HARFORD COUNTY

95% DESIGN PLANS
NOT FOR CONSTRUCTION

Bid No. : TBA

Heavenly Pond Stream Restoration

Department Of Public Works
Water Resources Engineering

INDEX OF SHEETS

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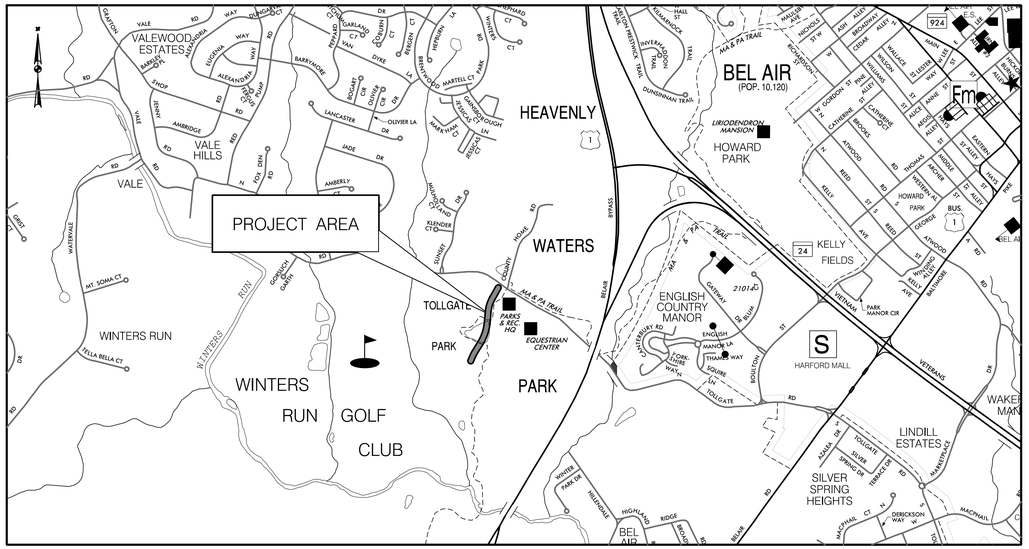
LEGEND

EXISTING ROADWAY
BASE OR SURVEY LINE
TRAVERSE POINT
RIGHT OF WAY LINE
LIMIT OF DISTURBANCE
GRADING ELEVATION CONTOURS (5')
GRADING ELEVATION CONTOURS (1')
EXISTING GROUND CONTOURS (5')
EXISTING GROUND CONTOURS (1')
EXISTING FENCE LINE
EXISTING PIPE/CULVERT
EXISTING DROP INLET
WETLAND
WETLAND BUFFER
WATERS OF THE US
HEDGE /TREE LINE
BUSH /TREE
CLAY CHANNEL BLOCK
TOE BOULDER PROTECTION
OVERFLOW STABILIZATION
TRIBUTARY STABILIZATION
CASCADE STRUCTURE
STEP-POOL STRUCTURE
RIFFLE STABILIZATION
WOOD RIFFLE STABILIZATION
OUTFALL POOL
PARK TRAIL



NOTE: COORDINATES AND BEARINGS SHOWN HEREON ARE REFERRED TO THE MARYLAND COORDINATE SYSTEM (NAD 83/1991) AND ARE BASED ON THE FOLLOWING HARFORD COUNTY SURVEY CONTROL MONUMENTS:

FALLSTON	N 675,445.19	E 1,477,585.69
MALL	N 677,491.95	E 1,494,171.14
BYNUM	N 689,572.61	E 1,489,940.03

NOTE: ALL ELEVATIONS SHOWN HEREON ARE REFERRED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD '88) WITH LOCAL REFERENCE TO THE FOLLOWING HARFORD COUNTY SURVEY CONTROL MONUMENTS:

FALLSTON	ELEV. 455.79
MALL	ELEV. 363.62
BYNUM	ELEV. 433.18

NOTE: STATE STREAM USE CLASS DESIGNATION IV-P (RECREATIONAL TROUT WATERS) IN STREAM CLOSURE MARCH 1 THROUGH MAY 31 INCLUSIVE OF ANY YEAR.

HORIZONTAL DATUM	NAD 83 / 91
VERTICAL DATUM	NAVD 88

SCALE: 1" = 1000'
1000 0 1000 2000 FEET

GENERAL NOTES

1. ALL WORK PERFORMED ON THIS PROJECT SHALL BE IN ACCORDANCE WITH MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO AND MAINTENANCE AND PROTECTION OF EXISTING UTILITIES AND STRUCTURES. THIS IS TO INCLUDE ALL SEWER LINES AND SERVICE LINES.
3. PRIOR TO ANY ONSITE LAND DISTURBANCES, FORTY-EIGHT (48) HOURS ADVANCE NOTICE SHALL BE GIVEN TO THE D.P.W. INSPECTION SECTION BY CONTACTING THE CHIEF INSPECTOR AT 410-638-3128 AT WHICH TIME A PRECONSTRUCTION MEETING WILL BE SCHEDULED.
4. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1), AND SEVEN DAYS (7) AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF TRAFFIC AND TRAFFIC CONTROL DURING CONSTRUCTION AND PRIOR TO ACCEPTANCE BY THE COUNTY; CONSISTENT WITH THE MDOT SHA BOOK OF STANDARDS FOR HIGHWAY AND INCIDENTAL STRUCTURES.
6. BEFORE THE START OF CONSTRUCTION, THE CONTRACTOR IS TO VERIFY THE LOCATION OF EXISTING UTILITIES BY CONTACTING "MISS UTILITY" (1-800-257-7777).

REVIEWED FOR TECHNICAL SUFFICIENCY — DATE
STORMWATER MANAGEMENT

REVIEWED AND APPROVAL RECOMMENDED — DATE
CHIEF ENGINEER

APPROVAL RECOMMENDED — DATE
DEPUTY DIRECTOR OF PUBLIC WORKS

APPROVED — DATE
DIRECTOR OF PUBLIC WORKS

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

REV#	DATE	DESCRIPTION

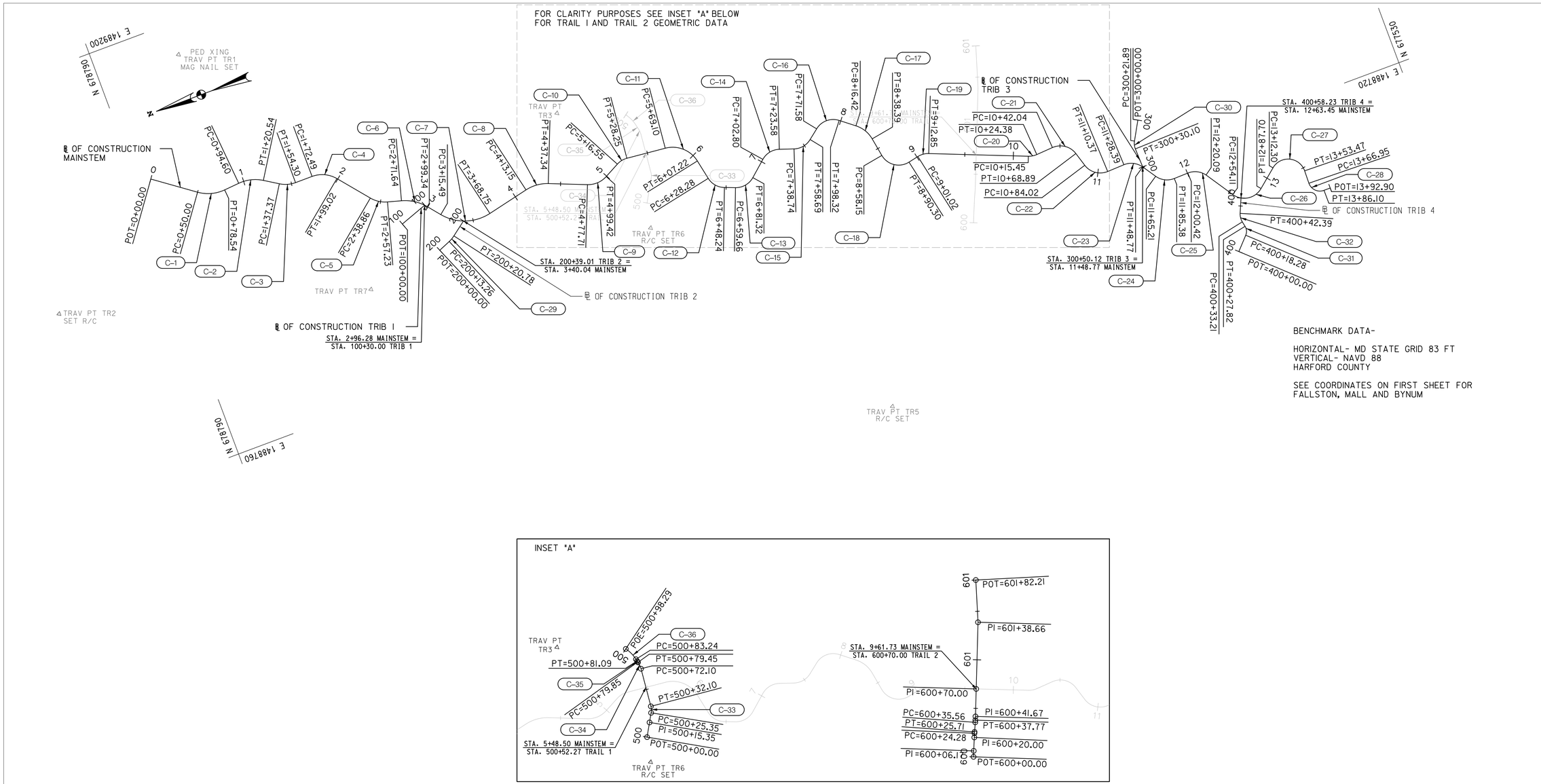
REVISIONS

HEAVENLY POND STREAM RESTORATION

TITLE SHEET

HARFORD COUNTY
DEPARTMENT OF PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR, MARYLAND 21014
410-638-3127
SD-PLAN #59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE 1" = 1000'	
DESIGNED BY MRM	SHEET 1 OF 58
DRAWN BY MER	FWA JOB NUMBER



BENCHMARK DATA-

HORIZONTAL- MD STATE GRID 83 FT
VERTICAL- NAVD 88
HARFORD COUNTY

SEE COORDINATES ON FIRST SHEET FOR
FALLSTON, MALL AND BYNUM

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

REV#	DATE	REVISIONS DESCRIPTION

HEAVENLY POND
STREAM RESTORATION

GEOMETRY SHEET

HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS

WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR MARYLAND 21014
410-638-3277
SC PLAN #59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE 1" = 50'	
DESIGNED BY MRM	SHEET 2 OF 58
DRAWN BY MER	FWA JOB NUMBER

BASELINE CONTROL COORDINATES

BL CONSTRUCTION	POINT	NORTHING	EASTING	STATION	BEARING AH	RADIUS
MAINSTEM	POT	678775.6799	1489056.8220	0+00.00	S 36°07'33.3795" W	
	PC	678735.2937	1489027.3439	0+50.00	S 36°07'33.3795" W	
	PI	678723.2509	1489018.5538	0+64.91	S 4°45'32.6367" E	
	CC	678711.7113	1489059.6529			40.0000'
	PT	678708.3926	1489019.7908	0+78.54	S 4°45'32.6367" E	
	PC	678692.3909	1489021.1230	0+94.60	S 4°45'32.6367" E	
	PI	678678.9928	1489022.2384	1+08.04	S 32°23'49.7612" W	
	CC	678689.0722	1488981.2609			40.0000'
	PT	678667.6409	1489015.0350	1+20.54	S 32°23'49.7612" W	
	PC	678653.4299	1489006.0175	1+37.37	S 32°23'49.7612" W	
	PI	678646.0847	1489001.3566	1+46.07	S 0°03'21.3642" W	
	CC	678637.3563	1489031.3481			30.0000'
	PT	678637.3856	1489001.3481	1+54.30	S 0°03'21.3642" W	
	PC	678619.1974	1489001.3304	1+72.49	S 0°03'21.3642" W	
	PI	678604.9972	1489001.3165	1+86.69	S 50°42'58.3776" W	
	CC	678619.2267	1488971.3304			30.0000'
	PT	678596.0061	1488990.3252	1+99.02	S 50°42'58.3776" W	
	PC	678570.7770	1488959.4834	2+38.86	S 50°42'58.3776" W	
	PI	678564.7733	1488952.1441	2+48.35	S 15°38'08.7115" W	
	CC	678547.5564	1488978.4783			30.0000'
	PT	678555.6420	1488949.5884	2+57.23	S 15°38'08.7115" W	
	PC	678541.7664	1488945.7050	2+71.64	S 15°38'08.7115" W	
	PI	678527.9899	1488941.8492	2+85.95	S 50°54'27.0682" W	
	CC	678553.8948	1488902.3702			45.0000'
	PT	678518.9690	1488930.7460	2+99.34	S 50°54'27.0682" W	
	PC	678508.7855	1488918.2119	3+15.49	S 50°54'27.0682" W	
	PI	678490.0294	1488895.1263	3+45.24	S 12°39'49.0145" E	
	CC	678471.5313	1488948.4794			48.0000'
	PT	678461.0084	1488901.6471	3+68.75	S 12°39'49.0143" E	
	PC	678417.6934	1488911.3796	4+13.15	S 12°39'49.0145" E	
	PI	678405.5152	1488914.1160	4+25.63	S 21°59'49.4502" W	
	CC	678408.9243	1488872.3527			40.0000'
	PT	678393.9420	1488909.4408	4+37.34	S 21°59'49.4502" W	
	PC	678356.5165	1488894.3221	4+77.71	S 21°59'49.4502" W	
	PI	678345.7652	1488889.9790	4+89.30	S 27°46'05.5345" E	
	CC	678347.1525	1488917.5022			25.0000'
	PT	678335.5051	1488895.3812	4+99.42	S 27°46'05.5345" E	
	PC	678320.3476	1488903.3621	5+16.55	S 27°46'05.5345" E	
	PI	678315.0214	1488906.1665	5+22.57	S 5°43'55.2948" W	
	CC	678311.0297	1488885.6653			20.0000'
	PT	678309.0322	1488905.5653	5+28.25	S 5°43'55.2948" W	
	PC	678268.3861	1488901.4854	5+69.10	S 5°43'55.2948" W	
	PI	678246.3755	1488899.2760	5+91.22	S 78°32'24.9793" W	
	CC	678271.3824	1488871.6354			30.0000'
	PT	678241.9805	1488877.5957	6+07.22	S 78°32'24.9793" W	
	PC	678237.7959	1488856.9534	6+28.28	S 78°32'24.9793" W	
	PI	678235.6305	1488846.2717	6+39.18	S 21°21'50.7931" W	
	CC	678218.1946	1488860.9270			20.0000'
	PT	678225.4804	1488842.3013	6+48.24	S 21°21'50.7931" W	
	PC	678214.8481	1488838.1422	6+59.66	S 21°21'50.7931" W	
	PI	678203.6443	1488833.7596	6+71.69	S 40°41'29.5085" E	
	CC	678207.5622	1488856.7679			20.0000'
	PT	678194.5225	1488841.6033	6+81.32	S 40°41'29.5085" E	
	PC	678178.2311	1488855.6119	7+02.80	S 40°41'29.5085" E	
	PI	678169.5585	1488863.0693	7+14.24	S 18°50'18.4571" W	
	CC	678165.1914	1488840.4473			20.0000'
	PT	678158.7333	1488859.3760	7+23.58	S 18°50'18.4571" W	
	PC	678144.3869	1488854.4813	7+38.74	S 18°50'18.4571" W	
	PI	678134.0776	1488850.9640	7+49.63	S 38°18'37.7122" E	
	CC	678137.9289	1488873.4100			20.0000'
	PT	678125.5304	1488857.7167	7+58.69	S 38°18'37.7122" E	
	PC	678115.4151	1488865.7083	7+71.58	S 38°18'37.7122" E	
	PI	678103.0219	1488875.4995	7+87.38	S 38°17'13.1176" W	
	CC	678103.0166	1488850.0150			20.0000'
	PT	678090.6246	1488865.7134	7+98.32	S 38°17'13.1176" W	
	PC	678076.4165	1488854.4977	8+16.42	S 38°17'13.1176" W	
	PI	678067.3871	1488847.3701	8+27.92	S 80°14'44.7062" W	
	CC	678095.0045	1488830.9502			30.0000'
	PT	678065.4382	1488836.0328	8+38.39	S 80°14'44.7062" W	
	PC	678062.0910	1488816.5623	8+58.15	S 80°14'44.7062" W	
	PI	678058.5744	1488796.1057	8+78.90	S 11°52'53.5851" E	
	CC	678042.3802	1488819.9508			20.0000'
	PT	678038.2624	1488800.3793	8+90.30	S 11°52'53.5851" E	
	PC	678027.7719	1488802.5865	9+01.02	S 11°52'53.5851" E	
	PI	678021.8088	1488803.8411	9+07.12	S 22°00'30.2151" W	
	CC	678023.6541	1488783.0150			20.0000'
	PT	678016.1593	1488801.5575	9+12.85	S 22°00'30.2151" W	
	PC	677921.0421	1488763.1115	10+15.45	S 22°00'30.2151" W	
	PI	677916.8297	1488761.4089	10+19.99	S 3°35'20.1312" E	
	CC	677913.5472	1488781.6541			20.0000'
	PT	677912.2953	1488761.6933	10+24.38	S 3°35'20.1312" E	
	PC	677894.6743	1488762.7985	10+42.04	S 3°35'20.1312" E	
	PI	677878.8201	1488763.7929	10+57.92	S 73°19'44.9314" W	
	CC	677893.4223	1488742.8377			20.0000'

BASELINE CONTROL COORDINATES

BL CONSTRUCTION	POINT	NORTHING	EASTING	STATION	BEARING AH	RADIUS
MAINSTEM	PT	677874.2630	1488748.5752	10+68.89	S 73°19'44.9314" W	
	PC	677869.9229	1488734.0821	10+84.02	S 73°19'44.9314" W	
	PI	677865.4819	1488719.2521	10+99.50	S 2°09'10.0564" E	
	CC	677850.7635	1488739.8195			20.0000'
	PT	677850.0122	1488719.8337	11+10.37	S 2°09'10.0564" E	
	PC	677831.9997	1488720.5108	11+28.39	S 2°09'10.0564" E	
	PI	677820.8316	1488720.9306	11+39.57	S 56°14'24.5316" W	
	CC	677831.2484	1488700.5249			20.0000'
	PT	677814.6209	1488711.6392	11+48.77	S 56°14'24.5316" W	
	PC	677805.4862	1488697.9731	11+65.21	S 56°14'24.5316" W	
	PI	677799.3524	1488688.7967	11+76.25	S 1°32'49.3716" E	
	CC	677788.8587	1488709.0874			20.0000'
	PT	677788.3188	1488689.0947	11+85.38	S 1°32'49.3716" E	
	PC	677773.2919	1488689.5005	12+00.42	S 1°32'49.3716" E	
	PI	677762.5786	1488689.7899	12+11.13	S 54°49'22.3798" W	
	CC	677772.7519	1488669.5078			20.0000'
	PT	677756.4044	1488681.0299	12+20.09	S 56°37'02.9912" W	
	PC	677737.6883	1488652.6265	12+54.11	S 56°37'02.9912" W	
	PI	677725.4161	1488634.0024	12+76.41	S 39°37'01.0442" E	
	CC	677720.9879	1488663.6310			20.0000'
	PT	677708.2349	1488648.2245	12+87.70	S 39°37'01.0442" E	
	PC	677689.2865	1488663.9094	13+12.30	S 39°37'01.0442" E	
	PI	677658.8254	1488689.1243	13+51.84	N 88°34'00.3810" W	
	CC	677677.8088	1488650.0436			18.0000'
	PT	677659.8144	1488649.5934	13+53.47	N 88°34'00.3810" W	
	PC	677660.1515	1488636.1205	13+66.95	N 88°34'00.3810" W	
	PI	677660.4593	1488623.8204	13+79.25	S 0°00'00.0001" W	
	CC	677648.1553	1488635.8204			12.0000'
	PT	677648.1553	1488623.8204	13+86.10	S 0°00'00.0001" W	
	POE	677641.3501	1488623.8204	13+92.90		
TRIBUTARY 1	POT	678549.2266	1488922.947	100+00.00	S 19°41'54.0455" E	
	POE	678520.9825	1488933.059	100+30.00		
TRIBUTARY 2	POT	678522.5719	1488884.147	200+00.00	S 22°27'29.2419" E	
	PC	678510.3211	1488889.211	200+13.26	S 22°27'29.2419" E	
	PI	678506.8273	1488890.656	200+17.04	S 36°49'22.5927" E	
	CC	678521.7814	1488916.936			30.0000'
	PT	678503.801	1488892.921	200+20.78	S 36°49'22.5927" E	
	POE	678489.2033	1488903.851	200+39.01		
TRIBUTARY 3	POT	677802.4114	1488758.541	300+00.00	N 60°20'07.8572" W	
	PC	677813.2461	1488739.518	300+21.89	N 60°20'07.8572" W	
	PI	677815.3285	1488735.862	300+26.10	S 88°19'37.0022" W	
	CC	677800.212	1488732.094			15.0000'
	PT	677815.2056	1488731.656	300+30.10	S 88°19'37.0022" W	
	POE	677814.6209	1488711.639	300+50.12		
TRIBUTARY 4	POT	677752.3126	1488595.398	400+00.00	S 46°39'22.4302" E	
	PC	677739.7691	1488608.689	400+18.28	S 46°39'22.4302" E	
	PI	677736.2195	1488612.45	400+23.45	N 78°39'07.5434" E	
	CC	677747.0416	1488615.552			10.0000'
	PT	677737.2371	1488617.52	400+27.82	N 78°39'07.5434" E	
	PC	677738.2969	1488622.801	400+33.21	N 78°39'07.5434" E	
	PI	677739.2299	1488627.45	400+37.95	S 66°15'43.7494" E	
	CC	677723.5902	1488625.752			15.0000'
	PT	677737.3211	1488631.791	400+42.39	S 66°15'43.7494" E	
	POE	677730.9464	1488646.287	400+58.23		
TRAIL 1	POT	678305.6525	1488855.151	500+00.00	S 60°00'21.3935" E	
	PI	678297.9778	1488868.448	500+15.35	S 60°19'39.5720" E	
	PC	678293.0269	1488877.137	500+25.35	S 58°31'05.5792" E	
	PI	678291.2361	1488880.061	500+28.78	S 84°16'19.2114" E	
	CC	678305.819	1488884.97			15.0000'
	PT	678290.8939	1488883.473	500+32.10	S 84°16'19.2114" E	
	PC	678286.9017	1488923.274	500+72.10	S 84°16'19.2114" E	
	PI	678286.5303	1488926.976	500+75.82	N 74°38'54.7461" E	
	CC	678306.8018	1488925.27			20.0000'
	PT	678287.5154	1488930.565	500+79.45	N 74°38'54.7463" E	
	PC	678287.6199	1488930.945	500+79.85	N 74°38'54.7459" E	
	PI	678287.7846	1488931.545	500+80.47	N 78°12'41.7868" E	
	CC	678268.3335	1488936.24			20.0000'
	PT	678287.9117	1488932.154	500+81.09	N 78°12'41.7870" E	
	PC	678288.3504	1488934.256	500+83.24	N 78°12'41.7870" E	
	PI	678289.9113	1488941.735	500+90.88	N 53°55'08.2331" E	
	CC	678323.1016	1488927.003			35.5000'
	POE	678294.4111	1488947.9104	500+98.29		

CURVE DATA

BL CONSTRUCTION	CURVE NO.	DELTA	Dc	R	T	L	E	CENTER OF CURVE NORTH	CENTER OF CURVE EAST
MAINSTEM	C-1	40°53'06.0159"	143°14'22.0156"	40.0000'	14.9097'	28.5431'	2.6884	678711.7113	1489059.6529
	C-2	37°09'22.3977"	143°14'22.0156"	40.0000'	13.4445'	25.9399'	2.199	678689.0722	1488981.2609
	C-3	32°20'28.3969"	190°59'09.3541"	30.0000'	8.6991'	16.9338'	1.2358	678637.3563	1489031.3481
	C-4	50°39'37.0134"	190°59'09.3541"	30.0000'	14.2002'	26.5257'	3.1911	678619.2267	1488971.3304
	C-5	35°04'49.6661"	190°59'09.3541"	30.0000'	9.4821'	18.3681'	1.4628	678547.5564	1488978.4783
	C-6	35°16'18.3566"	127°19'26.2361"	45.0000'	14.3059'	27.7024'	2.2193	678553.8948	1488902.3702
	C-7	63°34'16.0827"	119°21'58.3463"	48.0000'	29.7445'	53.2572'	8.4689	678471.5313	1488948.4794
	C-8	34°39'38.4647"	143°14'22.0156"	40.0000'	12.4819'	24.1977'	1.9022	678408.9243	1488872.3527
	C-9	49°45'54.9849"	229°10'59.2250"	25.0000'	11.5954'	21.7142'	2.5582	678347.1525	1488917.5022
	C-10	33°30'00.8295"	286°28'44.0312"	20.0000'	6.0194'	11.6938'	0.8862	678311.0297	1488885.6653
	C-11	72°48'29.6843"	190°59'09.3541"	30.0000'	22.1212'	38.1223'	7.274	678271.3824	1488871.6354
	C-12	57°10'34.1862"	286°28'44.0312"	20.0000'	10.8990'	19.9582'	2.7769	678218.1946	1488860.9270
	C-13	62°03'20.3014"	286°28'44.0312"	20.0000'	12.0304'	21.6615'	3.3395	678207.5622	1488856.7679
	C-14	59°31'47.9656"	286°28'44.0312"	20.0000'	11.4379'	20.7799'	3.0396	678165.1914	1488840.4473
	C-15	57°08'56.1694"	286°28'44.0312"	20.0000'	10.8928'	19.9487'	2.774	678137.9289	1488873.4100
	C-16	76°35'50.8299"	286°28'44.0312"	20.0000'	15.7943'	26.7376'	5.4845	678103.0166	1488850.0150
	C-17	41°57'31.5886"	190°59'09.3541"	30.0000'	11.5035'	21.9696'	2.1299	678095.0045	1488830.9502
	C-18	92°07'38.2911"	286°28'44.0312"	20.0000'	20.7567'	32.1585'	8.8243	678042.3802	1488819.9508
	C-19	33°53'23.8002"	286°28'44.0312"	20.0000'	6.0936'	11.8298'	0.9077	678023.6541	1488783.0150
	C-20	25°35'50.3463"	286°28'44.0312"	20.0000'	4.5434'	8.9351'	0.5096	677913.5472	1488781.6541
	C-21	76°55'05.0626"	286°28'44.0312"	20.0000'	15.8854'	26.8495'	5.5411	677893.4223	1488742.8377
	C-22	75°28'54.9878"	286°28'44.0312"	20.0000'	15.4806'	26.3482'	5.2913	677850.7635	1488739.8195
	C-23	58°23'34.5879"	286°28'44.0312"	20.0000'	11.1760'	20.3830'	2.9108	677831.2484	1488700.5249
	C-24	57°47'13.9032"	286°28'44.0312"	20.0000'	11.0377'	20.1715'	2.8436	677788.8587	1488709.0874
	C-25	56°22'11.7514"	286°28'44.0312"	20.0000'	10.7172'	19.6768'	2.6905	677772.7519	1488669.5078
	C-26	96°14'04.0352"	286°28'44.0312"	20.0000'	22.3039'	33.5922'	9.9577	677720.9879	1488663.6310
	C-27	131°03'00.6630"	318°18'35.5904"	18.0000'	39.5433'	41.1706'	25.4473	677677.8088	1488650.0436
	C-28	91°25'59.6189"	477°27'53.3853"	12.0000'	12.3040'	19.1497'	5.1869	677648.1553	1488635.8204
TRIBUTARY 2	C-29	14°21'53.3509"	190°59'09.3541"	30.0000'	3.7805'	7.5214'	0.2373	678521.7814	1488916.9361
TRIBUTARY 3	C-30	31°20'15.1406"	381°58'18.7084"	15.0000'	4.2075'	8.2041'	0.5789	677800.2120	1488732.0941
TRIBUTARY 4	C-31	54°41'30.0265"	572°57'28.0625"	10.0000'	5.1715'	9.5455'	1.2581	677747.0416	1488615.5523
	C-32	35°05'08.7072"	381°58'18.7084"	15.0000'	4.7418'	9.1854'	0.7317	677723.5902	1488625.7524
TRAIL 1	C-33	25°45'13.6324"	381°58'18.7084"	15.0000'	3.4291'	6.7423'	0.387	678305.8190	1488884.9704
	C-34	21°04'46.0425"	286°28'44.0312"	20.0000'	3.7211'	7.3581'	0.3432	678306.8018	1488925.2697
	C-35	3°33'47.0409"	286°28'44.0312"	20.0000'	0.6221'	1.2437'	0.0097	678268.3335	1488936.2399
	C-36	24°17'33.5537"	161°23'47.6231"	35.5000'	7.6406'	15.0515'	0.8129	678323.1016	1488927.0034

BASELINE CONTROL COORDINATES

BL CONSTRUCTION	POINT	NORTHING	EASTING	STATION	BEARING AH	RADIUS
TRAIL 2	POT	677997.8537	1488718.671	600+00.00	S 67°38'47.5409" E	
	PI	677995.5089	1488724.373	600+06.17	S 67°06'29.9091" E	
	PI	677990.1274	1488737.118	600+20.00	S 67°06'29.9091" E	
	PC	677988.4634	1488741.059	600+24.28	S 67°06'29.9091" E	
	PI	677988.1839	1488741.721	600+25.00	S 65°27'42.4227" E	
	CC	677942.4013	1488721.609			50.0000'
	PT	677987.8855	1488742.374	600+25.71	S 65°27'42.4227" E	
	PC	677983.7955	1488751.333	600+35.56	S 65°27'42.4225" E	
	PI	677983.337	1488752.338	600+36.67	S 67°59'29.7847" E	
	CC	678029.2797	1488772.098			50.0000'
	PT	677982.9232	1488753.361	600+37.77	S 67°59'29.7847" E	
	PI	677981.4633	1488756.973	600+41.67	S 67°59'29.7847" E	
	PI	677970.8456	1488783.242	600+70.00	S 67°59'29.7847" E	
	PI	677945.1148	1488846.901	601+38.66	S 72°30'38.9104" E	
	POE	677932.0267	1488888.439	601+82.21		

TRAVERSE CONTROL COORDINATES

POINT	NORTHING	EASTING	ELEVATION
TR1	678704.1300	1489166.8940	284.2350
TR2	678912.6860	1488959.6470	276.6040
TR3	678360.2140	1488974.1950	248.5900
TR5	678142.1110	1488570.5310	242.2140
TR6	678311.1950	1488829.7240	241.7860
TR7	678603.0060	1488871.1090	253.9220

McCORMICK TAYLOR
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REVISIONS

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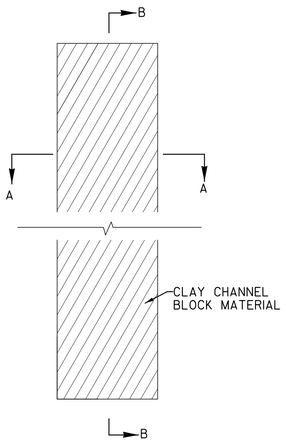
HEAVENLY POND STREAM RESTORATION

GEOMETRY SHEET

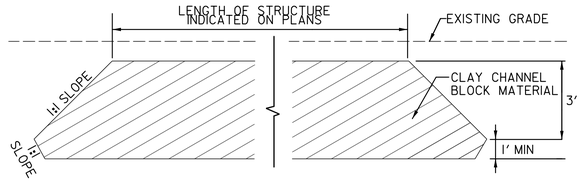
HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS

WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR MARYLAND 21014
410-638-3677
SC PLAN #39839
GR PERMIT #15366-2018

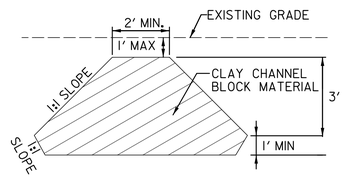
DATE 2/12/20	DRAWING NO.
SCALE 1" = 50'	
DESIGNED BY MRM	SHEET 3 OF 58
DRAWN BY MER	FWA JOB NUMBER



PLAN VIEW
CLAY CHANNEL BLOCK (CCB)
NOT TO SCALE

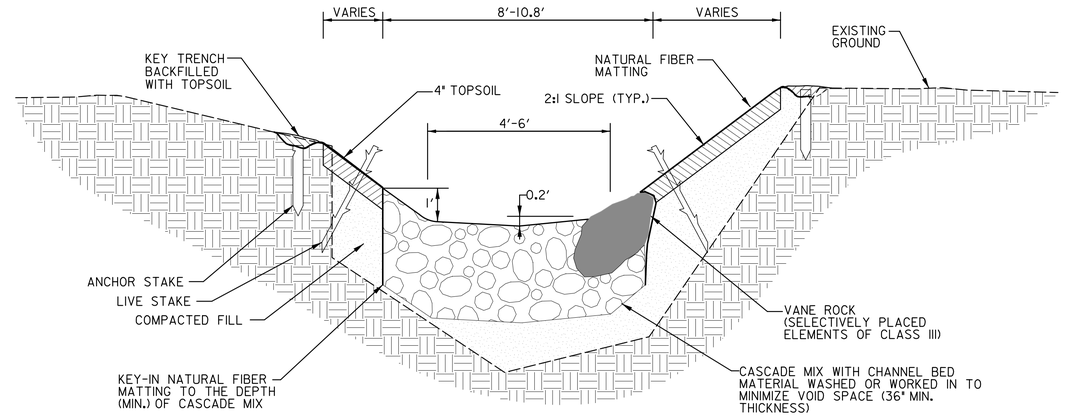


LONGITUDAL SECTION VIEW 'B–B'
CLAY CHANNEL BLOCK (CCB)
NOT TO SCALE



CROSS SECTION VIEW 'A–A'
CLAY CHANNEL BLOCK (CCB)
NOT TO SCALE

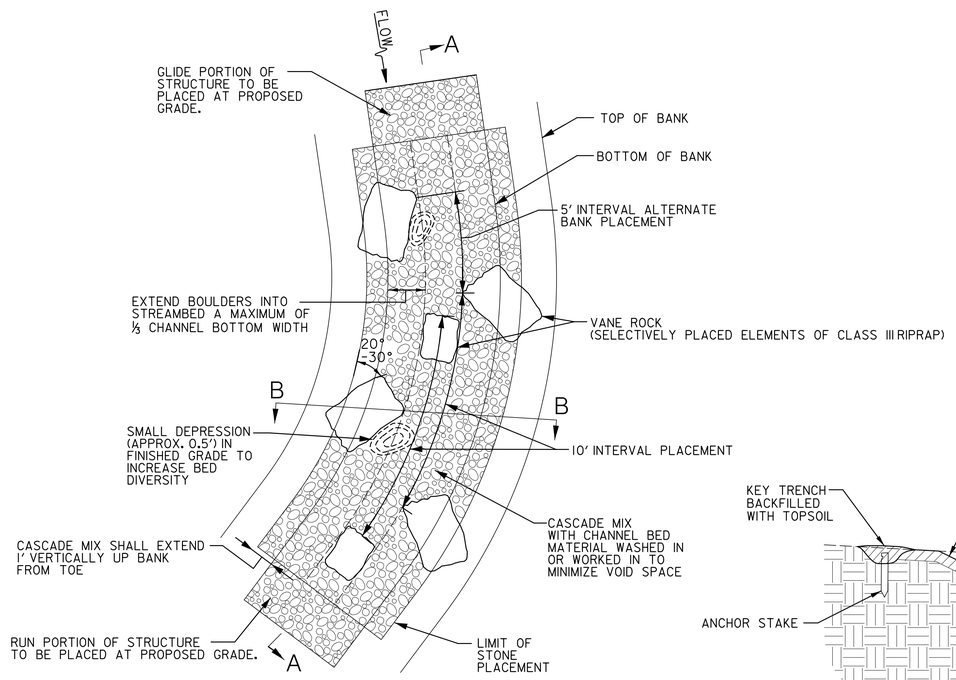
NOTE: CLAY CHANNEL BLOCK MATERIAL TO BE PLACED IN 8" COMPACTED LIFTS



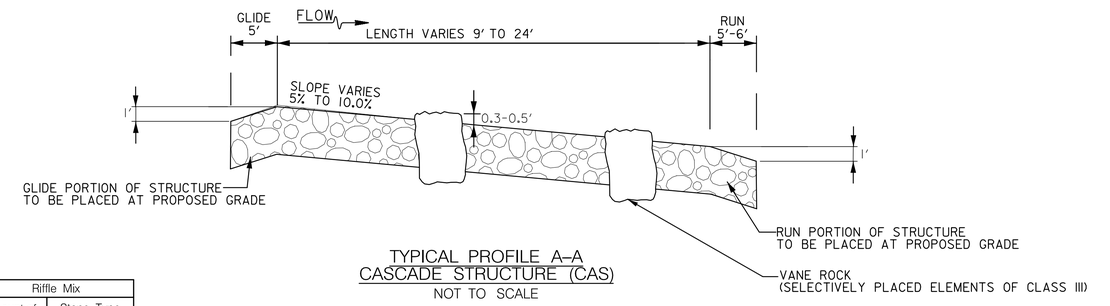
TYPICAL SECTION B–B
CASCADE STUCTURE (CAS)
NOT TO SCALE

NOTES:
1. RIGHT BANK SLOPE ALONG CAS-20 (STA. 12+88 TO 13+12) IS SHALLOWER THAN 2:1, WHICH RESULTS IN A WIDER TOP WIDTH. EXTEND CASCADE MIX 1' VERTICALLY UP THE BANK FROM THE TOE. THE WIDTH OF CASCADE MIX PLACEMENT WILL BE GREATER THAN 2'.

Cascade Mix	
Amount of Stone (%)	Stone Type (% by Volume)
20	SHA Class 1
60	SHA Class 2
20	SHA Class 3
100	Total



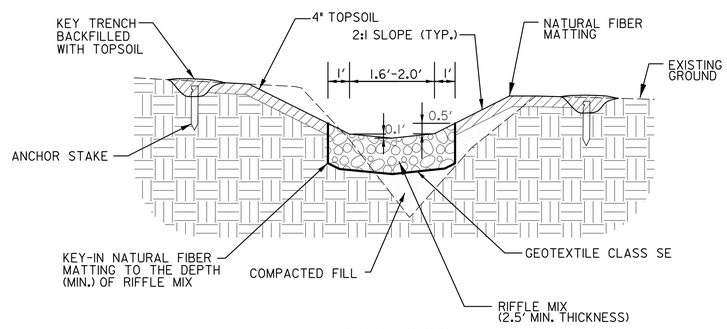
PLAN VIEW
CASCADE STRUCTURE (CAS)
NOT TO SCALE



TYPICAL PROFILE A–A
CASCADE STRUCTURE (CAS)
NOT TO SCALE

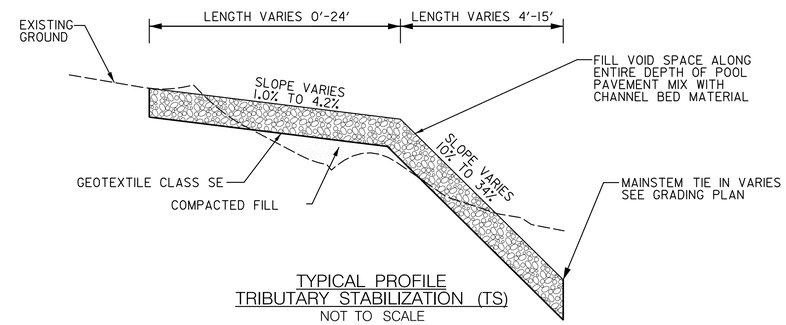
NOTES:
1. RUN AND GLIDE PORTION OF FEATURE NOT APPLICABLE WHERE STRUCTURE TIES INTO STEP-POOL.

Riffle Mix	
Amount of Stone (%)	Stone Type (% by Volume)
70	SHA Class 1
30	SHA Class 2
100	Total



TYPICAL SECTION
TRIBUTARY STABILIZATION (TS)
NOT TO SCALE

NOTES:
1. LEFT BANK SLOPE ALONG PORTIONS OF TRIBUTARY 3 (TS-3) IS SHALLOWER THAN 2:1, WHICH RESULTS IN A WIDER TOP WIDTH. EXTEND RIFFLE MIX 0.5' VERTICALLY UP BANK FROM THE BANK TOE. THE WIDTH OF RIFFLE MIX WILL BE GREATER THAN 1' ALONG PORTIONS OF THE LEFT BANK ALONG TC-3.



TYPICAL PROFILE
TRIBUTARY STABILIZATION (TS)
NOT TO SCALE

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REVISIONS

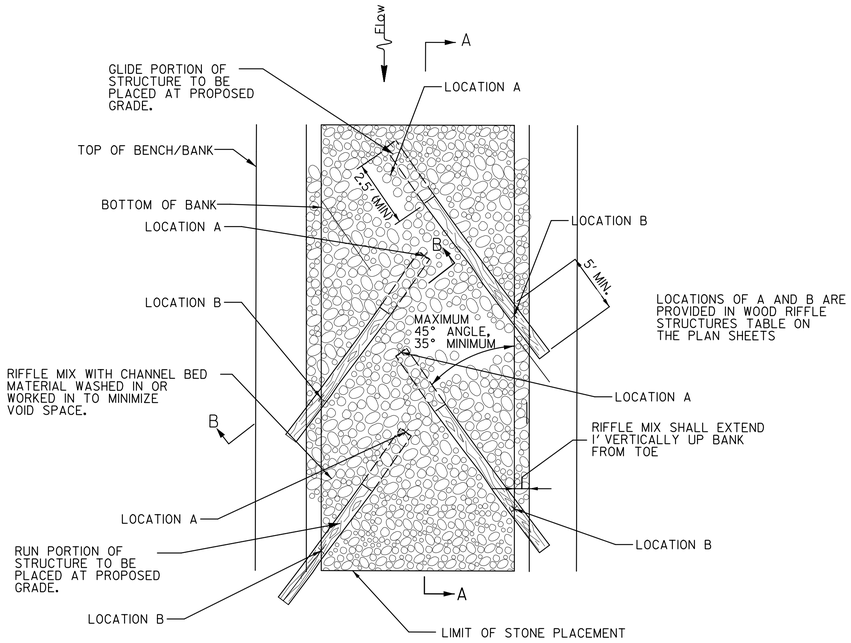
REV#	DATE	DESCRIPTION

HEAVENLY POND STREAM RESTORATION

DETAIL SHEET

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR, MARYLAND 21014
410-638-3277
SC PLAN #59839
GR PERMIT #15366-2018

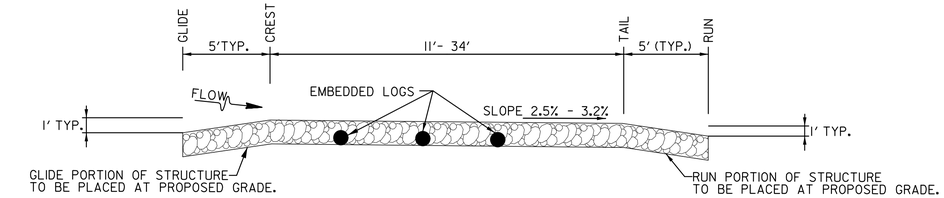
DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 4 OF 58
DRAWN BY MER	FWA JOB NUMBER



PLAN VIEW
WOOD RIFFLE STABILIZATION (WRS)
NOT TO SCALE

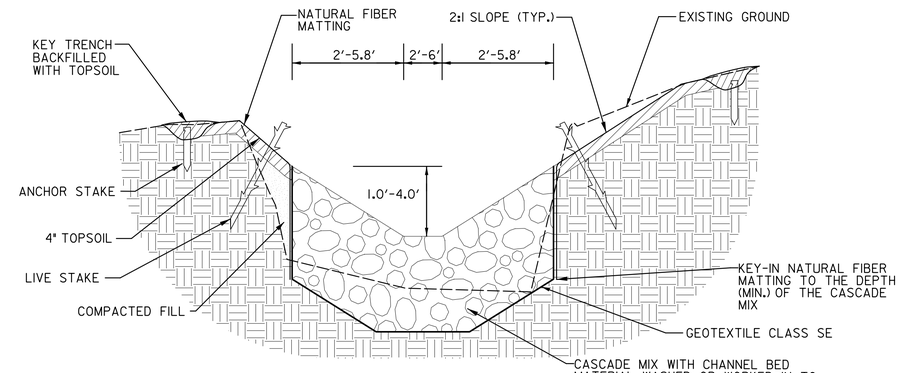
Riffle Mix	
Amount of Stone (%)	Stone Type (% by Volume)
70	SHA Class 1
30	SHA Class 2
100	Total

CASCADE MIX PLACEMENT HEIGHT FOR OUTFALL POOL	
STATION	PLACEMENT HEIGHT (FT)
0+10	1.0
0+18	4.0
0+28	3.0
0+31	1.0

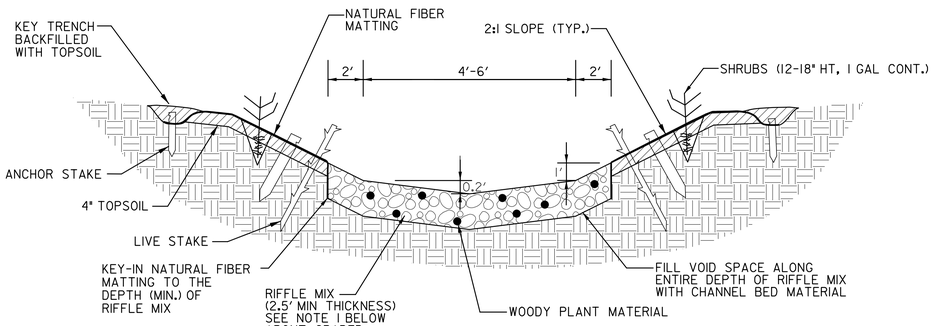


TYPICAL PROFILE 'A–A'
WOOD RIFFLE STABILIZATION (WRS)
NOT TO SCALE

NOTES:
1. RIFFLE MIX SHALL BE PLACED SO THAT IT SHINGLES IN A DOWNSTREAM DIRECTION. SMALL AND LARGE RIPRAP SHALL BE MIXED TO MINIMIZE VOID SPACES. RIPRAP MUST BE PLACED IN A MANNER TO PROMOTE INTERLOCKING. DUMPING OF RIPRAP WILL NOT BE PERMITTED.

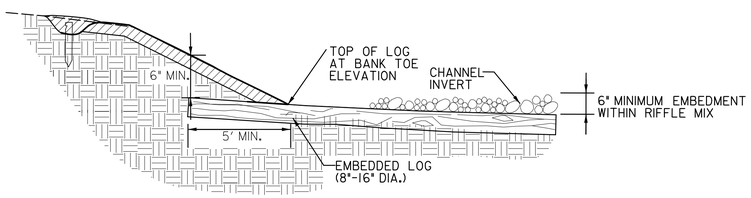


TYPICAL SECTION
OUTFALL POOL (OP)
NOT TO SCALE



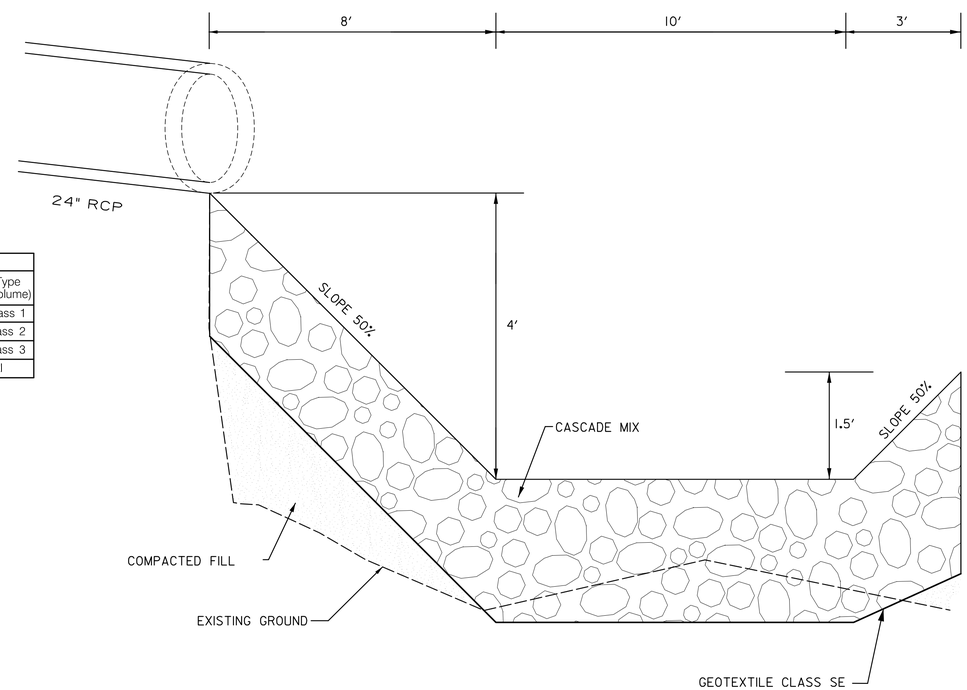
TYPICAL SECTION
WOOD RIFFLE STABILIZATION (WRS)
NOT TO SCALE

NOTES:
1. PLACE 6" OF GRADED AGGREGATE BEDDING UNDERNEATH RIFFLE MIX PLACED WITHIN THE LIMITS OF THE FORMER POND (STA. 5+70 TO 9+40). THIS INCLUDES WRS-1, WRS-2, WRS-3 AND WRS-4.
2. INCORPORATE SALVAGED WOODY PLANT MATERIAL BETWEEN 4'-6' IN LENGTH AND 1"-3" DIA. (MEASURED AT CENTER OF LOG) INTO RIFFLE HABITAT STRUCTURE.
3. HARDWOOD SPECIES PREFERRED FOR THE EMBEDDED LOG.



CROSS SECTION 'B–B'
WOOD RIFFLE STABILIZATION (WRS)
NOT TO SCALE

Cascade Mix	
Amount of Stone (%)	Stone Type (% by Volume)
20	SHA Class 1
60	SHA Class 2
20	SHA Class 3
100	Total



PROFILE
OUTFALL POOL (OP)
NOT TO SCALE

McCORMICK TAYLOR
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REV#	DATE	DESCRIPTION

REVISIONS

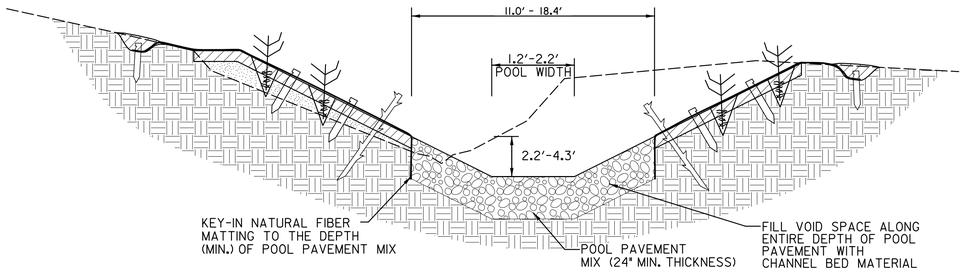
HEAVENLY POND STREAM RESTORATION

DETAIL SHEET

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS

WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR, MARYLAND 21014
410-638-3277
SC PLAN #59839
GR PERMIT #15366-2018

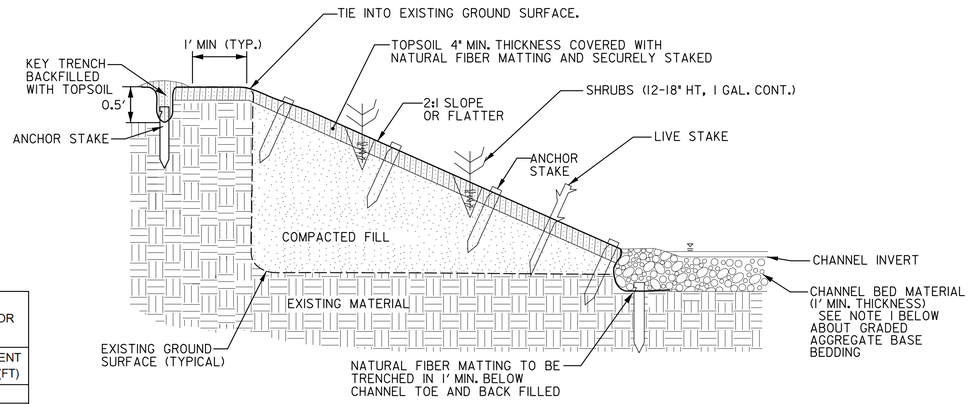
DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 5 OF 58
DRAWN BY MER	FWA JOB NUMBER



TYPICAL CROSS SECTION 'B-B'
STEP-POOL (SP) POOL

NOT TO SCALE

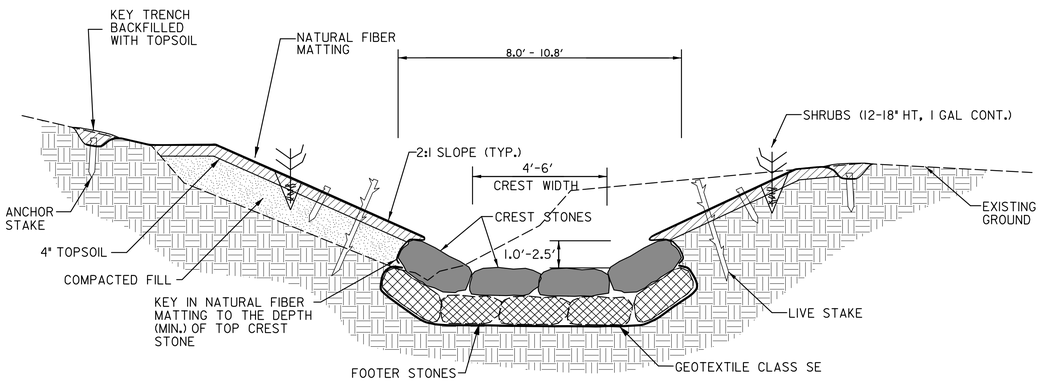
Pool Pavement Mix	
Amount of Stone (%)	Stone Type (% by Volume)
40	SHA Class 0
40	SHA Class 1
20	SHA Class 2
100	Total



TYPICAL STREAMBANK STABILIZATION IN FILL

NOT TO SCALE

POOL PAVEMENT PLACEMENT HEIGHT FOR STEP POOL POOLS	
STATION	PLACEMENT HEIGHT (FT)
0+47	2.8
0+54	2.2
2+16	2.8
2+23	2.2
3+81	2.8
3+88	2.2
4+53	2.8
4+60	2.2
9+46	3.6
9+53	3.5
9+62	4.3
9+69	3.7
9+78	4.3
9+85	3.7
9+94	4.3
10+01	3.7
10+10	2.8
10+17	2.2

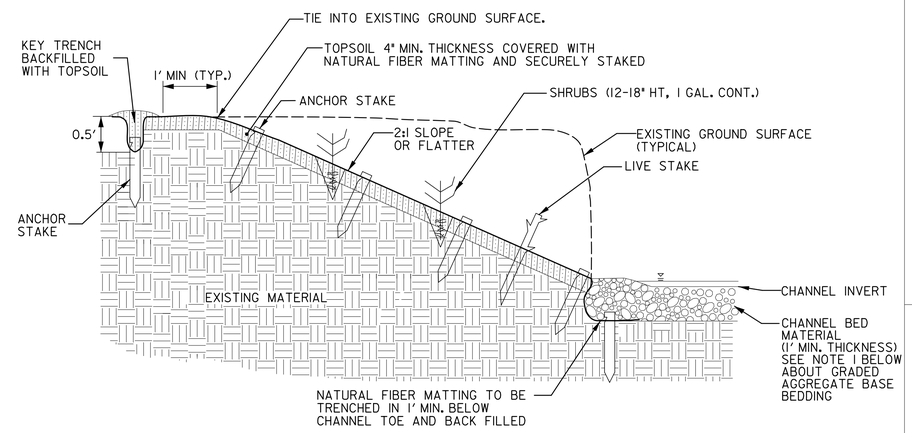


TYPICAL CROSS SECTION 'A-A'
STEP-POOL (SP) CREST

NOT TO SCALE

CREST STONES PLACEMENT HEIGHT FOR STEP POOL CRESTS		
STATION FROM	STATION TO	PLACEMENT HEIGHT (FT)
0+40	0+43	1.0
0+56	0+59	1.0
2+09	2+12	1.0
2+25	2+28	1.0
3+74	3+77	1.0
3+90	3+93	1.0
4+46	4+49	1.0
4+62	4+65	1.0
9+39	9+42	1.5
9+55	9+58	2.5
9+71	9+74	2.5
9+87	9+90	2.5
10+03		2.5
10+06		1.8
10+19	10+22	1.0

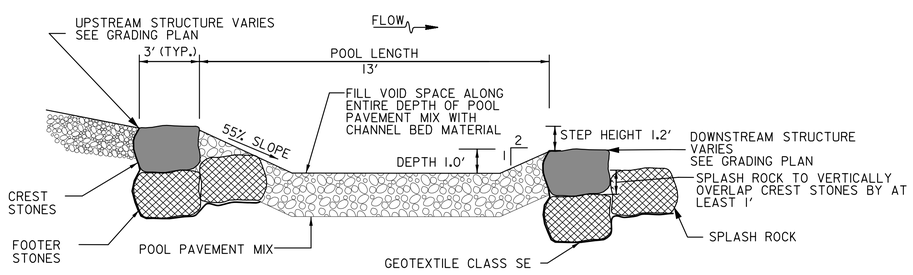
NOTE: THE CREST ALONG STA 10+03 TO 10+06 HAS VARIED PLACEMENT HEIGHT.



TYPICAL STREAMBANK STABILIZATION IN CUT

NOT TO SCALE

NOTES:
1. PLACE 6" OF GRADED AGGREGATE BEDDING UNDERNEATH CHANNEL BED MATERIAL PLACED WITHIN THE LIMITS OF THE FORMER POND (STA. 6+07 TO 9+39).

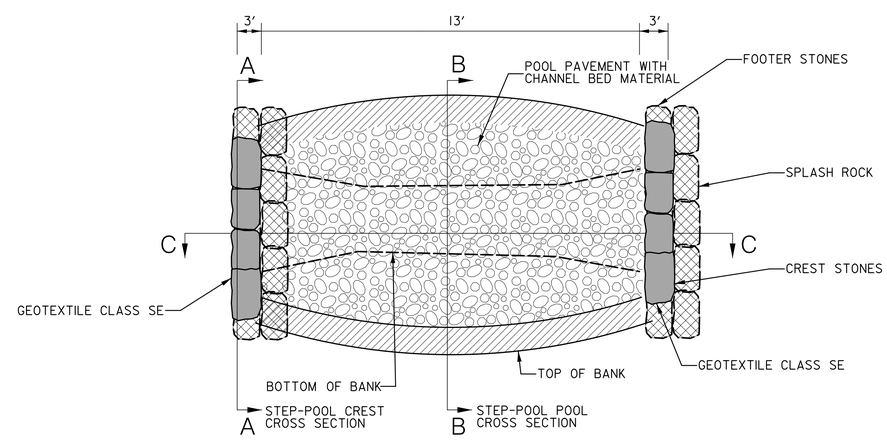


TYPICAL PROFILE 'C-C'
STEP-POOL (SP)

NOT TO SCALE

NOTES:
1. SPLASH ROCKS TO EXTEND ACROSS THE ENTIRE WIDTH OF CHANNEL AND BE KEYED AT LEAST 6" INTO BOTH BANKS.

CREST STONE, FOOTER STONES, AND SPLASH ROCK			
ROCK SIZE RANGE	ROCK DIAMETER (INCHES)		
	SHORT AXIS	INTERMEDIATE AXIS	LONG AXIS
MINIMUM	24	30	30
MAXIMUM	36	40	50



PLAN VIEW OF STEP-POOL (SP)

NOT TO SCALE

McCORMICK TAYLOR
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Baltimore, Maryland 21202
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REV#	DATE	DESCRIPTION
REVISIONS		

HEAVENLY POND STREAM RESTORATION

DETAIL SHEET

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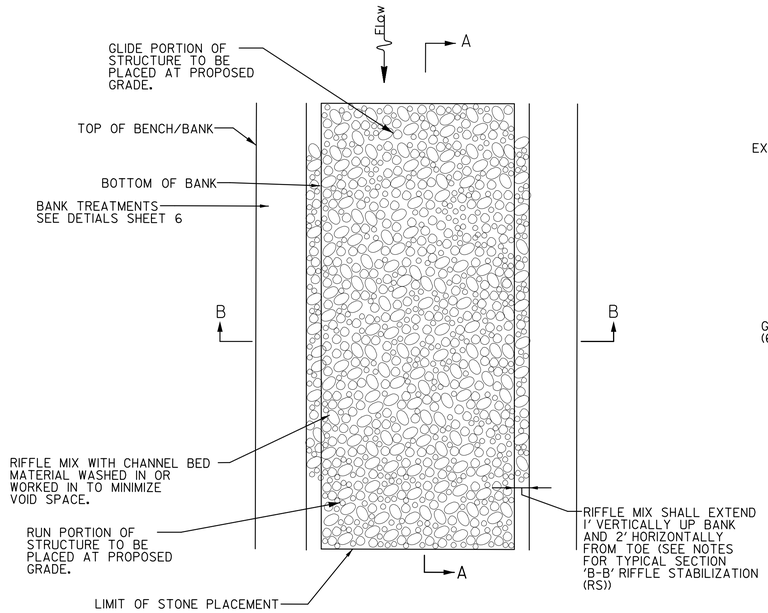
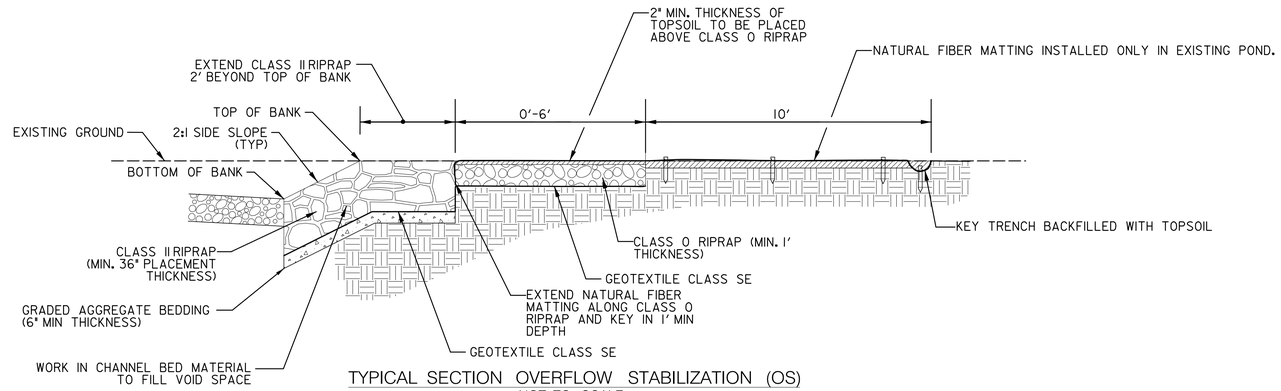
DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 6 OF 58
DRAWN BY MER	FWA JOB NUMBER

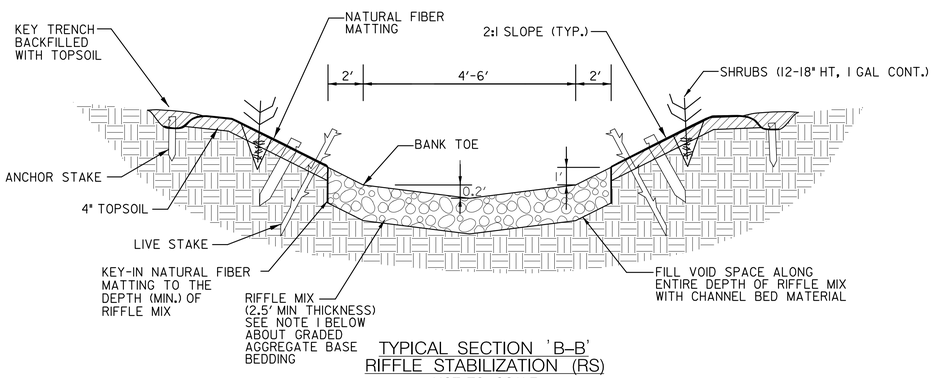


PLAN VIEW
RIFFLE STABILIZATION (RS)
NOT TO SCALE



TYPICAL SECTION OVERFLOW STABILIZATION (OS)
NOT TO SCALE

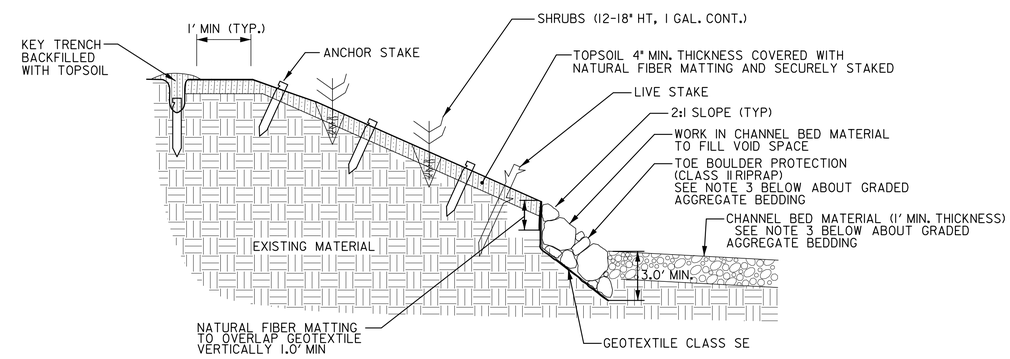
NOTES:
1. LAYOUT AND CONSTRUCTION OF OVERFLOW STABILIZATION TO OCCUR UNDER DIRECT SUPERVISION OF THE ENGINEER
2. CONSTRUCT UPSTREAM AND DOWNSTREAM TIE-INS WITH SMOOTH TRANSITIONS TO PROPOSED GRADING AND AS APPROVED BY THE ENGINEER



TYPICAL SECTION 'B-B'
RIFFLE STABILIZATION (RS)
NOT TO SCALE

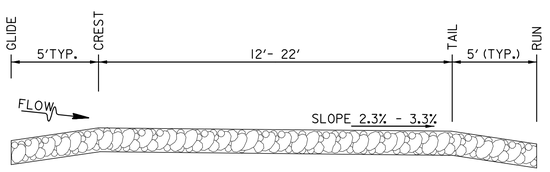
NOTES:
1. PLACE 6" OF GRADED AGGREGATE BEDDING UNDERNEATH RIFFLE MIX PLACED WITHIN THE LIMITS OF THE FORMER POND (STA. 5+70 TO 9+40). THIS INCLUDES RS-1, RS-2, RS-3, RS-4 AND RS-5.
2. RIGHT BANK SLOPE ALONG RS-7 (STA. 13+47 TO 13+67) IS SHALLOWER THAN 2:1, WHICH RESULTS IN A WIDER TOP WIDTH. EXTEND RIFFLE MIX 1' VERTICALLY UP THE BANK FROM THE TOE. THE WIDTH OF RIFFLE MIX PLACEMENT WILL BE GREATER THAN 2'.
3. LEFT BANK SLOPE ALONG RS-7 (STA. 13+47 TO 13+67) IS 2:1 AT STA. 13+47 AND SHALLOWER THAN 2:1 AT STA. 13+67, WHICH RESULTS IN A WIDER TOP WIDTH. EXTEND RIFFLE MIX 1' VERTICALLY UP THE BANK FROM THE TOE. THE WIDTH OF RIFFLE MIX PLACEMENT WILL BE GREATER THAN 2' ALONG PORTIONS OF THE LEFT BANK ALONG RS-7.

Riffle Mix	
Amount of Stone (%)	Stone Type (% by Volume)
70	SHA Class 1
30	SHA Class 2
100	Total



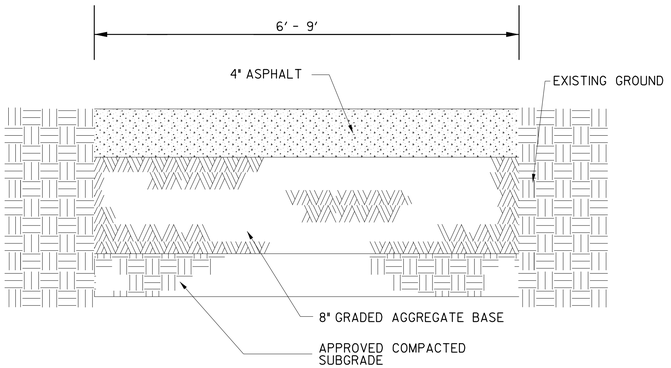
TOE BOULDER PROTECTION (TBP) TYPICAL SECTION
NOT TO SCALE

NOTES:
1. ROCK PLACEMENT HEIGHT VARIES FROM 1' AT THE UPSTREAM AND DOWNSTREAM LIMITS OF PROPOSED TOE BOULDER PROTECTION TO A MAXIMUM OF 3.5 FT AS INDICATED IN THE CROSS SECTIONS.
2. SEE CROSS SECTIONS FOR TOE BOULDER PLACEMENT HEIGHT AT SPECIFIC LOCATIONS.
3. PLACE 6" OF GRADED AGGREGATE BEDDING UNDERNEATH TOE BOULDER PROTECTION AND CHANNEL BED MATERIAL PLACED WITHIN THE LIMITS OF THE FORMER POND (STA. 5+70 TO 9+40).



TYPICAL PROFILE 'A-A'
RIFFLE STABILIZATION (RS)
NOT TO SCALE

NOTES:
1. RIFFLE MIX SHALL BE PLACED SO THAT IT SHINGLES IN A DOWNSTREAM DIRECTION. SMALL AND LARGE RIPRAP SHALL BE MIXED TO MINIMIZE VOID SPACES. RIPRAP MUST BE PLACED IN A MANNER TO PROMOTE INTERLOCKING. DUMPING OF RIPRAP WILL NOT BE PERMITTED.



PARK TRAIL TYPICAL SECTION
NOT TO SCALE

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

REV#	DATE	REVISIONS DESCRIPTION

HEAVENLY POND STREAM RESTORATION
DETAIL SHEET

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR, MARYLAND 21014
410-638-3277
SD PLAN #59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 7 OF 58
DRAWN BY MER	FWA JOB NUMBER

PLANTING SCHEDULE

LEGEND	ZONE	QUANTITY	BOTANICAL NAME	COMMON NAME	WETLAND STATUS	SIZE	ROOT	SPACING
	LIVE STAKE	453	*CORNUS AMOMUM*	SILKY DOGWOOD	FACW	3'-4' HT	LIVE STAKE	PLANT 2' O.C.
	LIVE STAKE	453	*VIBURNUM DENTATUM*	SOUTHERN ARROWWOOD	FAC	3'-4' HT	LIVE STAKE	PLANT 2' O.C.
	LIVE STAKE	453	*SALIX NIGRA*	BLACK WILLOW	OBL	3'-4' HT	LIVE STAKE	PLANT 2' O.C.
	STREAMBANK SHRUB	18	*CORNUS AMOMUM*	SILKY DOGWOOD	FACW	12-18" HT	1 GAL. CONT.	PLANT 5' O.C
	STREAMBANK SHRUB	18	*ARONIA ARBUTIFOLIA*	RED CHOKEBERRY	FACW	12-18" HT	1 GAL. CONT.	PLANT 5' O.C
	STREAMBANK SHRUB	18	*SALIX NIGRA*	BLACK WILLOW	OBL	12-18" HT	1 GAL. CONT.	PLANT 5' O.C
	SHRUB	4	*SALIX DISCOLOR*	PUSSY WILLOW	FACW	2'-3' HT	3 GAL. CONT.	PLANT 8' O.C.
	SHRUB	4	*CORNUS AMOMUM*	SILKY DOGWOOD	FACW	2'-3' HT	3 GAL. CONT.	PLANT 8' O.C.
	SHRUB	4	*PHOTINIA MELANOCARPA*	BLACK CHOKEBERRY	FAC	2'-3' HT	3 GAL. CONT.	PLANT 8' O.C.
	SHRUB	4	*ARONIA ARBUTIFOLIA*	RED CHOKEBERRY	FACW	2'-3' HT	3 GAL CONT.	PLANT 8' O.C.
	SHRUB	4	*ALNUS INCANA*	SPECKLED ALDER	FACU	2'-3' HT	3 GAL. CONT.	PLANT 8' O.C.
	RIPARIAN	43	*QUERCUS RUBRA*	NORTHERN RED OAK	FACU	3-5' HT	5 GAL. CONT.	PLANT 12' O.C.
	RIPARIAN	43	*PLANTANUS OCCIDENTALIS*	AMERICAN SYCAMORE	FACW	3-5' HT	5 GAL. CONT.	PLANT 12' O.C.
	RIPARIAN	43	*QUERCUS ALBA*	WHITE OAK	FACU	3-5' HT	5 GAL. CONT.	PLANT 12' O.C.
	RIPARIAN	43	*ACER SACCHARINUM*	SILVER MAPLE	FACW	3-5' HT	5 GAL. CONT.	PLANT 12' O.C.
	RIPARIAN	33	*SALIX DISCOLOR*	PUSSY WILLOW	FACW	2'-3' HT	3 GAL. CONT.	PLANT 8' O.C.
	RIPARIAN	33	*CORNUS AMOMUM*	SILKY DOGWOOD	FACW	2'-3' HT	3 GAL. CONT.	PLANT 8' O.C.
	RIPARIAN	33	*PHOTINIA MELANOCARPA*	BLACK CHOKEBERRY	FAC	2'-3' HT	3 GAL. CONT.	PLANT 8' O.C.
	RIPARIAN	33	*ARONIA ARBUTIFOLIA*	RED CHOKEBERRY	FACW	2'-3' HT	3 GAL CONT.	PLANT 8' O.C.
	RIPARIAN	33	*ALNUS INCANA*	SPECKLED ALDER	FACU	2'-3' HT	3 GAL. CONT.	PLANT 8' O.C.
	WETLAND	29	*QUERCUS BICOLOR*	SWAMP WHITE OAK	FACW	3-5' HT	5 GAL. CONT.	PLANT 12' O.C.
	WETLAND	29	*PLATANUS OCCIDENTALIS*	AMERICAN SYCAMORE	FACW	3-5' HT	5 GAL. CONT.	PLANT 12' O.C.
	WETLAND	29	*BETULA NIGRA*	RIVER BIRCH	FACW	3-5' HT	5 GAL. CONT.	PLANT 12' O.C.
	WETLAND	28	*SALIX NIGRA*	BLACK WILLOW	OBL	2'-3' HT	3 GAL. CONT.	PLANT 8' O.C.
	WETLAND	28	*CEPHALANTHUS OCCIDENTALIS*	BUTTONBUSH	OBL	2'-3' HT	3 GAL CONT.	PLANT 8' O.C.
	WETLAND	28	*VACCINIUM CORYMBOSUM*	HIGHBUSH BLUEBERRY	FACW	2'-3' HT	3 GAL. CONT.	PLANT 8' O.C.

TURF SCHEDULE

LEGEND

ZONE	QUANTITY (SY)	REMARKS
TURFGRASS	5296	TURF ESTABLISHMENT (SEED)

* SEED SOWING RATE TO BE APPLIED AT 200 LBS/AC

RIPARIAN SEED MIX

ZONE	BOTANICAL NAME	COMMON NAME	WETLAND STATUS	PERCENT MIX	TOTAL MIX (LBS)
STREAMBANK, RIPARIAN	*Carex vulpinoidea*	Fox Sedge	OBL	20	
STREAMBANK, RIPARIAN	*Elymus virginicus*	Virginia Wild Rye	FACW	20	
STREAMBANK, RIPARIAN	*Andropogon gerardii*	Big Bluestem	FAC	10	
STREAMBANK, RIPARIAN	*Panicum clandestinum*	Deertongue	FAC	10	
STREAMBANK, RIPARIAN	*Carex scoparia*	Blunt Broom Sedge	FACW	7	
STREAMBANK, RIPARIAN	*Verbena hastata*	Blue Vervain	FACW	5	
STREAMBANK, RIPARIAN	*Panicum virgatum*	Switchgrass	FAC	5	
STREAMBANK, RIPARIAN	*Carex crinita*	Fringed Nodding Sedge	OBL	4	
STREAMBANK, RIPARIAN	*Euthamia graminifolia*	Grass Leaved Goldenrod	FAC	3	
STREAMBANK, RIPARIAN	*Helenium autumnale*	Common Sneezeweed	FACW	3	
STREAMBANK, RIPARIAN	*Carex stipata*	Awl Sedge	OBL	2	
STREAMBANK, RIPARIAN	*Eupatorium perfoliatum*	Boneset	FACW	2	
STREAMBANK, RIPARIAN	*Elymus riparius*	Riverbank Wildrye	FACW	2	
STREAMBANK, RIPARIAN	*Eupatorium fistulosum*	Joe Pye Weed	FACW	2	
STREAMBANK, RIPARIAN	*Asclepias incarnata*	Swamp Milkweed	OBL	1	
STREAMBANK, RIPARIAN	*Chelone glabra*	White Turtlehead	OBL	1	
STREAMBANK, RIPARIAN	*Helianthus divaricatus*	Woodland Sunflower	NOT CLASSIFIED	1	
STREAMBANK, RIPARIAN	*Ludwigia alternfolia*	Seedbox	FACW	1	
STREAMBANK, RIPARIAN	*Penstemon digitalis*	Tall White Beardtongue	FAC	1	
Total				100	50

* SEED SOWING RATE TO BE APPLIED AT 50 LBS/AC

** LIVESTAKE, STREAMBANK SHRUB, SHRUB, AND RIPARIAN ZONES ARE TO BE SEEDED WITH RIPARIAN SEED MIX

WETLAND SEED MIX

LEGEND

ZONE	BOTANICAL NAME	COMMON NAME	WETLAND STATUS	PERCENT MIX	TOTAL MIX (LBS)
WETLAND	*Carex vulpinoidea*	Fox Sedge	OBL	32	
WETLAND	*Elymus virginicus*	Virginia Wildrye	FACW	20	
WETLAND	*Carex lurida*	Shallow Sedge	OBL	14	
WETLAND	*Carex lupulina*	Hop Sedge	OBL	10	
WETLAND	*Carex tribuloides*	Blunt Broom Sedge	FACW	6.3	
WETLAND	*Juncus effusus*	Soft Rush	FACW	3	
WETLAND	*Symphyotrichum puniceum*	Purplestem Aster	OBL	2	
WETLAND	*Heliopsis helianthoides*	Oxeye Sunflower	FACU	2	
WETLAND	*Verbena hastata*	Blue Vervain	FACW	2	
WETLAND	*Asclepias incarnata*	Swamp Milkweed	OBL	1.5	
WETLAND	*Doellingeria umbellata*	Flat Topped White Aster	FACW	1	
WETLAND	*Eupatorium perfoliatum*	Boneset	FACW	1	
WETLAND	*Onoclea sensibilis*	Sensitive Fern	FACW	1	
WETLAND	*Alisma subcordatum*	Mud Plantain	OBL	0.5	
WETLAND	*Carex intumescens*	Bladder Sedge	FACW	0.5	
WETLAND	*Calamagrostis perplexa*	Wood Reedgrass	FACW	0.5	
WETLAND	*Juncus tenuis*	Path Rush	FAC	0.5	
WETLAND	*Scirpus cyperinus*	Woolgrass	FACW	0.5	
WETLAND	*Zizia aurea*	Golden Alexanders	FAC	0.5	
WETLAND	*Eupatorium fistulosum*	Joe Pye Weed	FACW	0.3	
WETLAND	*Penthorum sedoides*	Ditch Stonecrop	OBL	0.3	
WETLAND	*Chelone glabra*	WhiteTurtlehead	OBL	0.2	
WETLAND	*Ludwigia alternfolia*	Seedbox	FACW	0.2	
WETLAND	*Mimulus ringens*	Square Stemmed Monkeyflower	OBL	0.2	
Total				100	21

* SEED SOWING RATE TO BE APPLIED AT 50 LBS/AC

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Baltimore, Maryland 21202
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McCORMICK TAYLOR

REV#	DATE	DESCRIPTION

REVISIONS

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HARFORD COUNTY
DEPARTMENT OF PUBLIC WORKS

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BEL AIR, MARYLAND 21014
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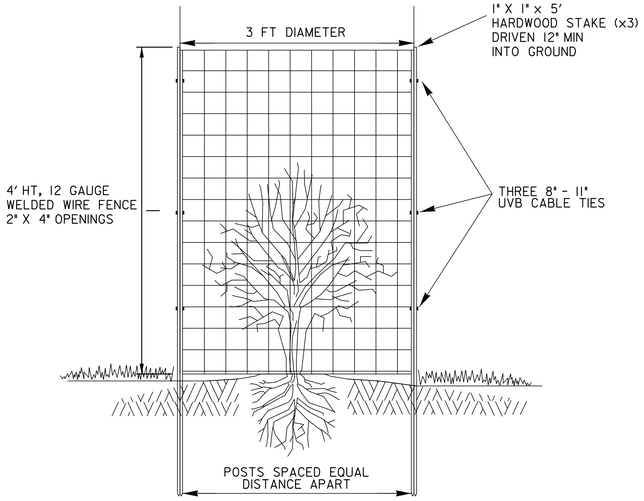
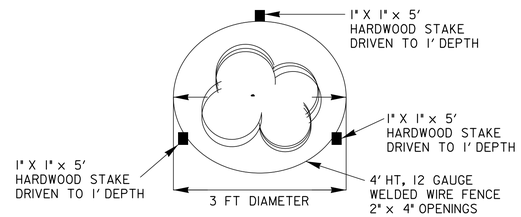


DEER PROTECTION DETAIL – SHRUB

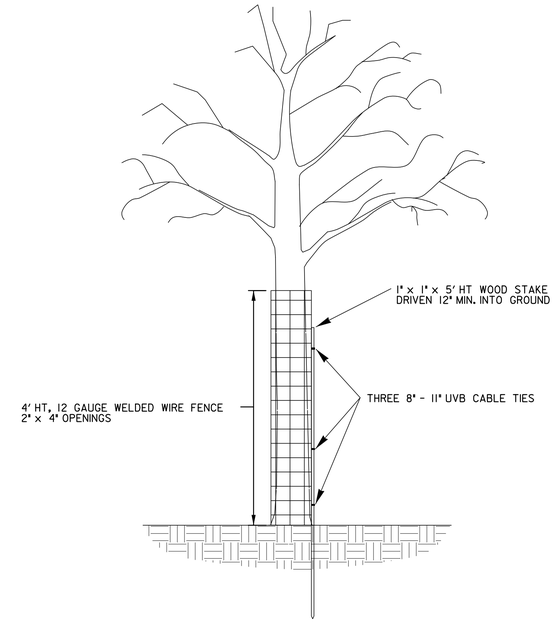
NOT TO SCALE



DEER PROTECTION – SHRUB TOP VIEW

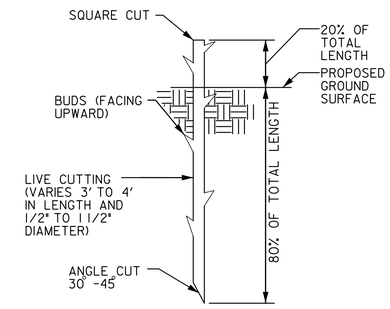
NOT TO SCALE

NOTE:
1. INSTALL DEER PROTECTION ON ALL TREES AND SHRUBS WITHIN THE RIPARIAN ZONE.



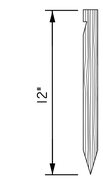
DEER PROTECTION DETAIL – TREE

NOT TO SCALE



LIVE STAKE

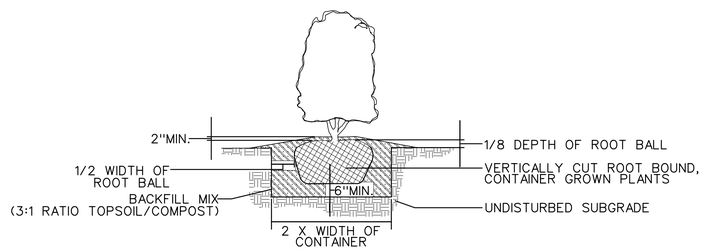
NOTE:
1. LIVE STAKES MUST BE INSTALLED WHILE DORMANT (LATE FALL TO EARLY SPRING). DO NOT ALLOW THEM TO DRY OUT.



1" X 2" NOTCHED
WOOD GRADE STAKE
OR EQUIVALENT

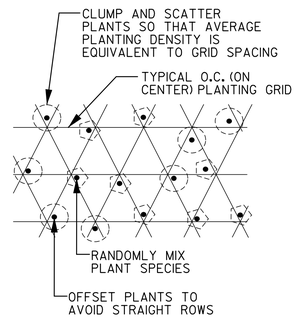
ANCHOR STAKE

NOT TO SCALE



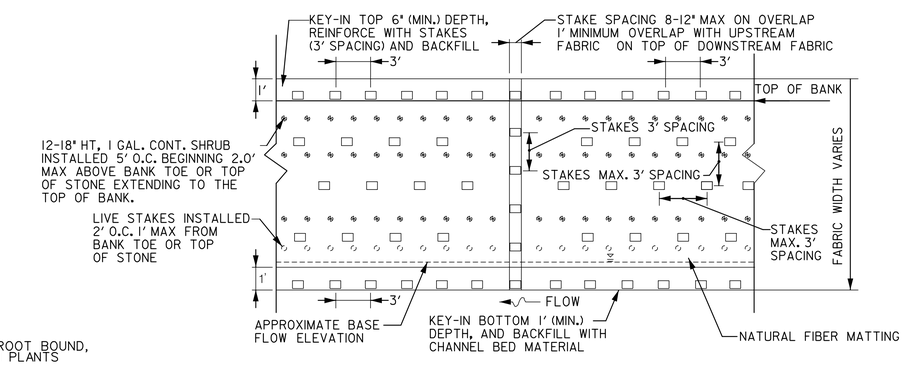
SHRUB PLANTING DETAIL

NOTE:
1. ALL TREES AND SHRUBS SHALL HAVE A MINIMUM OF ONE BRANCHED GROWTH AT TIME OF PLANTING



RANDOM PLANTING PATTERN

NOT TO SCALE

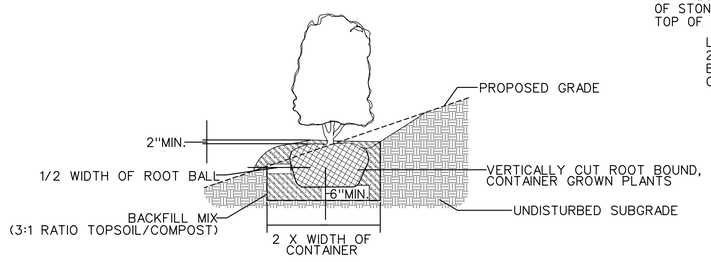


NATURAL FIBER MATTING – PLAN VIEW

NOT TO SCALE

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

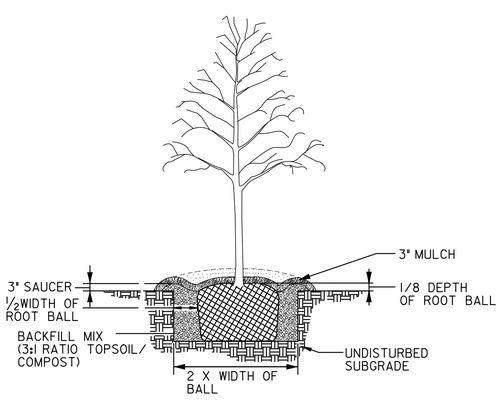
MATERIAL	WOVEN COIR MATTING
THICKNESS	0.3 IN.
WEIGHT	20 OZ/SY
WATER VELOCITY	12 FT/SEC
OPEN AREA	50%



SLOPE PLANTING DETAIL FOR SHRUBS

CONTAINER GROWN
(NOT TO SCALE)

NOTE:
1. ALL TREES AND SHRUBS SHALL HAVE A MINIMUM OF ONE BRANCHED GROWTH AT TIME OF PLANTING



DECIDUOUS TREE PLANTING DETAIL

CONTAINER GROWN
(NOT TO SCALE)

McCORMICK TAYLOR
509 South Exeter Street
4th Floor
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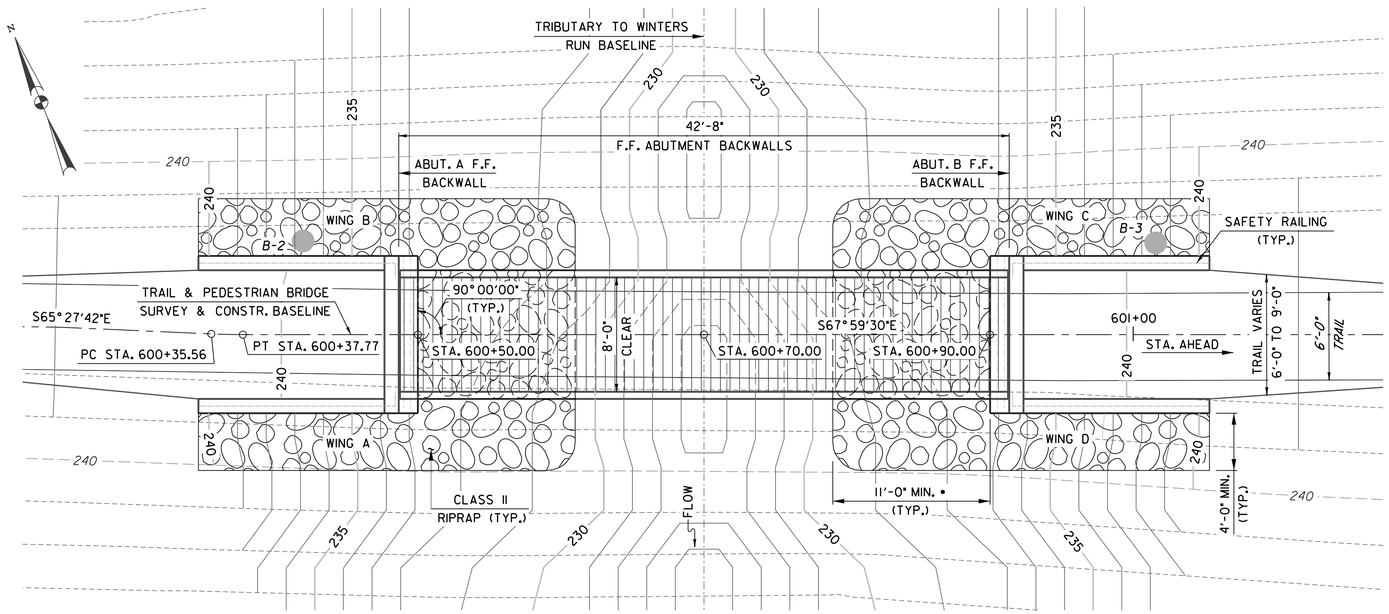
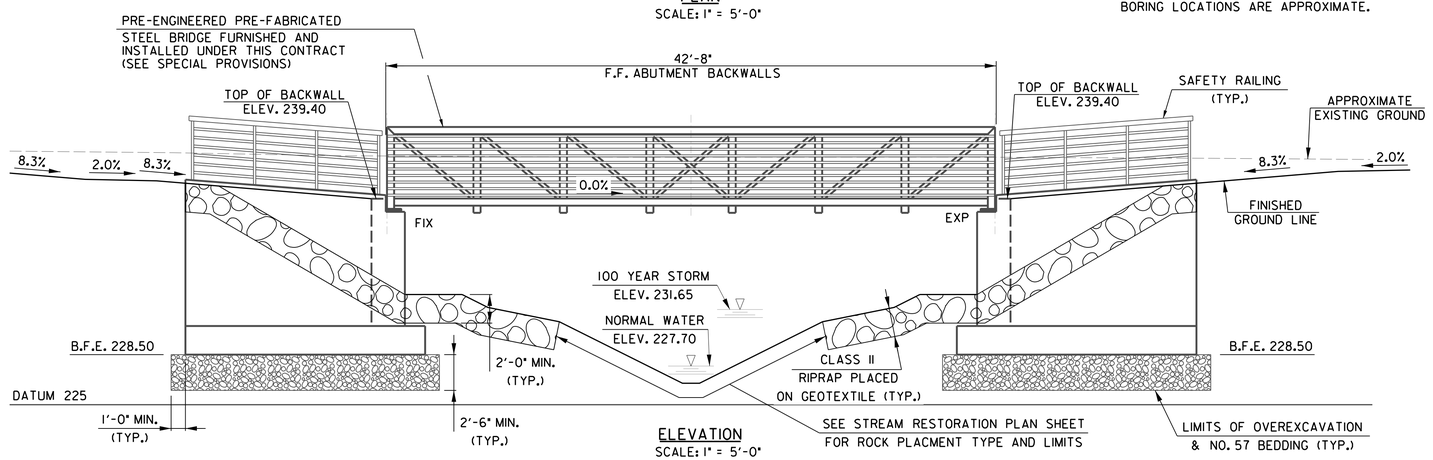


• PLAN DIMENSION

PLAN
SCALE: 1" = 5'-0"

NOTE:
BORING LOCATIONS ARE APPROXIMATE.



ELEVATION
SCALE: 1" = 5'-0"

TRAIL SURVEY & CONSTR. BASELINE HORIZONTAL CURVE DATA

PI STA. = 600+36.67
Δ = 2°31'47" RIGHT
D = 114°35'30"
T = 1.10'
L = 2.21'
R = 50.0'
E = 0.01'
PC STA. = 600+35.56
PT STA. = 600+37.77

HYDRAULIC DATA

DRAINAGE AREA = 0.12 SQ. MI.

Q100	= 286 CFS
100 YR. H.W.	= 231.65 FT
V100	= 6.07 FT/S

EXISTING HYDRAULIC DATA

DRAINAGE AREA = 0.12 SQ. MI.

Q100	*= 286 CFS*
100 YR. H.W.	*= 243.60 FT*
V100	*= 13.28 FT/S*

LEGEND:

ABUT.	= ABUTMENT
℄	= BASELINE
B.F.E.	= BOTTOM FOOTING ELEVATION
BOT.	= BOTTOM
℄	= CENTERLINE
CLR.	= CLEAR COVER
CONSTR.	= CONSTRUCTION
DIA.	= DIAMETER
ELEV.	= ELEVATION
E.F.	= EACH FACE
EQ. SPA.	= EQUAL SPACING
F.F.	= FRONT FACE
JT.	= JOINT
MAX.	= MAXIMUM
MIN.	= MINIMUM
P.G.	= PROFILE GRADE
R.F.	= REAR FACE
STA.	= STATION
STR.	= STRAIGHT
TYP.	= TYPICAL
VERT.	= VERTICAL
W.P.	= WORK POINT

PRE-ENGINEERED BRIDGE STRUCTURE NOTES

18. THE BRIDGE SHALL BE DESIGNED, FABRICATED, DELIVERED AND ERECTED BY A FIRM EXPERIENCED IN PRE-ENGINEERED BRIDGE CONSTRUCTION.

19. ALL STEEL FOR THE BRIDGE STRUCTURE SHALL BE WEATHERING STEEL WITH A MINIMUM YIELD STRENGTH OF 50,000 PSI, SEE SPECIAL PROVISIONS.

20. PRIOR TO FABRICATION, THE CONTRACTOR SHALL SUBMIT THE FOLLOWING ITEMS TO THE ENGINEER FOR HIS REVIEW (SUBMITTED ITEMS SHALL BE PREPARED UNDER THE SUPERVISION OF, AND BEAR THE SEAL OF, A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MARYLAND):

    BRIDGE DESIGN CALCULATIONS INCLUDING A TABLE OF BRIDGE REACTIONS.

    ERECTION DRAWINGS TO INCLUDE DETAILS SHOWING FABRICATION AND ASSEMBLY OF THE PRE-ENGINEERING BRIDGE STRUCTURE.

    ANCHOR BOLT PLACEMENT DRAWING TO SHOW ALL ANCHOR BOLT LOCATIONS.

21. SHOP DRAWING SUBMITTALS FOR ALL MAJOR STRUCTURE COMPONENTS AND SYSTEMS SHALL BE INCLUDED AS A PART OF THE SCOPE OF THIS PROJECT AND MUST BE FORWARDED TO AND APPROVED BY THE STRUCTURAL ENGINEER PRIOR TO FABRICATION. CONTRACTOR SHALL ALLOW A MINIMUM OF 3 WEEKS IN THE SCHEDULE FOR ENGINEER'S REVIEW OF SHOP DRAWINGS.

22. ERECT THE BRIDGE TRUE TO LINE, LEVEL AND PLUMB. LEVEL BASE PLATES TO A TRUE PLANE WITH FULL BEARING TO THE SUPPORTING STRUCTURE. USE NON-SHRINK GROUT TO OBTAIN UNIFORM BEARING AND TO MAINTAIN A LEVEL BASE LINE ELEVATION.

GENERAL NOTES

SPECIFICATIONS:
1. MARYLAND STATE HIGHWAY ADMINISTRATION'S STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS DATED JULY 2019 INCLUDING ALL REVISIONS THEREOF AND ADDITIONS THERETO.
2. DESIGN IS IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SEVENTH EDITION, 2014.

LOADING:
3. THE BRIDGE STRUCTURE SHALL BE DESIGNED FOR THE FOLLOWING LOADS:
   UNIFORM LIVE LOAD: IN ACCORDANCE WITH THE AASHTO GUIDE SPECIFICATIONS DESIGN OF PEDESTRIAN BRIDGES.
   VEHICLE LIVE LOAD: H-5

CONCRETE:
4. ALL CONCRETE SHALL BE MIX NO. 3 (3,500 PSI).
5. ALL EXPOSED CORNERS OF CONCRETE SHALL BE CHAMFERED ¾" X ¾" WITH MILLED CHAMFER STRIPS EXCEPT ON UNEXPOSED FOOTINGS AND WHERE INDICATED BY THE FOLLOWING NOTATION ON THE PLANS "DO NOT CHAMFER".

REINFORCING STEEL:
6. REINFORCING STEEL SHALL BE DEFORMED, GRADE 60 BARS CONFORMING TO ASTM A615. ALL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH ASTM A775. TOUCH UP SCRATCHED OR DAMAGED EPOXY COATING IN THE FIELD PRIOR TO CLOSING UP FORM WORK AND PLACING CONCRETE. ALL FORM WORK, REINFORCING STEEL, AND INSERTS WILL BE CHECKED AND APPROVED PRIOR TO CONCRETE PLACEMENT.
7. MINIMUM COVER FOR ANY REINFORCING BAR SHALL BE 2" UNLESS OTHERWISE NOTED, WITH THE EXCEPTION OF BARS AT THE BOTTOM AND SIDES OF ALL FOOTINGS, WHICH SHALL HAVE 3" MINIMUM COVER.
8. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.

STRUCTURAL STEEL:
9. STRUCTURAL STEEL SHALL CONFORM TO A 709, GRADE 50W.

FOUNDATION NOTES

10. THE DESIGN OF THE BRIDGE FOUNDATIONS HAS BEEN BASED ON THE GEOTECHNICAL INFORMATION AND RECOMMENDATIONS CONTAINED IN "REPORT OF GEOTECHNICAL EXPLORATION" PREPARED BY GEO-TECHNOLOGY ASSOCIATES, INC. AND DATED AUGUST, 2016.
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12. A TABLE OF BRIDGE REACTIONS TO THE ABUTMENTS SHALL BE FURNISHED TO THE ENGINEER. CONSTRUCTION OF THE ABUTMENTS, INCLUDING FABRICATION OF REINFORCING STEEL, SHALL NOT BEGIN PRIOR TO THE APPROVAL OF ABUTMENT FOUNDATIONS AND DETAILS.
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16. BEFORE BEGINNING EXCAVATION, DIVERT ALL SURFACE WATER BY THE USE OF TEMPORARY SWALES OR OTHER MEANS. DO NOT ALLOW SURFACE WATER TO POND BEHIND THE WALLS DURING CONSTRUCTION.
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McCORMICK TAYLOR
509 South Exeter Street
4th Floor
Baltimore, Maryland 21202
(410) 662-7400

REV#	DATE	DESCRIPTION

REVISIONS

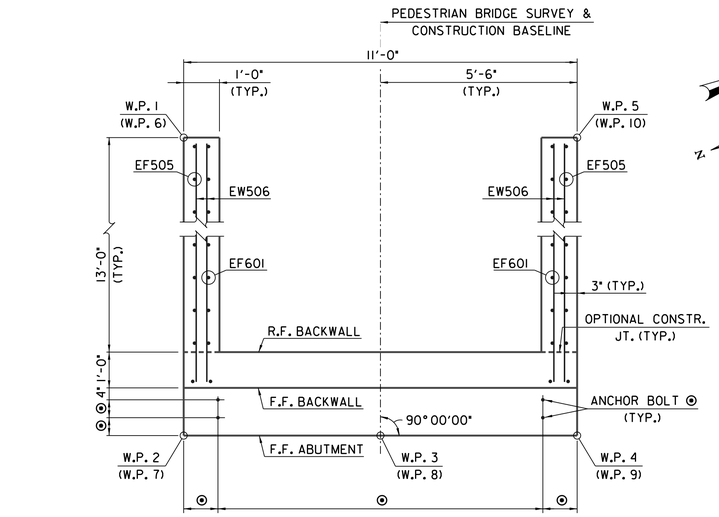
HEAVENLY POND STREAM RESTORATION

DOWNSTREAM PEDESTRIAN BRIDGE – BR01

GENERAL PLAN, ELEVATION & TYPICAL SECTION

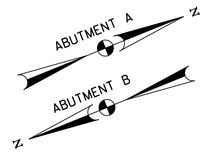
HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR, MARYLAND 21014
410-638-3277
SC PLAN #TBD

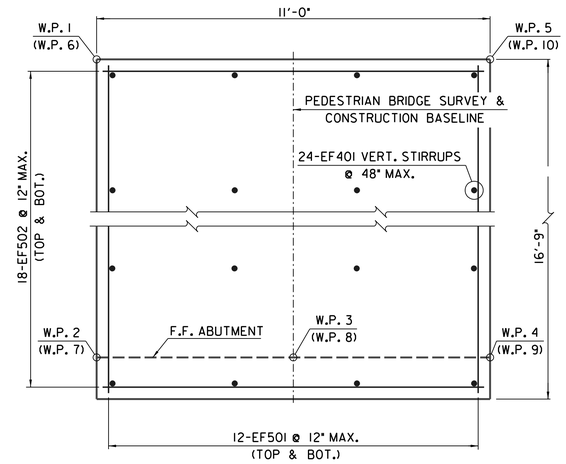
DATE 7/12/19	DRAWING NO.
SCALE AS INDICATED	
DESIGNED BY SDH/AJF	SHEET 10 OF 58
DRAWN BY TAD/AJF	FWA JOB NUMBER



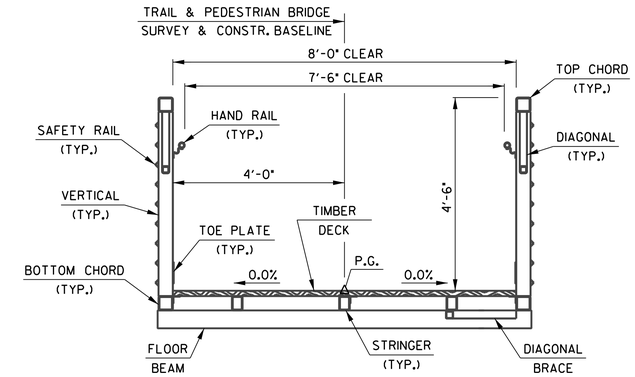
NOTE:
BACKWALL & STEM REINFORCEMENT NOT SHOWN.

SECTION A-A
(INDICATES ABUTMENT B)
SCALE: 1/2" = 1'-0"

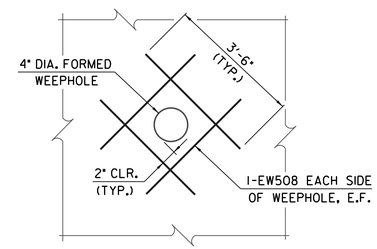




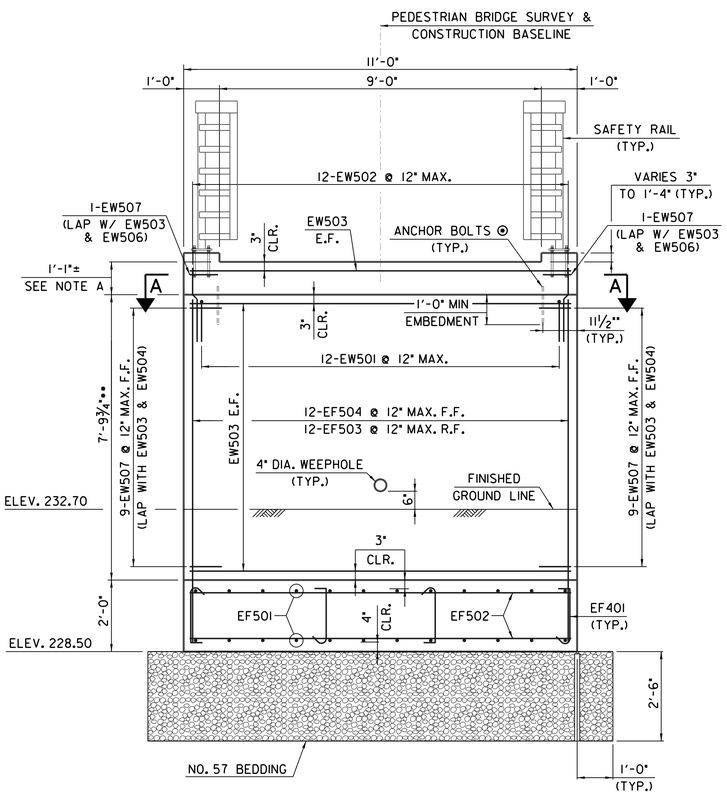
ABUTMENT A & B FOOTING PLAN
SCALE: 1/2" = 1'-0"



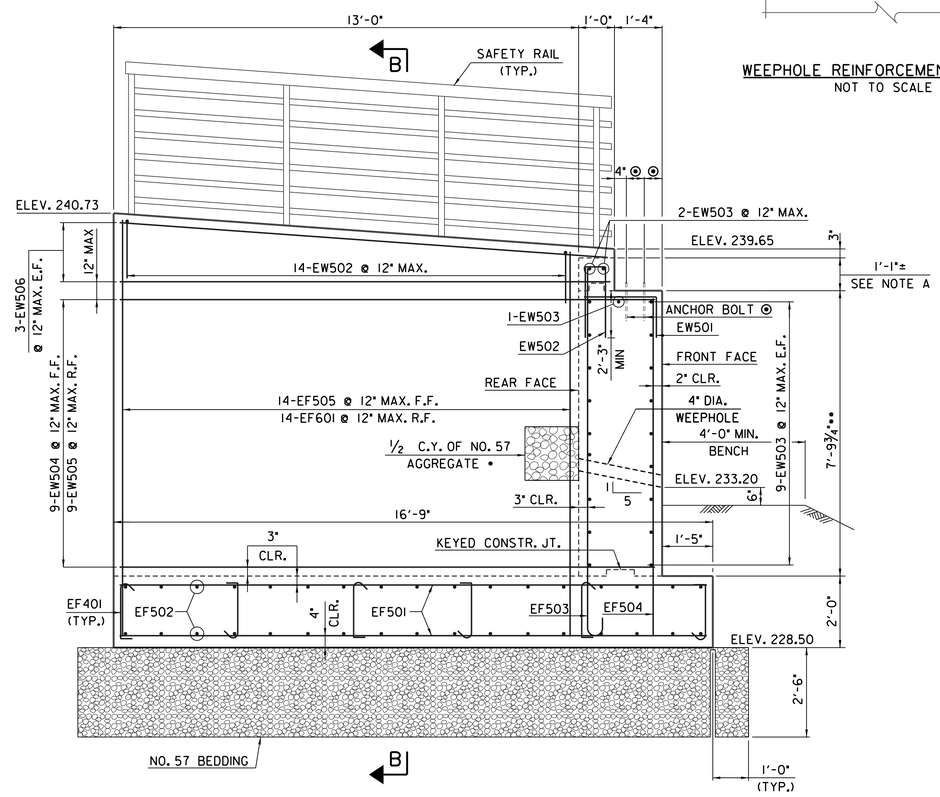
TRUSS SECTION
NOT TO SCALE



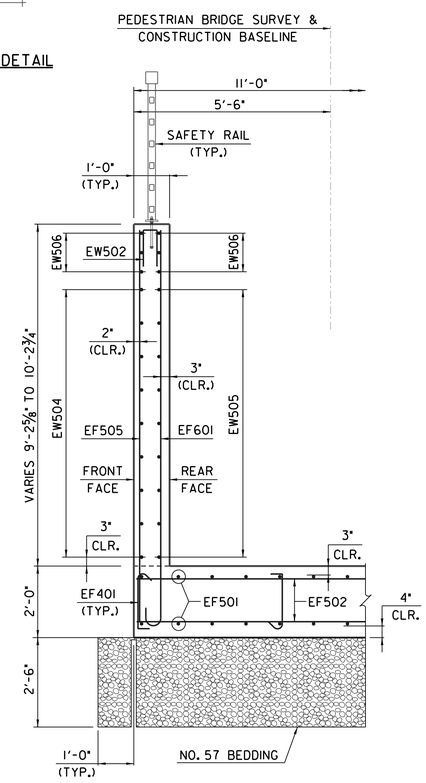
WEEPHOLE REINFORCEMENT DETAIL
NOT TO SCALE



ABUTMENT A & B ELEVATION
SCALE: 1/2" = 1'-0"



ABUTMENT A & B TYPICAL SECTION
& WINGWALL ELEVATION
SCALE: 1/2" = 1'-0"



SECTION B-B
SCALE: 1/2" = 1'-0"

• WEEPHOLE AND NO. 57 AGGREGATE ARE INCIDENTAL TO CEMENT CONCRETE - MIX NO. 3.
•• ADJUST BASED ON BACKWALL HEIGHT GIVEN BY BRIDGE MANUFACTURER.
⊙ SIZE AND LOCATION TO BE DETERMINED BY MANUFACTURER.
NOTE A: COORDINATE WITH BRIDGE MANUFACTURER.

NOTES:
1. FOR GENERAL PLAN AND ELEVATION, SEE SHEET 10.
2. FOR REINFORCEMENT BAR SCHEDULE, SEE SHEET 12.
3. FOR SAFETY RAILING, SEE SHEET 12.

McCORMICK TAYLOR
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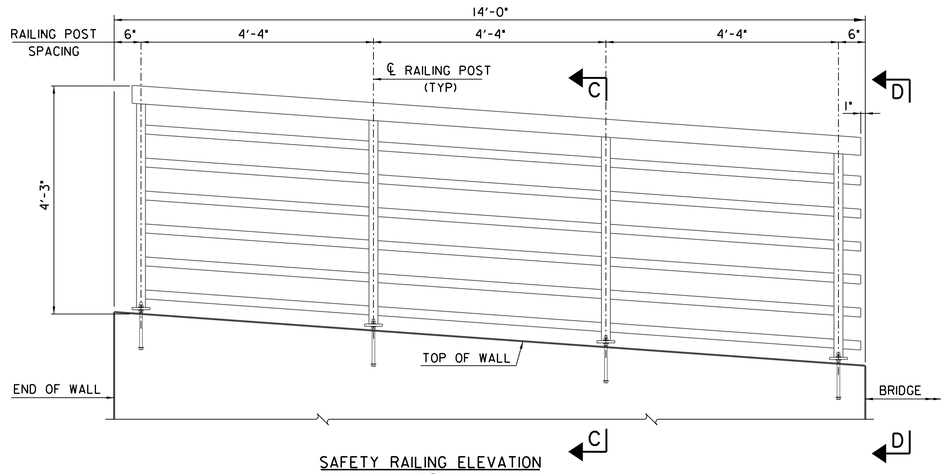
REV'S	DATE	DESCRIPTION

REVISIONS

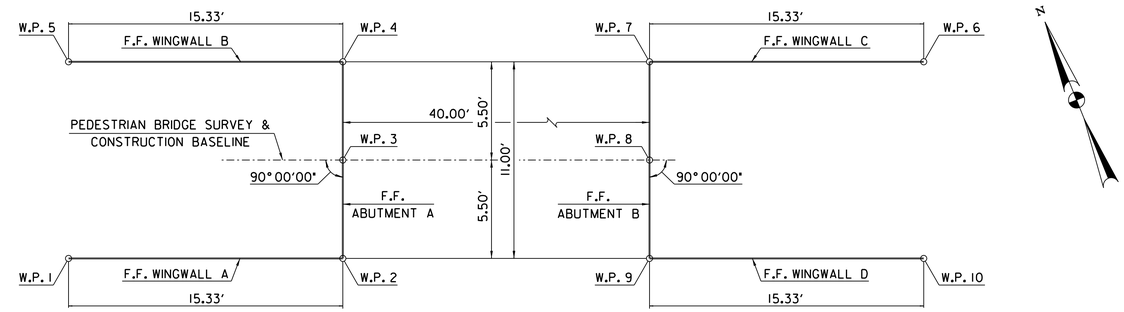
HEAVENLY POND STREAM RESTORATION
DOWNSTREAM PEDESTRIAN BRIDGE - BR01
ABUTMENT PLAN, ELEVATION & TYPICAL SECTION

HARFORD COUNTY
DEPARTMENT OF PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR, MARYLAND 21014
410-638-3277
SC PLAN #TBD

DATE	DRAWING NO.
7/12/19	
SCALE AS INDICATED	
DESIGNED BY SDH/AJF	SHEET 11 OF 58
DRAWN BY TAD/AJF	FWA JOB NUMBER



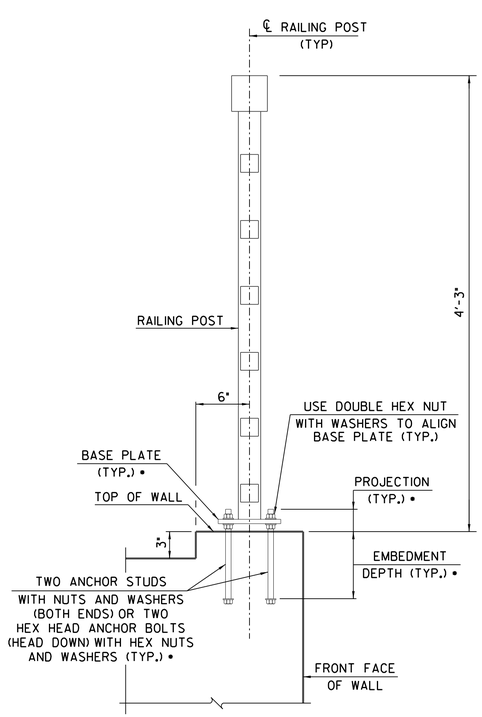
SAFETY RAILING ELEVATION
SCALE: 3/4" = 1'-0"



STAKE-OUT PLAN
NOT TO SCALE

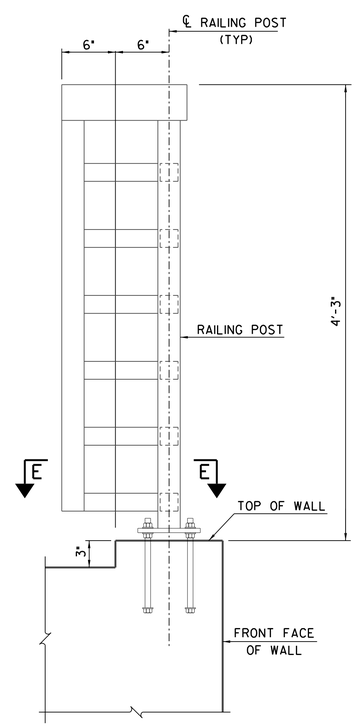
RAILING NOTES:

1. ALL POSTS AND RAILING SHALL BE HOT ROLLED STEEL CONFORMING TO A 787, G90. ALL RAIL AND POST MEMBERS SHALL BE STRUCTURAL STEEL TUBING CONFORMING TO A 500, GRADE B. ALL STEEL SHALL BE HOT DIPPED GALVANIZED IN CONFORMENCE WITH A 525, G90.
2. ALL ANCHOR PLATES SHALL BE STEEL CONFORMING TO A 709, GRADE 50.
3. ANCHOR STUDS OR ANCHOR BOLTS SHALL CONFORM TO A 276, TYPE 430 OR TYPE 304 STAINLESS STEEL ANNEALED, HOT-FINISHED, ULTIMATE STRENGTH 70,000 PSI MINIMUM, 20% MINIMUM ELONGATION. THREADS MAY BE ROLLED OR CUT.
4. ALL LONGITUDINAL RAILS SHALL BE PARALLEL TO TOP OF WALL.
5. ALL METAL SHALL BE PAINTED PER SECTION 435.
6. THE FINISHED COLOR SHOULD BE BROWN.
7. SAFETY RAIL SYSTEM AND ANCHORAGE TO BE DETERMINED BY CONTRACTOR (SEE SPECIAL PROVISIONS).

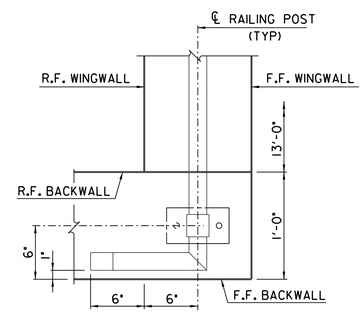


SECTION C-C
SCALE: 1 1/2" = 1'-0"

• SEE RAILING NOTE 7.



SECTION D-D
SCALE: 1 1/2" = 1'-0"



SECTION E-E
SCALE: 1 1/2" = 1'-0"

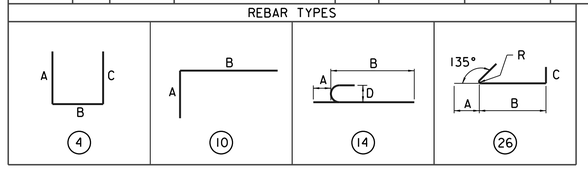
WORKPOINTS - BRIDGE				
W.P.	STATION	OFFSET	NORTHING	EASTING
1	600+34.91	5.58 RT	677978.9872	1488748.4222
2	600+50.00	5.50 RT	677973.2412	1488762.6382
3	600+50.00	0.00	677978.3404	1488764.6993
4	600+50.00	5.50 LT	677983.4396	1488766.7604
5	600+34.42	5.41 LT	677989.1856	1488752.5444
6	601+05.33	5.50 LT	677962.7039	1488818.0615
7	600+90.00	5.50 LT	677968.4499	1488803.8455
8	600+90.00	0.00	677963.3507	1488801.7844
9	600+90.00	5.50 RT	677958.2515	1488799.7234
10	601+05.33	5.50 RT	677952.5054	1488813.9393

STAKE-OUT NOTE:

FOUR PLACE COORDINATES ARE FOR COMPUTATIONAL PURPOSES ONLY AND DO NOT IMPLY A PRECISION BEYOND TWO DECIMAL POINTS.

REINFORCEMENT BAR SCHEDULE											
MARK	SIZE	NUMBER	LENGTH	TYPE	A	B	C	D	E	R	REMARKS
EF401	4	48	2'-2"	26	4 1/2"	1'-5"	4 1/2"			1"	
EF501	5	48	16'-3"	STR							
EF502	5	72	10'-6"	STR							
EF503	5	24	10'-11"	14	7"	10'-4"		5"			
EF504	5	24	9'-3"	STR							ADJUST AS NEEDED FOR BEAM SEAT ELEVATION ADJUSTMENTS
EF505	5	56	10'-9" TO 11'-9"	STR							VARY EA BY 7/8" (+); (4 SETS OF 14)
EF601	6	56	11'-4" TO 12'-4"	14	8"	10'-8" TO 11'-8"		6"			VARY B BY 7/8" (+); (4 SETS OF 14)
EW501	5	24	5'-0"	10	3'-0"	2'-0"					ADJUST AS NEEDED FOR BEAM SEAT ELEVATION ADJUSTMENTS
EW502	5	80	7'-1"	4	3'-3"	7"	3'-3"				ADJUST AS NEEDED FOR BEAM SEAT ELEVATION ADJUSTMENTS
EW503	5	42	10'-8"	STR							
EW504	5	36	15'-0"	STR							
EW505	5	36	14'-2"	STR							
EW506	5	24	13'-8"	STR							
EW507	5	40	6'-0"	10	3'-0"	3'-0"					
EW508	5	16	3'-6"	STR							

REBAR TYPES



- "•" DIMENSION ON 180° HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE, OTHERWISE STANDARD HOOKS ARE TO BE USED.
- FOR REINFORCEMENT BAR FABRICATION DETAILS, REFER TO STANDARD DRAWING BC-736M.
- FIGURES IN CIRCLES SHOW TYPES.
- "E" - INDICATES EPOXY COATED REBARS.
- FOR ALL BAR TYPES SHOWN, DIMENSIONS A-E AND LENGTH ARE MEASURED ALONG OUTSIDE OF BAR. R IS MEASURED ALONG INSIDE OF BAR.

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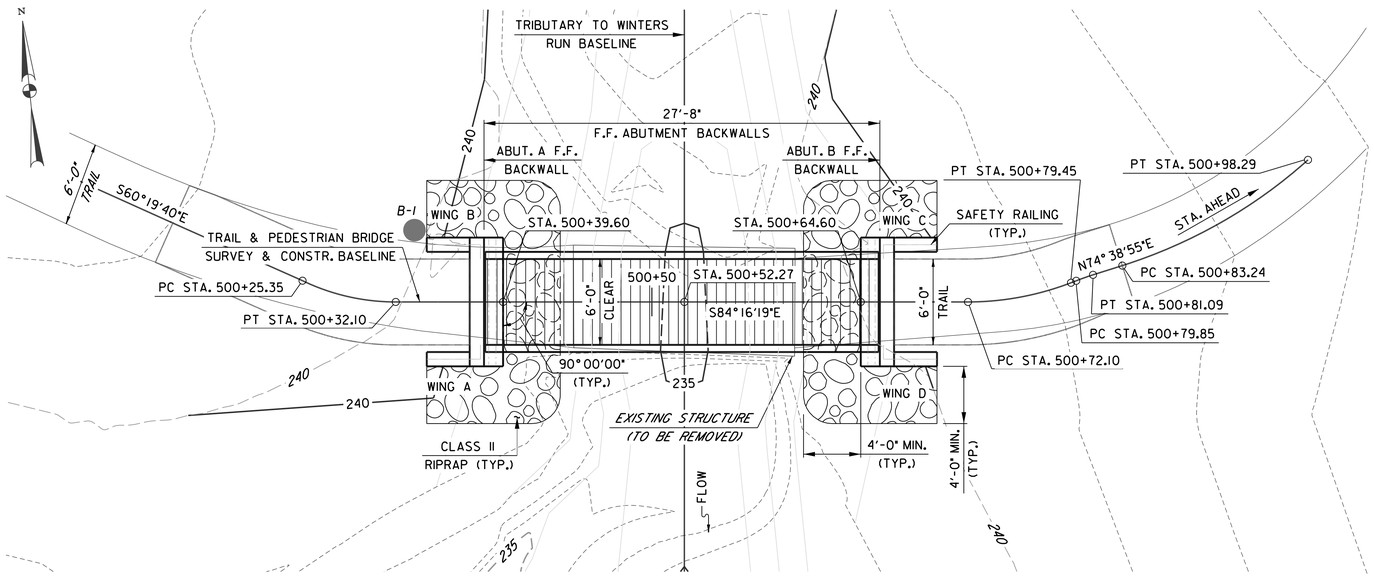
REVISIONS		
REV#	DATE	DESCRIPTION

HEAVENLY POND STREAM RESTORATION
DOWNSTREAM PEDESTRIAN BRIDGE - BR01
SAFETY RAILING DETAILS

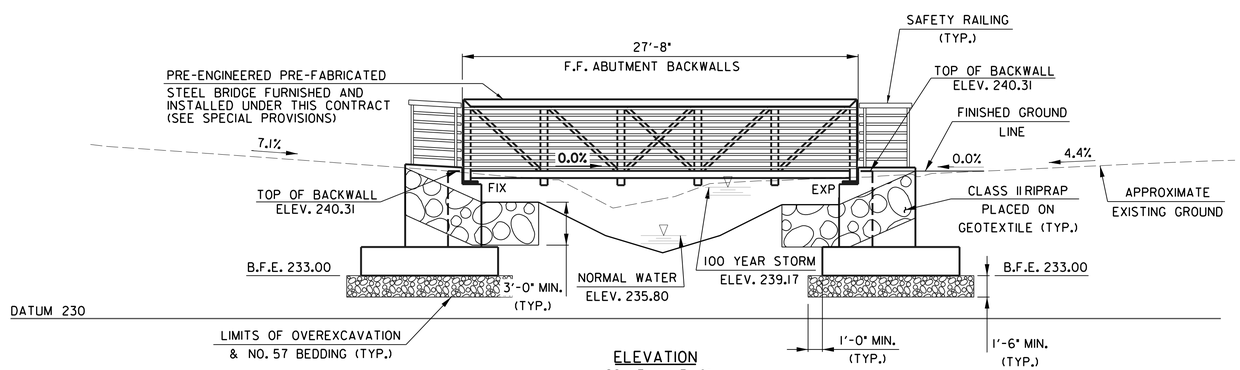
HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR, MARYLAND 21014
410-638-3127
SC PLAN #TBD

DATE	DRAWING NO.
7/12/19	
SCALE	
DESIGNED BY	
	SHEET 12 OF 58
DRAWN BY	FWA JOB NUMBER



PLAN
SCALE: 1" = 5'-0"

NOTE:
BORING LOCATION IS APPROXIMATE.



ELEVATION
SCALE: 1" = 5'-0"

TRAIL SURVEY & CONSTR. BASELINE HORIZONTAL CURVE DATA

PI STA. = 500+28.78
Δ = 25°45'14" LEFT
D = 381°58'19"
T = 3.43'
L = 6.74'
R = 15.0'
E = 0.39'
PC STA. = 500+25.35
PT STA. = 500+32.10

PI STA. = 500+75.82
Δ = 21°04'46" LEFT
D = 286°28'44"
T = 3.72'
L = 7.36'
R = 20.0'
E = 0.34'
PC STA. = 500+72.10
PT STA. = 500+79.45

HYDRAULIC DATA

DRAINAGE AREA = 0.12 SQ. MI.

Q100 = 286 CFS
100 YR. H.W. = 239.17 FT
V100 = 7.84 FT/S

EXISTING HYDRAULIC DATA

DRAINAGE AREA = 0.12 SQ. MI.

Q100 = 286 CFS
100 YR. H.W. = 243.56 FT
V100 = 2.02 FT/S

PRE-ENGINEERED BRIDGE STRUCTURE NOTES

18. THE BRIDGE SHALL BE DESIGNED, FABRICATED, DELIVERED AND ERECTED BY A FIRM EXPERIENCED IN PRE-ENGINEERED BRIDGE CONSTRUCTION.

19. ALL STEEL FOR THE BRIDGE STRUCTURE SHALL BE WEATHERING STEEL WITH A MINIMUM YIELD STRENGTH OF 50,000 PSI, SEE SPECIAL PROVISIONS.

20. PRIOR TO FABRICATION, THE CONTRACTOR SHALL SUBMIT THE FOLLOWING ITEMS TO THE ENGINEER FOR HIS REVIEW (SUBMITTED ITEMS SHALL BE PREPARED UNDER THE SUPERVISION OF, AND BEAR THE SEAL OF, A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MARYLAND):

    BRIDGE DESIGN CALCULATIONS INCLUDING A TABLE OF BRIDGE REACTIONS.

    ERECTION DRAWINGS TO INCLUDE DETAILS SHOWING FABRICATION AND ASSEMBLY OF THE PRE-ENGINEERING BRIDGE STRUCTURE.

    ANCHOR BOLT PLACEMENT DRAWING TO SHOW ALL ANCHOR BOLT LOCATIONS.

21. SHOP DRAWING SUBMITTALS FOR ALL MAJOR STRUCTURE COMPONENTS AND SYSTEMS SHALL BE INCLUDED AS A PART OF THE SCOPE OF THIS PROJECT AND MUST BE FORWARDED TO AND APPROVED BY THE STRUCTURAL ENGINEER PRIOR TO FABRICATION. CONTRACTOR SHALL ALLOW A MINIMUM OF 3 WEEKS IN THE SCHEDULE FOR ENGINEER'S REVIEW OF SHOP DRAWINGS.

22. ERECT THE BRIDGE TRUE TO LINE, LEVEL AND PLUMB. LEVEL BASE PLATES TO A TRUE PLANE WITH FULL BEARING TO THE SUPPORTING STRUCTURE. USE NON-SHRINK GROUT TO OBTAIN UNIFORM BEARING AND TO MAINTAIN A LEVEL BASE LINE ELEVATION.

GENERAL NOTES

SPECIFICATIONS:
1. MARYLAND STATE HIGHWAY ADMINISTRATION'S STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS DATED JULY 2019 INCLUDING ALL REVISIONS THEREOF AND ADDITIONS THERETO.

2. DESIGN IS IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SEVENTH EDITION, 2014.

LOADING:
3. THE BRIDGE STRUCTURE SHALL BE DESIGNED FOR THE FOLLOWING LOADS:
   UNIFORM LIVE LOAD: IN ACCORDANCE WITH THE AASHTO GUIDE SPECIFICATIONS DESIGN OF PEDESTRIAN BRIDGES.
   VEHICLE LIVE LOAD: H-5

CONCRETE:
4. ALL CONCRETE SHALL BE MIX NO. 3 (3,500 PSI).

5. ALL EXPOSED CORNERS OF CONCRETE SHALL BE CHAMFERED ¾" X ¾" WITH MILLED CHAMFER STRIPS EXCEPT ON UNEXPOSED FOOTINGS AND WHERE INDICATED BY THE FOLLOWING NOTATION ON THE PLANS "DO NOT CHAMFER".

REINFORCING STEEL:
6. REINFORCING STEEL SHALL BE DEFORMED, GRADE 60 BARS CONFORMING TO ASTM A615. ALL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH ASTM A775. TOUCH UP SCRATCHED OR DAMAGED EPOXY COATING IN THE FIELD PRIOR TO CLOSING UP FORM WORK AND PLACING CONCRETE. ALL FORM WORK, REINFORCING STEEL, AND INSERTS WILL BE CHECKED AND APPROVED PRIOR TO CONCRETE PLACEMENT.

7. MINIMUM COVER FOR ANY REINFORCING BAR SHALL BE 2" UNLESS OTHERWISE NOTED, WITH THE EXCEPTION OF BARS AT THE BOTTOM AND SIDES OF ALL FOOTINGS, WHICH SHALL HAVE 3" MINIMUM COVER.

8. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.

STRUCTURAL STEEL:
9. STRUCTURAL STEEL SHALL CONFORM TO A 709, GRADE 50W.

FOUNDATION NOTES

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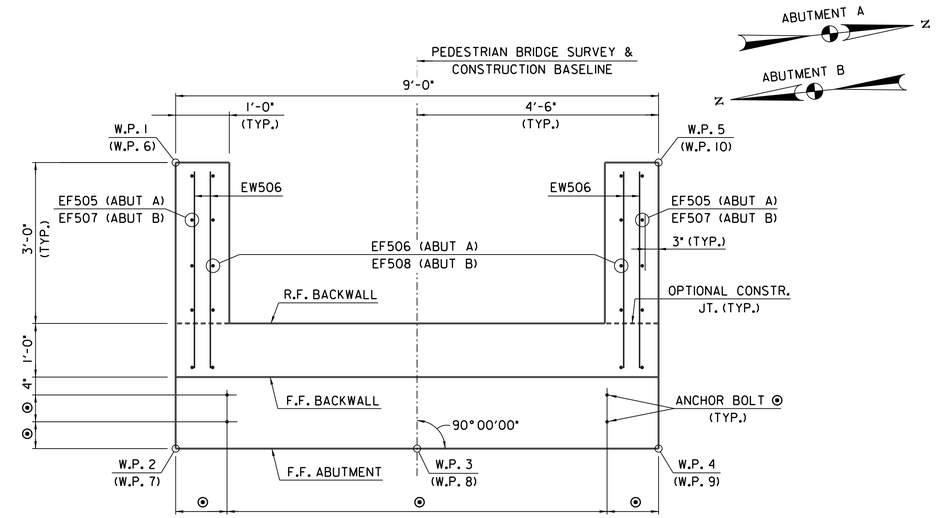
REV#	DATE	REVISIONS DESCRIPTION

HEAVENLY POND STREAM RESTORATION
UPSTREAM PEDESTRIAN BRIDGE - BR02
GENERAL PLAN, ELEVATION & TYPICAL SECTION

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR, MARYLAND 21014
410-638-3127
SCC PLAN #TBD

DATE 7/12/19	DRAWING NO.
SCALE AS INDICATED	
DESIGNED BY SDH/AJF	SHEET 13 OF 58
DRAWN BY TAD/AJF	FWA JOB NUMBER



NOTE:
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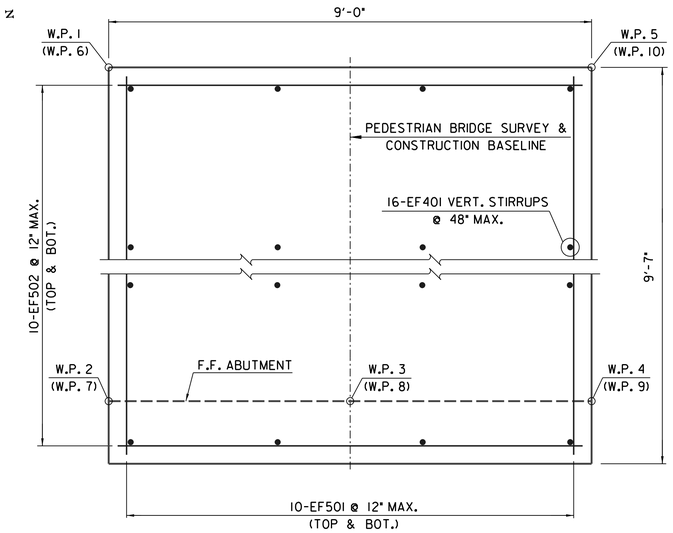
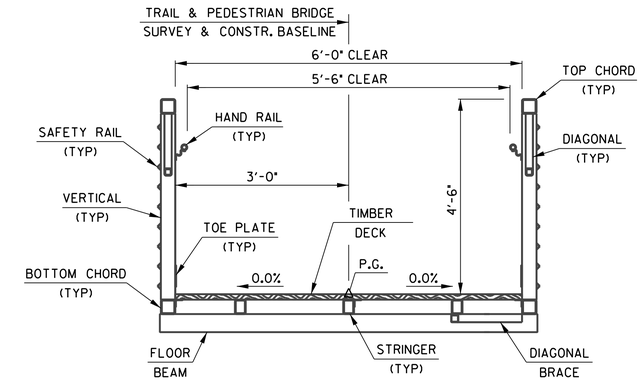
SECTION A-A
(INDICATES ABUTMENT B)
SCALE: 3/4" = 1'-0"

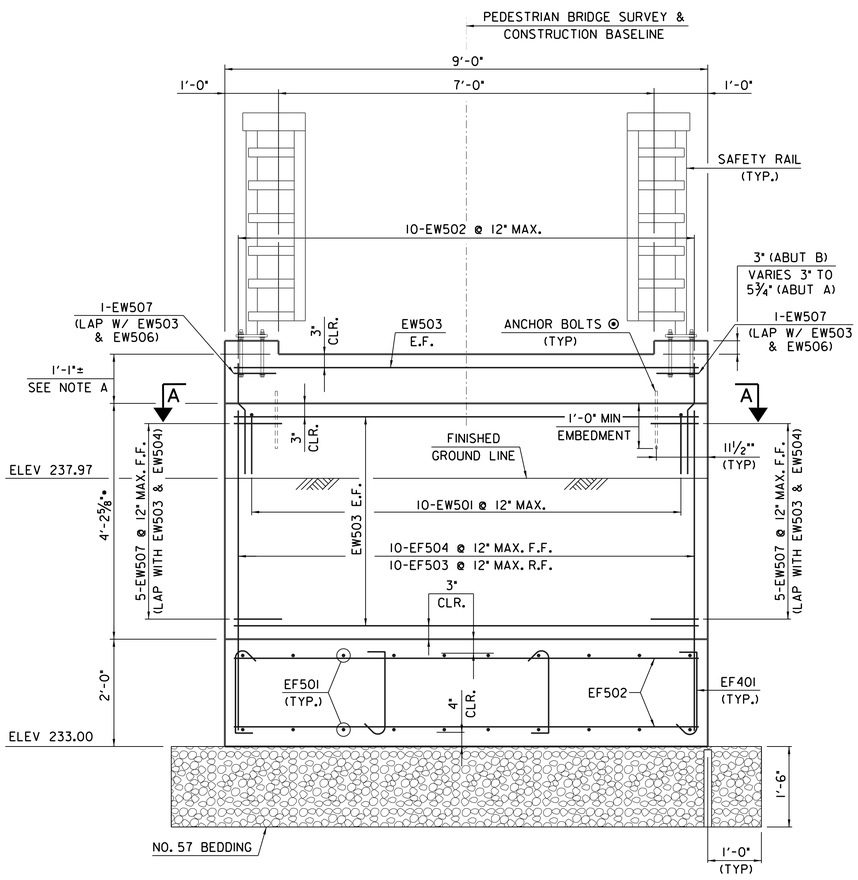


ABUTMENT A & B FOOTING PLAN
SCALE: 3/4" = 1'-0"



TRUSS SECTION
NOT TO SCALE

NOTES:
1. FOR GENERAL PLAN AND ELEVATION, SEE SHEET 13.
2. FOR REINFORCEMENT BAR SCHEDULE, SEE SHEET 15.
3. FOR SAFETY RAILING, SEE SHEET 15.



ABUTMENT A & B ELEVATION
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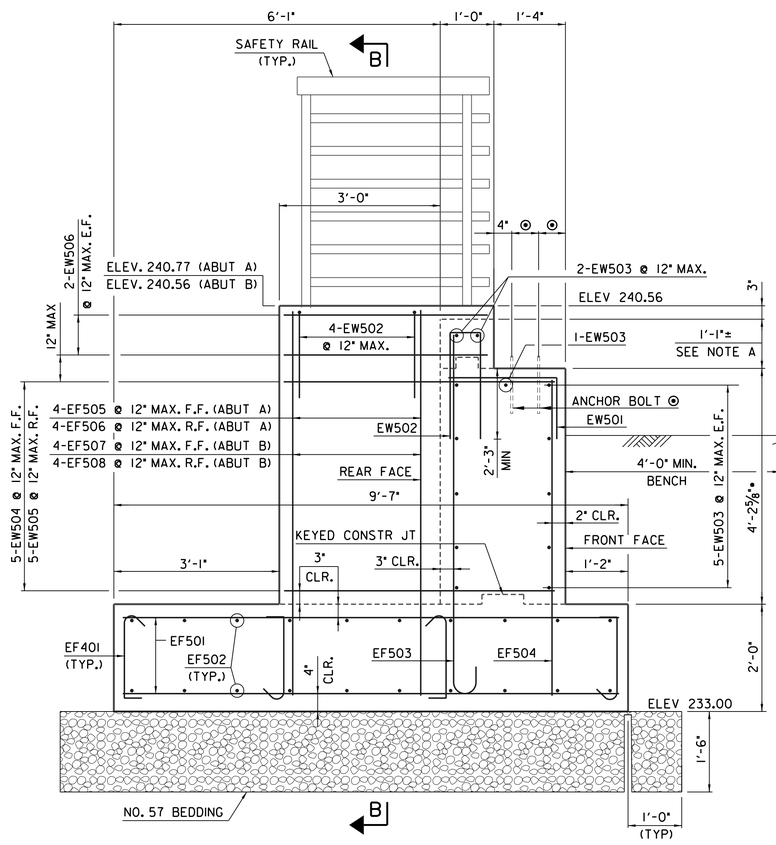
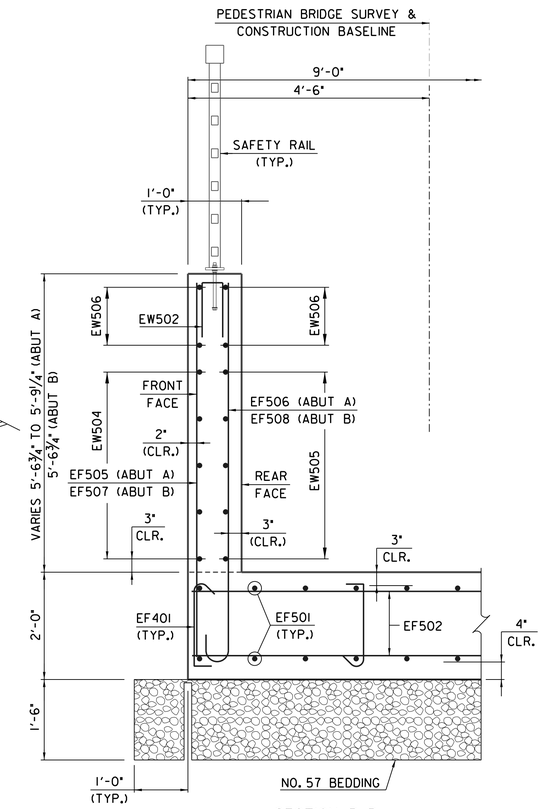
⊙ SIZE AND LOCATION TO BE DETERMINED BY MANUFACTURER.
NOTE A: COORDINATE WITH BRIDGE MANUFACTURER.



ABUTMENT A & B TYPICAL SECTION & WINGWALL ELEVATION
SCALE: 3/4" = 1'-0"



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

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

REV'N	DATE	DESCRIPTION

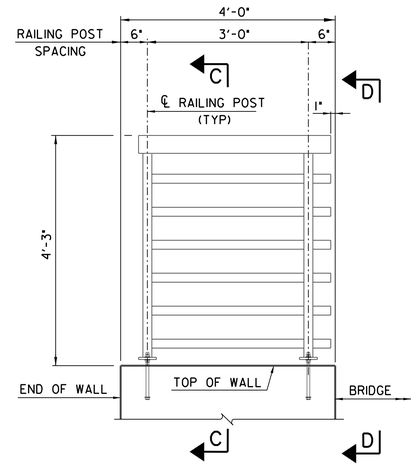
HEAVENLY POND STREAM RESTORATION

UPSTREAM PEDESTRIAN BRIDGE - BR02

ABUTMENT PLAN, ELEVATION & TYPICAL SECTION

HARFORD COUNTY
DEPARTMENT OF PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR, MARYLAND 21014
410-638-3277
SC PLAN #TBD

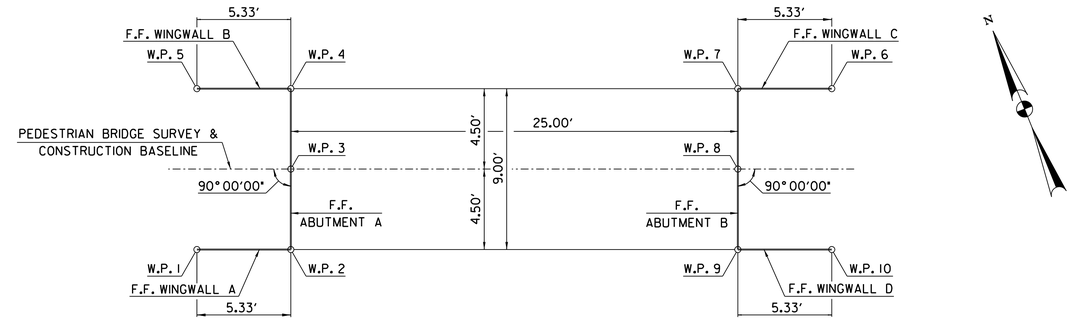
DATE	DRAWING NO.
7/12/19	
SCALE AS INDICATED	
DESIGNED BY SDH/AJF	SHEET 14 OF 58
DRAWN BY TAD/AJF	FWA JOB NUMBER



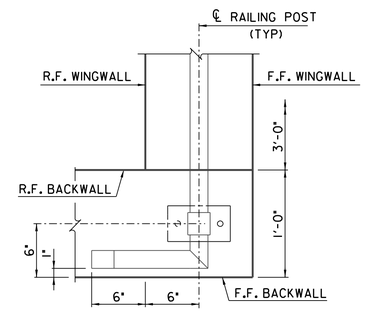
SAFETY RAILING ELEVATION
SCALE: 3/4" = 1'-0"

RAILING NOTES:

1. ALL POSTS AND RAILING SHALL BE HOT ROLLED STEEL CONFORMING TO A 787, G90. ALL RAIL AND POST MEMBERS SHALL BE STRUCTURAL STEEL TUBING CONFORMING TO A 500, GRADE B. ALL STEEL SHALL BE HOT DIPPED GALVANIZED IN CONFORMENCE WITH A 525, G90.
2. ALL ANCHOR PLATES SHALL BE STEEL CONFORMING TO A 709, GRADE 50.
3. ANCHOR STUDS OR ANCHOR BOLTS SHALL CONFORM TO A 276, TYPE 430 OR TYPE 304 STAINLESS STEEL ANNEALED, HOT-FINISHED, ULTIMATE STRENGTH 70,000 PSI MINIMUM, 20% MINIMUM ELONGATION. THREADS MAY BE ROLLED OR CUT.
4. ALL LONGITUDINAL RAILS SHALL BE PARALLEL TO TOP OF WALL.
5. ALL METAL SHALL BE PAINTED PER SECTION 435.
6. THE FINISHED COLOR SHOULD BE BROWN.
7. SAFETY RAIL SYSTEM AND ANCHORAGE TO BE DETERMINED BY CONTRACTOR (SEE SPECIAL PROVISIONS).



STAKE-OUT PLAN
NOT TO SCALE

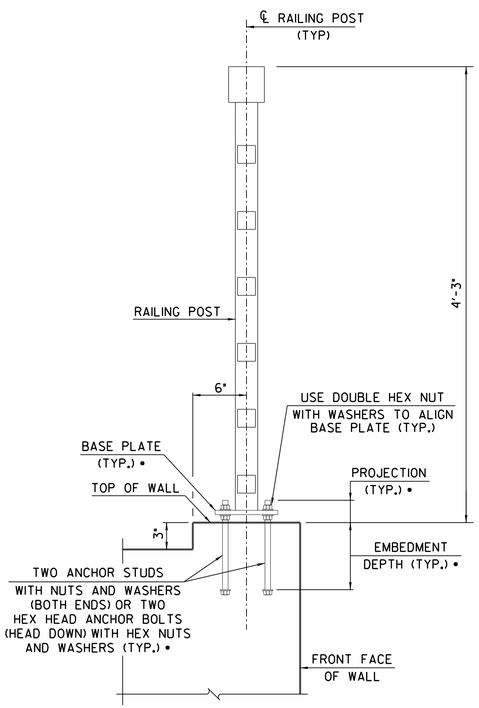


SECTION E-E
SCALE: 1 1/2" = 1'-0"

WORKPOINTS - BRIDGE				
W.P.	STATION	OFFSET	NORTHING	EASTING
1	500+34.26	4.50 RT	678286.2001	1488885.1801
2	500+39.60	4.50 RT	678285.6678	1488890.4867
3	500+39.60	0.00	678290.1454	1488890.9358
4	500+39.60	4.50 LT	678294.6229	1488891.3850
5	500+34.26	4.50 LT	678295.1552	1488886.0783
6	500+69.93	4.50 LT	678291.5955	1488921.5668
7	500+64.60	4.50 LT	678292.1278	1488916.2601
8	500+64.60	0.00	678287.6502	1488915.8110
9	500+64.60	4.50 RT	678283.1727	1488915.3619
10	500+69.93	4.50 RT	678282.6404	1488920.6686

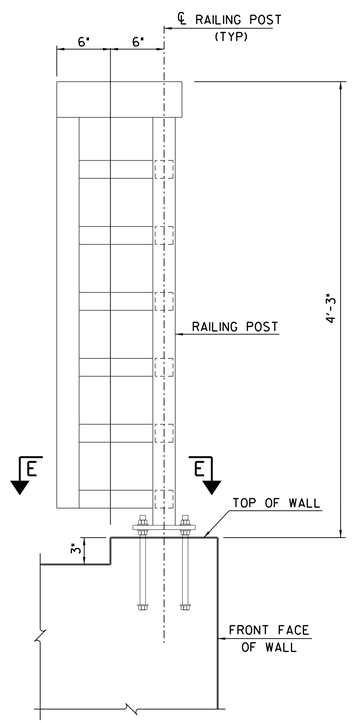
STAKE-OUT NOTE:

FOUR PLACE COORDINATES ARE FOR COMPUTATIONAL PURPOSES ONLY AND DO NOT IMPLY A PRECISION BEYOND TWO DECIMAL POINTS.



SECTION C-C
SCALE: 1 1/2" = 1'-0"

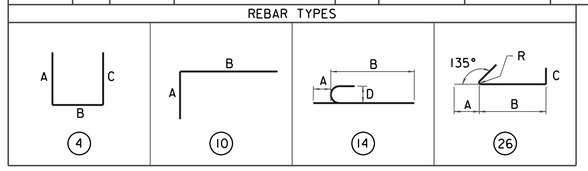
• SEE RAILING NOTE 7.



SECTION D-D
SCALE: 1 1/2" = 1'-0"

REINFORCEMENT BAR SCHEDULE											
MARK	SIZE	NUMBER	LENGTH	TYPE	A	B	C	D	E	R	REMARKS
EF401	4	32	2'-2"	26	4 1/2"	1'-5"	4 1/2"			1"	
EF501	5	40	9'-1"	STR							
EF502	5	40	8'-6"	STR							
EF503	5	20	7'-4"	14	7"	6'-9"		5"			
EF504	5	20	5'-8"	STR							ADJUST AS NEEDED FOR BEAM SEAT ELEVATION ADJUSTMENTS
EF505	5	8	7'-2" to 7'-4"	STR							VARY EA BY 5/8" (+); (2 SETS OF 4)
EF506	5	8	7'-8" TO 7'-10"	14	7"	7'-1" TO 7'-3"		5"			VARY B BY 5/8" (+); (2 SETS OF 4)
EF507	5	8	7'-1"	STR							
EF508	5	8	7'-7"	14	7"	7'-0"		5"			
EW501	5	20	5'-0"	10	3'-0"	2'-0"					ADJUST AS NEEDED FOR BEAM SEAT ELEVATION ADJUSTMENTS
EW502	5	36	7'-1"	4	3'-3"	7"	3'-3"				ADJUST AS NEEDED FOR BEAM SEAT ELEVATION ADJUSTMENTS
EW503	5	26	8'-8"	STR							
EW504	5	20	5'-0"	STR							
EW505	5	20	4'-2"	STR							
EW506	5	16	3'-8"	STR							
EW507	5	24	6'-0"	10	3'-0"	3'-0"					

REBAR TYPES



- "•" DIMENSION ON 180° HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE, OTHERWISE STANDARD HOOKS ARE TO BE USED.
- FOR REINFORCEMENT BAR FABRICATION DETAILS, REFER TO STANDARD DRAWING BC-736M.
- FIGURES IN CIRCLES SHOW TYPES.
- "E" - INDICATES EPOXY COATED REBARS.
- FOR ALL BAR TYPES SHOWN, DIMENSIONS A-E AND LENGTH ARE MEASURED ALONG OUTSIDE OF BAR. R IS MEASURED ALONG INSIDE OF BAR.

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

REV.#	DATE	DESCRIPTION

REVISIONS

HEAVENLY POND STREAM RESTORATION

UPSTREAM PEDESTRIAN BRIDGE - BR02

SAFETY RAILING DETAILS

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR, MARYLAND 21014
410-638-3127
SC PLAN #TBD

DATE	DRAWING NO.
7/12/19	
SCALE	
DESIGNED BY	
	SHEET 15 OF 58
DRAWN BY	FWA JOB NUMBER

NOTES FOR EXPLORATION LOGS

KEY TO USCS TERMINOLOGY AND GRAPHIC SYMBOLS

MAJOR DIVISIONS (BASED UPON ASTM D 2488)			SYMBOLS GRAPHIC	SYMBOLS LETTER
COARSE-GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LESS THAN 15% PASSING THE NO. 200 SIEVE)		GW
				GP
		GRAVELS WITH FINES (MORE THAN 15% PASSING THE NO. 200 SIEVE)		GM
				GC
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LESS THAN 15% PASSING THE NO. 200 SIEVE)		SW
				SP
		SANDS WITH FINES (MORE THAN 15% PASSING THE NO. 200 SIEVE)		SM
				SC
FINE-GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILT OR CLAY (<15% RETAINED ON THE NO. 200 SIEVE)	SILTS AND LEAN CLAYS LIQUID LIMIT LESS THAN 50		ML
				CL
				OL
	SILT OR CLAY WITH SAND OR GRAVEL (15% TO 30% RETAINED ON THE NO. 200 SIEVE)	ELASTIC SILTS AND FAT CLAYS LIQUID LIMIT GREATER THAN 50		MH
	SANDY OR GRAVELLY SILT OR CLAY (>30% RETAINED ON THE NO. 200 SIEVE)			CH
				OH
HIGHLY ORGANIC SOILS				PT

NOTE: DUAL SYMBOLS ARE USED TO INDICATE COARSE-GRAINED SOILS WHICH CONTAIN AN ESTIMATED 5 TO 15% FINES BASED ON VISUAL CLASSIFICATION OR BETWEEN 5 AND 12% FINES BASED ON LABORATORY SOILS WHEN THE PLOT OF LIQUID LIMIT & PLASTICITY INDEX VALUES FALLS IN THE PLASTICITY CHART'S CROSS-HATCHED AREA. FINE-GRAINED SOILS ARE CLASSIFIED AS ORGANIC (OL OR OH) WHEN ENOUGH ORGANIC PARTICLES ARE PRESENT TO INFLUENCE ITS PROPERTIES. LABORATORY TEST RESULTS ARE USED TO SUPPLEMENT SOIL CLASSIFICATION BY THE VISUAL-MANUAL PROCEDURES OF ASTM D 2488.

ADDITIONAL TERMINOLOGY AND GRAPHIC SYMBOLS

	DESCRIPTION		GRAPHIC SYMBOLS
ADDITIONAL DESIGNATIONS	TOPSOIL		
	MAN MADE FILL		
	GLACIAL TILL		
	COBBLES AND BOULDERS		
RESIDUAL SOIL DESIGNATIONS	DESCRIPTION	"N" VALUE	
	HIGHLY WEATHERED ROCK	50 TO 50/1"	
	PARTIALLY WEATHERED ROCK	MORE THAN 50 BLOWS FOR 1" OF PENETRATION OR LESS, AUGER PENETRABLE	

COARSE-GRAINED SOILS (GRAVEL AND SAND)

DESIGNATION	BLOWS PER FOOT (BPF) "N"
VERY LOOSE	0 - 4
LOOSE	5 - 10
MEDIUM DENSE	11 - 30
DENSE	31 - 50
VERY DENSE	>50

NOTE: "N" VALUE DETERMINED AS PER ASTM D 1586

FINE-GRAINED SOILS (SILT AND CLAY)

CONSISTENCY	BPF "N"
VERY SOFT	<2
SOFT	2 - 4
MEDIUM STIFF	5 - 8
STIFF	9 - 15
VERY STIFF	16 - 30
HARD	>30

NOTE: ADDITIONAL DESIGNATIONS TO ADVANCE SAMPLER INDICATED IN BLOW COUNT COLUMN:
WOH = WEIGHT OF HAMMER
WOR = WEIGHT OF ROD(S)

SAMPLE TYPE

DESIGNATION	SYMBOL
SOIL SAMPLE	S-
SHELBY TUBE	U-
ROCK CORE	R-

WATER DESIGNATION

DESCRIPTION	SYMBOL
ENCOUNTERED DURING DRILLING	▽
UPON COMPLETION OF DRILLING	▼
24 HOURS AFTER COMPLETION	▼

NOTE: WATER OBSERVATIONS WERE MADE AT THE TIME INDICATED. POROSITY OF SOIL STRATA, WEATHER CONDITIONS, SITE TOPOGRAPHY, ETC. MAY CAUSE WATER LEVEL CHANGES.

LOG OF BORING NO. B-1

PROJECT: **Heavenly Pond**
PROJECT NO.: **31161626**
PROJECT LOCATION: **Harford County, Maryland**

DATE STARTED: **8/8/2016**
DATE COMPLETED: **8/8/2016**
DRILLING CONTRACTOR: **MDA Drilling, Inc.**
DRILLER: **D. Addison**
DRILLING METHOD: **HSA/SPT**
SAMPLING METHOD: **Split-Spoon**

WATER LEVEL (ft): 7.0 | BOC
DATE: 8/8/16
CAVED (ft): 7.5

WATER ENCOUNTERED DURING DRILLING (ft) **None**
GROUND SURFACE ELEVATION: **240**
DATUM: **Topo**
EQUIPMENT: **B-57**
LOGGED BY: **E. Kussman**
CHECKED BY: **T. Wirth**

SAMPLE NUMBER	SAMPLE DEPTH (ft.)	SAMPLE RECOVERY (in.)	SAMPLE BLOWS/6 inches	N (blows/ft.)	ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
					240.0	0	FILL			Topsoil = 5 inches
S-1	1.0	15	3-5-8	13					Orange/ brown/ gray, moist, stiff, lean clay (FILL)	
S-2	3.5	16	6-8-6	14					Orange, moist, stiff, sandy lean clay (FILL)	
S-3	6.0	15	6-8-10	18	234.0	6	SM		Gray, moist, medium dense, Silty SAND	▽
S-4	8.5	18	8-10-15	25					Brown, moist, medium dense, Silty SAND	
						12				
S-5	13.5	14	3-5-10	15	225.0				Same	
						18			Boring Terminated at 15 feet	
						24				
						30				
						36				

NOTES: **Elevations and locations are approximate. BOC = Backfilled on completion.**

GEO-TECHNOLOGY ASSOCIATES, INC.
3445-A Box Hill Corporate Center Drive
Abingdon, MD 21009

LOG OF BORING NO. B-1

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

REVISIONS: REV# | DATE | DESCRIPTION

HEAVENLY POND STREAM RESTORATION
DOWNSTREAM PEDESTRIAN BRIDGE - BR01
BORING SHEET 1

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR, MARYLAND 21014
410-638-3227
SC PLAN #TBD

DATE: 7/12/19
DRAWING NO.
SCALE
DESIGNED BY
SHEET 16 OF 58
DRAWN BY
FWA JOB NUMBER

LOG OF BORING NO. B-2

Sheet 1 of 1

PROJECT: **Heavenly Pond**
PROJECT NO.: **31161626**
PROJECT LOCATION: **Harford County, Maryland**

WATER LEVEL (ft):	21.8	15.2	15.0
DATE:	8/8/16	8/10/16	8/18/16
CAVED (ft):	18.5	Pipe	Pipe

DATE STARTED: **8/8/2016**
DATE COMPLETED: **8/8/2016**
DRILLING CONTRACTOR: **MDA Drilling, Inc.**
DRILLER: **D. Addison**
DRILLING METHOD: **HSA/SPT**
SAMPLING METHOD: **Split-Spoon**

WATER ENCOUNTERED DURING DRILLING (ft) **24.0**
GROUND SURFACE ELEVATION: **242**
DATUM: **Topo**
EQUIPMENT: **B-57**
LOGGED BY: **E. Kussman**
CHECKED BY: **T. Wirth**

SAMPLE NUMBER	SAMPLE DEPTH (ft.)	SAMPLE RECOVERY (in.)	SAMPLE BLOWS/6 inches	N (blows/ft.)	ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
					242.0	0	FILL		Brown, moist, medium dense, silty sand (FILL)	Topsoil = 5 inches
S-1	0.0	15	3-6-9-13	15					Brown/ orange, moist, very stiff, sandy silt (FILL)	
S-2	2.0	24	5-6-10-9	16					Brown, moist, loose, silty sand (FILL)	
S-3	4.0	10	5-5-5-6	10					Grayish brown, moist, stiff, sandy silt (FILL)	
S-4	6.0	20	5-5-6-6	11		6			Grayish brown, moist, medium stiff, sandy silt (FILL)	
S-5	8.0	18	4-4-4-8	8					Grayish brown, moist, stiff, lean clay (FILL)	
S-6	10.0	20	6-6-9-10	15					Grayish brown, moist medium stiff, lean clay (FILL)	
S-7	12.0	16	5-3-3-4	6		12			Gray, moist, medium stiff, fat clay (FILL)	
S-8	14.0	20	3-2-5-16	7	226.0		SM		Orange, moist, loose, Silty SAND	
S-9	16.0	24	10-5-5-9	10		18			Orangish brown, moist, medium dense, Silty SAND	
S-10	18.0	20	10-10-14-18	24					Orange, moist dense, Silty SAND	
S-11	20.0	24	15-18-20-31	38			SM		Orange/ brown, moist, very dense, Silty SAND	
S-12	22.0	16	20-25-31-38	56		24			Orange/ brown, moist, dense, Silty SAND	
S-13	24.0	20	6-21-28-39	49	216.0		HW		Orangish brown, moist, very dense, Highly Weathered Rock	
S-14	26.0		21-39-50/4"						Same	
S-15	28.0	14	23-40-50/3"		212.0	30			Boring Terminated at 30 feet	
						36				

NOTES: **Elevations and locations are approximate. BOC = Backfilled on completion.**

GEO-TECHNOLOGY ASSOCIATES, INC.
3445-A Box Hill Corporate Center Drive
Abingdon, MD 21009

LOG OF BORING NO. B-2

Sheet 1 of 1

LOG OF BORING NO. B-3

Sheet 1 of 1

PROJECT: **Heavenly Pond**
PROJECT NO.: **31161626**
PROJECT LOCATION: **Harford County, Maryland**

WATER LEVEL (ft):	22.0	14.0	13.3
DATE:	8/8/16	8/10/16	8/18/16
CAVED (ft):	17.5	Pipe	Pipe

DATE STARTED: **8/8/2016**
DATE COMPLETED: **8/8/2016**
DRILLING CONTRACTOR: **MDA Drilling, Inc.**
DRILLER: **D. Addison**
DRILLING METHOD: **HSA/SPT**
SAMPLING METHOD: **Split-Spoon**

WATER ENCOUNTERED DURING DRILLING (ft) **22.0**
GROUND SURFACE ELEVATION: **242**
DATUM: **Topo**
EQUIPMENT: **B-57**
LOGGED BY: **E. Kussman**
CHECKED BY: **T. Wirth**

SAMPLE NUMBER	SAMPLE DEPTH (ft.)	SAMPLE RECOVERY (in.)	SAMPLE BLOWS/6 inches	N (blows/ft.)	ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
					242.0	0	FILL		Brown, moist, medium dense, silty sand (FILL)	Topsoil = 6 inches
S-1	0.0	8	4-5-8-12	13					Same (FILL)	
S-2	2.0	15	12-6-6-7	12					Grayish brown, moist, stiff, sandy silt (FILL)	
S-3	4.0	24	10-6-7-6	13		6			Grayish brown, moist, loose, silty sand (FILL)	
S-4	6.0	10	3-3-2-4	5					Grayish brown, moist, loose, silty sand (FILL)	
S-5	8.0	18	3-4-4-5	8					Brown, moist, loose, silty sand (FILL)	
S-6	10.0	18	3-4-4-5	8	230.0	12	SM		Brown, moist, medium dense, Silty SAND USDA - Sandy Loam	
S-7	12.0	20	4-4-7-10	11					Same	
S-8	14.0	19	6-6-7-9	13					Gray/ orange, moist, medium cense, Silty SAND	
S-9	16.0	17	6-10-12-12	22		18			Brown, moist, dense, Silty SAND	
S-10	18.0	24	10-14-18-25	32					Orange/ brown, moist, very dense, Silty SAND	
S-11	20.0	24	15-33-35-45	68					Orange/ white/ gray, moist, very dense, Silty SAND	
S-12	22.0	20	20-24-31-44	55	218.0	24	HW		Gray/ brown/ orange, moist, very dense, Highly Weathered Rock	
S-13	24.0	10	12-31-50/4"						Gray, moist, very dense, Highly Weathered Rock	
S-14	26.0	8	28-50/4"						Same	
S-15	28.0	8	50-50/3"		212.0	30			Boring Terminated at 30 feet	
						36				

NOTES: **Elevations and locations are approximate. BOC = Backfilled on completion.**

GEO-TECHNOLOGY ASSOCIATES, INC.
3445-A Box Hill Corporate Center Drive
Abingdon, MD 21009

LOG OF BORING NO. B-3

Sheet 1 of 1

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

REVISIONS

REV#	DATE	DESCRIPTION

HEAVENLY POND STREAM RESTORATION

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR, MARYLAND 21014
410-638-3277
SC PLAN #TBD

DATE 7/12/19	DRAWING NO.
SCALE	
DESIGNED BY	SHEET 17 OF 58
DRAWN BY	FWA JOB NUMBER

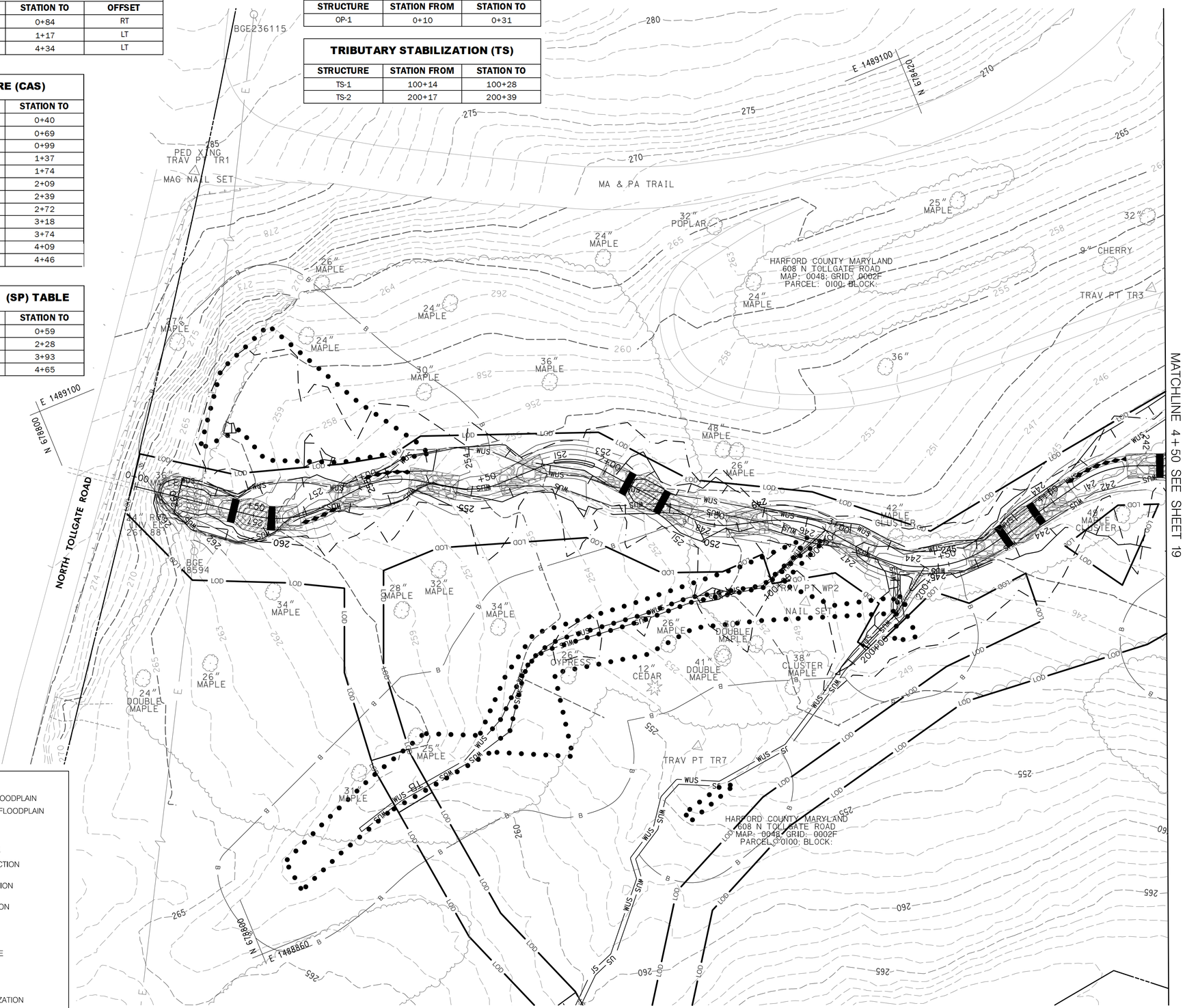
BANK PROTECTION (TBP) SCHEDULE			
STRUCTURE	STATION FROM	STATION TO	OFFSET
TBP-1	0+69	0+84	RT
TBP-2	0+99	1+17	LT
TBP-3	4+09	4+34	LT

OUTFALL POOL (OP)		
STRUCTURE	STATION FROM	STATION TO
OP-1	0+10	0+31

TRIBUTARY STABILIZATION (TS)		
STRUCTURE	STATION FROM	STATION TO
TS-1	100+14	100+28
TS-2	200+17	200+39

CASCADE STRUCTURE (CAS)		
STRUCTURE	STATION FROM	STATION TO
CAS-1	0+31	0+40
CAS-2	0+59	0+69
CAS-3	0+84	0+99
CAS-4	1+17	1+37
CAS-5	1+54	1+74
CAS-6	1+99	2+09
CAS-7	2+28	2+39
CAS-8	2+55	2+72
CAS-9	2+97	3+18
CAS-10	3+58	3+74
CAS-11	3+93	4+09
CAS-12	4+34	4+46

STEP-POOL STRUCTURE (SP) TABLE		
STRUCTURE	STATION FROM	STATION TO
SP-1	0+40	0+59
SP-2	2+09	2+28
SP-3	3+74	3+93
SP-4	4+46	4+65



SEE E&S SHEETS FOR CONTINUATION OF ACCESS PATH

LEGEND

- EXISTING 100 YEAR FLOODPLAIN
- PROPOSED 100 YEAR FLOODPLAIN
- WETLAND BOUNDARY
- WETLAND BUFFER
- CLAY CHANNEL BLOCK
- TOE BOULDER PROTECTION
- OVERFLOW STABILIZATION
- TRIBUTARY STABILIZATION
- CASCADE STRUCTURE
- STEP-POOL STRUCTURE
- RIFFLE STABILIZATION
- WOOD RIFFLE STABILIZATION
- OUTFALL POOL
- PARK TRAIL

NOTES:

1. STRUCTURE PLACEMENTS SHOWN ON PLANS ARE FOR VISUALIZATION PURPOSES ONLY. SEE TABLES, PROFILES AND CROSS SECTIONS FOR THE PLACEMENT OF STRUCTURES. CHANGES IN FIELD CONDITIONS MAY WARRANT FIELD CHANGES AS DIRECTED BY HARFORD COUNTY.
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3. MA AND PA TRAIL TO REMAIN OPEN DURING CONSTRUCTION.

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

REVISIONS

REV#	DATE	DESCRIPTION

HEAVENLY POND STREAM RESTORATION

PLAN SHEET

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR MARYLAND 21014
410-638-3217
SC PLAN #59839
GR PERMIT #15366-2018

DATE	DRAWING NO.
2/12/20	
SCALE	
1" = 20'	
DESIGNED BY	
MRM	SHEET 18 OF 58
DRAWN BY	FWA JOB NUMBER
MER	

CLAY CHANNEL BLOCK (CCB)			
STRUCTURE	STATION FROM	STATION TO	OFFSET
CCB-1	8+72	9+25	RT

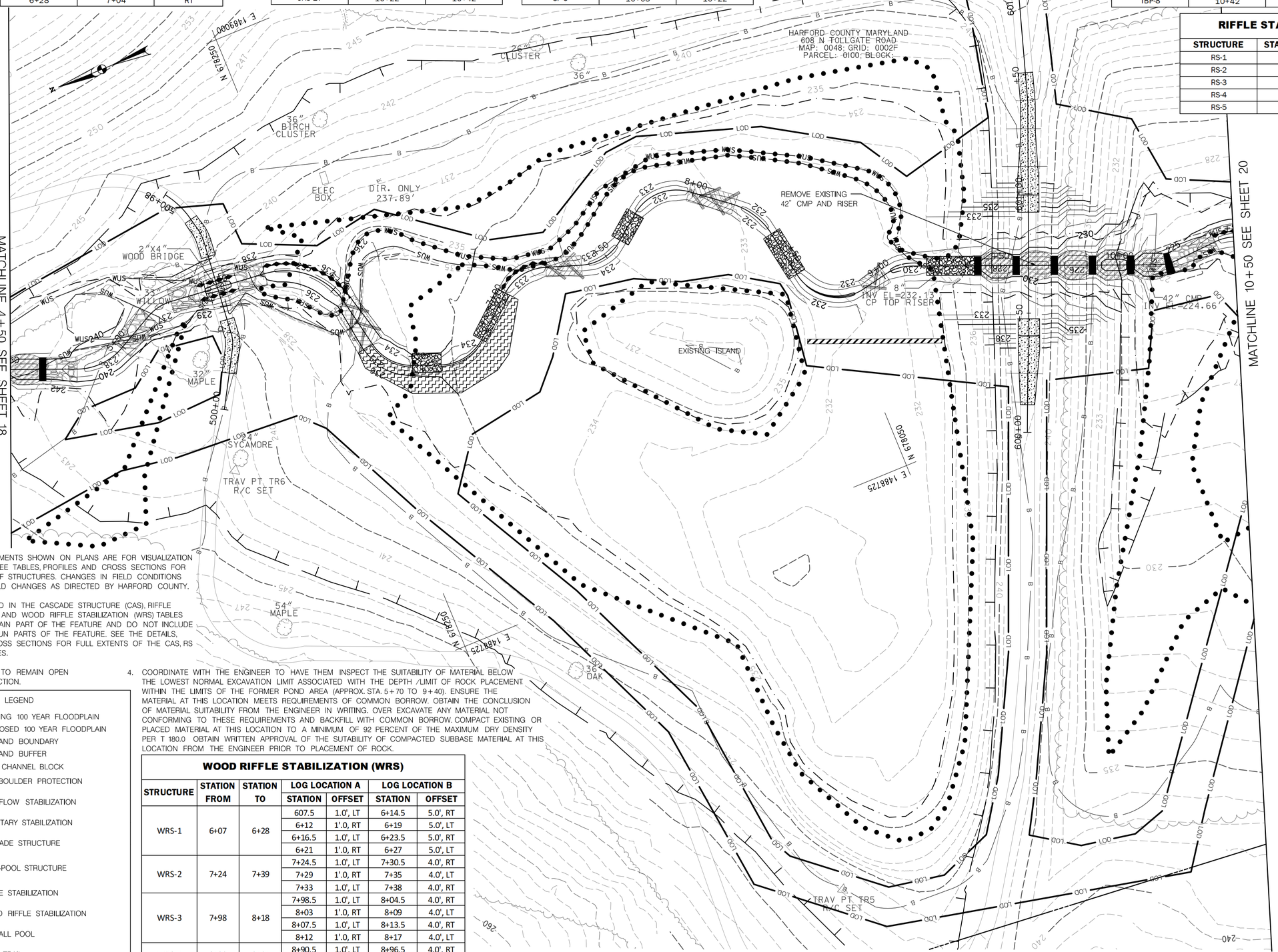
OVERFLOW STABILIZATION (OS)			
STRUCTURE	STATION FROM	STATION TO	OFFSET
OS-1	6+28	7+04	RT

CASCADE STRUCTURE (CAS)		
STRUCTURE	STATION FROM	STATION TO
CAS-13	4+65	4+78
CAS-14	4+99	5+17
CAS-15	5+28	5+40
CAS-16	5+57	5+69
CAS-17	10+22	10+42

STEP-POOL STRUCTURE (SP) TABLE		
STRUCTURE	STATION FROM	STATION TO
SP-5	9+39	9+55
SP-6	9+55	9+71
SP-7	9+71	9+87
SP-8	9+87	10+03
SP-9	10+03	10+22

BANK PROTECTION (TBP) SCHEDULE			
STRUCTURE	STATION FROM	STATION TO	OFFSET
TBP-4	5+40	5+57	RT
TBP-5	5+40	5+57	LT
TBP-6	5+69	6+07	LT
TBP-7	7+03	7+24	LT
TBP-8	10+42	10+69	LT

RIFFLE STABILIZATION (RS)		
STRUCTURE	STATION FROM	STATION TO
RS-1	6+48	6+60
RS-2	6+81	7+03
RS-3	7+59	7+72
RS-4	8+38	8+58
RS-5	9+19	9+39



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3. MA AND PA TRAIL TO REMAIN OPEN DURING CONSTRUCTION.
4. COORDINATE WITH THE ENGINEER TO HAVE THEM INSPECT THE SUITABILITY OF MATERIAL BELOW THE LOWEST NORMAL EXCAVATION LIMIT ASSOCIATED WITH THE DEPTH /LIMIT OF ROCK PLACEMENT WITHIN THE LIMITS OF THE FORMER POND AREA (APPROX. STA. 5+70 TO 9+40). ENSURE THE MATERIAL AT THIS LOCATION MEETS REQUIREMENTS OF COMMON BORROW. OBTAIN THE CONCLUSION OF MATERIAL SUITABILITY FROM THE ENGINEER IN WRITING. OVER EXCAVATE ANY MATERIAL NOT CONFORMING TO THESE REQUIREMENTS AND BACKFILL WITH COMMON BORROW. COMPACT EXISTING OR PLACED MATERIAL AT THIS LOCATION TO A MINIMUM OF 92 PERCENT OF THE MAXIMUM DRY DENSITY PER T 180.0 OBTAIN WRITTEN APPROVAL OF THE SUTABILITY OF COMPACTED SUBBASE MATERIAL AT THIS LOCATION FROM THE ENGINEER PRIOR TO PLACEMENT OF ROCK.

LEGEND

- EXISTING 100 YEAR FLOODPLAIN
- PROPOSED 100 YEAR FLOODPLAIN
- WETLAND BOUNDARY
- WETLAND BUFFER
- CLAY CHANNEL BLOCK
- TOE BOULDER PROTECTION
- OVERFLOW STABILIZATION
- TRIBUTARY STABILIZATION
- CASCADE STRUCTURE
- STEP-POOL STRUCTURE
- RIFFLE STABILIZATION
- WOOD RIFFLE STABILIZATION
- OUTFALL POOL
- PARK TRAIL

WOOD RIFFLE STABILIZATION (WRS)						
STRUCTURE	STATION FROM	STATION TO	LOG LOCATION A		LOG LOCATION B	
			STATION	OFFSET	STATION	OFFSET
WRS-1	6+07	6+28	607.5	1.0', LT	6+14.5	5.0', RT
			6+12	1'.0, RT	6+19	5.0', LT
			6+16.5	1.0', LT	6+23.5	5.0', RT
			6+21	1'.0, RT	6+27	5.0', LT
WRS-2	7+24	7+39	7+24.5	1.0', LT	7+30.5	4.0', RT
			7+29	1'.0, RT	7+35	4.0', LT
			7+33	1.0', LT	7+38	4.0', RT
WRS-3	7+98	8+18	7+98.5	1.0', LT	8+04.5	4.0', RT
			8+03	1'.0, RT	8+09	4.0', LT
			8+07.5	1.0', LT	8+13.5	4.0', RT
			8+12	1'.0, RT	8+17	4.0', LT
WRS-4	8+90	9+01	8+90.5	1.0', LT	8+96.5	4.0', RT
			8+95	1'.0, RT	9+00	4.0', LT

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PLAN SHEET

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS

WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR MARYLAND 21014
410-638-3677
SCC PLAN #59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE 1" = 20'	
DESIGNED BY MRM	SHEET 19 OF 58
DRAWN BY MER	FWA JOB NUMBER

BANK PROTECTION (TBP) SCHEDULE			
STRUCTURE	STATION FROM	STATION TO	OFFSET
TBP-9	12+54	12+63	RT
TBP-10	12+65	12+88	RT
TBP-11	13+12	13+47	LT

RIFFLE STABILIZATION (RS)		
STRUCTURE	STATION FROM	STATION TO
RS-6	11+85	12+00
RS-7	13+47	13+67

CASCADE STRUCTURE (CAS)		
STRUCTURE	STATION FROM	STATION TO
CAS-18	10+69	10+84
CAS-19	11+10	11+28
CAS-20	12+88	13+12

TRIBUTARY STABILIZATION (TS)		
STRUCTURE	STATION FROM	STATION TO
TS-3	300+34	300+48
TS-4	400+19	400+58

WOOD RIFFLE STABILIZATION (WRS)						
STRUCTURE	STATION FROM	STATION TO	LOG LOCATION A		LOG LOCATION B	
			STATION	OFFSET	STATION	OFFSET
WRS-5	11+49	11+65	11+49	1.0', LT	11+56	4.5', RT
			11+54	1'.0, RT	11+60.5	4.5', LT
			11+58.5	1.0', LT	11+64	4.5', RT
WRS-6	12+20	12+54	12+21	1.0', LT	12+27.5	4.5', RT
			12+27.5	1'.0, RT	12+34	4.5', LT
			12+34	1.0', LT	1240.5	4.5', RT
			12+40.5	1'.0, RT	12+47	4.5', LT
			12+47	1.0', LT	12+52.5	4.5' RT

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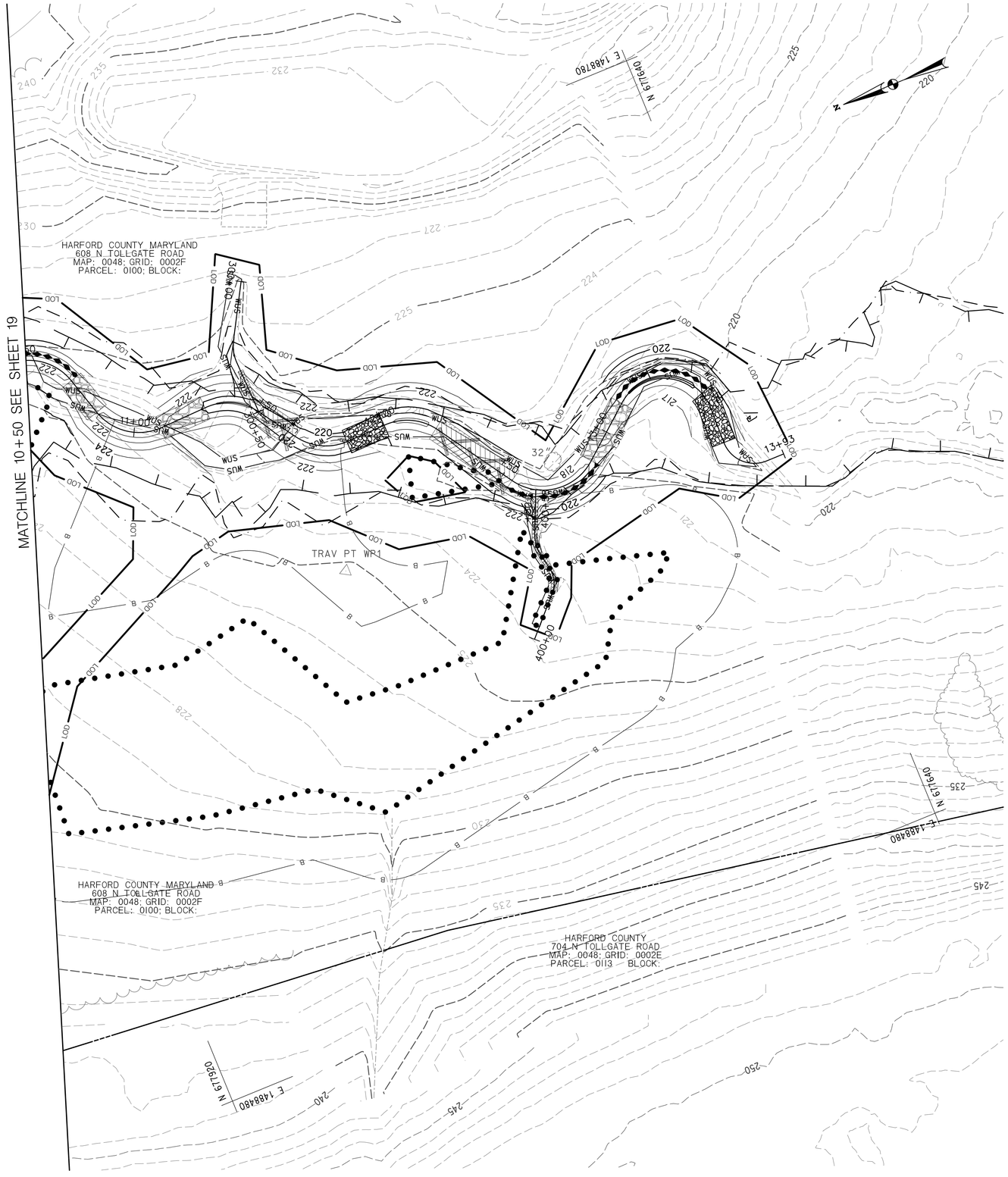
- PARK TRAIL



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EROSION AND SEDIMENT CONTROL – GENERAL NOTES

SEQUENCE OF CONSTRUCTION

1. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST FIVE (5) DAYS PRIOR TO THE START OF WORK.

2. THE CONTRACTOR SHALL NOTIFY THE HARFORD COUNTY CONSTRUCTION INSPECTION DIVISION (410) 612-1612 AND WATER AND SEWER DIVISION (410) 638-3300; A MINIMUM OF 24 HOURS PRIOR TO THE START OF ANY CONSTRUCTION. THE CONTRACTOR SHALL ALSO NOTIFY THE MARYLAND DEPARTMENT OF ENVIRONMENT INSPECTOR AT (301) 665-2850, FIVE (5) DAYS BEFORE ANY LAND DISTURBING ACTIVITY

3. ORANGE CONSTRUCTION FENCE SHALL BE MANUALLY INSTALLED WHERE INDICATED ON THE PLANS AND ALONG THE OUTER LOD PERIMETER. THIS SHALL BE COMPLETED BY AND INSPECTED AT THE PRECONSTRUCTION MEETING.

4. THE CONTRACTOR SHALL COORDINATE AN ON-SITE PRE-CONSTRUCTION MEETING WHICH SHALL INCLUDE, BUT NOT BE LIMITED TO, THE COUNTY PROJECT MANAGER, THE ENGINEER, AND THE EROSION AND SEDIMENT CONTROL INSPECTOR.

5. THE CONTRACTOR SHALL REFER TO STANDARD NO. MD 104.00-13 GENERAL NOTE 11 FOR CONSTRUCTION ACCESS CONSIDERATIONS.

PHASE 1 UPSTREAM OF POND (STA 0+00 TO STA 5+40)

1. CONSTRUCT THE PERIMETER CONTROLS AS SHOWN ON THE PLAN INCLUDING STABILIZED CONSTRUCTION ENTRANCES, SILT FENCE, AND SILT FENCE ON PAVEMENT. CLEARING ONLY THE AREAS NEEDED TO INSTALL THE E&S CONTROLS. CARE SHALL BE TAKEN TO MINIMIZE DISTURBANCE TO ALL TREES.

2. AS THE PERIMETER CONTROLS ARE INSTALLED, CLEAR AND GRUB ACCESS ROADS ALONG PROJECT AREA. ACCESS ROADS SHALL BE STABILIZED AT THE END OF EACH WORK DAY WITH WOOD MULCH. NO DISTURBED AREA SHALL BE LEFT OVERNIGHT UNLESS DIRECTED TO AN APPROVED EROSION AND SEDIMENT CONTROL DEVICE. STAGING AND STORAGE AREAS MAY BE CLEARED AND UTILIZED AS NEEDED.

3. ALL STREAM CROSSING SHALL BE CONDUCTED WITHIN THE DIVERSION AREA OR WITH A TEMPORARY ACCESS BRIDGE.

4. STREAM RESTORATION SHALL PROCEED UPSTREAM TO DOWNSTREAM UTILIZING SANDBAG DAMS WITH PUMP AROUNDS TO ALLOW ACCESS INTO THE STREAM. WORK AREA SHALL BE DEWATERED AND PUMPED TO AN APPROVED DEWATERING DEVICE. AT THE END OF EACH DAY ALL DISTURBED AREAS SHALL BE STABILIZED UNLESS DIRECTED TO AN APPROVED EROSION AND SEDIMENT CONTROL DEVICE. AREAS WITHIN THE CHANNEL SHALL BE STABILIZED WITH STREAM BED MATERIAL. CHANNEL BANKS SHALL BE STABILIZED WITH MATTING. NO PUMPING OPERATIONS SHALL BE UTILIZED DURING OFF WORK HOURS.

PHASE 2 - POND (STA 5+40 TO 9+20)

1. STREAM RESTORATION SHALL PROCEED UPSTREAM TO DOWNSTREAM UTILIZING SANDBAG DAMS WITH PUMP AROUNDS TO ALLOW ACCESS INTO THE STREAM. WORK AREA SHALL BE DEWATERED AND PUMPED DIRECTLY INTO THE EXISTING RISER STRUCTURE/TO AN APPROVED DEWATERING DEVICE. AS FIELD CONDITIONS WARRANT AND WITH PRIOR, WRITTEN APPROVAL FROM THE ENGINEER, INSTALL CONTINGENT DEWATERING TRENCHES TO CONTROL SATURATED CONDITIONS FOR EFFECTIVE CONSTRUCTION. AT THE END OF EACH DAY ALL DISTURBED AREAS SHALL BE STABILIZED UNLESS DIRECTED TO AN APPROVED EROSION AND SEDIMENT CONTROL DEVICE. AREAS WITHIN THE CHANNEL SHALL BE STABILIZED WITH STREAM BED MATERIAL. CHANNEL BANKS SHALL BE STABILIZED WITH MATTING. NO PUMPING OPERATIONS SHALL BE UTILIZED DURING OFF WORK HOURS.

PHASE 3 - DOWNSTREAM OF POND (STA 9+20 TO 13+25)

1. MOUNTABLE BERMS SHALL BE INSTALLED TO ALLOW THE INSTALLATION OF DISCHARGE HOSE THROUGH THE TEMPORARY ACCESS PATH. ALTERNATIVES TO THE MOUNTABLE BERMS MAY BE ACCEPTABLE AT THE DISCRETION OF THE SEDIMENT CONTROL INSPECTOR.

2. ALL STREAM CROSSING SHALL BE CONDUCTED WITHIN THE DIVERSION AREA OR WITH A TEMPORARY ACCESS BRIDGE.

3. STREAM RESTORATION SHALL PROCEED UPSTREAM TO DOWNSTREAM UTILIZING SANDBAG DAMS WITH PUMP AROUNDS TO ALLOW ACCESS INTO THE STREAM. WORK AREA SHALL BE DEWATERED AND PUMPED TO AN APPROVED DEWATERING DEVICE. AT THE END OF EACH DAY ALL DISTURBED AREAS SHALL BE STABILIZED UNLESS DIRECTED TO AN APPROVED EROSION AND SEDIMENT CONTROL DEVICE. AREAS WITHIN THE CHANNEL SHALL BE STABILIZED WITH STREAM BED MATERIAL. CHANNEL BANKS SHALL BE STABILIZED WITH MATTING. NO PUMPING OPERATIONS SHALL BE UTILIZED DURING OFF WORK HOURS.

4. UPON COMPLETION OF WORK PERMANENTLY STABILIZE ALL DISTURBED AREAS FROM ALL PHASES AS SHOWN ON THE LANDSCAPE PLANS.

5. WHEN AREAS ARE FULLY STABILIZED, AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR, REMOVE THE REMAINING SEDIMENT CONTROL DEVICES AND IMMEDIATELY STABILIZE ANY DISTURBED AREAS.

PUMPS SHALL ONLY OPERATE DURING APPROVED WORKING HOURS

SITE ANALYSIS

TOTAL SITE AREA:	2.94 AC
TOTAL DISTURBED AREA:	2.94 AC
AREA TO BE PAVED:	0.00 AC
AREA TO BE STABILIZED:	2.94 AC
CUT:	1,670 CY
FILL:	530 CY
TOPSOIL:	967 CY
NPDES ID PT. N: 678178.798	E: 1488883.677

PERMANENT VEGETATIVE STABILZATION

ALL DISTURBED AREAS, WHICH ARE NOT TO BE PAVED, SHALL BE PERMANENTLY STABILIZED AS FOLLOWS:

A) SEEDBED PREPARATION:
LOOSEN UPPER THREE INCHES BY RAKING, DISCING, OR OTHER ACCEPTABLE MEANS AFTER SPREADING FOUR INCHES OF TOPSOIL.

B) SOIL AMENDMENTS:
APPLY 500 LBS PER ACRE OF 10-10-10 FERTILIZER AND TWO TONS PER ACRE OF LIME.

C) SEEDING:*
FOR PERIODS OF MARCH I TO MAY 15 AND AUGUST 15 TO OCTOBER 15, SEED WITH 125 LBS PER ACRE OF TALL FESCUE, 15 LBS PER ACRE OF PERENNIAL RYEGRASS, AND 10 LBS OF KENTUCKY BLUEGRASS.

FOR PERIOD OF MAY 16 TO AUGUST 14, SEED WITH 110 LBS PER ACRE OF TALL FESCUE AND 3 LBS PER ACRE OF WEEPING LOVEGRASS.

FOR PERIOD OF OCTOBER 16 TO FEBRUARY 28, PROTECT SITE BY: OPTIONS - 1) 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, 2) USE SOD, OR 3) SEED WITH 60 LBS PER ACRE OF TALL FESCUE AND MULCH WITH 2 TONS PER ACRE OF WELL ANCHORED STRAW.
NOTE: FOR QUICK COVER WITH TALL FESCUE, ADD 2 LBS OF SMALL GRAIN PER 1,000 SQ. FT.

D) MULCHING SPECIFICATIONS:
MULCH SHALL BE APPLIED TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.

APPLY 2 TONS PER ACRE OF STRAW OVER ALL SEEDED AREAS. IF A MULCH ANCHORING TOOL IS TO BE USED, THE RATE SHALL BE INCREASED TO 2.5 TONS PER ACRES. **

MULCH ANCHORING SHALL BE PERFORMED IMMEDIATELY FOLLOWING MULCH APPLICATION TO MINIMIZE LOSS BY WIND AND WATER. THE TYPE OF MULCH ANCHORING USED MUST COMPLY WITH THE 2011 MARYLAND STANDARD AND SPECIFICATIONS.

* IF OTHER SEED MIXES ARE TO BE SUBSTITUTED, THEY MUST COMPLY WITH THE 2011 MARYLAND STANDARD AND SPECIFICTAIONS, CHAPTER B, TABLE B-3 (PAGES B 26 TO B 31)
** IF A DIFFERENT TYPE OF MULCH IS TO BE USED, IT MUST COMPLY WITH THE 2011 MARYLAND STANDARD AND SPECIFICTION, CHAPTER B: MULCHING (PAGES B 6 & B 7)

TEMPORARY VEGETATION STABILIZATION

TEMPORARY VEGETATION STABILIZATION
A) SEEDBED PREPARATION:
LOOSEN UPPER THREE INCHES BY DISCING, RAKING OR OTHER ACCEPTABLE MEANS.

B) SOIL AMENDMENTS:
APPLY 600 LBS PER ACRE OF 10-10-10 FERTILIZER AND TWO TONS PER ACRE OF LIME.

C) SEEDING: *
FOR PERIODS OF MARCH 1 TO APRIL 30 AND AUGUST 15 TO NOVEMBER 15, SEED WITH 2.5 BU PER ACRE OF CEREAL RYE PLUS 30 LBS PER ACRE OF TALL FESCUE OR 5 LBS PER ACRE OF REDTOP OR 20 LBS PER ACRE OF PERENNIAL RYEGRASS.

FOR PERIOD OF MAY 1 TO AUGUST 14, SEED WITH 3 LBS PER ACRE OF WEEPING LOVEGRASS OR 40 LBS PER ACRE OF JAPANESE OR FOXTAIL MILLET.

FOR THE PERIOD OF NOVEMBER 16 TO FEBRUARY 28, PROTECT THE SITE BY APPLYING TWO TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING OR USE SOD.

D) MULCHING SPECIFICATIONS:
MULCH SHALL BE APPLIED TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.

APPLY 2 TONS PER ACRE OF STRAW OVER ALL SEEDED AREAS. IF A MULCH ANCHORING TOOL IS TO BE USED, THE RATE SHALL BE INCREASED TO 2.5 TONS PER ACRES. **

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HARFORD COUNTY SEDIMENT CONTROL NOTES

1. THE CONTRACTOR/OWNER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS. FURTHER, NO CONSTRUCTION ACTIVITY SHALL TAKE PLACE UNTIL ALL REQUIRED PERMITS HAVE BEEN OBTAINED.

2. THE LIMITS OF DISTURBANCE SHALL BE CLEARLY DELINEATED IN THE FIELD PRIOR TO GRADING OF THE SITE TO ENSURE COMPLIANCE WITH APPROVED PLANS. ALL FOREST RETENTION AREAS WILL BE DELINEATED WITH BLAZE ORANGE FENCE AS WELL AS ANY SWM INFILTRATION PRACTICE PRIOR TO ANY CLEARING. WORK BEYOND THE LIMITS OF DISTURBANCE AND IN ANY AREA INSIDE THE FOREST RETENTION AND SWM INFILTRATION AREA IS CONSIDERED TO BE A VIOLATION OF THIS PLAN.

3. ALL SEDIMENT CONTROL PRACTICES MUST BE INSTALLED PRIOR TO ANY CONSTRUCTION ACTIVITY. UPON COMPLETION OF THE INSTALLATION OF PERIMETER SEDIMENT CONTROL PRACTICES THE SITE MUST BE INSPECTED BY THE DEPARTMENT OF PUBLIC WORKS (DPW). NO ADDITIONAL CONSTRUCTION ACTIVITY WILL BE AUTHORIZED WITHOUT THE APPROVAL FROM DPW.

4. ALL POINTS OF INGRESS AND EGRESS SHALL BE PROTECTED TO PREVENT TRACKING OF MUD INTO PUBLIC WAYS. DURING CONSTRUCTION, EVERY MEANS WILL BE TAKEN TO CONTROL SOIL EROSION AND SILTATION. IF NECESSARY A WASH RACK MAY NEED TO BE ESTABLISHED.

5. EARTH DIKES, SEDIMENT TRAPS, ETC. WILL BE LOCATED AS SHOWN ON THESE DRAWINGS. FIELD CHANGES AND MINOR ADJUSTMENTS ARE PERMISSIBLE AS LONG AS THE INSTALLATION FUNCTIONS AND CONFORMS TO SPECIFICATIONS. THE SITE INSPECTOR PRIOR TO INSTALLATION MUST APPROVE ALL SUCH CHANGES. MAJOR CHANGES TO THE APPROVED PLAN WILL REQUIRE RE-APPROVAL BY THE HARFORD SOIL CONSERVATION DISTRICT.

6. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:
   A) THREE CALENDAR DAYS ON SLOPES GREATER THAN 3:1, ALL WATERWAYS AND TO THE SURFACE OF ALL PERIMETER CONTROLS.
   B) SEVEN CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS OF THE PROJECT SITE.

7. DUST CONTROL MUST BE MANAGED AS PART OF ALL SEDIMENT CONTROL PLANS. FAILURE TO DO SO IS A VIOLATION OF THIS PLAN.

8. SEDIMENT BASINS MUST BE BUILT TO DESIGN SPECIFICATIONS SHOWN ON THE PLAN. IF THE BASIN IS TO BE USED AS A FUTURE SWM FACILITY, THE BASIN WILL BE BUILT IN ACCORDANCE WITH THE LATEST MD-378 STANDARDS AND SPECIFICATIONS. SPECIFIED MATERIALS MUST BE USED. NO CHANGES OR MODIFICATIONS WILL BE MADE WITHOUT WRITTEN AUTHORIZATION OF THE HARFORD SOIL CONSERVATION DISTRICT.

9. TEMPORARY FENCING SHALL BE PLACED AROUND ALL SEDIMENT BASINS, TRAPS, AND PONDS DURING CONSTRUCTION AND SITE GRADING.

10. AT THE END OF EACH WORKING DAY ALL SEDIMENT CONTROL PRACTICES WILL BE INSPECTED AND LEFT OPERATIONAL. A WEEKLY LOG WILL BE KEPT IN ACCORDANCE WITH NOI/NPDES REGULATIONS. A COPY OF THE APPROVED SEDIMENT CONTROL PLANS SHALL BE AVAILABLE AT THE SITE AT ALL TIMES.

11. ENSURE POSITIVE DRAINAGE TO ALL ROAD INLETS DURING ALL PHASES OF ROAD CONSTRUCTION TO ENSURE POSITIVE FLOW TO TRAPS AND OR BASINS.

12. CUT AND/OR FILL SHALL BE DONE IN CONFORMANCE WITH 2011 EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS FOR LAND GRADING.

13. SURFACE FLOWS OVER CUT AND FILL SLOPES SHALL BE CONTROLLED BY EITHER REDIRECTING FLOWS FROM TRAVERSING THE SLOPES OR BY INSTALLING MECHANICAL DEVICES TO SAFELY CONVEY WATER DOWN SLOPES WITHOUT CAUSING EROSION.

14. OFF-SITE WASTE OR BORROW AREAS SHALL HAVE AN APPROVED EROSION AND SEDIMENT CONTROL PLAN PRIOR TO THE IMPORT OR EXPORT OF MATERIAL TO/FROM THE PROJECT SITE.

15. ALL MATERIAL ORIGINATING FROM THE DEVELOPMENT OF THE PROPERTY AND DEPOSITED ON THE PUBLIC RIGHT-OF-WAY SHALL BE IMMEDIATELY REMOVED.

16. STORM DRAIN INLETS AND OUTLETS SHALL BE PROTECTED PER 2011 EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS.

17. TOPSOIL, LIMING, FERTILIZING, SEEDING, MULCHING, SOD, ETC. ARE ALL ESSENTIAL PARTS OF THE SEDIMENT CONTROL PLAN AND MUST BE COMPLETED ALONG WITH ALL OTHER PRACTICES.

18. TRAPS TO BE REMOVED SHALL BE DEWATERED AS PER THE 2011 EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS.

19. PRIOR TO REMOVAL OF TRAPS OR CONVERSION OF SEDIMENT BASINS TO SWM FACILITIES, THE STORM DRAINS WILL BE FLUSHED

20. SEDIMENT CONTROL PRACTICES WILL BE MAINTAINED UNTIL ALL DISTURBED AREAS FOR WHICH THE PRACTICES WERE INSTALLED HAVE BEEN STABILIZED. SEDIMENT CONTROL PRACTICES MAY BE REMOVED ONLY WITH THE AUTHORIZATION OF THE DPW INSPECTOR. ALL DISTURBED AREAS RESULTING FROM THE REMOVAL OF SEDIMENT CONTROL DEVICES SHALL BE STABILIZED IMMEDIATELY. REMOVAL PRIOR TO INSPECTOR'S APPROVAL CONSTITUTES A VIOLATION.

ENGINEER'S CERTIFICATION
I certify that this plan for erosion and sediment control and storm water management represents a practical and workable plan based on my personal knowledge of the site conditions and that it was prepared in accordance with the 2011 Maryland Standard and Specifications for Soil Erosion and Sediment Control.

(Engineer / Date)

OWNER'S CERTIFICATION
I / We certify that all development and construction will be done according to this plan of development and plan for erosion and sediment control and that any responsible personnel involved in the construction project will have a certification of attendance at a Department of Natural Resources Approved Training Program for the control of sediment and erosion before beginning the project. I also authorize periodic onsite inspection by the Harford Soil Conservation District or their authorized agents, or as deemed necessary

(Owner / Date)

EROSION AND SEDIMENT CONTROL PLAN #: 59839

RECOMENDED FOR APPROVAL:

HARFORD COUNTY, DPW

TECHNICAL CONCURRENCE:

HARFORD SOIL CONSERVATION DISTRICT

APPROVED:

HARFORD SOIL CONSERVATION DISTRICT

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

REV#	DATE	DESCRIPTION

REVISIONS

HEAVENLY POND
STREAM RESTORATION

EROSION AND SEDIMENT
GENERAL NOTES SHEET

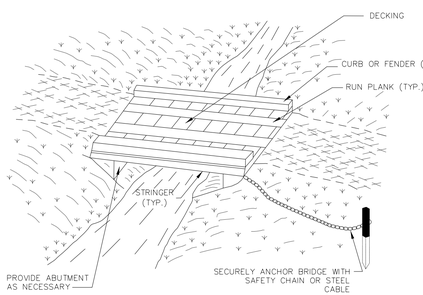
HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS

WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR, MARYLAND 21014
410-638-3377
SCP PLAN #59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 21 OF 58
DRAWN BY MER	FWA JOB NUMBER

DETAIL H-4-1 TEMPORARY ACCESS BRIDGE

STANDARD SYMBOL TB



LOCATION PLAN

NOTE:
TIME OF YEAR RESTRICTIONS DO NOT APPLY TO THE CONSTRUCTION OR REMOVAL OF A TEMPORARY ACESS BRIDGE UNLESS THERE IS DISTURBANCE TO THE STREAM CHANNEL.

1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL H-4-1 TEMPORARY ACCESS BRIDGE

CONSTRUCTION SPECIFICATIONS

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

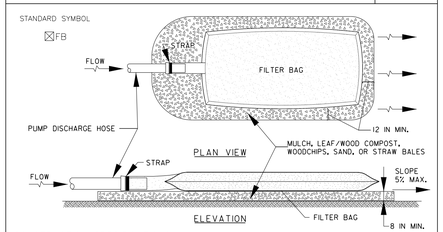
2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL F-4 FILTER BAG (FB)

STANDARD SYMBOL FB



CONSTRUCTION SPECIFICATIONS

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

GRAB TENSILE	250 LB	ASTM D-4632
PUNCTURE	150 LB	ASTM D-4833
FLOW RATE	70 GAL/MIN/FT^2	ASTM D-4491
PERMITTIVITY (SEC^{-1})	1.2 SEC^{-1}	ASTM D-4491
UV RESISTANCE	70% STRENGTH @ 500 HOURS	ASTM D-4355
APPARENT OPENING SIZE (AOS)	0.15-0.18 MM	ASTM D-4751
SEAM STRENGTH	90%	ASTM D-4632

6. REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

BEST MANAGEMENT PRACTICES FOR WORKING IN NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, AND 100-YEAR FLOODPLAIN

1. NO EXCESS FILL, CONSTRUCTION MATERIAL, OR DEBRIS SHALL BE STOCKPILED OR STORED IN NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.

2. PLACE MATERIALS IN A LOCATION AND MANNER WHICH DOES NOT ADVERSELY IMPACT SURFACE OR SUBSURFACE WATER FLOW INTO OR OUT OF THE NONTIDAL WETLAND, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.

3. DO NOT USE THE EXCAVATED MATERIAL AS BACKFILL IF IT CONTAINS WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE. IF ADDITIONAL BACKFILL IS REQUIRED, USE CLEAN MATERIAL FREE OF WASTE METAL PRODUCTS, UNSIGHTLY DEBRIS, TOXIC MATERIAL, OR ANY OTHER DELETERIOUS SUBSTANCE.

4. PLACE HEAVY EQUIPMENT ON MATS OR SUITABLY OPERATE THE EQUIPMENT TO PREVENT DAMAGE TO THE NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, WATERWAYS, OR THE 100-YEAR FLOODPLAIN.

5. REPAIR AND MAINTAIN ANY SERVICEABLE STRUCTURE OR FILL SO THERE IS NO PERMANENT LOSS OF NONTIDAL WETLANDS, NONTIDAL WETLAND BUFFERS, OR WATERWAYS, OR PERMANENT MODIFICATION OF THE 100-YEAR FLOODPLAIN IN EXCESS OF THAT LOST UNDER THE ORIGINALLY AUTHORIZED STRUCTURE OR FILL.

6. RECTIFY ANY NONTIDAL WETLANDS, WETLAND BUFFERS, WATERWAYS, OR 100-YEAR FLOODPLAIN TEMPORARILY IMPACTED BY ANY CONSTRUCTION.

7. ALL STABILIZATION IN THE NONTIDAL WETLAND AND NONTIDAL WETLAND BUFFER SHALL CONSIST OF THE FOLLOWING SPECIES: ANNUAL RYEGRASS (LOLIUM MULTIFLORUM), MILLET (SETARIA ITALICA), BARLEY (HORDEUM SP.), OATS (UNIOLA SP.), AND/OR RYE (SECALE CEREALE). THESE SPECIES WILL ALLOW FOR THE STABILIZATION OF THE SITE WHILE ALSO ALLOWING FOR THE VOLUNTARY REVEGETATION OF NATURAL WETLAND SPECIES. OTHER NON-PERSISTENT VEGETATION MAY BE ACCEPTABLE, BUT MUST BE APPROVED BY THE NONTIDAL WETLANDS AND WATERWAYS DIVISION. KENTUCKY 31 FESCUE SHALL NOT BE UTILIZED IN WETLAND OR BUFFER AREAS. THE AREA SHOULD BE SEEDED AND MULCHED TO REDUCE EROSION AFTER CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED.

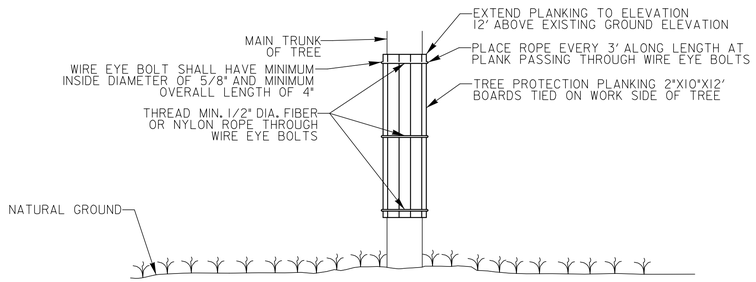
8. AFTER INSTALLATION HAS BEEN COMPLETED, MAKE POST-CONSTRUCTION GRADES AND ELEVATIONS THE SAME AS THE ORIGINAL GRADES AND ELEVATIONS IN TEMPORARILY IMPACTED AREAS.

9. TO PROTECT AQUATIC SPECIES, IN-STREAM WORK IS PROHIBITED AS DETERMINED BY THE CLASSIFICATION OF THE STREAM:

USE IV-P WATERS: IN-STREAM WORK SHALL NOT BE CONDUCTED DURING THE PERIOD MARCH 1 THROUGH MAY 31, INCLUSIVE, DURING ANY YEAR.

10. STORMWATER RUNOFF FROM IMPERVIOUS SURFACES SHALL BE CONTROLLED TO PREVENT THE WASHING OF DEBRIS INTO THE WATERWAY.

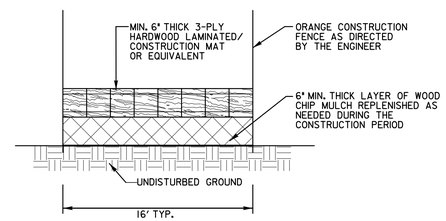
11. CULVERTS SHALL BE CONSTRUCTED AND ANY RIPRAP PLACED SO AS NOT TO OBSTRUCT THE MOVEMENT OF AQUATIC SPECIES, UNLESS THE PURPOSE OF THE ACTIVITY IS TO IMPOUND WATER.



NOTE:
FOR TREE PROTECTION PLANKING, AS DIRECTED BY THE ENGINEER, TIE WITH 1/2" DIAMETER ROPE (FIBER OR NYLON), SUFFICIENT 2"X10"X12' BOARDS AROUND MAIN TRUNK OF TREE TO PROTECT ALL AREAS EXPOSED TO CONSTRUCTION. IN THE EVENT THAT 2"X10"X12' BOARDS ARE TOO LARGE FOR A TREE, 2"X10"X6', 2"X10"X8' OR 2"X10"X10' BOARDS MAY BE USED AS DIRECTED BY THE ENGINEER

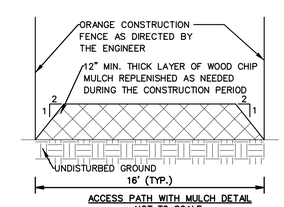
TREE PROTECTION PLANKING DETAIL

NOT TO SCALE



ACCESS PATH WITH SWAMP/TIMBER MATS DETAIL

NOT TO SCALE

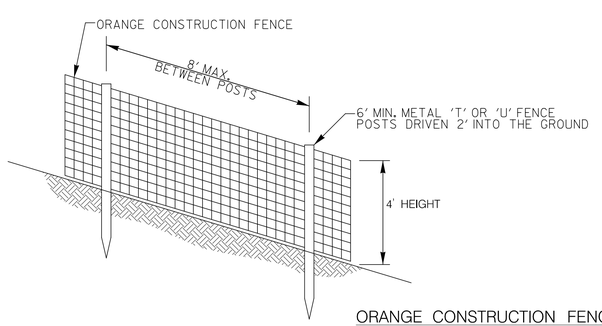


ACCESS PATH WITH MULCH DETAIL

NOT TO SCALE

ACCESS PATH DETAIL NOTES:

1. MATS SHALL BE PLACED END TO END TO FORM A CONTINUOUS SPAN FOR THE ENTIRE LENGTH OF THE AREA TO BE PROTECTED.
2. MATS SHALL BE INSPECTED FREQUENTLY AND MAINTAINED OR REPLACED AS NECESSARY TO ENSURE THEIR PROPER FUNCTION.
3. INDIVIDUAL MATS SHALL BE SECURELY CONSTRUCTED WITH INDIVIDUAL COMPONENT LAYERS BOLTED, CABLED OR OTHERWISE SECURELY FASTENED. ACCESS ROUTES TO BE TO BE VERIFIED BY ENGINEER AT PRE-CONSTRUCTION MEETING. MINOR ADJUSTMENTS TO THE ALIGNMENT THAT MINIMIZES TREE DISTURBANCE ARE ENCOURAGED AND REQUIRE REVIEW AND APPROVAL BY THE ENGINEER AND THE SEDIMENT CONTROL INSPECTOR.
4. AS FIELD CONDITIONS WARRANT, ADDITIONAL WOOD CHIP MULCH (EXCEEDING THE MINIMUM 6" OR 12" AS INDICATED IN THE DETAILS ABOVE) MAY BE REQUIRED AT THE DISCRETION OF THE SEDIMENT CONTROL INSPECTOR TO AVOID RUTTING OF THE SOIL SURFACE.
5. SWAMP MATS ARE REQUIRED WHEN CROSSING WETLANDS.
6. AS FIELD CONDITIONS WARRANT, SWAMP/TIMBER MATS IN ADDITION TO THOSE INDICATED ON THE PLANS MAY BE NECESSARY AT NO ADDITIONAL COST TO THE COUNTY.
7. CONTRACTOR SHALL MAINTAIN MULCH MAT THROUGHOUT CONSTRUCTION PERIOD. UPON COMPLETION OF THE PROJECT, MULCH CAN REMAIN IN PLACE, BEING SPREAD THROUGHOUT THE SITE AT A MAXIMUM DEPTH OF 2". THE CONTRACTOR MUST ENSURE THAT THIS PROCESS IS DONE THROUGHOUT THE GRADING PROCESS, IN A MANNER WHICH ENSURES PROPOSED GRADES ARE MET AND MAINTAINED, WITHOUT DISTURBANCE TO FINAL SEEDING AND PLANTING OF THE SITE.
8. SCARIFICATION OF COMPACTED MULCH TO OCCUR UPON REMOVAL OF ACCESS PATH, AT DIRECTION OF THE ENGINEER. IF SOILS ARE EXPOSED AND RUTTED BELOW MULCH MATTING, CONTRACTOR TO ADDRESS ACCORDINGLY TO RESTORE NATURAL CONDITIONS. STABILIZE ALL EXPOSED SOIL WITH APPROPRIATE PERMANENT SEED MIX, AS DEFINED IN THE LANDSCAPE PLANS. SOIL STABILIZATION MATTING MAY BE REQUIRED AT THE DISCRETION OF THE SEDIMENT CONTROL INSPECTOR TO STABILIZE SLOPED AREAS.
9. THE ACCESS PATH IS DESIGNED TO PREVENT COMPACTION OF EXISTING SOILS USING LOW PRESSURE EQUIPMENT WHICH EXERTS NO MORE THAN 12 PSI. IF THE CONTRACTOR INTENDS TO USE ANY EQUIPMENT WITH HIGHER LOADS, ADDITIONAL PROTECTION MEASURES MUST BE PROVIDED, AT NO ADDITIONAL COST TO THE COUNTY, AND THOSE MEASURES MUST BE APPROVED BY THE ENGINEER PRIOR TO IMPLEMENTATION.



NOTES:

1. PRACTICE MAY BE COMBINED WITH SEDIMENT CONTROL FENCING.
2. LOCATION AND LIMITS OF FENCING SHALL BE COORDINATED IN FIELD WITH ENGINEER.
3. BOUNDARIES OF PROTECTION AREA SHALL BE STAKED PRIOR TO INSTALLING PROTECTIVE DEVICE.
4. FENCING SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION.
5. ROOT DAMAGE SHALL BE AVOIDED.
6. SECURE FENCING TO POSTS USING TENSION WIRE OR REINFORCED PLASTIC TIE OF GAUGE SUFFICIENT TO PREVENT TEARING OF FENCING FROM POSTS.

ORANGE CONSTRUCTION FENCE DETAIL

NOT TO SCALE

EROSION & SEDIMENT CONTROL LEGEND

PROPOSED ℄	1+00
LIMIT OF DISTURBANCE/ ORANGE CONSTRUCTION FENCE	LOD
SILT FENCE	SF SF
SILT FENCE ON PAVEMENT	SFOP
STABILIZED CONSTRUCTION ENTRANCE	SCE
DEWATERING PUMP	DW
CLEAR WATER PUMP	CWP
DIVERSION/PUMP AROUND HOSE	
SANDBAG DAM	
EXISTING MAJOR CONTOURS	290
EXISTING MINOR CONTOURS	292
PROPOSED MAJOR CONTOURS	295
PROPOSED MINOR CONTOURS	292
SUPER SILT FENCE	SSF SSF
PROPOSED 100 YEAR FLOOD PLAIN	
EXISTING 100 YEAR FLOOD PLAIN	
TEMPORARY ACCESS BRIDGE (TB)	
WATERS OF THE US	WUS
DEWATERING FILTER BAG	FB
PUMP DISCHARGE OUTFALL PROCECTION	OP
ACCESS PATH WITH MULCH	
ACCESS PATH WITH SWAMP/TIMBER MATS	
TEMPORARY ACCESS BRIDGE	TB
TREE PROTECTION PLANKING	P
TREE TO BE REMOVED	
MOUNTABLE BERM	
WETLAND BOUNDARY	
WETLAND BUFFER	B

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

REV #	DATE	DESCRIPTION

REVISIONS

HEAVENLY POND STREAM RESTORATION

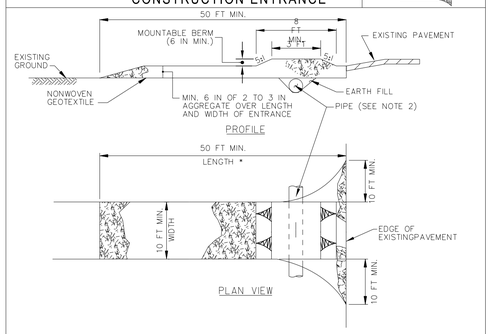
EROSION AND SEDIMENT CONTROL DETAIL SHEET

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR MARYLAND 21014
410-638-3777
SC PLAN #59839
GR PERMIT #15366-2018

DATE	DRAWING NO.
2/12/20	
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 22 OF 58
DRAWN BY MER	FWA JOB NUMBER

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL SCE



CONSTRUCTION SPECIFICATIONS

1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.

2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.

3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.

4. WHERE SPECIFIED OR DIRECTED BY THE COUNTY PLACE A 6 INCH LAYER OF WOOD CHIP MULCH AS SUBBASE TO PROTECT TREE ROOTS.

5. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.

6. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

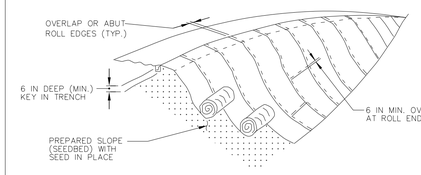
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

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

STANDARD SYMBOL

TSSMS – 2 lb/ft²



CONSTRUCTION SPECIFICATIONS

1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.

2. USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOLDER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.

3. SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.

4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.

5. UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.

6. OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.

7. KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.

8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.

9. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

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 instream construction sites.

IMPLEMENTATION SEQUENCE

Sediment control measures, pump-around practices, and associated channel and bank construction should be completed in the following sequence (refer to Detail 1.2):

1. Construction activities including the installation of erosion and sediment control measures should not begin until all necessary easements and/or right-of-ways have been acquired. All existing utilities should be marked 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 his/her own expense to the county's or utility company's satisfaction.

2. The contractor should notify the Maryland Department of the Environment or WMA sediment control inspector at least 5 days before beginning construction. Additionally, the contractor should inform the local environmental protection and resource management inspection and enforcement division and the provider of local utilities a minimum of 48 hours before starting construction.

3. The contractor should conduct a pre-construction meeting on site with the WMA sediment control inspector, the county project manager, and the engineer to review limits of disturbance, erosion and sediment control requirements, and the sequence of construction. The contractor should stake out all limits of disturbance prior to the pre-construction meeting so they may be reviewed. The participants will also designate the contractor's staging areas and flag all trees within the limit of disturbance which will be removed for construction access. Trees should not be removed within the limit of disturbance without approval from the WMA or local authority.

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 minimize disturbance within the work area 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 inspection and enforcement division, the contractor should begin work at 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 must be followed unless the contractor gets written approval for deviations from the WMA 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 pumped around the work area. The pump should discharge onto a stable velocity dissipater made of riprap 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 timber mats or similar 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 specified. (See Section 4, Stream Crossings, Maryland Guidelines to Waterway Construction).

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

10. After an area is completed and stabilized, the clean water dike should be removed. After the first sediment flush, a new clean 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 must be installed on any tributary or storm drain outfall which contributes baseflow to the work area. This should be accomplished by locating a sandbag dike at the downstream end of the tributary or storm drain outfall and pumping the stream flow around the work area. This water should discharge onto the same velocity dissipater used for the main stem pump around.

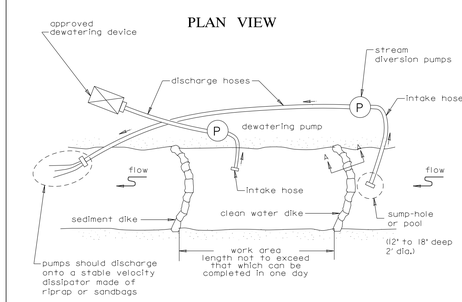
12. If a tributary is to be restored, construction should take place on the tributary before work on the main stem reaches the tributary confluence. Construction in the tributary, including pump around practices, should follow the same sequence as for the main stem of the river or stream. When construction on the tributary is completed, work on the main stem should resume. Water from the tributary should continue to be pumped 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 INSTREAM CONSTRUCTION MEASURES	*REVISED NOVEMBER 2000* *PAGE 1.2 - 1.2*	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

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

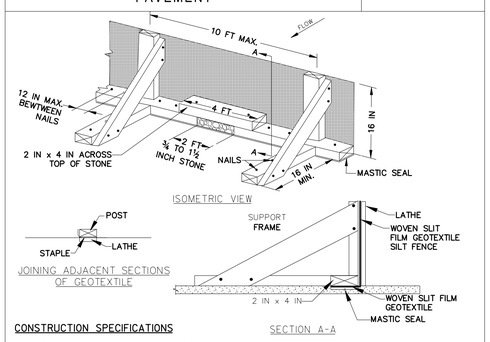


TEMPORARY INSTREAM CONSTRUCTION MEASURES	*REVISED NOVEMBER 2000* *PAGE 1.2 - 3*	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

DETAIL E-2 SILT FENCE ON PAVEMENT

STANDARD SYMBOL

—SFOP—



CONSTRUCTION SPECIFICATIONS

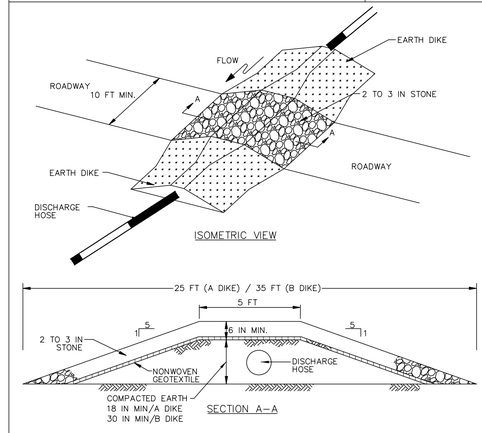
1. USE NOMINAL 2 INCH X 4 INCH LUMBER.
2. USE WOVEN SLIT FILM GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
3. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
4. SPACE UPRIGHT SUPPORTS NO MORE THAN 10 FEET APART.
5. PROVIDE A TWO FOOT OPENING BETWEEN EVERY SET OF SUPPORTS AND PLACE STONE IN THE OPENING OVER GEOTEXTILE.
6. KEEP SILT FENCE TAUT AND SECURELY STAPLE TO THE UPSLOPE SIDE OF UPRIGHT SUPPORTS. EXTEND GEOTEXTILE UNDER 2x4.
7. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, FOLD, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL. ATTACH LATHE.
8. PROVIDE A MASTIC SEAL BETWEEN PAVEMENT, GEOTEXTILE, AND 2x4 TO PREVENT SEDIMENT-LADEN WATER FROM ESCAPING BENEATH SILT FENCE INSTALLATION.
9. SECURE BOARDS TO PAVEMENT WITH 40D 5 INCH MINIMUM LENGTH NAILS.
10. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. MAINTAIN WATER TIGHT SEAL ALONG BOTTOM. REPLACE STONE IF 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

DETAIL C-8 MOUNTABLE BERM

STANDARD SYMBOL MB



CONSTRUCTION SPECIFICATIONS

1. USE MINIMUM WIDTH OF 10 FEET TO ALLOW FOR VEHICULAR PASSAGE.
2. PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE EARTH MOUND PRIOR TO PLACING STONE.
3. PLACE 2 TO 3 INCH STONE OR EQUIVALENT RECYCLED CONCRETE AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE MOUNTABLE BERM.
4. MAINTAIN LINE, GRADE, AND CROSS SECTION. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN SPECIFIED DIMENSIONS. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE.

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

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

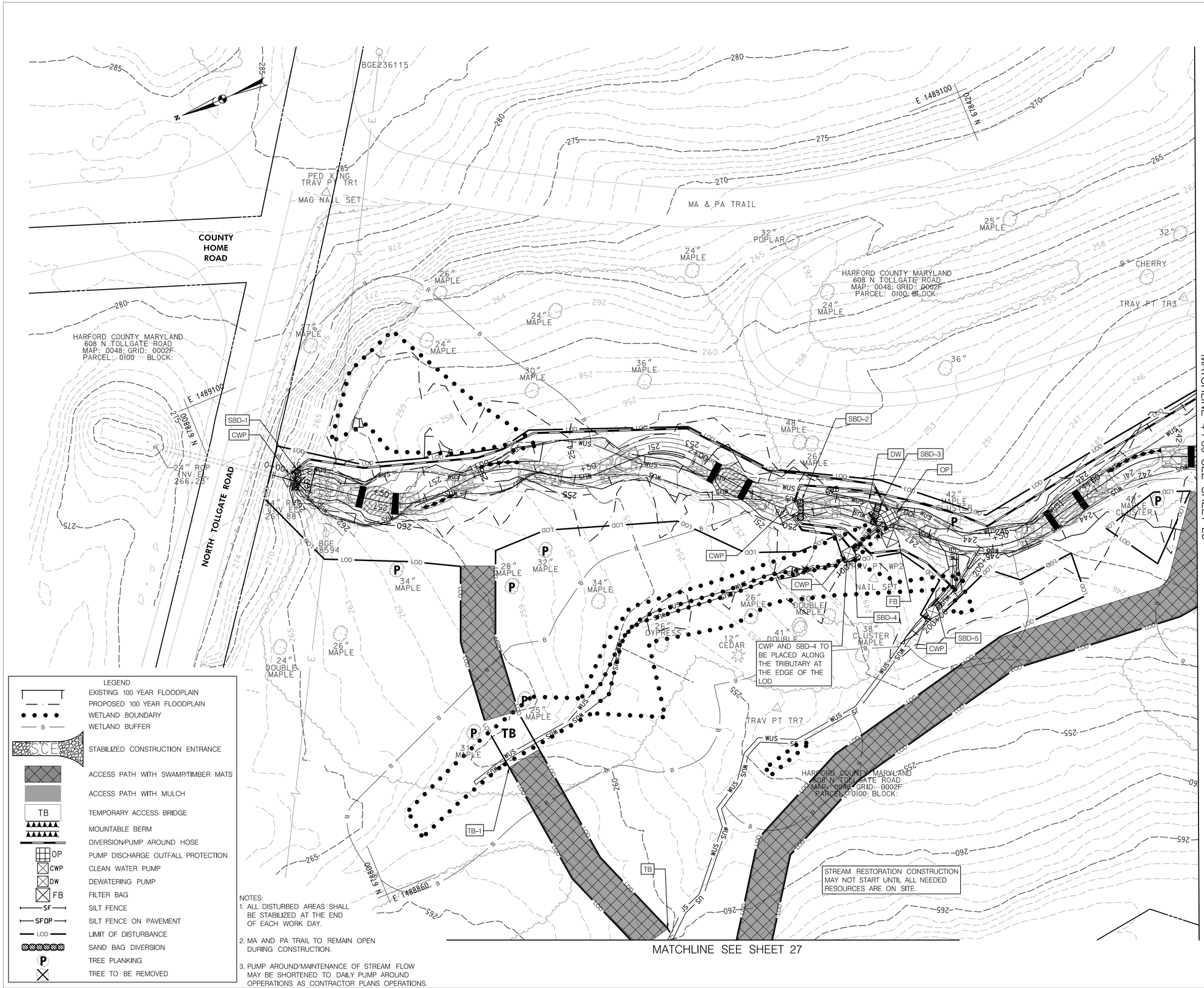
REV#	DATE	REVISIONS DESCRIPTION

HEAVENLY POND STREAM RESTORATION

EROSION AND SEDIMENT CONTROL DETAIL SHEET

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR, MARYLAND 21014
410-638-3277
SC-PLAN #59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 23 OF 58
DRAWN BY MER	FWA JOB NUMBER



LEGEND

- EXISTING 100 YEAR FLOODPLAIN
- PROPOSED 100 YEAR FLOODPLAIN
- WETLAND BOUNDARY
- WETLAND BUFFER
- SCE — STABILIZED CONSTRUCTION ENTRANCE
- ACCESS PATH WITH SWAMP/TIMBER MATS
- ACCESS PATH WITH MULCH
- TB — TEMPORARY ACCESS BRIDGE
- MOUNTABLE BERM
- DIVERSION/PUMP AROUND HOSE
- OP — PUMP DISCHARGE OUTFALL PROTECTION
- CWP — CLEAN WATER PUMP
- DW — DEWATERING PUMP
- FB — FILTER BAG
- SF — SILT FENCE
- SFOP — SILT FENCE ON PAVEMENT
- LOD — LIMIT OF DISTURBANCE
- SAND BAG DIVERSION
- P — TREE PLANKING
- TREE TO BE REMOVED

NOTES:
1. ALL DISTURBED AREAS SHALL BE STABILIZED AT THE END OF EACH WORK DAY.
2. MA AND PA TRAIL TO REMAIN OPEN DURING CONSTRUCTION.
3. PUMP AROUND/MAINTENANCE OF STREAM FLOW MAY BE SHORTENED TO DAILY PUMP AROUND OPPERATIONS AS CONTRACTOR PLANS OPERATIONS.

FILTER BAG

QTY (EA)	REMARKS
1	

TREE PLANKING

QTY (EA)	REMARKS
7	

SAND BAG DIVERSION (SBD)

QTY (LF)	REMARKS
11	SBD-1
10	SBD-2
10	SBD-3
4	SBD-4
3	SBD-5

ACCESS PATH

QTY (LF)	REMARKS
447	

TEMPORARY BRIDGE (TB)

STA.	REMARKS
N/A	TB-1

CLEAN WATER PUMP

QTY (EA)	REMARKS
4	

PUMP DISCHARGE OUTFALL PROTECTION

QTY (EA)	REMARKS
1	

DEWATERING PUMP

QTY (EA)	REMARKS
1	

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REVISIONS

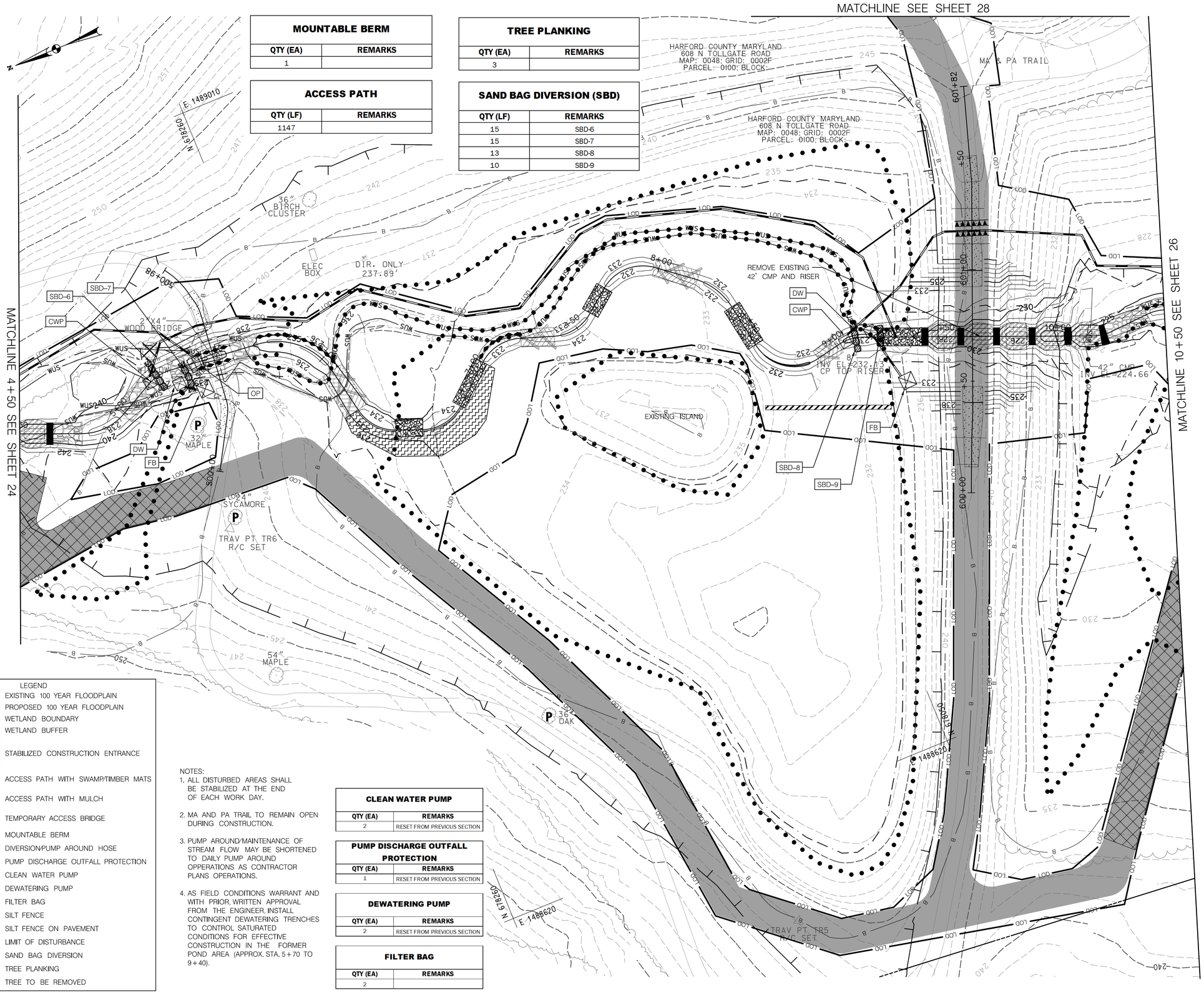
REV#	DATE	DESCRIPTION

HEAVENLY POND STREAM RESTORATION

EROSION AND SEDIMENT CONTROL PLAN

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR MARYLAND 21014
410-638-3277
SC PLAN # 59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE 1" = 20'	
DESIGNED BY MRM	SHEET 24 OF 58
DRAWN BY MER	FWA JOB NUMBER



MOUNTABLE BERM	
QTY (EA)	REMARKS
1	

ACCESS PATH	
QTY (LF)	REMARKS
1147	

TREE PLANKING	
QTY (EA)	REMARKS
3	

SAND BAG DIVERSION (SBD)	
QTY (LF)	REMARKS
15	SBD-6
15	SBD-7
13	SBD-8
10	SBD-9

LEGEND

- EXISTING 100 YEAR FLOODPLAIN
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NOTES:

1. ALL DISTURBED AREAS SHALL BE STABILIZED AT THE END OF EACH WORK DAY.
2. MA AND PA TRAIL TO REMAIN OPEN DURING CONSTRUCTION.
3. PUMP AROUND/MAINTENANCE OF STREAM FLOW MAY BE SHORTENED TO DAILY PUMP AROUND OPPERATIONS AS CONTRACTOR PLANS OPERATIONS.
4. AS FIELD CONDITIONS WARRANT AND WITH PRIOR, WRITTEN APPROVAL FROM THE ENGINEER, INSTALL CONTINGENT DEWATERING TRENCHES TO CONTROL SATURATED CONDITIONS FOR EFFECTIVE CONSTRUCTION IN THE FORMER POND AREA (APPROX. STA. 5+70 TO 9+40).

CLEAN WATER PUMP	
QTY (EA)	REMARKS
2	RESET FROM PREVIOUS SECTION

PUMP DISCHARGE OUTFALL PROTECTION	
QTY (EA)	REMARKS
1	RESET FROM PREVIOUS SECTION

DEWATERING PUMP	
QTY (EA)	REMARKS
2	RESET FROM PREVIOUS SECTION

FILTER BAG	
QTY (EA)	REMARKS
2	

McCORMICK TAYLOR
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REV#	DATE	DESCRIPTION

REVISIONS

HEAVENLY POND STREAM RESTORATION

EROSION AND SEDIMENT CONTROL PLAN

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR, MARYLAND 21014
410-638-3277
SD PLAN #59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE 1" = 20'	
DESIGNED BY MRM	SHEET 25 OF 58
DRAWN BY MER	FWA JOB NUMBER

CLEAN WATER PUMP	
QTY (EA)	REMARKS
3	RESET FROM PREVIOUS SECTION

PUMP DISCHARGE OUTFALL PROTECTION	
QTY (EA)	REMARKS
2	RESET FROM PREVIOUS SECTION

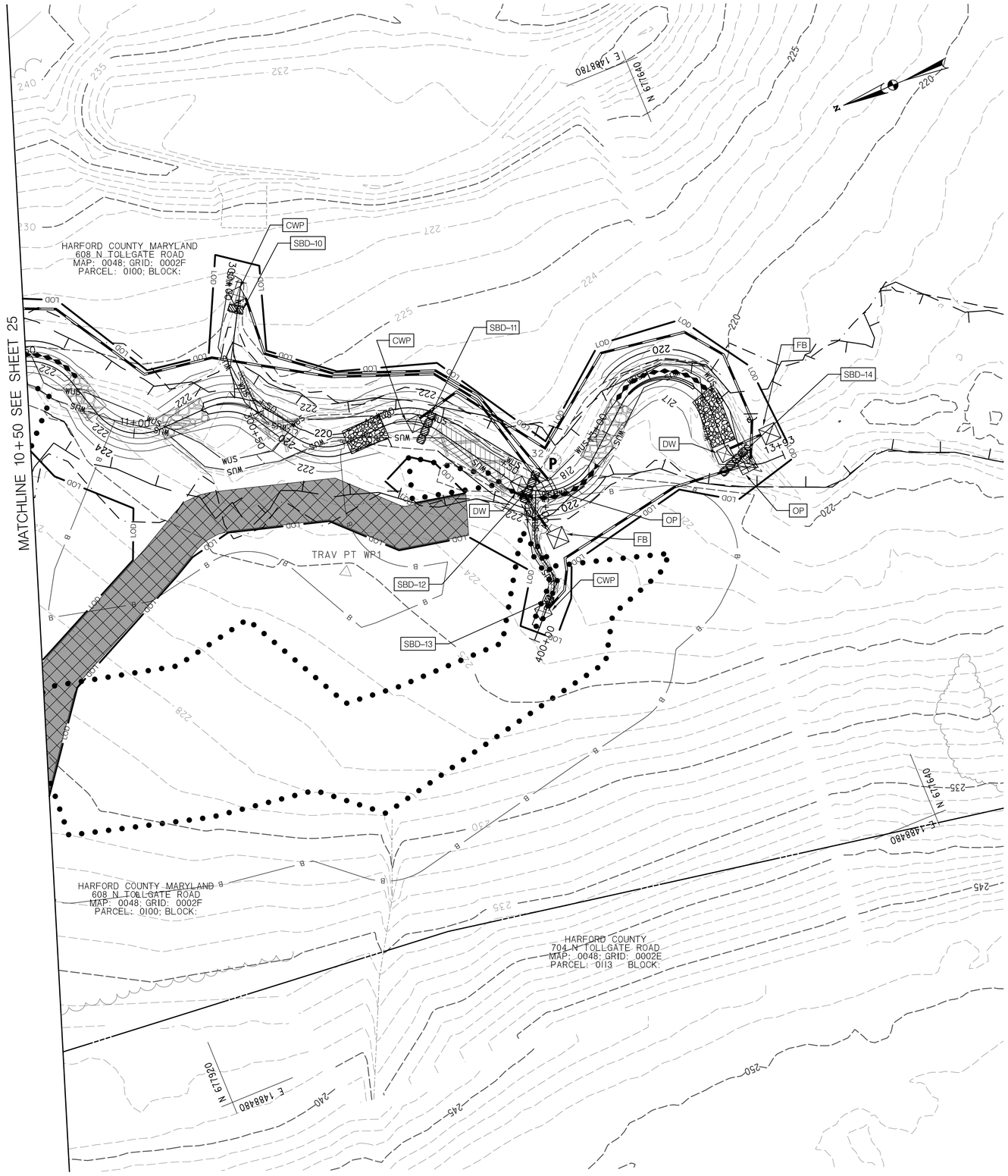
DEWATERING PUMP	
QTY (EA)	REMARKS
2	RESET FROM PREVIOUS SECTION

FILTER BAG	
QTY (EA)	REMARKS
2	

SAND BAG DIVERSION (SBD)	
QTY (LF)	REMARKS
6	SBD-10
13	SBD-11
13	SBD-12
5	SBD-13
15	SBD-14

ACCESS PATH	
QTY (LF)	REMARKS
200	

TREE PLANKING	
QTY (EA)	REMARKS
1	



LEGEND

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NOTES:
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REV#	DATE	REVISIONS DESCRIPTION

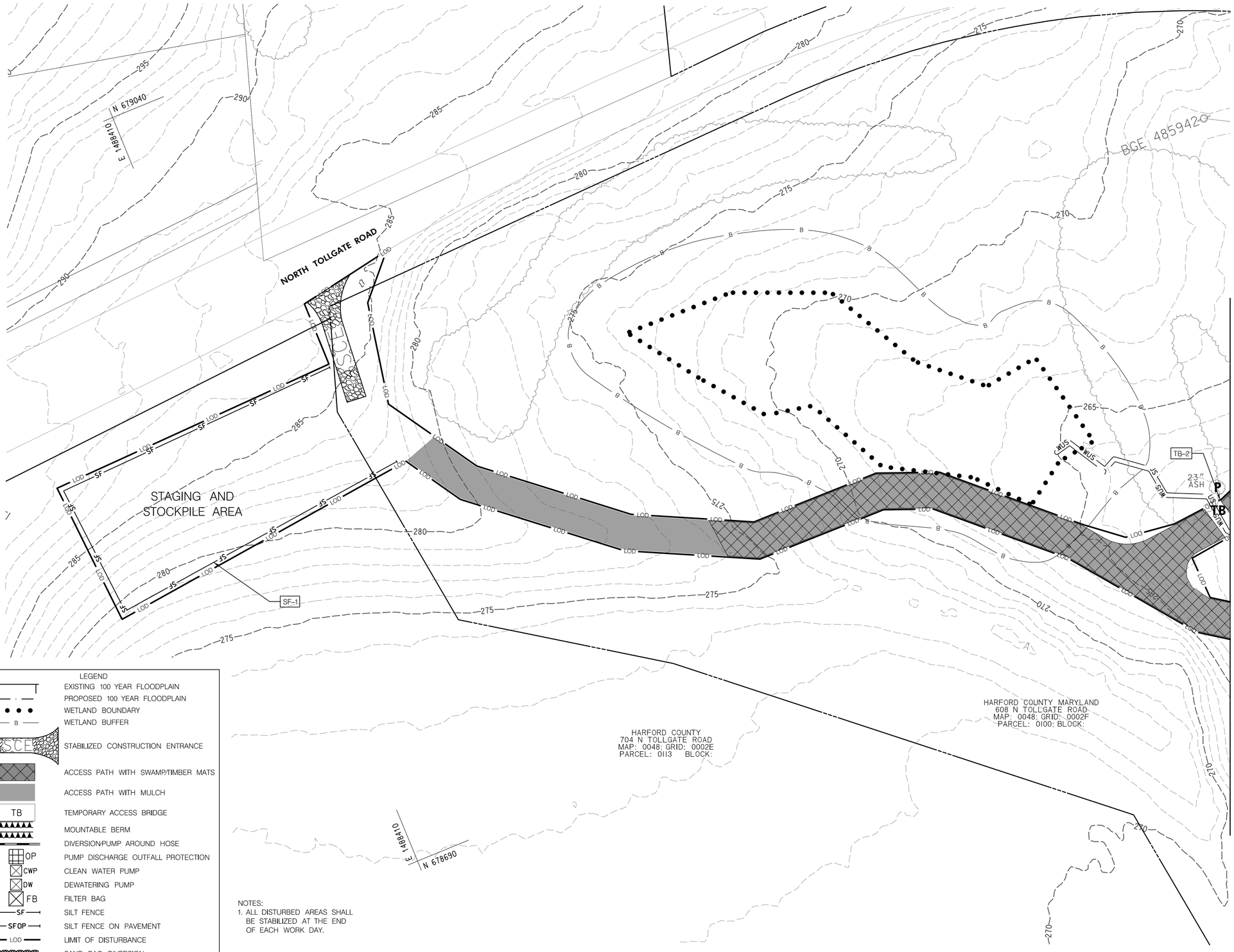
HEAVENLY POND STREAM RESTORATION

EROSION AND SEDIMENT CONTROL PLAN

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS

WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR MARYLAND 21014
410-638-3277
SC PLAN #59839
GR PERMIT #15366-2018

DATE	DRAWING NO.
2/12/20	
SCALE 1" = 20'	
DESIGNED BY MRM	SHEET 26 OF 58
DRAWN BY MER	FWA JOB NUMBER



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NOTES:
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SILT FENCE (SF)

QTY (LF)	REMARKS
322	SF-1

ACCESS PATH

QTY (LF)	REMARKS
422	

STABILIZED CONSTRUCTION ENTRANCE

QTY (EA)	REMARKS
1	

TREE PLANKING

QTY (EA)	REMARKS
1	

TEMPORARY BRIDGE (TB)

STA.	REMARKS
N/A	TB-2

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HEAVENLY POND STREAM RESTORATION

EROSION AND SEDIMENT CONTROL PLAN

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
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BEL AIR MARYLAND 21014
410-638-3271
SD PLAN #59839
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DATE 2/12/20	DRAWING NO.
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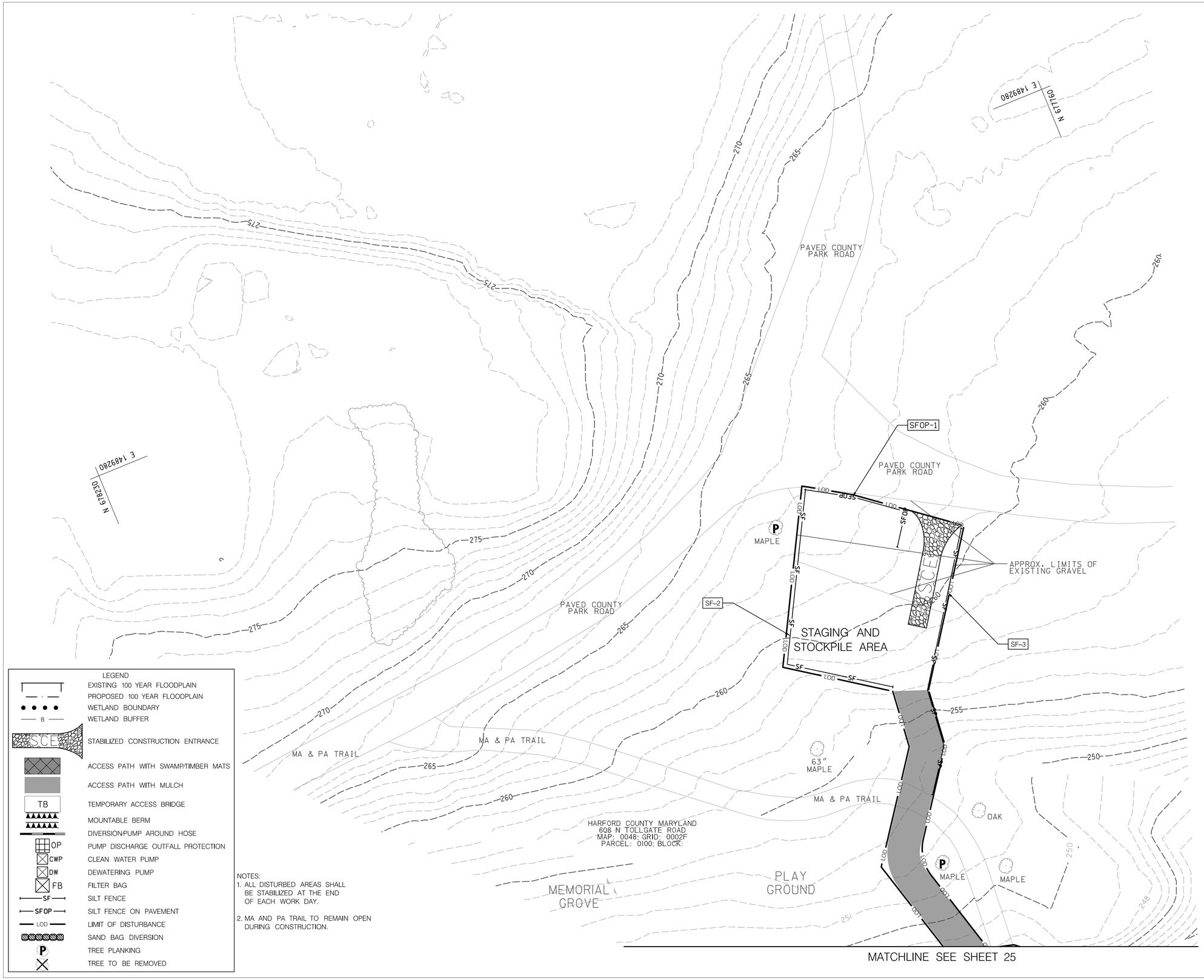
DESIGNED BY MRM	SHEET 27 OF 58
DRAWN BY MER	FWA JOB NUMBER



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SILT FENCE (SF)

QTY (LF)	REMARKS
131	SF-2
126	SF-3

SILT FENCE ON PAVEMENT (SFOP)

QTY (LF)	REMARKS
64	SFOP-1

ACCESS PATH

QTY (LF)	REMARKS
131	

STABILIZED CONSTRUCTION ENTRANCE

QTY (EA)	REMARKS
1	

TREE PLANKING

QTY (EA)	REMARKS
2	

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REVISIONS

HEAVENLY POND STREAM RESTORATION

EROSION AND SEDIMENT CONTROL PLAN

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS

WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
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DATE 2/12/20	DRAWING NO.
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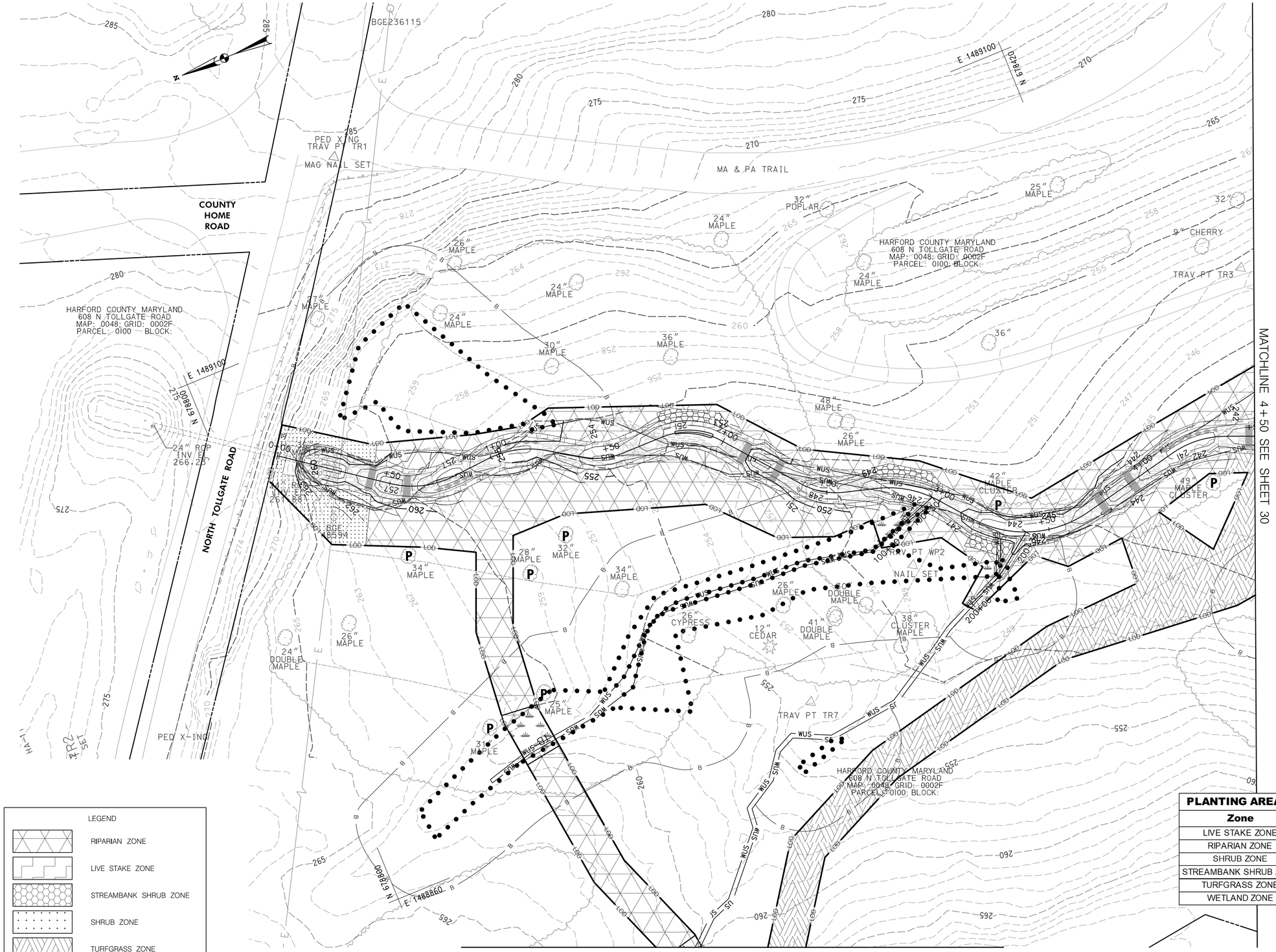

LEGEND

- RIPARIAN ZONE
- LIVE STAKE ZONE
- STREAMBANK SHRUB ZONE
- SHRUB ZONE
- TURFGRASS ZONE
- WETLAND ZONE

PLANTING AREAS BY ZONE (This Sheet Only)

Zone	Area
LIVE STAKE ZONE	1873 SF
RIPARIAN ZONE	12210 SF
SHRUB ZONE	1081 SF
STREAMBANK SHRUB ZONE	407 SF
TURFGRASS ZONE	5996 SF
WETLAND ZONE	481 SF

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HEAVENLY POND STREAM RESTORATION

LANDSCAPE PLAN

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
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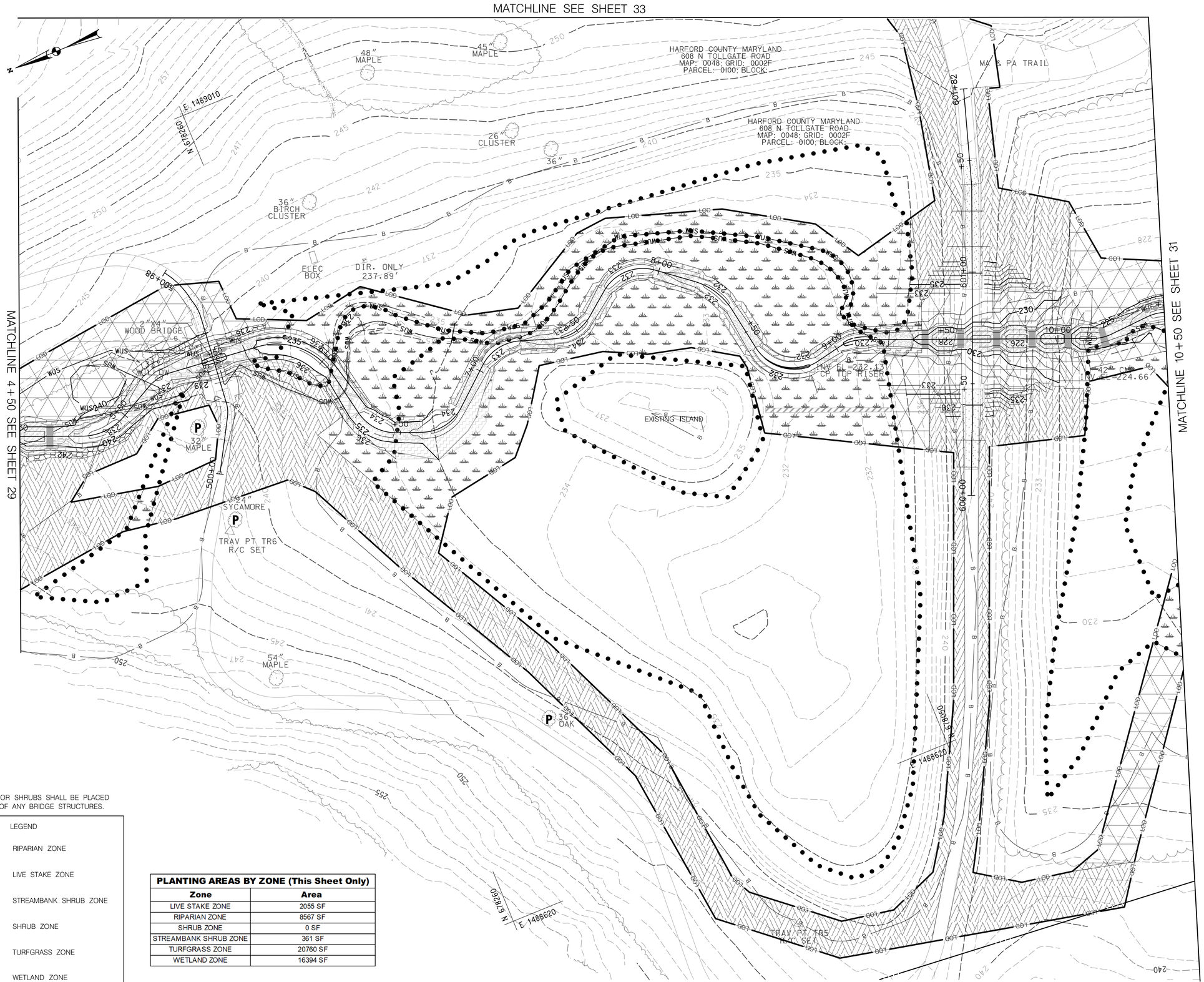

NOTE: NO TREES OR SHRUBS SHALL BE PLACED WITHIN 15' OF ANY BRIDGE STRUCTURES.

LEGEND

- RIPARIAN ZONE
- LIVE STAKE ZONE
- STREAMBANK SHRUB ZONE
- SHRUB ZONE
- TURFGRASS ZONE
- WETLAND ZONE

PLANTING AREAS BY ZONE (This Sheet Only)

Zone	Area
LIVE STAKE ZONE	2055 SF
RIPARIAN ZONE	8567 SF
SHRUB ZONE	0 SF
STREAMBANK SHRUB ZONE	361 SF
TURFGRASS ZONE	20760 SF
WETLAND ZONE	16394 SF

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REVISIONS

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HEAVENLY POND STREAM RESTORATION

LANDSCAPE PLAN

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR MARYLAND 21014
410-638-3677
SC PLAN #59839
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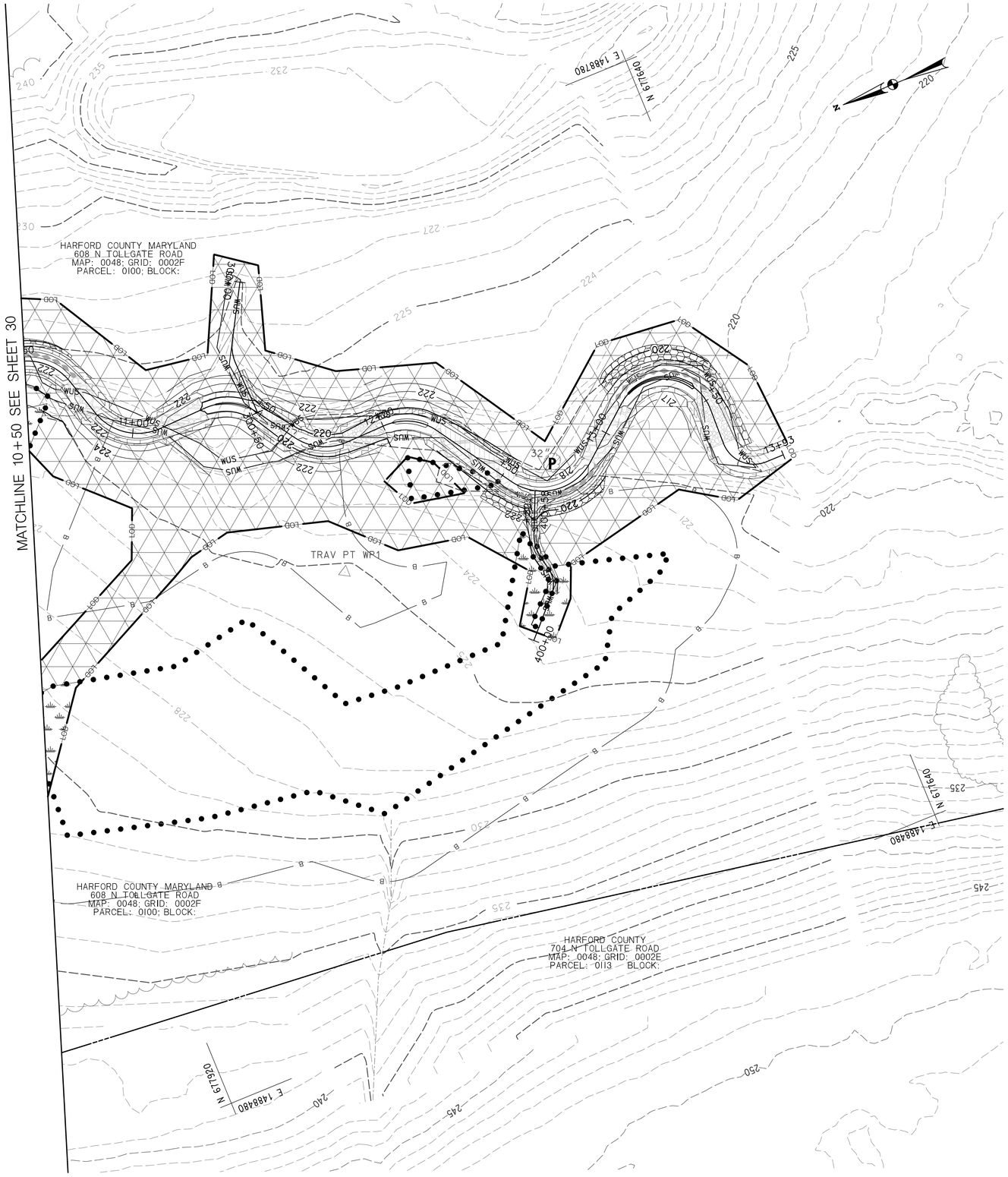
DATE 2/12/20	DRAWING NO.
SCALE 1" = 20'	
DESIGNED BY MRM	SHEET 30 OF 58
DRAWN BY MER	FWA JOB NUMBER

PLANTING AREAS BY ZONE (This Sheet Only)	
Zone	**Area**
LIVE STAKE ZONE	1502 SF
RIPARIAN ZONE	13739 SF
SHRUB ZONE	0 SF
STREAMBANK SHRUB ZONE	517 SF
TURFGRASS ZONE	0 SF
WETLAND ZONE	724 SF



LEGEND

- RIPARIAN ZONE
- LIVE STAKE ZONE
- STREAMBANK SHRUB ZONE
- SHRUB ZONE
- TURFGRASS ZONE
- WETLAND ZONE

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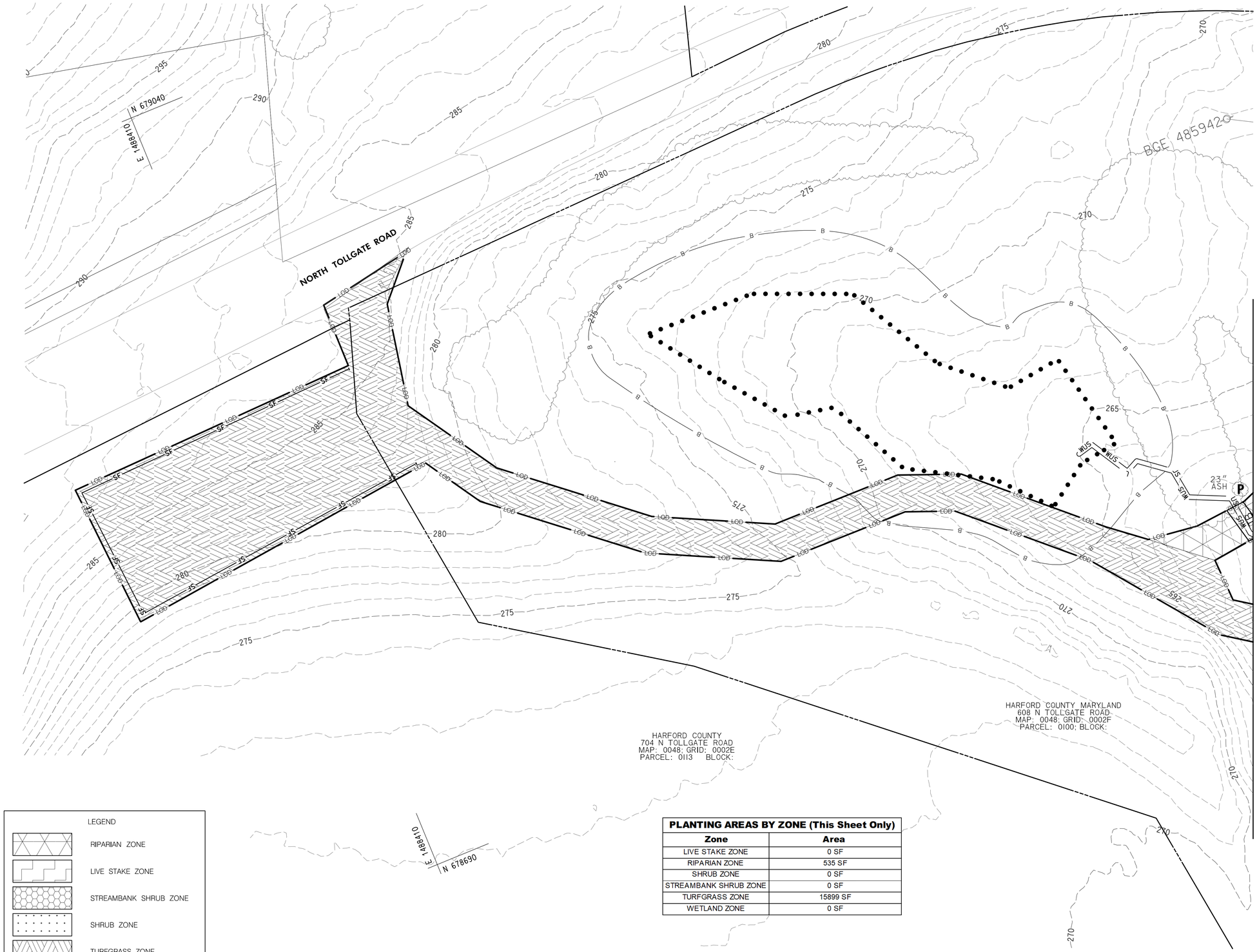
HEAVENLY POND STREAM RESTORATION

LANDSCAPE PLAN

HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS

WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR MARYLAND 21014
410-638-3277
SD PLAN #59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE 1" = 20'	
DESIGNED BY MRM	SHEET 31 OF 58
DRAWN BY MER	FWA JOB NUMBER



LEGEND

- RIPARIAN ZONE
- LIVE STAKE ZONE
- STREAMBANK SHRUB ZONE
- SHRUB ZONE
- TURFGRASS ZONE
- WETLAND ZONE

PLANTING AREAS BY ZONE (This Sheet Only)

Zone	Area
LIVE STAKE ZONE	0 SF
RIPARIAN ZONE	535 SF
SHRUB ZONE	0 SF
STREAMBANK SHRUB ZONE	0 SF
TURFGRASS ZONE	15899 SF
WETLAND ZONE	0 SF

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509 South Exeter Street
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REVISIONS

REV#	DATE	DESCRIPTION

HEAVENLY POND STREAM RESTORATION

LANDSCAPE PLAN

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR, MARYLAND 21014
410-638-3277
SD PLAN #59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE 1" = 20'	
DESIGNED BY MRM	SHEET 32 OF 58
DRAWN BY MER	FWA JOB NUMBER

PLANTING AREAS BY ZONE (This Sheet Only)

Zone	Area
LIVE STAKE ZONE	0 SF
RIPARIAN ZONE	0 SF
SHRUB ZONE	0 SF
STREAMBANK SHRUB ZONE	0 SF
TURFGRASS ZONE	5012 SF
WETLAND ZONE	0 SF

LEGEND

- RIPARIAN ZONE
- LIVE STAKE ZONE
- STREAMBANK SHRUB ZONE
- SHRUB ZONE
- TURFGRASS ZONE
- WETLAND ZONE

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HEAVENLY POND STREAM RESTORATION

LANDSCAPE PLAN

HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR, MARYLAND 21014
410-638-3127
SC PLAN #59839
GR PERMIT #15366-2018

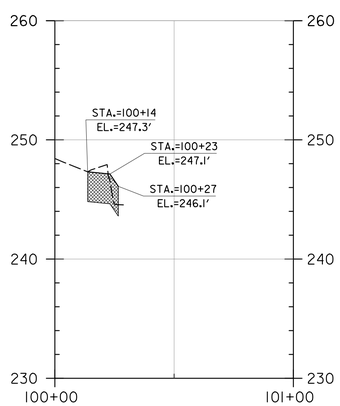
DATE 2/12/20	DRAWING NO.
SCALE 1" = 20'	
DESIGNED BY MRM	SHEET 33 OF 58
DRAWN BY MER	FWA JOB NUMBER

MAINSTEM

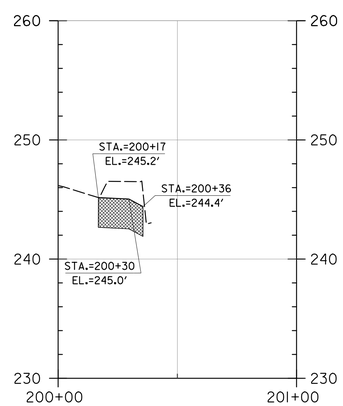
SCALE:
HORIZONTAL: 1"=30′ VERTICAL: 1" = 6′

LEGEND

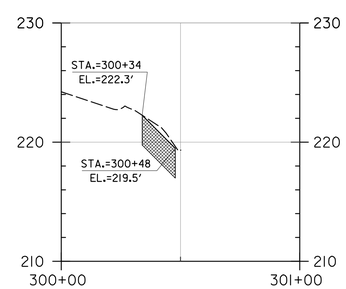
- EXISTING PROFILE
- PROPOSED PROFILE
- TRIBUTARY STABILIZATION
- CASCADE STRUCTURE
- RIFFLE STABILIZATION
- WOOD RIFFLE STABILIZATION
- OUTFALL POOL
- POOL PAVEMENT
- STEP-POOL CREST
- CHANNEL BED MATERIAL



TRIBUTARY 1



TRIBUTARY 2



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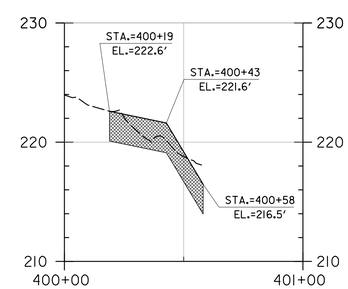

TRIBUTARY 4

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McCORMICK TAYLOR

REV#	DATE	DESCRIPTION

REVISIONS

HEAVENLY POND
STREAM RESTORATION

PROFILE SHEET

HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS

WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
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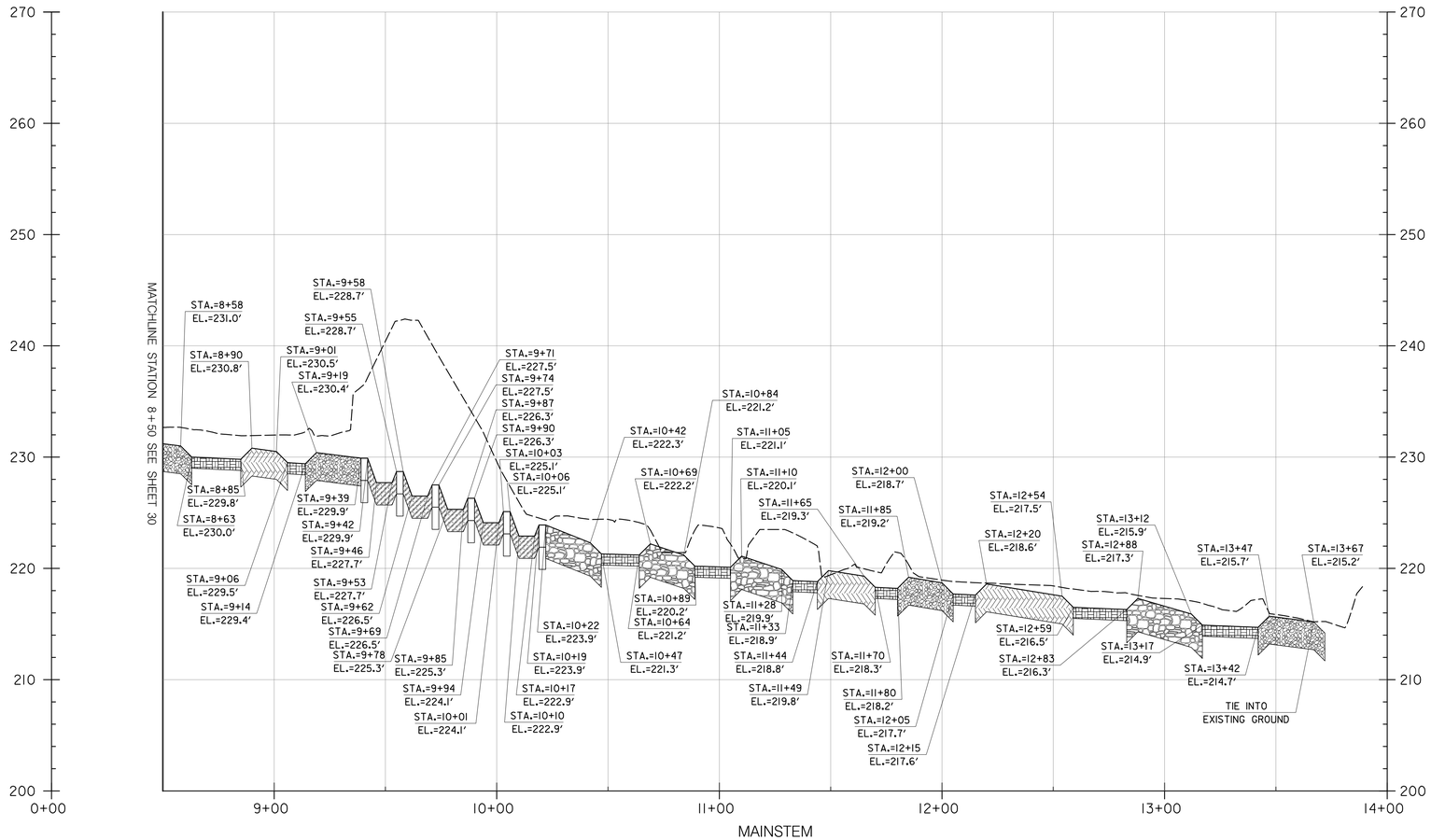
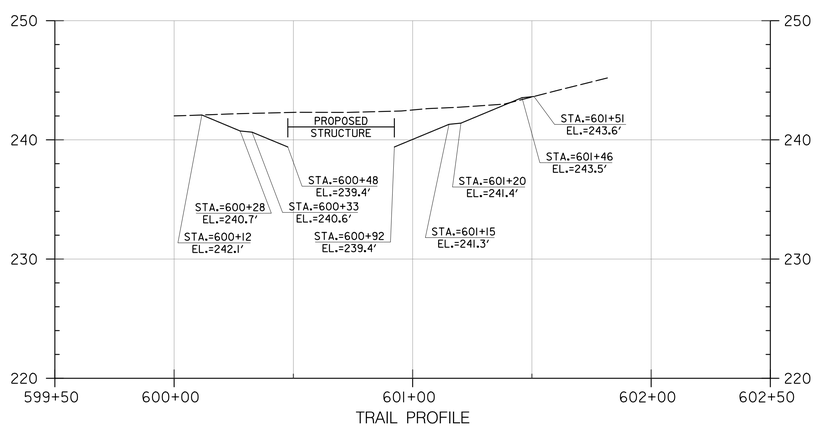
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 34 OF 58
DRAWN BY MER	FWA JOB NUMBER



MAINSTEM



TRAIL PROFILE

SCALE:
HORIZONTAL: 1"=30' VERTICAL: 1" = 6'

LEGEND

- EXISTING PROFILE
- PROPOSED PROFILE
- TRIBUTARY STABILIZATION
- CASCADE STRUCTURE
- RIFFLE STABILIZATION
- WOOD RIFFLE STABILIZATION
- OUTFALL POOL
- POOL PAVEMENT
- STEP-POOL CREST
- CHANNEL BED MATERIAL

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REVISIONS

REV#	DATE	DESCRIPTION

HEAVENLY POND STREAM RESTORATION

PROFILE SHEET

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
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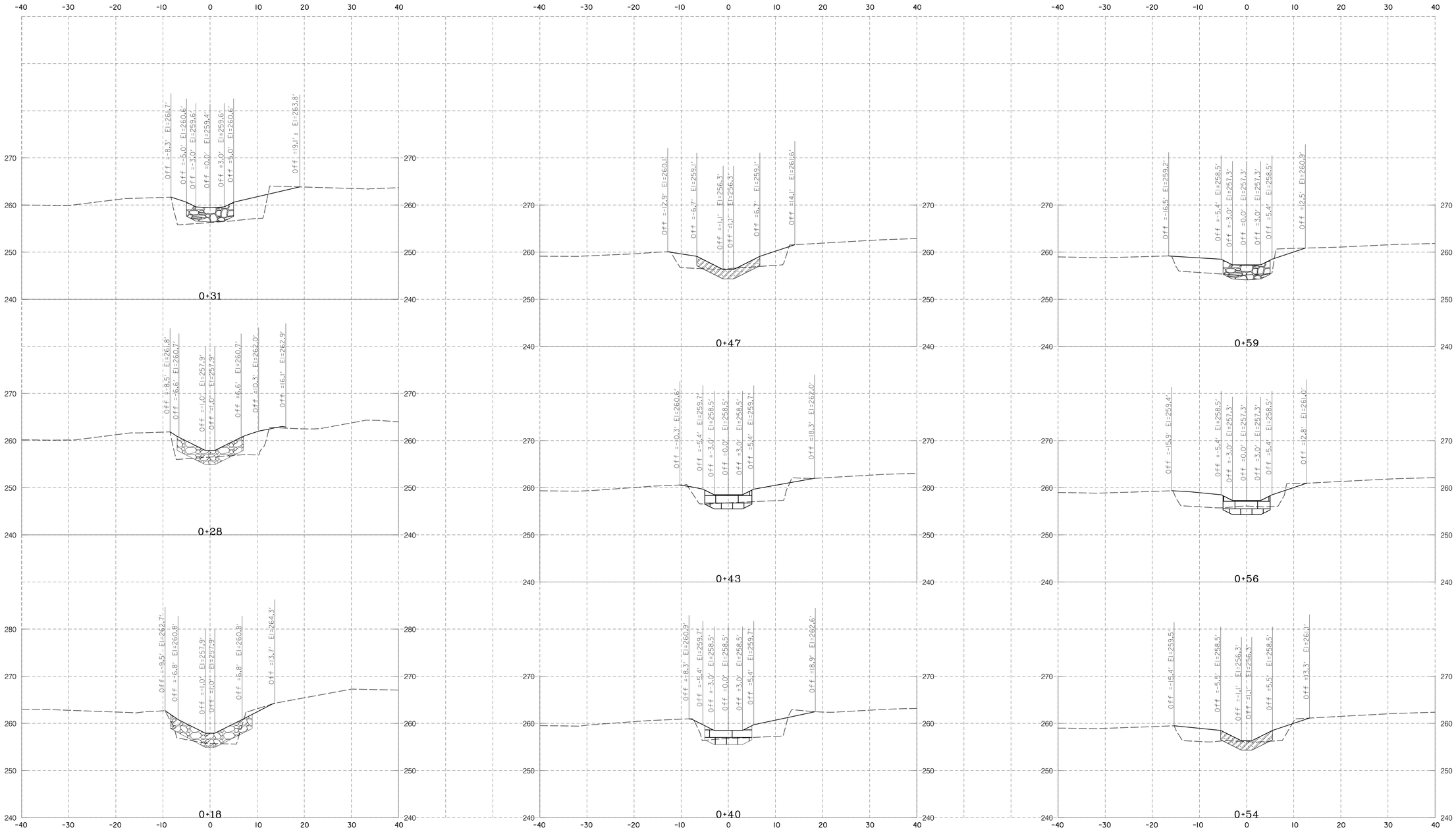
410-638-3217
SC PLAN #59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 35 OF 58
DRAWN BY MER	FWA JOB NUMBER



LEGEND

- EXISTING GROUND
- PROPOSED GRADE
- OUTFALL POOL
- CASCADE
- STEP-POOL CREST
- POOL PAVEMENT
- TOE BOULDER PROTECTION
- CHANNEL BED MATERIAL
- WOOD RIFFLE STABILIZATION
- RIFFLE STABILIZATION
- TRIBUTARY STABILIZATION
- OVERFLOW STABILIZATION
- GRADED AGGREGATE BEDDING

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

DESIGN AND DRAWING BASED UPON THE MARYLAND COORDINATE SYSTEM
HORIZONTAL = NAD 83/91
VERTICAL = NAVD 88

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REV#	DATE	DESCRIPTION

REVISIONS

HEAVENLY POND
STREAM RESTORATION
CROSS SECTIONS

HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS

WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
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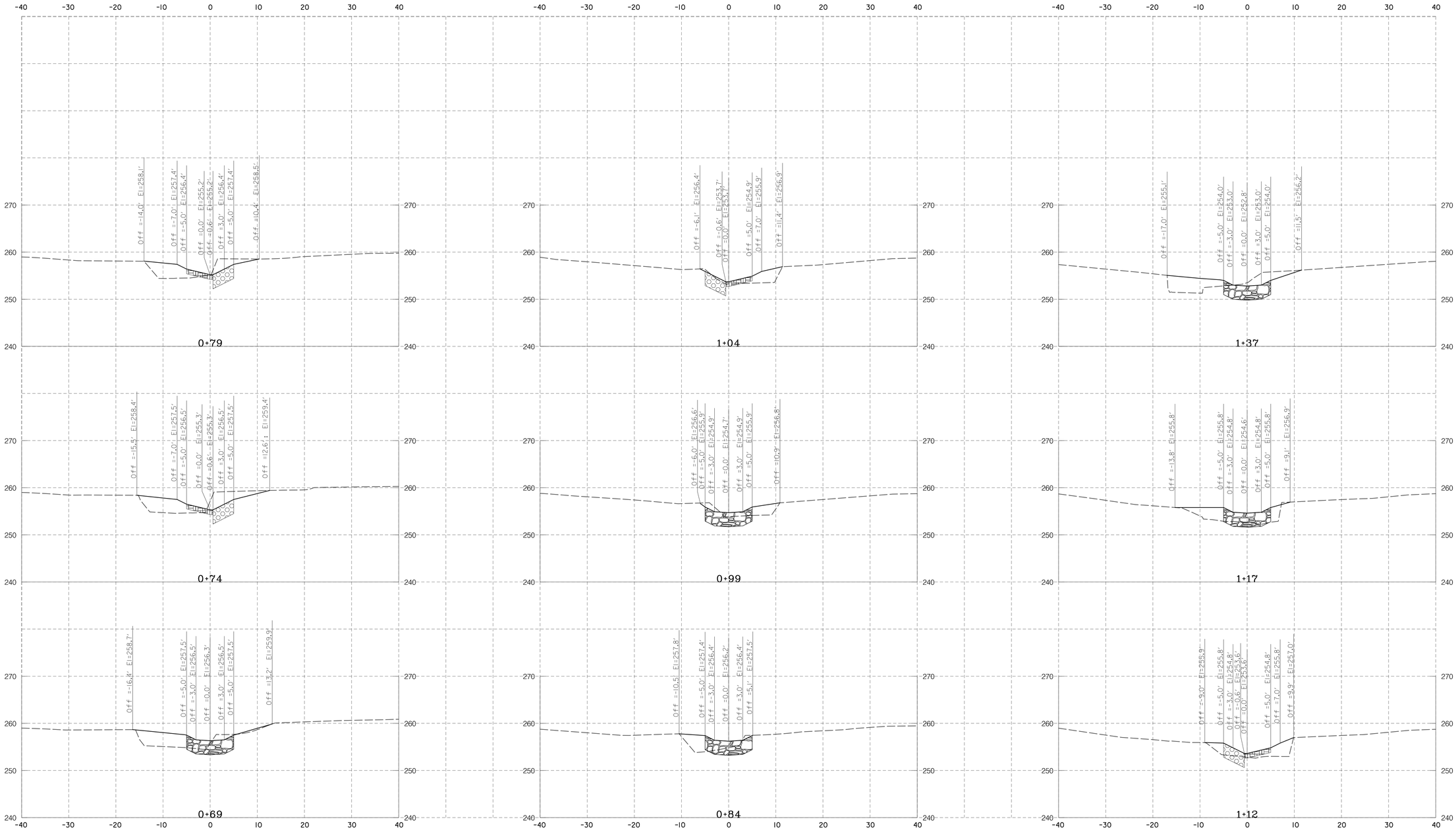
410-638-3277
SC PLAN #59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 36 OF 58
DRAWN BY MER	FWA JOB NUMBER



LEGEND

- EXISTING GROUND
- PROPOSED GRADE
- OUTFALL POOL
- CASCADE
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SCALE
HORIZONTAL: 1"=10' VERTICAL: 1" = 10'

DESIGN AND DRAWING BASED UPON THE MARYLAND COORDINATE SYSTEM
HORIZONTAL = NAD 83/91
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REV#	DATE	DESCRIPTION

REVISIONS

HEAVENLY POND
STREAM RESTORATION
CROSS SECTIONS

HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
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410-638-3277
SCD PLAN #59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
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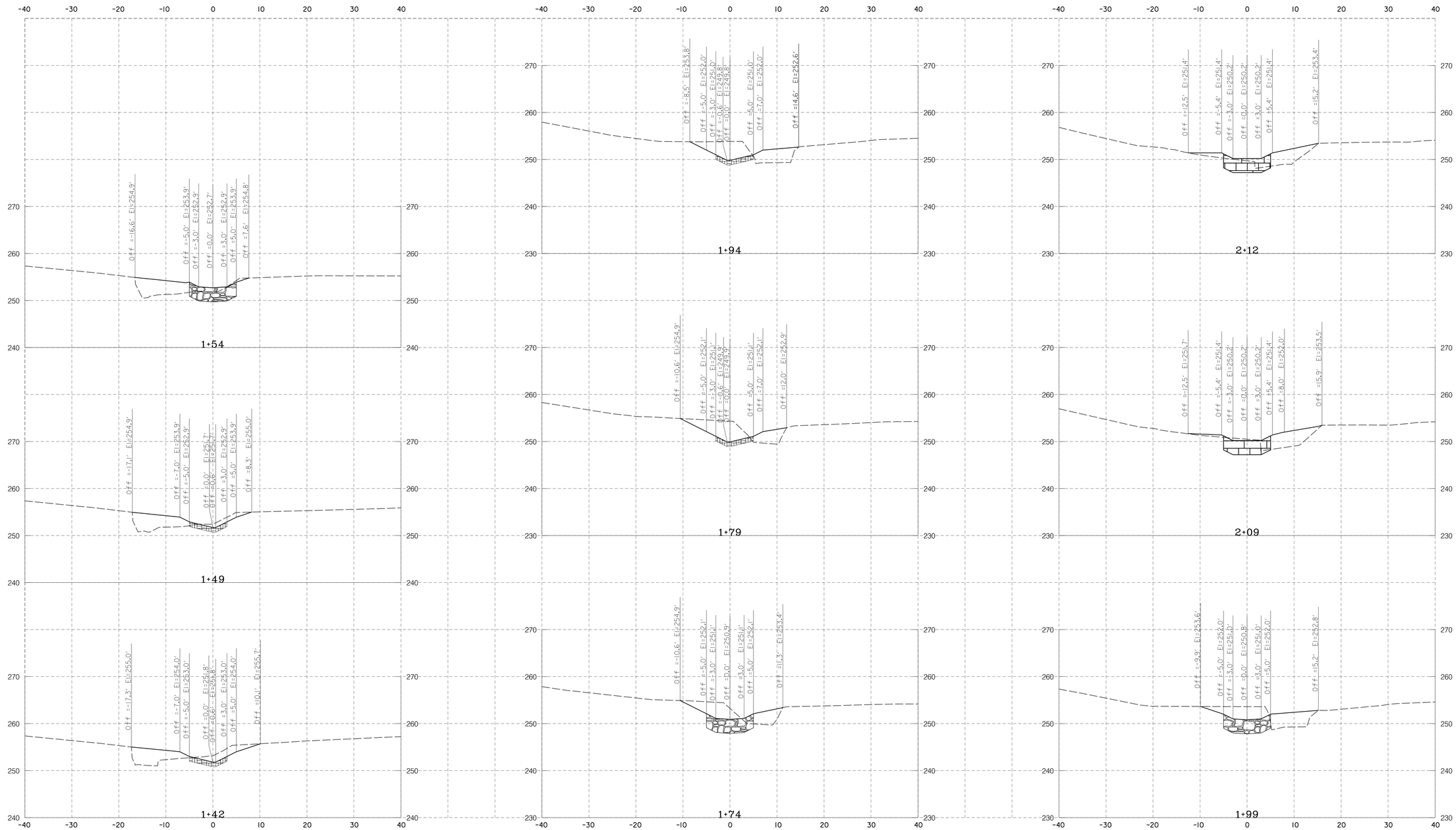
DRAWN BY MER	FWA JOB NUMBER



LEGEND

- EXISTING GROUND
- PROPOSED GRADE
- OUTFALL POOL
- CASCADE
- STEP-POOL CREST
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HORIZONTAL = NAD 83/91
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REV#	DATE	REVISIONS DESCRIPTION

HEAVENLY POND
STREAM RESTORATION
CROSS SECTIONS

HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
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410-638-3277
SC PLAN #59839
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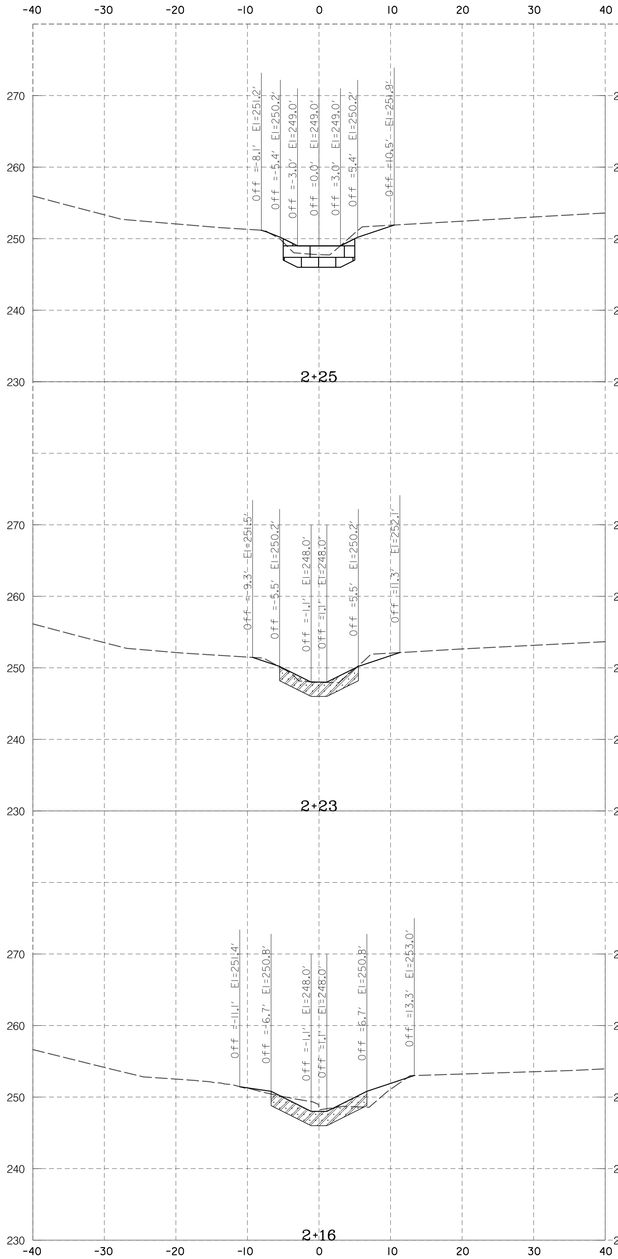
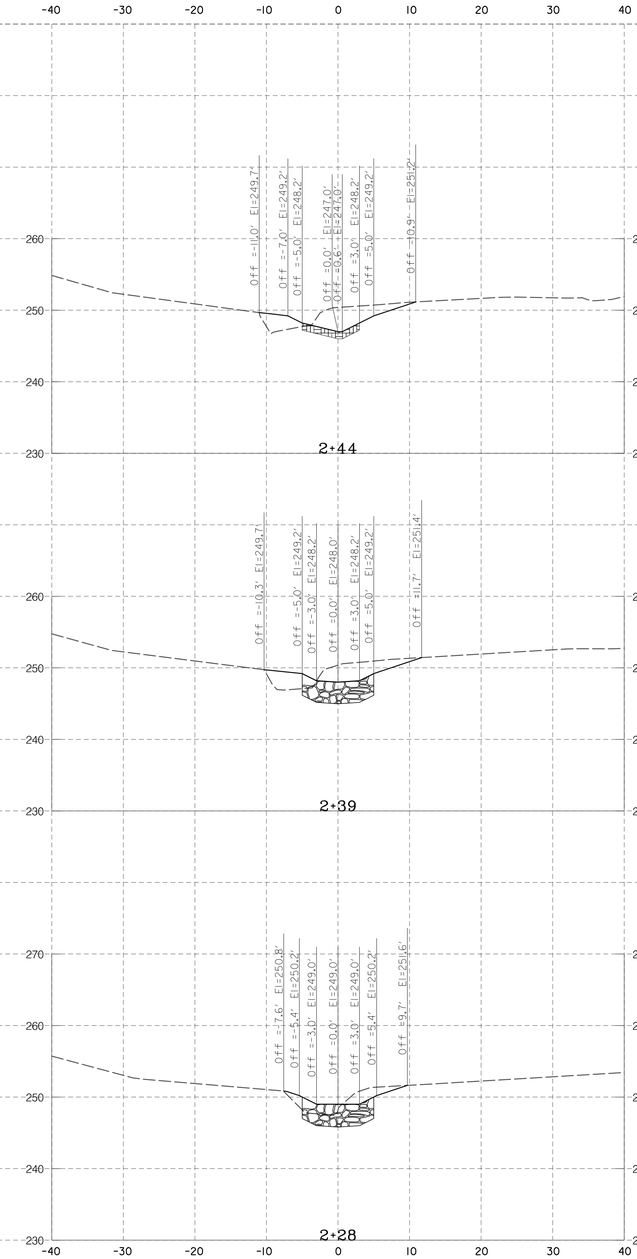
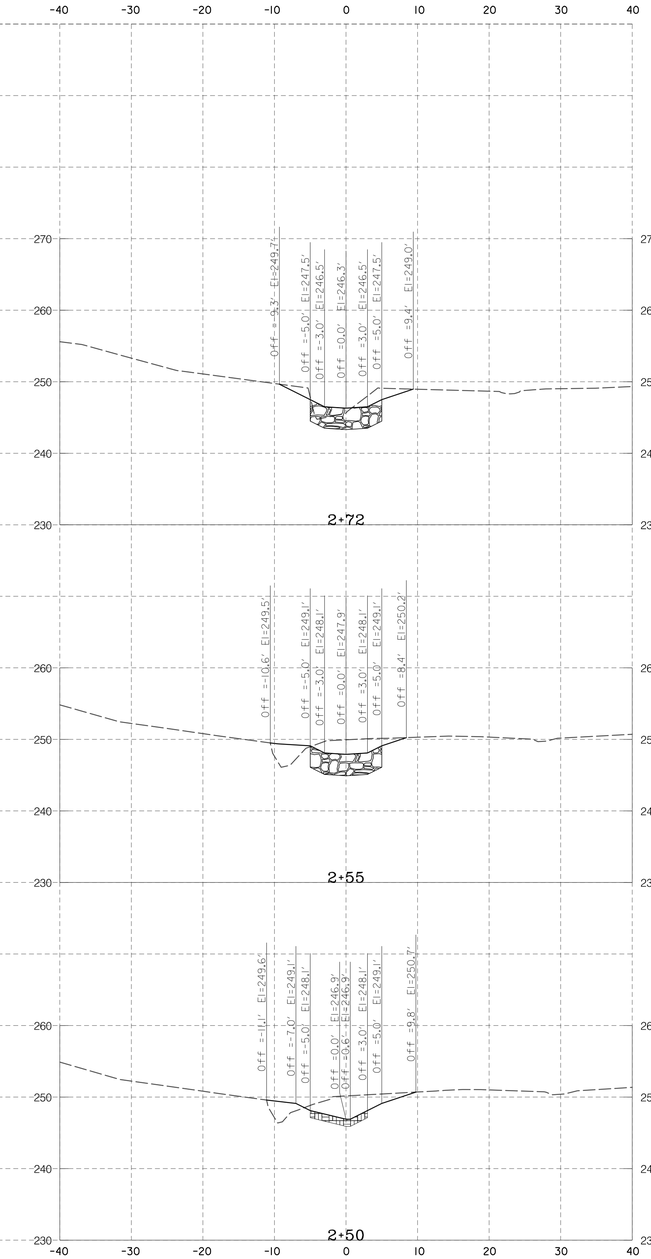
DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 38 OF 58
DRAWN BY MER	FWA JOB NUMBER







LEGEND

- EXISTING GROUND
- PROPOSED GRADE
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REV#	DATE	DESCRIPTION

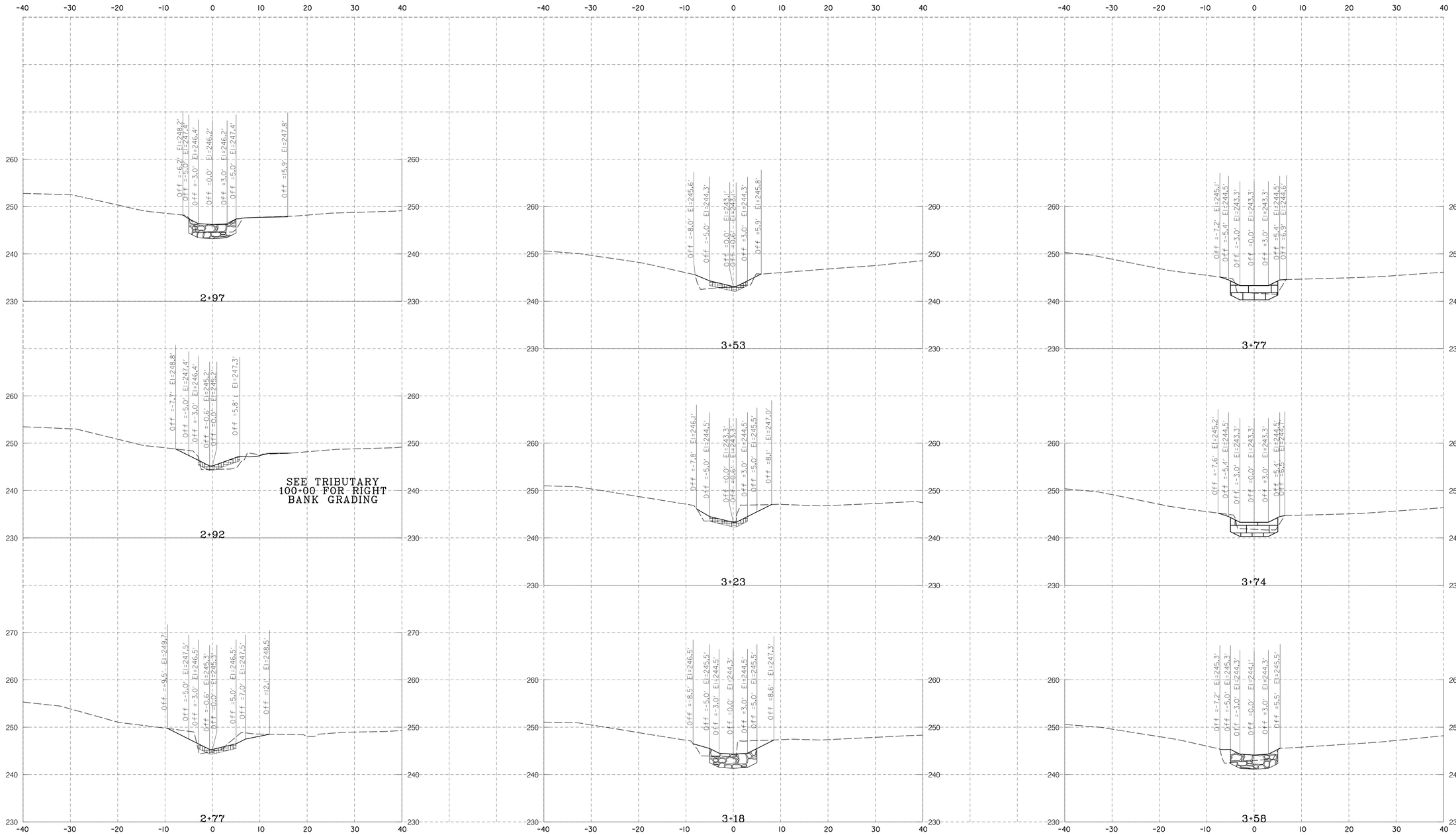
REVISIONS

HEAVENLY POND
STREAM RESTORATION
CROSS SECTIONS

HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS

WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR MARYLAND 21014
410-638-3677
SC PLAN #59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 39 OF 58
DRAWN BY MER	FWA JOB NUMBER



LEGEND

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DESIGN AND DRAWING BASED UPON THE MARYLAND COORDINATE SYSTEM
HORIZONTAL = NAD 83/91
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REV#	DATE	DESCRIPTION

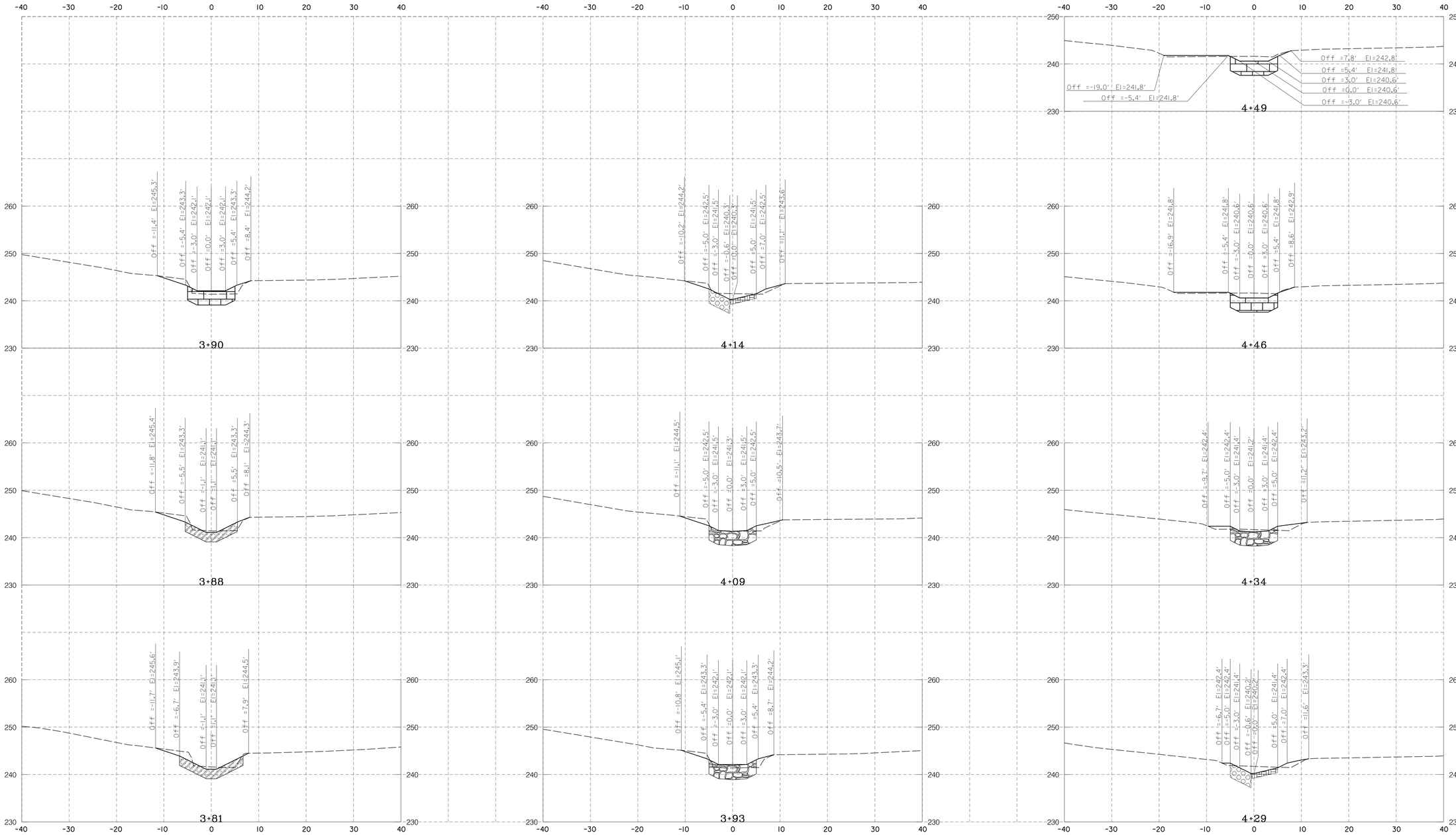
REVISIONS

HEAVENLY POND
STREAM RESTORATION
CROSS SECTIONS

HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS

WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR, MARYLAND 21014
410-638-3277
SCP PLAN #59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 40 OF 58
DRAWN BY MER	FWA JOB NUMBER



LEGEND

- EXISTING GROUND
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SCALE
HORIZONTAL: 1"=10' VERTICAL: 1" = 10'

DESIGN AND DRAWING BASED UPON THE MARYLAND COORDINATE SYSTEM
HORIZONTAL = NAD 83/91
VERTICAL = NAVD 88

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REV#	DATE	DESCRIPTION

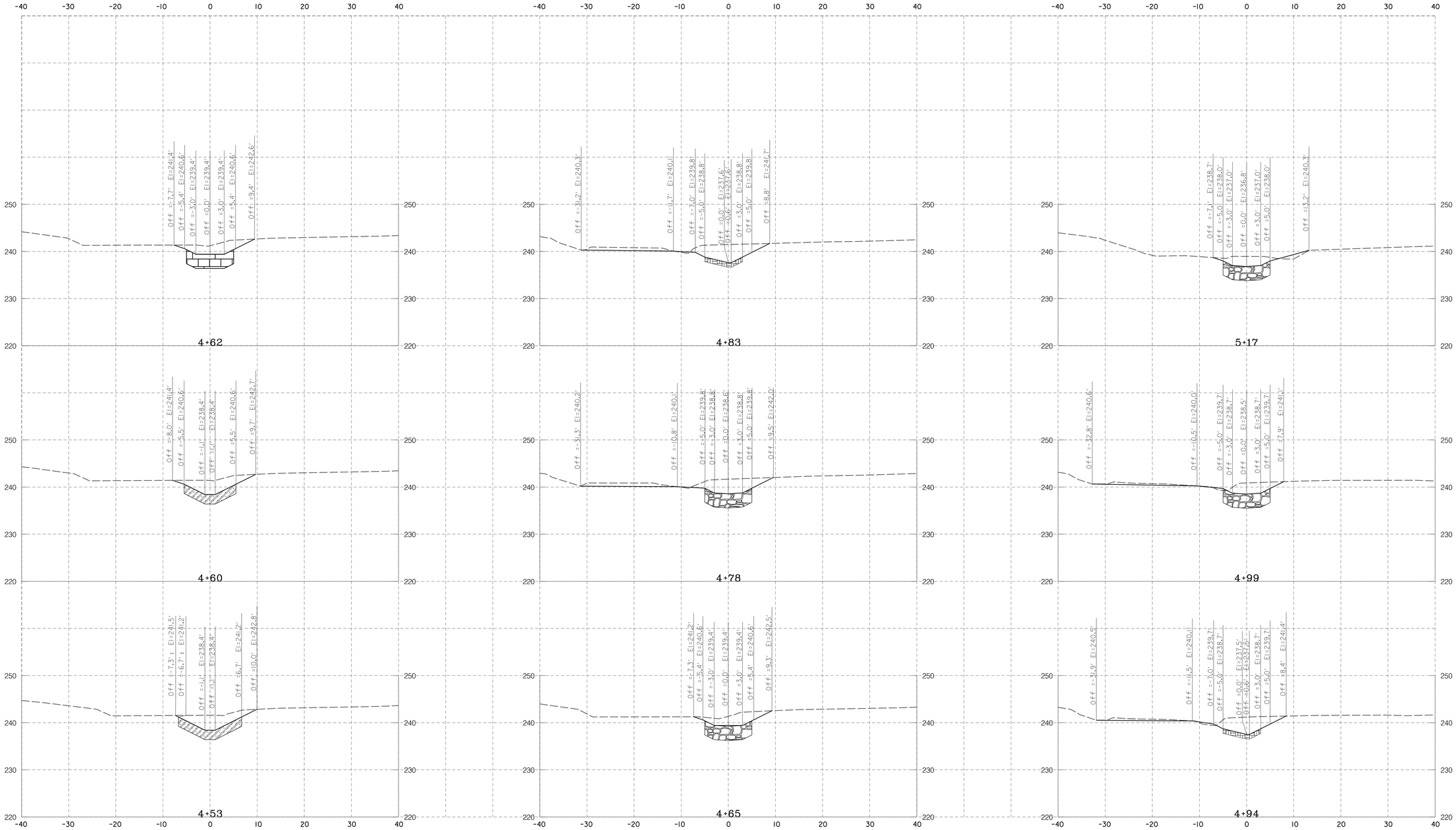
REVISIONS

HEAVENLY POND
STREAM RESTORATION
CROSS SECTIONS

HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS

WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR MARYLAND 21014
410-638-3277
S/C PLAN #59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 41 OF 58
DRAWN BY MER	FWA JOB NUMBER



LEGEND

- EXISTING GROUND
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REV#	DATE	DESCRIPTION

REVISIONS

HEAVENLY POND
STREAM RESTORATION
CROSS SECTIONS

HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
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410-638-3677
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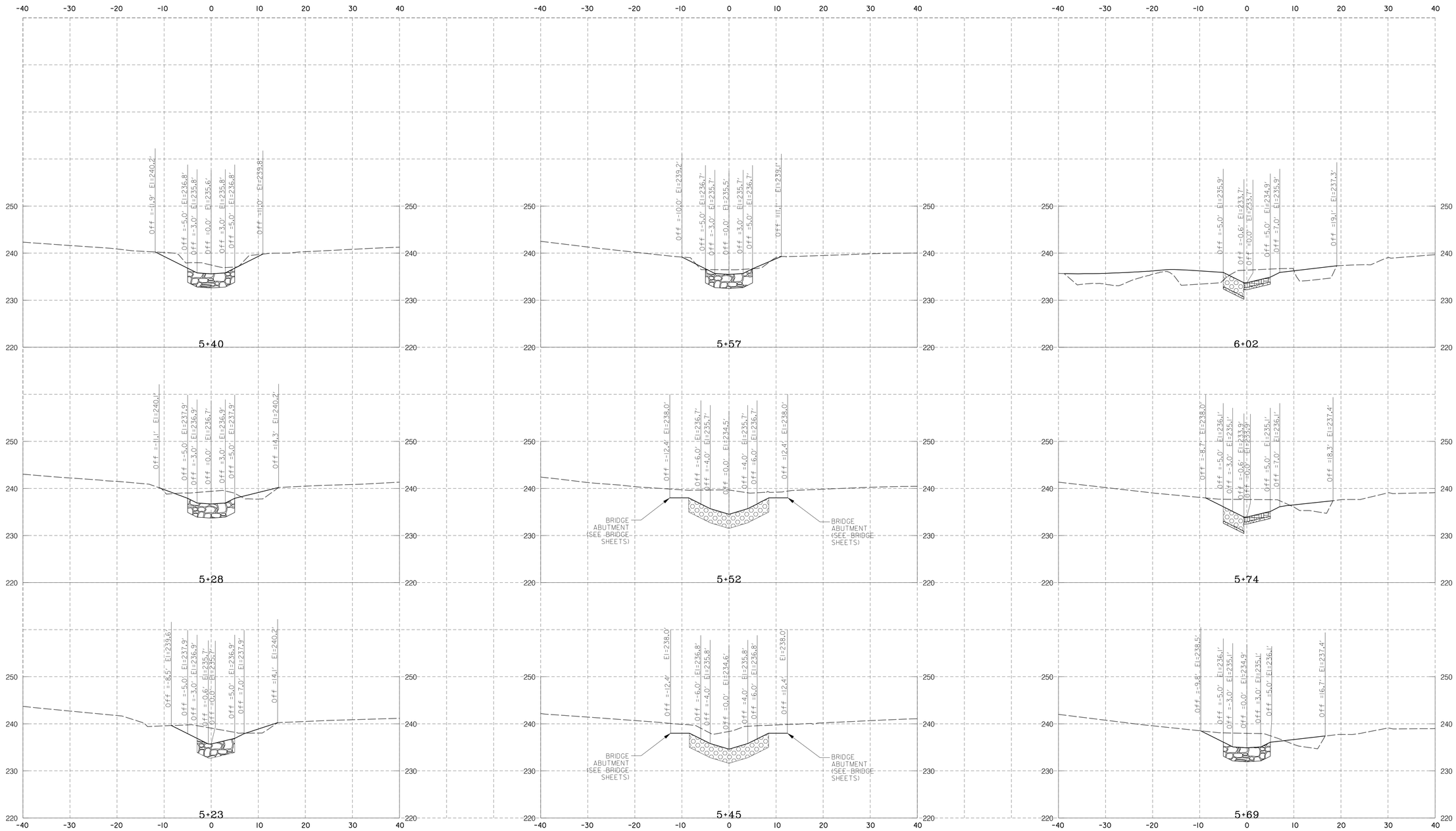
DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 42 OF 58
DRAWN BY MER	FWA JOB NUMBER



LEGEND

- EXISTING GROUND
- PROPOSED GRADE
- OUTFALL POOL
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REV#	DATE	REVISIONS DESCRIPTION

HEAVENLY POND
STREAM RESTORATION
CROSS SECTIONS

HARFORD COUNTY
DEPARTMENT OF
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410-638-3277
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DATE 2/12/20	DRAWING NO.
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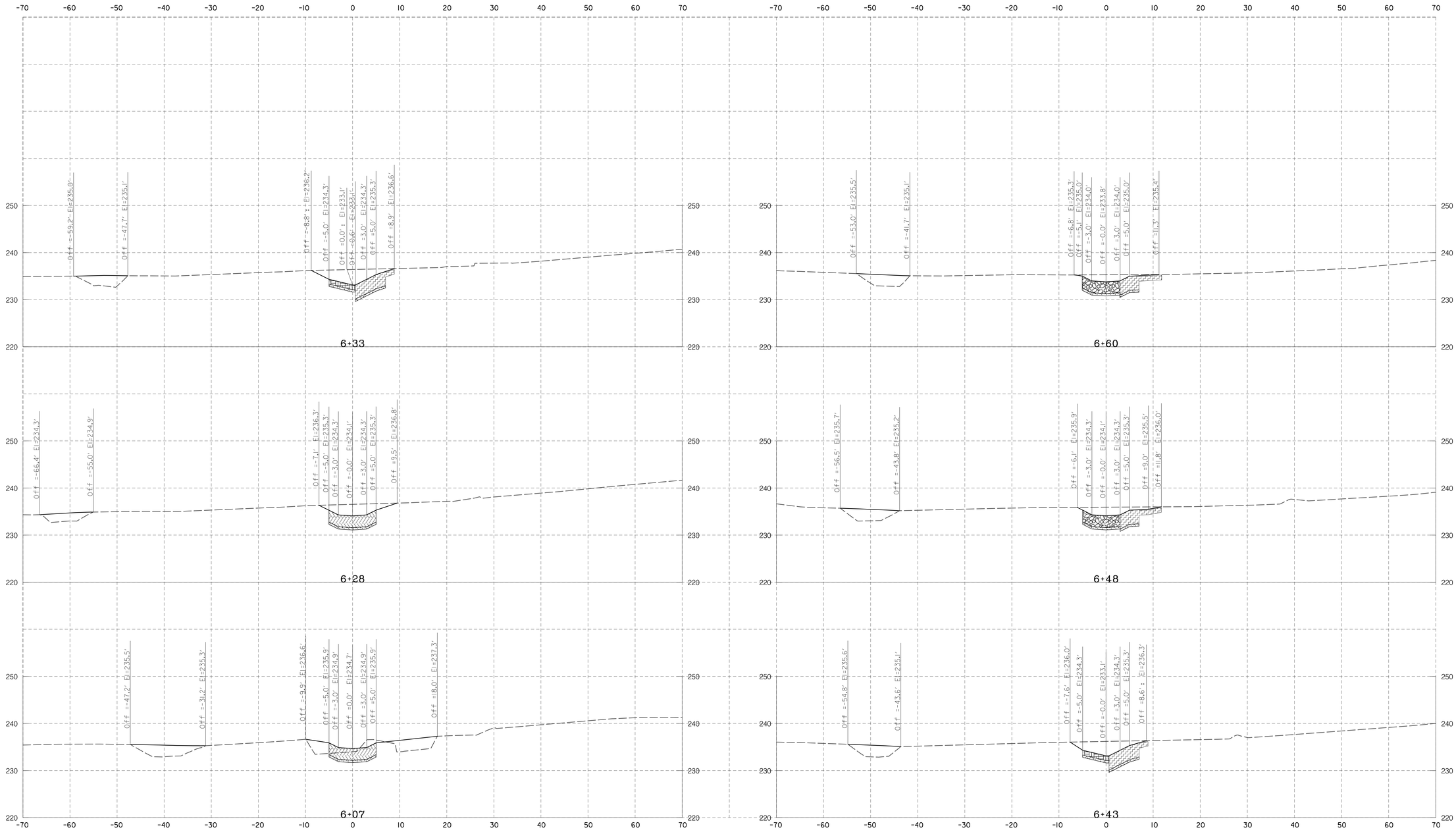

LEGEND

- EXISTING GROUND
- PROPOSED GRADE
- OUTFALL POOL
- CASCADE
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SCALE
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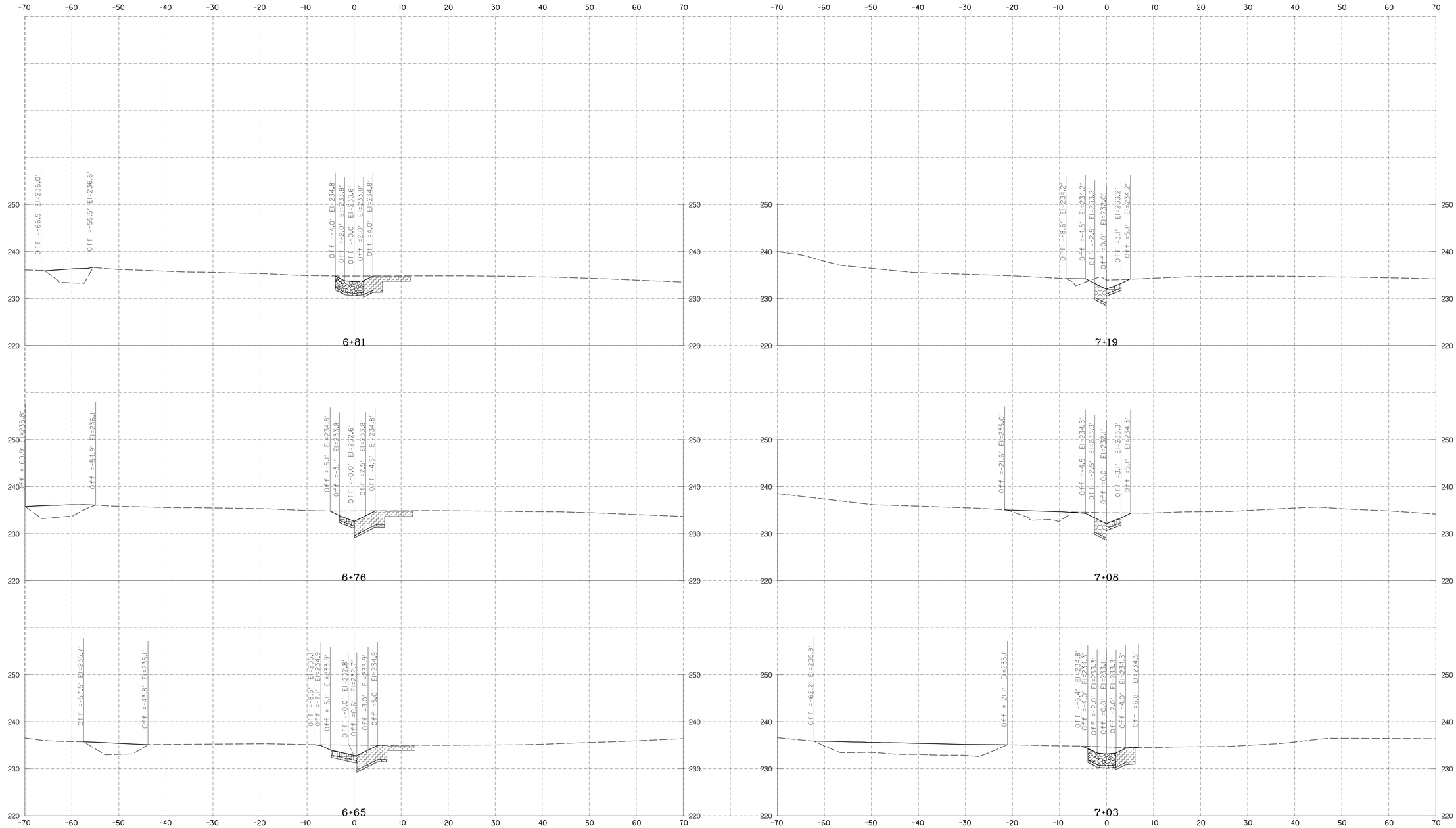
DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 44 OF 58
DRAWN BY MER	FWA JOB NUMBER



LEGEND

- EXISTING GROUND
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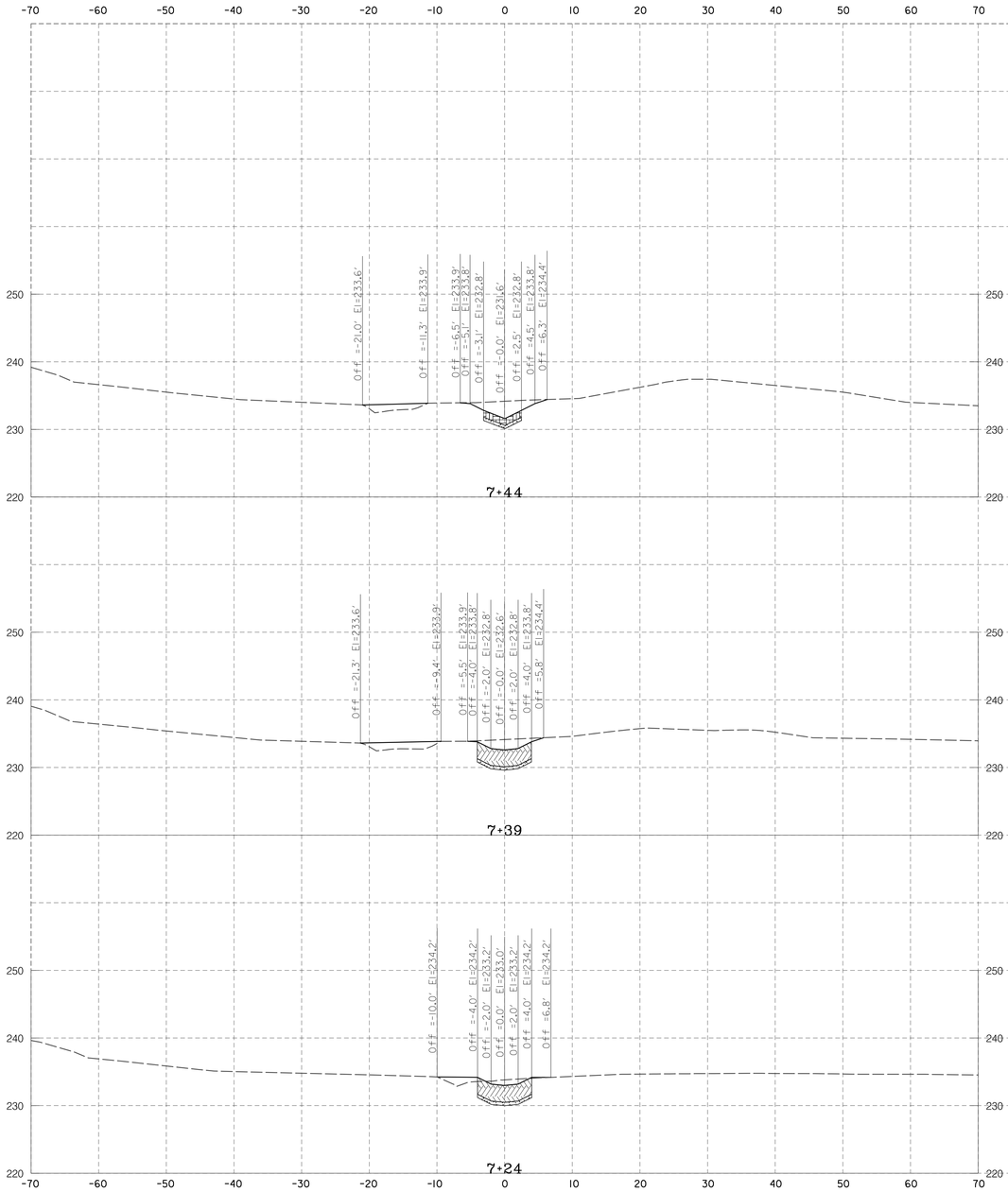
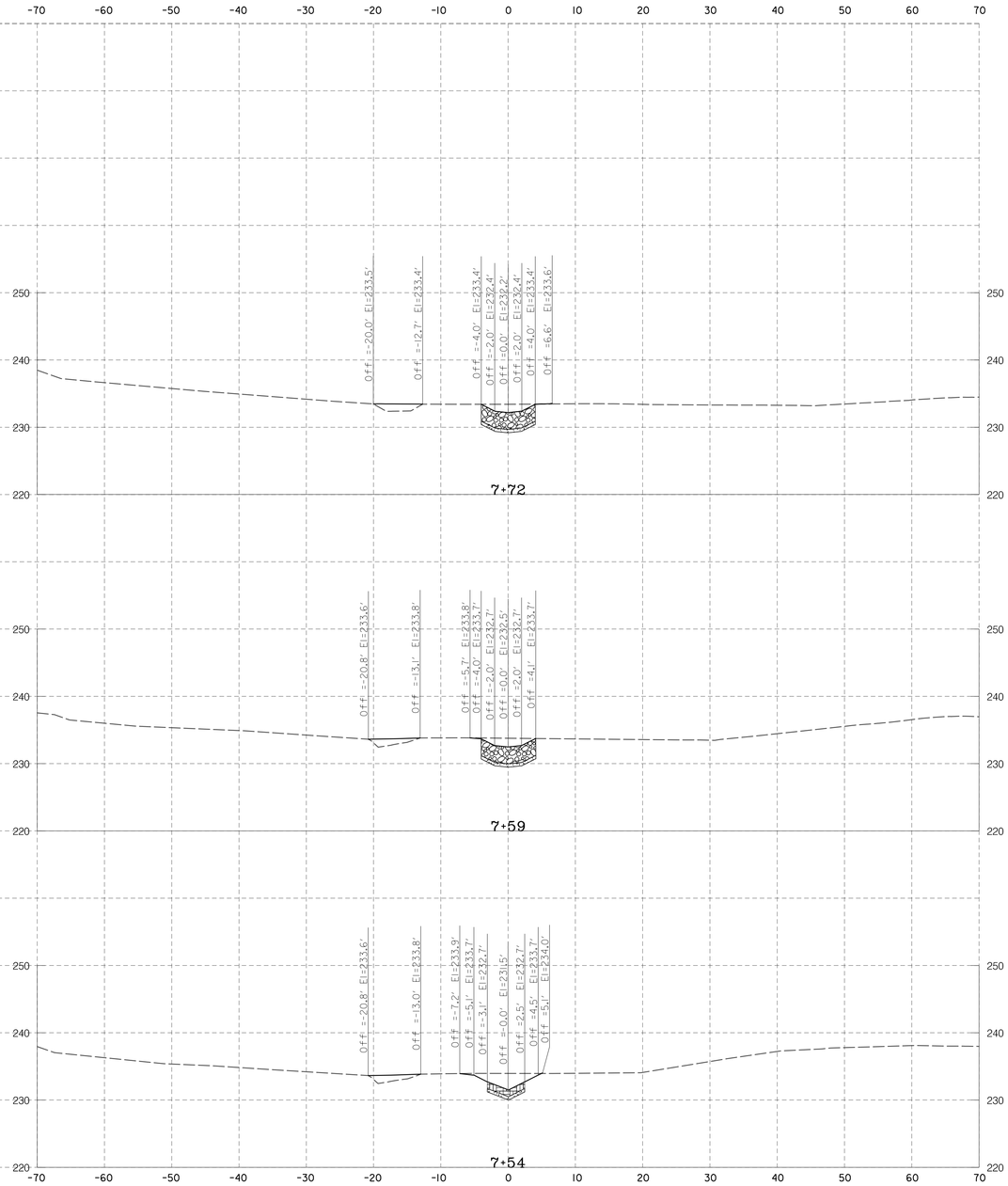
DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 45 OF 58
DRAWN BY MER	FWA JOB NUMBER





LEGEND

- EXISTING GROUND
- PROPOSED GRADE
- OUTFALL POOL
- CASCADE
- STEP-POOL CREST
- POOL PAVEMENT
- TOE BOULDER PROTECTION
- CHANNEL BED MATERIAL
- WOOD RIFFLE STABILIZATION
- RIFFLE STABILIZATION
- TRIBUTARY STABILIZATION
- OVERFLOW STABILIZATION
- GRADED AGGREGATE BEDDING

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

DESIGN AND DRAWING BASED UPON THE MARYLAND COORDINATE SYSTEM
HORIZONTAL = NAD 83/91
VERTICAL = NAVD 88

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

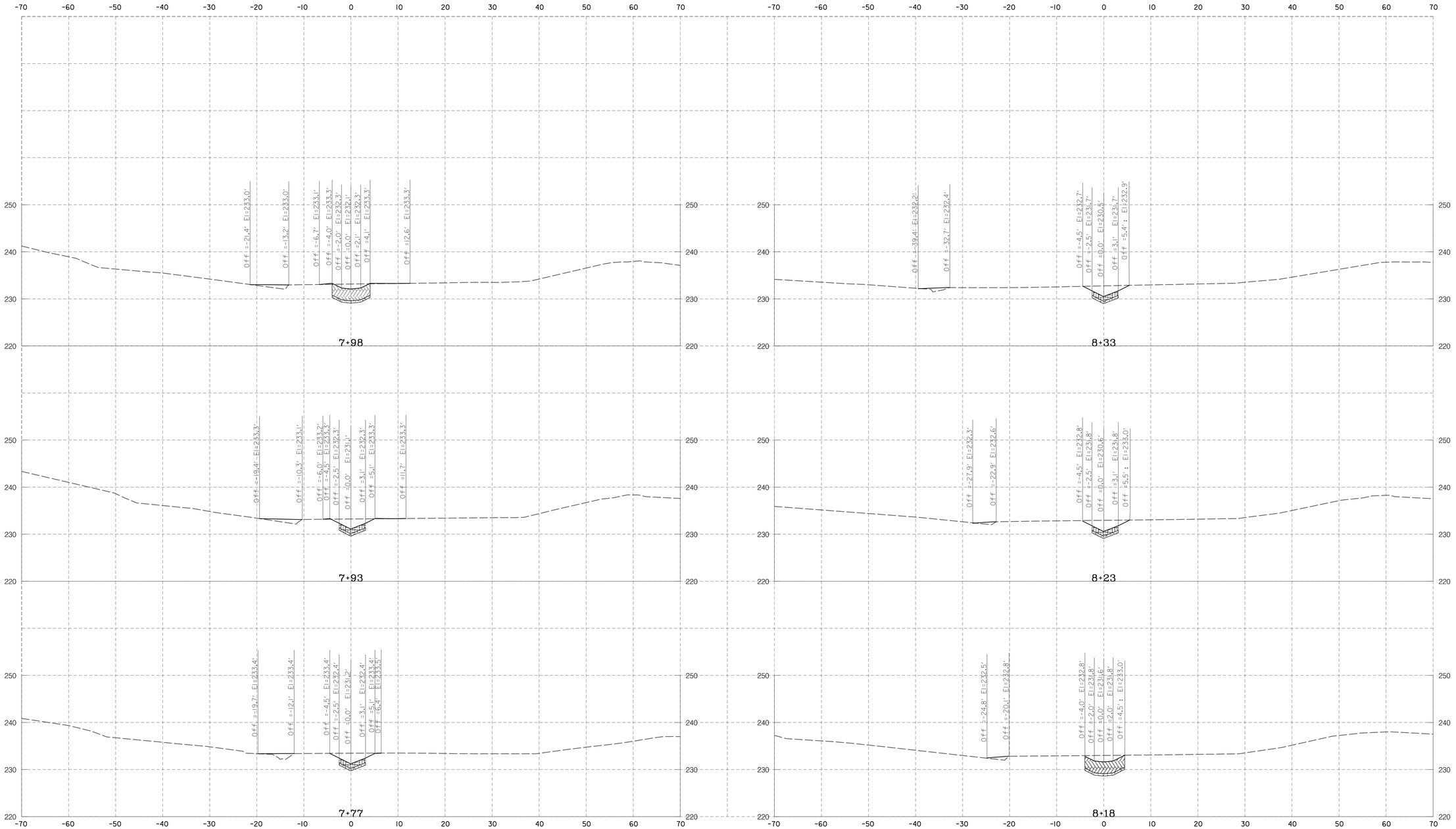
REV#	DATE	DESCRIPTION

REVISIONS

HEAVENLY POND
STREAM RESTORATION
CROSS SECTIONS

HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR MARYLAND 21014
410-638-3277
S/C PLAN #59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 46 OF 58
DRAWN BY MER	FWA JOB NUMBER



LEGEND

- EXISTING GROUND
- PROPOSED GRADE
- OUTFALL POOL
- CASCADE
- STEP-POOL CREST
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SCALE
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DESIGN AND DRAWING BASED UPON THE MARYLAND COORDINATE SYSTEM
HORIZONTAL = NAD 83/91
VERTICAL = NAVD 88

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

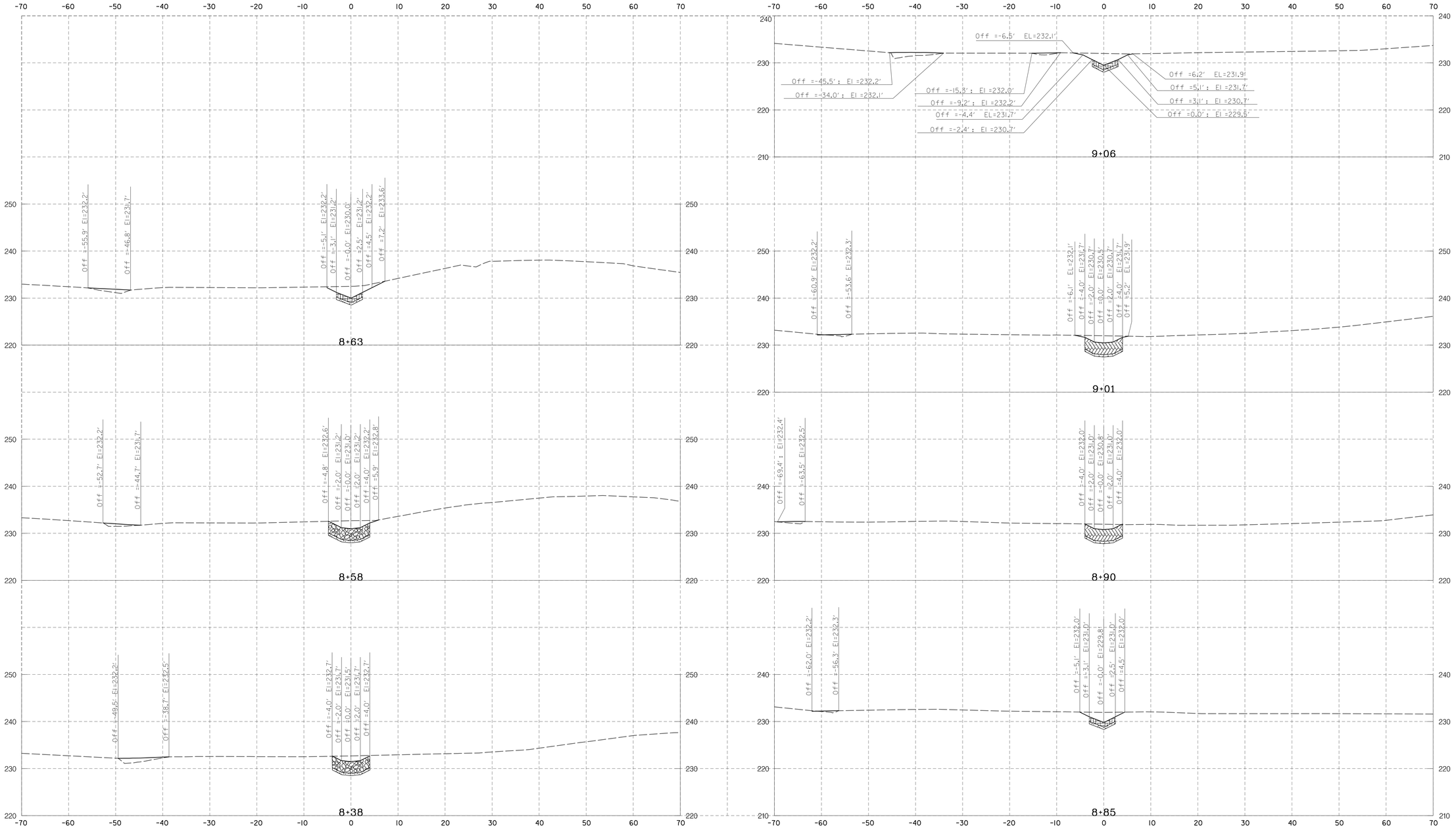
REVISIONS

REV#	DATE	DESCRIPTION

HEAVENLY POND
STREAM RESTORATION
CROSS SECTIONS

HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR MARYLAND 21014
410-638-3217
SC PLAN #59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 47 OF 58
DRAWN BY MER	FWA JOB NUMBER



LEGEND

- EXISTING GROUND
- PROPOSED GRADE
- OUTFALL POOL
- CASCADE
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SCALE
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DESIGN AND DRAWING BASED UPON THE MARYLAND COORDINATE SYSTEM
HORIZONTAL = NAD 83/91
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McCORMICK TAYLOR
509 South Exeter Street
4th Floor
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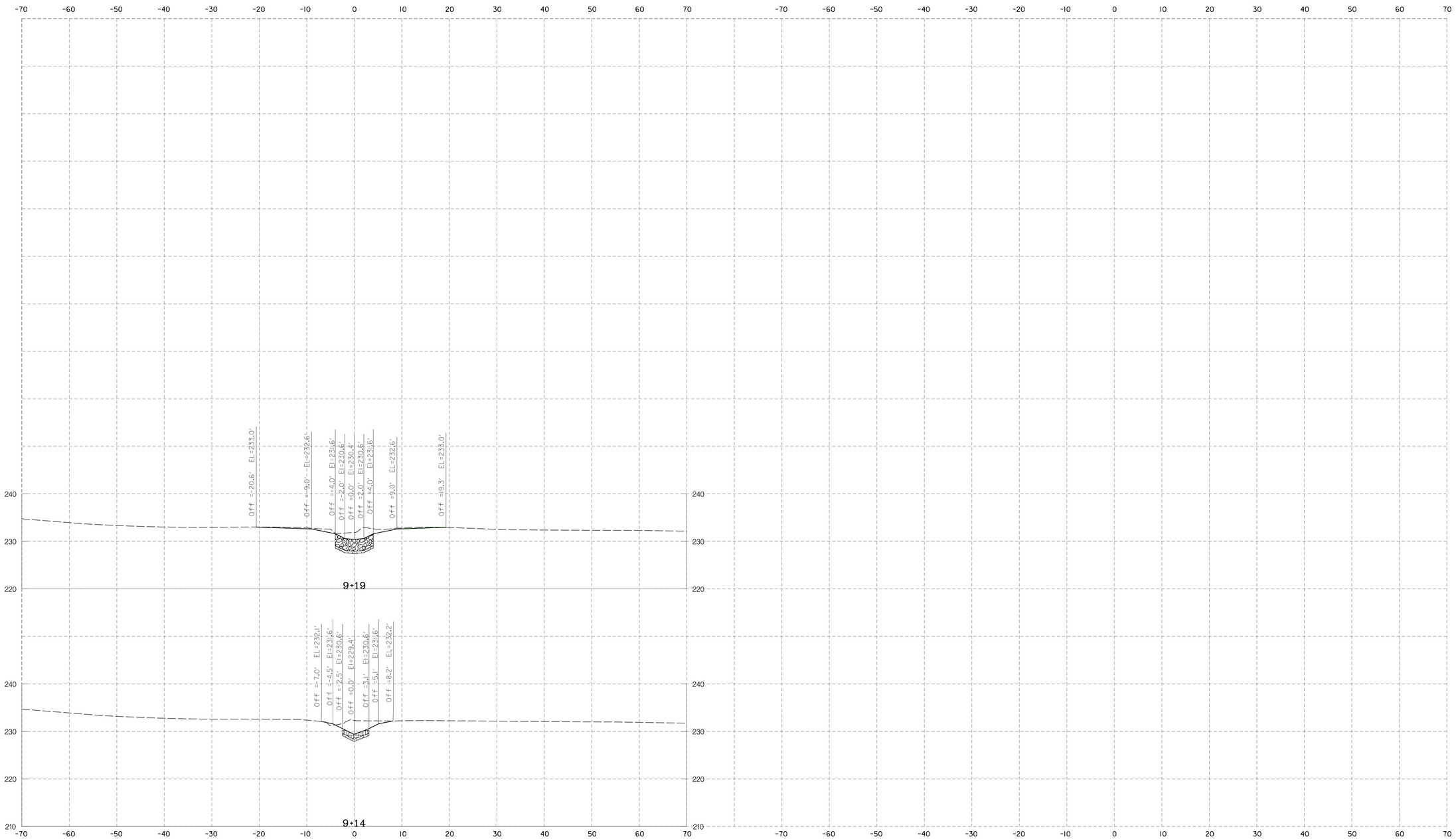
(410) 662-7400

REV#	DATE	REVISIONS DESCRIPTION

HEAVENLY POND
STREAM RESTORATION
CROSS SECTIONS

HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL-AIR MARYLAND 21014
410-638-3677
SC PLAN #59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 48 OF 58
DRAWN BY MER	FWA JOB NUMBER



LEGEND

- EXISTING GROUND
- PROPOSED GRADE
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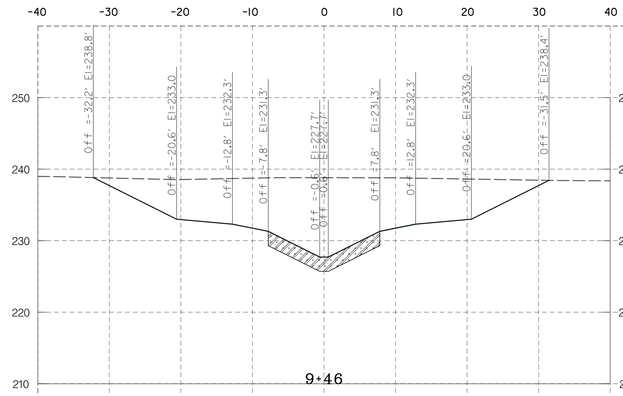
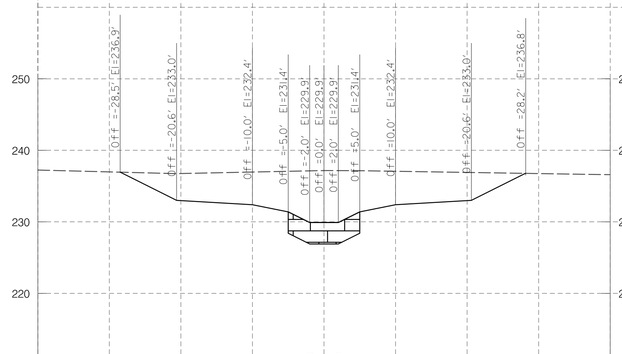
REV#	DATE	DESCRIPTION
REVISIONS		

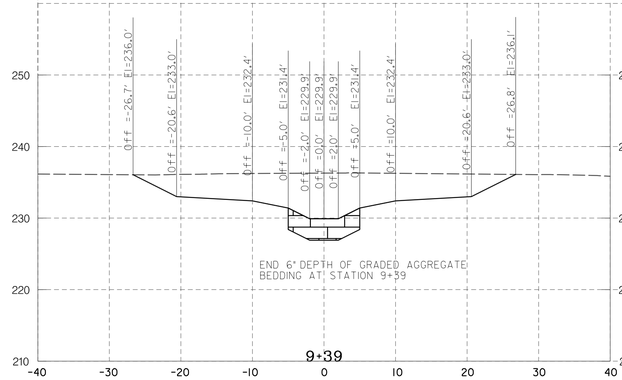
HEAVENLY POND
STREAM RESTORATION
CROSS SECTIONS

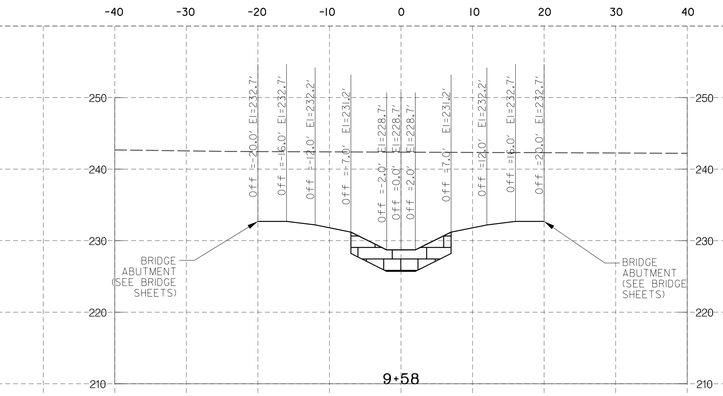
HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR MARYLAND 21014
410-638-3277
SC PLAN #59839
GR PERMIT #15366-2018

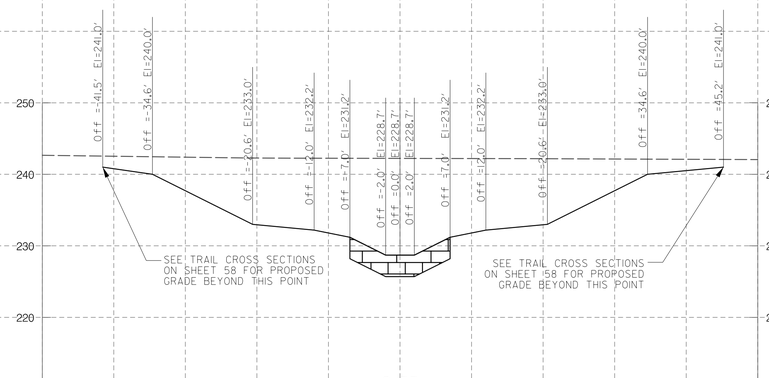
DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 49 OF 58
DRAWN BY MER	FWA JOB NUMBER

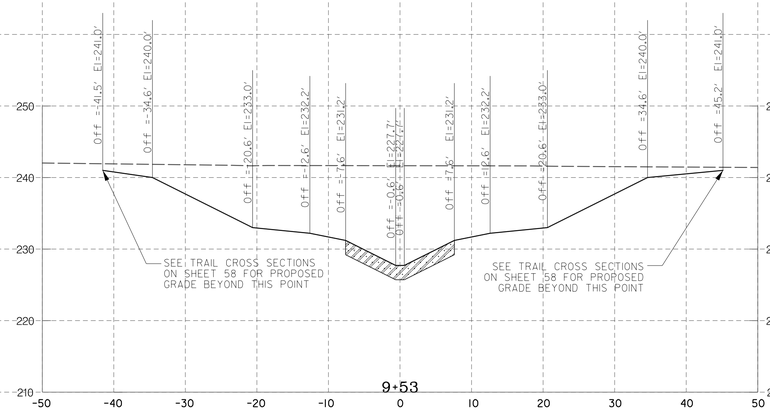


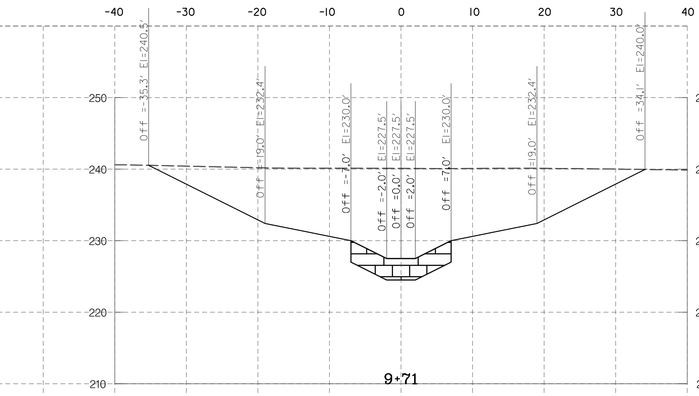


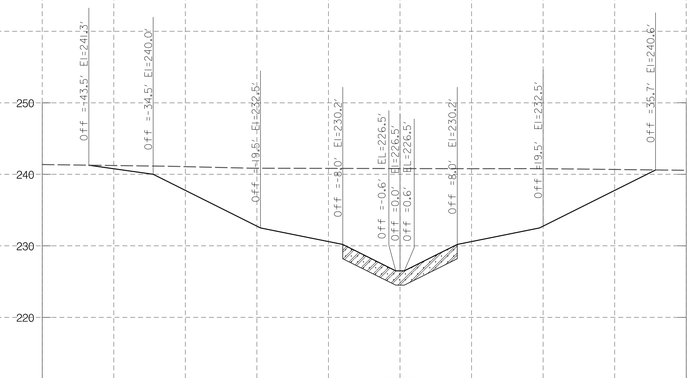


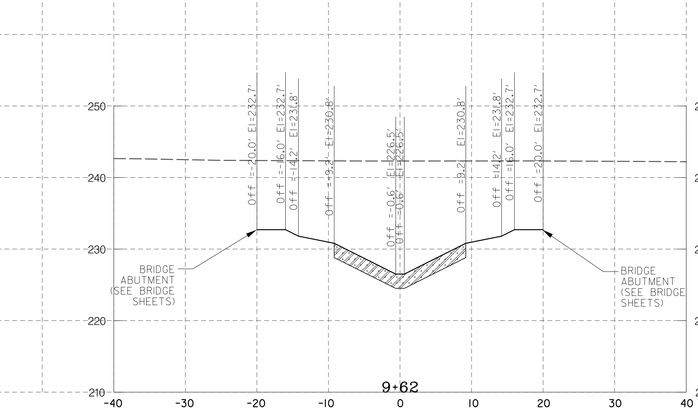












LEGEND

- EXISTING GROUND
- PROPOSED GRADE
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SCALE
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DESIGN AND DRAWING BASED UPON THE MARYLAND COORDINATE SYSTEM
HORIZONTAL = NAD 83/91
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McCORMICK TAYLOR
509 South Exeter Street
4th Floor
Baltimore, Maryland 21202
(410) 662-7400

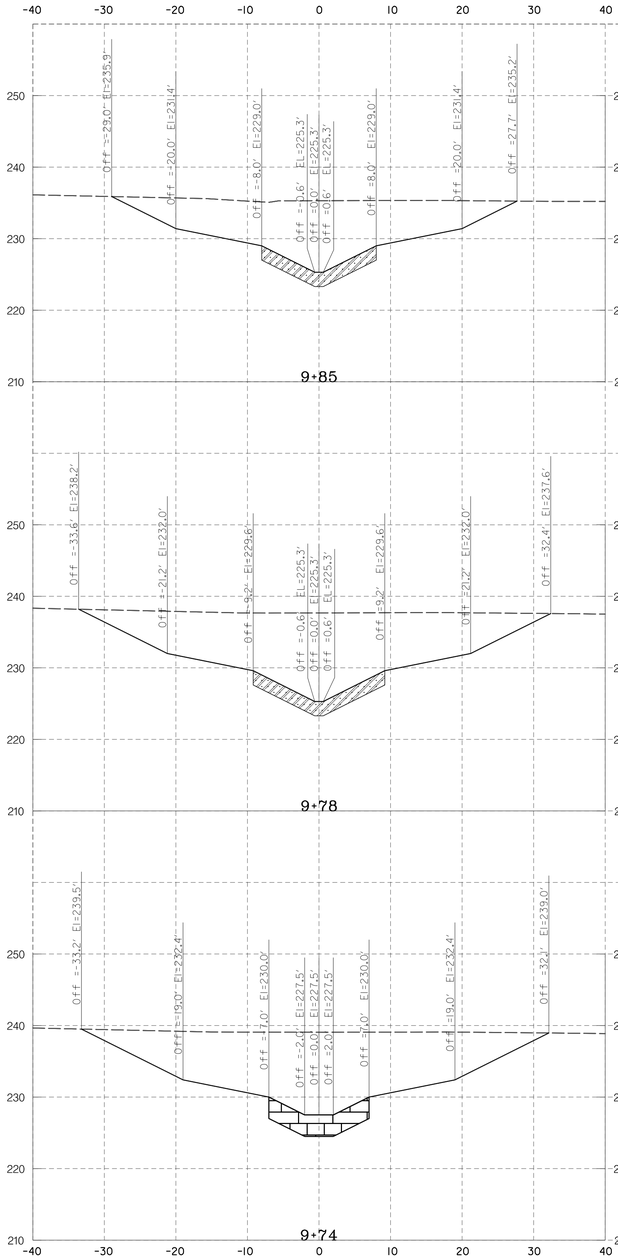
REV#	DATE	DESCRIPTION

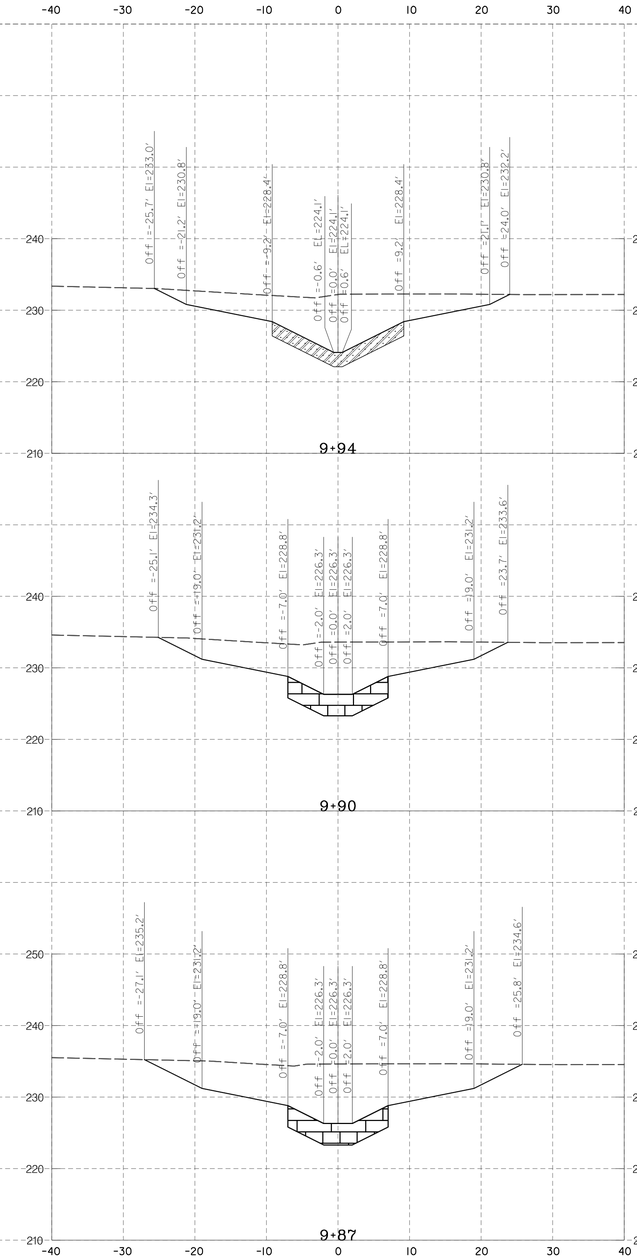
REVISIONS

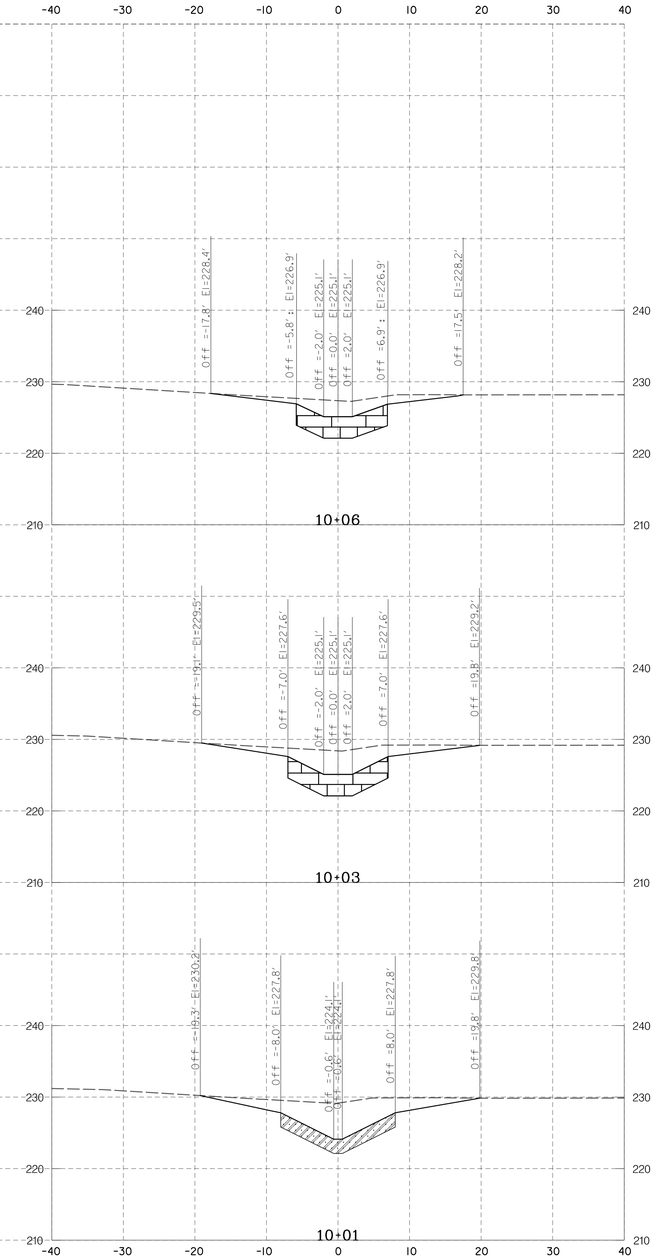
HEAVENLY POND
STREAM RESTORATION
CROSS SECTIONS

HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR, MARYLAND 21014
410-638-3227
SCP PLAN #59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 50 OF 58
DRAWN BY MER	FWA JOB NUMBER







LEGEND

- EXISTING GROUND
- PROPOSED GRADE
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McCORMICK TAYLOR

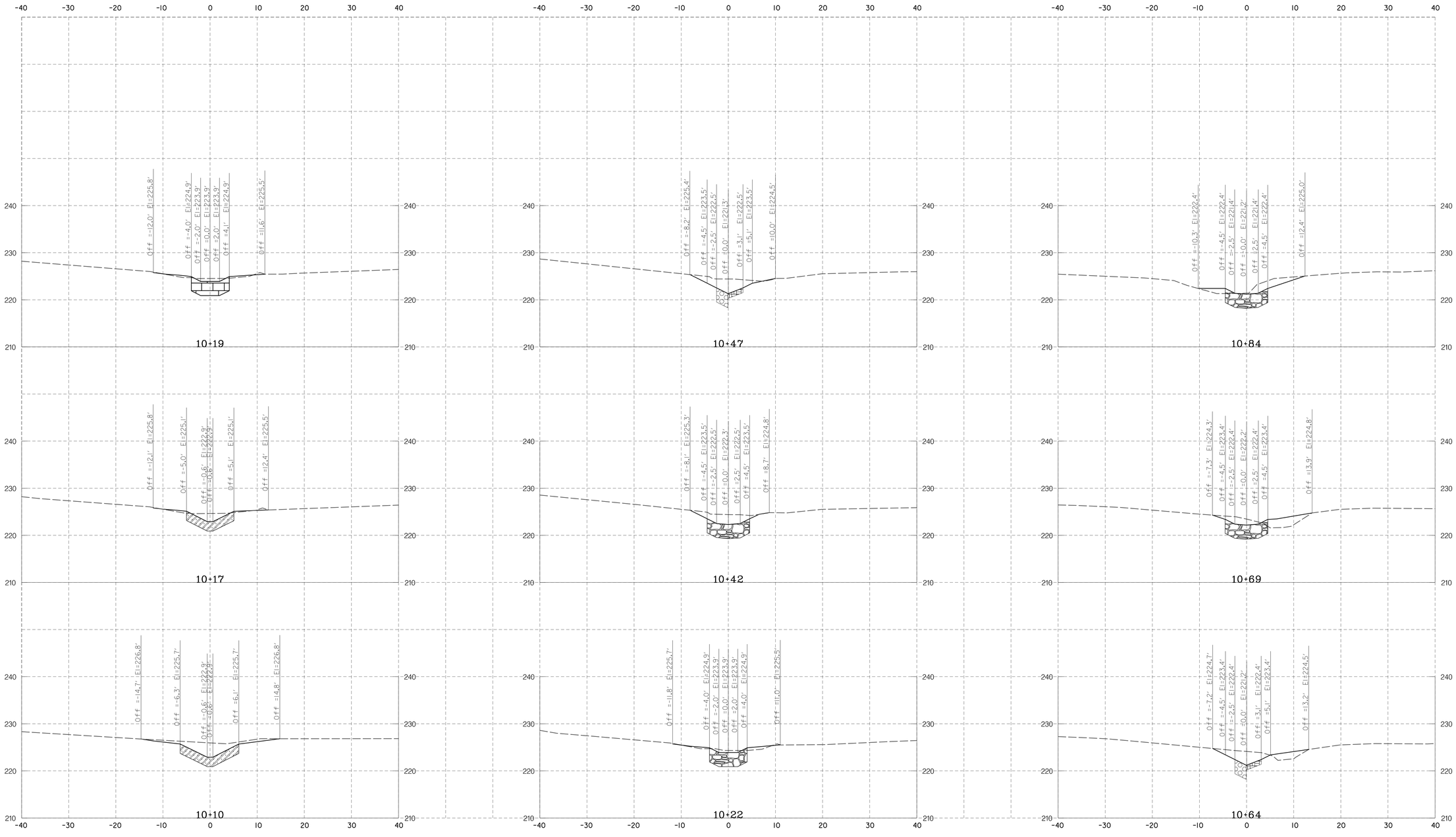
REV#	DATE	DESCRIPTION

REVISIONS

HEAVENLY POND
STREAM RESTORATION
CROSS SECTIONS

HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR MARYLAND 21014
410-638-3227
SC PLAN #59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 51 OF 58
DRAWN BY MER	FWA JOB NUMBER



LEGEND

- EXISTING GROUND
- PROPOSED GRADE
- OUTFALL POOL
- CASCADE
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DESIGN AND DRAWING BASED UPON THE MARYLAND COORDINATE SYSTEM
HORIZONTAL = NAD 83/91
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4th Floor
Baltimore, Maryland 21202
(410) 662-7400

McCORMICK TAYLOR

REV#	DATE	DESCRIPTION

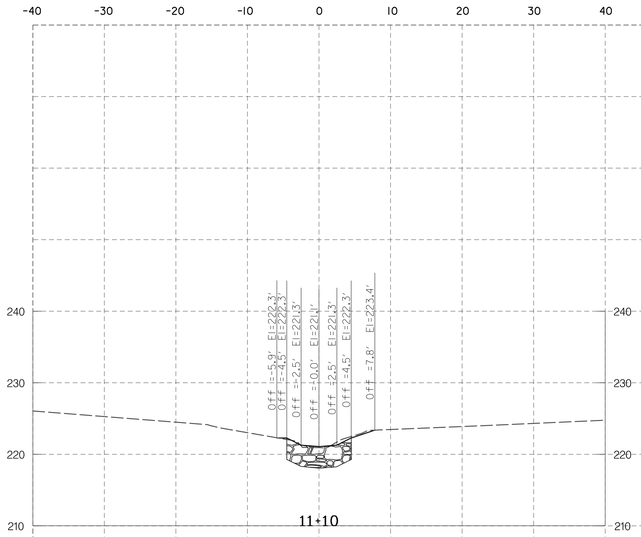
REVISIONS

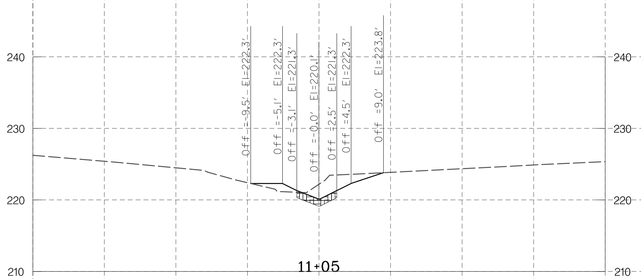
HEAVENLY POND
STREAM RESTORATION
CROSS SECTIONS

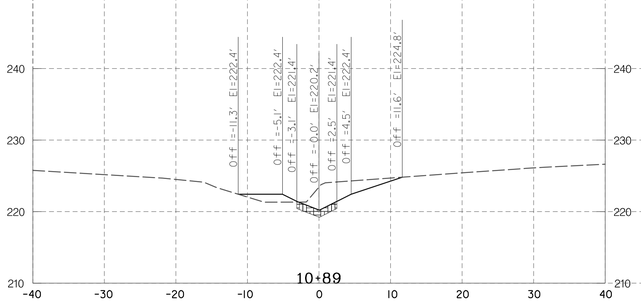
HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS

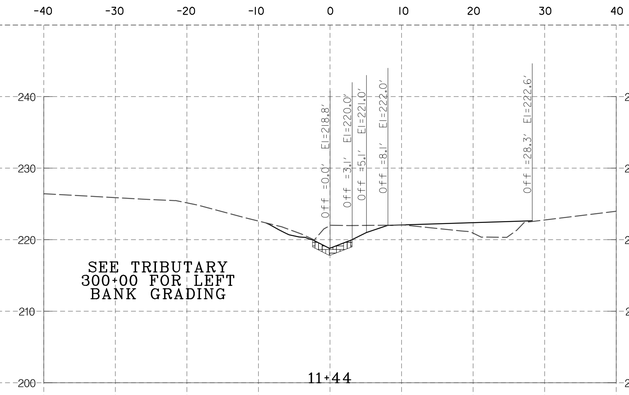
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR, MARYLAND 21014
410-638-3277
SC PLAN #59839
GR PERMIT #15366-2018

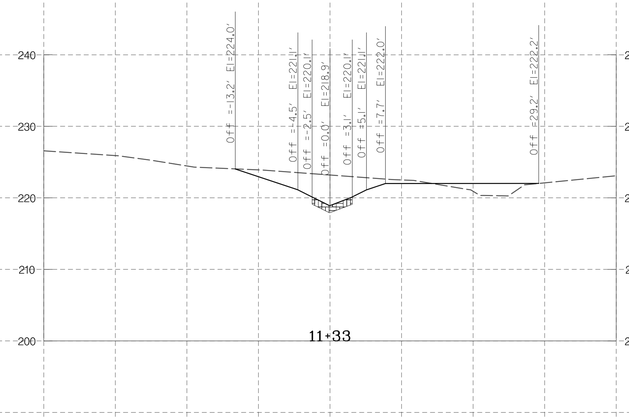
DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 52 OF 58
DRAWN BY MER	FWA JOB NUMBER

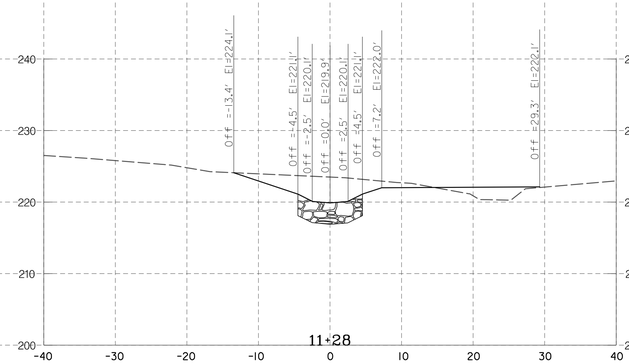


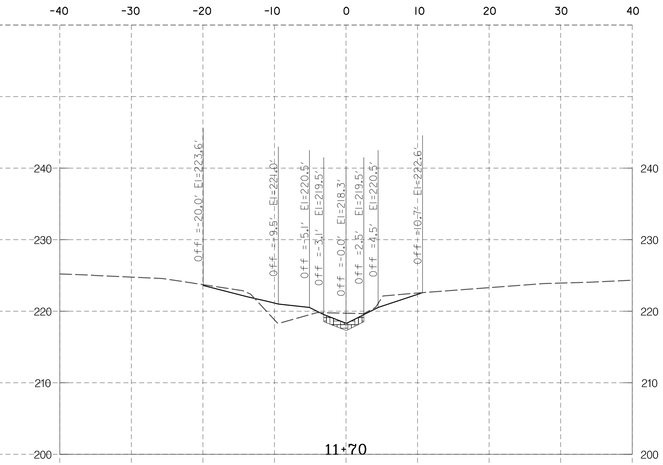


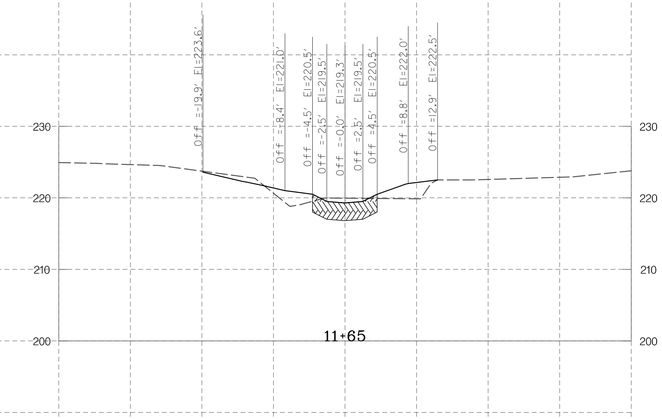


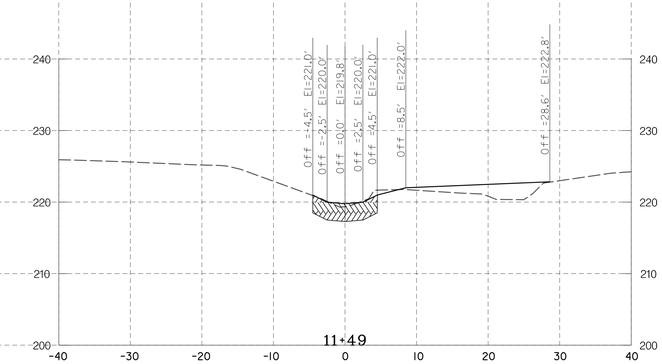












LEGEND

- EXISTING GROUND
- PROPOSED GRADE
- OUTFALL POOL
- CASCADE
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- POOL PAVEMENT
- TOE BOULDER PROTECTION
- CHANNEL BED MATERIAL
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SCALE
HORIZONTAL: 1"=10' VERTICAL: 1" = 10'

DESIGN AND DRAWING BASED UPON THE MARYLAND COORDINATE SYSTEM
HORIZONTAL = NAD 83/91
VERTICAL = NAVD 88

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

McCORMICK TAYLOR

REV#	DATE	DESCRIPTION

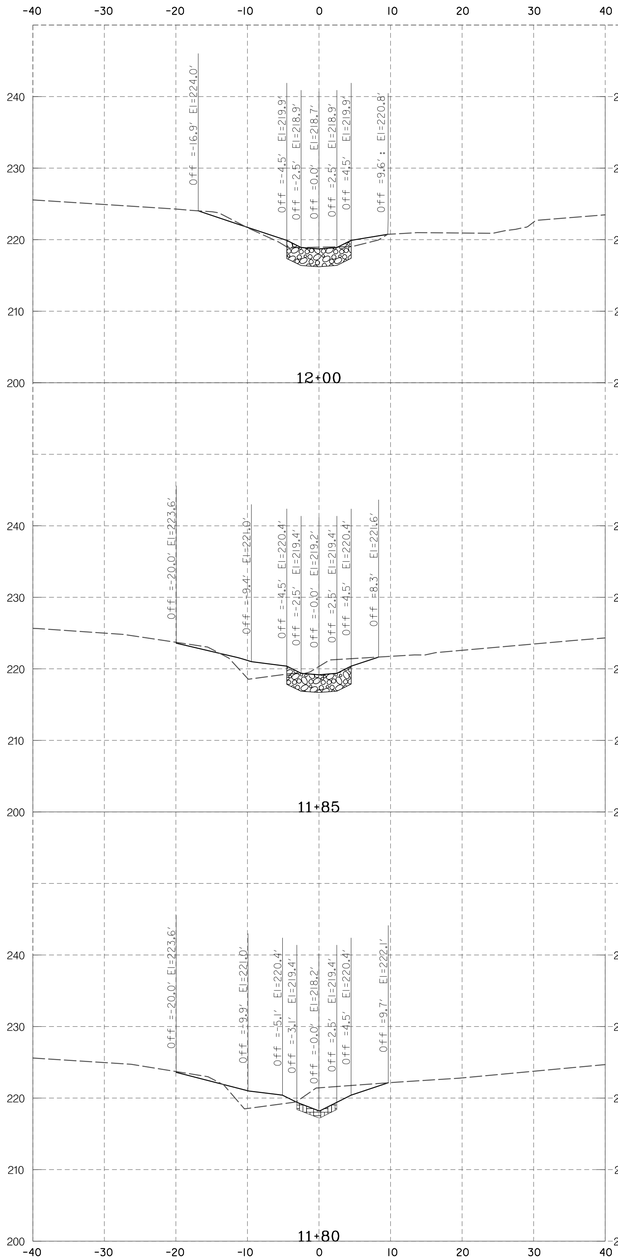
REVISIONS

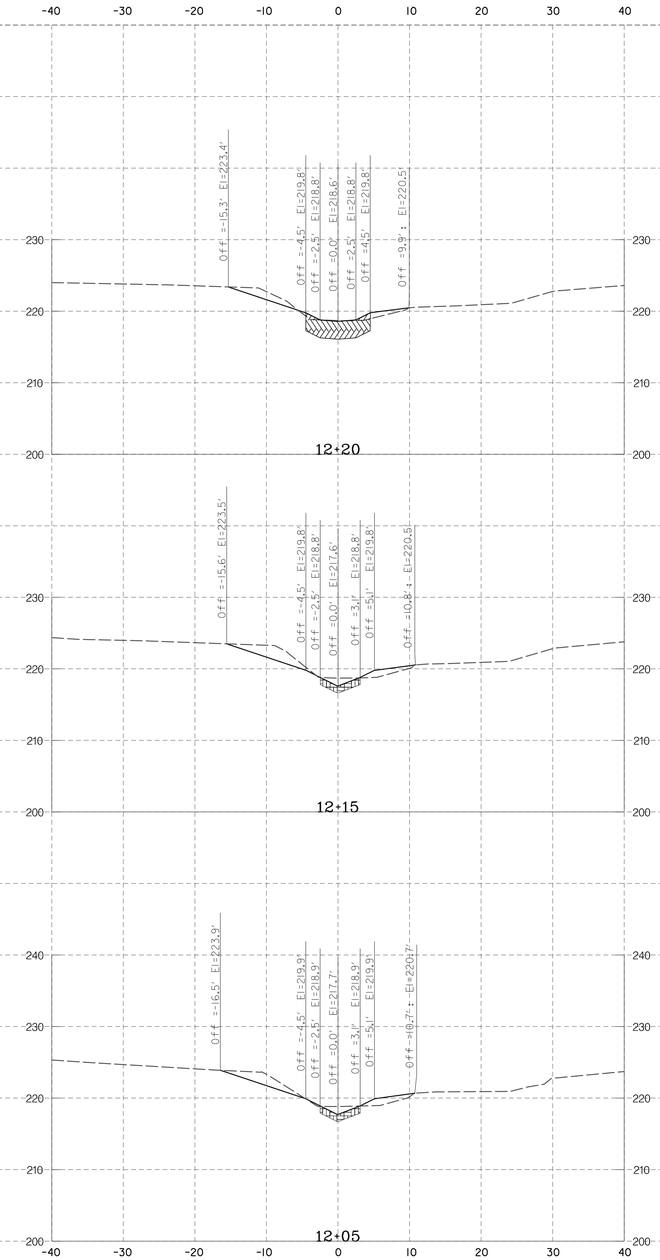
HEAVENLY POND
STREAM RESTORATION
CROSS SECTIONS

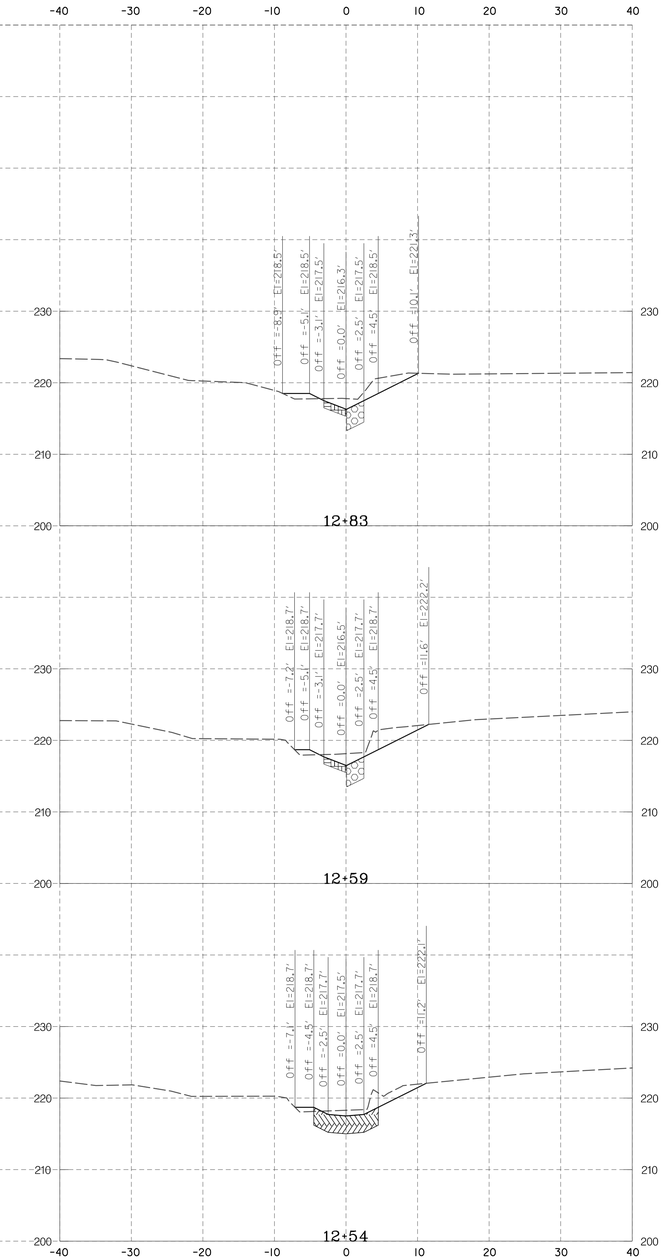
HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS

WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR MARYLAND 21014
410-638-3277
SC PLAN #59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 53 OF 58
DRAWN BY MER	FWA JOB NUMBER







LEGEND

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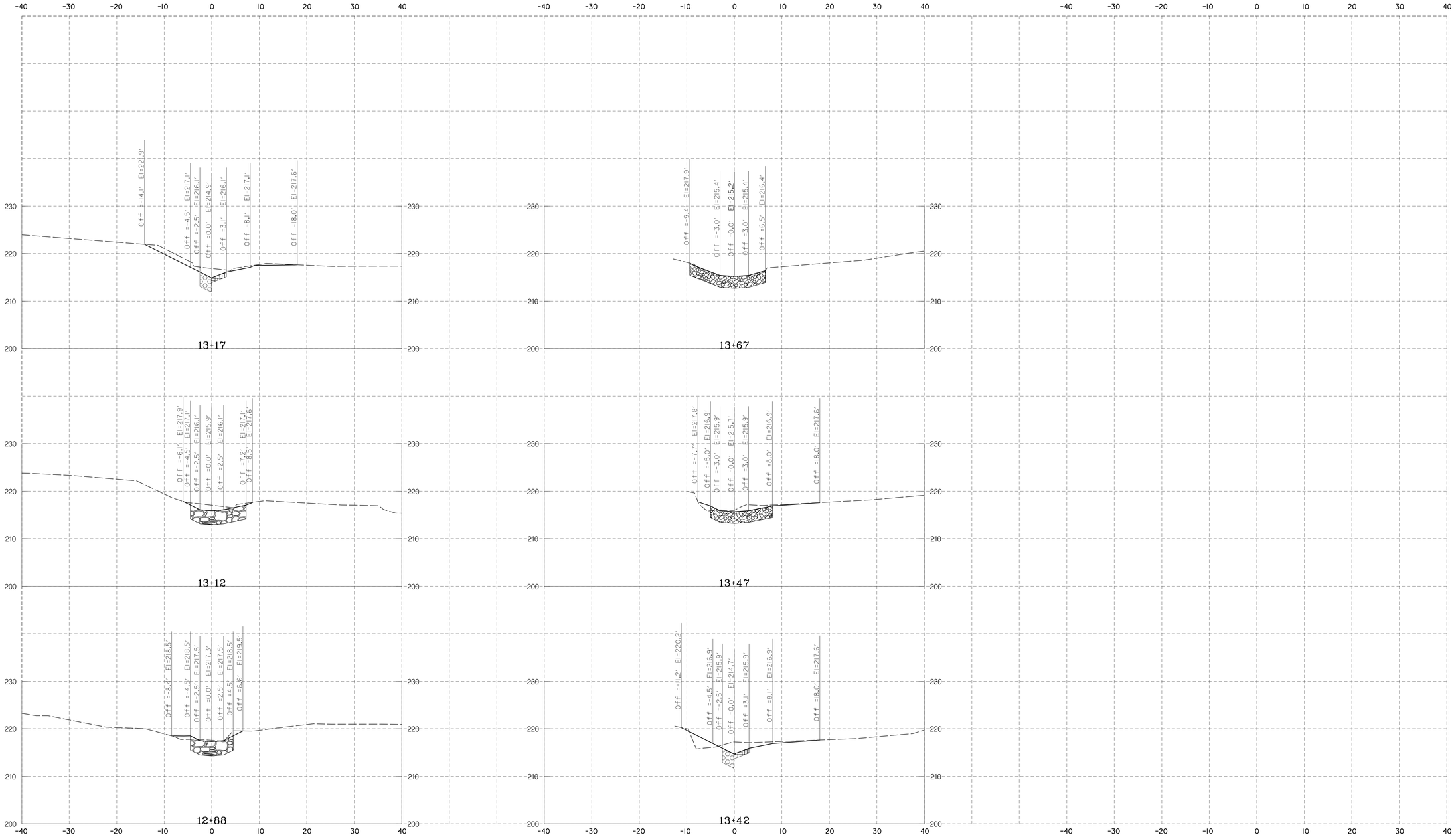
REV#	DATE	REVISIONS DESCRIPTION

HEAVENLY POND
STREAM RESTORATION
CROSS SECTIONS

HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS

WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR, MARYLAND 21014
410-638-3277
SC PLAN #59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 54 OF 58
DRAWN BY MER	FWA JOB NUMBER



LEGEND

- EXISTING GROUND
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REVISIONS

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STREAM RESTORATION
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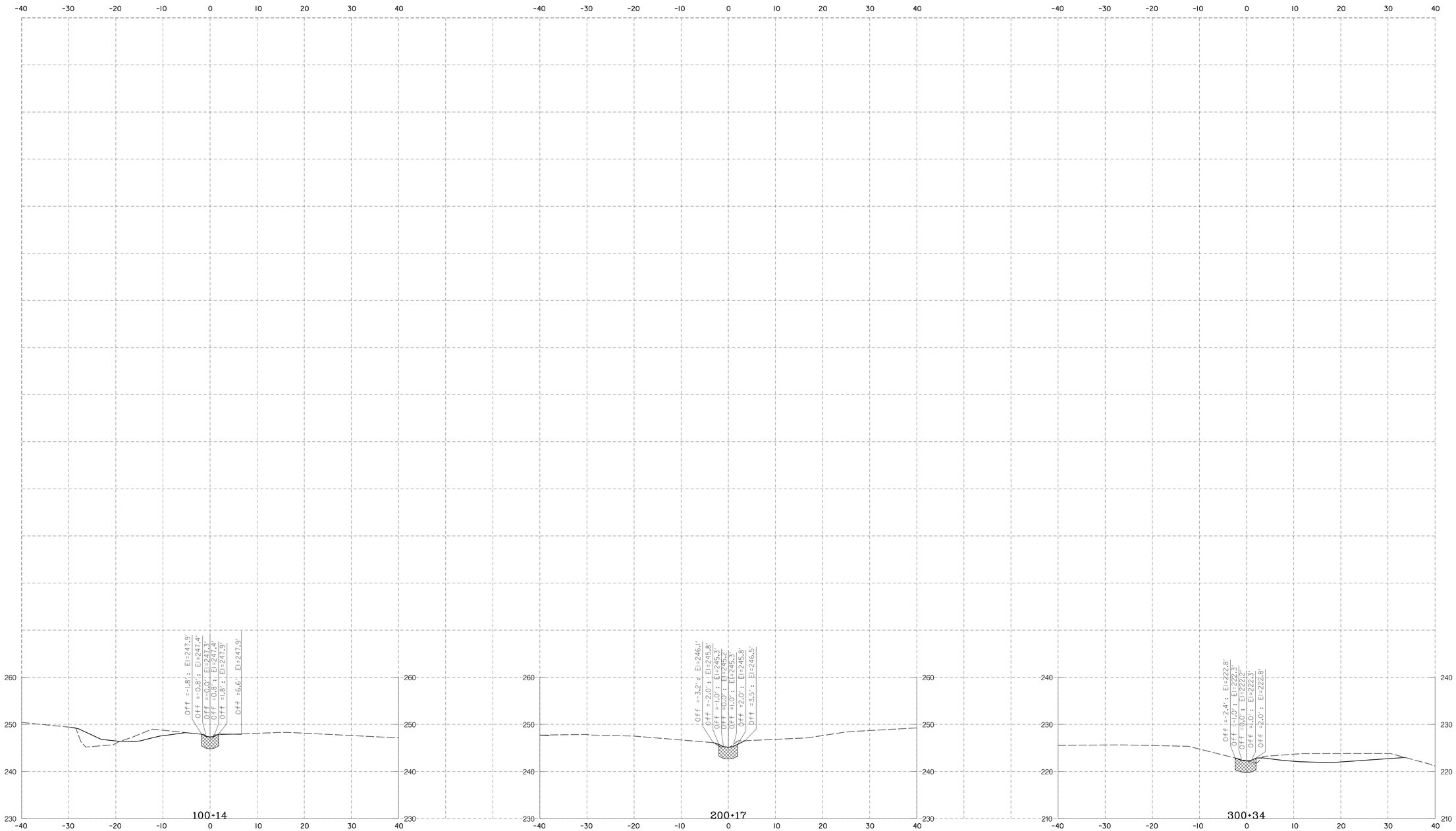
HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS

WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR MARYLAND 21014
410-638-3777
SC PLAN #39839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 55 OF 58
DRAWN BY MER	FWA JOB NUMBER



LEGEND

- EXISTING GROUND
- PROPOSED GRADE
- OUTFALL POOL
- CASCADE
- STEP-POOL CREST
- POOL PAVEMENT
- TOE BOULDER PROTECTION
- CHANNEL BED MATERIAL
- WOOD RIFFLE STABILIZATION
- RIFFLE STABILIZATION
- TRIBUTARY STABILIZATION
- OVERFLOW STABILIZATION
- GRADED AGGREGATE BEDDING

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

DESIGN AND DRAWING BASED UPON THE MARYLAND COORDINATE SYSTEM
HORIZONTAL = NAD 83/91
VERTICAL = NAVD 88

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

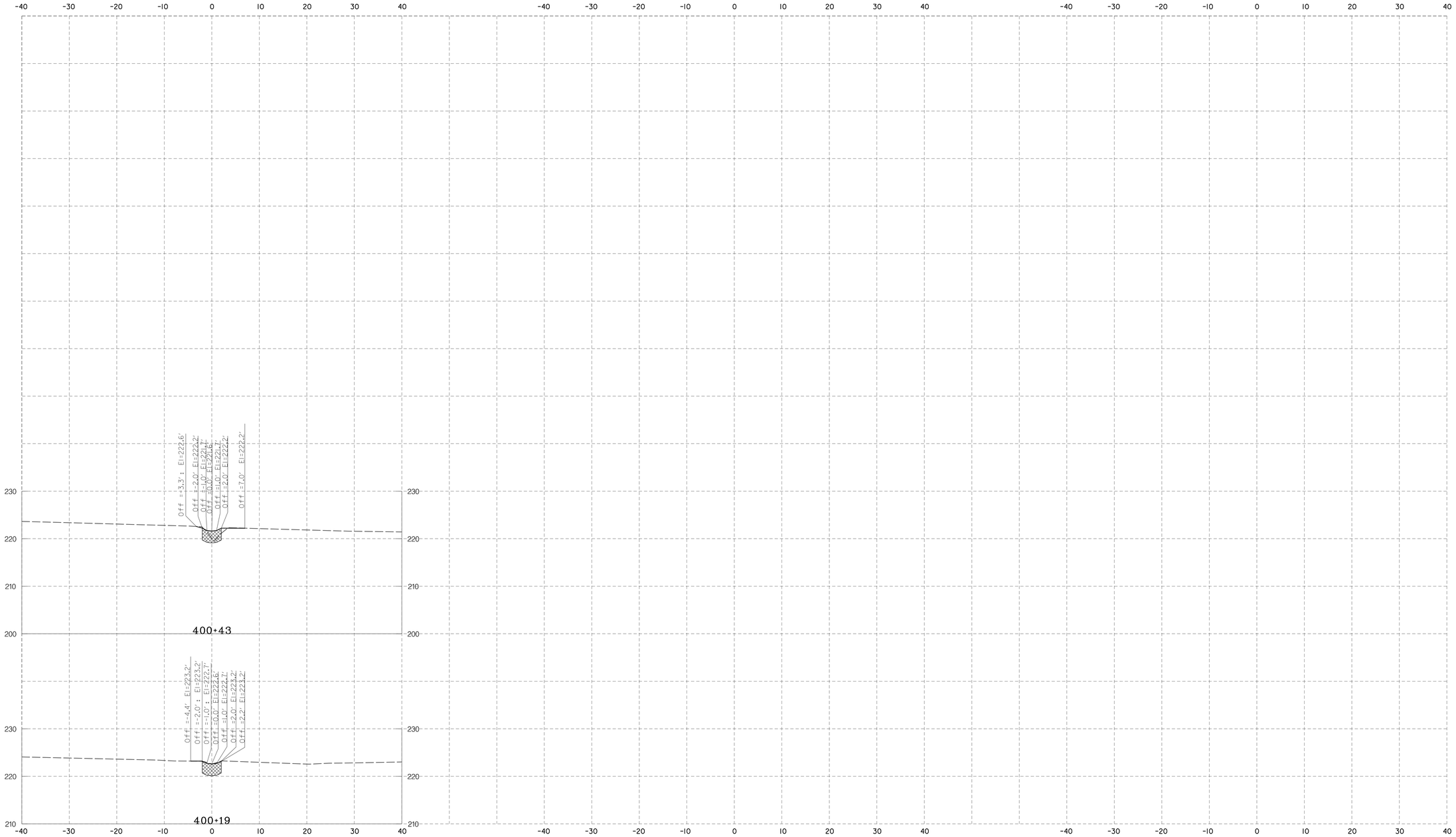
REVISIONS	
DATE	DESCRIPTION

HEAVENLY POND
STREAM RESTORATION
CROSS SECTIONS

HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS

WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR, MARYLAND 21014
410-638-3277
SC PLAN #59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 56 OF 58
DRAWN BY MER	FWA JOB NUMBER



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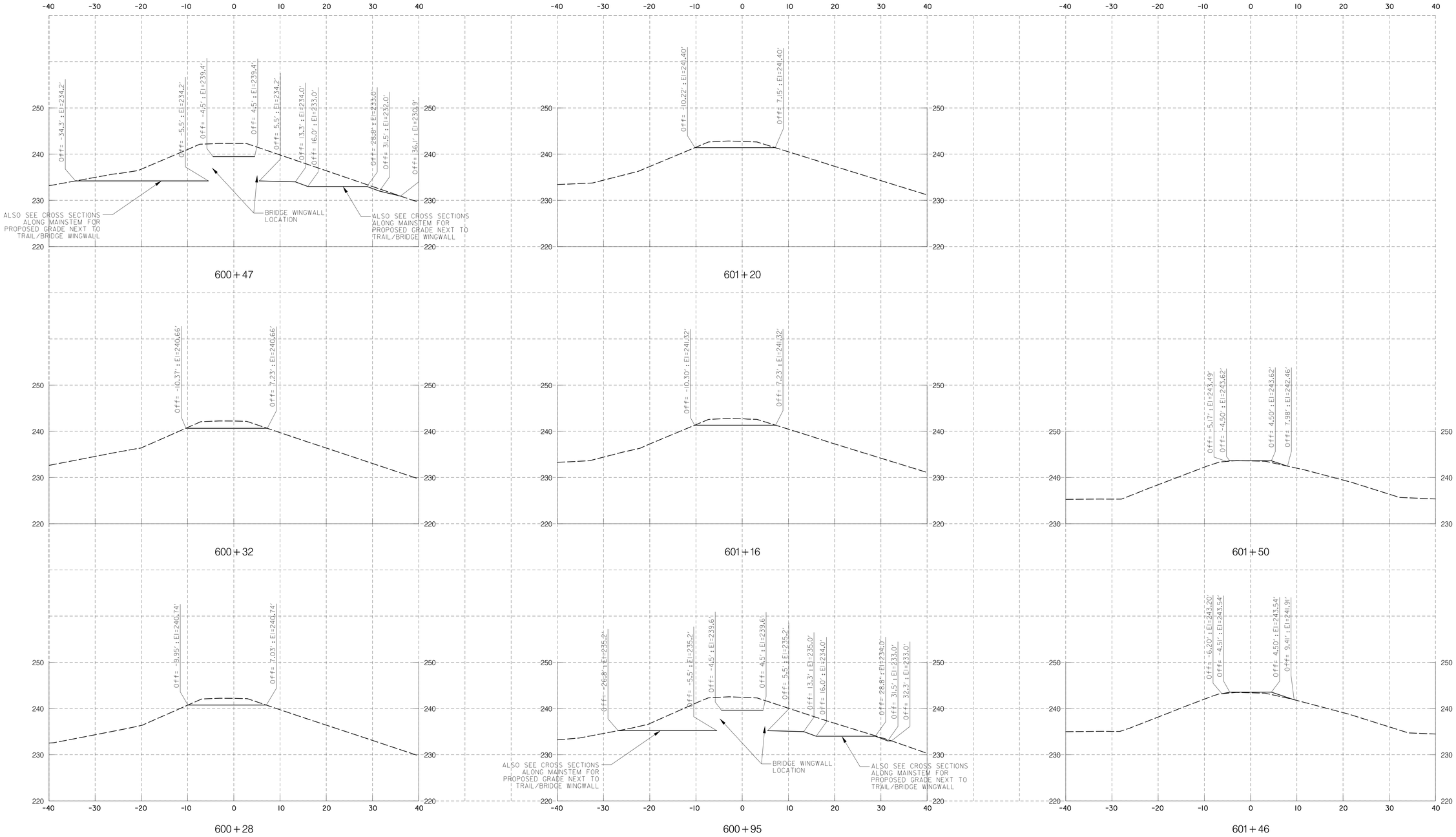
REV#	DATE	DESCRIPTION

REVISIONS

HEAVENLY POND
STREAM RESTORATION
CROSS SECTIONS

HARFORD COUNTY
DEPARTMENT OF
PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR MARYLAND 21014
410-638-3677
S/C PLAN #59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 57 OF 58
DRAWN BY MER	FWA JOB NUMBER



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REVISIONS

REV#	DATE	DESCRIPTION

HEAVENLY POND STREAM RESTORATION
CROSS SECTIONS

HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS
WATER RESOURCES ENGINEERING
212 SOUTH BOND STREET
1ST FLOOR
BEL AIR MARYLAND 21014
410-638-3217
SC PLAN #59839
GR PERMIT #15366-2018

DATE 2/12/20	DRAWING NO.
SCALE AS SHOWN	
DESIGNED BY MRM	SHEET 58 OF 58
DRAWN BY MER	FWA JOB NUMBER