

HARFORD COUNTY, MARYLAND

DEPARTMENT OF PUBLIC WORKS

BID NO. XX-XXX

WOODLAND DRIVE

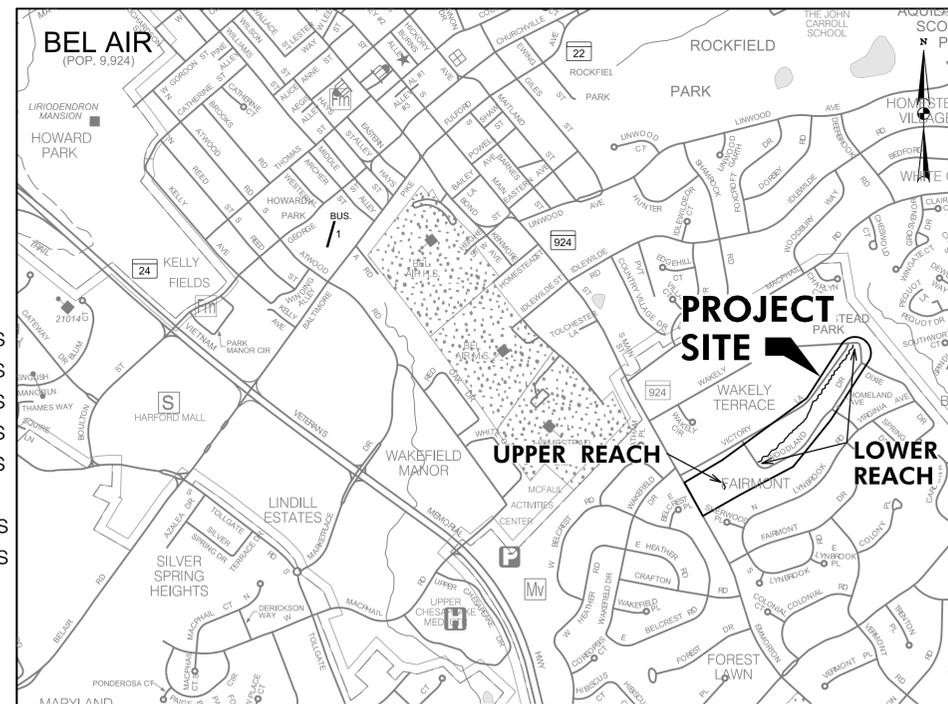
STREAM RESTORATION PROJECT

30 % DESIGN DEVELOPMENT

NOVEMBER 2018

INDEX OF SHEETS

SHEET NO.	SHEET NAME	DESCRIPTION
1 of 24	TI – 1 of 1	Title Sheet
2 of 24	GN – 1 of 1	Key Sheet
3 of 24	GS – 1 of 1	Geometry Sheet– Stream Plan
4 of 24	TS – 1 of 1	Typical Sections
5 of 24	PR – 1 of 2	Stream Profile
6 of 24	PR – 2 of 2	Stream Profile
7 of 24	SR – 1 of 4	Stream Restoration Plan
8 of 24	SR – 2 of 4	Stream Restoration Plan
9 of 24	SR – 3 of 4	Stream Restoration Plan
10 of 24	SR – 4 of 4	Stream Restoration Plan
11 of 24	DE – 1 of 2	Stream Details
12 of 24	DE – 2 of 2	Stream Details
13 of 24	EN – 1 of 6	Erosion & Sediment Control General Notes
14 of 24	EN – 2 of 6	Erosion & Sediment Control General Notes
15 of 24	EN – 3 of 6	Erosion & Sediment Control General Notes
16 of 24	EN – 4 of 6	Erosion & Sediment Control General Notes
17 of 24	EN – 5 of 6	Erosion & Sediment Control General Notes
18 of 24	EN – 6 of 6	Sequence of Construction
19 of 24	ED – 1 of 2	Erosion & Sediment Control Control Details
20 of 24	ED – 2 of 2	Erosion & Sediment Control Control Details
21 of 24	ES – 1 of 4	Erosion & Sediment Control Plan Sheet
22 of 24	ES – 2 of 4	Erosion & Sediment Control Plan Sheet
23 of 24	ES – 3 of 4	Erosion & Sediment Control Plan Sheet
24 of 24	ES – 4 of 4	Erosion & Sediment Control Plan Sheet



LOCATION MAP

SCALE 1" = 1,000'

GENERAL NOTES

- SPECIFICATIONS: ALL WORK IS TO BE PERFORMED IN ACCORDANCE MARYLAND STATE HIGHWAY ADMINISTRATIONS STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS DATED JULY 2008 AND THE MOST RECENT REVISIONS THEREOF AND ADDITIONS THERETO.
- UTILITIES: UTILITY LOCATIONS SHOWN ON THE PLANS ARE BASED ON LIMITED INFORMATION AVAILABLE. HOWEVER, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE ACCURACY OF THIS INFORMATION. THE COST OF REPAIR OR REPLACEMENT OF ANY SUCH FACILITIES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE BORNE BY HIM.

CONTACT "MISS UTILITY" PHONE 1-800-257-7777, 48 HOURS PRIOR TO THE START OF WORK. THERE SHOULD BE NO EXCAVATION UNTIL THE LOCATIONS OF UNDERGROUND UTILITIES HAVE BEEN DETERMINED.
- STANDARD DETAILS: REFERENCE MADE TO STANDARDS ARE TAKEN FROM THE HARFORD COUNTY ROAD CODE "BOOK OF STANDARD DETAILS" AND FROM "THE MARYLAND STATE HIGHWAY ADMINISTRATION'S BOOK OF STANDARDS-HIGHWAY AND INCIDENTAL STRUCTURES", IT WILL BE THE CONTRACTOR'S RESPONSIBILITY THAT THE STANDARD DRAWINGS IN HIS POSSESSION ARE THE LATEST REVISED STANDARDS UP TO AND INCLUDING THE DATE OF THE ADVERTISEMENT OF THIS CONTRACT.
- RIGHT-OF-WAY LINES: RIGHT-OF-WAY LINES SHOWN ON THESE PLANS DO NOT INCLUDE EASEMENTS. THEY ARE FOR ASSISTANCE IN INTERPRETING THE PLANS ONLY. THESE LINES DO NOT REPRESENT THE OFFICIAL PROPERTY ACQUISITION LINES. FOR OFFICIAL FEE RIGHT-OF-WAY AND EASEMENT INFORMATION, SEE THE APPROPRIATE RIGHT-OF-WAY PLATS.
- SOIL CONSERVATION: THE CONTRACTOR SHALL NOT DISTURB THE EXISTING VEGETATION OUTSIDE THE LIMITS OF DISTURBANCE. STOCKPILING AND STAGING WILL NOT BE ALLOWED ON SITE. THE CONTRACTOR MUST SECURE AN OFF-SITE AREA AND ANY NECESSARY PERMITS. SOIL STABILIZATION WILL CONFORM TO 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. THE CONTRACTOR WILL OBTAIN APPROVAL OF THE HARFORD COUNTY SOIL CONSERVATION DISTRICT FOR HIS PLANS IN CONTROLLING SEDIMENT EROSION FOR THE BORROW AREA AND DISPOSING OF ANY WASTE EXCAVATION.
- EXISTING SIGNS OR OTHER PRIVATE AND/OR COMMERCIAL PROPERTY: ALL EXISTING SIGNS OR OTHER PRIVATE AND/OR COMMERCIAL PROPERTY DISTURBED DURING CONSTRUCTION SHALL BE TEMPORARILY RESET IMMEDIATELY AND PERMANENTLY RESET AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE INCIDENTAL TO ALL OTHER ITEMS IN THE CONTRACT.
- SURVEYS:
HORIZONTAL CONTROL – COORDINATES SHOWN ON THE PLANS ARE BASED NAD83(2011) PER LEICA SMARTNET US SURVEY FEET.

VERTICAL CONTROL – ELEVATIONS SHOWN ON THE PLANS ARE BASED ON NAVD88 (GEOID12A) AS PER LEICA SMARTNET.

ONLY THOSE CONTROL POINTS SHOWN ON THESE PLANS ARE TO BE USED FOR THE CONSTRUCTION OF THIS PROJECT.
- THE CONTRACTOR SHALL CONTACT HARFORD COUNTY DEPARTMENT OF PUBLIC WORKS, BUREAU OF CONSTRUCTION INSPECTIONS AT (410) 638-3217 48 HOURS PRIOR TO THE START OF CONSTRUCTION.



Rummel, Klepper & Kahl, LLP
700 EAST PRATT STREET | BALTIMORE, MD 21202
SUITE 500 PH: (410) 728-2900

Engineers | Construction Managers | Planners | Scientists
www.rkk.com

Owner:
HARFORD COUNTY
212 South Bond Street, 1st Floor
Bel Air, MD 21014

REVIEWED AND APPROVAL RECOMMENDED:

PROJECT ENGINEER

REVIEWED AND APPROVAL RECOMMENDED:

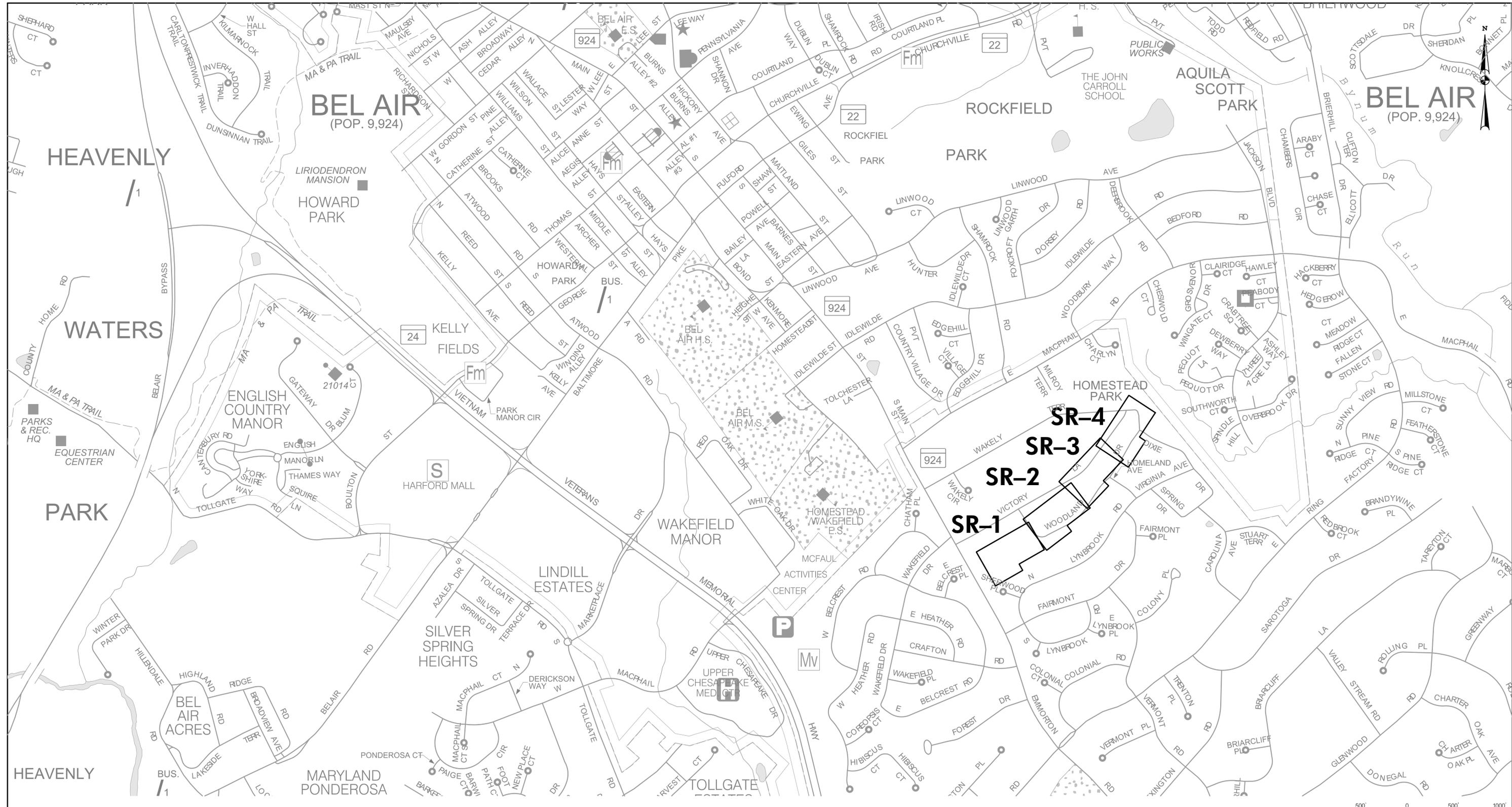
CHIEF ENGINEER

APPROVAL RECOMMENDED:

DEPUTY DIRECTOR OF PUBLIC WORKS

APPROVED:

DIRECTOR OF PUBLIC WORKS



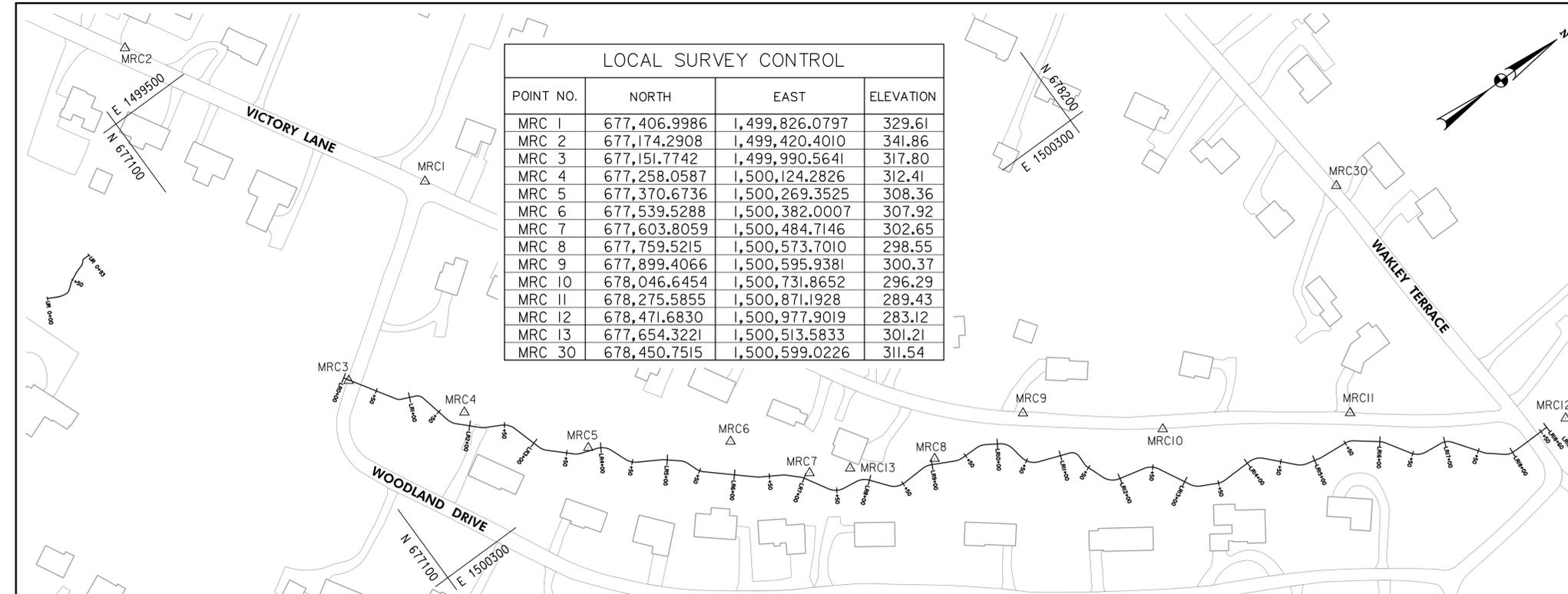
GN-1

Revisions		HARFORD COUNTY, MARYLAND	
		Woodland Run Stream Restoration KEY SHEET	
Drawn By :	MRV/BDM/KMS/DWB	Contract No :	
Designed By :	BDM/KMS/DWB	Scale :	1" = 500'
Reviewed By :	SBP	Sheet	2 Of 24
		Date : NOVEMBER 2018	

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BY: dblack -

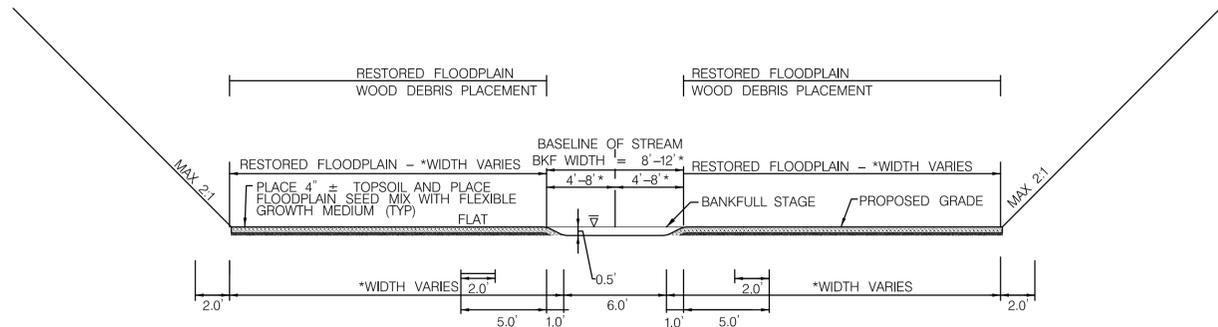
TAX MAP: 0049 GRID: 0003C HCG BILLING ID No.: HCG DWG ID No.: ADC MAP: 21 GRID: H10



LOCAL SURVEY CONTROL			
POINT NO.	NORTH	EAST	ELEVATION
MRC 1	677,406.9986	1,499,826.0797	329.61
MRC 2	677,174.2908	1,499,420.4010	341.86
MRC 3	677,151.7742	1,499,990.5641	317.80
MRC 4	677,258.0587	1,500,124.2826	312.41
MRC 5	677,370.6736	1,500,269.3525	308.36
MRC 6	677,539.5288	1,500,382.0007	307.92
MRC 7	677,603.8059	1,500,484.7146	302.65
MRC 8	677,759.5215	1,500,573.7010	298.55
MRC 9	677,899.4066	1,500,595.9381	300.37
MRC 10	678,046.6454	1,500,731.8652	296.29
MRC 11	678,275.5855	1,500,871.1928	289.43
MRC 12	678,471.6830	1,500,977.9019	283.12
MRC 13	677,654.3221	1,500,513.5833	301.21
MRC 30	678,450.7515	1,500,599.0226	311.54

STREAM RESTORATION LR ALIGNMENT			STREAM RESTORATION LR ALIGNMENT		
STATION	NORTH	EAST	STATION	NORTH	EAST
POB 00+00.00	677,148.25	1,499,983.20	PI 09+38.46	677,785.81	1,500,596.02
PC 00+80.56	677,191.00	1,500,051.48	CC Curve SR-20	677,792.10	1,500,571.13
PI 00+84.24	677,192.96	1,500,054.60	PT 09+44.07	677,791.61	1,500,596.13
CC Curve SR-1	677,201.17	1,500,045.11	PC 09+69.39	677,816.93	1,500,596.63
PT 00+87.70	677,196.32	1,500,056.09	PI 09+76.51	677,824.06	1,500,596.77
PC 01+08.82	677,215.63	1,500,064.63	CC Curve SR-21	677,816.44	1,500,621.62
PI 01+14.91	677,221.20	1,500,067.09	PT 09+83.27	677,830.03	1,500,600.64
CC Curve SR-2	677,210.78	1,500,075.60	PC 10+03.24	677,846.79	1,500,611.49
PT 01+20.09	677,222.50	1,500,073.04	PI 10+14.40	677,856.16	1,500,617.56
PC 01+66.31	677,232.36	1,500,118.20	CC Curve SR-22	677,833.20	1,500,632.47
PI 01+73.62	677,233.92	1,500,125.34	PT 10+24.23	677,857.90	1,500,628.59
CC Curve SR-3	677,256.78	1,500,112.87	PC 10+41.20	677,860.54	1,500,645.35
PT 01+80.53	677,239.07	1,500,130.51	PI 10+55.76	677,862.80	1,500,659.72
PC 02+15.25	677,263.58	1,500,155.11	CC Curve SR-23	677,885.23	1,500,641.46
PI 02+18.97	677,266.20	1,500,157.75	PT 10+67.56	677,876.42	1,500,664.86
CC Curve SR-4	677,281.29	1,500,137.47	PC 11+3.98	677,919.86	1,500,681.22
PT 02+22.63	677,269.47	1,500,159.50	PI 11+22.46	677,927.79	1,500,684.21
PC 02+46.19	677,290.24	1,500,170.63	CC Curve SR-24	677,915.63	1,500,692.45
PI 02+56.68	677,299.48	1,500,175.59	PT 11+28.74	677,927.63	1,500,692.69
CC Curve SR-5	677,278.42	1,500,192.67	PC 11+45.50	677,927.29	1,500,709.44
PT 02+66.05	677,302.42	1,500,185.66	PI 11+74.62	677,937.43	1,500,736.74
PC 03+08.53	677,314.32	1,500,226.44	CC Curve SR-25	677,942.04	1,500,749.17
PI 03+15.20	677,316.19	1,500,232.84	PT 11+99.00	677,960.87	1,500,728.04
CC Curve SR-6	677,338.32	1,500,219.43	PC 12+37.47	677,992.29	1,500,761.46
PT 03+21.57	677,321.00	1,500,237.46	PI 12+48.79	678,003.29	1,500,764.16
PC 03+60.16	677,348.84	1,500,264.20	CC Curve SR-26	677,986.34	1,500,785.75
PI 03+65.60	677,352.76	1,500,267.96	PT 12+58.73	678,008.52	1,500,774.20
CC Curve SR-7	677,366.16	1,500,246.16	PC 13+08.75	678,031.61	1,500,818.57
PT 03+70.86	677,357.89	1,500,269.76	PI 13+16.70	678,035.28	1,500,825.62
PC 03+94.49	677,380.19	1,500,277.57	CC Curve SR-27	678,053.79	1,500,807.02
PI 04+06.00	677,391.04	1,500,281.38	PT 13+24.14	678,042.35	1,500,829.25
CC Curve SR-8	677,371.91	1,500,301.17	PC 13+48.15	678,063.70	1,500,840.24
PT 04+16.06	677,395.21	1,500,292.10	PI 13+54.42	678,069.28	1,500,843.11
PC 04+40.08	677,403.92	1,500,314.49	CC Curve SR-28	678,075.14	1,500,818.01
PI 04+48.67	677,407.04	1,500,322.50	PT 13+60.44	678,075.55	1,500,843.00
CC Curve SR-9	677,427.22	1,500,305.42	PC 04+56.63	677,414.42	1,500,326.90
PT 04+56.63	677,414.42	1,500,326.90	PI 04+92.54	677,445.27	1,500,345.28
PC 04+92.54	677,445.27	1,500,345.28	CC Curve SR-10	677,447.04	1,500,346.34
PI 04+94.60	677,447.04	1,500,346.34	PT 04+96.65	677,448.61	1,500,347.67
CC Curve SR-10	677,432.47	1,500,366.76	PC 05+18.07	677,464.96	1,500,361.49
PT 04+96.65	677,448.61	1,500,347.67	PI 05+24.89	677,470.18	1,500,365.90
PC 05+18.07	677,464.96	1,500,361.49	CC Curve SR-11	677,448.82	1,500,380.58
PI 05+24.89	677,470.18	1,500,365.90	PT 05+31.39	677,472.43	1,500,372.34
CC Curve SR-11	677,448.82	1,500,380.58	PC 05+43.70	677,476.48	1,500,383.96
PT 05+31.39	677,472.43	1,500,372.34	PI 05+50.12	677,478.60	1,500,390.02
PC 05+43.70	677,476.48	1,500,383.96	CC Curve SR-12	677,500.09	1,500,375.71
PI 05+50.12	677,478.60	1,500,390.02	PT 05+56.28	677,483.39	1,500,394.32
CC Curve SR-12	677,500.09	1,500,375.71	PC 06+10.73	677,523.91	1,500,430.69
PT 05+56.28	677,483.39	1,500,394.32	PI 06+10.73	677,523.91	1,500,430.69
PC 06+10.73	677,523.91	1,500,430.69	CC Curve SR-13	677,556.43	1,500,426.29
PI 06+10.73	677,523.91	1,500,430.69	PT 06+36.67	677,543.48	1,500,447.68
CC Curve SR-13	677,556.43	1,500,426.29	PC 06+68.53	677,570.73	1,500,464.18
PT 06+36.67	677,543.48	1,500,447.68	PI 06+71.40	677,573.19	1,500,465.67
PC 06+68.53	677,570.73	1,500,464.18	CC Curve SR-14	677,557.78	1,500,485.56
PI 06+71.40	677,573.19	1,500,465.67	PT 06+74.25	677,575.25	1,500,467.68
CC Curve SR-14	677,557.78	1,500,485.56	PC 06+94.50	677,589.73	1,500,481.83
PT 06+74.25	677,575.25	1,500,467.68	PI 06+94.50	677,589.73	1,500,481.83
PC 06+94.50	677,589.73	1,500,481.83	CC Curve SR-15	677,572.26	1,500,499.71
PI 06+94.50	677,589.73	1,500,481.83	PT 07+01.33	677,593.91	1,500,487.21
CC Curve SR-15	677,572.26	1,500,499.71	PC 07+37.99	677,612.24	1,500,518.95
PT 07+01.33	677,593.91	1,500,487.21	PI 07+50.16	677,618.33	1,500,529.49
PC 07+37.99	677,612.24	1,500,518.95	CC Curve SR-16	677,633.89	1,500,506.45
PI 07+50.16	677,618.33	1,500,529.49	PT 07+60.64	677,630.37	1,500,531.20
CC Curve SR-16	677,633.89	1,500,506.45	PC 07+80.91	677,650.45	1,500,534.06
PT 07+60.64	677,630.37	1,500,531.20	PI 07+80.91	677,650.45	1,500,534.06
PC 07+80.91	677,650.45	1,500,534.06	CC Curve SR-17	677,646.92	1,500,558.81
PI 07+80.91	677,650.45	1,500,534.06	PT 08+00.15	677,666.67	1,500,543.48
CC Curve SR-17	677,646.92	1,500,558.81	PC 08+29.15	677,684.46	1,500,566.39
PT 08+00.15	677,666.67	1,500,543.48	PI 08+41.98	677,692.32	1,500,576.53
PC 08+29.15	677,684.46	1,500,566.39	CC Curve SR-18	677,704.21	1,500,551.07
PI 08+41.98	677,692.32	1,500,576.53	PT 08+52.86	677,705.14	1,500,576.05
CC Curve SR-18	677,704.21	1,500,551.07	PC 08+85.42	677,737.68	1,500,574.83
PT 08+52.86	677,705.14	1,500,576.05	PI 08+91.98	677,744.24	1,500,574.59
PC 08+85.42	677,737.68	1,500,574.83	CC Curve SR-19	677,738.62	1,500,599.82
PI 08+91.98	677,744.24	1,500,574.59	PT 08+98.26	677,750.07	1,500,577.59
CC Curve SR-19	677,738.62	1,500,599.82	PC 09+32.66	677,780.65	1,500,593.36
PT 08+98.26	677,750.07	1,500,577.59			
PC 09+32.66	677,780.65	1,500,593.36			

STREAM RESTORATION CURVE DATA											
Curve	1	2	3	4	5	6	7	8	9	10	11
Radius	12	12	25	25	25	25	25	25	25	25	25
Delta	34°05'15.51" Left	53°49'51.78" Right	32°34'36.80" Left	16°54'40.40" Left	45°31'34.09" Right	29°52'57.30" Left	24°31'29.73" Left	49°25'14.09" Right	37°56'22.44" Left	9°24'20.92" Right	30°32'25.25" Right
Degree of Curve	477°27'53.39"	477°27'53.39"	229°10'59.22"	229°10'59.22"	229°10'59.22"	229°10'59.22"	229°10'59.22"	229°10'59.22"	229°10'59.22"	229°10'59.22"	229°10'59.22"
Length	7.1393	11.2743	14.2143	7.3789	19.8645	13.0387	10.701	21.5638	16.5543	4.1041	13.3257
Tangent	3.6788	6.092	7.305	3.7165	10.4901	6.6713	5.4337	11.5042	8.5934	2.0567	6.8252
Chord	7.0345	10.8642	14.0237	7.3522	19.3461	12.8915	10.6195	20.9015	16.2535	4.0995	13.1685
Middle Ordinate	0.527	1.2999	1.0035	0.2717	1.9472	0.8452	0.5704	2.2892	1.3577	0.0842	0.8826
External	0.5512	1.4578	1.0454	0.2747	2.1117	0.8748	0.5837	2.5199	1.4357	0.0845	0.9149
Tangent Direction	N 57°56'40.65" E	N 23°51'25.14" E	N 77°41'16.92" E	N 45°06'40.12" E	N 28°11'59.73" E	N 73°43'33.82" E	N 43°50'36.52" E	N 19°19'06.79" E	N 68°44'20.87" E	N 30°47'58.44" E	N 40°12'19.36" E
Radial Direction	N 32°03'19.35" W	N 66°08'34.86" W	N 12°18'43.08" W	N 44°53'19.88" W	N 61°48'00.27" W	N 16°16'26.18" W	N 46°09'23.48" W	N 70°40'53.21" W	N 21°15'39.13" W	N 59°12'01.56" W	N 49°47'40.64" W
Chord Direction	N 40°54'02.90" E	N 50°46'21.03" E	N 61°23'58.52" E	N 36°39'19.92" E	N 50°57'46.77" E	N 58°47'05.17" E	N 31°34'51.65" E	N 44°01'43.83" E	N 35°30'08.90" E	N 55°28'31.99" E	N 33°04'14.73" W
Radial Direction	N 66°08'34.86" W	N 12°18'43.08" W	N 44°53'19.88" W	N 61°48'00.27" W	N 16°16'26.18" W	N 46°09'23.48" W	N 70°40'53.21" W	N 21°15'39.13" W	N 59°12'01.56" W	N 49°47'40.64" W	N 19°15'15.39" W
Tangent Direction	N 23°51'25.14" E	N 77°41'16.92" E	N 45°06'40.12" E	N 28°11'59.73" E	N 73°43'33.82" E	N 43°50'36.52" E	N 19°19'06.79" E	N 68°44'20.87" E	N 30°47'58.44" E	N 40°12'19.36" E	N 70°44'44.61" E
Curve	12	13	14	15	16	17	18	19	20	21	22
Radius	25	25	25	25	25	25	25	25	25	25	25
Delta	28°49'59.05" Left	10°42'34.35" Left	13°07'40.87" Right	15°39'29.88" Right	51°53'26.89" Left	44°05'14.98" Right	54°19'33.17" Left	29°24'29.50" Right	26°08'44.65" Left	31°48'23.54" Right	48°07'25.65" Right
Degree of Curve	229°10'59.22"	229°10'59.22"	229°10'59.22"	229°10'59.22"	229°10'59.22"	229°10'59.22"	229°10'59.22"	229°10'59.22"	229°10'59.22"	229°10'59.22"	229°10'59.22"
Length	12.5808	4.6729	5.7282	6.8322	22.6416	19.2368	23.7041	12.8317	11.4082	13.8782	20.998
Tangent	6.4266	2.3433	2.8767	3.4375	12.1638	10.1229	12.8278	6.5605	5.8052	7.123	11.1631
Chord	12.4485	4.6661	5.7157	6.81	21.8757	18.7657	22.8261	12.6914	11.3095	13.7007	20.3862
Middle Ordinate	0.7872	0.1091	0.1639	0.233	2.5179	1.8276	2.7572	0.8188	0.9569	2.1724	2.3791
External	0.8128	0.1096	0.165	0.2352	2.8021	1.9717	3.099	0.8465	0.6652	0.9949	2.3791
Tangent Direction	N										



* SEE PLAN FOR LOCATIONS AND VARYING FLOODPLAIN AND CHANNEL WIDTHS

TYPICAL RIFFLE STREAM SECTION
NOT TO SCALE

TS-1

NOT FOR CONSTRUCTION

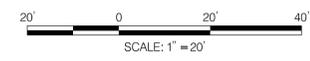
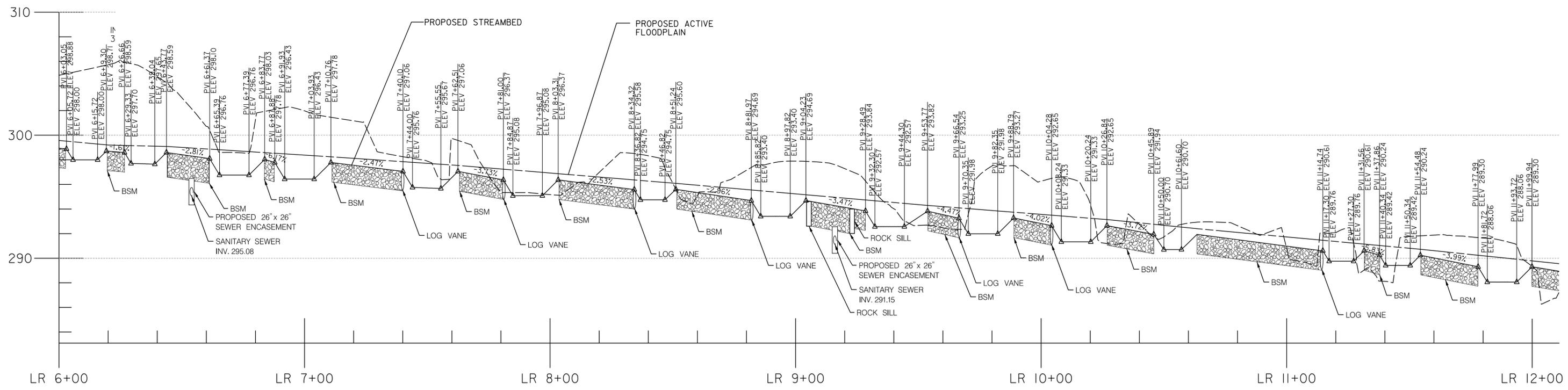
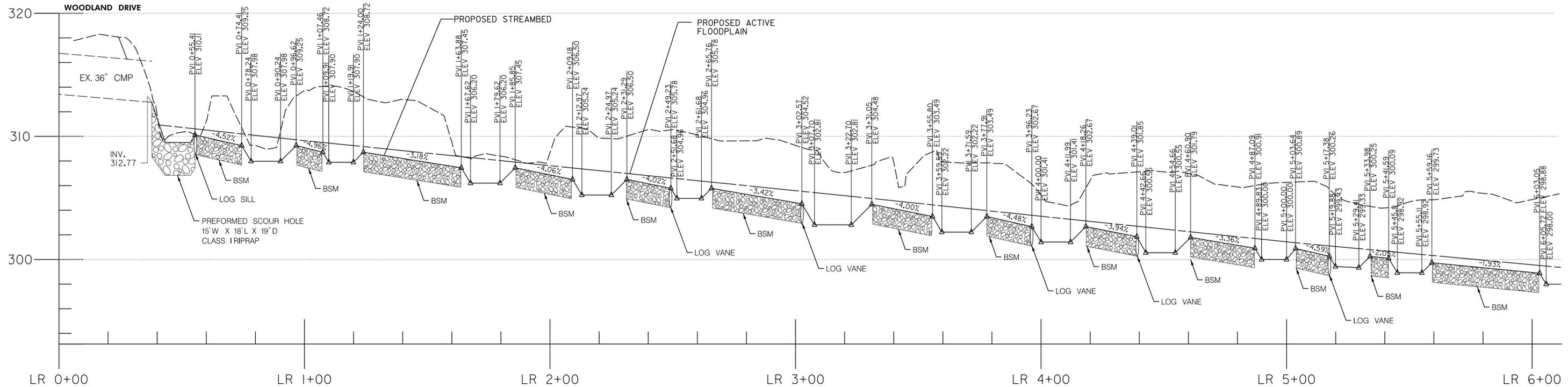


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Revisions

HARFORD COUNTY, MARYLAND	
Woodland Run Stream Restoration TYPICAL SECTIONS	
Drawn By : <u>MRW/BDM/KMS/DWB</u>	Contract No : _____
Designed By : <u>BDM/KMS/DWB</u>	Scale : <u>NOT TO SCALE</u>
Reviewed By : <u>SBP</u>	Sheet <u>4</u> Of <u>24</u>
Date : <u>NOVEMBER 2018</u>	

BY: dblack -



PR-1

Revisions		HARFORD COUNTY, MARYLAND	
		Woodland Run Stream Restoration STREAM PROFILE	
Drawn By :	MRW/BDM/KMS/DWB	Contract No :	
Designed By :	BDM/KMS/DWB	Scale :	H: 1" = 20' V: 1" = 4'
Reviewed By :	SBP	Sheet	5 Of 24
		Date : NOVEMBER 2018	

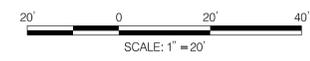
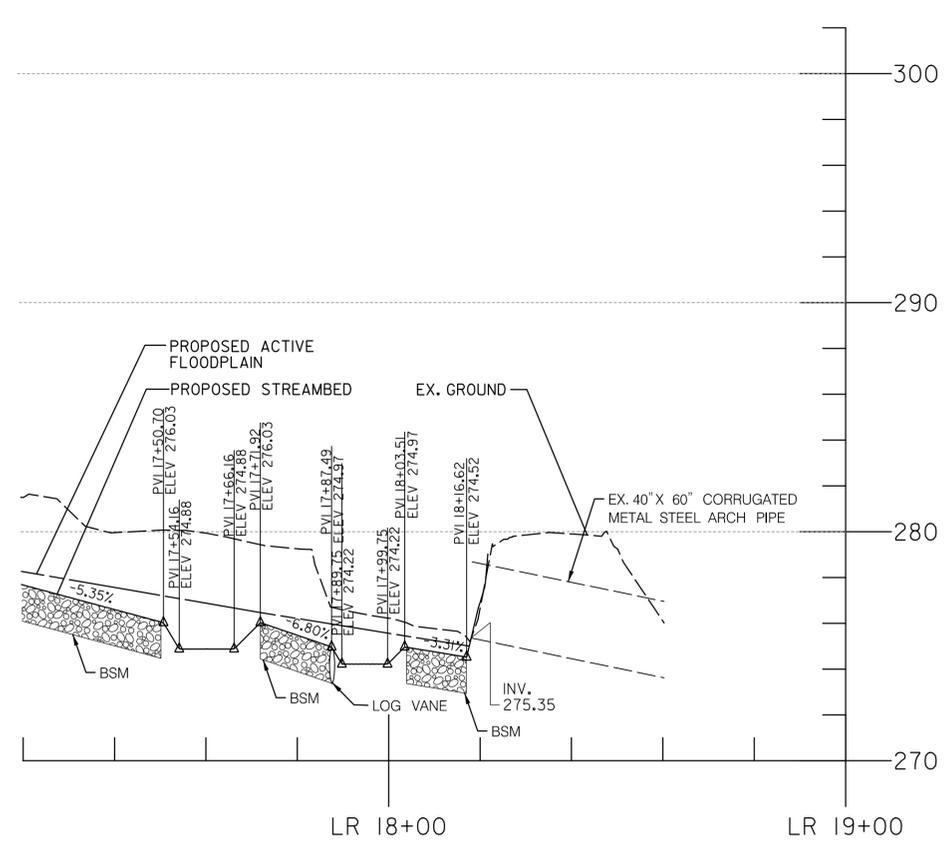
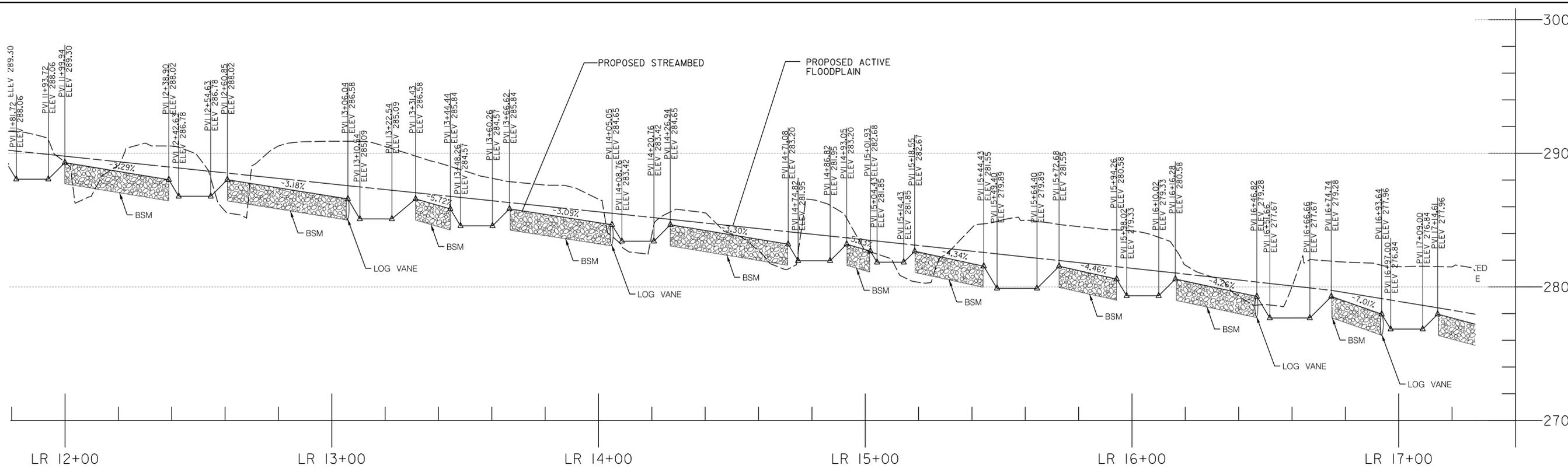
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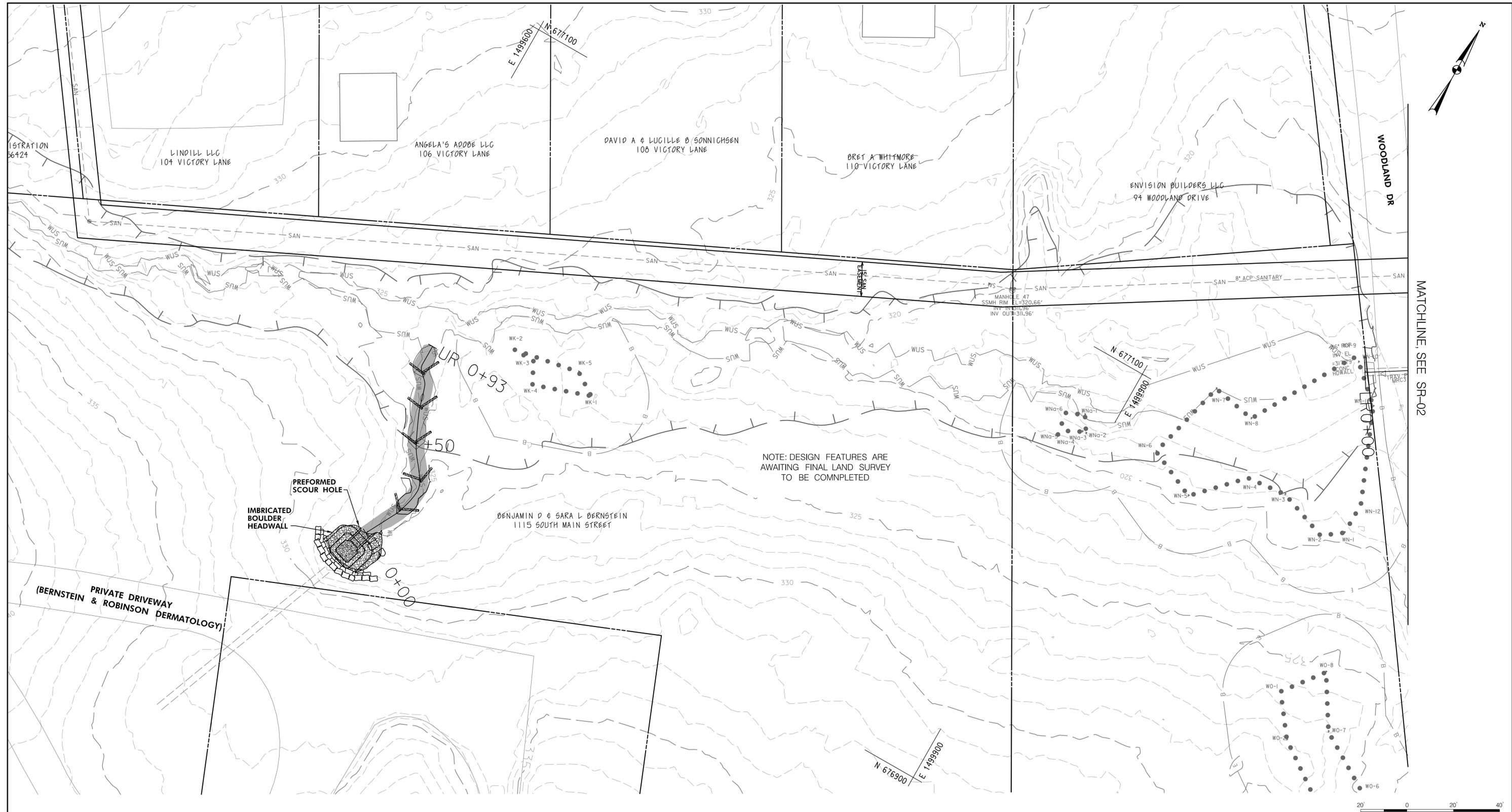
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PR-2

Revisions		HARFORD COUNTY, MARYLAND	
		Woodland Run Stream Restoration STREAM PROFILE	
Drawn By :	MRW/BDM/KMS/DWB	Contract No :	
Designed By :	BDM/KMS/DWB	Scale :	H: 1" = 20' V: 1" = 4'
Reviewed By :	SBP	Sheet	6 Of 24
		Date :	NOVEMBER 2018

BY: dblack



MATCHLINE, SEE SR-02

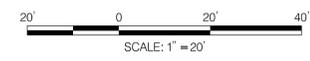
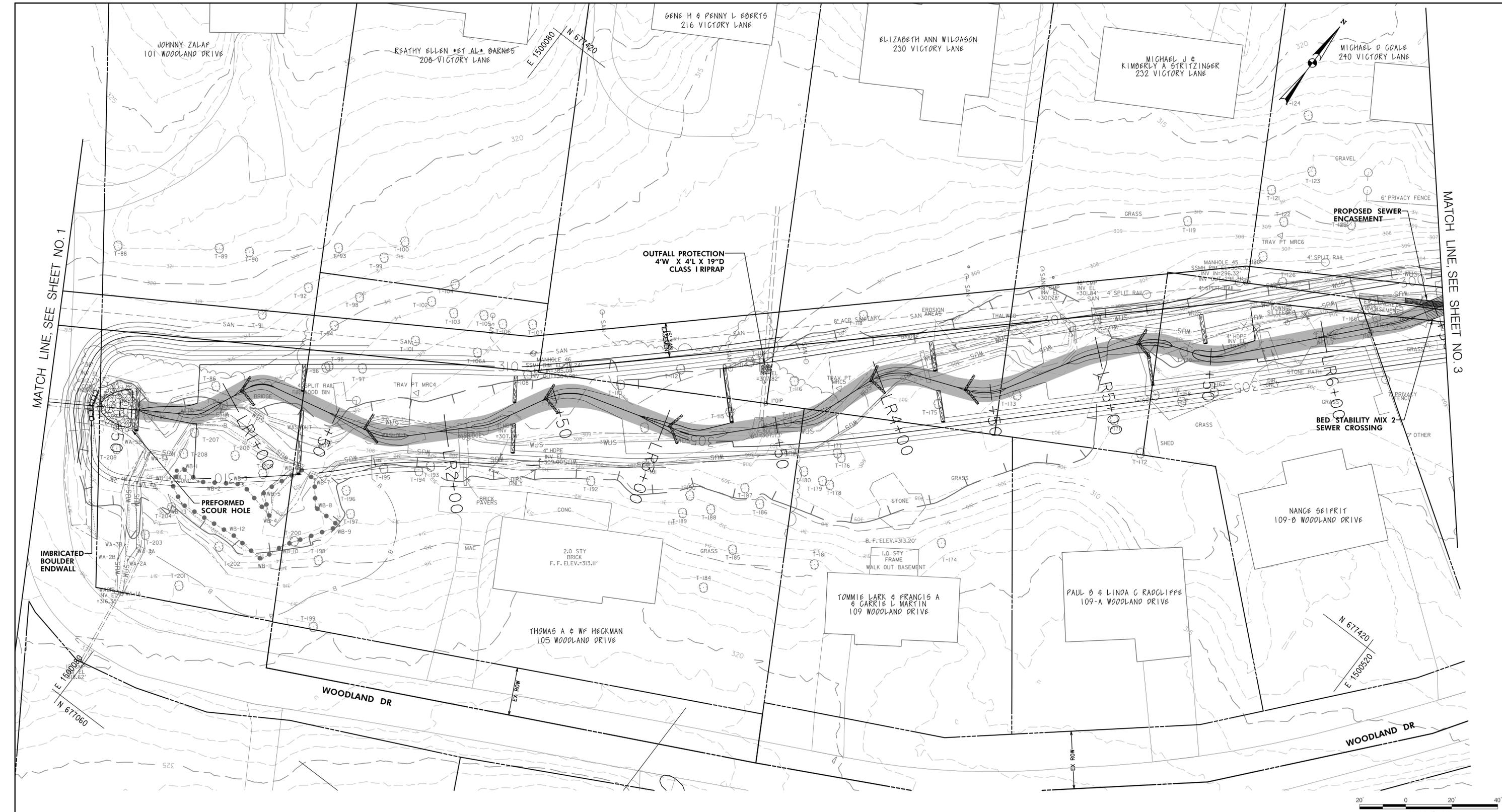
LEGEND	
--- SAN ---	EXISTING SANITARY SEWER
● ● ●	WETLAND BOUNDARY
— B —	25 FT WETLAND BUFFER
— WUS —	WATERS OF THE US
— T —	PRELIMINARY 100 YEAR FLOODPLAIN
---	ROW/PROPERTY BOUNDARY
	BED STABILITY MIX (BSM)
	IMBRICATED RIPRAP
	BURIED LOG PLACEMENT - FLOODPLAIN
	BURIED LOG PLACEMENT - IN-CHANNEL
	PROPOSED CHANNEL
	PROPOSED EXTRUDED CURB

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SR-1		HARFORD COUNTY, MARYLAND	
Revisions		Woodland Run Stream Restoration PROPOSED CONDITIONS PLAN	
Drawn By :	MRW/BDM/KMS/DWB	Contract No :	
Designed By :	BDM/KMS/DWB	Scale :	1" = 20'
Reviewed By :	SBP	Sheet	7 Of 24
		Date : NOVEMBER 2018	

BY: dblack -



LEGEND

--- SAN ---	EXISTING SANITARY SEWER		BED STABILITY MIX (BSM)
● ● ●	WETLAND BOUNDARY		IMBRICATED RIPRAP
--- B ---	25 FT WETLAND BUFFER		BURIED LOG PLACEMENT - FLOODPLAIN
--- WUS ---	WATERS OF THE US		BURIED LOG PLACEMENT - IN-CHANNEL
	PRELIMINARY 100 YEAR FLOODPLAIN		PROPOSED CHANNEL
---	ROW/PROPERTY BOUNDARY		PROPOSED EXTRUDED CURB

SR-2

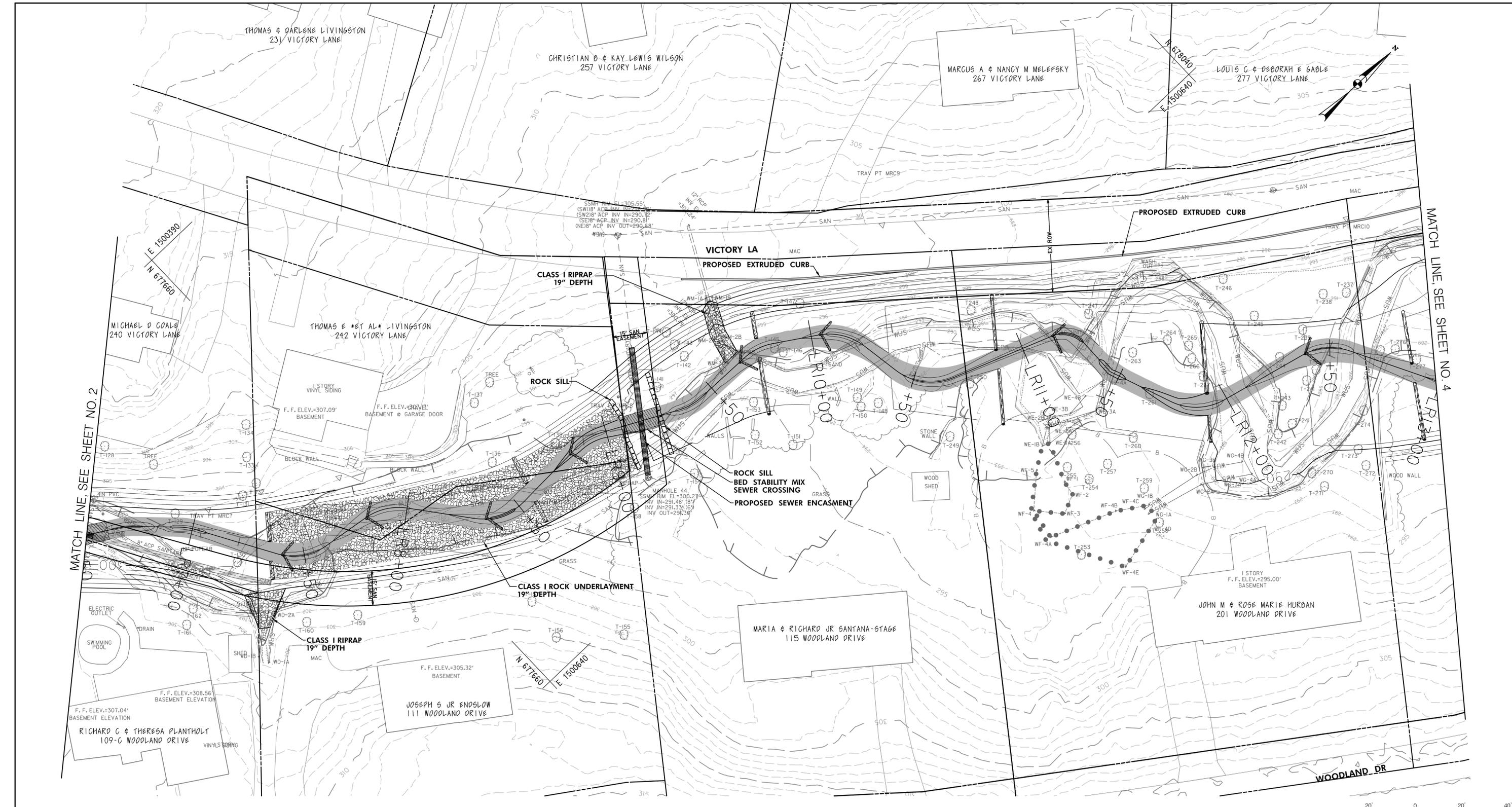
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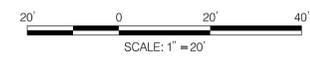
Revisions		HARFORD COUNTY, MARYLAND	
Woodland Run Stream Restoration PROPOSED CONDITIONS PLAN			
Drawn By :	MRW/BDM/KMS/DWB	Contract No :	
Designed By :	BDM/KMS/DWB	Scale :	1" = 20'
Reviewed By :	SBP	Sheet	8 Of 24
Date : NOVEMBER 2018			

BY: dblack -



MATCH LINE, SEE SHEET NO. 2

MATCH LINE, SEE SHEET NO. 4



LEGEND

- | | | | |
|-------------|---------------------------------|--|-----------------------------------|
| --- SAN --- | EXISTING SANITARY SEWER | | BED STABILITY MIX (BSM) |
| ● ● ● | WETLAND BOUNDARY | | IMBRICATED RIPRAP |
| — B — | 25 FT WETLAND BUFFER | | BURIED LOG PLACEMENT - FLOODPLAIN |
| — WUS — | WATERS OF THE US | | BURIED LOG PLACEMENT - IN-CHANNEL |
| | PRELIMINARY 100 YEAR FLOODPLAIN | | PROPOSED CHANNEL |
| --- | ROW/PROPERTY BOUNDARY | | PROPOSED EXTRUDED CURB |

SR-3

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Revisions

HARFORD COUNTY, MARYLAND

Woodland Run
Stream Restoration
PROPOSED CONDITIONS PLAN

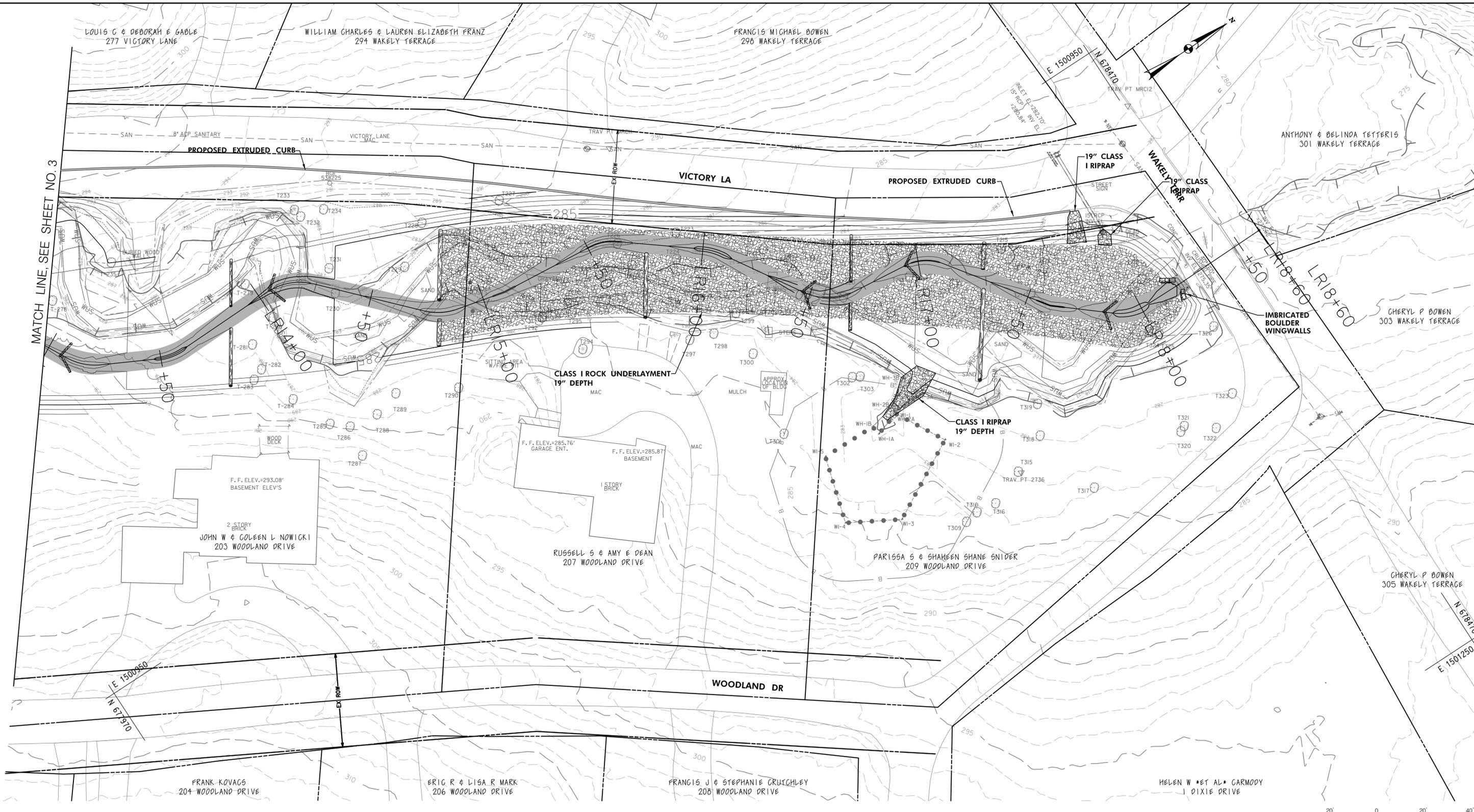
Drawn By : MRW/BDM/KMS/DWB	Contract No : _____
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Reviewed By : SBP	Sheet 9 Of 24
Date : NOVEMBER 2018	

BY: dblack

TAX MAP: 0049 GRID: 0003C HCG BILLING ID No.: HCG DWG ID No.: ADC MAP: 21 GRID: H10

BY: dblack

PLOTTED: Wednesday, November 07, 2018 AT 08:38 PM
FILE: \\balsrv05\2017\201711\7040_HARCO\Task 001_Woodland Run\CADD\plans\SR-004-Woodland.dgn



LEGEND

--- SAN ---	EXISTING SANITARY SEWER		BED STABILITY MIX (BSM)
● ● ●	WETLAND BOUNDARY		IMBRICATED RIPRAP
- B -	25 FT WETLAND BUFFER		BURIED LOG PLACEMENT - FLOODPLAIN
- WUS -	WATERS OF THE US		BURIED LOG PLACEMENT - IN-CHANNEL
- T -	PRELIMINARY 100 YEAR FLOODPLAIN		PROPOSED CHANNEL
---	ROW/PROPERTY BOUNDARY		PROPOSED EXTRUDED CURB

NOT FOR CONSTRUCTION

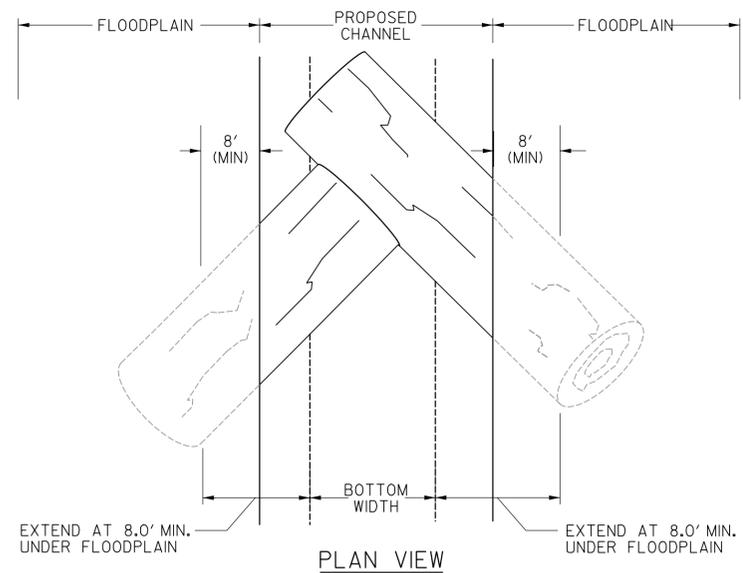
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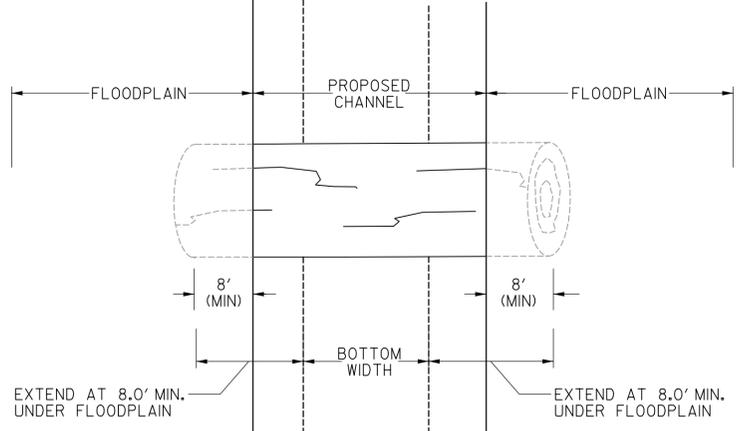
SR-4		HARFORD COUNTY, MARYLAND	
		Woodland Run Stream Restoration PROPOSED CONDITIONS PLAN	
Revisions		Drawn By : MRW/BDM/KMS/DWB	Contract No : _____
		Designed By : BDM/KMS/DWB	Scale : 1" = 20'
		Reviewed By : SBP	Sheet 10 Of 24
			Date : NOVEMBER 2018

ADC MAP: 21 GRID: H1
TAX MAP: 0049 GRID: 0003C
HCG BILLING ID No.:
HCG DWG ID No.:

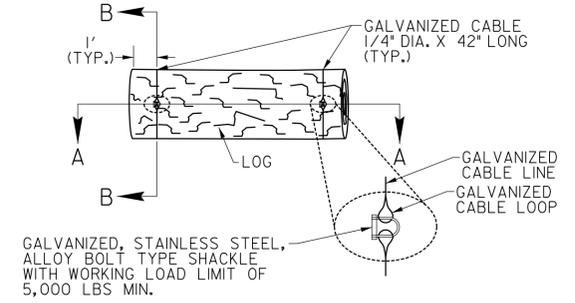
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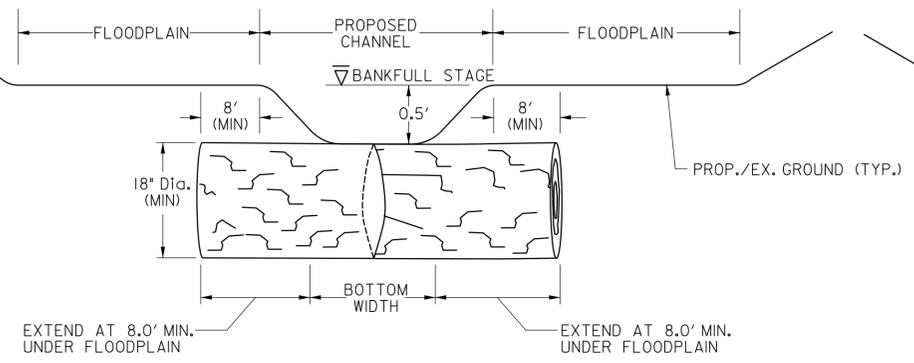
PLAN VIEW



PLAN VIEW



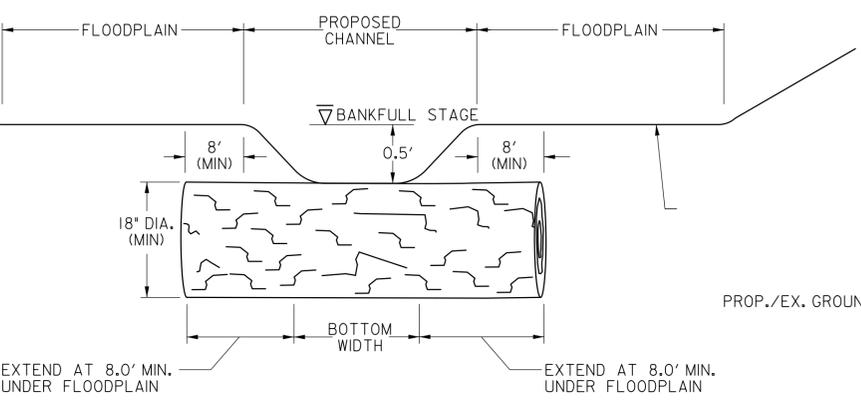
PLAN VIEW



SECTION VIEW

IN-CHANNEL ('V' PATTERN)

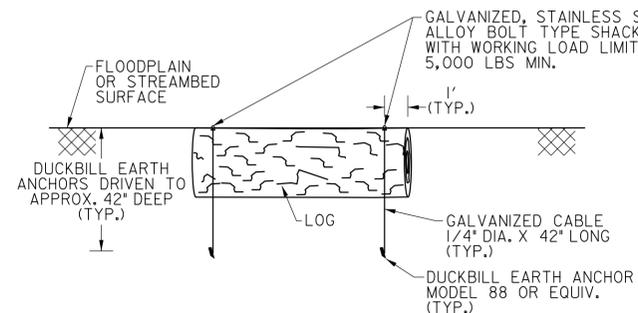
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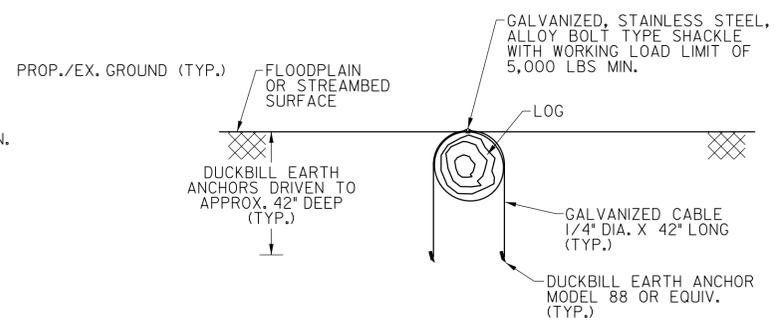
SECTION VIEW

IN-CHANNEL (PERPENDICULAR TO CHANNEL)

NOT TO SCALE



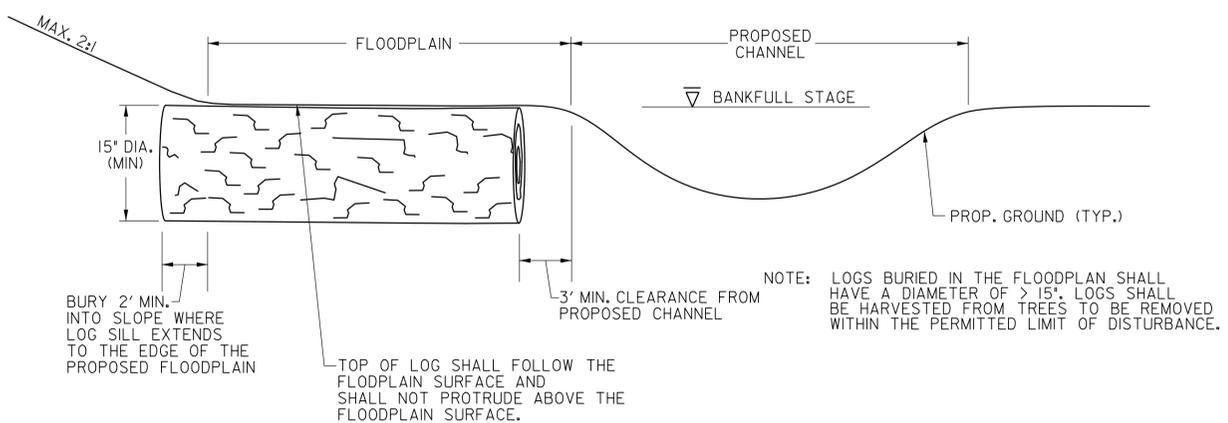
SECTION A-A



SECTION B-B

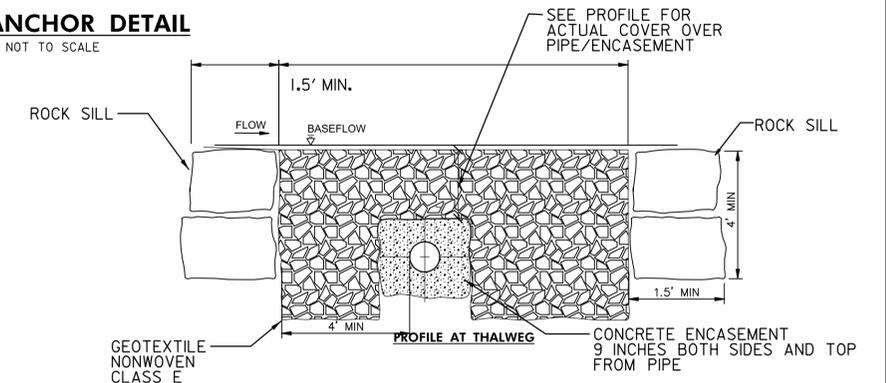
LOG ANCHOR DETAIL

NOT TO SCALE



BURIED LOG PLACEMENT DETAIL

NOT TO SCALE



PIPE PROTECTION DETAIL

DE-1

Revisions		HARFORD COUNTY, MARYLAND	
		Woodland Run Stream Restoration STREAM DETAILS	
Drawn By :	MRW/BDM/KMS/DWB	Contract No :	
Designed By :	BDM/KMS/DWB	Scale :	NOT TO SCALE
Reviewed By :	SBP	Sheet	11 Of 24
		Date : NOVEMBER 2018	

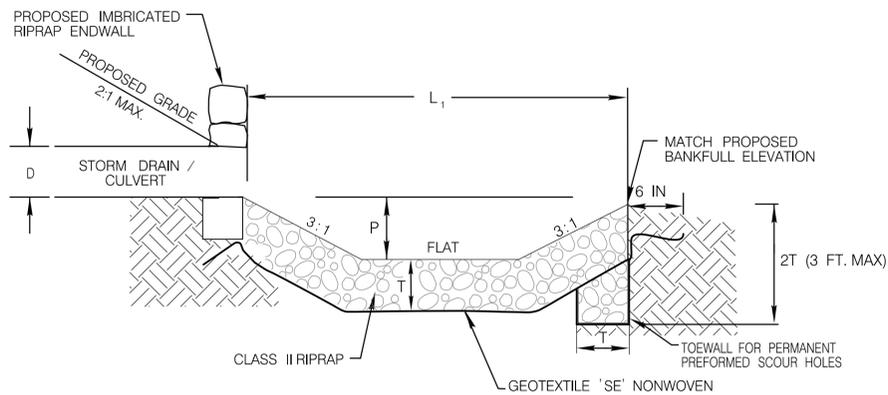
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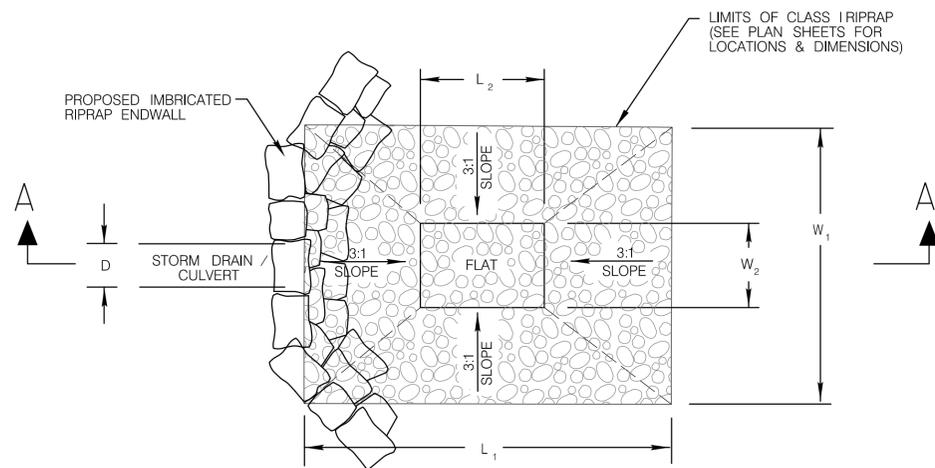
BY: dblack -

ADC MAP: 21 GRID: H10
 TAX MAP: 0049 GRID: 0003C
 HCG BILLING ID No.:
 HCG DWG ID No.:



*NOTE: T (STONE THICKNESS) = 2 X D50 (MEDIAN DIAMETER OF RIPRAP)

SECTION A-A



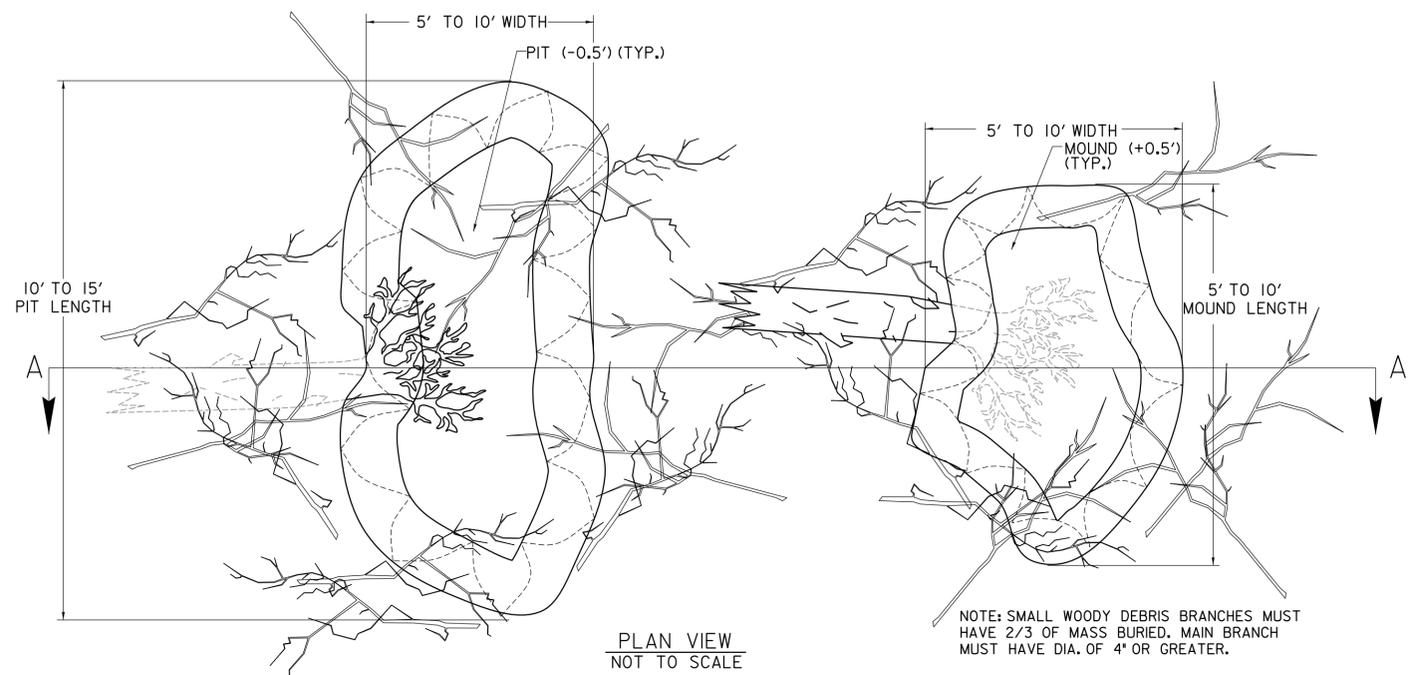
PLAN VIEW

PREFORMED SCOUR HOLE CONSTRUCTION DETAILS

NOT TO SCALE

PREFORMED SCOUR HOLE DIMENSION TABLE

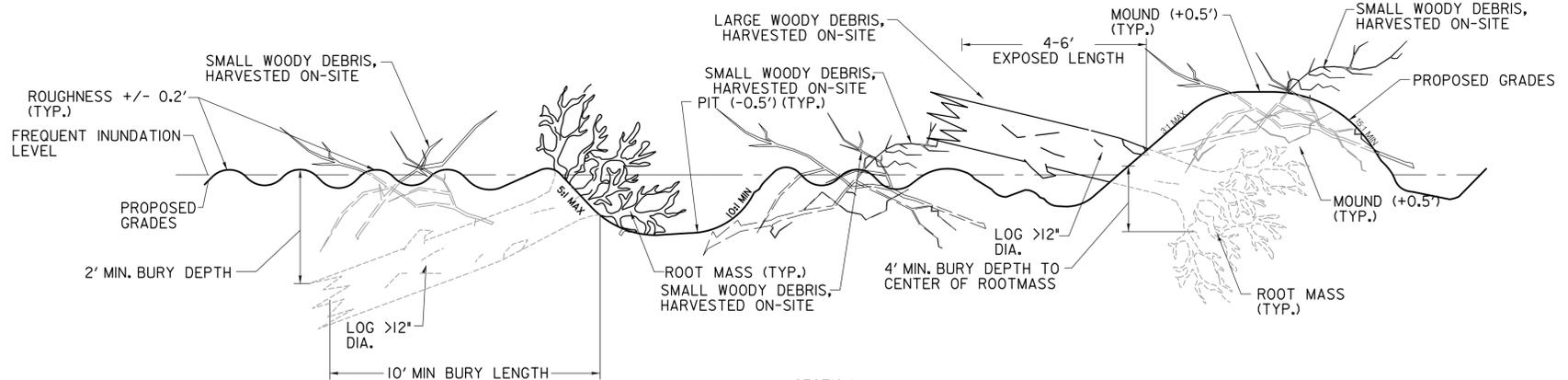
D (IN.)	L ₁ (FT.)	L ₂ (FT.)	W ₁ (FT.)	W ₂ (FT.)	P (FT.)	D50 (IN.)	T (IN.)
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-



PLAN VIEW
NOT TO SCALE

NOTE: SMALL WOODY DEBRIS BRANCHES MUST HAVE 2/3 OF MASS BURIED. MAIN BRANCH MUST HAVE DIA. OF 4\"/>

*NOT TO SCALE



SECTION A-A
NOT TO SCALE
WOODY DEBRIS PLACEMENT DETAIL
NOT TO SCALE

DE-2

NOT FOR CONSTRUCTION



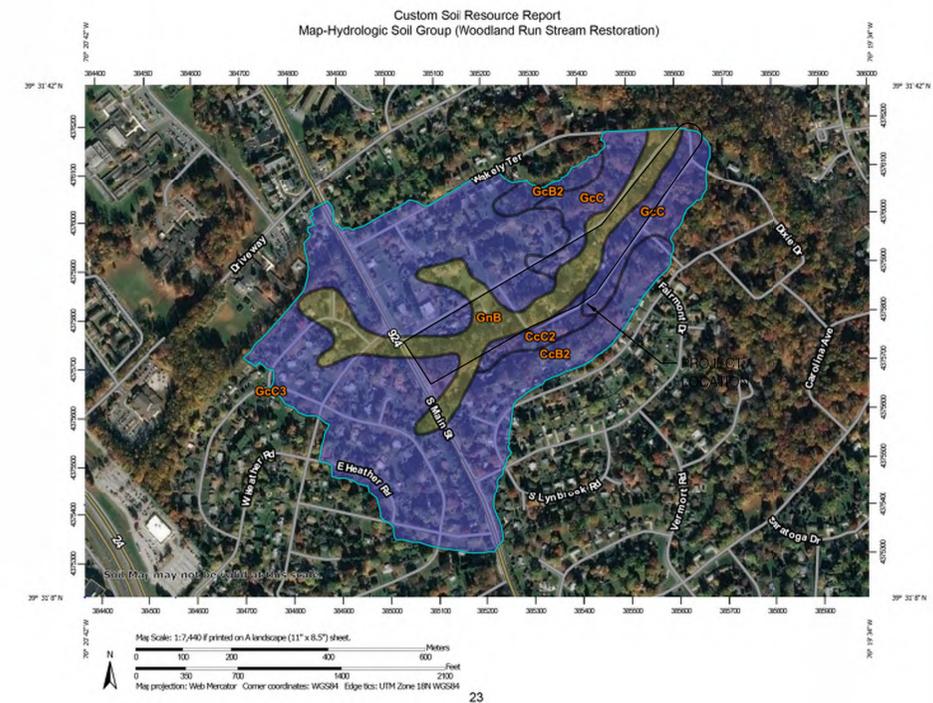
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		Woodland Run Stream Restoration STREAM DETAILS	
Drawn By :	MRW/BDM/KMS/DWB	Contract No :	
Designed By :	BDM/KMS/DWB	Scale :	NOT TO SCALE
Reviewed By :	SBP	Sheet	12 Of 24
		Date : NOVEMBER 2018	

SEDIMENT CONTROL NOTES

1. A GRADING UNIT OF 20 ACRES IS THE MAXIMUM CONTIGUOUS AREA ALLOWED TO BE GRADED AT A GIVEN TIME.
2. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PROCEEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY DPW. NO MORE THAN THIRTY ACRES CUMULATIVELY MAY BE DISTURBED AT ANY GIVEN TIME.
3. THE CONTRACTOR/OWNER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS. FURTHER, NO CONSTRUCTION ACTIVITY SHALL TAKE PLACE UNTIL ALL REQUIRED PERMITS HAVE BEEN OBTAINED.
4. 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.
5. ALL SEDIMENT CONTROL PRACTICES MUST BE INSTALLED PRIOR TO ANY CONSTRUCTION ACTIVITY. UPON COMPLETION OF THE INSTALLATION OF THE 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.
6. 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.
7. 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.
8. 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.
9. DUST CONTROL MUST BE MANAGED AS PART OF ALL SEDIMENT CONTROL PLANS. FAILURE TO DO SO IS A VIOLATION OF THIS PLAN.
10. 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.
11. TEMPORARY FENCING SHALL BE PLACED AROUND ALL SEDIMENT BASINS, TRAPS, AND PONDS DURING CONSTRUCTION AND SITE GRADING.
12. 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 NONNPDES REGULATIONS. A COPY OF THE APPROVED SEDIMENT CONTROL PLANS SHALL BE AVAILABLE AT THE SITE AT ALL TIMES.
13. ENSURE POSITIVE DRAINAGE TO ALL ROAD INLETS DURING ALL PHASES OF ROAD CONSTRUCTION TO ENSURE POSITIVE FLOW TO TRAPS AND OR BASINS.
14. CUT AND/OR FILL SHALL BE DONE IN CONFORMANCE WITH 2011 EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS FOR LAND GRADING.
15. SURFACE FLOWS OVER CUT AND FILL SLOPES SHALL BE CONTROLLED BY EITHER REDIRECTING FLOW FROM TRAVERSING THE SLOPES OR BY INSTALLING MECHANICAL DEVICES TO SAFELY CONVEY WATER DOWN SLOPES WITHOUT CAUSING EROSION.
16. 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.
17. ALL MATERIAL ORIGINATING FROM THE DEVELOPMENT OF THE PROPERTY AND DEPOSITED ON THE PUBLIC RIGHT-OF-WAY SHALL BE IMMEDIATELY REMOVED.
18. STORM DRAIN INLETS AND OUTLETS SHALL BE PROTECTED PER 2011 EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS.
19. 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.
20. TRAPS TO BE REMOVED SHALL BE DEWATERED AS PER THE 2011 EROSION AND SEDIMENT CONTROL STANDARDS AND SPECIFICATIONS.
21. PRIOR TO REMOVAL OF TRAPS OR CONVERSION OF SEDIMENT BASINS TO SWM FACILITIES, THE STORM DRAINS WILL BE FLUSHED.
22. 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.



PROJECT LOCATION: SOIL SURVEY MAP

MAP LEGEND

- Area of Interest (AOI)
- Area of Interest (AOI)
- Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available



PROFESSIONAL CERTIFICATION I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

LICENSE NO. 16493

EXPIRATION DATE: 2019-05-16

EROSION AND SEDIMENT CONTROL PLAN # _____

RECOMMEND FOR APPROVAL

HARFORD COUNTY DPW

TECHNICAL CONCURRENCE

HARFORD SOIL CONSERVATION DISTRICT

APPROVED:

HARFORD SOIL CONSERVATION DISTRICT

SITE ANALYSIS (NOT FOR BIDDING PURPOSES)

TOTAL AREA TO BE STABILIZED	= XXX ACRES
TOTAL DISTURBED AREA	= XXX ACRES
TOTAL AREA TO BE PAVED	= XXX ACRES
TOTAL CUT	= XXX CY
TOTAL FILL	= XX CY
NPDES ID POINT: N:664,400,5897 E:1,500,661,4868	

ANY SOIL MATERIAL LEAVING THE SITE SHALL ONLY BE DISPOSED OF AT SITES WITH AN APPROVED EROSION AND SEDIMENT CONTROL PLAN AND AN ACTIVE GRADING PERMIT

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 THIS SITE CONDITIONS AND THAT IT WAS PREPARED WITH THE MD STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, DATED 2011."

ENGINEER _____ DATE _____

DEVELOPER'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 CERTIFICATE 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 _____

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EN-01

Revisions	HARFORD COUNTY, MARYLAND	
	Woodland Run Stream Restoration	
	EROSION & SEDIMENT CONTROL GENERAL NOTES	
Drawn By : MRW/BDM/KMS/DWB	Contract No : _____	
Designed By : BDM/KMS/DWB	Scale : NOT TO SCALE	
Reviewed By : SBP	Sheet 13 Of 24	
	Date : NOVEMBER 2018	

BY: dblack -

TAX MAP: 0049 GRID: 0003C HCG BILLING ID NO.: HCG DWG ID NO.: ADC MAP: 21 GRID: H10

B-3 STANDARDS AND SPECIFICATIONS FOR LAND GRADING

DEFINITION
RESHAPING THE EXISTING LAND SURFACE TO PROVIDE SUITABLE TOPOGRAPHY FOR BUILDING FACILITIES AND OTHER SITE IMPROVEMENTS.

PURPOSE
TO PROVIDE EROSION CONTROL AND VEGETATIVE ESTABLISHMENT FOR EXTREME CHANGES IN GRADE.

CONDITIONS WHERE PRACTICE APPLIES
EARTH DISTURBANCES OR EXTREME GRADE MODIFICATIONS ON STEEP OR LONG SLOPES.

DESIGN CRITERIA
THE GRADING PLAN SHOULD BE BASED ON THE INCORPORATION OF BUILDING DESIGNS AND STREET LAYOUTS THAT FIT AND UTILIZE EXISTING TOPOGRAPHY AND DESIRABLE NATURAL SURROUNDINGS TO AVOID EXTREME GRADE MODIFICATIONS. INFORMATION SUBMITTED MUST PROVIDE SUFFICIENT TOPOGRAPHIC SURVEYS AND SOIL INVESTIGATIONS TO DETERMINE LIMITATIONS THAT MUST BE IMPOSED ON THE GRADING OPERATION RELATED TO SLOPE STABILITY, ADJACENT PROPERTIES, DRAINAGE PATTERNS, MEASURES FOR WATER REMOVAL, AND VEGETATIVE TREATMENT, ETC. MANY JURISDICTIONS HAVE REGULATIONS AND DESIGN PROCEDURES ALREADY ESTABLISHED FOR LAND GRADING THAT MUST BE FOLLOWED. THE PLAN MUST SHOW EXISTING AND PROPOSED CONTOURS FOR THE AREA(S) TO BE GRADED INCLUDING PRACTICES FOR EROSION CONTROL, SLOPE STABILIZATION, AND SAFE CONVEYANCE OF RUNOFF (E.G., WATERWAYS, LINED CHANNELS, REVERSE BENCHES, GRADE STABILIZATION STRUCTURES). THE GRADING/CONSTRUCTION PLANS ARE TO INCLUDE THE PHASING OF THESE PRACTICES AND CONSIDERATION OF THE FOLLOWING:

1. PROVISIONS TO SAFELY CONVEY SURFACE RUNOFF TO STORM DRAINS, PROTECTED OUTLETS OR STABLE WATER COURSES TO ENSURE THAT SURFACE RUNOFF WILL NOT DAMAGE SLOPES OR OTHER GRADED AREAS.
2. CUT AND FILL SLOPES, STABILIZED WITH GRASSES, NO STEEPER THAN 2:1 (WHERE THE SLOPE IS TO BE MOWED, THE SLOPE SHOULD BE NO STEEPER THAN 3:1, BUT 4:1 IS PREFERRED BECAUSE OF SAFETY FACTORS RELATED TO MOWING STEEP SLOPES). SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL DESIGN AND STABILIZATION CONSIDERATIONS TO BE SHOWN ON THE PLANS.

B-3 STANDARDS AND SPECIFICATIONS FOR LAND GRADING Continued

3. BENCHING PER DETAIL B-3-1 WHENEVER THE VERTICAL INTERVAL (HEIGHT) OF ANY 2:1 SLOPE EXCEEDS 20 FEET; FOR 3:1 SLOPES, WHEN IT EXCEEDS 30 FEET; AND FOR 4:1 SLOPES, WHEN IT EXCEEDS 40 FEET. LOCATE BENCHES TO DIVIDE THE SLOPE FACE AS EQUALLY AS POSSIBLE AND TO CONVEY THE WATER TO A STABLE OUTLET. SOILS, SEEPS, ROCK OUTCROPS, ETC. ARE TO BE TAKEN INTO CONSIDERATION WHEN DESIGNING BENCHES.
 - A. PROVIDE BENCHES WITH A MINIMUM WIDTH OF SIX FEET FOR EASE OF MAINTENANCE.
 - B. DESIGN BENCHES WITH A REVERSE SLOPE OF 6:1 OR FLATTER TO THE TOE OF THE UPPER SLOPE AND WITH A MINIMUM OF ONE FOOT IN DEPTH. GRADE THE LONGITUDINAL SLOPE OF THE BENCH BETWEEN 2 PERCENT AND 3 PERCENT, UNLESS ACCOMPANIED BY APPROPRIATE DESIGN AND COMPUTATIONS.
 - C. THE MAXIMUM ALLOWABLE FLOW LENGTH WITHIN A BENCH IS 800 FEET UNLESS ACCOMPANIED BY APPROPRIATE DESIGN AND COMPUTATIONS.
4. DIVERSION OF SURFACE WATER FROM THE FACE OF ALL CUT AND FILL SLOPES USING EARTH DIKES OR SWALES. CONVEY SURFACE WATER DOWN SLOPE USING A DESIGNED STRUCTURE, AND:
 - A. PROTECT THE FACE OF ALL GRADED SLOPES FROM SURFACE RUNOFF UNTIL THEY ARE STABILIZED.
 - B. DO NOT SUBJECT THE SLOPE'S FACE TO ANY CONCENTRATED FLOW OF SURFACE WATER SUCH AS FROM NATURAL DRAINAGE WAYS, GRADED SWALES, DOWNSPOUTS, ETC.
 - C. PROTECT THE FACE OF THE SLOPE BY SPECIAL EROSION CONTROL MATERIALS TO INCLUDE, BUT NOT BE LIMITED TO, APPROVED VEGETATIVE STABILIZATION PRACTICES, RIPRAP OR OTHER APPROVED STABILIZATION METHODS.
5. SERRATED SLOPE AS SHOWN IN DETAIL B-3-2. THE STEEPEST ALLOWABLE SLOPE FOR RIPRAP ROCK IS 1.5:1. FOR NON ROCK SURFACES, THE SLOPES ARE TO BE 2:1 OR FLATTER. THESE STEPS WILL WEATHER AND ACT TO HOLD MOISTURE, LIME, FERTILIZER AND SEED THUS PRODUCING A MUCH QUICKER AND LONGER LIVED VEGETATIVE COVER AND BETTER SLOPE STABILIZATION.
6. SUBSURFACE DRAINAGE PROVISIONS. PROVIDE SUBSURFACE DRAINAGE WHERE NECESSARY TO INTERCEPT SEEPAGE THAT WOULD OTHERWISE ADVERSELY AFFECT SLOPE STABILITY OR CREATE EXCESSIVELY WET SITE CONDITIONS.
7. PROXIMITY TO ADJACENT PROPERTY. SLOPES MUST NOT BE CREATED CLOSE TO PROPERTY LINES WITHOUT ADEQUATE PROTECTION AGAINST SEDIMENTATION, EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE, OR OTHER RELATED DAMAGES.
8. QUALITY OF FILL MATERIAL. FILL MATERIAL MUST BE FREE OF BRUSH, RUBBISH, LOGS, STUMPS, BUILDING DEBRIS, AND OTHER OBJECTIONABLE MATERIAL. DO NOT PLACE FROZEN MATERIALS IN THE FILL NOR PLACE THE FILL MATERIAL ON A FROZEN FOUNDATION.
9. STABILIZATION. STABILIZE ALL DISTURBED AREAS STRUCTURALLY OR VEGETATIVELY IN COMPLIANCE WITH SECTION B-4 STANDARDS AND SPECIFICATIONS FOR STABILIZATION PRACTICES.

MAINTENANCE
THE LINE, GRADE, AND CROSS SECTION OF BENCHING AND SERRATED SLOPES MUST BE MAINTAINED. BENCHES AND SERRATED SLOPES MUST CONTINUOUSLY MEET THE REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

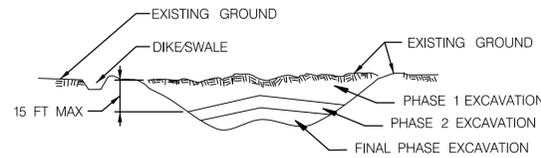


FIGURE B.1: INCREMENTAL STABILIZATION - CUT

PERMANENT VEGETATIVE STABILIZATION

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

- A). SEEDBED PREPARATION:
LOOSEN UPPER THREE INCH BY RAKING, DISCING, OR OTHER ACCEPTABLE MEANS AFTER SPREADING FOUR INCHES OF TOP SOIL.
- B). SOIL AMENDMENTS:
APPLY 500 LBS. PER ACRE OF 10-10-10 FERTILIZER AND TWO TONS PER ACRE OF LIME.
- C). SEEDING:
FOR PERIODS MARCH 1 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 WOOD CELLULOSE FIBER MULCH (WCFM) 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 WOOD CELLULOSE FIBER MULCH (WCFM).
NOTE: FOR QUICK COVER WITH TALL FESCUE, ADD 2 LBS. OF SMALL GRAIN PER 1,000 SQ. FT.
- D). MULCHING SPECIFICATIONS
MULCH SHALL BE WOOD CELLULOSE FIBER MULCH (WCFM) COMPLYING WITH SECTION B-4-5, B.1. OF THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS. THE WCFM SHALL BE APPLIED TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING AT A RATE OF 1500 LBS. PER ACRE (NET DRY WEIGHT).

* IF OTHER SEED MIXES ARE TO BE SUBSTITUTED, THEY MUST COMPLY WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS, SECTION B-4-5, TABLE B.3.

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 PERIOD 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 PERIODS 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 PERIODS OF NOVEMBER 16 TO FEBRUARY 28, PROTECT THE SITE BY APPLYING 1500 LBS. PER ACRE OF WOOD CELLULOSE FIBER MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOD.
- D). MULCHING SPECIFICATIONS
MULCH SHALL BE WOOD CELLULOSE FIBER MULCH (WCFM) COMPLYING WITH SECTION B-4-5, B.1. OF THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS. THE WCFM SHALL BE APPLIED TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING AT A RATE OF 1500 LBS. PER ACRE (NET DRY WEIGHT).

* IF OTHER SEED MIXES ARE TO BE SUBSTITUTED, THEY MUST COMPLY WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS, SECTION B-4-4, TABLE B.1.

B-4 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

DEFINITION
USING VEGETATION AS COVER TO PROTECT EXPOSED SOIL FROM EROSION.

PURPOSE
TO PROMOTE THE ESTABLISHMENT OF VEGETATION ON EXPOSED SOIL.

CONDITIONS WHERE PRACTICE APPLIES
ON ALL DISTURBED AREAS NOT STABILIZED BY OTHER METHODS, THIS SPECIFICATION IS DIVIDED INTO SECTIONS ON INCREMENTAL STABILIZATION; SOIL PREPARATION, SOIL AMENDMENTS AND TOPSOILING; SEEDING AND MULCHING; TEMPORARY STABILIZATION; AND PERMANENT STABILIZATION.

EFFECTS ON WATER QUALITY AND QUANTITY
STABILIZATION PRACTICES ARE USED TO PROMOTE THE ESTABLISHMENT OF VEGETATION ON EXPOSED SOIL WHEN SOIL IS STABILIZED WITH VEGETATION, THE SOIL IS LESS LIKELY TO ERODE AND MORE LIKELY TO ALLOW INFILTRATION OF RAINFALL, THEREBY REDUCING SEDIMENT LOADS AND RUNOFF TO DOWNSTREAM AREAS.

PLANTING VEGETATION IN DISTURBED AREAS WILL HAVE AN EFFECT ON THE WATER BUDGET, ESPECIALLY ON VOLUMES AND RATES OF RUNOFF. INFILTRATION, EVAPORATION, TRANSPIRATION, PERCOLATION, AND GROUNDWATER RECHARGE. OVER TIME, VEGETATION WILL INCREASE ORGANIC MATTER CONTENT AND IMPROVE THE WATER HOLDING CAPACITY OF THE SOIL AND SUBSEQUENT PLANT GROWTH.

VEGETATION WILL HELP REDUCE THE MOVEMENT OF SEDIMENT, NUTRIENTS, AND OTHER CHEMICALS CARRIED BY RUNOFF TO RECEIVING WATERS. PLANTS WILL ALSO HELP PROTECT GROUNDWATER SUPPLIES BY ASSIMILATING THOSE SUBSTANCES PRESENT WITHIN THE ROOT ZONE.

SEDIMENT CONTROL PRACTICES MUST REMAIN IN PLACE DURING GRADING, SEEDBED PREPARATION, SEEDING, MULCHING, AND VEGETATIVE ESTABLISHMENT.

ADEQUATE VEGETATIVE ESTABLISHMENT

INSPECT SEEDED AREAS FOR VEGETATIVE ESTABLISHMENT AND MAKE NECESSARY REPAIRS, REPLACEMENTS, AND RESEEDINGS WITHIN THE PLANTING SEASON.

1. ADEQUATE VEGETATIVE STABILIZATION REQUIRES 95 PERCENT GROUND COVER.
2. IF AN AREA HAS LESS THAN 40 PERCENT GROUND COVER, RESTABILIZE FOLLOWING THE ORIGINAL RECOMMENDATIONS FOR LIME, FERTILIZER, SEEDBED PREPARATION, AND SEEDING.
3. IF AN AREA HAS BETWEEN 40 AND 94 PERCENT GROUND COVER, OVER-SEED AND FERTILIZE USING HALF OF THE RATES ORIGINALLY SPECIFIED.
4. MAINTENANCE FERTILIZER RATES FOR PERMANENT SEEDING ARE SHOWN IN TABLE B.6.

B-4-1 STANDARDS AND SPECIFICATIONS FOR INCREMENTAL STABILIZATION

DEFINITION
ESTABLISHMENT OF VEGETATIVE COVER ON CUT AND FILL SLOPES.

PURPOSE
TO PROVIDE TIMELY VEGETATIVE COVER ON CUT AND FILL SLOPES AS WORK PROGRESSES.

CONDITIONS WHERE PRACTICE APPLIES
ANY CUT OR FILL SLOPE GREATER THAN 15 FEET IN HEIGHT. THIS PRACTICE ALSO APPLIES TO STOCKPILES.

EN-02

NOT FOR CONSTRUCTION



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Revisions	HARFORD COUNTY, MARYLAND	
	Woodland Run Stream Restoration EROSION AND SEDIMENT CONTROL GENERAL NOTES	
Drawn By : <u>MRW/BDM/KMS/DWB</u>	Contract No : _____	
Designed By : <u>BDM/KMS/DWB</u>	Scale : <u>NOT TO SCALE</u>	
Reviewed By : <u>SBP</u>	Sheet <u>14</u> Of <u>24</u>	Date : <u>NOVEMBER 2018</u>

BY: dblack -

ADC MAP: 21 GRID: H10

TAX MAP: 0049 GRID: 0003C

HCG BILLING ID No.:

HCG DWG ID No.:

B-4 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION Continued

CRITERIA

- A. INCREMENTAL STABILIZATION - CUT SLOPES
- EXCAVATE AND STABILIZE CUT SLOPES IN INCREMENTS NOT TO EXCEED 15 FEET IN HEIGHT. PREPARE SEEDBED AND APPLY SEED AND MULCH ON ALL CUT SLOPES AS THE WORK PROGRESSES.
 - CONSTRUCTION SEQUENCE EXAMPLE (REFER TO FIGURE B.1):
 - CONSTRUCT AND STABILIZE ALL TEMPORARY SWALES OR DIKES THAT WILL BE USED TO CONVEY RUNOFF AROUND THE EXCAVATION.
 - PERFORM PHASE 1 EXCAVATION, PREPARE SEEDBED, AND STABILIZE.
 - PERFORM PHASE 2 EXCAVATION, PREPARE SEEDBED, AND STABILIZE. OVERSEED PHASE 1 AREAS AS NECESSARY.
 - PERFORM FINAL PHASE EXCAVATION, PREPARE SEEDBED, AND STABILIZE. OVERSEED PREVIOUSLY SEEDED AREAS AS NECESSARY.

NOTE: ONCE EXCAVATION HAS BEGUN THE OPERATION SHOULD BE CONTINUOUS FROM GRUBBING THROUGH THE COMPLETION OF GRADING AND PLACEMENT OF TOPSOIL (IF REQUIRED) AND PERMANENT SEED AND MULCH. ANY INTERRUPTIONS IN THE OPERATION OR COMPLETING THE OPERATION OUT OF THE SEEDING SEASON WILL NECESSITATE THE APPLICATION OF TEMPORARY STABILIZATION.

B. INCREMENTAL STABILIZATION - FILL SLOPES

- CONSTRUCT AND STABILIZE FILL SLOPES IN INCREMENTS NOT TO EXCEED 15 FEET IN HEIGHT. PREPARE SEEDBED AND APPLY SEED AND MULCH ON ALL SLOPES AS THE WORK PROGRESSES.
- STABILIZE SLOPES IMMEDIATELY WHEN THE VERTICAL HEIGHT OF A LIFT REACHES 15 FEET, OR WHEN THE GRADING OPERATION CEASES AS PRESCRIBED IN THE PLANS.
- AT THE END OF EACH DAY, INSTALL TEMPORARY WATER CONVEYANCE PRACTICE(S), AS NECESSARY, TO INTERCEPT SURFACE RUNOFF AND CONVEY IT DOWN THE SLOPE IN A NON-EROSIVE MANNER.
- CONSTRUCTION SEQUENCE EXAMPLE (REFER TO FIGURE B.2):
 - CONSTRUCT AND STABILIZE ALL TEMPORARY SWALES OR DIKES THAT WILL BE USED TO DIVERT RUNOFF AROUND THE FILL. CONSTRUCT SILT FENCE ON LOW SIDE OF FILL UNLESS OTHER METHODS SHOWN ON THE PLANS ADDRESS THIS AREA.
 - AT THE END OF EACH DAY, INSTALL TEMPORARY WATER CONVEYANCE PRACTICE(S), AS NECESSARY, TO INTERCEPT SURFACE RUNOFF AND CONVEY IT DOWN THE SLOPE IN A NON-EROSIVE MANNER.
 - PLACE PHASE 1 FILL, PREPARE SEEDBED, AND STABILIZE.
 - PLACE PHASE 2 FILL, PREPARE SEEDBED, AND STABILIZE.
 - PLACE FINAL PHASE FILL, PREPARE SEEDBED, AND STABILIZE. OVERSEED PREVIOUSLY SEEDED AREAS AS NECESSARY.

NOTE: ONCE THE PLACEMENT OF FILL HAS BEGUN THE OPERATION SHOULD BE CONTINUOUS FROM GRUBBING THROUGH THE COMPLETION OF GRADING AND PLACEMENT OF TOPSOIL (IF REQUIRED) AND PERMANENT SEED AND MULCH. ANY INTERRUPTIONS IN THE OPERATION OR COMPLETING THE OPERATION OUT OF THE SEEDING SEASON WILL NECESSITATE THE APPLICATION OF TEMPORARY STABILIZATION.

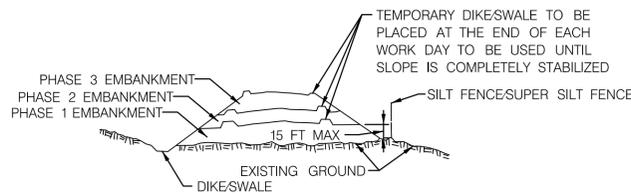


FIGURE B.2: INCREMENTAL STABILIZATION - FILL

B-4-2 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

DEFINITION

THE PROCESS OF PREPARING THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.

PURPOSE

TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH.

CONDITIONS WHERE PRACTICE APPLIES

WHERE VEGETATIVE STABILIZATION IS TO BE ESTABLISHED.

CRITERIA

A. SOIL PREPARATION

- TEMPORARY STABILIZATION
 - SEEDBED PREPARATION CONSISTS OF LOOSENING SOIL TO A DEPTH OF 3 TO 5 INCHES BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT, SUCH AS DISC HARROWS OR CHISEL PLOWS OR RIPPERS MOUNTED ON CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSENED, IT MUST NOT BE ROLLED OR DRAGGED SMOOTH BUT LEFT IN THE ROUGHENED CONDITION. SLOPES 3:1 OR FLATTER ARE TO BE TRACKED WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE.
 - APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS.
 - INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.
- PERMANENT STABILIZATION
 - A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:
 - SOIL PH BETWEEN 6.0 AND 7.0.
 - SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM).
 - SOIL CONTAINS LESS THAN 40 PERCENT CLAY BUT ENOUGH FINE GRAINED MATERIAL (GREATER THAN 30 PERCENT SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE. AN EXCEPTION: IF LOVEGRASS WILL BE PLANTED, THEN A SANDY SOIL (LESS THAN 30 PERCENT SILT PLUS CLAY) WOULD BE ACCEPTABLE.
 - SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT.
 - SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.
 - APPLICATION OF AMENDMENTS OR TOPSOIL IS REQUIRED IF ON-SITE SOILS DO NOT MEET THE ABOVE CONDITIONS.
 - GRADED AREAS MUST BE MAINTAINED IN A TRUE AND EVEN GRADE AS SPECIFIED ON THE APPROVED PLAN, THEN SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3 TO 5 INCHES.
 - APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST.
 - MIX SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. RAKE LAWN AREAS TO SMOOTH THE SURFACE, REMOVE LARGE OBJECTS LIKE STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. LOOSEN SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT TO ROUGHEN THE SURFACE WHERE SITE CONDITIONS WILL NOT PERMIT NORMAL SEEDBED PREPARATION. TRACK SLOPES 3:1 OR FLATTER WITH TRACKED EQUIPMENT LEAVING THE SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. LEAVE THE TOP 1 TO 3 INCHES OF SOIL LOOSE AND FRIABLE. SEEDBED LOOSENING MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.

B. TOPSOILING

- TOPSOIL IS PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION. THE PURPOSE IS TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.
- TOPSOIL SALVAGED FROM AN EXISTING SITE MAY BE USED PROVIDED IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-NRCS.
- TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:
 - THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
 - THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.
 - THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
 - THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.
- AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN.

DETAIL B-3-1 BENCHING		DETAIL B-3-2 SERRATED SLOPE									
STANDARD SYMBOL		STANDARD SYMBOL									
<table border="1"> <tr> <th>SLOPE</th> <th>y (MAX.)</th> </tr> <tr> <td>2:1</td> <td>20 FT</td> </tr> <tr> <td>3:1</td> <td>30 FT</td> </tr> <tr> <td>4:1</td> <td>40 FT</td> </tr> </table>		SLOPE	y (MAX.)	2:1	20 FT	3:1	30 FT	4:1	40 FT		
SLOPE	y (MAX.)										
2:1	20 FT										
3:1	30 FT										
4:1	40 FT										
<p>CONSTRUCTION SPECIFICATIONS</p> <ol style="list-style-type: none"> USE FILL MATERIAL FREE OF BRUSH, RUBBISH, ROCKS, LOGS, STUMPS, BUILDING DEBRIS, AND OTHER OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS. DO NOT INCORPORATE FROZEN, SOFT, MUCKY, OR HIGHLY COMPRESSIBLE MATERIALS INTO FILL SLOPES OR STRUCTURAL FILLS. DO NOT PLACE FILL ON A FROZEN FOUNDATION. PLACE ALL FILL IN LOOSE LIFTS NOT TO EXCEED 8 INCHES AND THEN COMPACT. COMPACT ALL FILLS AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, OR OTHER RELATED PROBLEMS. COMPACT FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES, CONDUITS, ETC., IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES. HANDLE SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION IN ACCORDANCE WITH SECTION H-2 SUBSURFACE DRAINS OR OTHER APPROVED METHODS. MAINTAIN LINE, GRADE, AND CROSS SECTION OF BENCHING, STABILIZE IN ACCORDANCE WITH THE 3/7 DAY STABILIZATION CRITERIA OR AS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN. INSTALLATION OF EROSION CONTROL MATTING MAY BE NECESSARY IN BENCH/SWALE INVERTS. CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. KEEP ALL BENCHES FREE OF SEDIMENT DURING ALL PHASES OF DEVELOPMENT. 		<p>CONSTRUCTION SPECIFICATIONS</p> <ol style="list-style-type: none"> DIVERT OVERLAND FLOW FROM THE TOP OF ALL SERRATED CUT SLOPES AND CARRY TO A SUITABLE OUTLET. MAKE SERRATIONS AS THE EXCAVATION PROGRESSES. CONSTRUCT EACH STEP OR SERRATION ON THE CONTOUR, RISE & RUN DIMENSIONS WILL VARY DEPENDING ON THE FINAL SLOPE RATIO. FOR RIPABLE ROCK SURFACES, MAKE TWO FOOT VERTICAL (RISE) AND THREE FOOT HORIZONTAL (RUN) SERRATIONS AT A SLOPE RATIO NO STEEPER THAN 1.5:1. FOR NON ROCK SURFACES, MAKE TWO FOOT VERTICAL (RISE) AND FOUR FOOT HORIZONTAL (RUN) SERRATIONS AT A SLOPE RATIO NO STEEPER THAN 2:1. KEEP ALL BENCHES FREE OF SEDIMENT DURING ALL PHASES OF CONSTRUCTION. HANDLE SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION IN ACCORDANCE WITH SECTION H-2 SUBSURFACE DRAINS OR OTHER APPROVED METHODS. MAINTAIN LINE, GRADE, AND CROSS SECTION OF SERRATED SLOPES. TEMPORARILY OR PERMANENTLY STABILIZE ALL GRADED, NON ROCK SURFACES IN ACCORDANCE WITH THE 3/7 DAY STABILIZATION REQUIREMENTS OR AS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN. CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. 									
<p>MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL</p> <p>U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011</p>		<p>MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL</p> <p>U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011</p>									

B-4-2 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS Continued

- TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:
 - TOPSOIL MUST BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, OR LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. TOPSOIL MUST NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND MUST CONTAIN LESS THAN 5 PERCENT BY VOLUME OF CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1 INCHES IN DIAMETER.
 - TOPSOIL MUST BE FREE OF NOXIOUS PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACK GRASS, JOHNSON GRASS, NUT SEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.
 - TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL.
- TOPSOIL APPLICATION
 - EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING TOPSOIL.
 - UNIFORMLY DISTRIBUTE TOPSOIL IN A 5 TO 8 INCH LAYER AND LIGHTLY COMPACT TO A MINIMUM THICKNESS OF 4 INCHES. SPREADING IS TO BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS MUST BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.
 - TOPSOIL MUST NOT BE PLACED IF THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING B.14 AND SEEDBED PREPARATION.
- SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)
 - SOIL TESTS MUST BE PERFORMED TO DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER ON SITES HAVING DISTURBED AREAS OF 5 ACRES OR MORE. SOIL ANALYSIS MAY BE PERFORMED BY A RECOGNIZED PRIVATE OR COMMERCIAL LABORATORY. SOIL SAMPLES TAKEN FOR ENGINEERING PURPOSES MAY ALSO BE USED FOR CHEMICAL ANALYSES.
 - FERTILIZERS MUST BE UNIFORM IN COMPOSITION, FREE FLOWING AND SUITABLE FOR ACCURATE APPLICATION BY APPROPRIATE EQUIPMENT. MANURE MAY BE SUBSTITUTED FOR FERTILIZER WITH PRIOR APPROVAL FROM THE APPROPRIATE APPROVAL AUTHORITY. FERTILIZERS MUST ALL BE DELIVERED TO THE SITE FULLY LABELED ACCORDING TO THE APPLICABLE LAWS AND MUST BEAR THE NAME, TRADE NAME OR TRADEMARK AND WARRANTY OF THE PRODUCER.
 - LIME MATERIALS MUST BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHEN HYDROSEEDING) WHICH CONTAINS AT LEAST 50 PERCENT TOTAL OXIDES (CALCIUM OXIDE PLUS MAGNESIUM OXIDE). LIMESTONE MUST BE GROUND TO SUCH FINENESS THAT AT LEAST 50 PERCENT WILL PASS THROUGH A #100 MESH SIEVE AND 98 TO 100 PERCENT WILL PASS THROUGH A #20 MESH SIEVE.
 - LIME AND FERTILIZER ARE TO BE EVENLY DISTRIBUTED AND INCORPORATED INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.
 - WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, SPREAD GROUND LIMESTONE AT THE RATE OF 4 TO 8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.

EN-03

<p>700 EAST PRATT STREET BALTIMORE, MD 21202 SUITE 500 PH: (410) 728-2900</p> <p>Engineers Construction Managers Planners Scientists www.rkk.com</p>	<p>Revisions</p>	<p>HARFORD COUNTY, MARYLAND</p> <p>Woodland Run Stream Restoration</p> <p>EROSION AND SEDIMENT CONTROL GENERAL NOTES</p>	
	<p>Drawn By : MRW/BDM/KMS/DWB</p> <p>Designed By : BDM/KMS/DWB</p> <p>Reviewed By : SBP</p>	<p>Contract No : _____</p> <p>Scale : NOT TO SCALE</p> <p>Sheet 15 Of 24</p> <p>Date : NOVEMBER 2018</p>	

BY: dblack

TAX MAP: 0049 GRID: 0003C ADC MAP: 21 GRID: H10 HCG BILLING ID No.: HCG DWG ID No.: SCALE: 1"=100'

B-4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

DEFINITION
THE APPLICATION OF SEED AND MULCH TO ESTABLISH VEGETATIVE COVER.

PURPOSE
TO PROTECT DISTURBED SOILS FROM EROSION DURING AND AT THE END OF CONSTRUCTION.

CONDITIONS WHERE PRACTICE APPLIES
TO THE SURFACE OF ALL PERIMETER CONTROLS, SLOPES, AND ANY DISTURBED AREA NOT UNDER ACTIVE GRADING.

CRITERIA

A. SEEDING

1. SPECIFICATIONS

- A. ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED USED MUST HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON ANY PROJECT. REFER TO TABLE B.4 REGARDING THE QUALITY OF SEED. SEED TAGS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY TYPE OF SEED AND SEEDING RATE.
- B. MULCH ALONE MAY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES ONLY IF THE GROUND IS FROZEN. THE APPROPRIATE SEEDING MIXTURE MUST BE APPLIED WHEN THE GROUND THAWS.
- C. INOCULANTS: THE INOCULANT FOR TREATING LEGUME SEED IN THE SEED MIXTURES MUST BE A PURE CULTURE OF NITROGEN FIXING BACTERIA PREPARED SPECIFICALLY FOR THE SPECIES. INOCULANTS MUST NOT BE USED LATER THAN THE DATE INDICATED ON THE CONTAINER. ADD FRESH INOCULANTS AS DIRECTED ON THE PACKAGE. USE FOUR TIMES THE RECOMMENDED RATE WHEN HYDROSEEDING. NOTE: IT IS VERY IMPORTANT TO KEEP INOCULANT AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75 TO 80 DEGREES FAHRENHEIT CAN WEAKEN BACTERIA AND MAKE THE INOCULANT LESS EFFECTIVE.
- D. SOD OR SEED MUST NOT BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.

2. APPLICATION

- A. DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS.
 - I. INCORPORATE SEED INTO THE SUBSOIL AT THE RATES PRESCRIBED ON TEMPORARY SEEDING TABLE B.1, PERMANENT SEEDING TABLE B.3, OR SITE-SPECIFIC SEEDING SUMMARIES.
 - II. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION. ROLL THE SEEDED AREA WITH A WEIGHTED ROLLER TO PROVIDE GOOD SEED TO SOIL CONTACT.
- B. DRILL OR CULTPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL.
 - I. CULTPACKING SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 14 INCH OF SOIL COVERING. SEEDBED MUST BE FIRM AFTER PLANTING.
 - II. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION.
- C. HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER).
 - I. IF FERTILIZER IS BEING APPLIED AT THE TIME OF SEEDING, THE APPLICATION RATES SHOULD NOT EXCEED THE FOLLOWING: NITROGEN, 100 POUNDS PER ACRE TOTAL OF SOLUBLE NITROGEN; P2O5 (PHOSPHOROUS), 200 POUNDS PER ACRE; K2O (POTASSIUM), 200 POUNDS PER ACRE.
 - II. LIME: USE ONLY GROUND AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE MAY BE APPLIED BY HYDROSEEDING). NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNT OR HYDRATED LIME WHEN HYDROSEEDING.
 - III. MIX SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION.
 - IV. WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.

B. MULCHING

1. MULCH MATERIALS (IN ORDER OF PREFERENCE)

- A. STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, RYE, OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR. STRAW IS TO BE FREE OF NOXIOUS WEED SEEDS AS SPECIFIED IN THE MARYLAND SEED LAW AND NOT MUSTY, MOLDY, CAKED, DECAYED, OR EXCESSIVELY DUSTY. NOTE: USE ONLY STERILE STRAW MULCH IN AREAS WHERE ONE SPECIES OF GRASS IS DESIRED.
- B. WOOD CELLULOSE FIBER MULCH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE.
 - I. WCFM IS TO BE DYED GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORMLY SPREAD SLURRY.
 - II. WCFM, INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS.
 - III. WCFM MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED, FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL MUST FORM A BLOTTER-LIKE GROUND COVER, ON APPLICATION, HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND MUST COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS.
 - IV. WCFM MATERIAL MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE PHYTO-TOXIC.
 - V. WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH OF APPROXIMATELY 10 MILLIMETERS, DIAMETER APPROXIMATELY 1 MILLIMETER, PH RANGE OF 4.0 TO 8.5, ASH CONTENT OF 1.6 PERCENT MAXIMUM AND WATER HOLDING CAPACITY OF 90 PERCENT MINIMUM. CONTACT.

2. APPLICATION

- A. APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.
 - B. WHEN STRAW MULCH IS USED, SPREAD IT OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE TO A UNIFORM LOOSE DEPTH OF 1 TO 2 INCHES. APPLY MULCH TO ACHIEVE A UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED. WHEN USING A MULCH ANCHORING TOOL, INCREASE THE APPLICATION RATE TO 2.5 TONS PER ACRE.
 - C. WOOD CELLULOSE FIBER USED AS MULCH MUST BE APPLIED AT A NET DRY WEIGHT OF 1500 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER TO ATTAIN A MIXTURE WITH A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
- 3. ANCHORING**
- A. PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS (LISTED BY PREFERENCE), DEPENDING UPON THE SIZE OF THE AREA AND EROSION HAZARD:
 - I. A MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE A MINIMUM OF 2 INCHES. THIS PRACTICE IS MOST EFFECTIVE ON LARGE AREAS, BUT IS LIMITED TO FLATTER SLOPES WHERE EQUIPMENT CAN OPERATE SAFELY. IF USED ON SLOPING LAND, THIS PRACTICE SHOULD FOLLOW THE CONTOUR.
 - II. WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER AT A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.
 - III. SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRO-TACK), DCA-70, PETROSET, TERRA TAX II, TERRA TACK AR OR OTHER APPROVED EQUAL MAY BE USED. FOLLOW APPLICATION RATES AS SPECIFIED BY THE MANUFACTURER. APPLICATION OF LIQUID BINDERS NEEDS TO BE HEAVIER AT THE EDGES WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF BANKS. USE OF ASPHALT BINDERS IS STRICTLY PROHIBITED.
 - IV. LIGHTWEIGHT PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER RECOMMENDATIONS. NETTING IS USUALLY AVAILABLE IN ROLLS 4 TO 15 FEET WIDE AND 300 TO 3,000 FEET LONG.

TEMPORARY SEEDING SUMMARY

HARDINESS ZONE (FROM FIGURE B.3): 7A SEED MIXTURE (FROM TABLE B.1)					FERTILIZER RATE (10-20-20)	LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS		
	ANNUAL RYEGRASS	40 LB/ACRE	2/15 - 4/30 8/15 - 11/30	1/2"	436 LB/AC (10 LB/1000 SF)	2 TONS/AC (90 LB/1000 SF)
	FOXTAIL MILLET	30 LB/ACRE	5/1 - 8/14	1/2"		

B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

DEFINITION
TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION.

PURPOSE
TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

CONDITIONS WHERE PRACTICE APPLIES
EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR 6 MONTHS OR MORE.

CRITERIA

A. SEED MIXTURES

1. GENERAL USE

- A. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE B.3 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3) AND BASED ON THE SITE CONDITION OR PURPOSE FOUND ON TABLE B.2. ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.
- B. ADDITIONAL PLANTING SPECIFICATIONS FOR EXCEPTIONAL SITES SUCH AS SHORELINES, STREAM BANKS, OR DUNES OR FOR SPECIAL PURPOSES SUCH AS WILDLIFE OR AESTHETIC TREATMENT MAY BE FOUND IN USDA-NRCS TECHNICAL FIELD OFFICE GUIDE, SECTION 342 - CRITICAL AREA PLANTING.
- C. FOR SITES HAVING DISTURBED AREA OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY.
- D. FOR AREAS RECEIVING LOW MAINTENANCE, APPLY UREA FORM FERTILIZER (46-0-0) AT 3 *POUNDS PER 1000 SQUARE FEET (150 POUNDS PER ACRE) AT THE TIME OF SEEDING IN ADDITION TO THE SOIL AMENDMENTS SHOWN IN THE PERMANENT SEEDING SUMMARY.

2. TURFGRASS MIXTURES

- A. AREAS WHERE TURFGRASS MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, AND COMMERCIAL SITES WHICH WILL RECEIVE A MEDIUM TO HIGH LEVEL OF MAINTENANCE.
- B. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED BELOW BASED ON THE SITE CONDITIONS OR PURPOSE. ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.
 - I. KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN AREAS THAT RECEIVE INTENSIVE MANAGEMENT. IRRIGATION REQUIRED IN THE AREAS OF CENTRAL MARYLAND AND EASTERN SHORE. RECOMMENDED CERTIFIED KENTUCKY BLUEGRASS CULTIVARS SEEDING RATE: 1.5 TO 2.0 POUNDS PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
 - II. KENTUCKY BLUEGRASS/PERENNIAL RYE: FULL SUN MIXTURE: FOR USE IN FULL SUN AREAS WHERE RAPID ESTABLISHMENT IS NECESSARY AND WHEN TURF WILL RECEIVE MEDIUM TO INTENSIVE MANAGEMENT. CERTIFIED PERENNIAL RYEGRASS CULTIVARS/CERTIFIED KENTUCKY BLUEGRASS SEEDING RATE: 2 POUNDS MIXTURE PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.
 - III. TALL FESCUE/KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN DROUGHT PRONE AREAS AND/OR FOR AREAS RECEIVING LOW TO MEDIUM MANAGEMENT IN FULL SUN TO MEDIUM SHADE. RECOMMENDED MIXTURE INCLUDES: CERTIFIED TALL FESCUE CULTIVARS 95 TO 100 PERCENT, CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 0 TO 5 PERCENT. SEEDING RATE: 5 TO 8 POUNDS PER 1000 SQUARE FEET. ONE OR MORE CULTIVARS MAY BE BLENDED.
 - IV. KENTUCKY BLUEGRASS/FINE FESCUE: SHADE MIXTURE: FOR USE IN AREAS WITH SHADE IN BLUEGRASS LAWNS. FOR ESTABLISHMENT IN HIGH QUALITY, INTENSIVELY MANAGED TURF AREA. MIXTURE INCLUDES: CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 30 TO 40 PERCENT AND CERTIFIED FINE FESCUE AND 60 TO 70 PERCENT. SEEDING RATE: 1* TO 3 POUNDS PER 1000 SQUARE FEET.

NOTES:

SELECT TURFGRASS VARIETIES FROM THOSE LISTED IN THE MOST CURRENT UNIVERSITY OF MARYLAND PUBLICATION, AGRONOMY MEMO #77, "TURFGRASS CULTIVAR RECOMMENDATIONS FOR MARYLAND"

CHOOSE CERTIFIED MATERIAL. CERTIFIED MATERIAL IS THE BEST GUARANTEE OF CULTIVAR PURITY. THE CERTIFICATION PROGRAM OF THE MARYLAND DEPARTMENT OF AGRICULTURE, TURF AND SEED SECTION, PROVIDES A RELIABLE MEANS OF CONSUMER PROTECTION AND ASSURES A PURE GENETIC LINE

C. IDEAL TIMES OF SEEDING FOR TURF GRASS MIXTURES

- WESTERN MD: MARCH 15 TO JUNE 1, AUGUST 1 TO OCTOBER 1 (HARDINESS ZONES: 5B, 6A)
- CENTRAL MD: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONE: 6B)
- SOUTHERN MD, EASTERN SHORE: MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONES: 7A, 7B)

D. TILL AREAS TO RECEIVE SEED BY DISKING OR OTHER APPROVED METHODS TO A DEPTH OF 2 TO 4 INCHES, LEVEL AND RAKE THE AREAS TO PREPARE A PROPER SEEDBED. REMOVE STONES AND DEBRIS OVER 1" INCHES IN DIAMETER. THE RESULTING SEEDBED MUST BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL POSE NO DIFFICULTY.

E. IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER FOR PLANT GROWTH (*TO 1 INCH EVERY 3 TO 4 DAYS DEPENDING ON SOIL TEXTURE) UNTIL THEY ARE FIRMLY ESTABLISHED. THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE LATE IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOT SEASONS, OR ON ADVERSE SITES.

PERMANENT SEEDING SUMMARY

HARDINESS ZONE (FROM FIGURE B.3): 7A SEED MIXTURE (FROM TABLE B.3)					FERTILIZER RATE (10-20-20)			LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	N	P205	K20	
1	SWITCH GRASS CREEPING RED FESCUE PATRIDGE PEA	10 15 4	2/15 - 5/31		45 LB/AC (1.0 LB/1000 SF)	90 LB/AC (2 LB/1000 SF)	90 LB/AC (2 LB/1000 SF)	2 TONS/AC (90 LB/1000 SF)
8	TALL FESCUE (85%),	100	2/15 - 4/30 8/15 - 11/30	1/4" - 1/2"				
9	TALL FESCUE KENTUCKY BLUEGRASS PERENNIAL RYEGRASS	60 40 20	2/15 - 4/30 8/15 - 11/30					

3. SOD MAINTENANCE

- A. IN THE ABSENCE OF ADEQUATE RAINFALL, WATER DAILY DURING THE FIRST WEEK OR AS OFTEN AND SUFFICIENTLY AS NECESSARY TO MAINTAIN MOIST SOIL TO A DEPTH OF 4 INCHES. WATER SOD DURING THE HEAT OF THE DAY TO PREVENT WILTING.
- B. AFTER THE FIRST WEEK, SOD WATERING IS REQUIRED AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE CONTENT.
- C. DO NOT MOW UNTIL THE SOD IS FIRMLY ROOTED. NO MORE THAN ??OF THE GRASS LEAF MUST BE REMOVED BY THE INITIAL CUTTING OR SUBSEQUENT CUTTINGS. MAINTAIN A GRASS HEIGHT OF AT LEAST 3 INCHES UNLESS OTHERWISE SPECIFIED.

EN-04

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Rummel, Klepper & Kahl, LLP
700 EAST PRATT STREET | BALTIMORE, MD 21202
SUITE 500 PH: (410) 728-2900
Engineers | Construction Managers | Planners | Scientists
www.rkk.com

Revisions	HARFORD COUNTY, MARYLAND	
	Woodland Run Stream Restoration	
	EROSION AND SEDIMENT CONTROL GENERAL NOTES	
Drawn By : MRW/BDM/KMS/DWB	Contract No : _____	
Designed By : BDM/KMS/DWB	Scale : NOT TO SCALE	
Reviewed By : SBP	Sheet 16 Of 24	
	Date : NOVEMBER 2018	

SEQUENCE OF CONSTRUCTION

1. CONTACT THE HARFORD COUNTY INSPECTOR AT LEAST 48 HOURS PRIOR TO STARTING CONSTRUCTION AND SCHEDULE A PRE-CONSTRUCTION MEETING.
2. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED OVERNIGHT UNLESS THE RUNOFF IS DIRECTED TO AN APPROVED SEDIMENT CONTROL DEVICE.
3. POSITIVE DRAINAGE SHALL BE MAINTAINED AT THE END OF EACH WORKDAY. IF IT RAINS OVERNIGHT, THE WORK AREA SHALL BE DEWATERED USING A PUMP AND FILTER BAG AND THE CLEAN WATER SHALL BE DISCHARGED TO AN APPROPRIATE OUTLET.
4. EROSION AND SEDIMENT CONTROL DEVICES AND/OR MEASURES ARE TO BE INSTALLED PRIOR TO ANY EXCAVATION OR DISTURBANCE WITHIN THE PROJECT LIMITS.
5. EROSION AND SEDIMENT CONTROL DEVICES AND/OR MEASURES SHALL BE MAINTAINED IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS UNTIL THE ENTIRE CONTRIBUTING AREA IS STABILIZED.
6. EROSION AND SEDIMENT CONTROL DEVICES AND/OR MEASURES ARE TO REMAIN IN PLACE UNTIL THEIR REMOVAL IS APPROVED BY PRINCE GEORGES COUNTY INSPECTOR.

EN-06

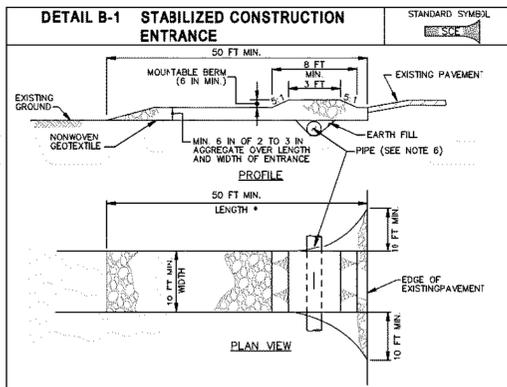


Rummel, Klepper & Kahl, LLP
 700 EAST PRATT STREET | BALTIMORE, MD 21202
 SUITE 500 PH: (410) 728-2900
 Engineers | Construction Managers | Planners | Scientists
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Revisions	HARFORD COUNTY, MARYLAND	
	Woodland Run Stream Restoration SEQUENCE OF CONSTRUCTION	
	Drawn By : <u>MRW/BDM/KMS/DWB</u>	Contract No : _____
	Designed By : <u>BDM/KMS/DWB</u>	Scale : <u>NOT TO SCALE</u>
	Reviewed By : <u>SBP</u>	Sheet <u>18</u> Of <u>24</u>
		Date : <u>NOVEMBER 2018</u>

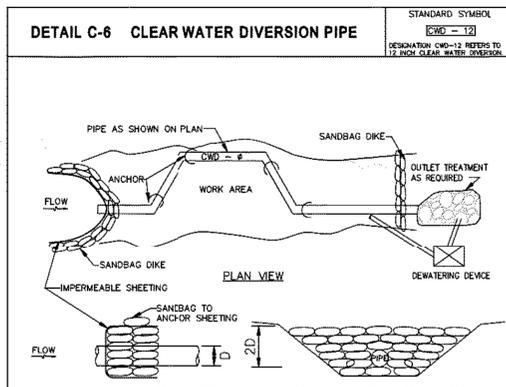
BY: dblack -

HCG BILLING ID No.: HCG DWG ID No.: TAX MAP: 0049 GRID: 0003C ADC MAP: 21 GRID: H10



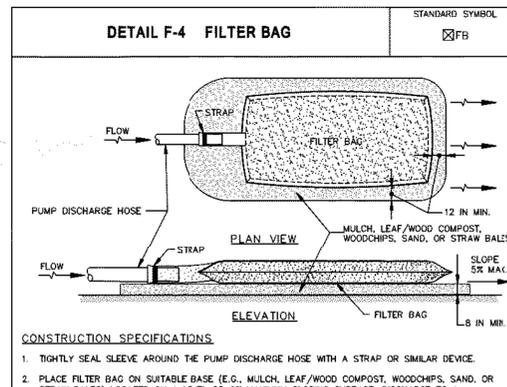
- CONSTRUCTION SPECIFICATIONS**
- PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (30 FEET FOR SINGLE RESIDENCE LOT) USE MINIMUM WIDTH OF 10 FEET. FLARE SIZE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
 - 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.
 - PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
 - 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.
 - MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS WARRANT 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



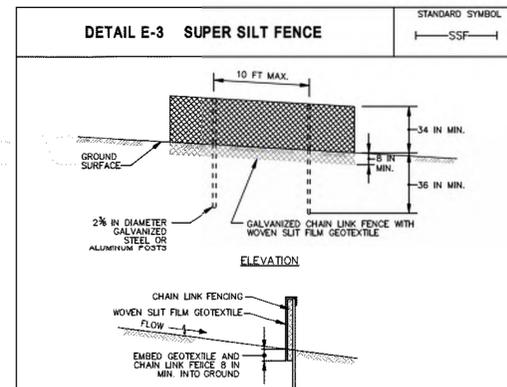
- CONSTRUCTION SPECIFICATIONS**
- FLEXIBLE PIPE IS PREFERRED. HOWEVER, CORRUGATED METAL PIPE OR EQUIVALENT PVC PIPE CAN BE USED. MAKE ALL JOINTS WATER-TIGHT.
 - FOR SANDBAGS USE MATERIALS THAT ARE RESISTANT TO ULTRA-VIOLET RADIATION, TEARING, AND PUNCTURE AND WOVEN TIGHTLY ENOUGH TO PREVENT LEAKAGE OF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

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



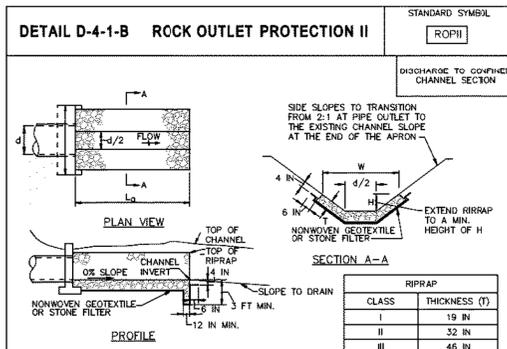
- CONSTRUCTION SPECIFICATIONS**
- TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
 - PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAF/WOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE. DISCHARGE TO A STABILIZED AREA. EXTEND BASE A MINIMUM OF 12 INCHES FROM EDGES OF BAG.
 - CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE.
 - REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. 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.
 - USE NONWOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH THREAD. SIZE SLEEVE TO ACCOMMODATE A MAXIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE BAG MUST BE MANUFACTURED FROM A NONWOVEN GEOTEXTILE THAT MEETS OR EXCEEDS MINIMUM AVERAGE ROLL VALUES (MARV) FOR THE FOLLOWING:
- | | | |
|----------------------------------|----------------------------|-------------|
| GRAB TENSILE | 250 LB | ASTM D-4632 |
| PUNCTURE | 150 LB | ASTM D-4633 |
| FLOW RATE | 70 GAL/MIN/FT ² | ASTM D-4491 |
| PERMITTIVITY (SEC ²) | 1.2 SEC ² | 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 |
- 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.

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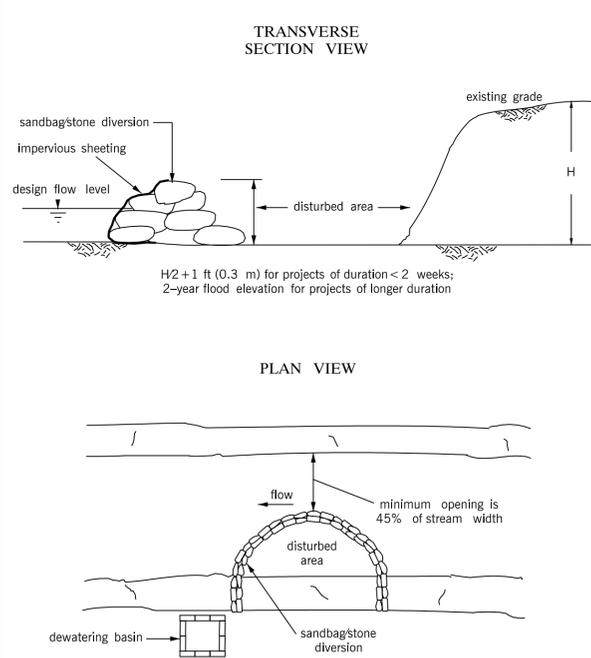
- CONSTRUCTION SPECIFICATIONS**
- INSTALL 2 1/2 INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
 - FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2 1/2 INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
 - FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
 - WHERE ENDS OF THE GEOTEXTILE COME TOGETHER THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
 - EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
 - PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
 - REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
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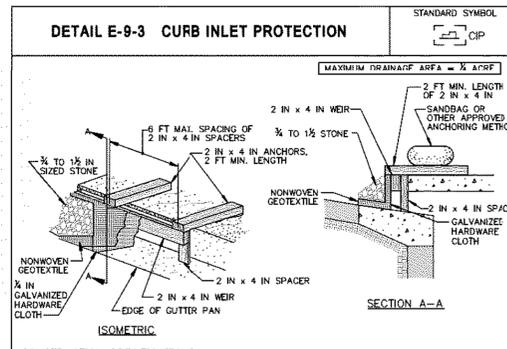


- CONSTRUCTION SPECIFICATIONS**
- RIPPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
 - USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
 - PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (3/4 TO 1 1/2 INCH STONE FOR 6 INCH MINIMUM DEPTH) AND RIPPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
 - EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPPRAP.
 - CONSTRUCT RIPPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENEOUS WITH THE SMALLER STONES AND SPILLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPPRAP IN A MANNER TO PREVENT DAMAGE TO THE STONE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
 - WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.
 - CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
 - MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLODGED RIPPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

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



TEMPORARY INSTREAM CONSTRUCTION MEASURES
 REVISED NOVEMBER 2000
 MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION



- CONSTRUCTION SPECIFICATIONS**
- USE NOMINAL 2 INCH x 4 INCH LUMBER.
 - USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
 - NAIL THE 2x4 WEIR TO 9 INCH LONG VERTICAL SPACERS (MAXIMUM 6 FEET APART).
 - ATTACH A CONTINUOUS PIECE OF 1/2 INCH GALVANIZED HARDWARE CLOTH WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4 WEIR, EXTENDING IT 2 FEET BEYOND THROAT ON EACH SIDE.
 - PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE OF THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH TO THE 2x4 WEIR.
 - PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FEET LENGTH). EXTEND THE ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
 - INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND THE ENDS OF THE THROAT OPENING.
 - FORM THE HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE CURB AND FACE OF CURB TO SPAN THE INLET OPENING. COVER THE HARDWARE CLOTH AND GEOTEXTILE WITH CLEAN 3/4 TO 1 1/2 INCH STONE OR EQUIVALENT RECYCLED CONCRETE.
 - AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
 - STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOSING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
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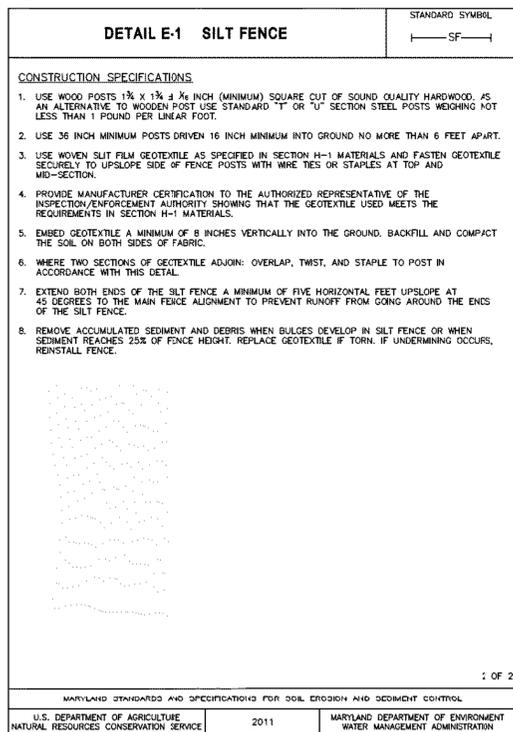
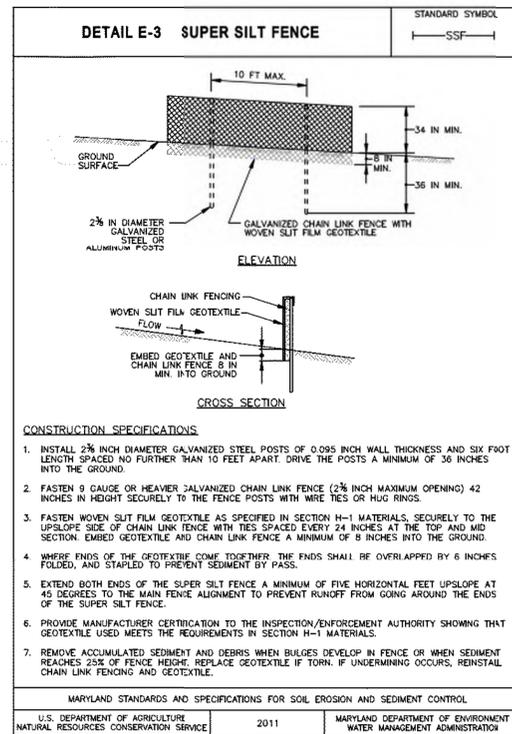
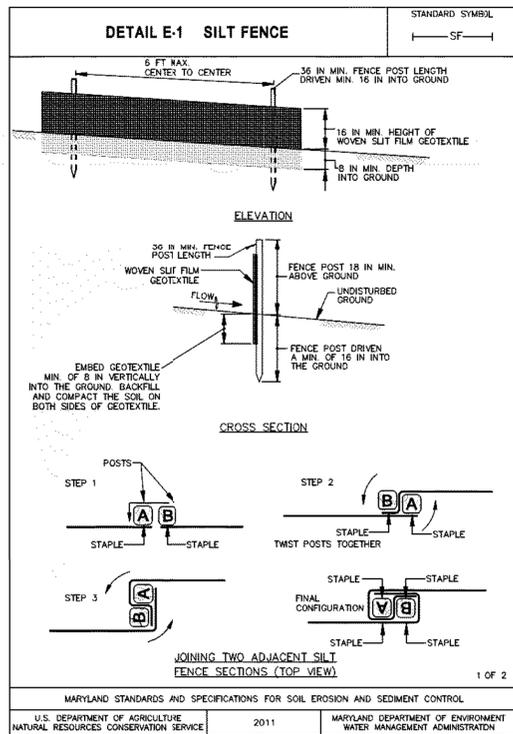
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Revisions		HARFORD COUNTY, MARYLAND Woodland Run Stream Restoration EROSION & SEDIMENT CONTROL DETAILS	
Drawn By :	MRW/BDM/KMS/DWB		
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Reviewed By :	SBP	Sheet	19 Of 24
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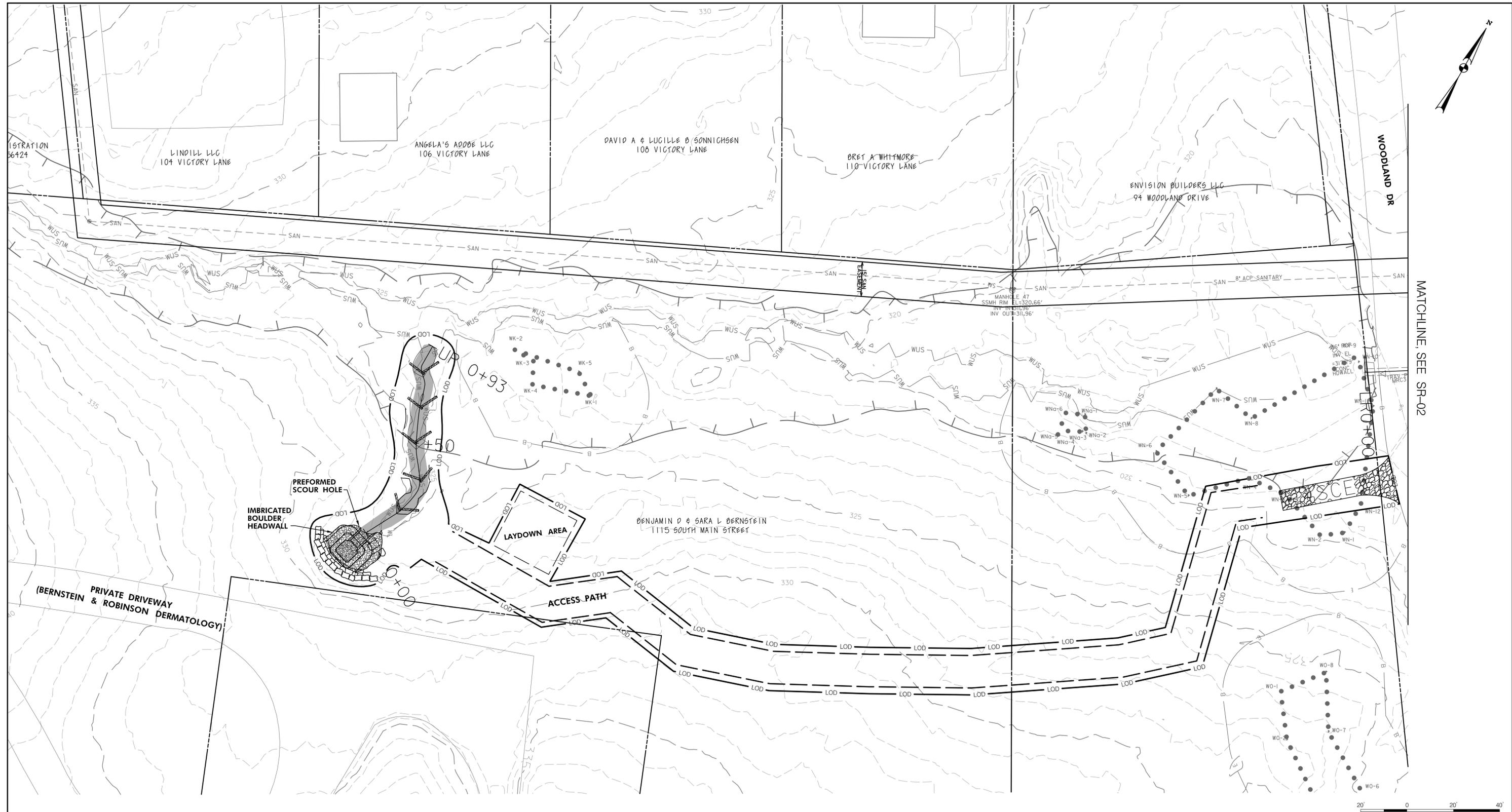


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		Date :	NOVEMBER 2018

BY: dblack



MATCHLINE, SEE SR-02



LEGEND

--- SAN ---	EXISTING SANITARY SEWER	— LOD —	LIMIT OF DISTURBANCE
● ● ●	WETLAND BOUNDARY	---	ACCESS PATH EDGE
— B —	25 FT WETLAND BUFFER		STABILIZED CONSTRUCTION ENTRANCE
— WUS —	WATERS OF THE US		
—	PRELIMINARY 100 YEAR FLOODPLAIN		
---	APPROXIMATE PROPERTY BOUNDARY		

ES-01

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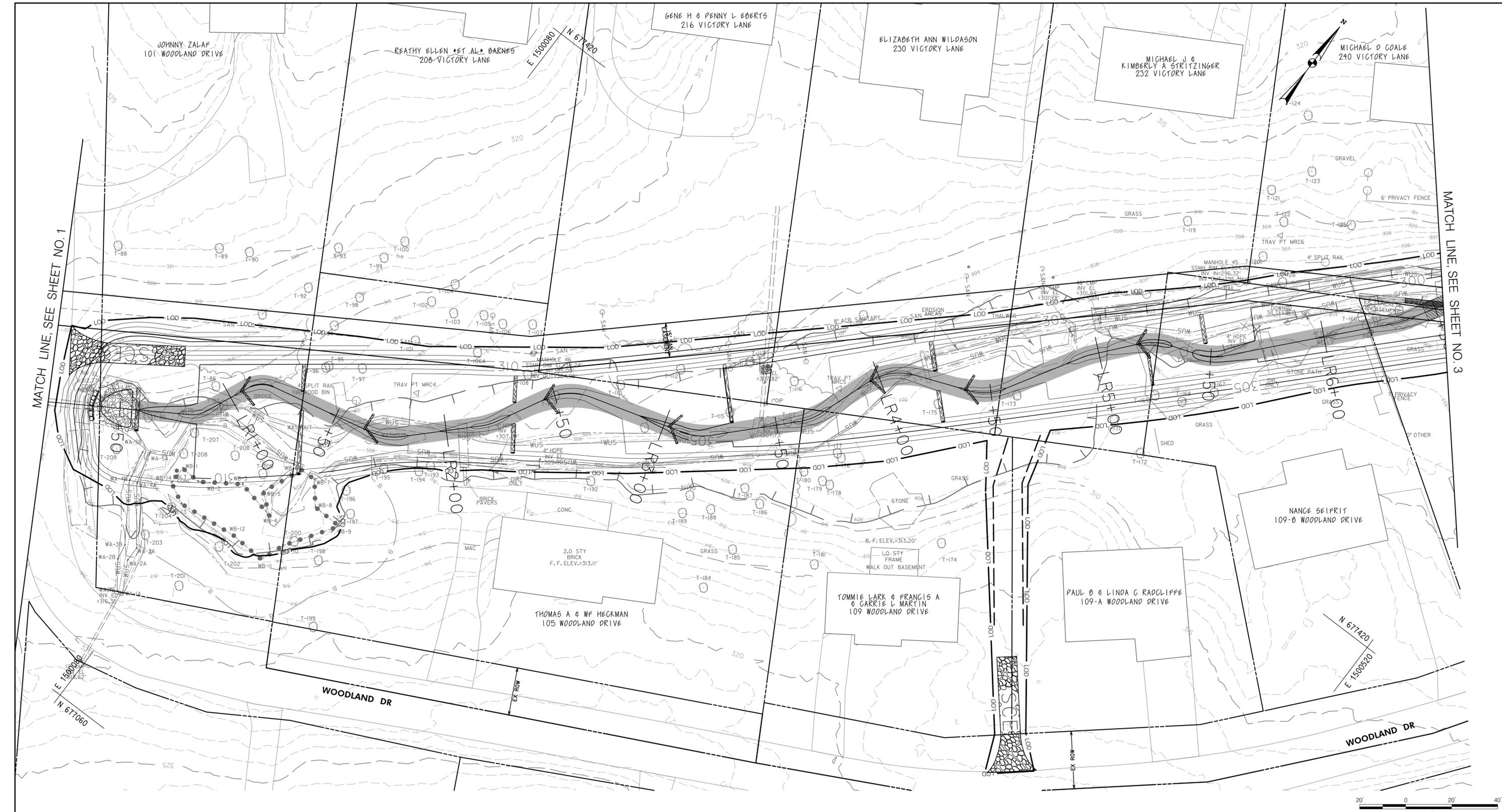
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	Woodland Run Stream Restoration EROSION & SEDIMENT CONTROL PLAN	
Drawn By : MRV/BDM/KMS/DWB	Contract No. : _____	
Designed By : BDM/KMS/DWB	Scale : 1" = 20'	
Reviewed By : SBP	Sheet 21 Of 24	
	Date : NOVEMBER 2018	

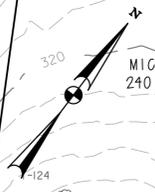
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ADC MAP: 21 GRID: H10
 TAX MAP: 0049 GRID: 0003C
 HCG BILLING ID No. :
 HCG DWG ID No. :



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MATCH LINE, SEE SHEET NO. 3



- LEGEND**
- SAN --- EXISTING SANITARY SEWER
 - ● ● WETLAND BOUNDARY
 - B --- 25 FT WETLAND BUFFER
 - WUS --- WATERS OF THE US
 - P --- PRELIMINARY 100 YEAR FLOODPLAIN
 - --- APPROXIMATE PROPERTY BOUNDARY
 - LOD --- LIMIT OF DISTURBANCE
 - --- ACCESS PATH EDGE
 - [SCE] STABILIZED CONSTRUCTION ENTRANC

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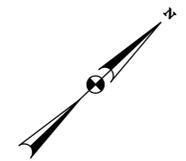
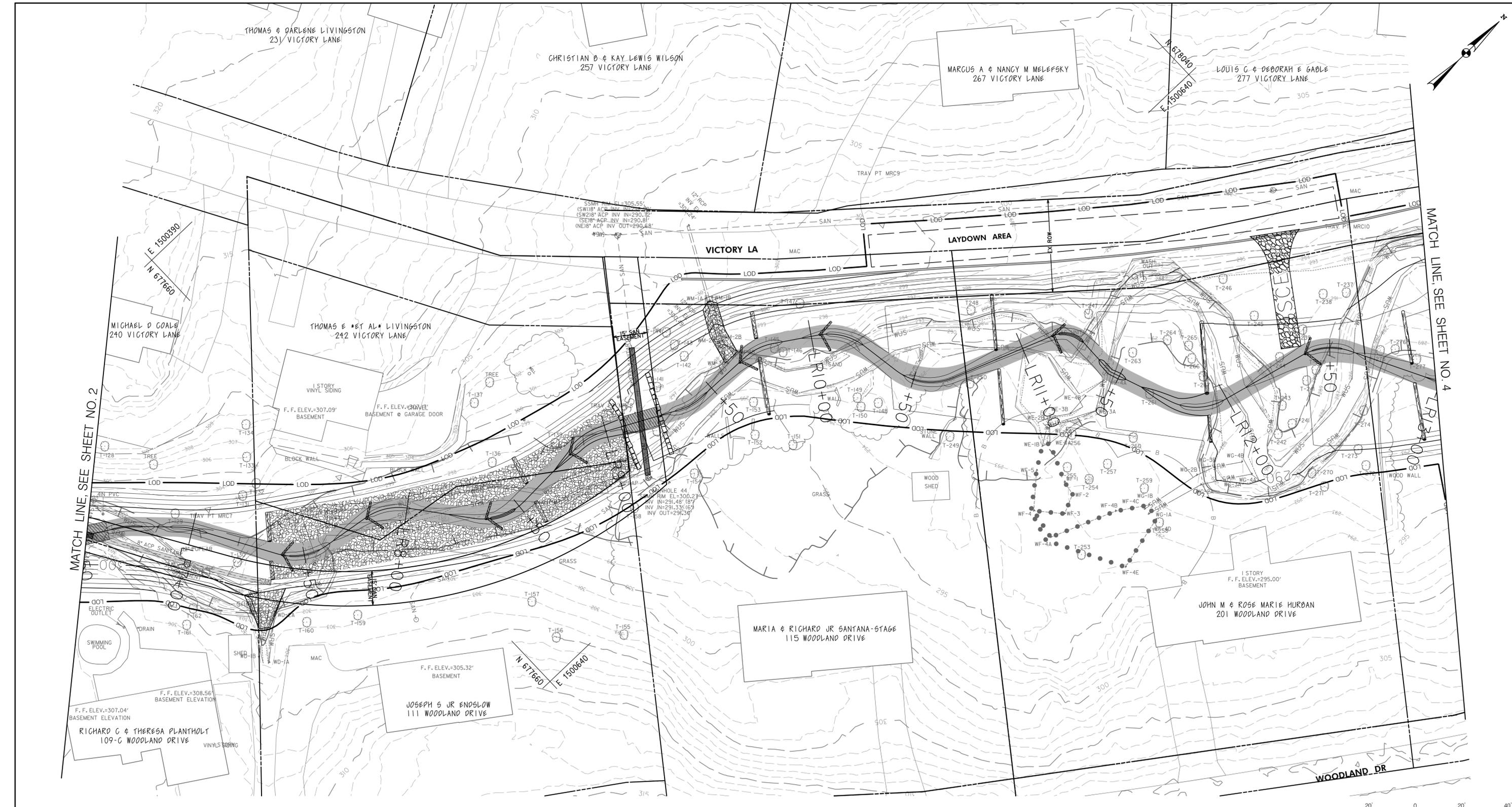
HARFORD COUNTY, MARYLAND

Woodland Run Stream Restoration EROSION & SEDIMENT CONTROL PLAN

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Contract No : _____
 Scale : 1" = 20'
 Sheet 22 Of 24
 Date : NOVEMBER 2018

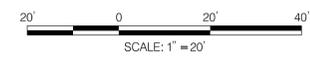
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- LEGEND**
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 - WETLAND BOUNDARY
 - B - 25 FT WETLAND BUFFER
 - WUS - WATERS OF THE US
 - PRELIMINARY 100 YEAR FLOODPLAIN
 - - - - - APPROXIMATE PROPERTY BOUNDARY
 - LOD — LIMIT OF DISTURBANCE
 - - - - - ACCESS PATH EDGE
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Revisions

HARFORD COUNTY, MARYLAND

Woodland Run
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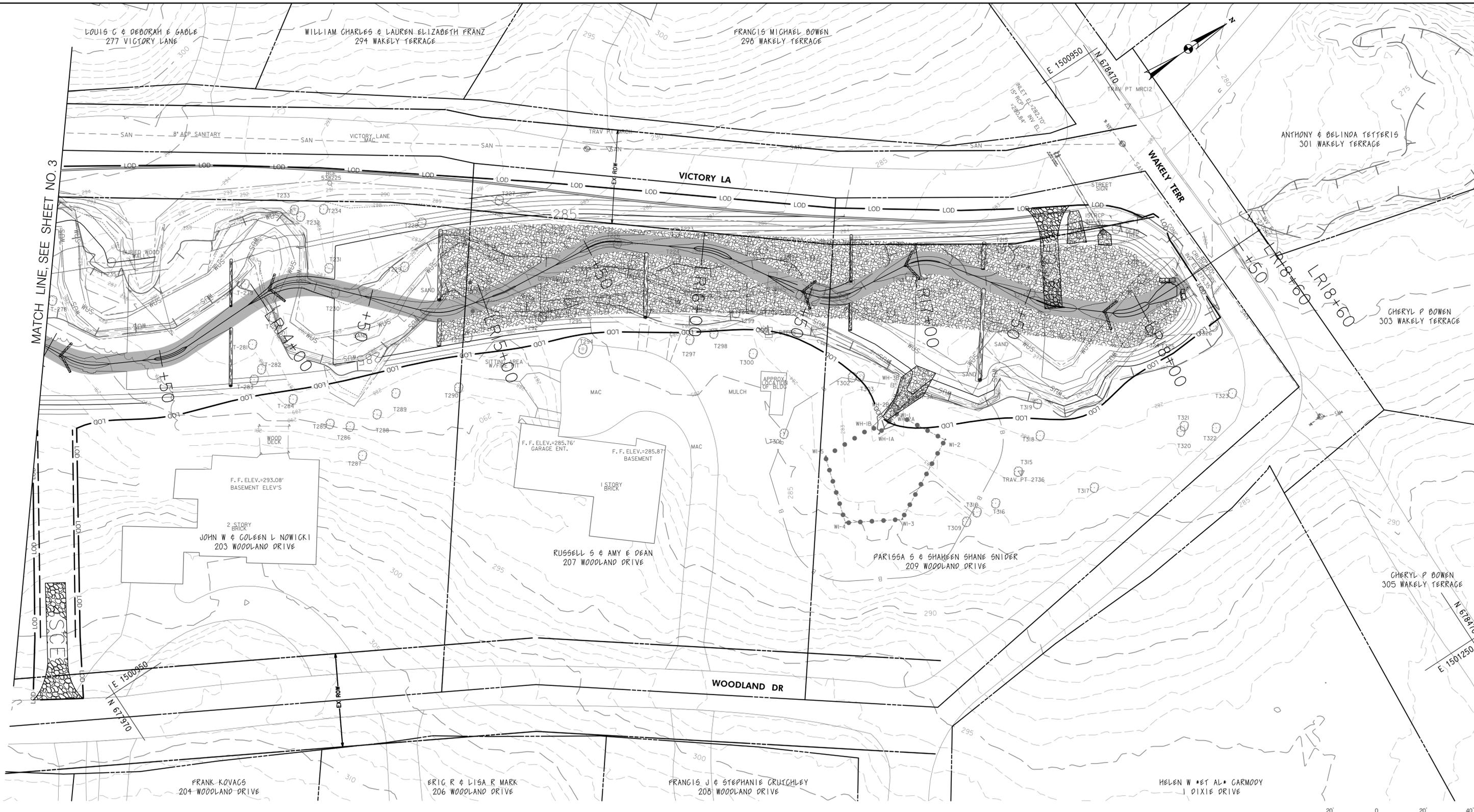
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Date : NOVEMBER 2018	

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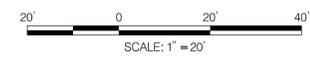
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		Date : NOVEMBER 2018	



ADC MAP: 21 GRID: H1
TAX MAP: 0049 GRID: 0003C
HCG BILLING ID No.:
HCG DWG ID No.: