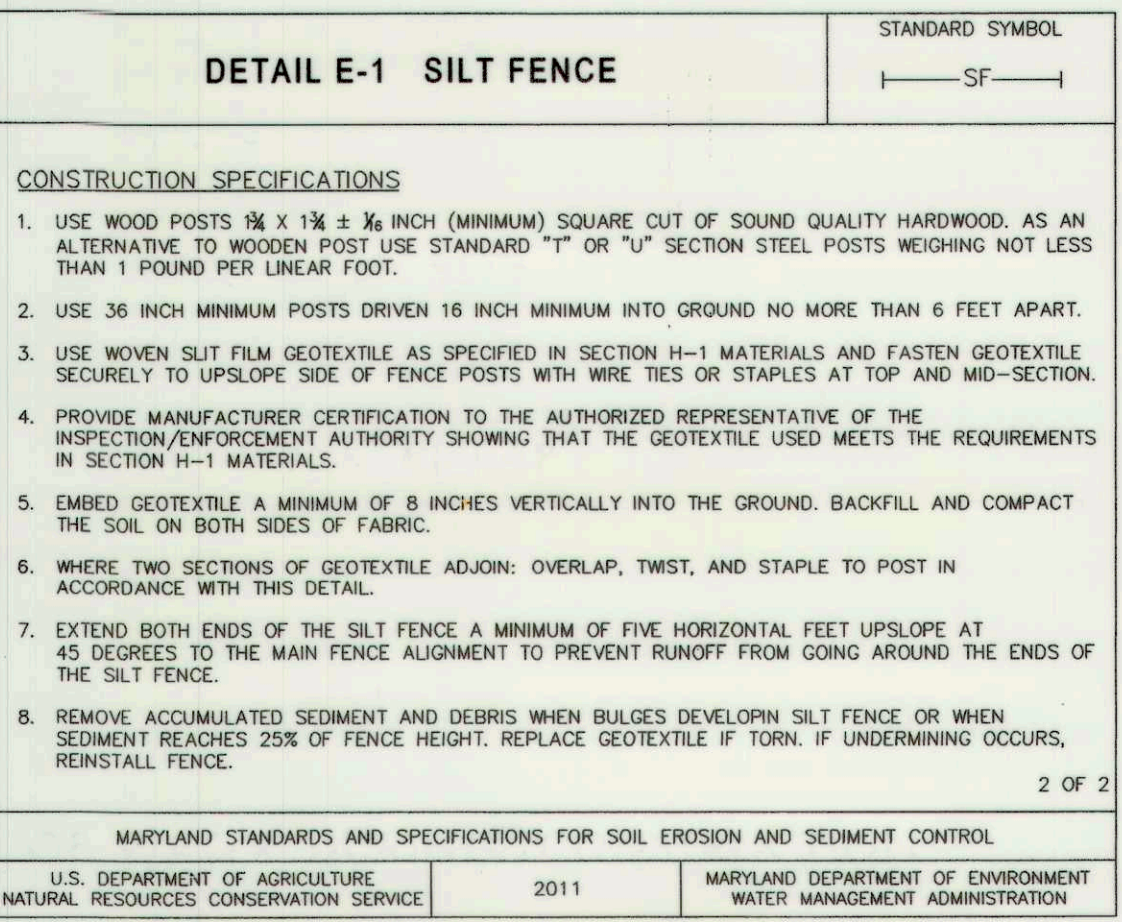
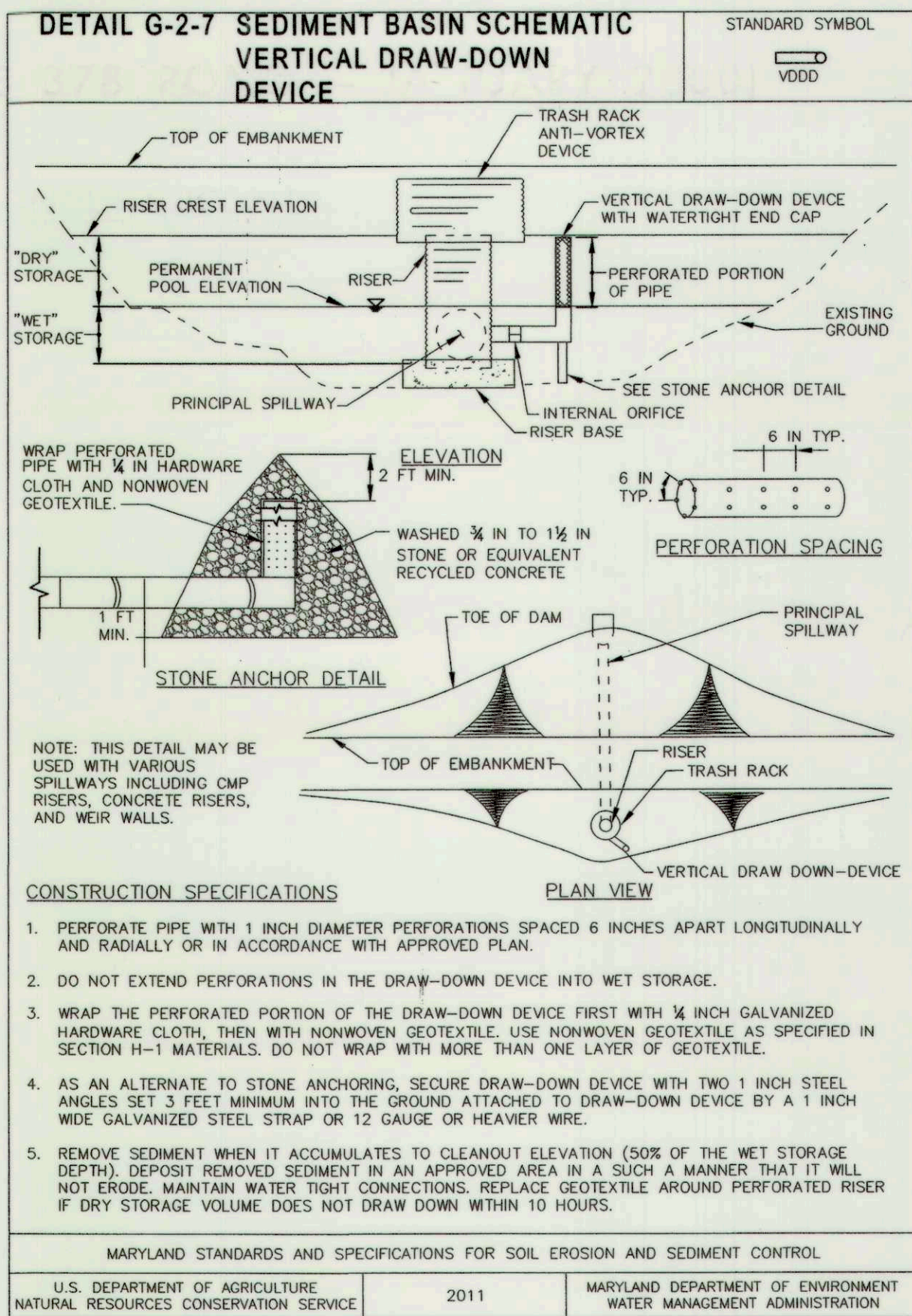
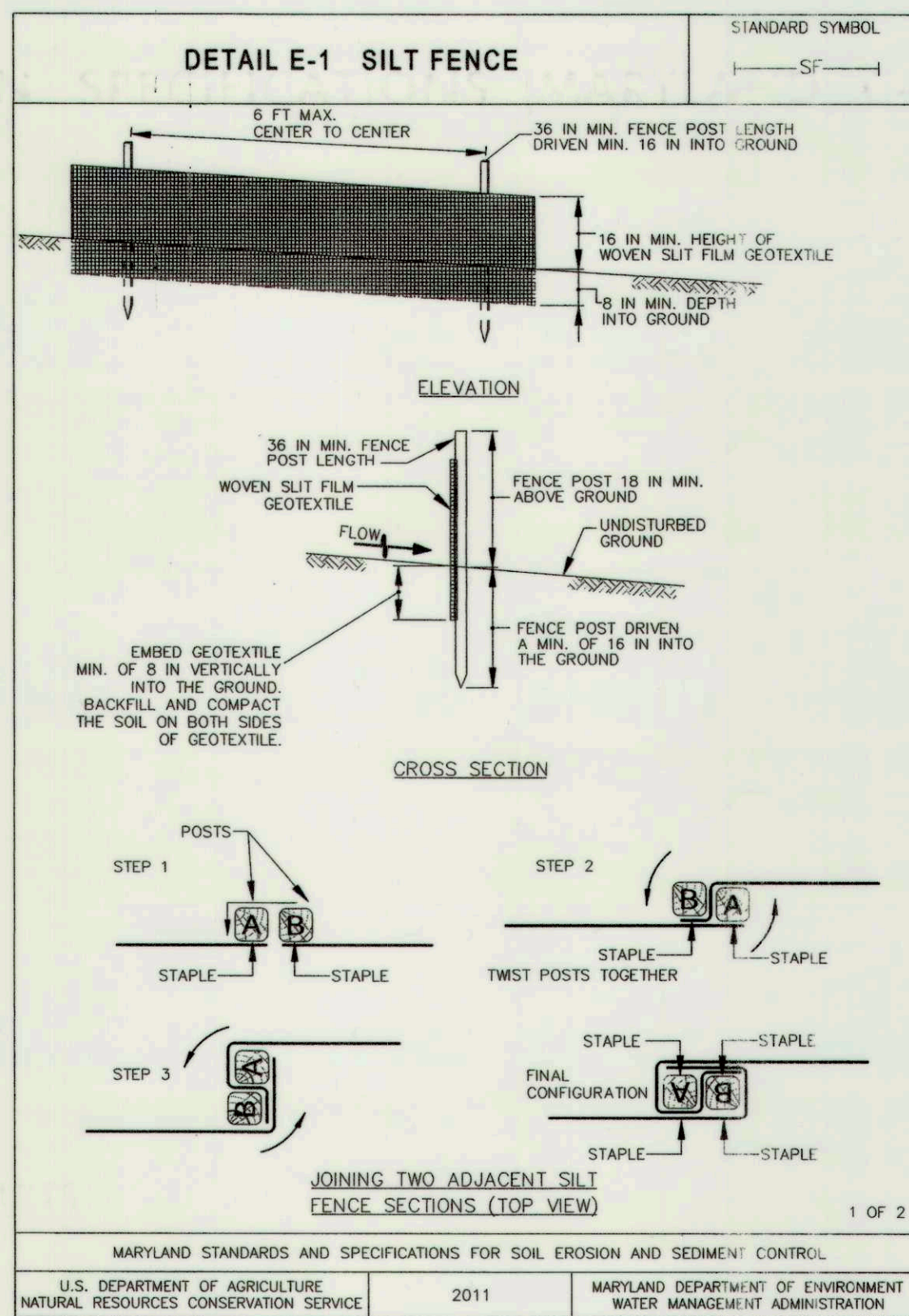
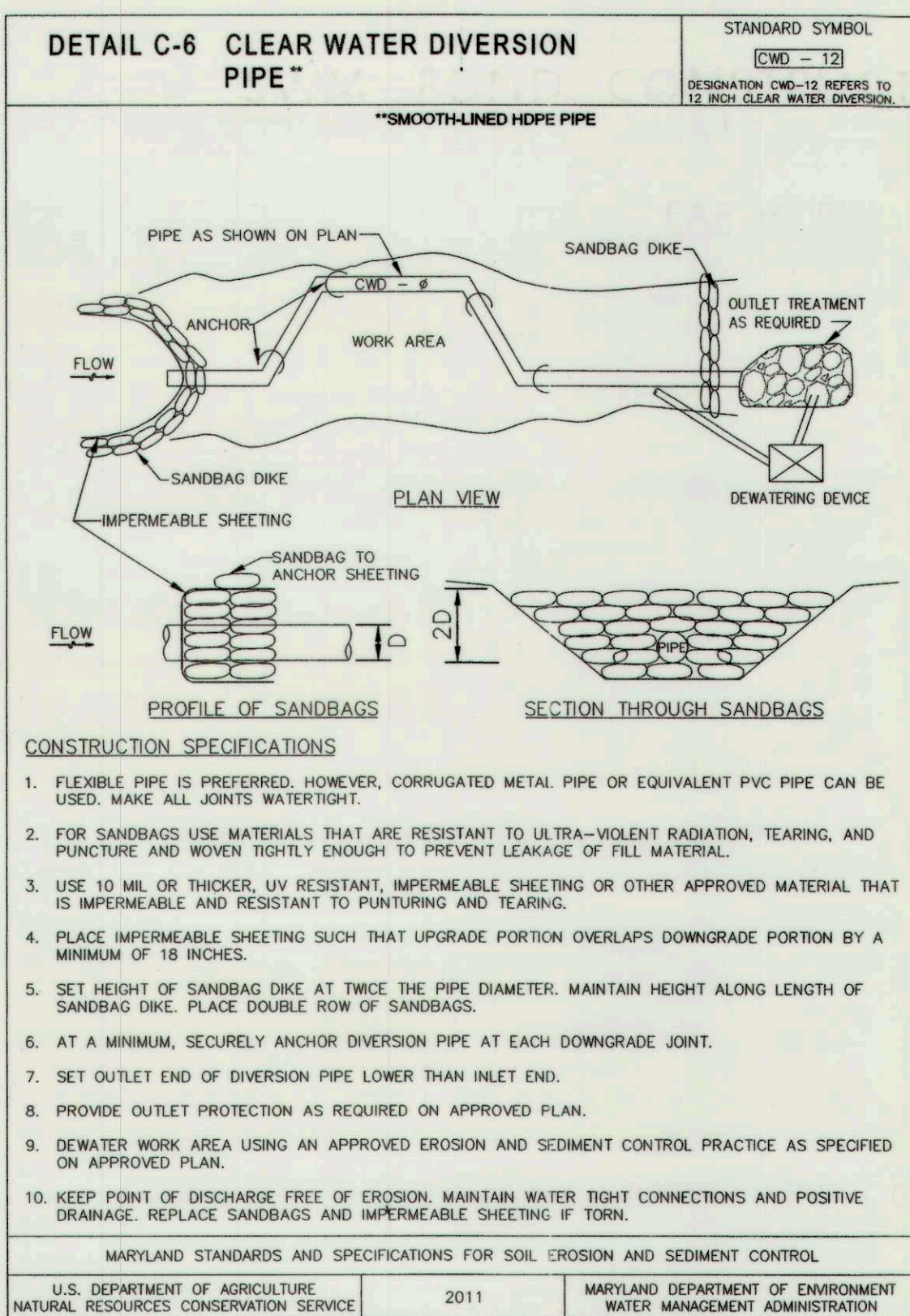
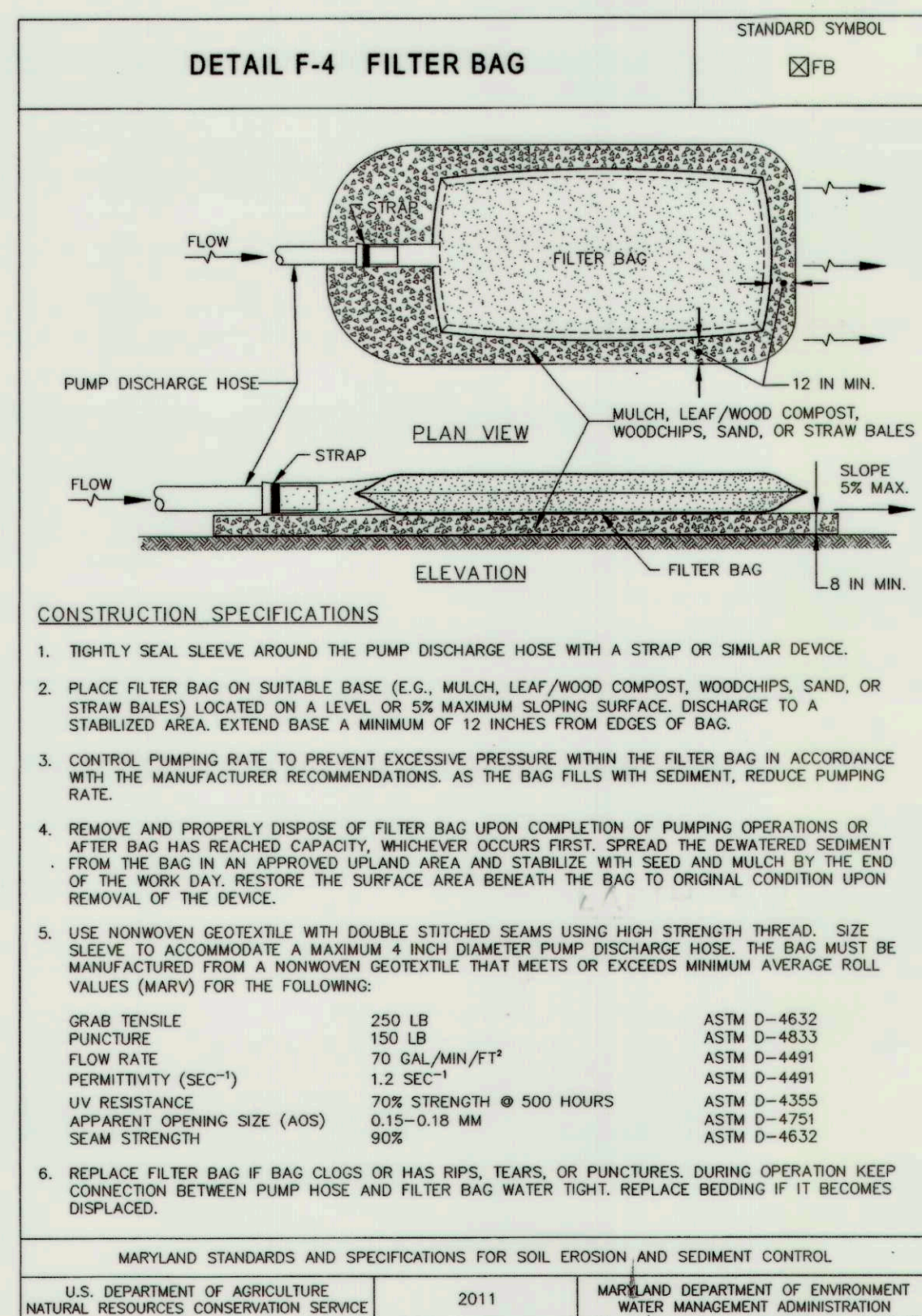
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SHEET

8 OF 11

Mark K. Taylor
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

DATE: 5/2/17



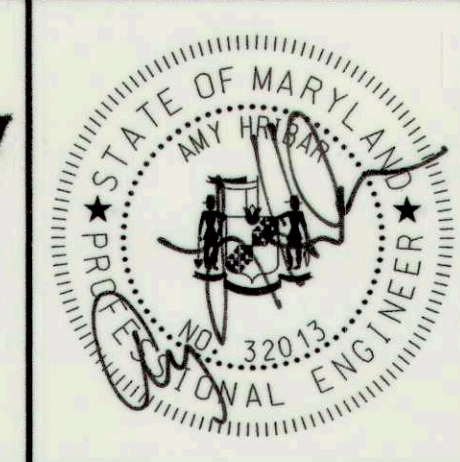
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

Mark DeLuca
CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

5/2/17
DATE

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

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



DES: ADM					
DRN: ADM					
CHK: AH					
DATE: 03/13/17					
BY	NO.	REVISION	DATE		

GARAND ROAD PRINCIPAL SPILLWAY REPLACEMENT AND SWM RETROFIT PROJECT
CAPITAL PROJECT #D-1160
HOWARD COUNTY
HSCD #: EP-16-29

EROSION AND SEDIMENT CONTROL DETAIL SHEET

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 ON 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 UNSTABLE SOIL IS ENCOUNTERED, ALL SUCH MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE EARTH COMPACTED TO PROVIDE ADEQUATE SUPPORT.

5. BACKFILLING SHALL CONFORM TO "STRUCTURE BACKFILL".

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

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

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



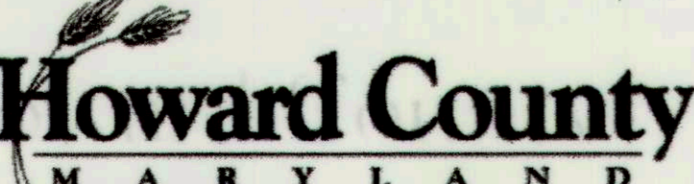
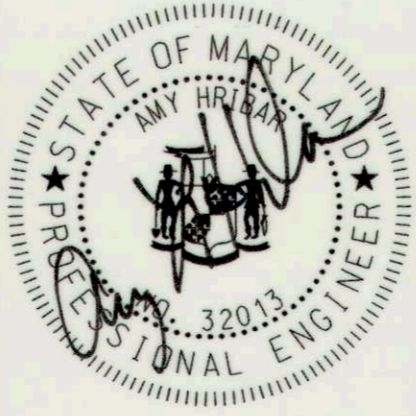
STABILIZATION

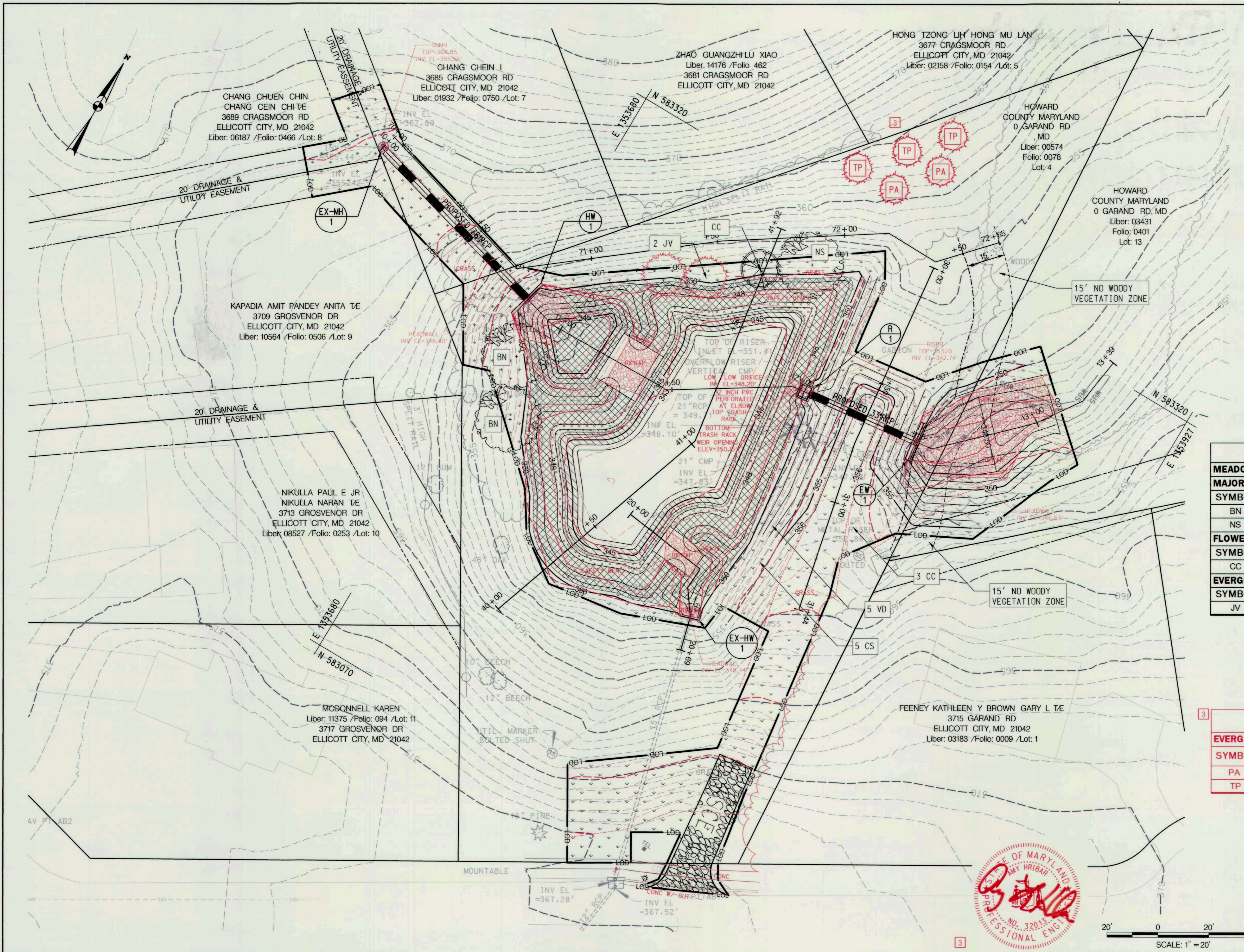
ALL BORROW AREAS SHALL BE GRADED TO PROVIDE PROPER DRAINAGE AND LEFT IN A SIGHTLY CONDITION. ALL EXPOSED SURFACES OF THE EMBANKMENT, SPILLWAY, SPOIL AND BORROW AREAS, AND BERMS SHALL BE STABILIZED BY SEEDING, LIMING, FERTILIZING AND MULCHING IN ACCORDANCE WITH THE NATURAL RESOURCES CONSERVATION SERVICE 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  CHIEF, BUREAU OF ENVIRONMENTAL SERVICES	 509 South Exeter Street 4th Floor Baltimore, Maryland 21202 (410) 662-7400	 Storm Water Management Division Bureau of Environmental Services 6751 Columbia Gateway Drive, Suite 514 Columbia, Maryland 21046-3143 (410) 313-6444		DES: ADM					GARAND ROAD PRINCIPAL SPILLWAY REPLACEMENT AND SWM RETROFIT PROJECT CAPITAL PROJECT #D-1160 HOWARD COUNTY HSCD #: EP-16-29	SCALE NOT TO SCALE
				DRN: ADM						
				CHK: AH					POND CONSTRUCTION SPECIFICATIONS	10 OF 11
				DATE: 03/13/17	BY	NO.	REVISION	DATE		



POND PLANTINGS

KEY	% FREQUENCY	SPECIES
	10	3 - Carex lat
	10	3 - Coreopsis
	20	Iris versicolor
	15	Lobelia cardinalis
	25	Panicum capillare
	10	Verbena officinalis
	10	Vernonia noveboracensis

EMERGENT PLUG PLANTINGS (ELEVATION)

KEY	% FREQUENCY	SPECIES
	15	3 - Acorus calamus
	25	Juncus effusus
	15	Peltandra virginica
	20	Pontederica zosterifolia
	25	Scirpus atrovirens

SUBMERGED PLUG PLANTINGS (ELEVATION)

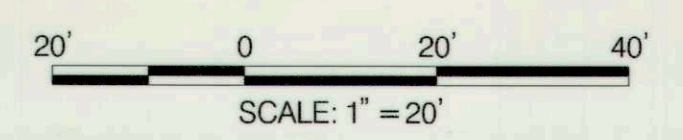
KEY	% FREQUENCY	SPECIES
	30	3 - Elodea canadensis
	40	3 - Nuphar lutea
	30	Sagittaria arifolia

PERIMETER SHADE PLANTINGS

MEADOW ESTABLISHMENT	
MAJOR DECIDUOUS TREES	
SYMBOL	SPECIES
BN	Betula nigra / River Birch
NS	Nyssa sylvatica / Black Gum
FLOWERING TREES	
SYMBOL	SPECIES
CC	Cercis canadensis / Eastern Red Bud
EVERGREEN TREES	
SYMBOL	SPECIES
JV	Juniperus virginiana / Eastern Red Cedar

ADDITIONAL TREE PLANTINGS

EVERGREEN TREES	
SYMBOL	SPECIES
PA	Picea abies / Norway Spruce
TP	Thuja plicata / Giant Arborvitae 'Green Giant'



DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY, MARYLAND

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES

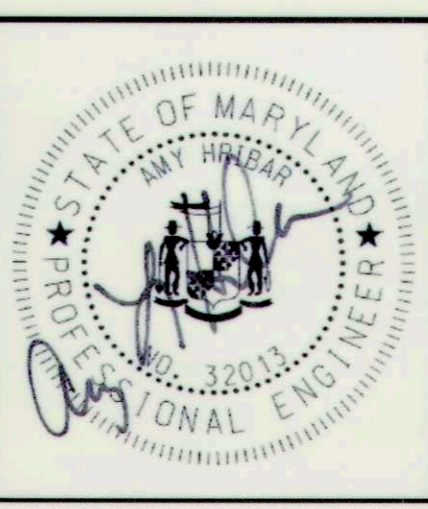
DATE

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: KKM				
DRN: KKM				
CHK: AH				
DATE: 03/13/17	ADM	3	AS-BUILT SURVEY - LANDSCAPING REVISION	4/25/18
	BY	NO.	REVISION	DATE

GARAND ROAD PRINCIPAL AND SWM RETENTION BASIN CAPITAL PROJECT HOWARD COUNTY HSCD #:

LANDSCAPING