Element	Point Type	Station	Northing	Easting	Radius	Length	Delta / Theta	Rotation Direction
Tangent	POB	22+00.00	634490.695	1632194.589				
	PC	22+10.96	634482.348	1632201.692				
Arc	PC	22+10.96	634482.348	1632201.692	75	47.39	36°12'23.83"	Left
	PI	22+35.48	634463.675	1632217.582				
	CC		634530.954	1632258.810				
	PRC	22+58.35	634457.995	1632241.433				
Arc	PRC	22+58.35	634457.995	1632241.433	200	147.68	42°18'30.33"	Right
	PI	23+35.74	634440.064	1632316.718				
	CC		634263.437	1632195.095				
	PT	24+06.04	634376.128	1632360.325				
Tangent	PT	24+06.04	634376.128	1632360.325				
	PC	24+34.59	634352.537	1632376.415				
Arc	PC	24+34.59	634352.537	1632376.415	25	9.86	22°35'49.21"	Right
	PI	24+39.59	634348.410	1632379.229				
	CC		634338.450	1632355.761				
	PT	24+44.45	634343.519	1632380.242				
Tangent	PT	24+44.45	634343.519	1632380.242				
	PC	24+72.56	634315.995	1632385.941				
Arc	PC	24+72.56	634315.995	1632385.941	200	94.57	27°05'30.54"	Left
	PI	25+20.75	634268.811	1632395.710				
	CC		634356.546	1632581.786				
	PT	25+67.13	634231.253	1632425.897				
Tangent	PT	25+67.13	634231.253	1632425.897				
	PC	26+07.42	634199.848	1632451.137				
Arc	PC	26+07.42	634199.848	1632451.137	420	133.63	18°13'46.37"	Left
	PI	26+74.80	634147.326	1632493.351				
	CC		634462.964	1632778.506				
	PT	27+41.05	634110.645	1632549.877				
Tangent	PT	27+41.05	634110.645	1632549.877				
	PC	27+75.56	634091.862	1632578.823				
Arc	PC	27+75.56	634091.862	1632578.823	300	43.28	8°15'59.52"	Right
	PI	27+97.24	634080.060	1632597.008				
	CC		633840.205	1632415.516				
	PT	28+18.84	634065.767	1632613.309				
Tangent	PT	28+18.84	634065.767	1632613.309				
	PC	28+70.84	634031.483	1632652.405				
Arc	PC	28+70.84	634031.483	1632652.405	300	37.9	7°14'16.95"	Left
	PI	28+89.81	634018.973	1632666.672				
	CC		634257.045	1632850.198				
	PT	29+08.74	634008.360	1632682.401				
Tangent	PT	29+08.74	634008.360	1632682.401				
	PC	29+35.09	633993.620	1632704.247				
Arc	PC	29+35.09	633993.620	1632704.247	15	17.7	67°35'32.39"	Left
	PI	29+45.13	633988.004	1632712.570				
	CC		634006.054	1632712.637				
	PRC	29+52.79	633993.558	1632720.934				
Arc	PRC	29+52.79	633993.558	1632720.934	10	9.11	52°10'28.19"	Right
	PI	29+57.68	633996.266	1632725.013				
	CC		633985.227	1632726.466				
	PT	29+61.89	633994.705	1632729.654				
Tangent	PT	29+61.89	633994.705	1632729.654				
	PC	29+76.92	633989.913	1632743.900				
Arc	PC	29+76.92	633989.913	1632743.900				
			NaN	NaN	7	21.99	180°00'00.00"	Left
	CC		633996.548	1632746.131				
	PT	29+98.91	634003.183	1632748.363				
Tangent	PT	29+98.91	634003.183	1632748.363				
	PC	30+21.14	634010.269	1632727.296				
Arc	PC	30+21.14	634010.269	1632727.296	60	57.76	55°09'40.03"	Right
	PI	30+52.48	634020.261	1632697.590				
	CC		634067.138	1632746.425				
	PT	30+78.91	634050.351	1632688.821				
Tangent	PT	30+78.91	634050.351	1632688.821				
	PC	31+73.38	634141.054	1632662.387				
Arc	PC	31+73.38	634141.054	1632662.387	50	16.22	18°35'05.43"	Left
	PI	31+81.56	634148.908	1632660.099				
	CC		634127.064	1632614.384				
	PT	31+89.60	634155.623	1632655.426				
Tangent	PT	31+89.60	634155.623	1632655.426				
	PC	32+31.35	634189.894	1632631.578				
Arc	PC	32+31.35	634189.894	1632631.578	6.7	20.2	172°45'50.74"	Right
	PI	33+37.32	634276.872	1632571.053				
	CC		634193.721	1632637.077				
	PT	32+51.56	634198.210	1632642.051				
Tangent	PT	32+51.56	634198.210	1632642.051				
	PC	32+87.84	634171.275	1632666.362				
Arc	PC	32+87.84	634171.275	1632666.362	200	65.29	18°42'11.06"	Right
	PI	33+20.78	634146.826	1632688.429				
	CC		634037.272	1632517.892				
	PT	33+53.13	634116.590	1632701.491				
Tangent	PT	33+53.13	634116.590	1632701.491				
	PC	33+88.42	634084.189	1632715.489				
Arc	PC	33+88.42	634084.189	1632715.489	35	56.21	92°00'43.73"	Left
	PI	34+24.67	634050.911	1632729.866				
	CC		634098.070	1632747.619				
	PT	34+44.63	634066.447	1632762.620				

Element	Point Type	Station	Northing	Easting	Radius	Length	Delta / Theta	Rotation Direction
Tangent	PT	34+44.63	634066.447	1632762.620				
	PC	34+88.81	634085.383	1632802.539				
Arc	PC	34+88.81	634085.383	1632802.539	35	31.31	51°15'13.91"	Right
	PI	35+05.60	634092.579	1632817.708				
	CC		634053.760	1632817.539				
	PT	35+20.12	634085.251	1632832.814				
Tangent	PT	35+20.12	634085.251	1632832.814				
	PC	35+43.83	634074.903	1632854.147				
Arc	PC	35+43.83	634074.903	1632854.147	100	15.2	8°42'33.56"	Right
	PI	35+51.45	634071.580	1632860.999				
	CC		633984.930	1632810.504				
	PT	35+59.03	634067.258	1632867.268				
Tangent	PT	35+59.03	634067.258	1632867.268				
	PC	36+07.57	634039.703	1632907.233				
Arc	PC	36+07.57	634039.703	1632907.233	170	80.63	27°10'34.57"	Left
	PI	36+48.66	634016.378	1632941.061				
	CC		634179.660	1633003.731				
	PT	36+88.21	634011.079	1632981.808				
Tangent	PT	36+88.21	634011.079	1632981.808				
	PC	37+24.50	634006.399	1633017.795				
Arc	PC	37+24.50	634006.399	1633017.795	50	14.59	16°42'53.24"	Left
	PI	37+31.84	634005.452	1633025.079				
	CC		634055.982	1633024.243				
	PT	37+39.08	634006.640	1633032.328				
Tangent	PT	37+39.08	634006.640	1633032.328				
	PC	37+59.93	634010.010	1633052.898				
Arc	PC	37+59.93	634010.010	1633052.898	25	17.37	39°49'05.72"	Right
	PI	37+68.98	634011.474	1633061.833				
	CC		633985.339	1633056.941				
	PT	37+77.30	634006.877	1633069.634				
Tangent	PT	37+77.30	634006.877	1633069.634				
	PC	38+26.18	633982.061	1633111.741				
Arc	PC	38+26.18	633982.061	1633111.741	150	73.51	28°04'38.28"	Left
	PI	38+63.69	633963.018	1633144.054				
	CC		634111.289	1633187.901				
	PT	38+99.69	633961.424	1633181.527				
Tangent	PT	38+99.69	633961.424	1633181.527				
	PC	42+62.80	633945.993	1633544.316				
Arc	PC	42+62.80	633945.993	1633544.316	200	69.1	19°47'48.00"	Right
	PI	42+97.70	633944.510	1633579.184				
	CC		633746.173	1633535.817				
	PT	43+31.91	633931.305	1633611.490				
Tangent	PT	43+31.91	633931.305	1633611.490				
	PC	43+52.42	633923.543	1633630.479				
Arc	PC	43+52.42	633923.543	1633630.479	250	26.48	6°04'04.19"	Right
	PI	43+65.67	633918.530	1633642.744				
	CC		633692.129	1633535.888				
	PT	43+78.90	633912.248	1633654.411				
Tangent	PT	43+78.90	633912.248	1633654.411				
	PC	44+08.60	633898.167	1633680.562				
Arc	PC	44+08.60	633898.167	1633680.562	110	53.62	27°55'49.23"	Left
	PI	44+35.95	633885.198	1633704.648				
	CC		633995.019	1633732.712				
	PT	44+62.22	633885.021	1633732.002				
Tangent	PT	44+62.22	633885.021	1633732.002				
	PC	44+78.09	633884.919	1633747.869				
Arc	PC	44+78.09	633884.919	1633747.869	20	15.04	43°05'58.79"	Left
	PI	44+85.99	633884.868	1633755.767				
	CC		633904.919	1633747.998				
	PT	44+93.13	633890.227	1633761.569				
Tangent	PT	44+93.13	633890.227	1633761.569				
	PC	44+93.13	633890.228	1633761.569				
Arc	PC	44+93.13	633890.228	1633761.569	25	14.46	33°08'20.32"	Right
	PI	45+00.57	633895.275	1633767.033				
	CC		633871.864	1633778.533				
	PT	45+07.59	633896.514	1633774.368				
Tangent	PT	45+07.59	633896.514	1633774.368				
	PC	45+25.03	633899.419	1633791.557				
Arc	PC	45+25.03	633899.419	1633791.557	150	27	10°18'52.14"	Right
	PI	45+38.56	633901.674	1633804.906				
	CC		633751.515	1633816.549				
	PT	45+52.03	633901.503	1633818.443				
Tangent	PT	45+52.03	633901.503	1633818.443				
	PC	46+06.75	633900.812	1633873.161				
Arc	PC	46+06.75	633900.812	1633873.161	150	33.12	12°39'04.97"	Right
	PI	46+23.38	633900.602	1633889.788				
	CC		633750.824	1633871.266				
	PT	46+39.87	633896.756	1633905.965				
Tangent	PT	46+39.87	633896.756	1633905.965				
	PC	46+66.81	633890.524	1633932.173				
Arc	PC	46+66.81	633890.524	1633932.173	150	25.31	9°39'58.17"	Left
	PI	46+79.49	633887.591	1633944.512				
	CC		634036.456	1633966.871				
	PT	46+92.12	633886.770	1633957.168				
Tangent	PT	46+92.12	633886.770	1633957.168				
	PC	47+14.63	633885.314	1633979.631				

Element	Point Type	Station	Northing	Easting	Radius	Length	Delta / Theta	Rotation Direction
Arc	PC	47+14.63	633885.314	1633979.631	100	29.43	16°51'39.82"	Right
	PI	47+29.45	633884.355	1633994.421				
	CC		633785.524	1633973.163				
	PT	47+44.05	633879.148	1634008.297				
Tangent	PT	47+44.05	633879.148	1634008.297				
	PC	47+54.09	633875.622	1634017.694				
Arc	PC	47+54.09	633875.622	1634017.694	120	89.77	42°51'47.15"	Left
	PI	48+01.19	633859.072	1634061.795				
	CC		633987.971	1634059.856				
	PT	48+43.86	633876.941	1634105.378				
Tangent	PT	48+43.86	633876.941	1634105.378				
	PC	48+96.40	633896.869	1634153.984				
Arc	PC	48+96.40	633896.869	1634153.984	400	28.9	4°08'20.70"	Left
	PI	49+10.85	633902.352	1634167.358				
	CC		634266.971	1634002.245				
	PT	49+25.29	633908.786	1634180.302				
Tangent	PT	49+25.29	633908.786	1634180.302				
	PC	49+92.58	633938.741	1634240.559				
Arc	PC	49+92.58	633938.741	1634240.559	500	44.77	5°07'49.76"	Left
	PI	50+14.99	633948.712	1634260.618				
	CC		634386.471	1634017.988				
	PT	50+37.36	633960.438	1634279.705				
Tangent	PT	50+37.36	633960.438	1634279.705				
	PC	52+61.28	634077.645	1634470.501				
Arc	PC	52+61.28	634077.645	1634470.501	25	31.4	71°58'17.63"	Left
	PI	52+79.43	634087.148	1634485.969				
	CC		634098.947	1634457.415				
	PRC	52+92.68	634104.798	1634481.721				
Arc	PRC	52+92.68	634104.798	1634481.721	20	62.72	179°40'22.97"	Right
	PI	123+02.34	640919.797	1632841.257				
	CC		634109.478	1634501.165				
	PT	53+55.40	634114.270	1634520.583				
Tangent	PT	53+55.40	634114.270	1634520.583				
	PC	53+96.95	634073.927	1634530.538				
Arc	PC	53+96.95	634073.927	1634530.538	15.24	36.45	137°01'07.73"	Left
	PI	54+35.66	634036.345	1634539.811				
	CC		634077.578	1634545.334				
	PT	54+33.40	634070.161	1634558.649				
Tangent	PT	54+33.40	634070.161	1634558.649				
	PC	55+99.63	634215.382	1634639.543				
Arc	PC	55+99.63	634215.382	1634639.543	100	22.84	13°05'10.19"	Left
	PI	56+11.10	634225.402	1634645.125				
	CC		634264.046	1634552.183				
	PT	56+22.47	634236.426	1634648.293				
Tangent	PT	56+22.47	634236.426	1634648.293				
	PC	56+74.14	634286.090	1634662.565				
Arc	PC	56+74.14	634286.090	1634662.565	25	10.07	23°04'52.51"	Right
	PI	56+79.25	634290.996	1634663.975				
	CC		634279.185	1634686.593				
	PT	56+84.22	634294.957	1634667.196				
Tangent	PT	56+84.22	634294.957	1634667.196				
	PC	57+20.35	634322.996	1634689.995				
Arc	PC	57+20.35	634322.996	1634689.995	60	96.68	92°19'18.82"	Right
	PI	57+82.84	634371.475	1634729.413				
	CC		634285.143	1634736.548				
	PRC	58+17.03	634330.124	1634776.255				
Arc	PRC	58+17.03	634330.124	1634776.255	15	19.38	74°02'26.27"	Left
	PI	58+28.34	634322.638	1634784.735				
	CC		634341.370	1634786.182				
	PT	58+36.42	634328.733	1634794.265				
Tangent	PT	58+36.42	634328.733	1634794.265				
	PC	59+47.93	634387.431	1634889.083				
Arc	PC	59+47.93	634387.431	1634889.083	200	36.91	10°34'29.61"	Right
	PI	59+66.44	634397.174	1634904.821				
	CC		634217.379	1634994.355				
	PT	59+84.85	634403.863	1634922.079				
Tangent	PT	59+84.85	634403.863	1634922.079				
	PC	60+86.24	634440.505	1635016.622				
Arc	PC	60+86.24	634440.505	1635016.622	500	124.52	14°16'06.46"	Right
	PI	61+48.82	634463.121	1635074.975				
	CC		633974.296	1635197.312				
	PT	62+10.76	634470.657	1635137.101				
Tangent	PT	62+10.76	634470.657	1635137.101				
	PC	62+73.51	634478.214	1635199.400				
Arc	PC	62+73.51	634478.214	1635199.400	50	15.01	17°12'20.12"	Left
	PI	62+81.08	634479.125	1635206.909				
	CC		634527.850	1635193.379				
	PT	62+88.53	634482.216	1635213.813				
Tangent	PT	62+88.53	634482.216	1635213.813				
	POE	63+02.51	634487.931	1635226.575				

Stantec

55 GREEN MOUNTAIN DRIVE
SOUTH BURLINGTON, VT 05403
Tel. 802.864.0223
www.stantec.com

Consultants

Legend

Notes

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD

File Name: alg.dgn	PZA	GAS	ISM	7/26/2018
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
ALIGNMENT SHEET

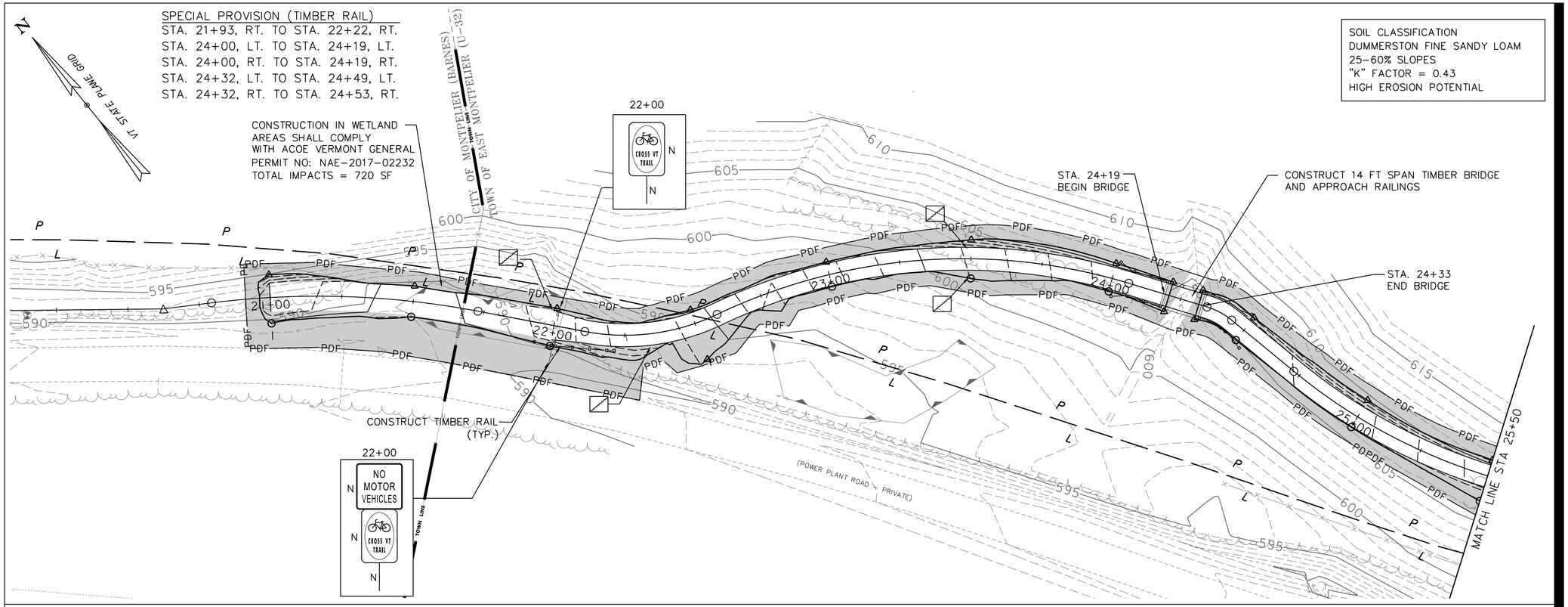
Project No. 195311563

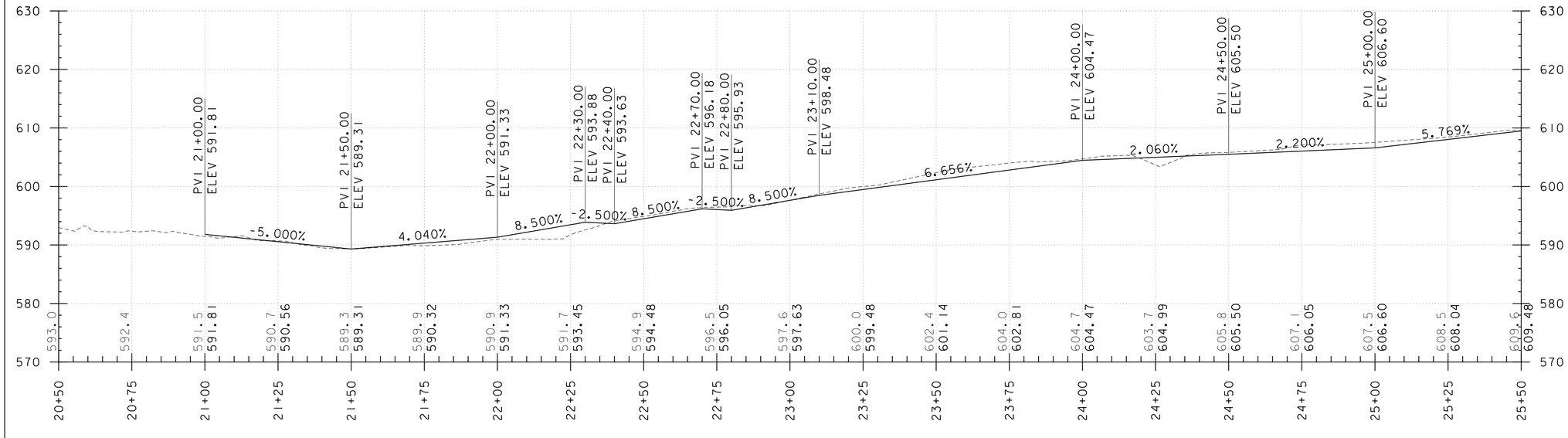
Scale NTS

Drawing No.

Sheet 6 of 57

Revision 0





PHASE 2

Stantec
55 GREEN MOUNTAIN DRIVE
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File Name: bdr.dgn	PZA	GAS	ISM	7/26/2018
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Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
PLAN AND PROFILE SHEET 1

Project No.	Scale	
195311563	1" = 20'	
Drawing No.	Sheet	Revision
	7 of 57	0

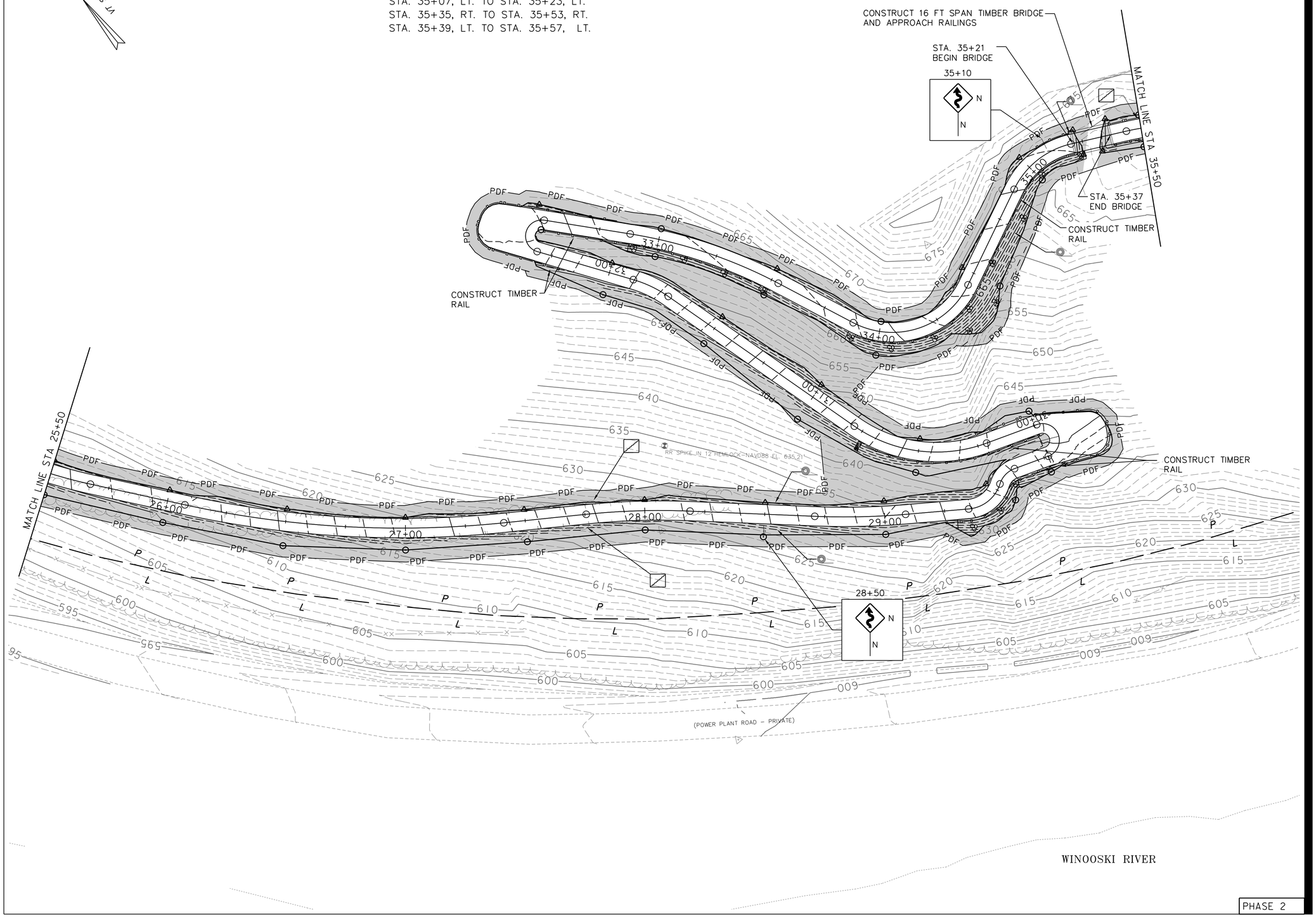
STONE FILL, TYPE I

STA. 29+30, RT. TO STA. 29+60, RT.
STA. 32+88, RT. TO STA. 33+50, RT.
STA. 33+88, RT. TO STA. 35+25, RT.

SPECIAL PROVISION (TIMBER RAIL)

STA. 29+25, RT. TO STA. 30+25, RT.
STA. 29+99, LT. TO STA. 30+71, LT.
STA. 32+20, RT. TO STA. 32+82, RT.
STA. 32+51, RT. TO STA. 33+43, RT.
STA. 33+91, RT. TO STA. 35+18, RT.
STA. 35+07, LT. TO STA. 35+23, LT.
STA. 35+35, RT. TO STA. 35+53, RT.
STA. 35+39, LT. TO STA. 35+57, LT.

SOIL CLASSIFICATION
DUMMERSTON FINE SANDY LOAM
25–60% SLOPES
"K" FACTOR = 0.43
HIGH EROSION POTENTIAL



PHASE 2

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55 GREEN MOUNTAIN DRIVE
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Notes

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Issued	By	Appd.	YY.MM.DD

File Name: bdr.dgn	PZA	GAS	ISM	7/26/2018
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

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Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
PLAN AND PROFILE SHEET 2

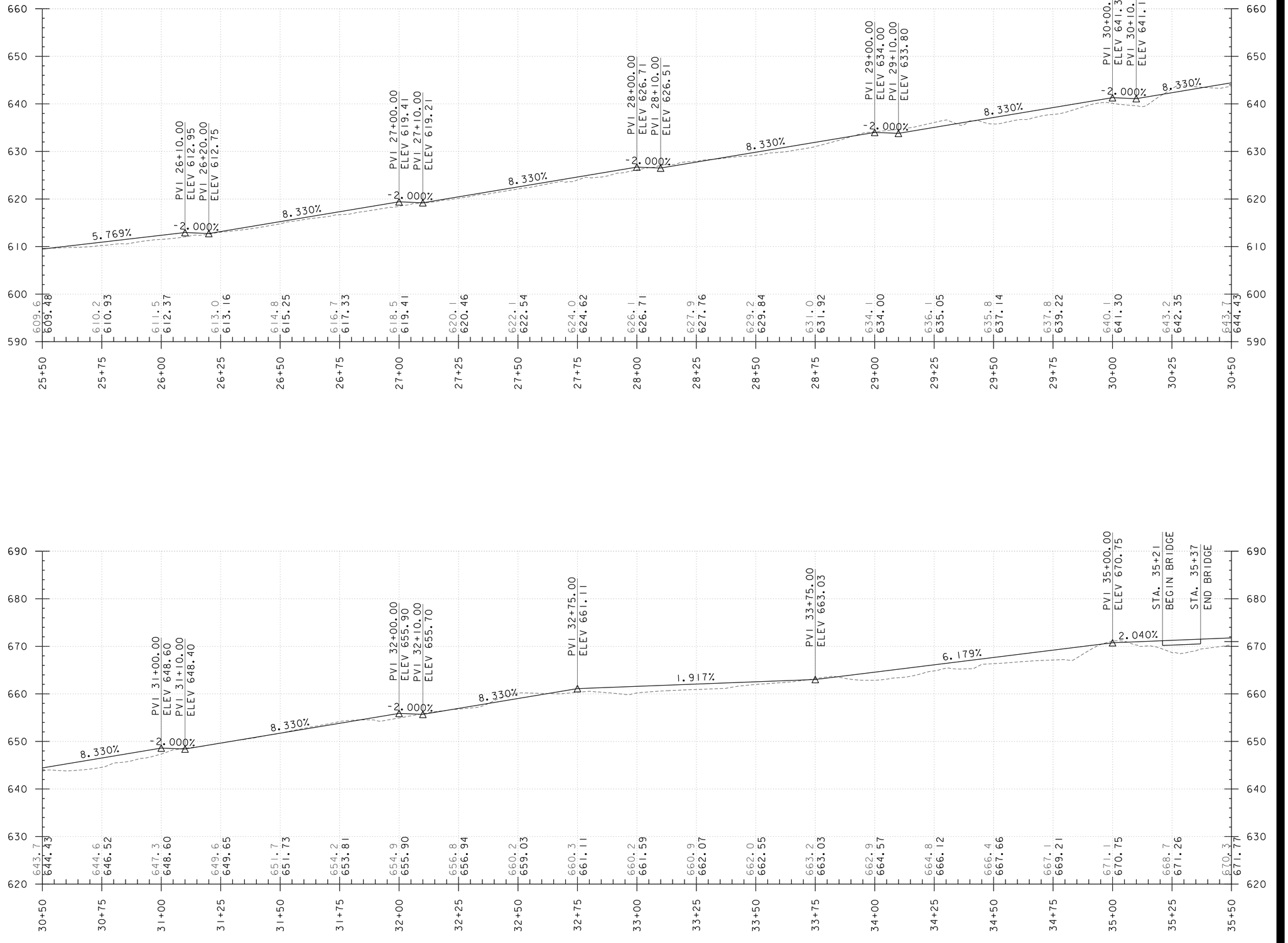
Project No.
195311563

Scale
1" = 20'

Drawing No.

Sheet
8 of 57

Revision
0



PHASE 2

Stantec

55 GREEN MOUNTAIN DRIVE
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Notes

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD

File Name: bdr.dgn	PZA Dwn.	GAS Chkd.	BM Dsgn.	7/26/2018 YY.MM.DD

Permit-Seal

Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
PLAN AND PROFILE SHEET 3

Project No.	Scale	
195311563	1" = 20'	
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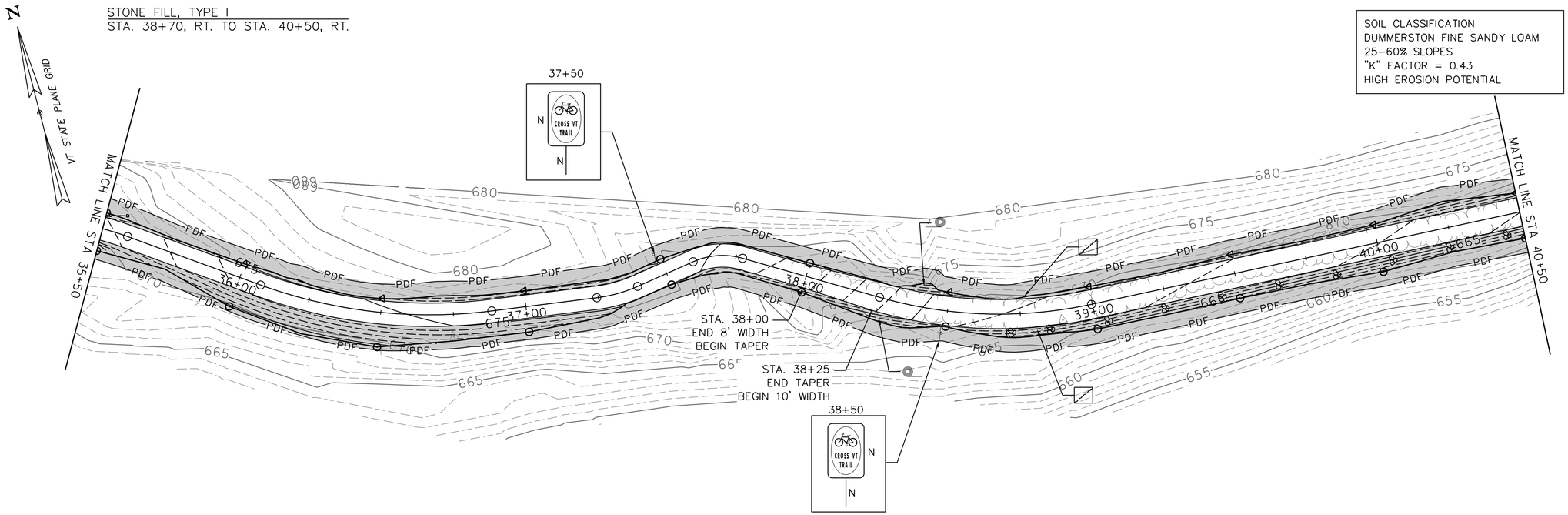
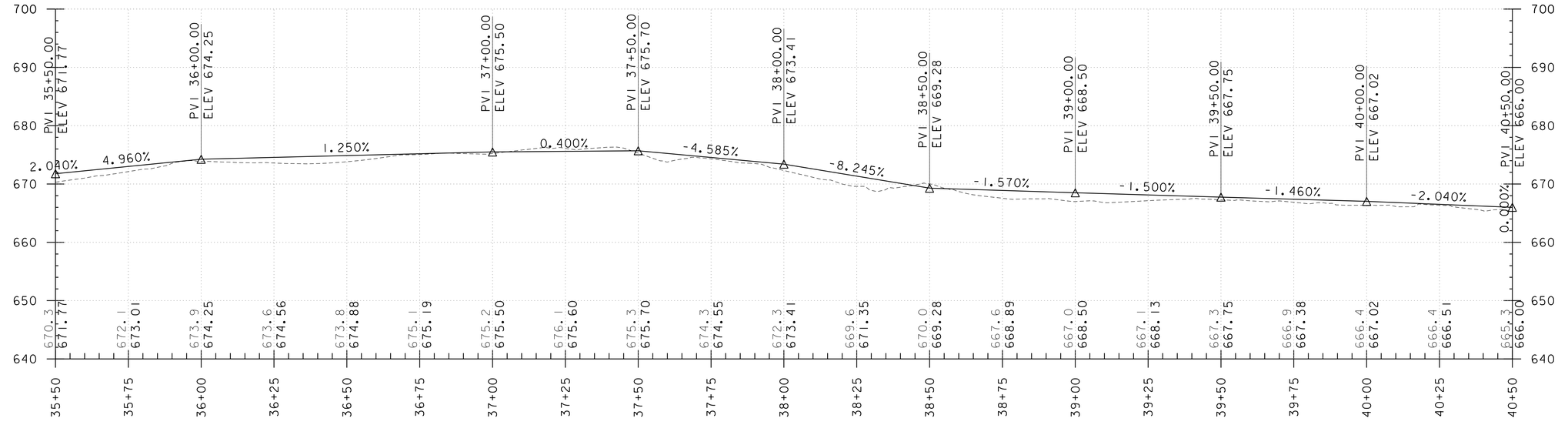
STONE FILL, TYPE I
STA. 38+70, RT. TO STA. 40+50, RT.





PHASE 2

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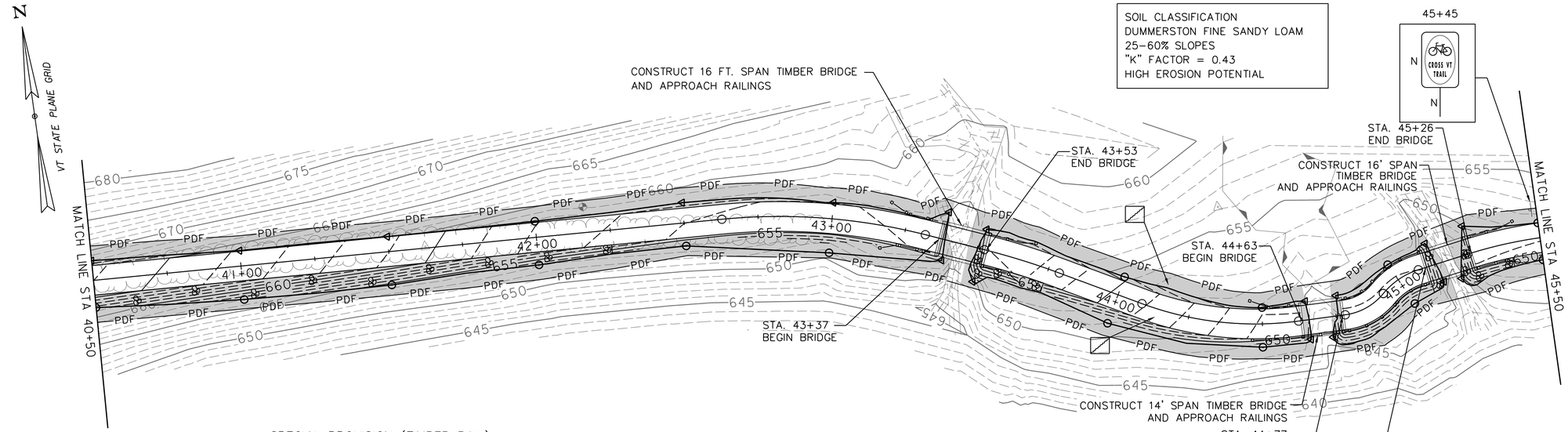
Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
PLAN AND PROFILE SHEET 4

Project No.	Scale	
195311563	1" = 20'	
Drawing No.	Sheet	Revision
	10 of 57	0

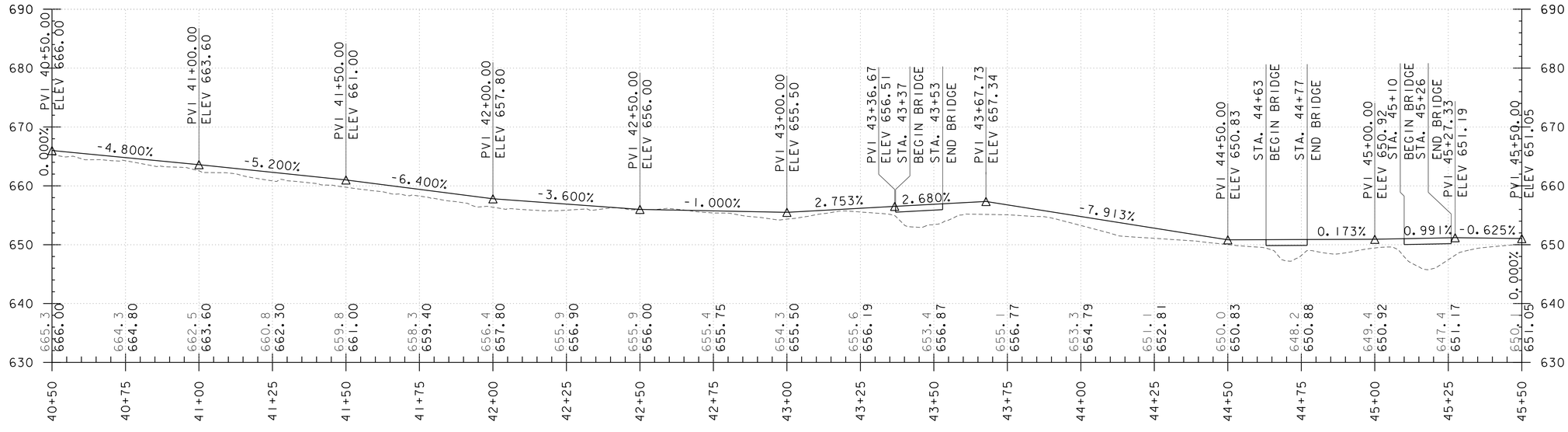


STONE FILL, TYPE I

STA. 40+50, RT. TO STA. 42+25, RT.
STA. 43+49, RT. TO STA. 43+75, RT.
STA. 45+10, LT. TO STA. 45+15, RT.
STA. 45+20, LT. TO STA. 45+40, RT.

SPECIAL PROVISION (TIMBER RAIL)

STA. 43+18, LT. TO STA. 43+35, LT.
STA. 43+18, RT. TO STA. 43+35, RT.
STA. 43+52, LT. TO STA. 43+69, LT.
STA. 43+52, RT. TO STA. 43+69, RT.
STA. 44+45, LT. TO STA. 44+62, LT.
STA. 44+46, RT. TO STA. 45+10, RT.
STA. 44+78, LT. TO STA. 45+10, LT.
STA. 45+25, LT. TO STA. 45+43, LT.
STA. 45+25, RT. TO STA. 45+43, RT.



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CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
PLAN AND PROFILE SHEET 5

Project No.	Scale	
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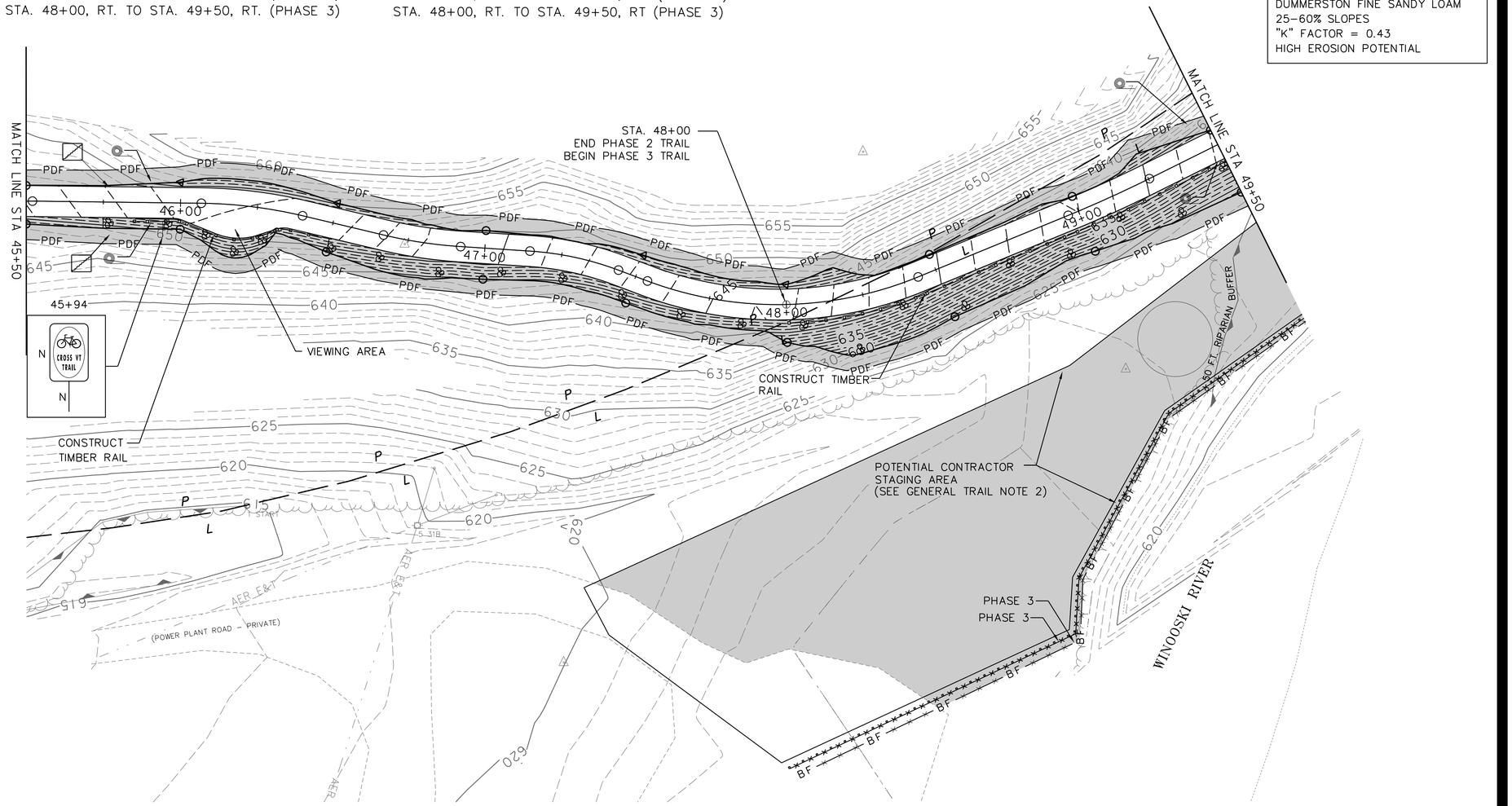
N

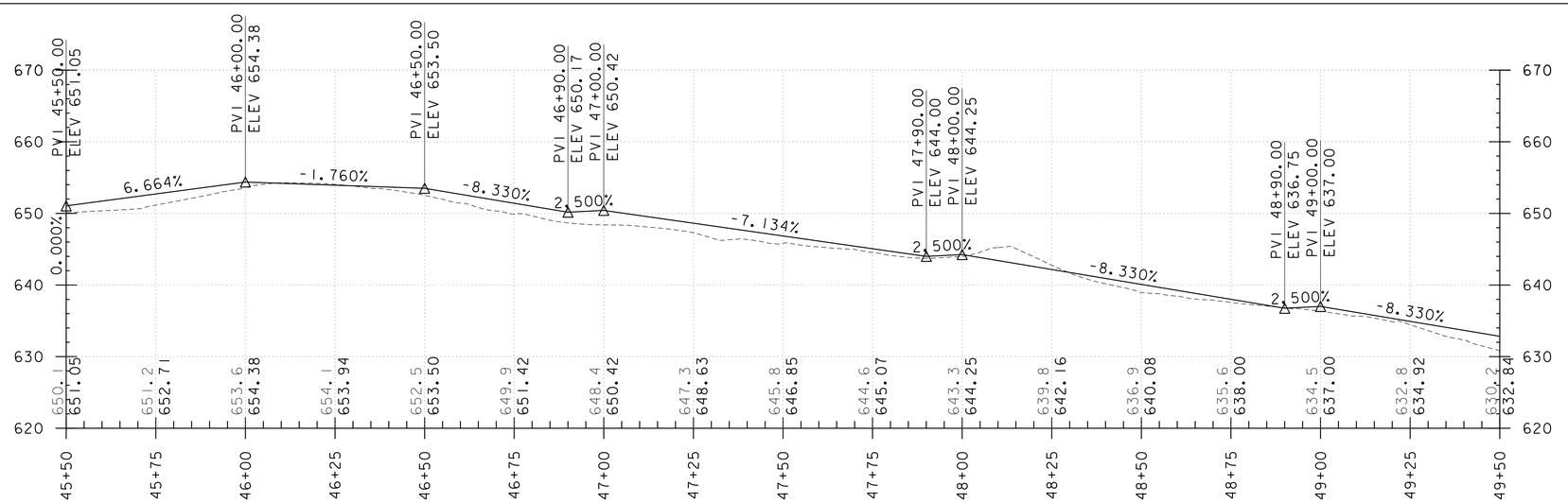
VT STATE PLANE GRID

STONE FILL, TYPE I
STA. 45+75, RT. TO STA. 48+00, RT. (PHASE 2)
STA. 48+00, RT. TO STA. 49+50, RT. (PHASE 3)

SPECIAL PROVISION (TIMBER RAIL)
STA. 45+85, RT. TO STA. 46+25, RT. (PHASE 2)
STA. 48+00, RT. TO STA. 49+50, RT (PHASE 3)

SOIL CLASSIFICATION
DUMMERSTON FINE SANDY LOAM
25–60% SLOPES
"K" FACTOR = 0.43
HIGH EROSION POTENTIAL





PHASE 2,3

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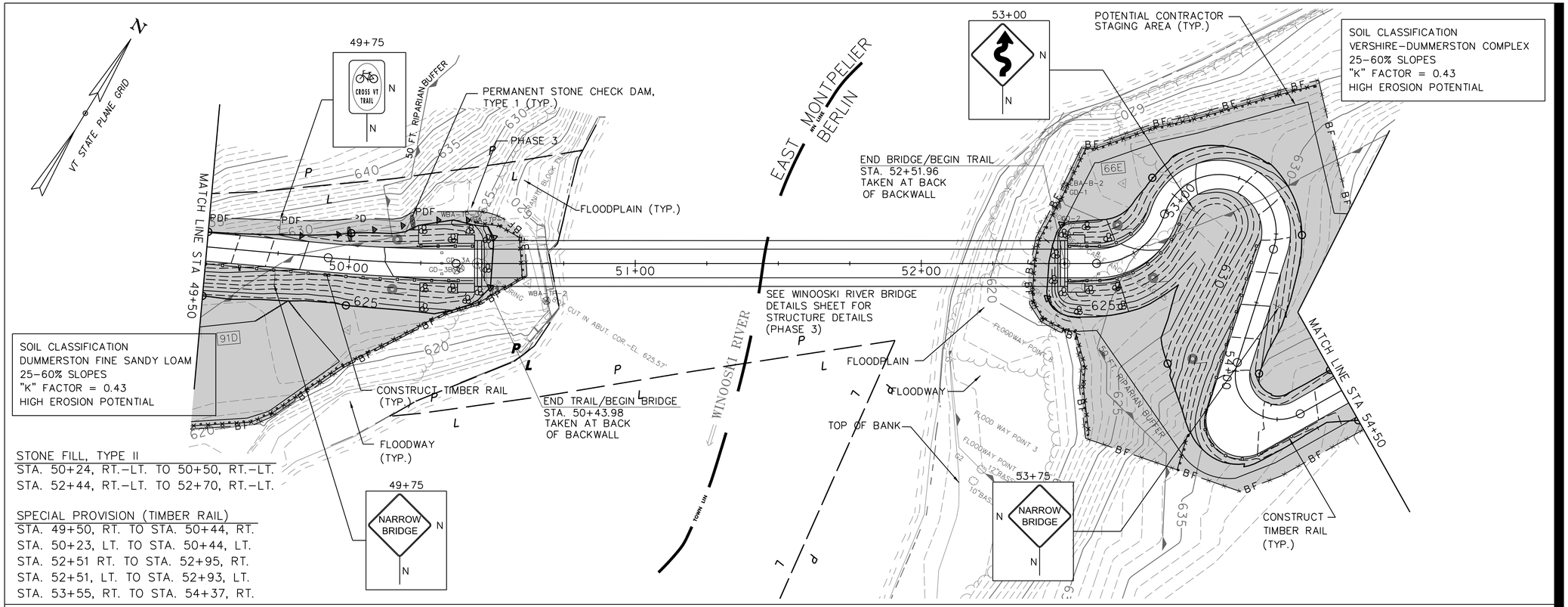
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

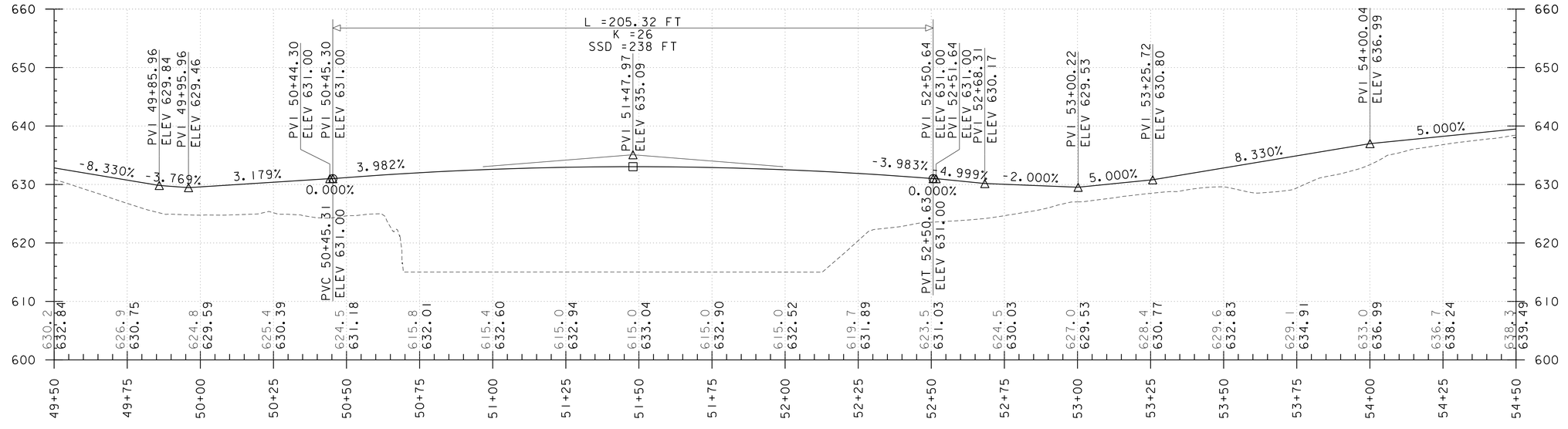
Title
PLAN AND PROFILE SHEET 6

Project No.	Scale	
195311563	1" = 20'	
Drawing No.	Sheet	Revision
	12 of 57	0



STONE FILL, TYPE II
STA. 50+24, RT.–LT. TO 50+50, RT.–LT.
STA. 52+44, RT.–LT. TO 52+70, RT.–LT.

SPECIAL PROVISION (TIMBER RAIL)
STA. 49+50, RT. TO STA. 50+44, RT.
STA. 50+23, LT. TO STA. 50+44, LT.
STA. 52+51 RT. TO STA. 52+95, RT.
STA. 52+51, LT. TO STA. 52+93, LT.
STA. 53+55, RT. TO STA. 54+37, RT.



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Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
PLAN AND PROFILE SHEET 7

Project No.	Scale	
195311563	1" = 20'	
Drawing No.	Sheet	Revision
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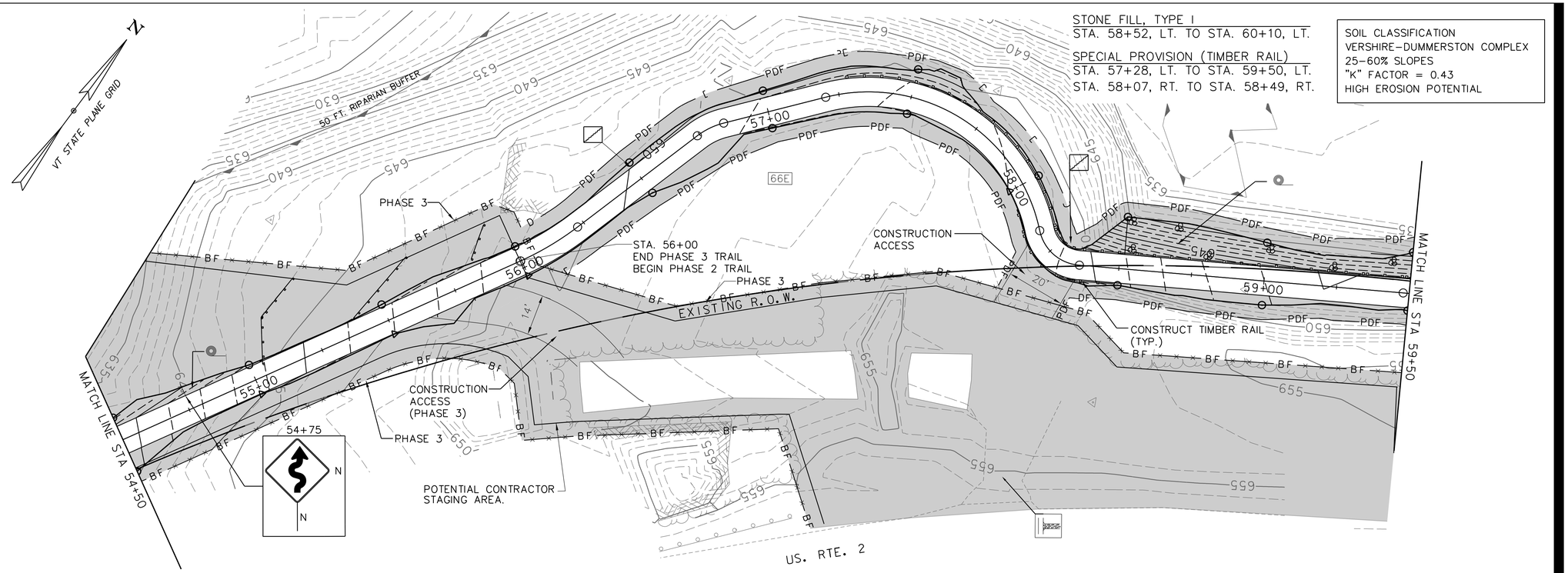
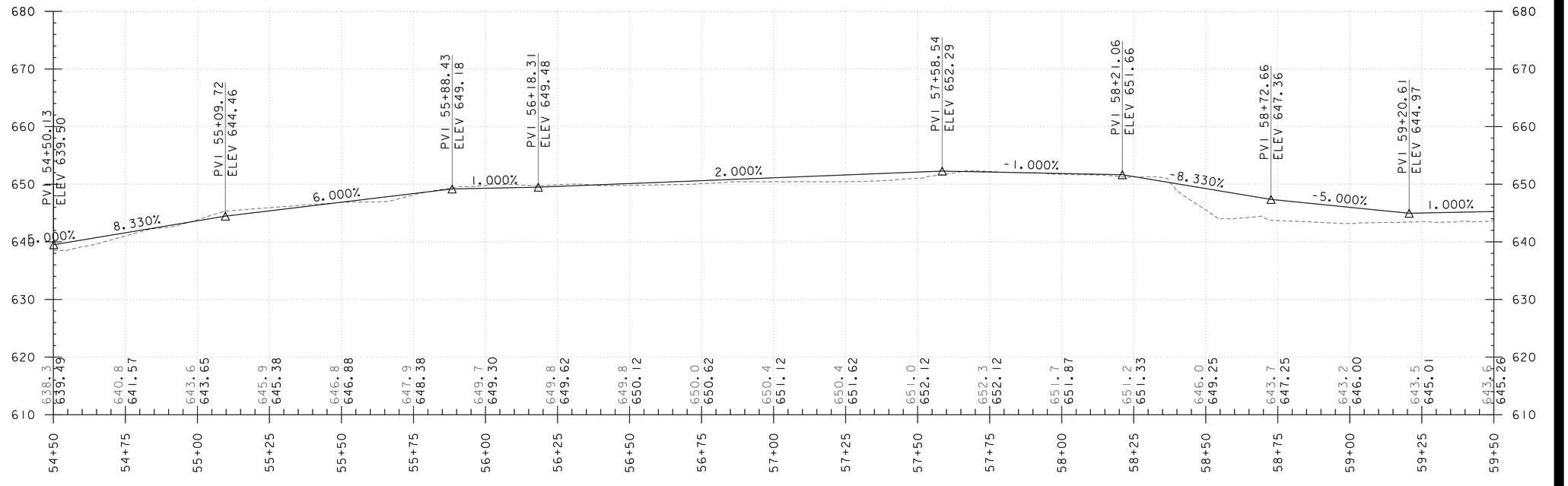


STONE FILL, TYPE I
STA. 58+52, LT. TO STA. 60+10, LT.

SPECIAL PROVISION (TIMBER RAIL)
STA. 57+28, LT. TO STA. 59+50, LT.
STA. 58+07, RT. TO STA. 58+49, RT.

SOIL CLASSIFICATION
VERSHIRE–DUMMERSTON COMPLEX
25–60% SLOPES
"K" FACTOR = 0.43
HIGH EROSION POTENTIAL



PHASE 2,3

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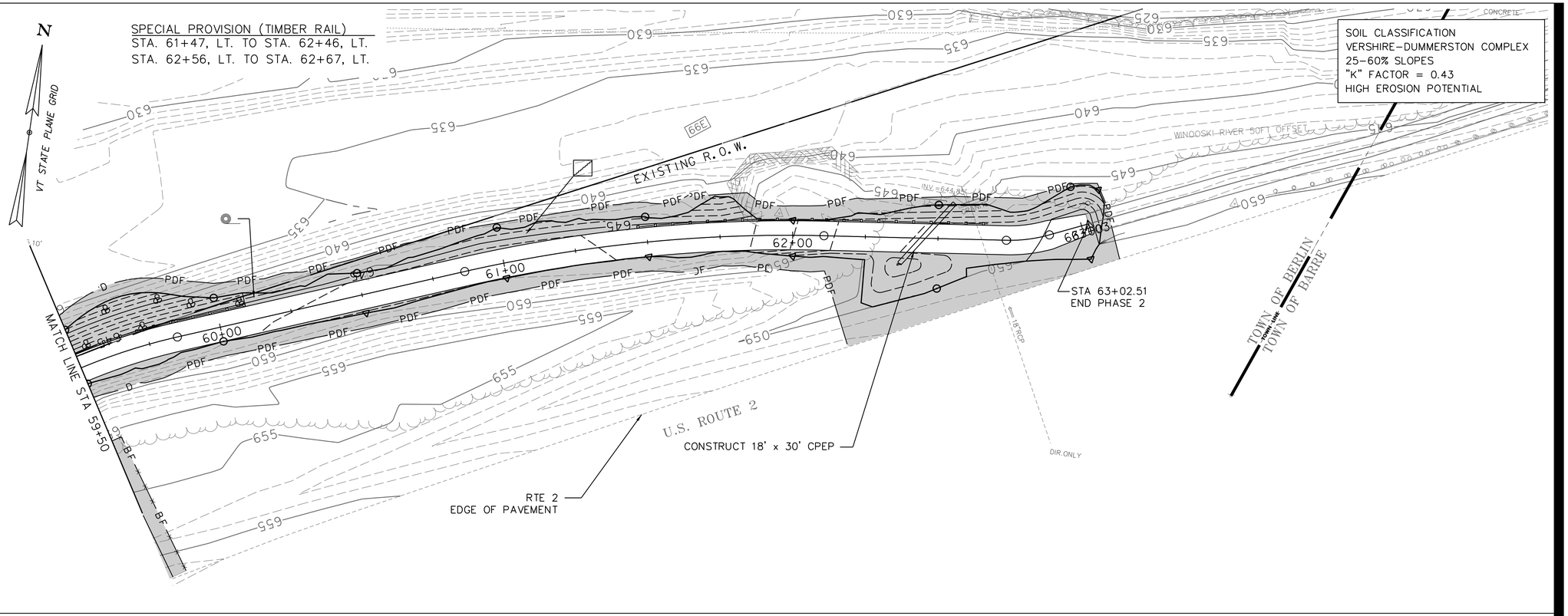
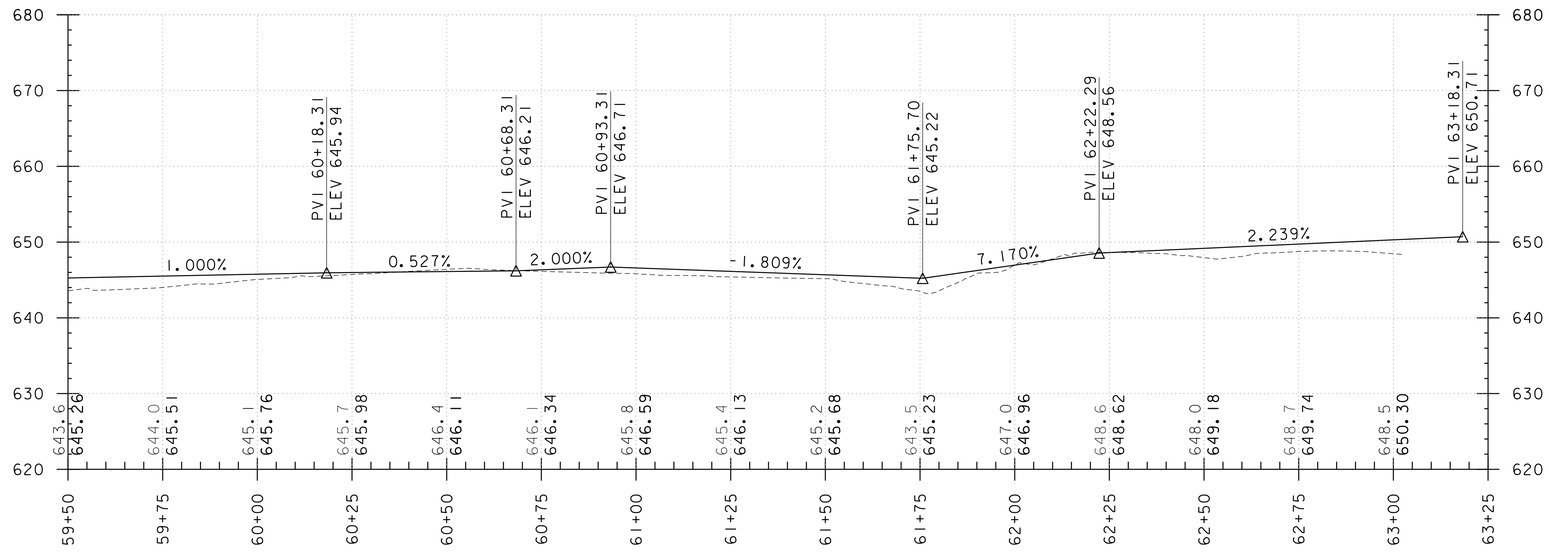
EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
PLAN AND PROFILE SHEET 8

Project No.	Scale	
195311563	1" = 20'	
Drawing No.	Sheet	Revision
	14 of 57	0





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CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
PLAN AND PROFILE SHEET 9

Project No.	Scale	
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STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET 01

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (in)	HEIGHT (in)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	EXIST POST SALVAGE	NO. OF POSTS	NEW SIGN POSTS: FLANGED CHANNEL lb/ft 1.12	2.0	3.0	SQUARE STEEL (in) lb/ft 1.75 (1.88)	2.0 (2.42)	2.5 (3.35)	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) lb/ft 3.0 (1.3)	4.0 (1.7)	4.0 MOD (1.7)	TUBULAR STEEL Ø (in) FOUNDATION	lb/ft 3.0 (7.6)	3.5 (9.0)	4.0 (10.8)	5.0 (14.6)	W-SHAPE STEEL FTG. SIZE 24"	30"	WEIGHT	POST SIZE	SIGN FRAME REQUIRED	REMARKS	SIGN DETAIL: DETAIL IN SHSM BOOK	DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
22+00, RT.	BIKE PATH	1	12	18	1.50						1					X																	VD-503 PHASE 2			E-131B
22+00, RT.	NO MOTOR VEHICLES	1	24	24	4.00						1					X																	R5-3 PHASE 2	X		
22+00, LT.	BIKE PATH	1	12	18	1.50						1					X																	VD-503 PHASE 2			E-131B
28+50, RT.		1	18	18	2.25						1					X																	WI-5L PHASE 2	X		
35+10, LT.		1	18	18	2.25						1					X																	WI-5L PHASE 2	X		
37+50, LT.	BIKE PATH	1	12	18	1.50						1					X																	VD-503 PHASE 2			E-131B
38+50, RT.	BIKE PATH	1	12	18	1.50						1					X																	VD-503 PHASE 2			E-131B
45+45, LT.	BIKE PATH	1	12	18	1.50						1					X																	VD-503 PHASE 2			E-131B
45+94, RT.	BIKE PATH	1	12	18	1.50						1					X																	VD-503 PHASE 2			E-131B
49+75, RT.	NARROW BRIDGE	1	18	18	2.25						1					X																	W5-2 PHASE 3	X		
49+75, LT.	BIKE PATH	1	12	18	1.50						1					X																	VD-503 PHASE 3			E-131B
53+00, RT.		1	18	18	2.25						1					X																	WI-5L PHASE 3	X		
53+75, LT.	NARROW BRIDGE	1	18	18	2.25						1					X																	W5-2 PHASE 3	X		
54+75, LT.		1	18	18	2.25						1					X																	WI-5L PHASE 3	X		
50+30, RT-LT 52+65, RT-LT		12	6	12	0.50 (6.00)																											OM2-IV PHASE 3 MOUNTED ON BOLLARDS	X		
												FT	FT	FT	FT	FT	FT		EA	LB	LB	LB		LB	LB	LB	LB										
FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE STANDARD SHEETS AND THE VTRANS "SIGN POST DESIGN GUIDELINE."		**TOTALS**			SF	SF	EA.	SF				FT			FT					LB			EA.	LB				EA.	EA.	LB							
		PHASE 2			17.50		-	-							120																						
		PHASE 3			16.50		-	-							50																						

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Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
TRAFFIC SIGN SUMMARY

Project No. 195311563
Scale NOT TO SCALE
Drawing No.
Sheet 16 of 57
Revision 0

EPSC PLAN NARRATIVE

1.1 PROJECT DESCRIPTION

THE PROJECT CONSISTS OF CONSTRUCTING A NEW, BICYLCE / PEDESTRIAN TRAIL THAT VARIES FROM 8-12 FT WIDE. THE TRAIL WILL BE BUILT IN PHASES OVER MULTIPLE CONSTRUCTION SEASONS BY BOTH HIRED CONTRACTOR AND VERMONT YOUT CONSERVATION CORPS (VYCC) AND CROSS VERMONT TRAIL ASSOCATION (CVTA) VOLUNTEER WORK CREWS.

TRAIL CONSTRUCTION WILL BEGIN AT A POINT ADJACENT TO POWERPLANT ROAD IN MONTPELIER, APPROXIMATELY 2,000-FEET FROM THE JUNCTION OF POWERPLANT ROAD AND GALLISON HILL ROAD, EXTENDING EAST PARALLEL TO THE WINOOSKI RIVER INTO EAST MONTPELIER, INCLUDING A NEW BRIDGE OVER THE WINOOSKI RIVER INTO BERLIN AND ENDING AT A POINT ADJACENT TO VT ROUTE 2 AT APPROXIMATELY THE BERLIN / BARRE TOWN LINE.

NOTE: AREA OF DISTURBANCE INCLUDES LIMITS OF EARTH DISTURBANCE WITHIN THE PROJECT AREA, AS WELL AS WASTE, BORROW AND STAGING AREAS, AND OTHER EARTH DISTURBING ACTIVITIES WITHIN OR DIRECTLY ADJACENT TO THE PROJECT LIMITS AS SHOWN ON THE ATTACHED EPSC PLAN.

TOTAL AREA OF DISTURBANCE AS SHOWN ON THE ATTACHED EPSC PLAN IS APPROXIMATELY 3.30 ACRES.

IT IS ANTICIPATED THAT THIS PROJECT WILL LAST TWO CONSTRUCTION SEASONS.

1.2 SITE INVENTORY

1.2.1 TOPOGRAPHY
THE TOPOGRAPHY OF THE PROJECT AREA ON THE NORTH AND WEST SIDE OF THE WINOOSKI RIVER CONSISTS OF A LOW GRADIENT, FORMER RAIL BED (NOW THE GRAVEL POWERPLANT ROAD) WITH A RISING BLUFF ABOVE. THE EAST SIDE OF THE RIVER IS PRIMARILY MADE UP OF FILL RESULTING FROM THE EXPANSION OF VT ROUTE 2 THAT TOOK PLACE IN THE 1950'S. MOST OF THE DISTURBANCE WILL BE ON THE STEEP BLUFF ABOVE THE RIVER.

1.2.2 DRAINAGE, WATERWAYS, BODIES OF WATER, AND PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES
THERE ARE SEVERAL SMALL DRAINAGE CHANNELS THAT THE TRAIL WILL CROSS. CROSSINGS WILL BE DONE WITH SHORT SPAN TIMBER BRIDGES. THE WINOOSKI HYDROELECTRIC DAM IS IMMEDIATELY DOWNSTREAM OF THE BRIDGE CROSSING THE WINOOSK RIVER.

1.2.3 VEGETATION
THE EXISTING DITCH LINE ALONG POWERPLANT ROAD IS OVER GROWN WITH SMALL SCRUB/SHRUB SPECIES. THE HILLSIDE ABOVE THE ROAD IS FORESTED WITH MIXED STANDS OF DECIDUOUS AND EVERGREEN TREES. THE EAST SIDE OF THE RIVER IS A MIX OF UNMAINTAINED TREE GROWTH AND SCRUB. THE PRINCIPAL IMPACTS TO VEGETATION WILL BE THOSE RESULTING FROM TRAIL CONSTRUCTION AND SLOPE WORK WITH LESSER IMPACTS TO ZONES SURROUNDING DESIGNATED STAGING AREAS.

1.2.4 SOILS
ALL SOIL DATA CAME FROM THE U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE FOR THE COUNTY OF WASHINGTON, VERMONT. SOILS ON THE PROJECT SITE ARE MAINLY DUMMERSTON FINE SANDY LOAM, 25% TO 60% SLOPES, "K FACTOR" = 0.43 (HIGH EROSION POTENTIAL)

NOTE: K-VALUES GENERALLY INDICATE THE FOLLOWING:
0.0-0.23 = LOW EROSION POTENTIAL
0.24-0.36 = MODERATE EROSION POTENTIAL
0.37 AND HIGHER = HIGH EROSION POTENTIAL

1.2.5 SENSITIVE RESOURCE AREAS
CRITICAL HABITATS: NO
HISTORICAL OR ARCHEOLOGICAL AREAS: NO
PRIME AGRICULTURAL LAND: NO
THREATENED AND ENDANGERED SPECIES: YES, POTENTIAL NLEB HABITAT
WATER RESOURCE: WINOOSK RIVER
WETLANDS: MINOR SLOPE AND CLEARING IMPACTS TO WETLAND AT WESTERN END OF PROJECT

1.3 RISK EVALUATION

THIS PROJECT IS PART OF A LARGER PLAN OF DEVELOPMENT. SEE PERMIT CONDITIONS FOR ADDITIONAL INFORMATION.

1.4 EROSION PREVENTION AND SEDIMENT CONTROL

THE EROSION CONTROL PLANS ARE MEANT AS A GUIDELINE FOR PREVENTING EROSION AND CONTROLLING SEDIMENT TRANSPORT. THE PRINCIPLES OUTLINED IN THIS NARRATIVE CONSIST OF APPLYING MEASURES THROUGHOUT CONSTRUCTION OF THE PROJECT IN ORDER TO MINIMIZE SEDIMENT TRANSPORT TO THE RECEIVING WATERS. THE MEASURES INCLUDE STABILIZATION AND STRUCTURAL PRACTICES, STORM WATER CONTROLS AND OTHER POLLUTION PREVENTION PRACTICES. THEY HAVE BEEN PROPOSED BY THE DESIGNER AS A BASIS FOR PROTECTING RESOURCES AND WILL NEED TO BE BUILT UPON BASED ON THE SPECIFIC MEANS AND METHODS OF THE CONTRACTOR. REFER TO THE LOW RISK SITE HANDBOOK AND APPROPRIATE DETAIL SHEETS FOR SPECIFIC GUIDANCE AND CONSTRUCTION DETAILING.

ALL MEASURES SHALL BE REGULARLY MAINTAINED AND SHALL BE CHECKED FOR SEDIMENT BUILD-UP. SEDIMENT SHALL BE DISPOSED OF AT AN APPROVED SITE WHERE IT WILL NOT BE SUBJECT TO EROSION.

1.4.1 MARK SITE BOUNDARIES
SITE BOUNDARIES AND AREAS CONSTRUCTION EQUIPMENT CAN ACCESS SHALL BE DELINEATED.

PROJECT DEMARCATION FENCING (PDF) SHALL BE USED TO PHYSICALLY MARK SITE BOUNDARIES. BARRIER FENCE WILL BE USED WITHIN 100' OF THE WINOOSKI RIVER.

1.4.2 LIMIT DISTURBANCE AREA
PREVENTING INITIAL SOIL EROSION BY MINIMIZING THE EXPOSED AREA IS MUCH MORE EFFECTIVE THAN TREATING ERODED SEDIMENT. EARTH DISTURBANCE CAN BE MINIMIZED THROUGH CONSTRUCTION PHASING BY ONLY OPENING UP EARTH AS NECESSARY. THIS CAN LIMIT THE AREA THAT WILL BE DISTURBED AND EXPOSED TO EROSION. EMPLOY TEMPORARY CONSTRUCTION STABILIZATION PRACTICES IN INCREMENTAL STAGES AS PHASES CHANGE. FOR PROJECTS WHICH FALL UNDER THE CONSTRUCTION GENERAL PERMIT, ONLY THE ACREAGE LISTED ON THE PERMIT AUTHORIZATION MAY BE EXPOSED AT ANY GIVEN TIME.

MAINTAINING VEGETATED BUFFERS ALONG STREAM BANKS, WETLANDS OR OTHER SENSITIVE AREAS IS A CRUCIAL EROSION AND SEDIMENT CONTROL MEASURE THAT SHOULD BE ESTABLISHED WHEREVER POSSIBLE.

1.4.3 SITE ENTRANCE/EXIT STABILIZATION
TRACKING OF SEDIMENT ONTO PUBLIC HIGHWAYS SHALL BE MINIMIZED TO REDUCE THE POTENTIAL FOR RUNOFF ENTERING RECEIVING WATERS. INSTALLATION SHALL COINCIDE WITH THE CONTRACTORS PROGRESS SCHEDULE.

STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AS PROPOSED ON THE EPSC PLAN AND ANYWHERE EQUIPMENT WILL BE GOING FROM AREAS OF EXPOSED SOILS TO PAVED SURFACES.

1.4.4 INSTALL SEDIMENT BARRIERS
SEDIMENT BARRIERS SHALL BE UTILIZED TO INTERCEPT RUNOFF AND ALLOW SUSPENDED SEDIMENT TO SETTLE OUT. THEY SHALL BE INSTALLED PRIOR TO ANY UP-SLOPE WORK.

SILT FENCE WILL BE INSTALLED AS PROPOSED ON THE EPSC PLAN.
WOVEN WIRE SILT FENCE WILL BE USED WITHIN 100' OF THE WINOOSKI RIVER.

1.4.5 DIVERT UPLAND RUNOFF
DIVERSIONARY MEASURES SHALL BE USED TO INTERCEPT RUNOFF FROM ABOVE THE CONSTRUCTION AND DIRECT IT AROUND THE DISTURBED AREA SO THAT CLEAN WATER DOES NOT BECOME MUDDIED WHILE TRAVELING OVER EXPOSED SOILS ON THE CONSTRUCTION SITE.

UPLAN RUNOFF WILL BE DIRECTED TO THE LOCATIONS OF THE TIMBER BRIDGE CROSSINGS TO PREVENT FLOW OVER EXPOSED AREAS.

1.4.6 SLOW DOWN CHANNELIZED RUNOFF
CHECK STRUCTURES SHALL BE UTILIZED TO REDUCE THE VELOCITY, AND THUS THE EROSIVE POTENTIAL, OF CONCENTRATED FLOW IN CHANNELS.

CHECK DAMS WILL BE INSTALLED AS PROPOSED ON THE EPSC PLAN, AT A MINIMUM.

1.4.7 CONSTRUCT PERMANENT CONTROLS
PERMANENT STORMWATER TREATMENT DEVICES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH PERMIT CONDITIONS.

1.4.8 STABILIZE EXPOSED SOILS DURING CONSTRUCTION
ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY STABILIZATION IN PLACE WITHIN 48 HOURS OF DISTURBANCE.

SURFACE ROUGHENING OF ALL EXPOSED SLOPES, COMBINED WITH TEMPORARY MULCHING, SHALL BE UTILIZED ON A REGULAR BASIS. BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED TO STABILIZE ALL SLOPES STEEPER THAN 1:3.

THE FORECAST OF RAINFALL EVENTS SHALL TRIGGER IMMEDIATE PROTECTION OF EXPOSED SOILS.

1.4.9 WINTER STABILIZATION
VARIOUS MEASURES SPECIFIC TO WINTER MAY BE NECESSARY SHOULD THE PROJECT EXTEND INTO WINTER (OCTOBER 15 THROUGH APRIL 15). REFER TO THE LOW RISK SITE HANDBOOK FOR GUIDANCE.

1.4.10 STABILIZE SOIL AT FINAL GRADE
EXPOSED SOIL MUST BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE.

SEED, MULCH, FERTILIZER AND LIME SHALL BE USED TO ESTABLISH PERMANENT VEGETATION. FOR SLOPES STEEPER THAN 1:3, BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED INSTEAD OF MULCH.

1.4.11 DE-WATERING ACTIVITIES
DISCHARGE FROM DEWATERING ACTIVITIES THAT FLOWS OFF OF THE CONSTRUCTION SITE MUST NOT CAUSE OR CONTRIBUTE TO A VIOLATION OF THE VERMONT WATER QUALITY STANDARDS.

DE-WATERING ACTIVITIES ARE NOT ANTICIPATED FOR THIS PROJECT.

1.4.12 INSPECT YOUR SITE
INSPECT THE PROJECT SITE BASED ON SPECIAL PROVISION REQUIREMENTS OR CONSTRUCTION GENERAL PERMIT AUTHORIZATION STIPULATIONS.

1.5 SEQUENCE AND STAGING

THIS SECTION WILL BE DEVELOPED BY THE CONTRACTOR USING THE GUIDANCE OUTLINED IN THE VTRANS EPSC PLAN CONTRACTOR CHECKLIST.

1.5.1 CONSTRUCTION SEQUENCE

1.5.2 OFF-SITE ACTIVITIES
IN ADDITION TO THE CONTRACTOR CHECKLIST ANY ACTIVITIES OUTSIDE THE CONSTRUCTION LIMITS SHALL FOLLOW SPECIFICATION 105.25- 105.29 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.

1.5.3 UPDATES

INDIVIDUAL CONSTRUCTION GENERAL PERMIT BY OTHERS
SEE PERMIT FOR ADDTIONAL INFORMATION

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Legend

Notes

Revision		By	Appd.	YY.MM.DD
Issued		By	Appd.	YY.MM.DD
File Name: ero_det.dgn		PZA Dwn.	GAS Chkd.	ISM Dsgn.	7/26/2018 YY.MM.DD

Permit-Seal

Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
EROSION CONTROL NARRATIVE

Project No. 195311563
Scale AS SHOWN
Drawing No.
Sheet 17 of 57
Revision 0

BARRIER FENCE (LINE STYLE)
653.50 — BF — BF —

BRUSH LAYER
653.75, DETAIL — BL

CHECK DAM (LINE STYLE)
653.25, DETAIL

COFFERDAM (LINE STYLE)
208.40

CURB DROP INLET PROTECTION
653.40, DETAIL

DUST CONTROL
609.10 & 15 — DC

PIPE INLET PROTECTION
653.40, DETAIL

EXCAVATED DROP INLET PROTECTION
653.40, DETAIL

FIBER ROLL (EROSION LOG)
653.60, DETAIL — FR

FILTER BAG
653.45, DETAIL

FILTER FABRIC DROP INLET PROTECTION
653.40, DETAIL

LIVE CUTTINGS/LIVE STAKES PLANTING
653.70, DETAIL — LS

LIVE FASCINE
653.65, DETAIL — LF

PROJECT DEMARCATION FENCE (LINE STYLE) — PDF — PDF —
653.55

ROLLED EROSION CONTROL PRODUCT (RECP)
653.20 (TEMP. EROSION MATTING)

SEDIMENT BASIN
INCIDENTAL TO COFFERDAM 208.40

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC ORIGINALLY DEVELOPED BY USDA-NRCS VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION	STANDARD SYMBOLS

SILT FENCE(LINE STYLE)
649.51, DETAIL

SILT FENCE WOVEN WIRE(LINE STYLE)
649.515, DETAIL

STABILIZED CONSTRUCTION ENTRANCE
653.35, DETAIL, VEHICLE TRACKING PAD

STONE & BLOCK DROP INLET PROTECTION
653.40, DETAIL

SURFACE ROUGHENING
INCIDENTAL TO CONTRACT

TURBIDITY CURTAIN
649.61, DETAIL, FILTER CURTAIN

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC ORIGINALLY DEVELOPED BY USDA-NRCS VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION	STANDARD SYMBOLS

VAOT LOW GROW/FINE FESCUE MIX

	LBS/AC					
WEIGHT	BROADCAST	HYDROSEED	NAME	LATIN NAME	GERM	PURITY
38%	57	95	CREEPING RED FESCUE	FESTUCA RUBRA VAR. RUBRA	90%	98%
29%	43.5	72.5	HARD FESCUE	FESTUCA LONGIFOLIA	85%	95%
15%	22.5	37.5	CHEWINGS FESCUE	FESTUCA RUBRA VAR. COMMUTATA	87%	95%
15%	22.5	37.5	ANNUAL RYEGRASS	LOLIUM MULTIFLORUM	90%	95%
3%	4.5	7.5	INERTS			
100%	150	250				

VAOT RURAL AREA MIX

	LBS/AC					
WEIGHT	BROADCAST	HYDROSEED	NAME	LATIN NAME	GERM	PURITY
37.5%	22.5	45	CREEPING RED FESCUE	FESTUCA RUBRA VAR. RUBRA	85%	98%
37.5%	22.5	45	TALL FESCUE	FESTUCA ARUNDINACEA	90%	95%
5.0%	3	6	RED TOP	AGROSTIS GIGANTEA	90%	95%
15.0%	9	18	WHITE FIELD CLOVER	TRIFOLIUM REPENS	85%	98%
5.0%	3	6	ANNUAL RYE GRASS	LOLIUM MULTIFLORUM	85%	95%
100%	60	120				

GENERAL AMENDMENT GUIDANCE

FERTILIZER	LIME	
10/20/10	AG LIME	PELLITIZED
500 LBS/AC	2 TONS/AC	1 TONS/AC

CONSTRUCTION GUIDANCE

1. SEED MIX: THE CONTRACTOR SHALL COORDINATE WITH THE RESIDENT ENGINEER ON WHICH SEED MIX TO USE.
2. SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED UPLAND (NON WETLAND) AREAS DISTURBED BY THE CONTRACTOR.
3. ALL SEED MIXTURES: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.
4. FERTILIZER AND LIMESTONE: SHALL FOLLOW RATES SHOWN ON PLAN OR AS DIRECTED BY THE ENGINEER.
5. HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2 TONS/ACRE, ACHIEVE 90% GROUND COVER OR AS DIRECTED BY THE ENGINEER.
6. HYDROSEEDING: ALTHOUGH GUIDANCE IS GIVEN ABOVE THE SITE CONDITIONS AND THE TYPE OF HYDROSEED PROPOSED FOR USE WILL ULTIMATELY DICTATE THE AMOUNTS AND TYPES OF SOIL AMENDMENTS TO BE APPLIED.
7. TURF ESTABLISHMENT: PLACING SEED, FERTILIZER, LIME AND MULCH PRIOR TO SEPTEMBER 15 AND AFTER APRIL 15 CAN BETTER ENSURE A VIGOROUS GROWTH OF GRASS.

ADAPTED FROM VTRANS TECHNICAL LANDSCAPE MANUAL FOR ROADWAYS AND TRANSPORTATION FACILITIES	TURF ESTABLISHMENT
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 651FOR SEED (PAY ITEM 651.15)	REVISIONS JANUARY 12, 2015 WHF

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Notes

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	Dwn.	Chkd.	Dsgn.	YY.MM.DD

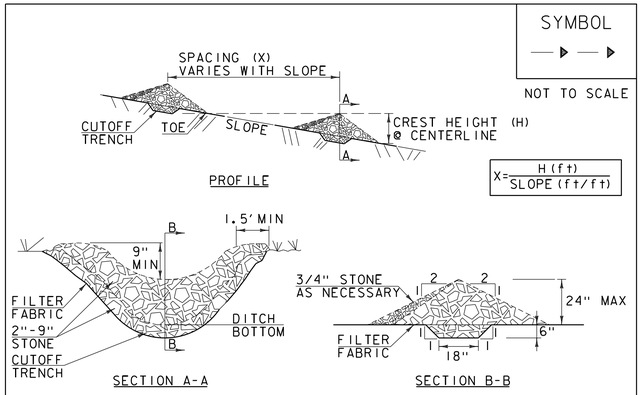
Permit-Seal

Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
EROSION CONTROL DETAILS

Project No. 1953111563
Scale AS SHOWN
Drawing No.
Sheet 18 of 57
Revision 0



CONSTRUCTION SPECIFICATIONS

1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION.
2. CHECK DAMS SHALL BE SPACED SO THAT THE ELEVATION OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION AS THE TOE OF THE UPSTREAM DAM.
3. 3/4" FILTERING STONE MAY BE ADDED TO THE FACE OF THE CHECK DAM AS NECESSARY.
4. EXTEND THE STONE A MINIMUM OF 1.5' BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
5. PROTECT CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
6. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.
7. MAXIMUM DRAINAGE AREA 2 ACRES.

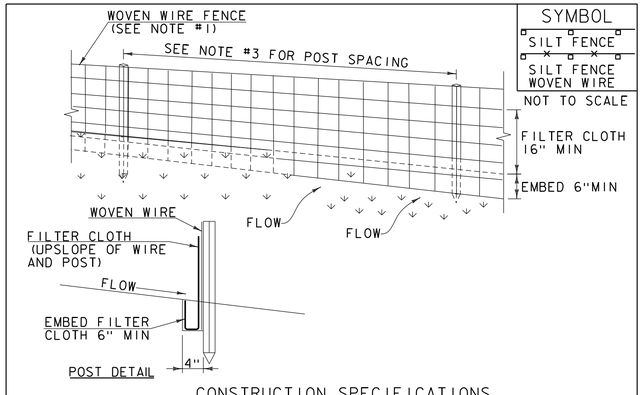
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

CHECK DAM

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR TEMPORARY STONE CHECK DAM, TYPE I (PAY ITEM 653.25)

REVISIONS	
MARCH 21, 2008	WHF
JANUARY 8, 2009	WHF



CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE REINFORCED FENCE IS REQUIRED WITHIN 100' UPSLOPE OF RECEIVING WATERS WHEN THE PROJECT FALLS UNDER A CONSTRUCTION STORMWATER PERMIT. WOVEN WIRE SHALL BE A MIN. 14 GAUGE WITH A 6" MAX. MESH OPENING.
2. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI100X, STABILINKA T140N OR APPROVED EQUIVALENT.
3. POST SPACING FOR WIRE-BACKED FENCE SHALL BE 10' MAXIMUM. FOR FILTER-CLOTH FENCE, WHEN ELONGATION IS >50%, POST SPACING SHALL NOT EXCEED 4' AND WHEN ELONGATION IS <50%, POST SPACING SHALL NOT EXCEED 6'.
4. WOVEN WIRE FENCE IS TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY 6" AND FOLDED.
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SEDIMENT REACHES HALF OF FABRIC HEIGHT.

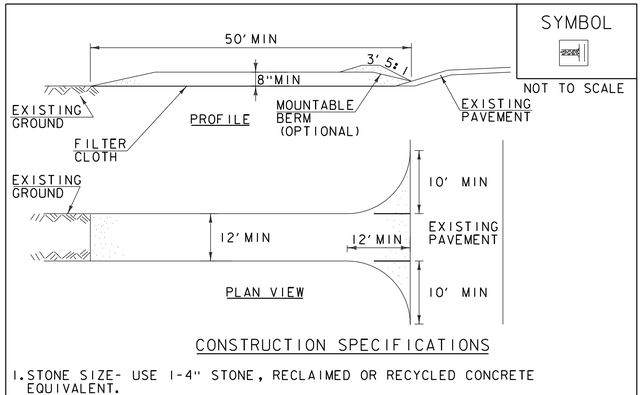
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SILT FENCE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 AND AS SHOWN IN THE PLANS FOR GEOTEXTILE FOR SILT FENCE (PAY ITEM 649.51) OR GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED (PAY ITEM 649.515).

REVISIONS	
MARCH 21, 2008	WHF
DECEMBER 11, 2008	WHF
JANUARY 13, 2009	WHF



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE- USE 1-4" STONE, RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH- NOT LESS THAN 50' (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30' MINIMUM LENGTH APPLIES).
3. THICKNESS- NOT LESS THAN 8".
4. WIDTH- 12' MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. 24' IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE MUST BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.
6. SURFACE WATER- ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED ACCORDING TO PERMIT REQUIREMENTS.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

STABILIZED CONSTRUCTION ENTRANCE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR VEHICLE TRACKING PAD (PAY ITEM 653.35) OR AS SPECIFIED IN THE CONTRACT.

REVISIONS	
MARCH 24, 2008	WHF
JANUARY 13, 2009	WHF

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Permit-Seal

Client/Project
CROSS VT TRAIL ASSOCIATION

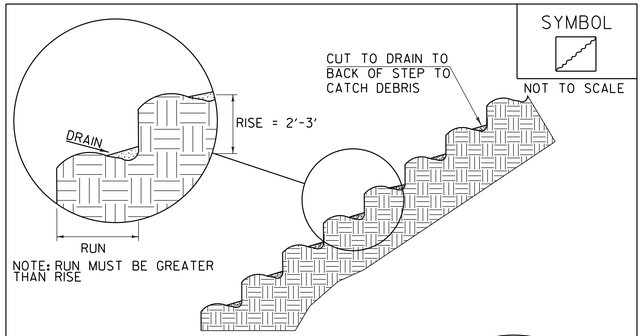
EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
EROSION CONTROL DETAILS

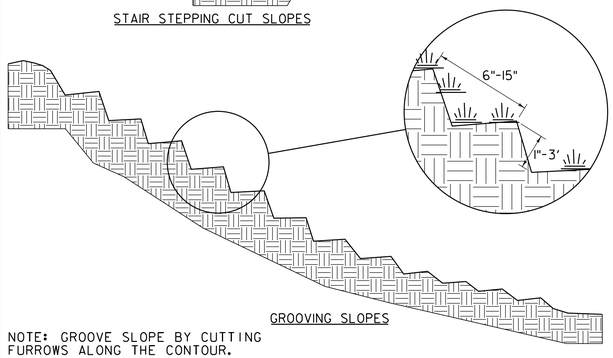
Project No. 195311563
Scale AS SHOWN
Drawing No.
Sheet 19 of 57
Revision 0

SYMBOL

NOT TO SCALE



STAIR STEPPING CUT SLOPES



GROOVING SLOPES

NOTE: GROOVE SLOPE BY CUTTING
FURROWS ALONG THE CONTOUR.
IRREGULARITIES IN THE SOIL SURFACE
CATCH RAINWATER AND RETAIN LIME,
FERTILIZER AND SEED.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SURFACE ROUGHENING

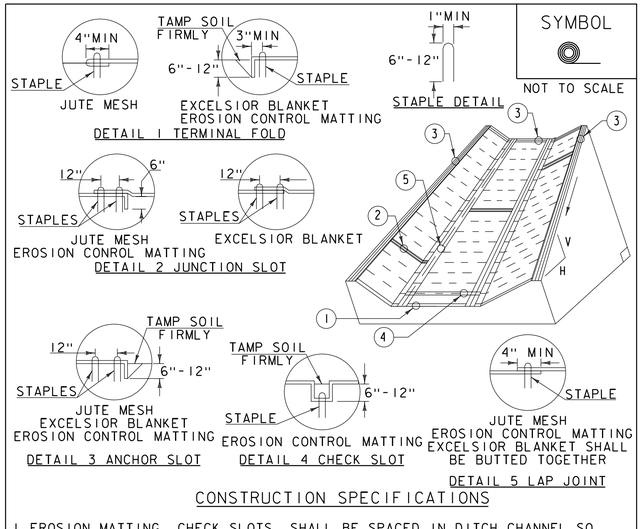
NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT

REVISIONS	
APRIL 1, 2008	WHF
JANUARY 13, 2009	WHF

SYMBOL

NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. EROSION MATTING, CHECK SLOTS, SHALL BE SPACED IN DITCH CHANNEL SO THAT ONE OCCURS WITHIN EACH 50' ON SLOPES OF MORE THAN 4% AND LESS THAN 6%. ON SLOPES OF 6% OR MORE, THEY SHALL BE SPACED SO THAT ONE OCCURS WITHIN EACH 25'.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4'X225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4'X150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

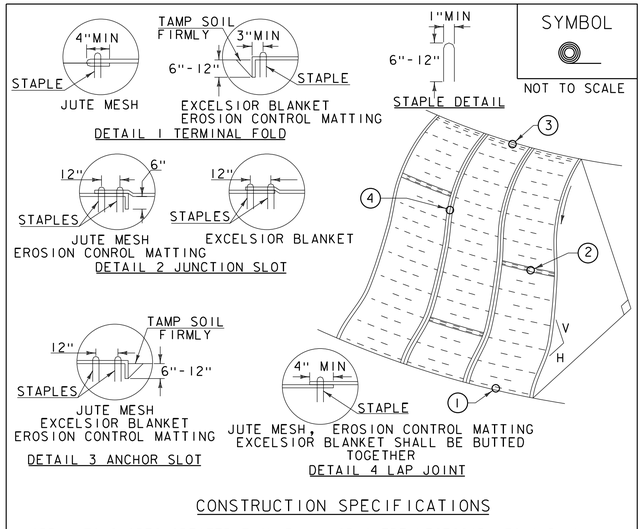
ROLLED EROSION CONTROL PRODUCT (RECP) DITCH

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 AND AS SHOWN IN THE PLANS FOR TEMPORARY EROSION MATTING (PAY ITEM 653.20) OR PERMANENT EROSION MATTING (PAY ITEM 653.21).

REVISIONS	
MARCH 8, 2007	JMF
APRIL 16, 2007	WHF
JANUARY 13, 2009	WHF

SYMBOL

NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. APPLY TO SLOPES GREATER THAN 3H:1V OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4'X225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4'X150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 AND AS SHOWN IN THE PLANS FOR TEMPORARY EROSION MATTING (PAY ITEM 653.20) OR PERMANENT EROSION MATTING (PAY ITEM 653.21).

REVISIONS	
APRIL 16, 2007	JMF
JANUARY 13, 2009	WHF

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Notes

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Permit-Seal

Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
EROSION CONTROL DETAILS

Project No. 195311563

Scale AS SHOWN

Drawing No.

Sheet 20 of 57

Revision 0

STATE OF VERMONT
AGENCY OF TRANSPORTATION

RIGHT - OF - WAY DETAIL SHEET

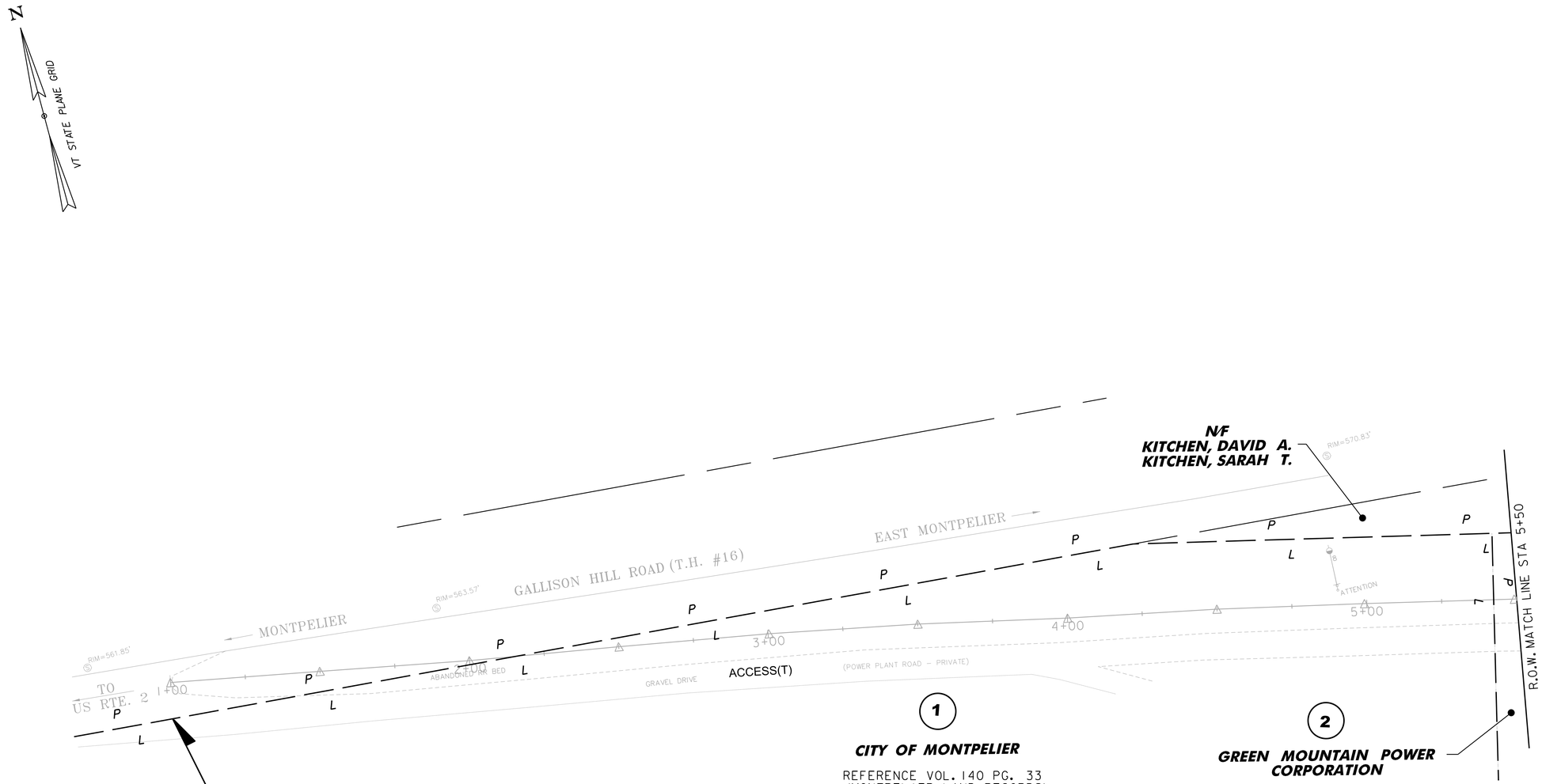
TABLE OF PROPERTY ACQUISITION

PARCEL NO.	PROPERTY OWNER	ROW SHEET NO.	BEGINNING STATION	ENDING STATION	TAKE	REMAINDER	RIGHT			RECORDING DATA					REMARKS
					AREA±	AREA±	TYPE	T / P	AREA ±	TITLE	DATE	TOWN / CITY	BOOK	PAGE	
1	CITY OF MONTPELIER	1	1+00 RT	5+42 RT			ACCESS	T				MONTPELIER			EXISTING ROAD (POWER PLANT ROAD) FROM GALLISON ROAD
2	GREEN MOUNTAIN POWER CORPORATION	1-5	5+42 CENTERLINE	21+68 CENTERLINE			ACCESS	T				MONTPELIER			EXISTING ROAD (POWER PLANT ROAD)
			20+91 RT	21+67 RT			CONST	T	429 SF						INCL. PDF
			20+96 RT	21+00 RT			SLOPE	T	53 SF						
			21+00.00 L T	21+68.06 LT			INSTALL & MAINTAIN	P	1925 SF						
3	WINOOSKI HYDRO ELECTRIC COMPANY	5-11	21+67 RT	50+75 LT			ACCESS	T							EXISTING ROAD (POWER PLANT ROAD)
			21+67 RT	22+30 RT			CONST	T	342 SF			EAST MONTPELIER			(INCL. PDF)
			21+67.18 RT	22+75.95 RT			INSTALL & MAINTAIN	P	2448 SF						SHARED USED PATH (SUP)
			47+63 RT	49+99 RT			CONST	T	0.36 AC						STAGING AREA
			47+82.04 RT	50+75.54 LT			INSTALL & MAINTAIN	P	0.18 AC						SHARED USED PATH (SUP), INCL. BRIDGE, STONE FILL
			47+94 RT	50+25 RT			CONST	T	1083 SF						INCL. PDF
			47+99 RT	50+30 RT			INSTALL	T							SILT FENCE & BARRIER FENCE
			48+09.97 RT	48+79.95 RT			SLOPE	P	147 SF						
			49+09.83 RT	50+24.95 RT			SLOPE	P	165 SF						
4	UNION HIGH SCHOOL DISTRICT NO. 32	5-11	21+68.06 LT	49+21.60 LT			INSTALL & MAINTAIN	P	1.78 AC			EAST MONTPELIER			SHARED USE PATH (SUP)
			34+27 RT	34+82 RT			CONST	T	179 SF						INCL. PDF
			34+32.89 RT	34+43.55 RT			SLOPE	P	31 SF						
			46+02 RT	46+34 RT			CONST	T	114 SF						INCL. PDF
			46+11.54 RT	46+25.45 RT			SLOPE	P	18 SF						
5	STATE OF VERMONT	11-13	50+73.32 RT	60+85.15 LT			INSTALL & MAINTAIN	P	0.62 AC			EAST MONTPELIER			SHARED USE PATH (SUP), INCL. BRIDGE, STONE FILL
	AGENCY OF NATURAL RESOURCES,		52+46 LT	56+05 LT			INSTALL	T				BERLIN			BARRIER FENCE
	VERMONT FISH AND WILDLIFE		52+47 LT	53+29 LT			INSTALL	T							SILT FENCE
	DEPARTMENT		52+47 RT	54+15 RT			INSTALL	T							BARRIER FENCE
			52+50 RT	54+06 RT			INSTALL	T							SILT FENCE
			52+53 LT	55+99 LT			CONST	T	607 SF						INCL. EROSION CONTROL
			55+23 RT	55+64 LT			INSTALL	T							BARRIER FENCE
			55+64 RT	56+23 RT			CONST	T	554 SF						ACCESS ROAD
			56+14 RT	58+19 RT			INSTALL	T							BARRIER FENCE
			58+41 LT	60+03 LT			CONST	T	643 SF						INCL. PDF
			58+48 LT	58+89 LT			SLOPE	T	82 SF						
			59+92 LT	59+85 LT			SLOPE	T	83 SF						
6	STATE OF VERMONT	11-13	54+19 RT	55+23 RT			INSTALL	T				BERLIN			BARRIER FENCE
	AGENCY OF TRANSPORTATION		55+64 RT	58+27 RT			INSTALL	T							BARRIER FENCE
			55+76 RT	59+52 RT			CONST	T	0.35 AC						
			58+19 RT	59+60 RT			INSTALL	T							BARRIER FENCE
			58+22.42 RT	63+02.51 RT			INSTALL & MAINTAIN	P	0.27 AC						SHARED USE PATH (SUP)
			58+33 RT				ACCESS	T							INGRESS FROM VT RTE. 2
			62+25 RT	62+55 RT			SLOPE	T	166 SF						
			62+93 RT	63+02 RT			SLOPE	T	8 SF						
			63+03 LT	63+10 RT			CONST	T	82 SF						
			63+03 LT	63+10 RT			SLOPE	T	109 SF						

TABLE OF REVISIONS

REVISION NO.	ROW SET SHEET #	DESCRIPTION	DATE

PROJECT NAME:	**CROSS VT TRAIL ASSOCIATION**
PROJECT NUMBER:	**STP EHO6(3) / STP CVRT (2)**
FILE NAME:	**CV_ROWDet_Sht.xls**
PROJECT LEADER:	**G. Bogue**
DESIGNED BY:	**H. Petrovs**
R.O.W. DETAIL SHEET #1	
PLOT DATE:	7/26/2018
DRAWN BY:	**L. Buxton**
CHECKED BY:	**H. Petrovs**
SHEET	21 OF 57



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RIGHT-OF-WAY LINES AND PROPERTY LINES AS SHOWN ON PLANS ARE BASED ON RESEARCH AND INFORMATION PROVIDED BY OTHERS.

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Consultants

Legend

Notes

Revision	By	Appd.	YY.MM.DD

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File Name: bdr_row.dgn	LRB	HP	HP	7/26/2018
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

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Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
R.O.W. PLAN SHEET 1

Project No.	Scale	
195311563	1" = 20'	
Drawing No.	Sheet	Revision
	22 of 57	0

N

VT STATE PLANE GRID

NF
KITCHEN, DAVID A.
KITCHEN, SARAH T.

P
L

R.O.W. MATCH LINE STA 5+50

6+00

7+00

8+00

9+00

10+00

R.O.W. MATCH LINE STA 10+50

ACCESS(T)

(POWER PLANT ROAD – PRIVATE)

ACCESS(T)

2

GREEN MOUNTAIN POWER CORPORATION

REFERENCE VOL. 128 PG. 237
(MONTPELIER LAND RECORDS)

WINOOSKI RIVER

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Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
R.O.W. PLAN SHEET 2

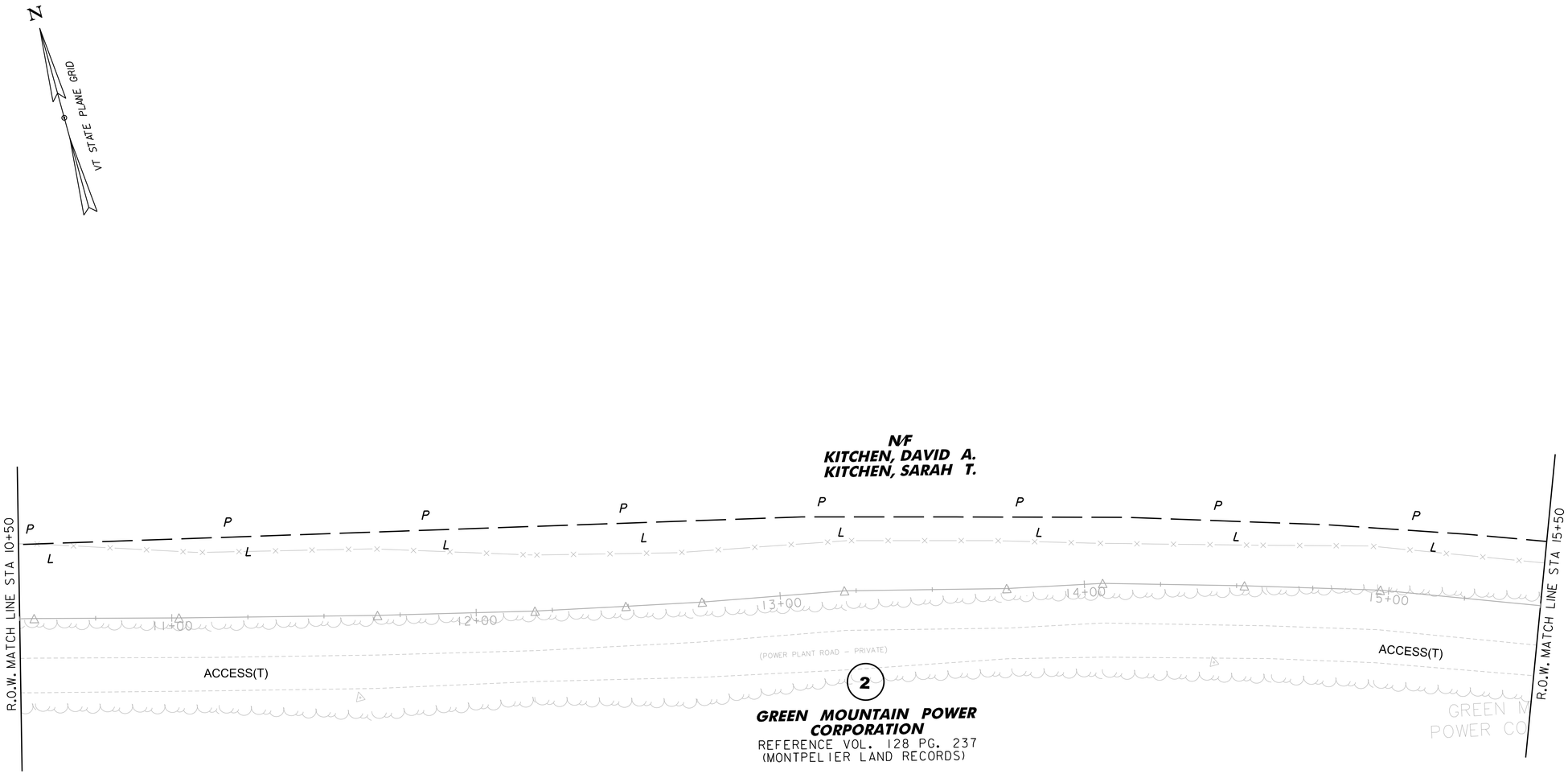
Project No.
195311563

Scale
1" = 20'

Drawing No.

Sheet
23 of 57

Revision
0



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Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
R.O.W. PLAN SHEET 3

Project No.	Scale	
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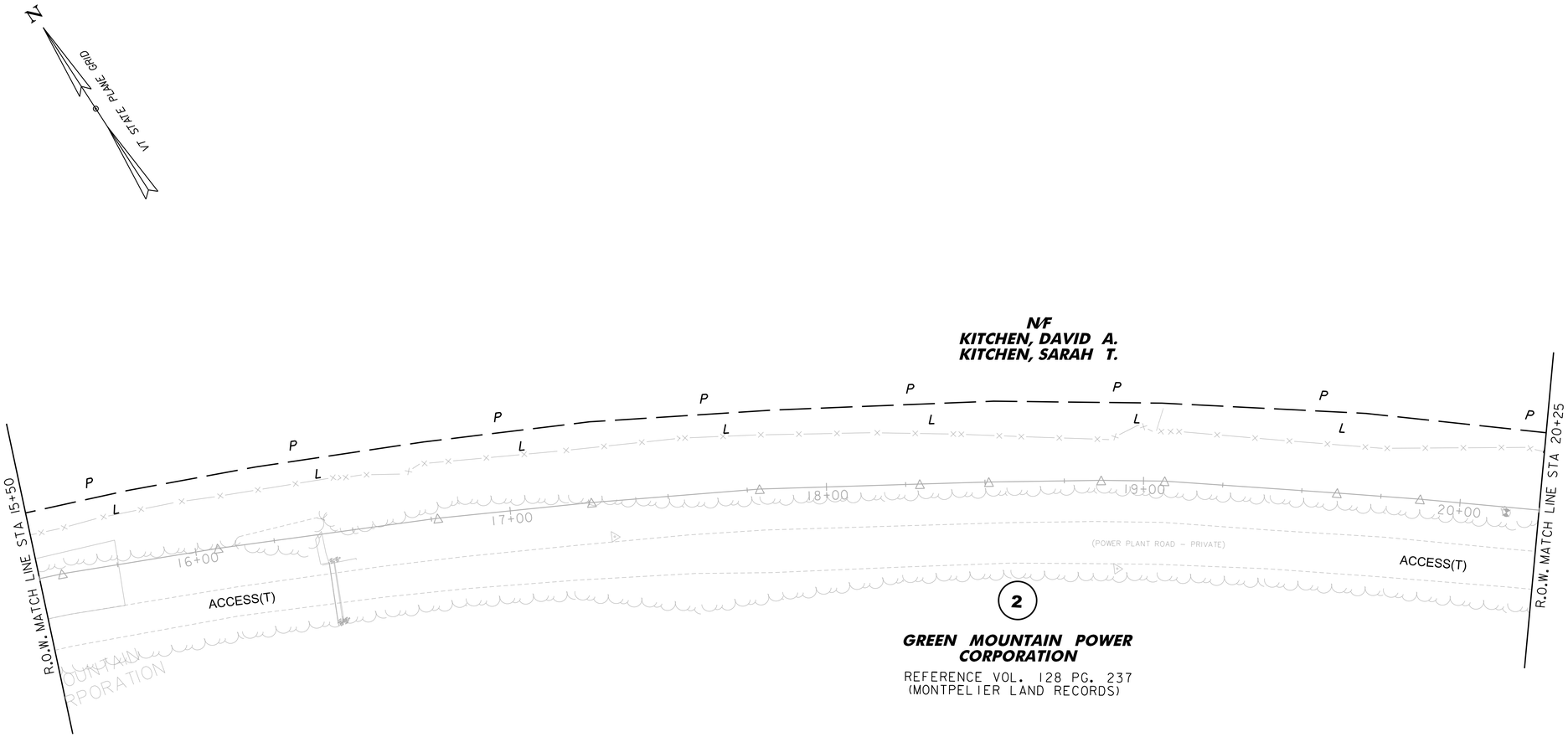
Drawing No.	Sheet	Revision
	24 of 57	0



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Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
R.O.W. PLAN SHEET 4

Project No.	Scale	
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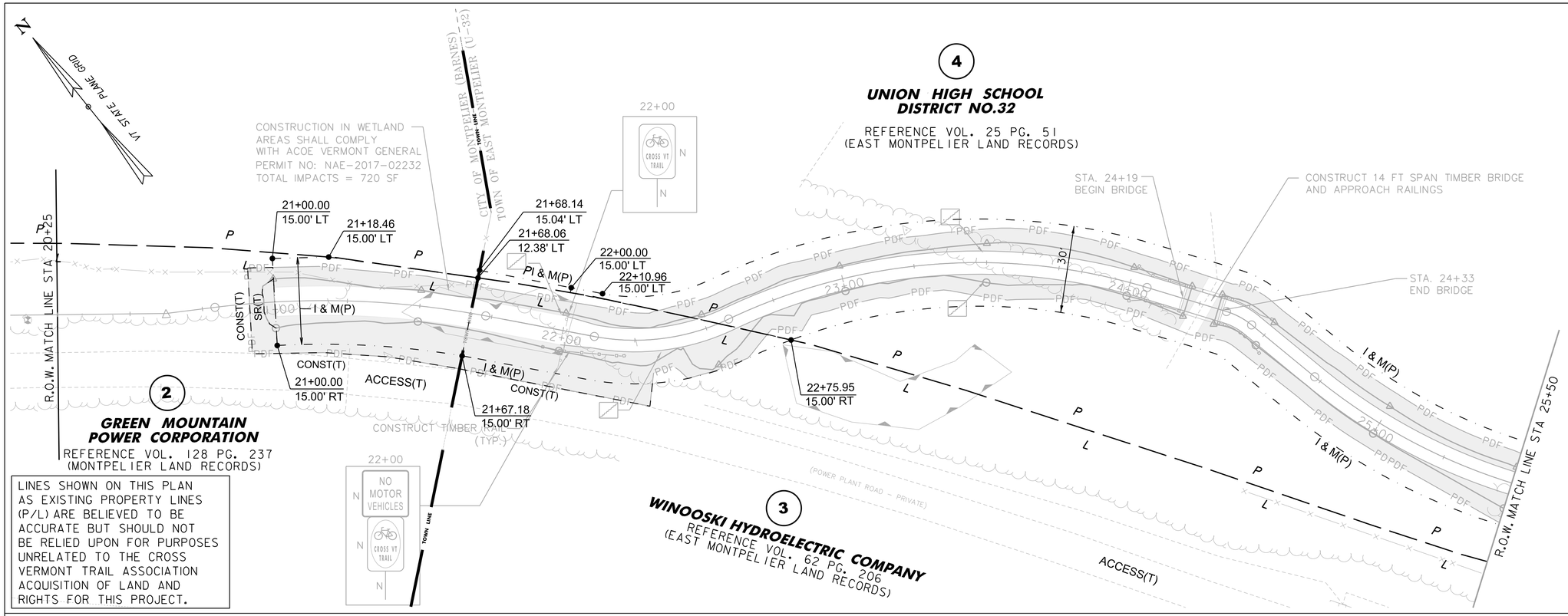
Drawing No.	Sheet	Revision
	25 of 57	0



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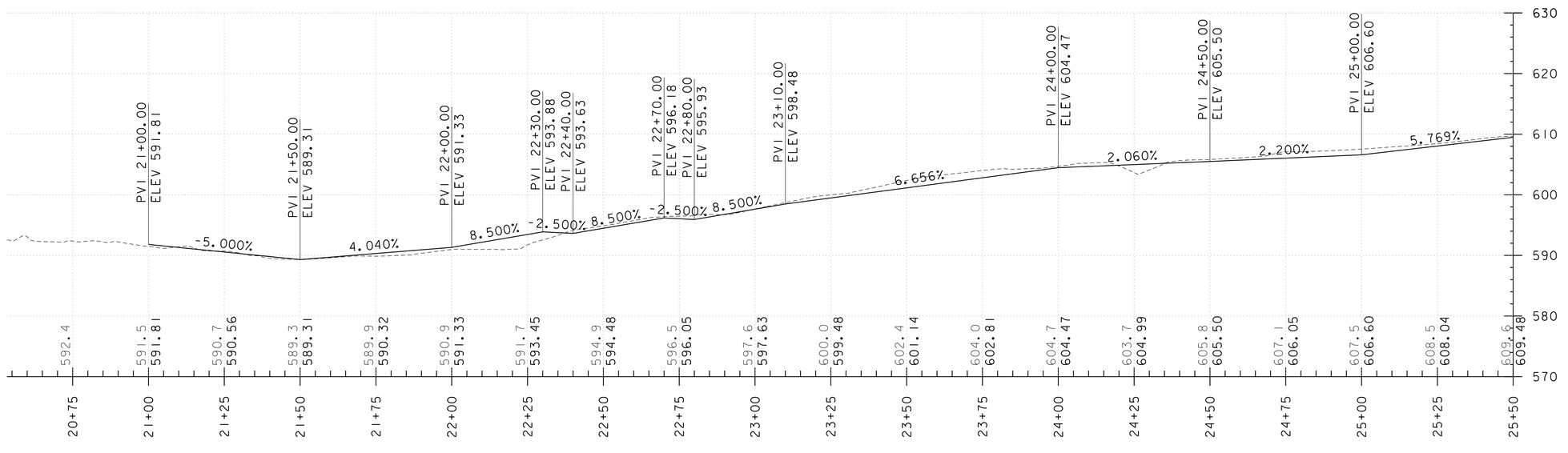

PHASE 2

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	Dwn.	Chkd.	Dsgn.	YY.MM.DD

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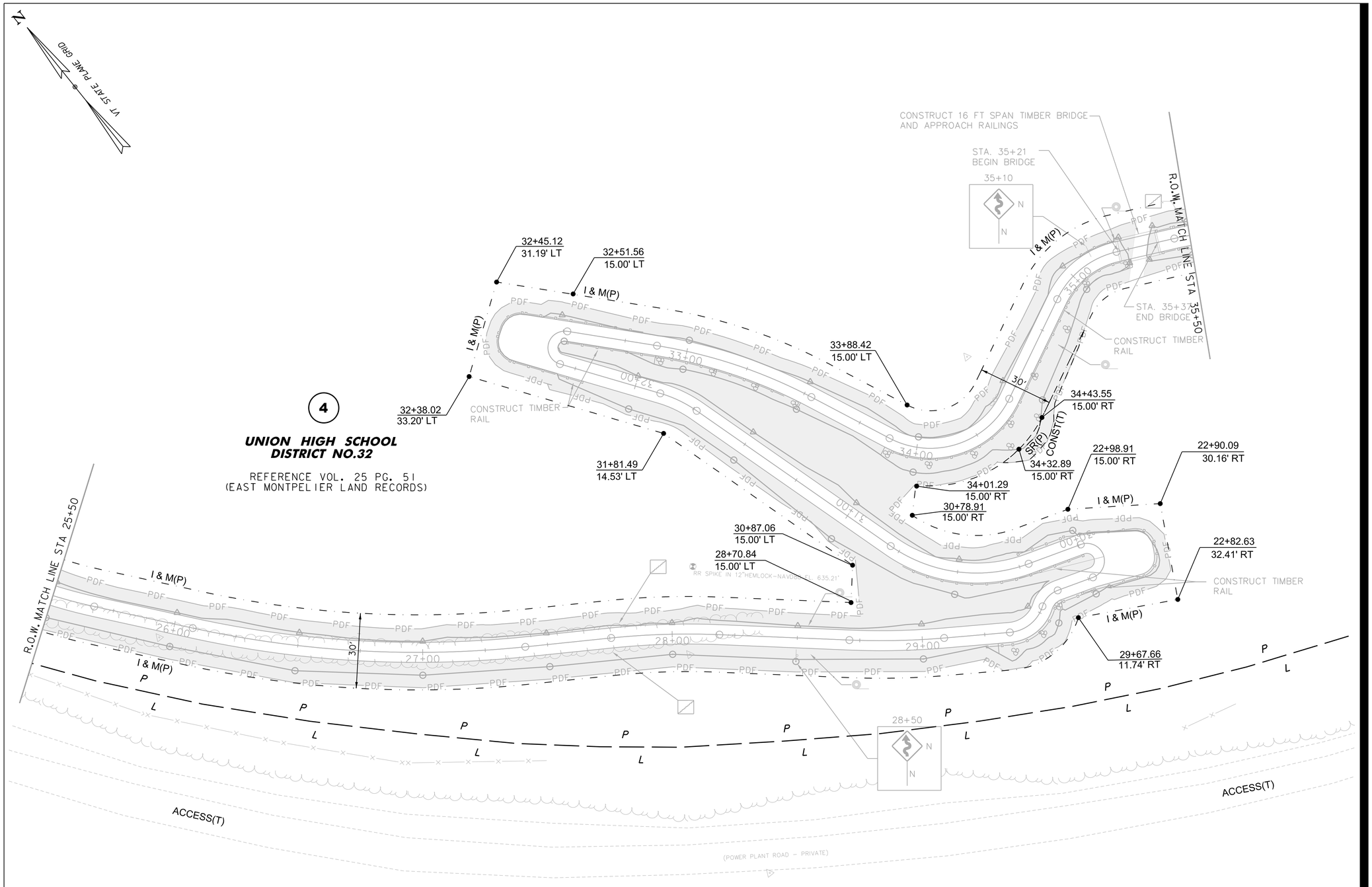
Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
R.O.W. PLAN SHEET 5

Project No.	Scale	
195311563	1" = 20'	
Drawing No.	Sheet	Revision
	26 of 57	0



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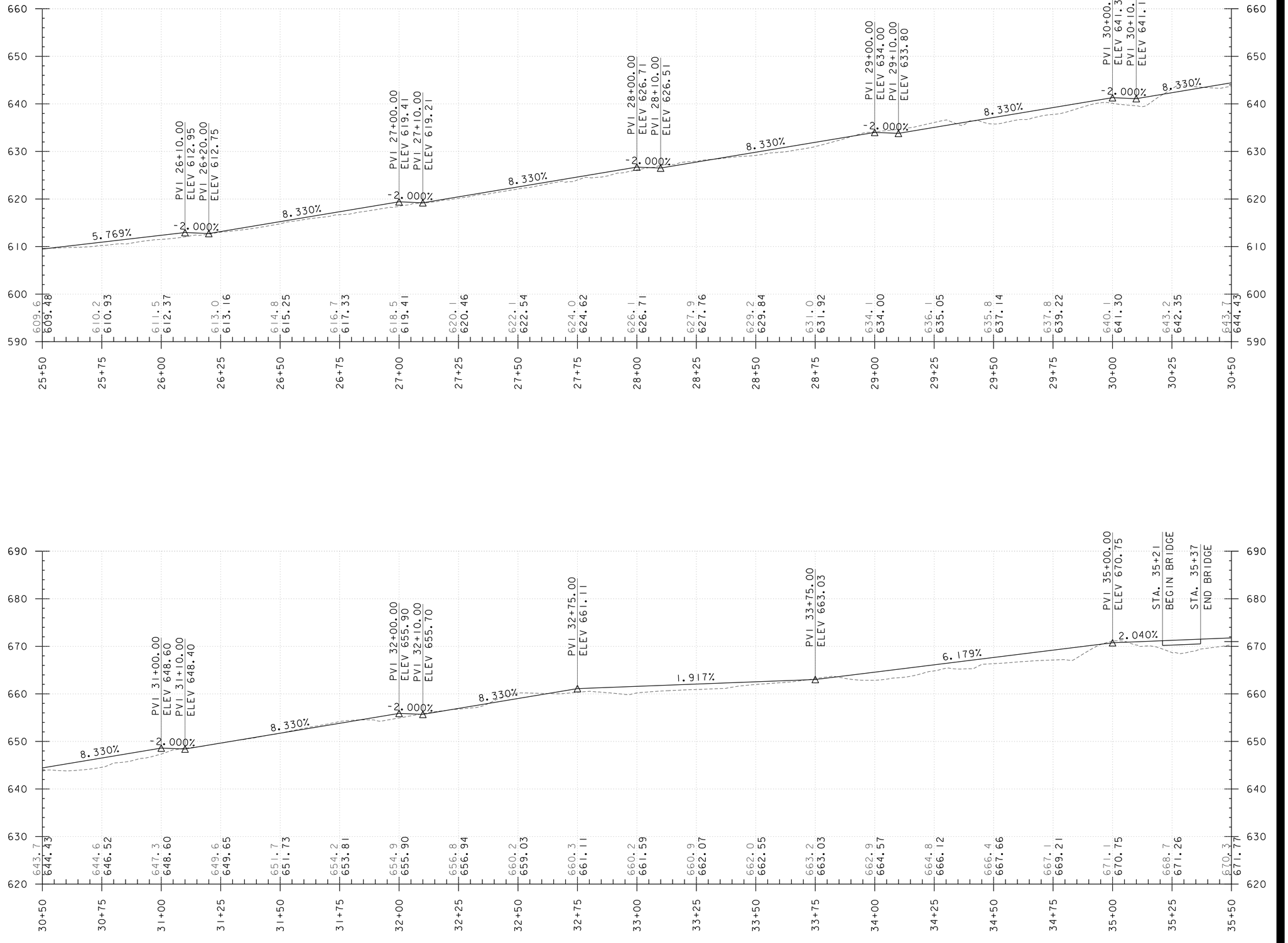
Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
R.O.W. PLAN SHEET 6

Project No.	Scale	
195311563	1" = 20'	
Drawing No.	Sheet	Revision
	27 of 57	0



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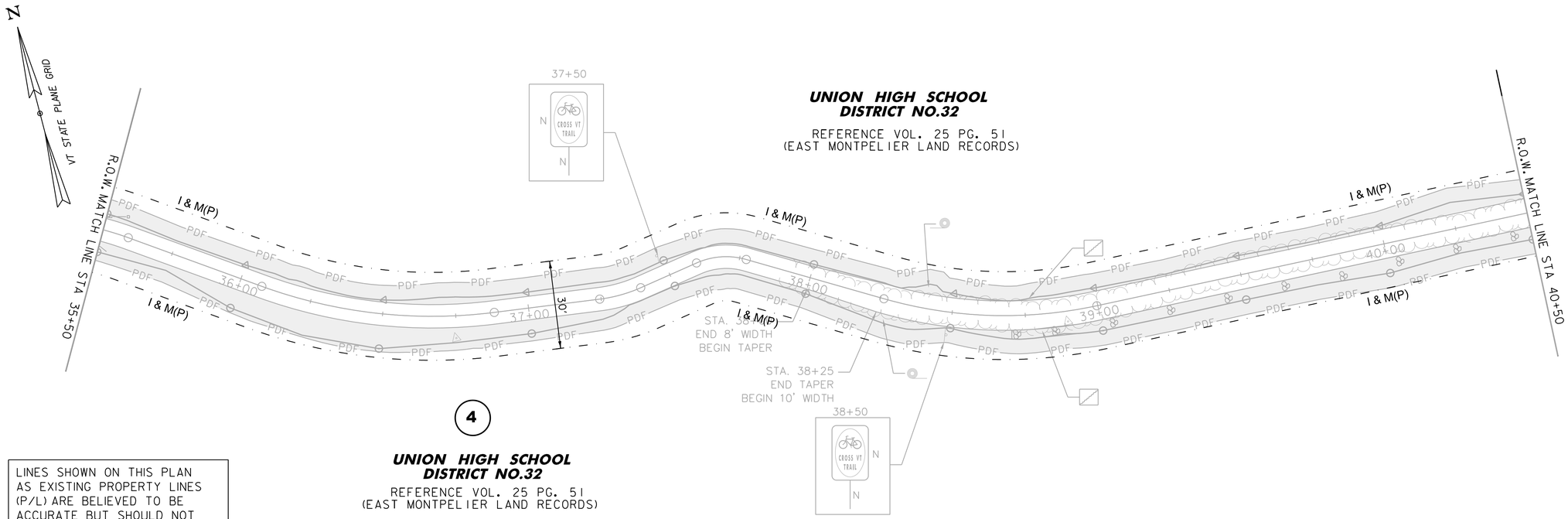
Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
PLAN AND PROFILE SHEET 7

Project No.	Scale	
195311563	1" = 20'	
Drawing No.	Sheet	Revision
	28 of 57	0



UNION HIGH SCHOOL
DISTRICT NO.32

REFERENCE VOL. 25 PG. 51
(EAST MONTPELIER LAND RECORDS)

4

UNION HIGH SCHOOL
DISTRICT NO.32

REFERENCE VOL. 25 PG. 51
(EAST MONTPELIER LAND RECORDS)

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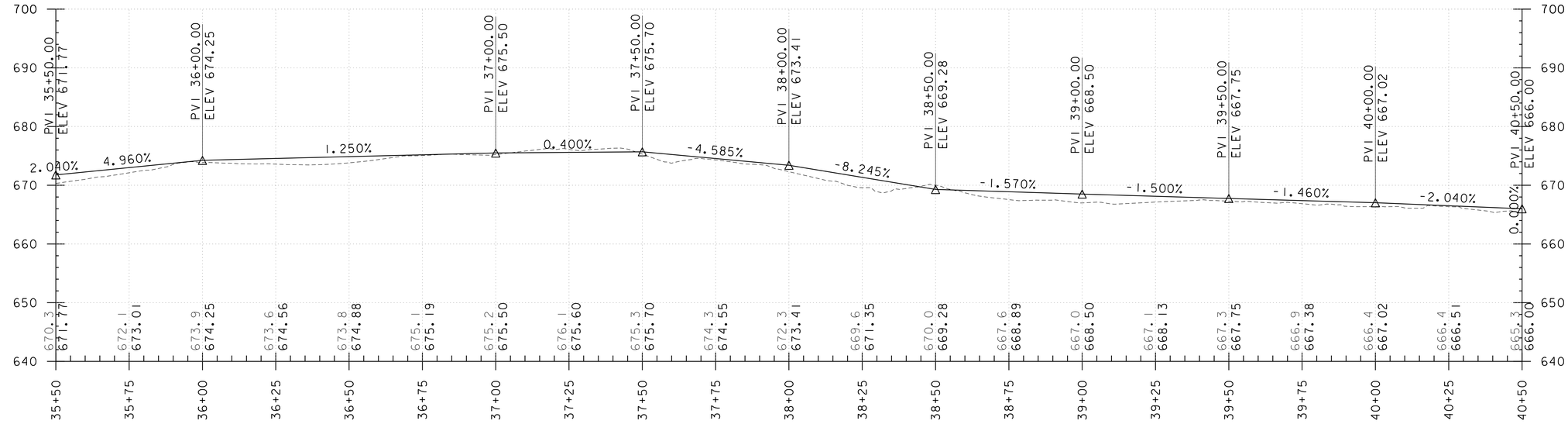

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Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
R.O.W. PLAN SHEET 8

Project No.	Scale	
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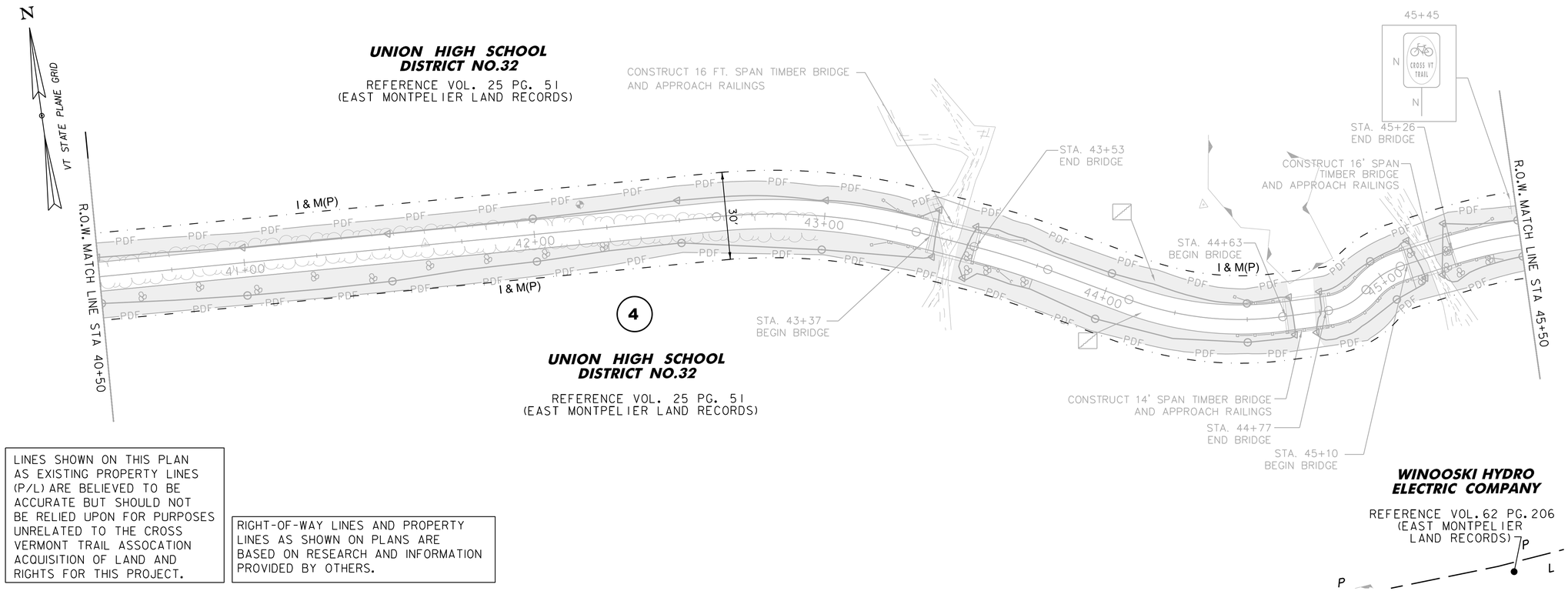
Drawing No.	Sheet	Revision
	29 of 57	0



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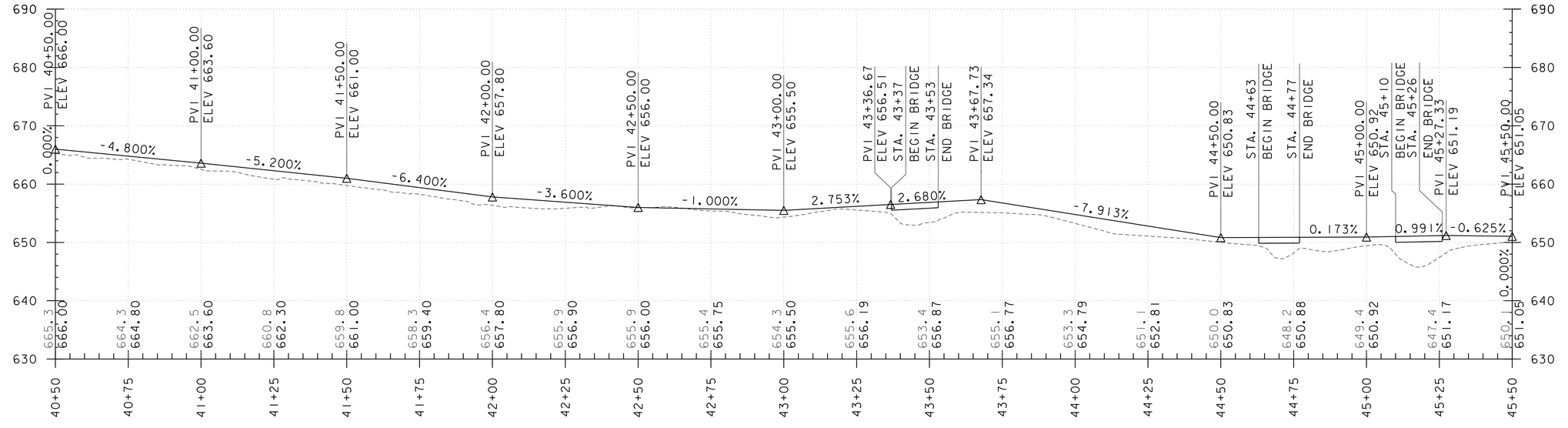

PHASE 2

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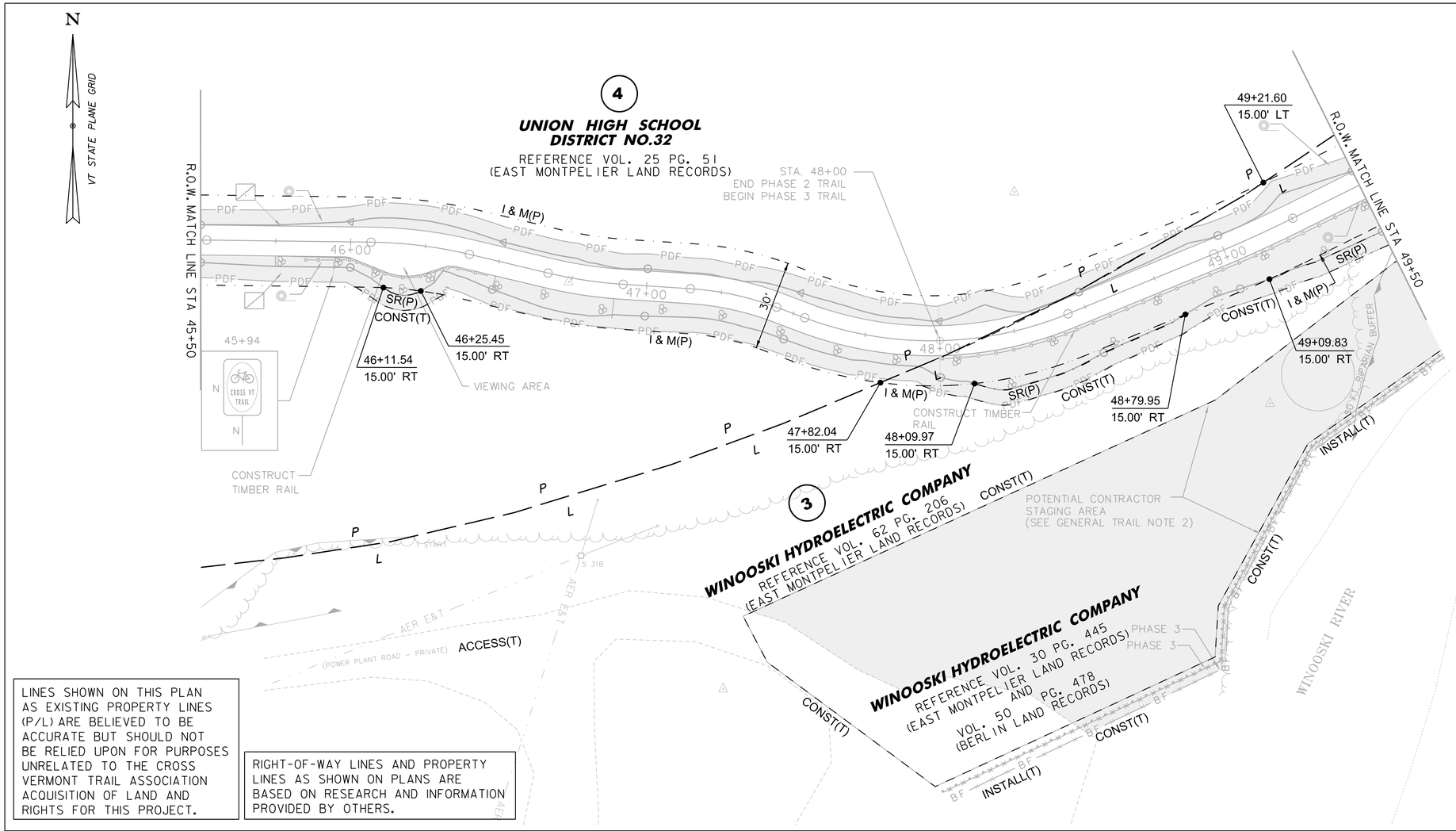
Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
R.O.W. PLAN SHEET 9

Project No.	Scale	
195311563	1" = 20'	
Drawing No.	Sheet	Revision
	30 of 57	0



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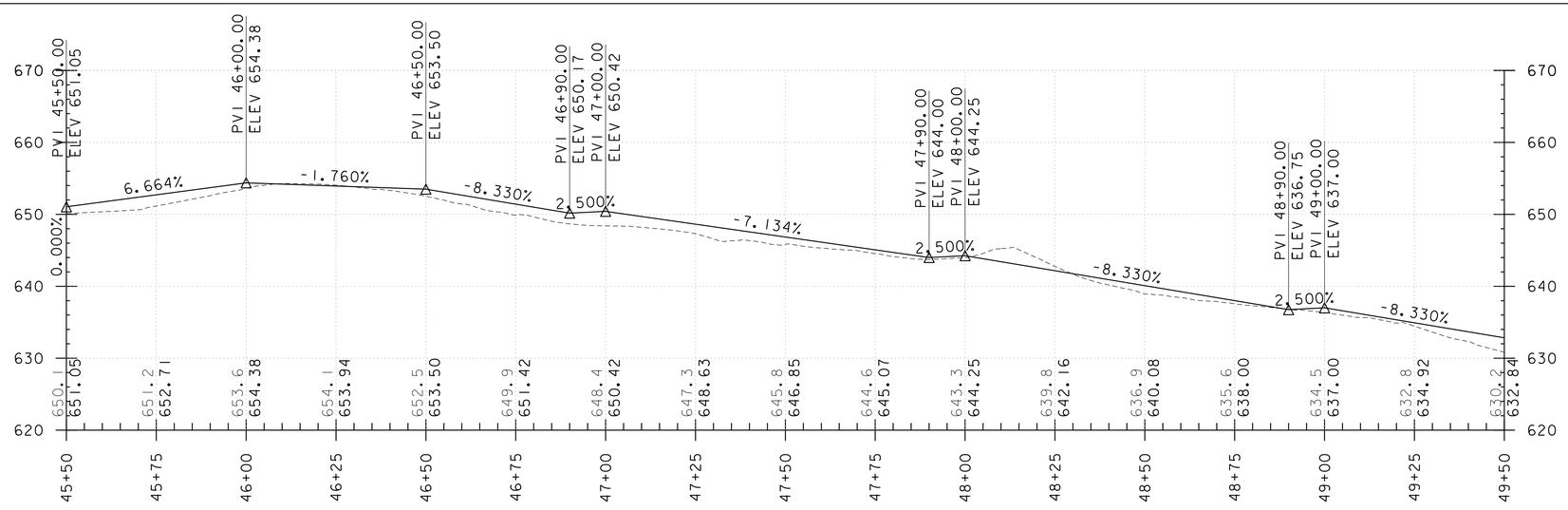

PHASE 2,3

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Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
R.O.W. PLAN SHEET 10

Project No.	Scale	
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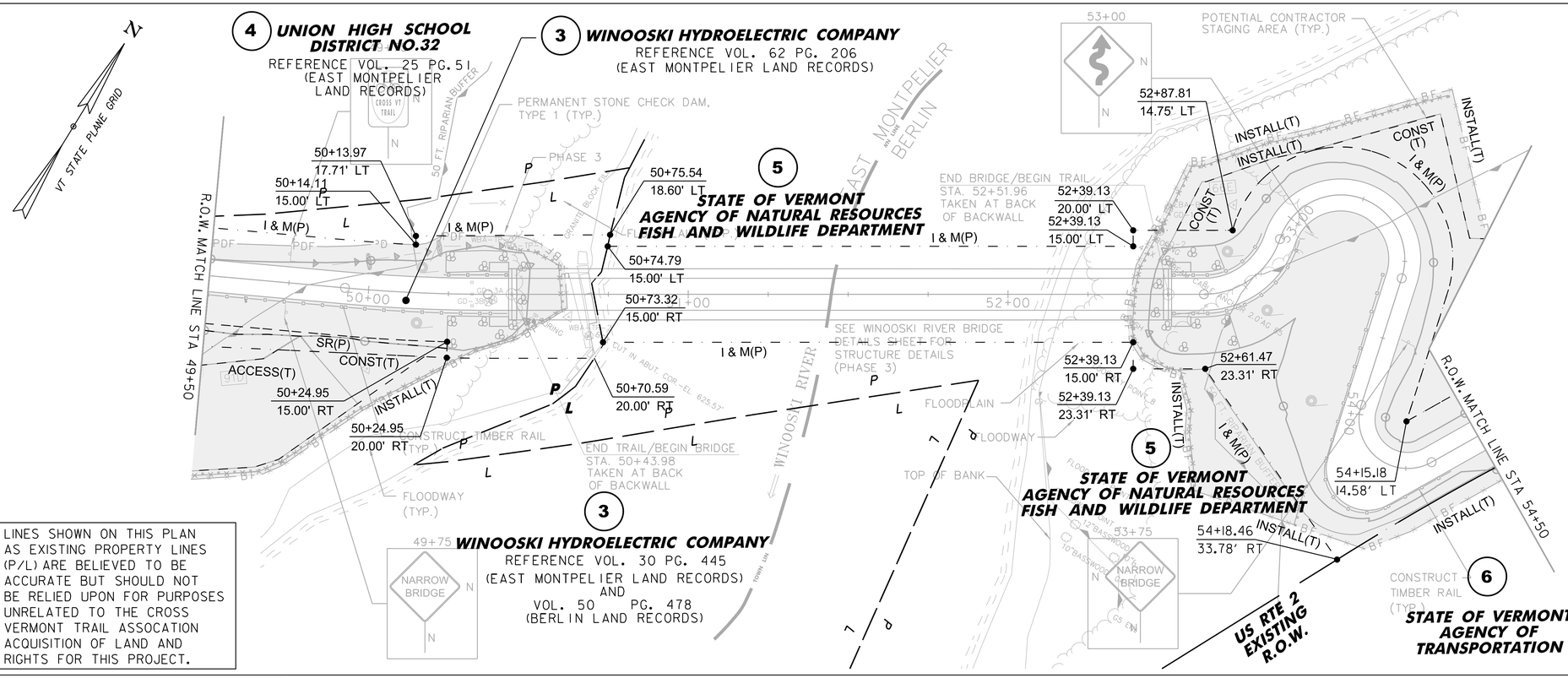
Drawing No.	Sheet	Revision
	31 of 57	0



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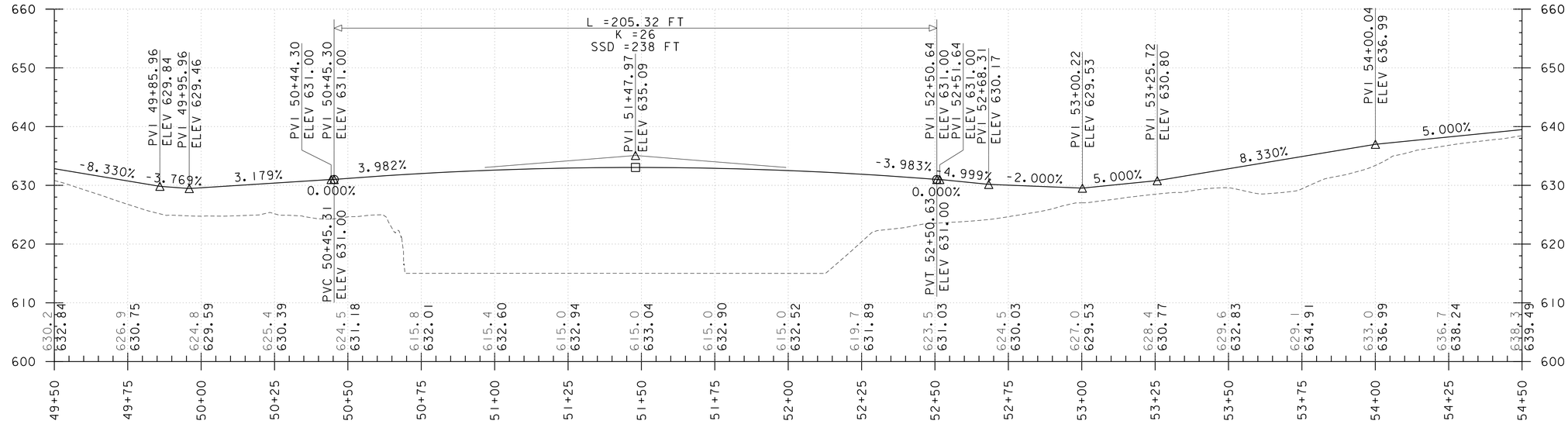

PHASE 3

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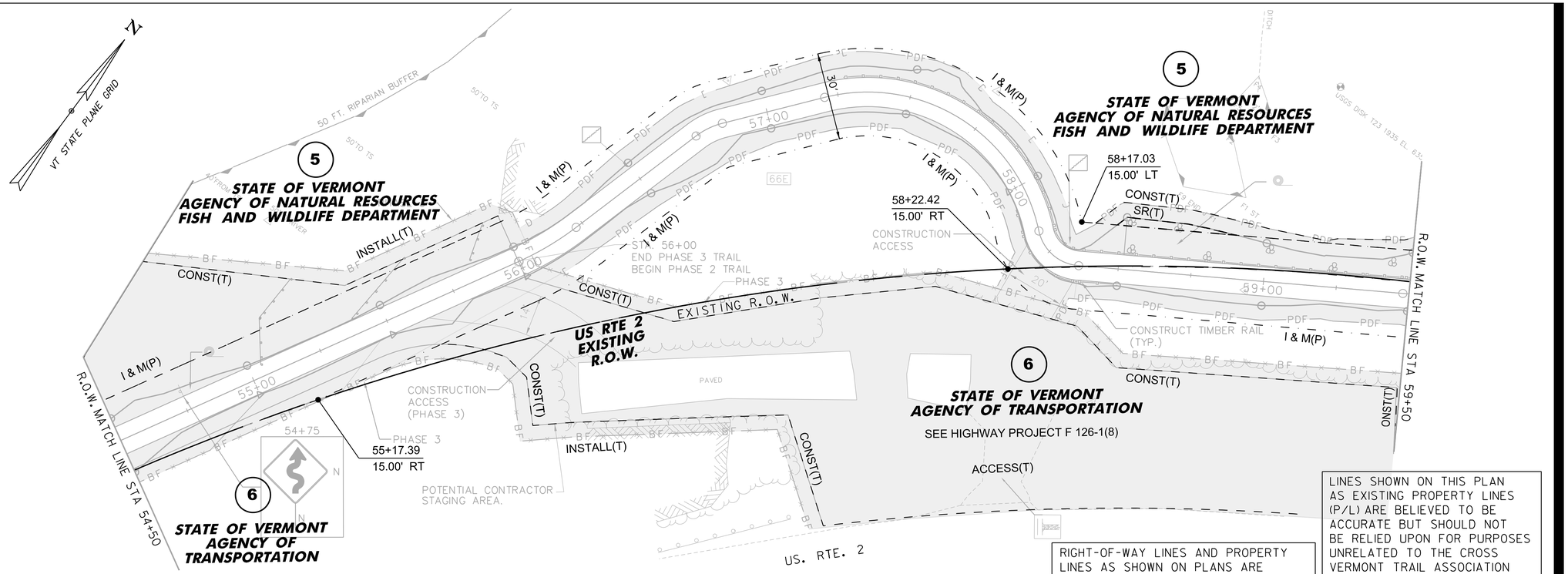
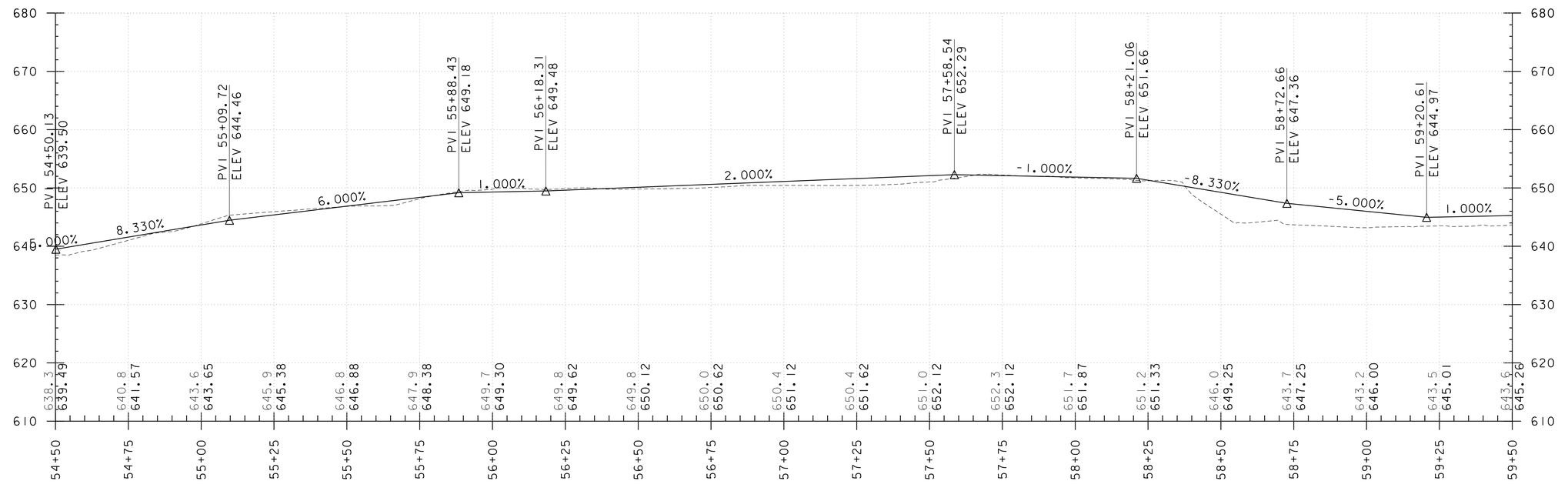
Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
R.O.W. PLAN SHEET 11

Project No.	Scale	
195311563	1" = 20'	
Drawing No.	Sheet	Revision
	32 of 57	0





PHASE 2,3

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Notes

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Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
R.O.W. PLAN SHEET 12

Project No.	Scale	
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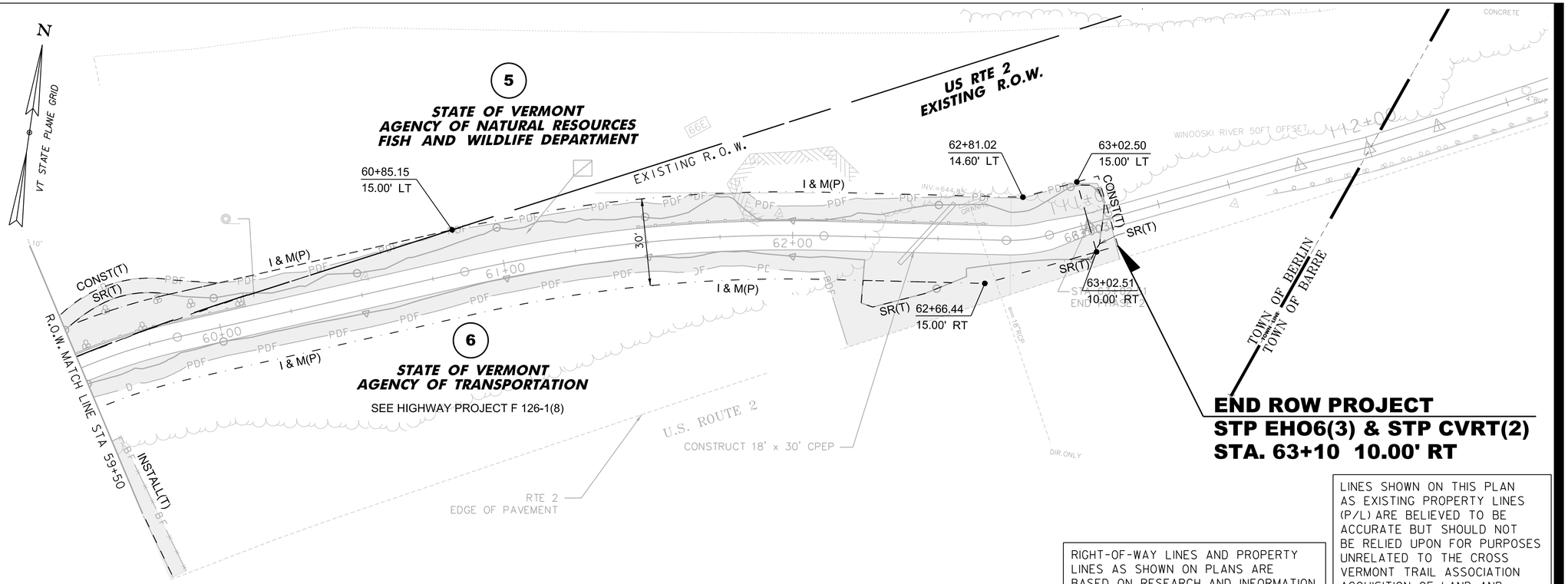
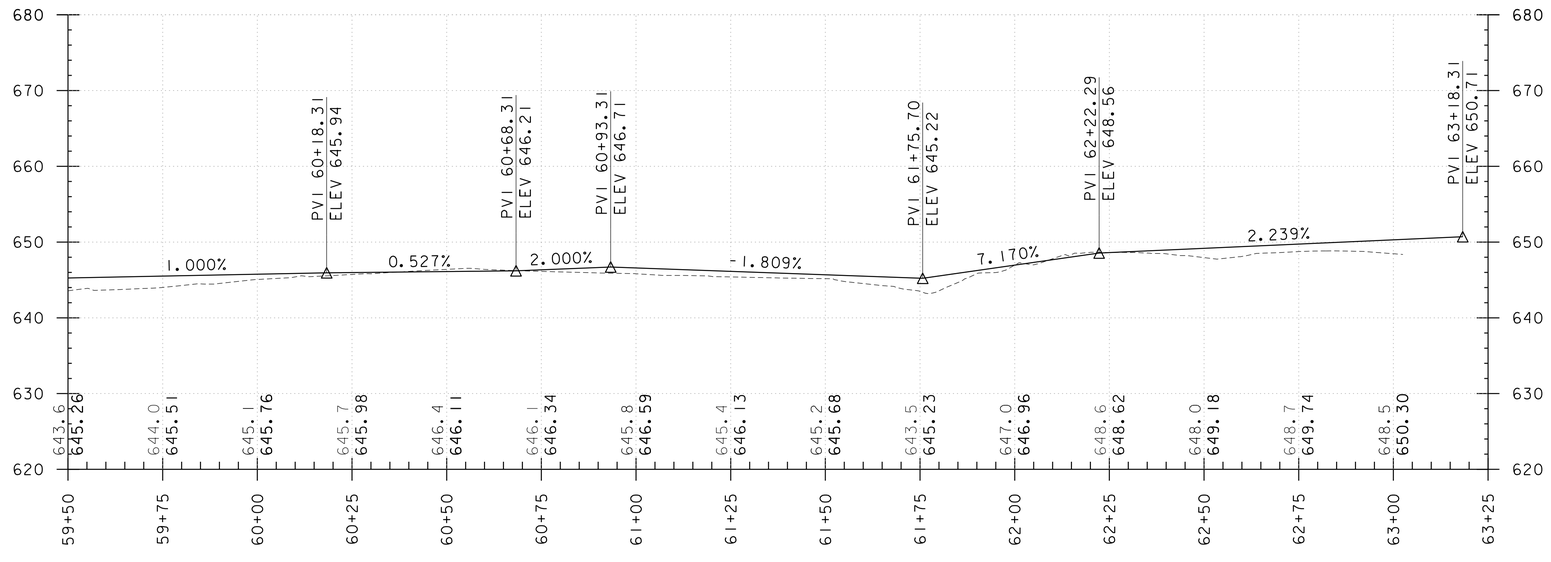
Drawing No.	Sheet	Revision
	33 of 57	0





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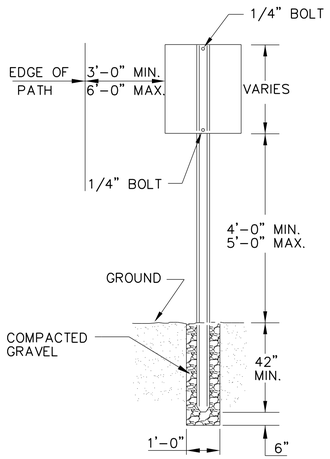
Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
R.O.W. PLAN SHEET 13

Project No.	Scale	
195311563	1" = 20'	
Drawing No.	Sheet	Revision
	34 of 57	0



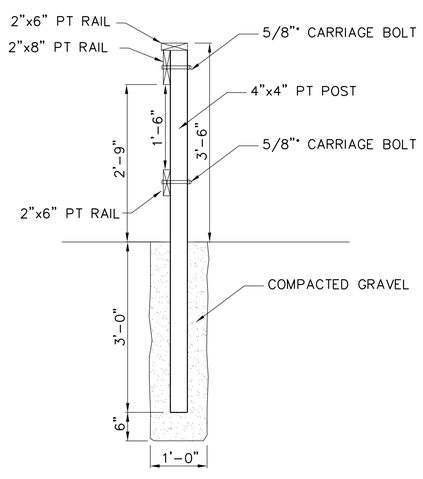
SIGN DETAILS

SIGN NOTES:

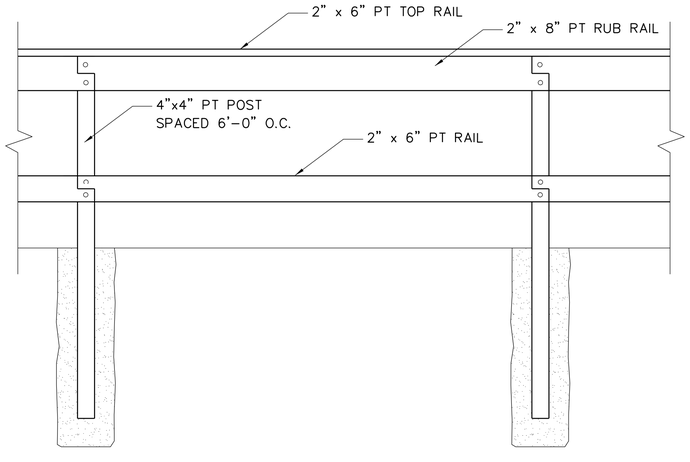
1. ALL SIGN DESIGNATIONS REFER TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD); 2009 EDITION OR VTRANS STANDARD E-131B. SIGN MATERIAL, RETROREFLECTIVITY, COLOR, SIZE, ETC; PER MUTCD.

2. SIGN LOCATIONS TO BE AS NOTED ON THE PLANS. UNLESS OTHERWISE NOTED ON THE PLANS, SIGNS AND POSTS TO BE PROVIDED AND INSTALLED BY CVTA IN ACCORDANCE WITH VTRANS PEDESTRIAN AND BICYCLE FACILITY PLANNING AND DESIGN MANUAL AND VTRANS STANDARD DRAWING A-79.

3. ALL SIGN DESIGNATIONS REFER TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD); 2009 EDITION OR VTRANS STANDARDS E-131B. SIGN MATERIAL, RETROREFLECTIVITY, COLOR, SIZE, ETC; PER MUTCD.



TIMBER RAIL TYPICAL SECTION



TIMBER RAIL – ELEVATION

NOTES:
1. SEE SHART SPAN BRIDGE NOTES FOR FURTHER DETAILS ON RAILS CONTIGUOUS WITH BRIDGES

2. ALL WORK SHOWN ON TIMBER RAIL DETAILS TO BE PAID AS SPECIAL PROVISON (TIMER RAIL)

3. TIMBER RAIL TO BE CCA PRESSURE TREATED TYPE IV PER VTRANS 726.01.

PHASE 2,3

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File Name: typ.dgn	PZA	GAS	ISM	7/26/2018
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

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Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
CONSTRUCTION DETAILS

Project No.	Scale	
195311563	AS SHOWN	
Drawing No.	Sheet	Revision
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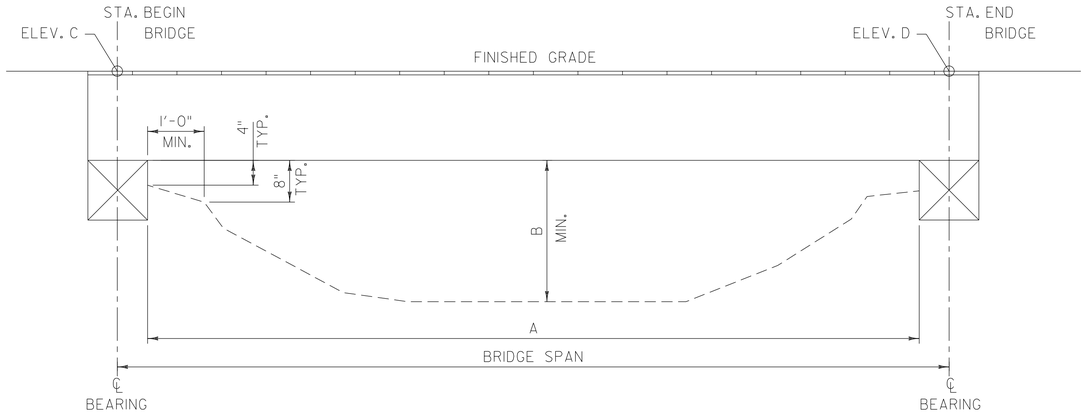
SHORT SPAN BRIDGE NOTES (PHASE 2):

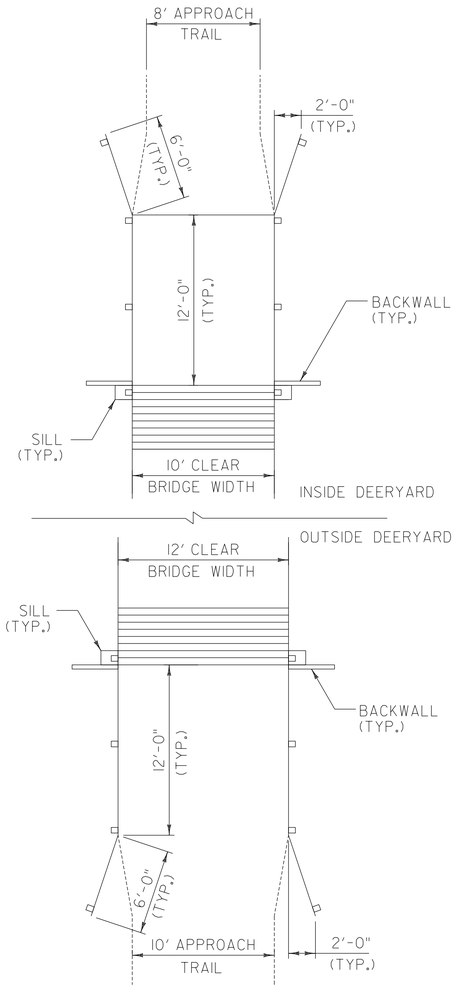
1. BRIDGE DESIGN LIVE LOAD IS 90 PSF IN ACCORDANCE WITH AASHTO LRFD GUIDE SPECIFICATIONS FOR PEDESTRIAN BRIDGES. BRIDGES ARE NOT DESIGNED FOR ANY VEHICLE LOADS.
2. LUMBER SHALL BE STANDARD DIMENSIONAL LUMBER, PRESERVATIVE TREATED IN ACCORDANCE WITH VAOT SPECIFICATION SUBSECTION 726.01, TYPE IV. LUMBER SHALL BE #2 GRADE OR BETTER SOUTHERN PINE.
3. THE PROFILE GRADE AND BRIDGE SPANS WERE SPECIFIED TO PROVIDE A MINIMUM 1-FOOT CLEARANCE BETWEEN THE BOTTOM OF THE BRIDGE STRINGERS AND THE BOTTOM OF THE CHANNEL AS MEASURED AT THE UPSTREAM FACE OF THE BRIDGE. FIELD CHANGES OF THE SPECIFIED BRIDGE SPAN SHALL BE PERMITTED, HOWEVER THE NEW SPAN SHALL BE CHOSEN FROM ONE OF THOSE SHOWN IN THE BRIDGE STRINGER OPTION TABLE ON SHEET 33.
4. THE HEIGHT OF RAILING ATTACHED TO THE SHORT SPAN BRIDGES SHALL BE 54-INCHES AS MEASURED FROM THE BRIDGE DECK. APPROACH RAILS THAT ARE CONTIGUOUS WITH BRIDGE MOUNTED RAIL SHALL ALSO BE 54-INCHES TALL AS MEASURED FROM THE TRAIL SURFACE AND SHALL BE EMBEDDED INTO THE GROUND A DEPTH OF 42-INCHES. APPROACH RAILS DO NOT REQUIRE USE OF WIRE FABRIC.
5. ALL BOLTS, WASHERS, NUTS AND MISCELLANEOUS METAL HARDWARE SHALL BE ASTM A307 HOT DIPPED GALVANIZED.
6. FASTENERS SHALL BE HOT DIPPED GALVANIZED RING SHANK NAILS OR WOOD SCREWS. DRIFT PINS FOR SILL SHALL BE DEFORMED NO. 6 REINFORCING BARS MEETING ASTM A615.
7. APPLY GLUE BETWEEN EACH STRINGER LAMINATION USING A WATERPROOF EXTERIOR ADHESIVE, COMPATIBLE WITH THE PRESERVATION TREATMENT SUCH AS PL-500 BY CONTECH OR APPROVED EQUAL. APPLY 3/8" CONTINUOUS BEAD @ 1 1/2" O.C.
8. MUD SILLS SHALL BEAR ON NATIVE SOIL OR LEDGE ROCK FREE FROM COMPRESSIBLE ORGANIC MATERIAL AND CAPABLE OF SUPPORTING THE BRIDGE UNDER FULL LOAD. PROVIDE UNIFORM BEARING UNDER ENTIRE LENGTH OF SILL. OTHER FOUNDATION CONDITIONS REQUIRE APPROVAL BY THE ENGINEER.
9. STRINGERS WITH CAMBER SHALL BE POSITIONED SO THAT CAMBER IS UP AND KNOTS NEAR THE EDGE WILL BE IN THE TOP HALF OF THE STRINGERS.
10. DECK PLANKS SHALL BE LAID HEART SIDE DOWN.



BRIDGE TYPICAL CROSS SECTION (FACING DOWNSTREAM)

ALL DIMENSIONS SHOWN IN DECIMAL FEET							
BRIDGE NO.	SPAN (ft)	STATION BEGIN	STATION END	A	B	C	D
1	14	24+19	24+33	13.33	1.00	604.86	605.15
2	16	35+21	35+37	15.33	1.67	671.18	671.50
3	16	43+37	43+53	15.33	1.10	656.46	656.89
4	14	44+63	44+77	13.33	1.31	650.85	650.88
5	16	45+10	45+26	15.33	3.00	651.02	651.18

TABLE OF STREAM CROSSING DIMENSIONS AND ELEVATIONS



BRIDGE TYPICAL APPROACH RAILING PLAN

SCALE: 3/16" = 1'-0"

PHASE 2

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Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT (2)

Title
SHORT SPAN BRIDGE DETAILS & NOTES

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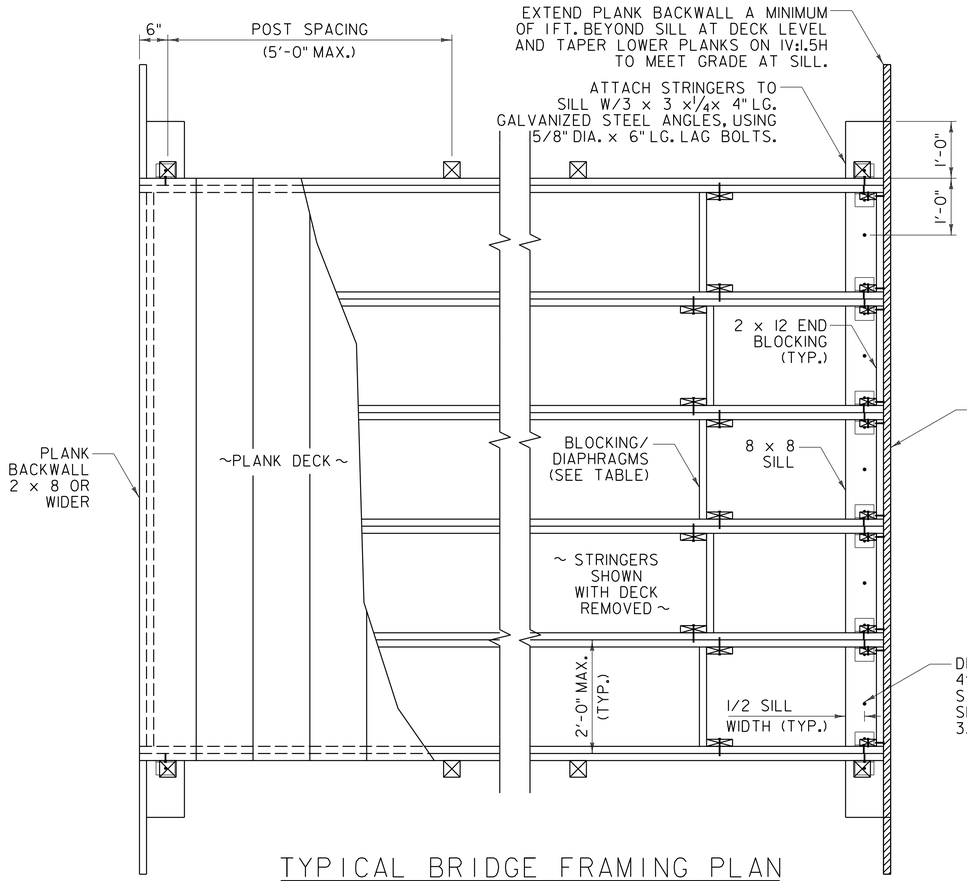
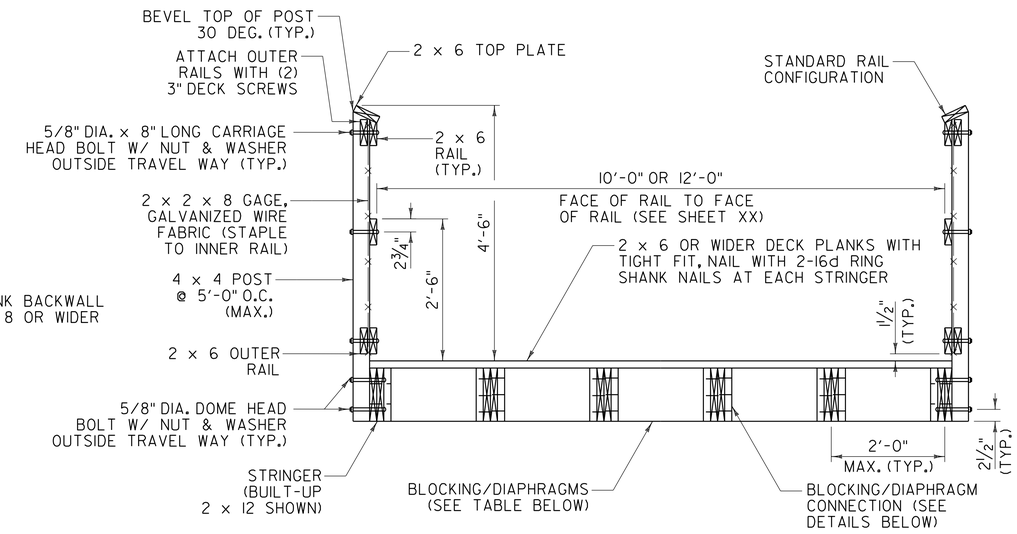


TYPICAL BRIDGE FRAMING PLAN

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

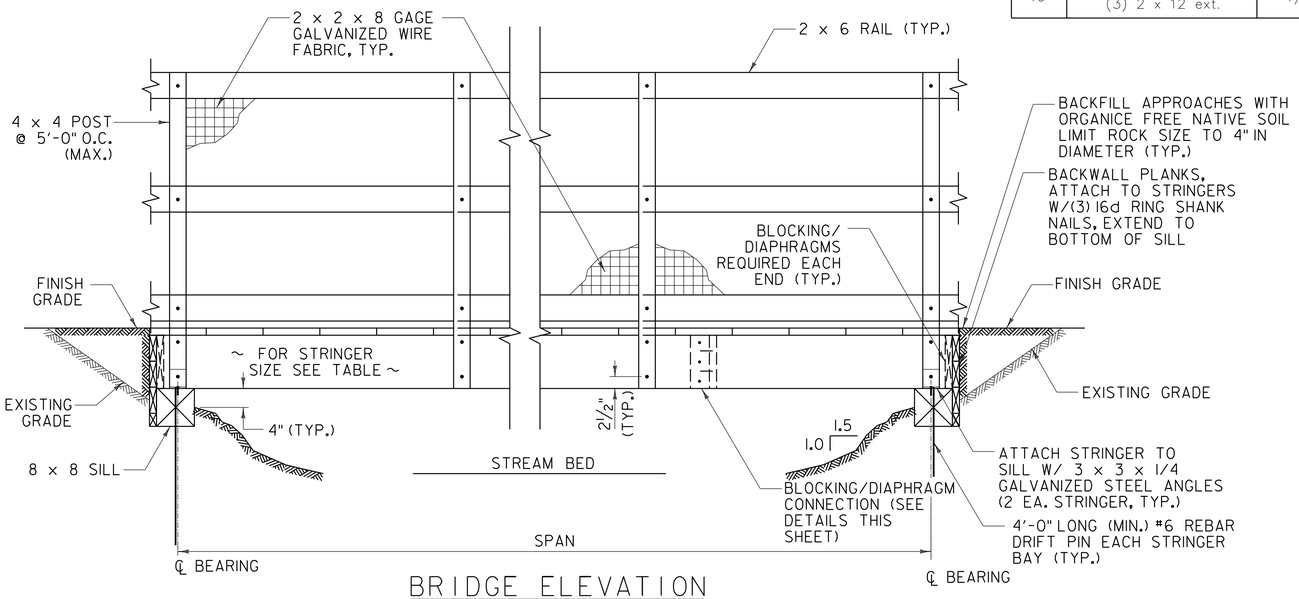


TYPICAL BRIDGE SECTION

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

BRIDGE STRINGER OPTION TABLE

SPAN (FT.)	DIMENSION LUMBER ** 2 FT. SPACING	BLK. PTS.	BLK. REQ'D.
14	(3) 2 x 12 int. (3) 2 x 12 ext.	1/2	2 x 12
16	(4) 2 x 12 int. (3) 2 x 12 ext.	1/2	2 x 12



BRIDGE ELEVATION

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

2 x 12 BLOCKING DETAILS

NTS

AFTER GLUING NAIL STRINGERS TOGETHER AS FOLLOWS:

2 x 12 NAILING DETAILS

NTS

RAIL SPLICE DETAIL

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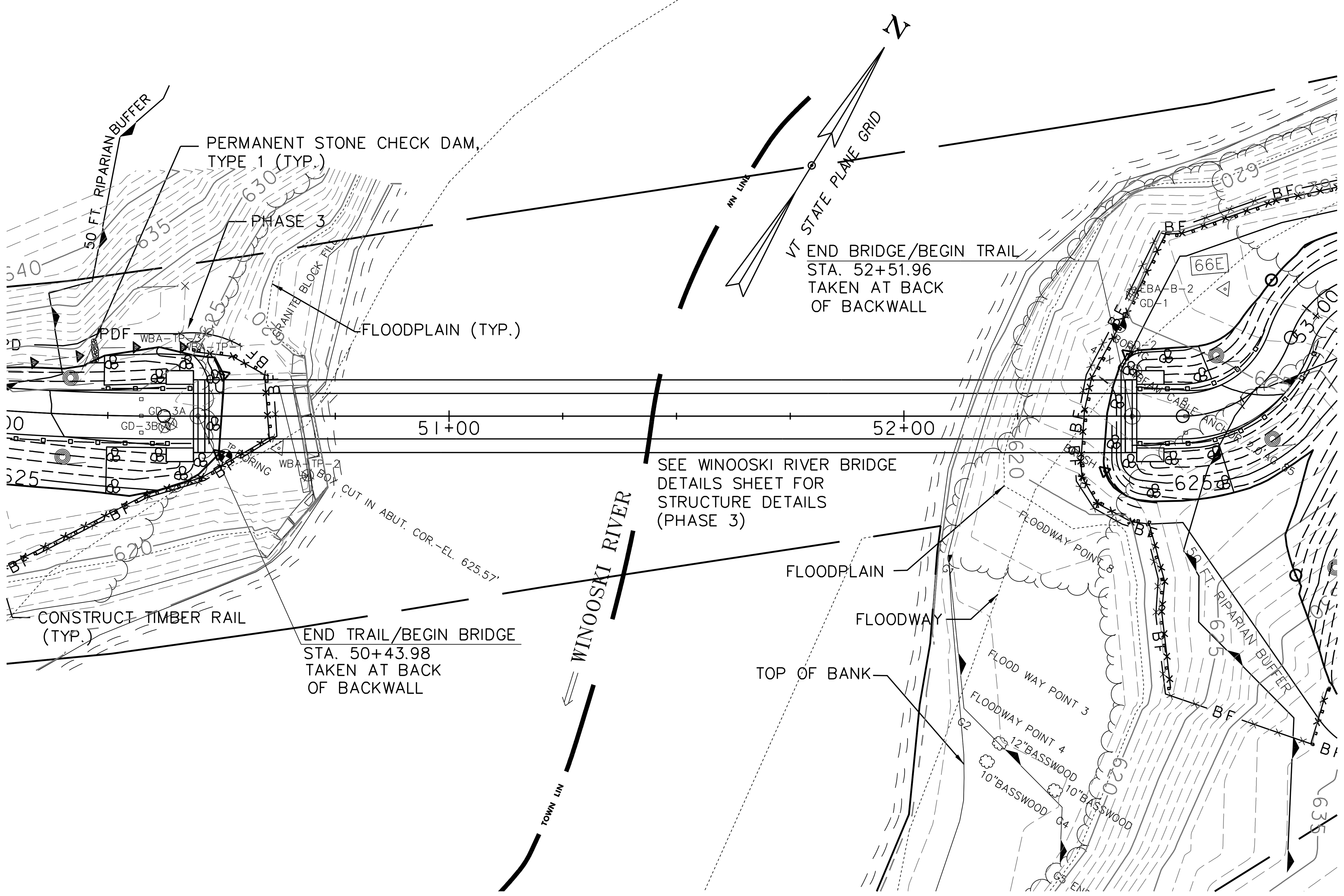


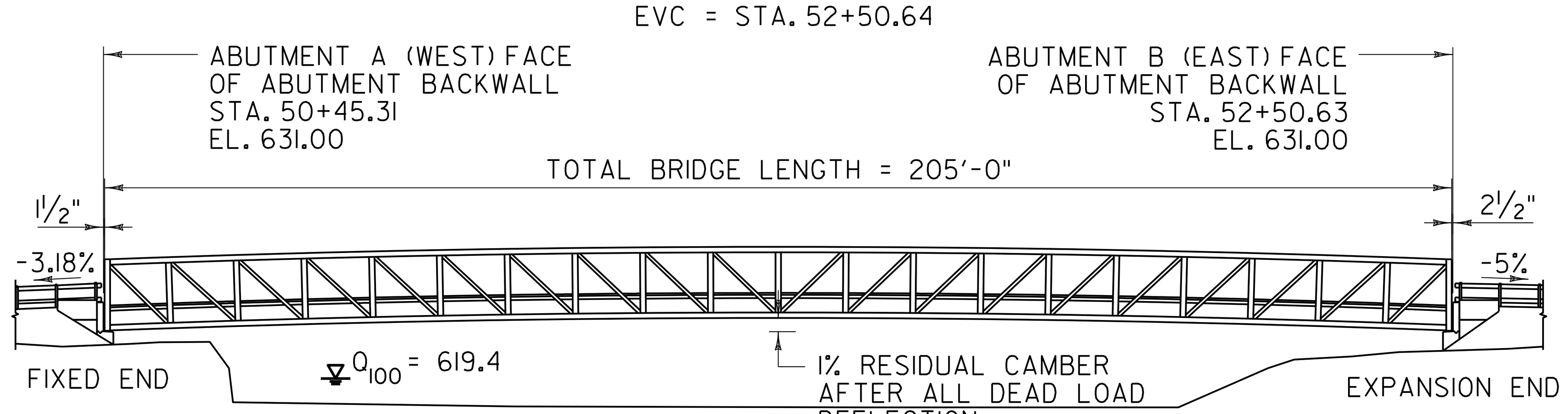
GENERAL NOTES (WINOOSKI RIVER BRIDGE) (PHASE 3):

1. DESIGN LOADING: 90 PSF AASHTO LRFD PEDESTRIAN LOADING
2. SPECIFICATIONS: 2017 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, EIGHTH EDITION WITH INTERIM SPECIFICATIONS
   VT PEDESTRIAN AND BICYCLE FACILITY PLANNING AND DESIGN MANUAL
   2010 VTRANS STRUCTURES DESIGN MANUAL
   2011 VTRANS STANDARD SPECIFICATIONS FOR CONSTRUCTION
3. SUPERSTRUCTURE: PREFABRICATED STEEL TRUSS-STYLE PEDESTRIAN BRIDGE
4. SUBSTRUCTURE: CAST-IN-PLACE REINFORCED CONCRETE ABUTMENTS ON MICROPILES
   GALVANIZED GABION BASKET WING WALLS
5. MATERIALS: CONCRETE: ABUTMENT / PILE CAP: CLASS B, F'c=3,500 PSI
   REINFORCING STEEL: ASTM A615/A615M, GRADE 60, Fy=60,000 PSI
6. CONTRACTOR SHALL TAKE PRECAUTIONS TO PROTECT THE RIVER FROM FALLING DEBRIS DURING ALL CONSTRUCTION OPERATIONS.
7. THE PROJECT GEOTECHNICAL REPORT TITLED: GEOTECHNICAL ENGINEERING RECOMMENDATIONS – FINAL DESIGN, CROSS VERMONT TRAIL – MONTPELIER TO EAST MONTPELIER, VT, PEDESTRIAN BRIDGE OVER WINOOSKI RIVER BY GEODESIGN, INC. FILE NO. 889-07.1 HAS BEEN INCLUDED IN THE BID DOCUMENTS.
8. GEOTECHNICAL INFORMATION FURNISHED OR REFERRED TO IN THIS PLAN SET IS FOR THE USE OF THE BIDDERS AND THE CONTRACTOR. THE CVTA SHALL NOT BE RESPONSIBLE FOR THE BIDDERS' OR CONTRACTORS' INTERPRETATIONS OF, OR CONCLUSIONS DRAWN FROM, THE GEOTECHNICAL INFORMATION. THE BORING LOGS, TEST PIT LOGS AND PROBE DATA CONTAINED IN THE REPORT PRESENT FACTUAL AND INTERPRETIVE SUBSURFACE INFORMATION COLLECTED AT DISCRETE LOCATIONS. DATA PROVIDED MAY NOT BE REPRESENTATIVE OF THE SUBSURFACE CONDITIONS BETWEEN THE EXPLORATION LOCATIONS.
9. GALVANIZED STEEL PLATES AT ABUTMENT JOINTS SHALL BE 11 FEET 10 INCHES LONG, 1 INCH NARROWER ON EACH SIDE THAN THE CLEAR OPENING BETWEEN CURBS. BEVELED EDGES, PREDRILLED HOLES AND ATTACHMENT HARDWARE SHALL BE INCIDENTAL TO ITEM 900.645 SPECIAL PROVISION (PREFABRICATED MULTI-MODAL BRIDGES).
10. FURNISH AND INSTALL 1/16" INCH THICK NEOPRENE RUBBER STRIPS BETWEEN THE WOOD DECK AND THE TOPS OF ALL STRINGERS AND ATTACHMENT ANGLES. PAYMENT FOR RUBBER STRIPS SHALL BE INCIDENTAL TO ITEM 900.645 SPECIAL PROVISION (PREFABRICATED MULTI-MODAL BRIDGES).
11. ALL DIMENSIONS SHOWN IN THE PLANS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 68 DEGREES FAHRENHEIT.

WINOOSKI RIVER BRIDGE PLAN

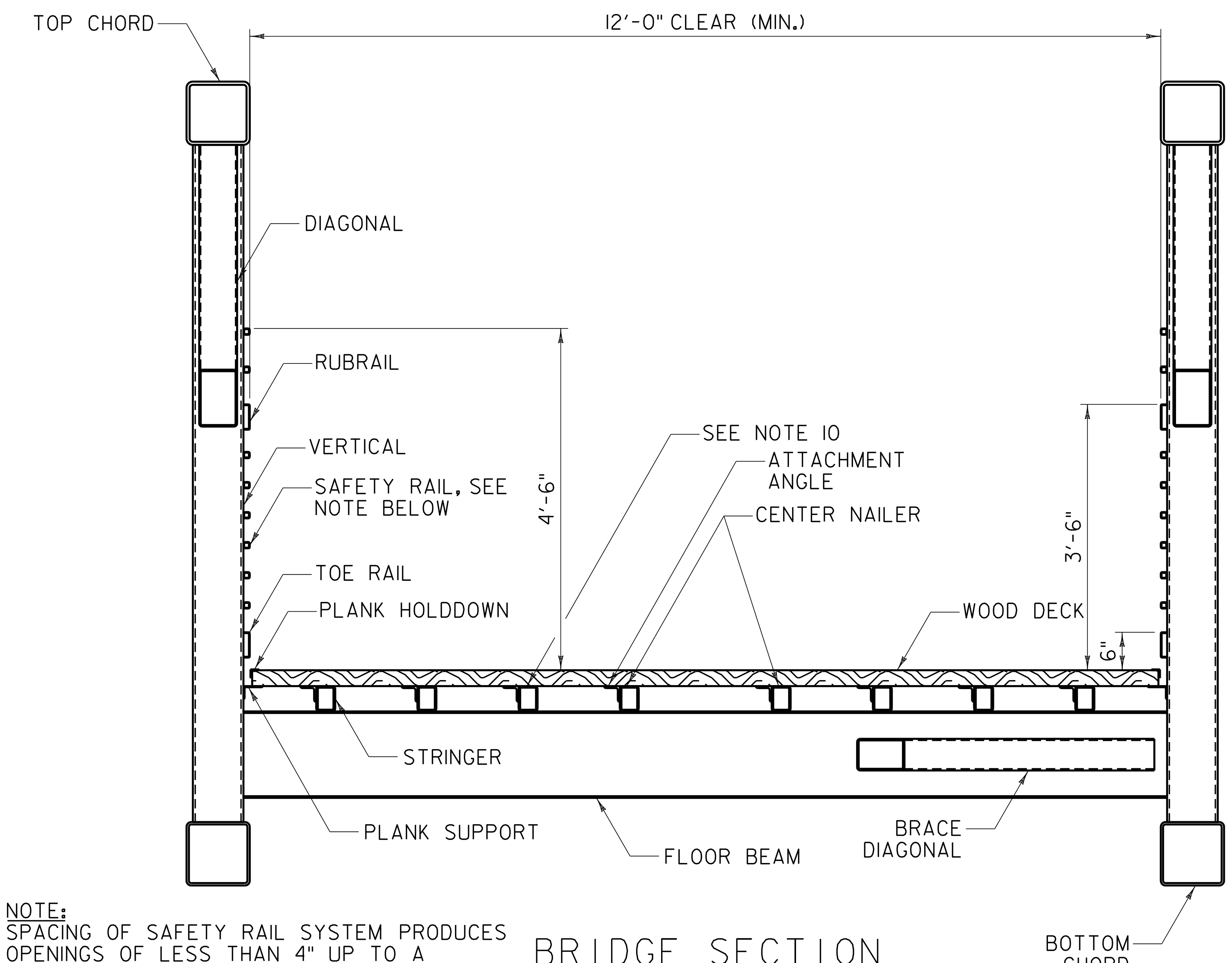
SCALE: 1" = 20'-0"

VERTICAL CURVE DATA
PVI STA. = 51+47.97
PVI EL. 635.09'
BVC = STA. 50+45.3
EVC = STA. 52+50.64



WINOOSKI RIVER BRIDGE ELEVATION

SCALE: 1" = 20'-0"



NOTE:
SPACING OF SAFETY RAIL SYSTEM PRODUCES OPENINGS OF LESS THAN 4" UP TO A MINIMUM HEIGHT OF 42" ABOVE THE DECK AND OPENINGS OF 8" OR LESS ABOVE 42" FROM DECK, UP TO A HEIGHT OF 54"

BRIDGE SECTION

SCALE: ¾" = 1'-0"

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BRIDGE PLAN AND ELEVATION

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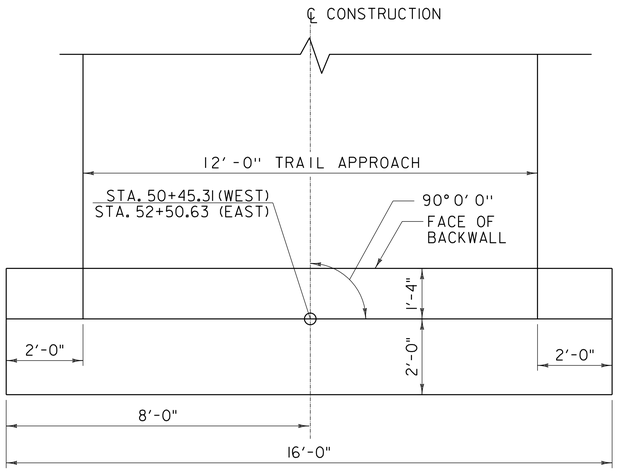
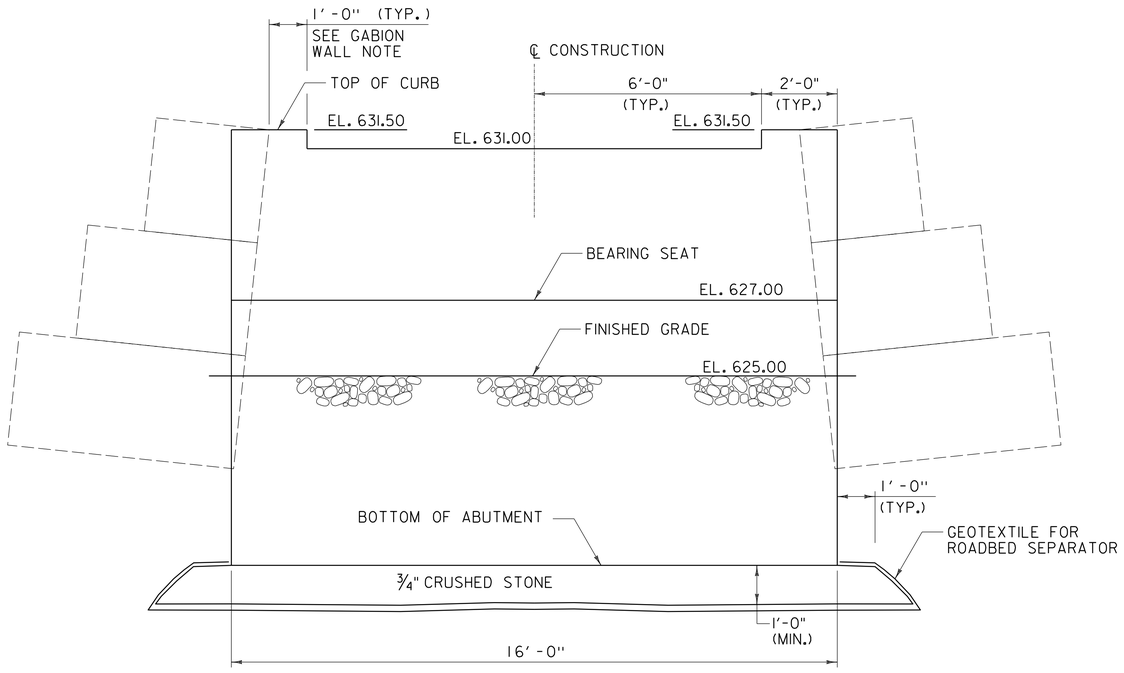


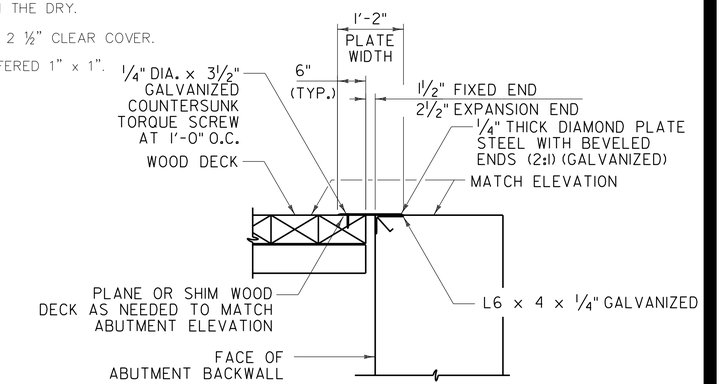
ABUTMENT PLAN
SCALE: ½" = 1'-0"



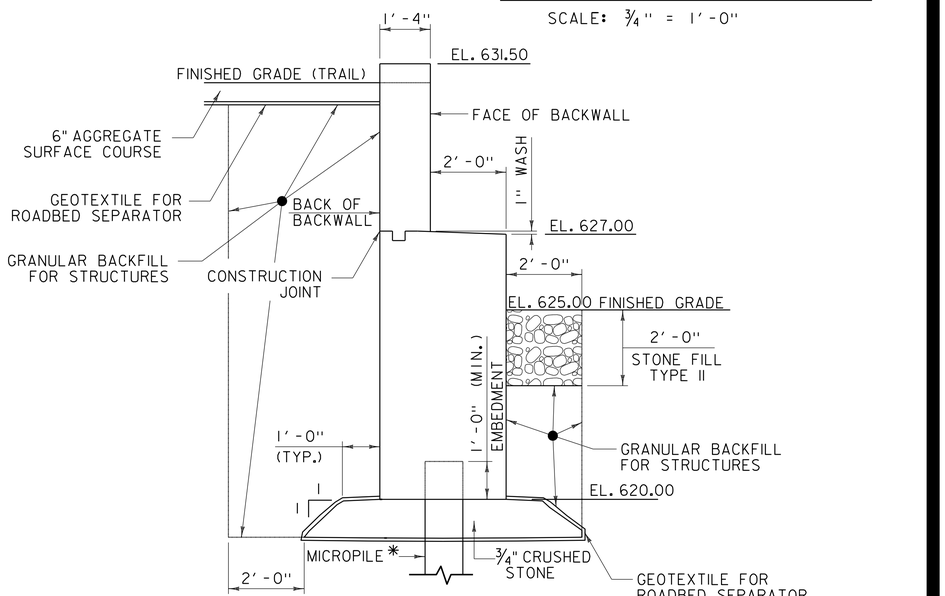
ABUTMENT ELEVATION
SCALE: ½" = 1'-0"

ABUTMENT AND DRILLED MICROPILE NOTES (PHASE 3):

1. DRILLED MICROPILE SHALL INCLUDE ALL COSTS FOR FURNISHING OF ALL DESIGN, MATERIALS, EQUIPMENT, LABOR AND SUPERVISION REQUIRED FOR DESIGN, DETAILING, INSTALLATION AND PROOF TESTING OF MICROPILES AND PILE TOP ATTACHMENTS. DETAILED SHOP DRAWINGS AND DESIGN CALCULATIONS SHALL BE SUBMITTED FOR APPROVAL BY THE ENGINEER SHOWING THE MICROPILE SIZE, SPACING, CLEARANCE, EMBEDMENT, SPLICES AND TOTAL ANTICIPATED LENGTH.
2. STEEL REINFORCED CONCRETE ABUTMENTS SHALL INCLUDE ALL COSTS FOR FURNISHING OF ALL DESIGN, MATERIALS, EQUIPMENT, LABOR AND SUPERVISION REQUIRED FOR DESIGN, DETAILING AND INSTALLATION OF CONCRETE ABUTMENTS. DRAWINGS AND CALCULATIONS SHALL BE SUBMITTED FOR APPROVAL BY THE ENGINEER SHOWING THE ABUTMENT REINFORCING STEEL SIZE, SPACING AND SPLICE LENGTHS ALONG WITH ANY MODIFICATIONS TO THE MASONRY DIMENSIONS NECESSARY TO INSTALL THE MICROPILES AND FURNISHED SUPERSTRUCTURE.
3. CONTRACTOR'S ENGINEER SHALL WORK CLOSELY WITH THE BRIDGE MANUFACTURER TO DETERMINE FOUNDATION LOADINGS (BOTH AXIAL AND LATERAL) AND TOLERANCE OF THE BRIDGE FOR TOTAL AND DIFFERENTIAL SETTLEMENT PRIOR TO COMMENCING DESIGN WORK ON THE MICROPILES OR CONCRETE ABUTMENTS. CONTRACTOR'S ENGINEER IS REFERRED TO THE PROJECT GEOTECHNICAL REPORT FOR DESIGN RECOMMENDATIONS.
4. ALL DRAWINGS AND CALCULATIONS FOR THE DRILLED MICROPILES AND STEEL REINFORCED CONCRETE ABUTMENTS SHALL FOLLOW AASHTO LRFD METHODOLOGY AND BE PREPARED AND STAMPED BY A PROFESSIONAL ENGINEER LICENSED BY THE STATE OF VERMONT WITH PILE EXPERTISE. ALL WORK SHALL BE IN ACCORDANCE WITH THE SPECIAL PROVISION TITLED: DRILLED MICROPILES AND CONCRETE ABUTMENT.
5. BRIDGE ABUTMENT DIMENSIONS HAVE BEEN PROVIDED AND ARE TO BE CONSIDERED APPROXIMATE. THESE DIMENSIONS INCLUDE THOSE FOR THE OVERALL ABUTMENT WIDTH, BEARING SEAT WIDTH AND BACKWALL HEIGHT. THESE DIMENSIONS SHALL BE VERIFIED OR ADJUSTED BY THE CONTRACTOR'S ENGINEER DURING THE SHOP SUBMITTAL PROCESS TO ACCOMMODATE THE CONTRACTOR'S CHOSEN SUPERSTRUCTURE MANUFACTURER'S DESIGN AND CLEARANCE REQUIREMENTS.
6. ANCHOR BOLTS FOR BEARING ASSEMBLIES SHALL BE LOCATED PER THE BRIDGE MANUFACTURER'S RECOMMENDATION.
7. CRUSHED STONE FOR USE AS WALL BEDDING SHALL MEET THE MATERIAL REQUIREMENTS FOR 704.02B AND WILL BE PAID FOR AS 204.30 GRANULAR BACKFILL FOR STRUCTURES.
8. THE BEARING SEAT SHALL HAVE A 1" WASH.
9. ALL SUBSTRUCTURE CONCRETE SHALL BE PLACED IN THE DRY.
10. ALL REINFORCING STEEL SHALL HAVE A MINIMUM OF 2 ½" CLEAR COVER.
11. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" x 1".



ABUTMENT JOINT DETAIL
SCALE: ¾" = 1'-0"



* SCHEMATIC ONLY, NUMBER AND LOCATIONS OF MICROPILES TO BE DETERMINED BY CONTRACTOR'S DESIGNER

ABUTMENT SECTION
SCALE: ½" = 1'-0"

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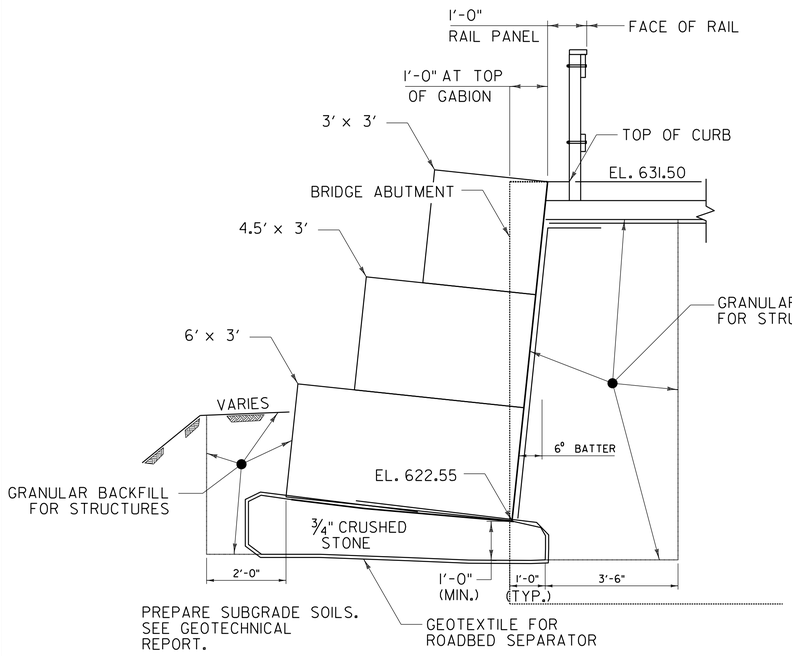
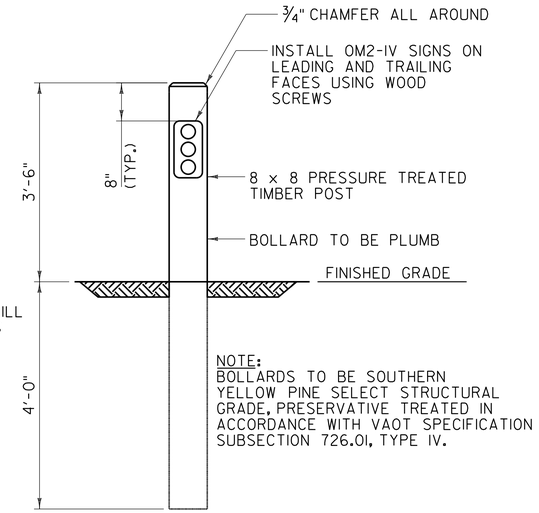
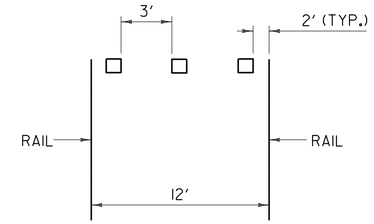


GABION RETAINING WALL SECTION

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



BOLLARD DETAIL



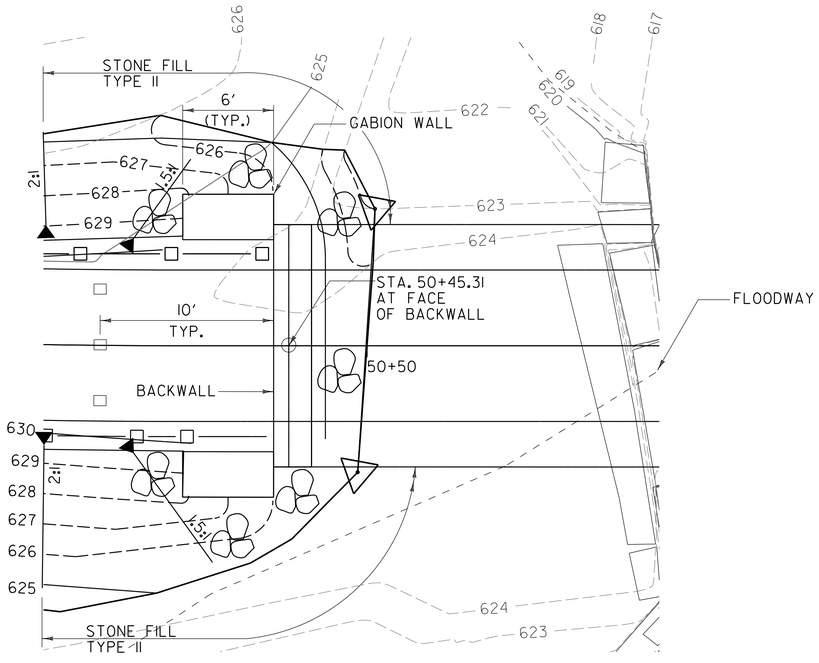
BOLLARD PLAN

GABION WALL NOTES (PHASE 3):

1. THE GABION RETAINING WALL SHALL INCLUDE ALL WORK OF FURNISHING AND INSTALLING WIRE MESH GABION BASKETS AND FILL MATERIAL. ALL WORK SHALL BE IN ACCORDANCE WITH THE SPECIAL PROVISION TITLED: GABION RETAINING WALL.
2. GABION BASKETS SHALL BE BATTERED AT 6 DEGREES SUCH THAT THE REAR OF THE TOP BASKET SHALL BE LOCATED 1-FT BEHIND THE FACE OF RAIL.
3. GABION WALL LAYOUT PRESUMES THE USE OF 3-FT TALL X 6-FT LONG BASKETS. IF ACTUAL BASKETS DIFFER FROM THESE DIMENSIONS, LAYOUT AND GRADING SHALL BE ADJUSTED SUCH THAT 1-FT WIDE RAIL PANEL IS MAINTAINED AND NO FILL IS ADDED WITHIN THE FLOODWAY LIMITS.
4. CRUSHED STONE FOR USE AS WALL BEDDING SHALL MEET THE MATERIAL REQUIREMENTS FOR 704.02B AND WILL BE PAID FOR AS 204.30 GRANULAR BACKFILL FOR STRUCTURES.

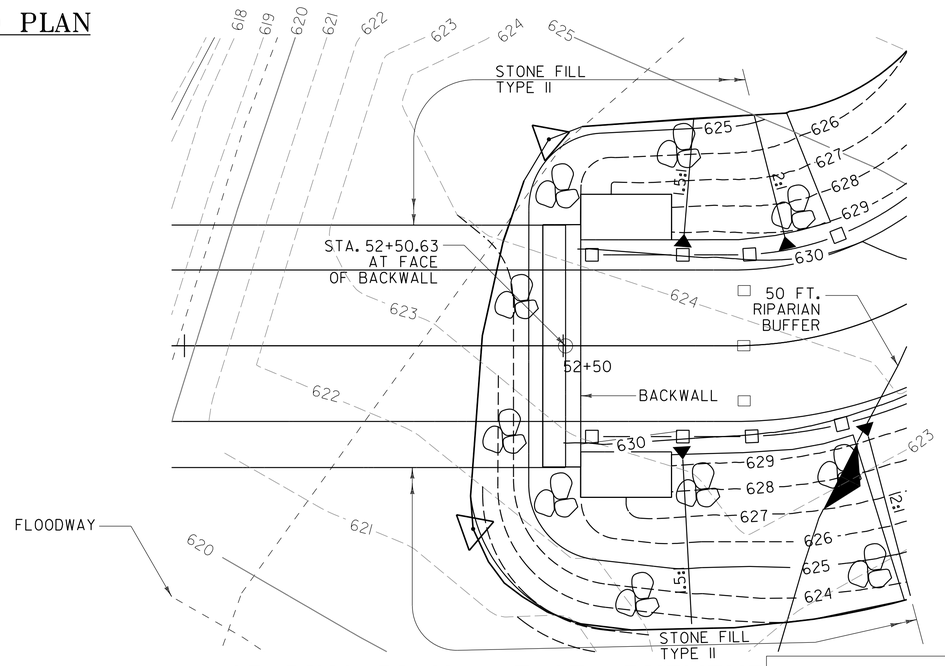
SUPERSTRUCTURE NOTES (PHASE 3):

1. PREFABRICATED MULTI-MODAL BRIDGE SHALL INCLUDE ALL COSTS OF DESIGN, DRAWINGS, FABRICATION, HANDLING, DELIVERY AND ERECTION OF THE BRIDGE SUPERSTRUCTURE AND ANY INCIDENTALS NECESSARY TO FURNISH THE PRODUCT COMPLETE IN PLACE, INCLUDING BEARING ASSEMBLIES AND ANCHOR BOLTS. DETAILED SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL BY THE ENGINEER SHOWING MEMBER SIZES AND LOCATION AND BEARING DETAILS AND SHALL INCLUDE DESIGN CALCULATIONS. DRAWINGS AND CALCULATIONS SHALL BE PREPARED AND STAMPED BY A PROFESSIONAL ENGINEER LICENSED BY THE STATE OF VERMONT. ALL WORK SHALL BE IN ACCORDANCE WITH THE SUPPLEMENTAL SPECIFICATION 545.20 PREFABRICATED MULTI-MODAL BRIDGE.
2. BRIDGE SECTION SHOWN IS SCHEMATIC FOR MEMBER TYPES AND SIZES. ALL DIMENSIONS SHOWN ON THE PLANS SHALL BE USED IN THE FINAL PRODUCT UNLESS OTHERWISE NOTED OR DIRECTED BY THE ENGINEER.
3. THE BRIDGE SPAN LENGTH SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO BRIDGE FABRICATION TO ENSURE PROPER FIT OF NEW SUPERSTRUCTURE ON THE ABUTMENTS.
4. BRIDGE SHALL RETAIN 1% RESIDUAL CAMBER AFTER ALL DEAD LOAD DEFLECTION.



GRADING PLAN - WEST ABUTMENT

SCALE: 1" = 5'-0"



GRADING PLAN - EAST ABUTMENT

SCALE: 1" = 5'-0"

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EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT (2)

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BRIDGE DETAILS

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FINAL HYDRAULICS REPORT

HYDRAULIC DATA

1. DRAINAGE AREA N/A
2. CHARACTER OF TERRAIN Hilly to mountainous
3. CHARACTER AND TYPE OF STREAM Winooski River
4. NATURE OF STREAMBED Sandy Gravel, Some Cobbles & Small Boulders

Q2.33= N/A Q50= N/A
Q10= N/A Q100= N/A
Q25= N/A Q500= N/A

5. DATE OF FLOOD OF RECORD Unknown
6. WATER SURFACE ELEVATION Unknown ESTIMATED DISCHARGE Unknown
7. NATURAL STREAM VELOCITY @ Q N/A
8. ICE CONDITIONS Moderate DEBRIS Moderate
9. DOES THE STREAM REACH MAX. HIGHWATER ELEVATION RAPIDLY? No
10. IS ORDINARY RISE RAPID? No
11. IS STAGE AFFECTED BY UPSTREAM/DOWNSTREAM CONDITIONS? Yes
    IF YES, DESCRIBE: Dams located approximately 2600 ft upstream and 900 ft downstream may affect stage.
12. WATERSHED STORAGE ____ HEADWATERS____ UNIFORM THROUGHOUT WATERSHED____
    IMMEDIATELY ABOVE SITE ____

EXISTING STRUCTURE

1. STRUCTURE TYPE: None YEAR BUILT: ____
2. CLEAR SPAN (NORMAL TO STREAM): ____
3. VERTICAL CLEARANCE ABOVE STREAMBED: ____
4. WATERWAY OF FULL OPENING: ____
5. DISPOSITION OF STRUCTURE: ____
6. TYPE OF MATERIAL UNDER SUBSTRUCTURE: See Boring Information
7. WATER SURFACE ELEVATION @ Q2.33= – VELOCITY= –
   Q10= 616.6 ft = N/A
   Q25= – = –
   Q50= 618.3 ft = N/A
   Q100= 619.4 ft = N/A
8. LONG TERM STREAM BED CHANGES: N/A
9. IS THE ROADWAY OVERTOPPED BELOW THE Q100? – FREQUENCY: –
10. RELIEF ELEVATION: 625 DISCHARGE OVER ROAD @Q100: –
11. UPSTREAM STRUCTURE: TOWN: East Montpelier DISTANCE: 1.9 M
    HIGHWAY NO.: VT. Route 2 STRUCTURE NO.: Unknown
    STRUCTURE TYPE: Bridge
    CLEAR SPAN: Unknown CLEAR HEIGHT: Unknown
    YEAR BUILT: Unknown FULL WATERWAY: Unknown
12. DOWNSTREAM STRUCTURE: TOWN: Berlin/Montpelier DISTANCE: 1.1 M
    HIGHWAY NO.: VT. Route 2 STRUCTURE NO.: Unknown
    STRUCTURE TYPE: Bridge
    CLEAR SPAN: Unknown CLEAR HEIGHT: Unknown
    YEAR BUILT: Unknown FULL WATERWAY: Unknown

PROPOSED STRUCTURE

STRUCTURE GEOMETRY:

1. STRUCTURE TYPE Single Span Steel Truss Pedestrian Bridge
2. CLEAR SPAN LENGTH(S): 205 ft
3. VERTICAL CLEARANCE ABOVE STREAMBED: 13 ft ± min.
4. ARE PROVISIONS TO BE MADE FOR PUBLIC UTILITIES? No

HYDRAULIC DATA:

1. WATERWAY AREA OF FULL OPENING (NORMAL TO STREAM): –
2. WATER SURFACE ELEVATION @ Q 2.33 = – VELOCITY= –
   Q 10 = 616.6 ft = N/A
   Q 25 = – = –
   Q 50 = 618.3 ft = N/A
   Q 100 = 619.4 ft = N/A
3. IS THE ROADWAY OVERTOPPED BELOW THE Q100? No FREQUENCY: Above Q100
4. RELIEF ELEVATION: 625 DISCHARGE OVER ROAD @Q100: None
5. AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 627 ft
6. VERTICAL CLEARANCE @Q 50 = 8.7 ft
7. SCOUR: None. All substructures located outside flood plain.
8. REQUIRED CHANNEL PROTECTION: None

PERMIT INFORMATION

AVERAGE DAILY FLOW: N/A
ORDINARY LOW WATER: N/A DEPTH: N/A
ORDINARY HIGH WATER: N/A DEPTH: N/A

ADDITIONAL COMMENTS

Bridge is part of a LTF project with no VTrans maintenance responsibility and solely for bicycle and pedestrian use. No recreational or service vehicles allowed. Access positively blocked by permanent bollards. For these reasons, a complete PI sheet is not being provided. Rather, the information that is readily available has been included here for documentation purposes. No hydrology or hydraulic study has been completed. WSEL's taken from 2013 FEMA FIS for Washington County. No load rating completed – vehicular access prohibited.

N/A = Not available
TBD = To be determined

DESIGN CRITERIA:

1. DESIGN LIVE LOAD AASHTO Pedestrian
2. DESIGN SPAN 205 ft
3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL – ON LEDGE –
4. ALLOWABLE LOAD FOR PILING TBD TYPE Steel Micropile ESTIMATED LENGTH TBD
5. STRUCTURAL STEEL AASHTO GRADE See Special Provision
6. REINFORCING STEEL GRADE 60 ksi
7. CONCRETE, HIGH PERFORMANCE CLASS B f' : 3,500 psi

TRAFFIC MAINTENANCE:

1. IS TRAFFIC TO BE MAINTAINED? No IF YES, ON EXISTING STRUCTURE ____ OR ON TEMPORARY BRIDGE ____
2. TEMPORARY BRIDGE REQUIREMENTS: ONE OR TWO WAY None TRAFFIC CONTROL SIGNALS REQUIRED No
   MINIMUM CLEAR SPAN (NORMAL TO STREAM): – VERTICAL CLEARANCE ABOVE STREAMBED: –
   WATERWAY OF FULL OPENING: –
   ARE SIDEWALKS REQUIRED? No IF SO, ON WHAT SIDE? ____
   STRUCTURE TYPE: None

PHASE 3

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Consultants

Legend

Notes

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD

File Name: struct det.dgn	LRB	GAB	MJC	7/26/2018
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

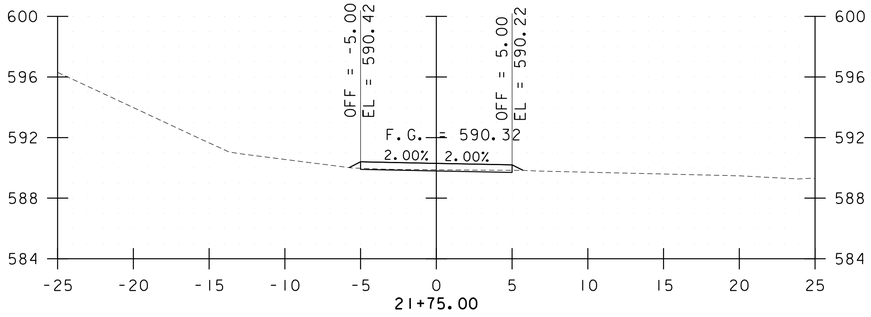
Permit-Seal

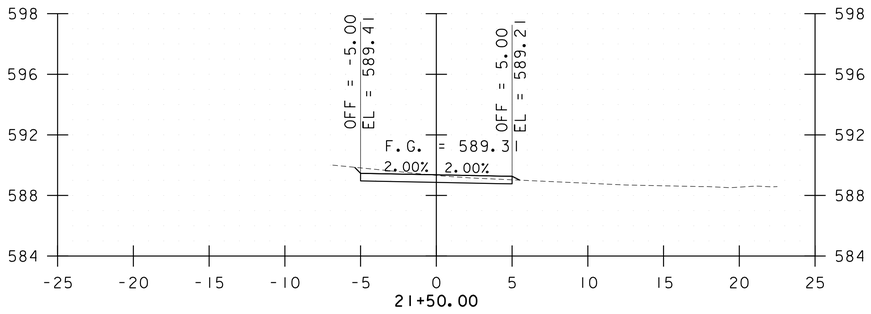
Client/Project
CROSS VT TRAIL ASSOCIATION

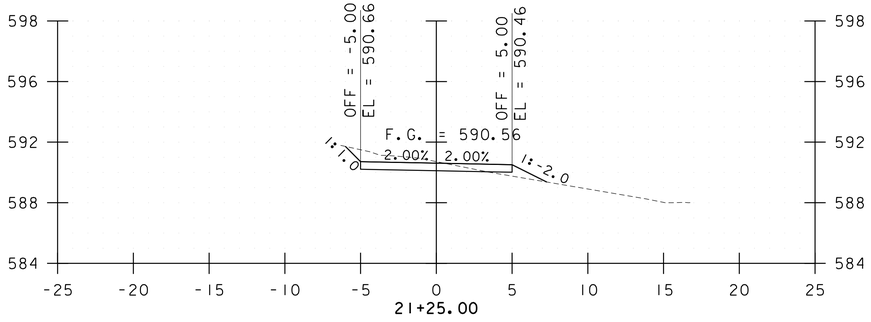
EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT (2)

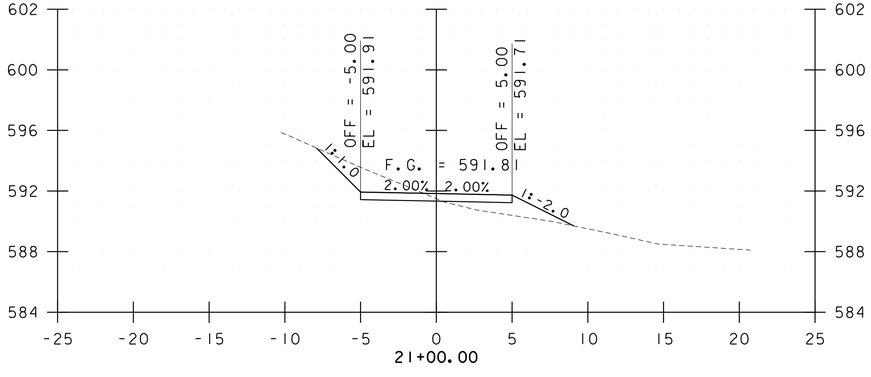
Title
BRIDGE PRELIMINARY INFORMATION

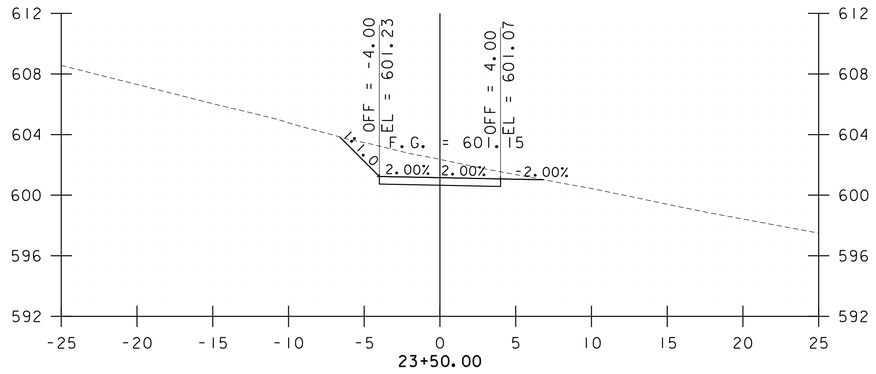
Project No. 195311563
Scale AS SHOWN
Drawing No.
Sheet 41 of 57
Revision 0

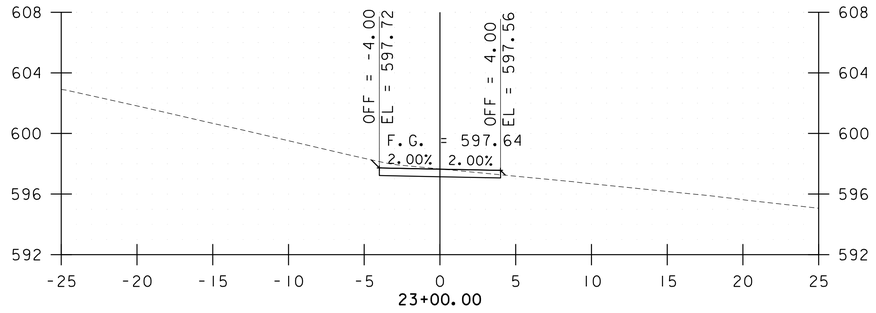


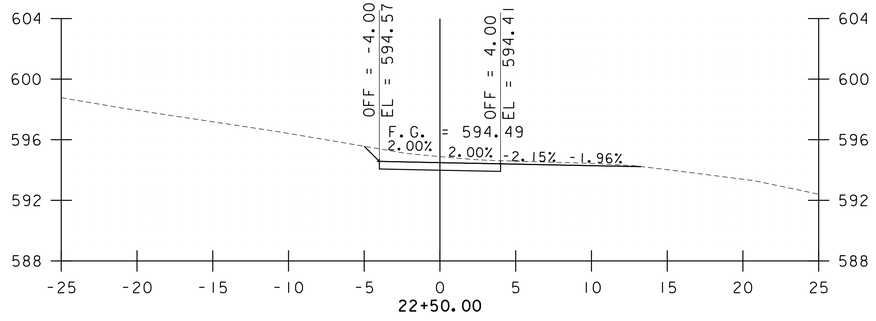


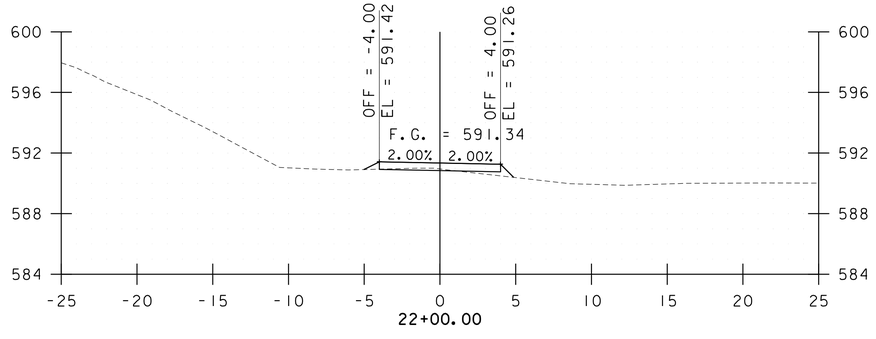












STA. 21+00 TO STA. 23+50

PHASE 2

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Notes

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File Name: xs.dgn	PZA Dwn.	GAS Chkd.	ISM Dsgn.	7/26/2018 YY.MM.DD

Permit-Seal

Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
CROSS SECTIONS SHEET 1

Project No.	Scale	
195311563	1" = 5'	
Drawing No.	Sheet	Revision
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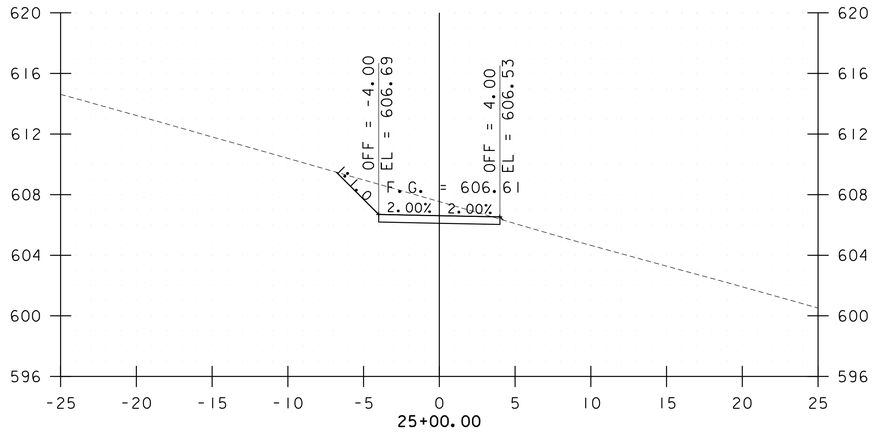

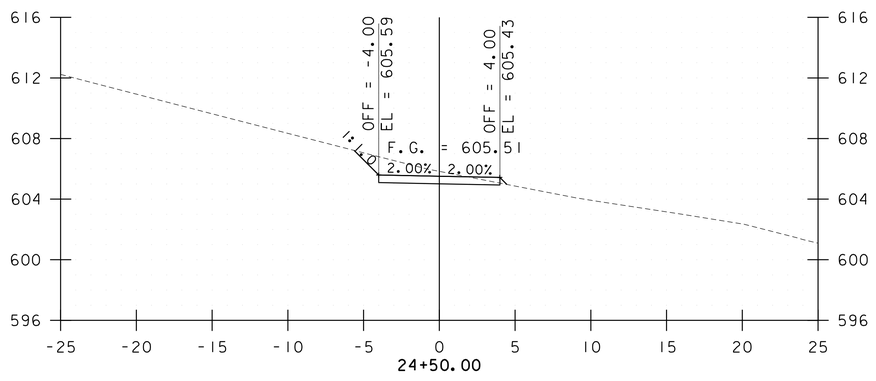

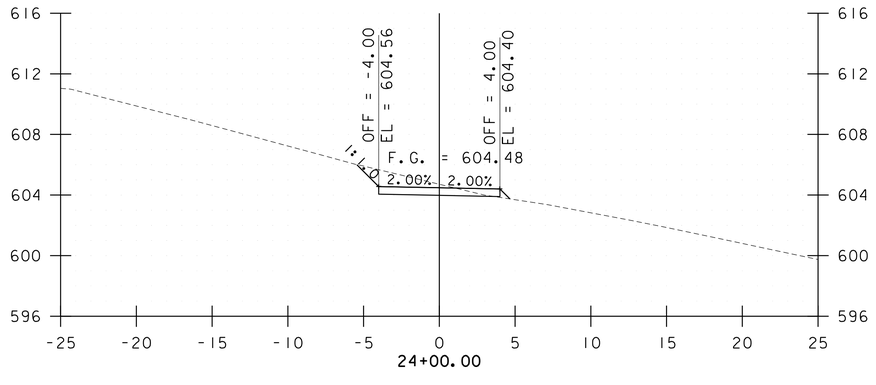

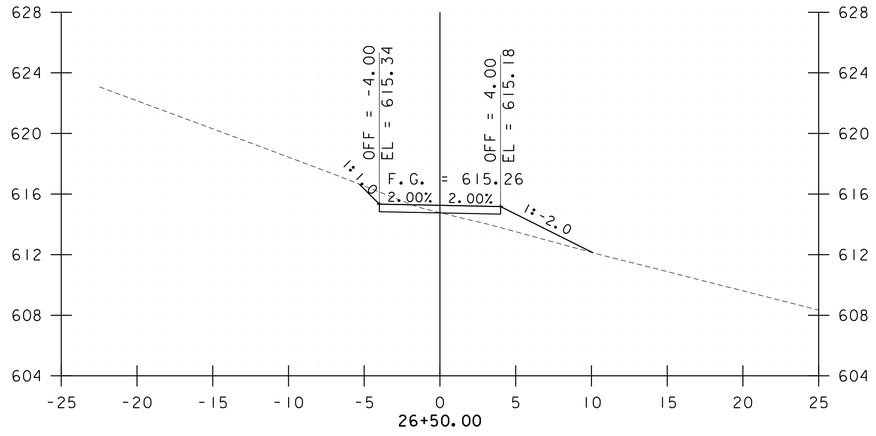

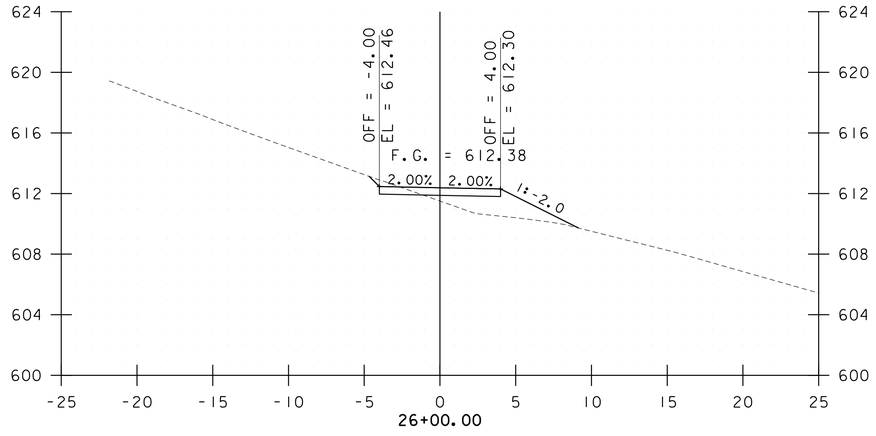

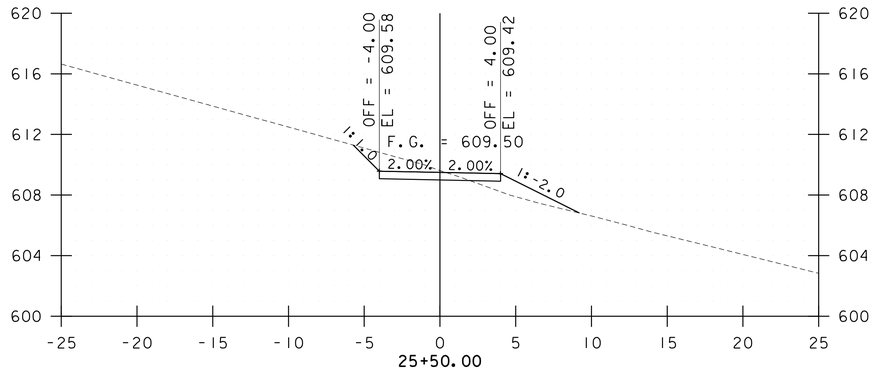

STA. 24+00 TO STA. 26+50

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Permit-Seal

Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
CROSS SECTIONS SHEET 2

Project No.	Scale	
195311563	1" = 5'	
Drawing No.	Sheet	Revision
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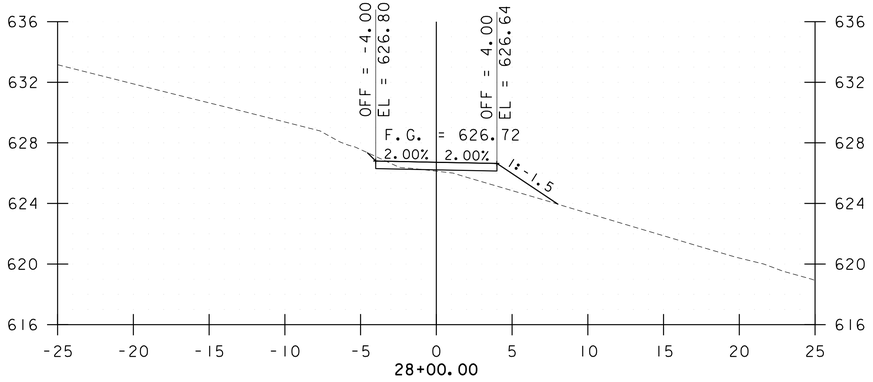

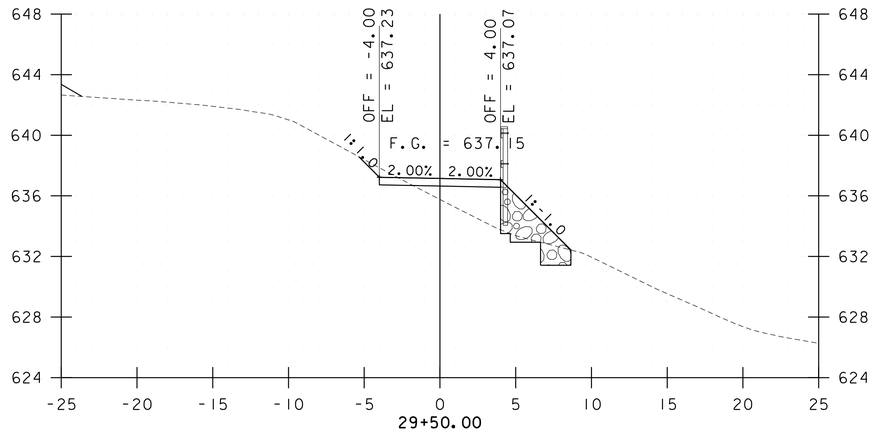

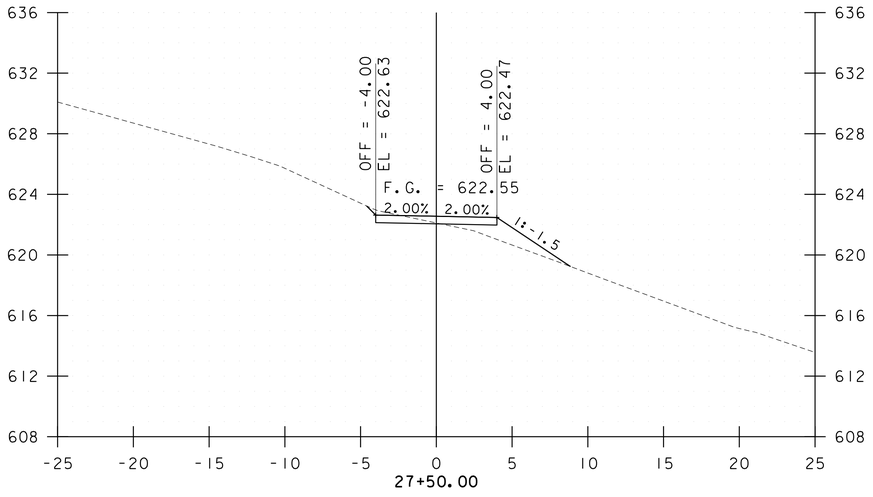

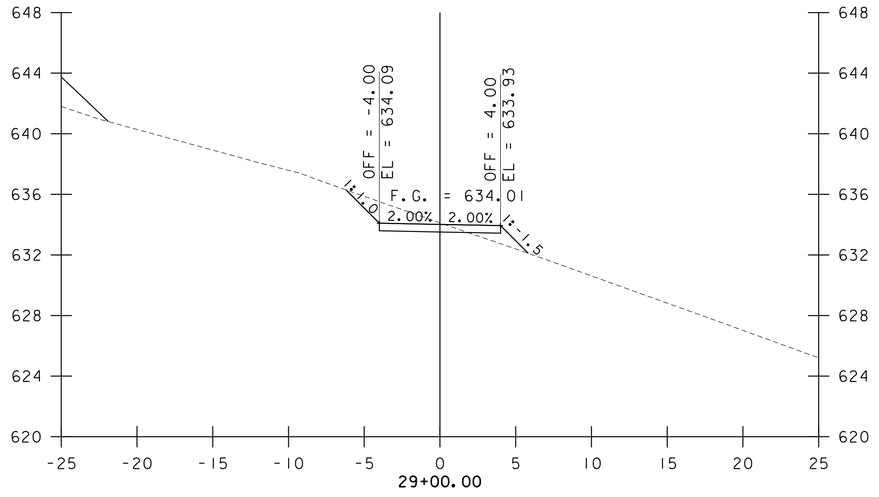

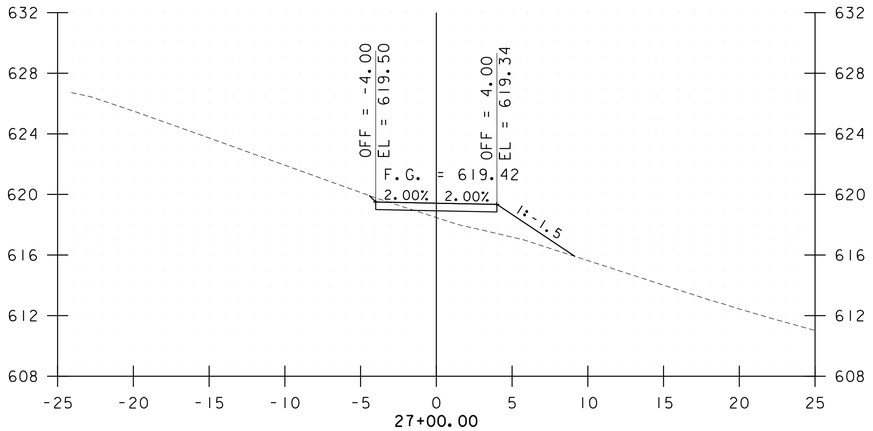

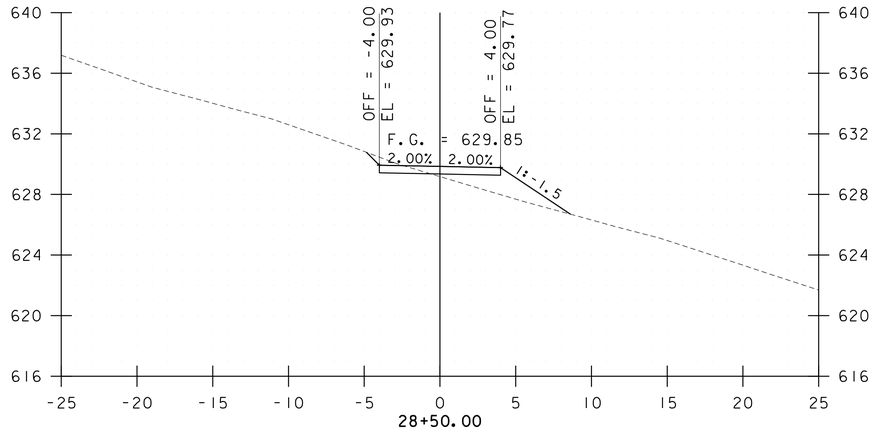

STA. 27+00 TO STA. 29+50

PHASE 2

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Notes

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	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
CROSS SECTIONS SHEET 3

Project No.	Scale	
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Drawing No.	Sheet	Revision
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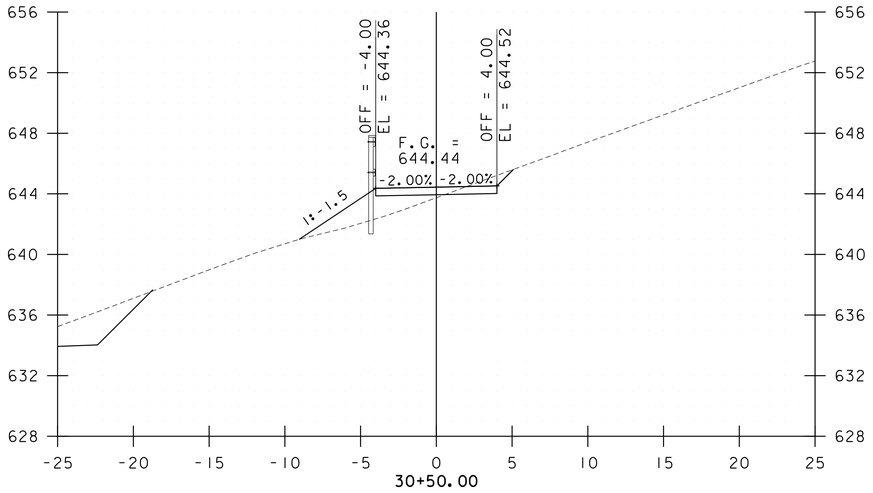

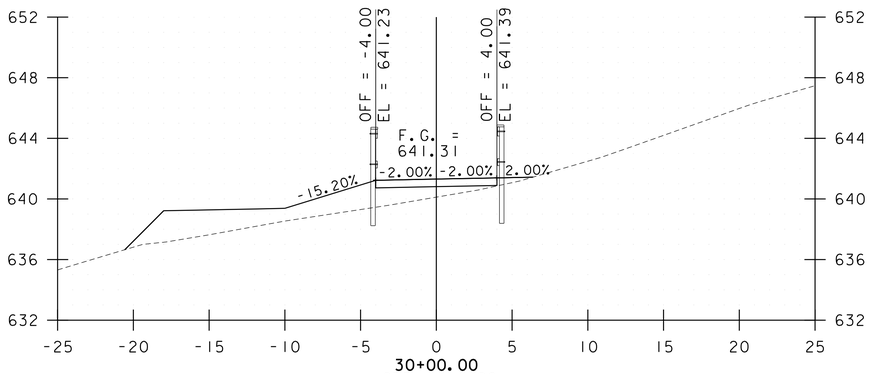

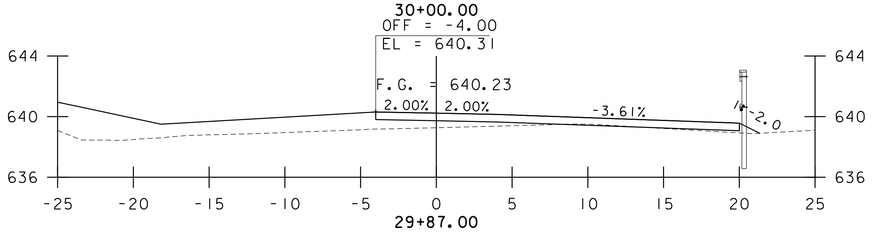

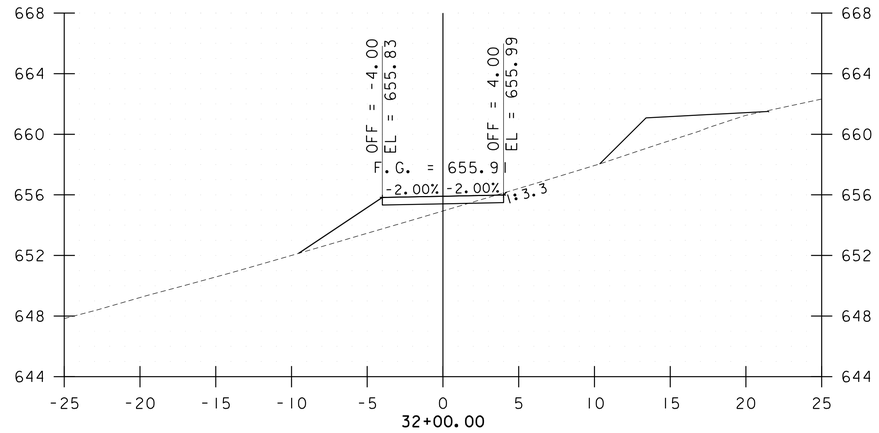

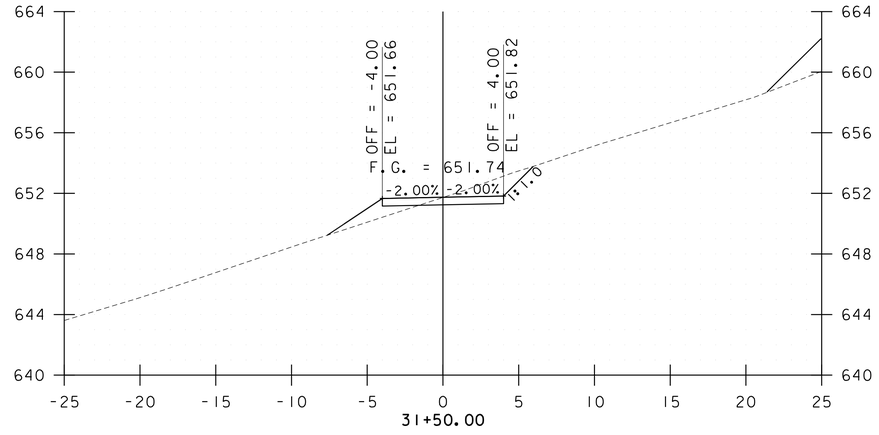

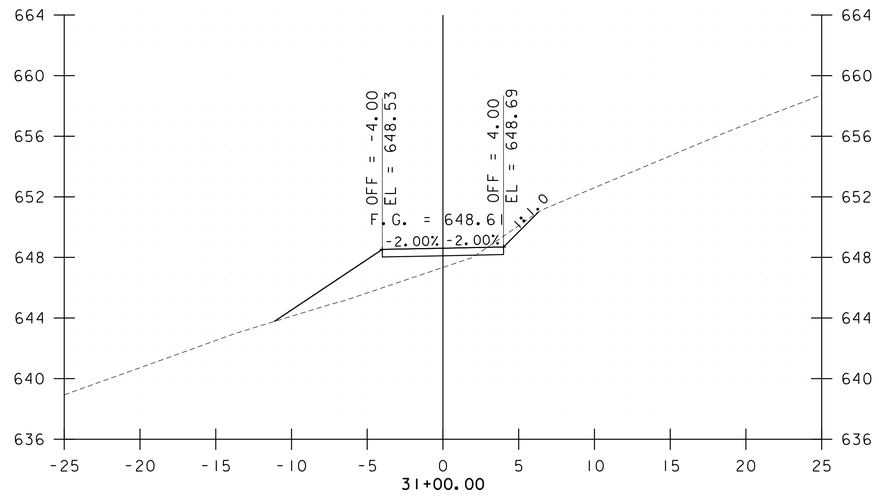

STA. 29+87 TO STA. 32+00

PHASE 2

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Permit-Seal

Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
CROSS SECTIONS SHEET 4

Project No.	Scale	
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Drawing No.	Sheet	Revision
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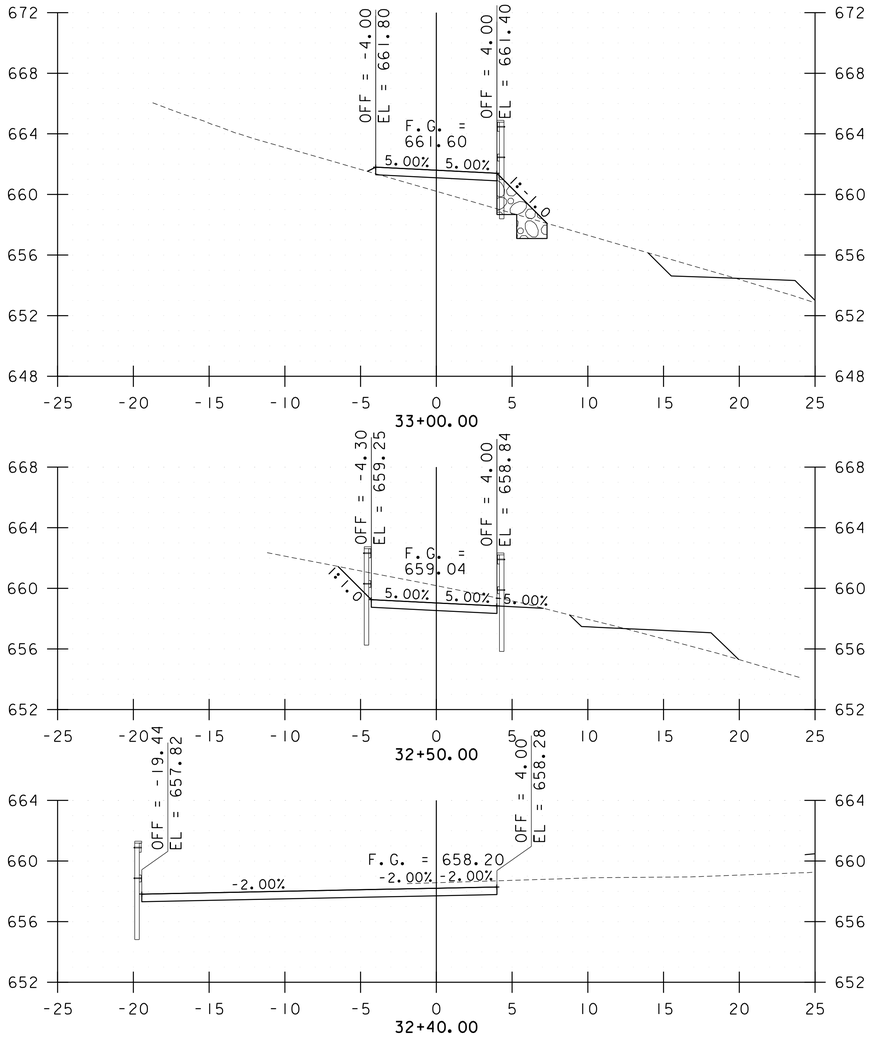

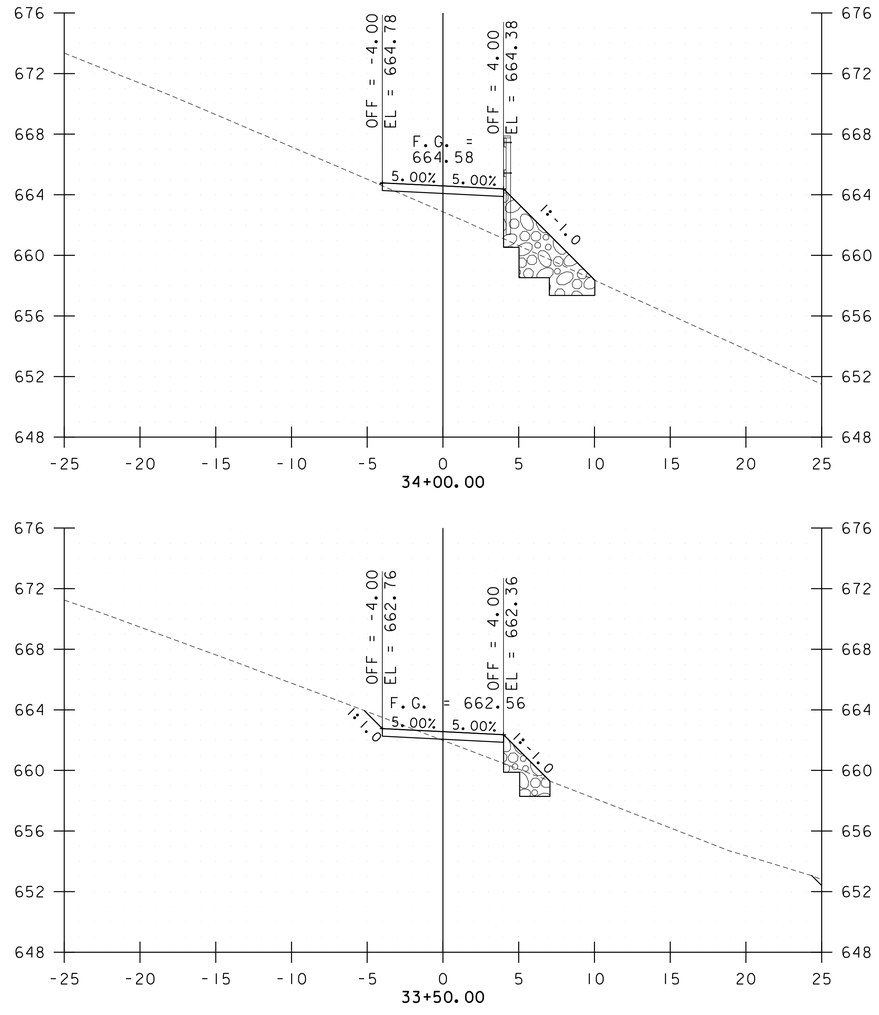

STA. 32+40 TO STA. 34+00

PHASE 2

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File Name: xs.dgn	PJA Dwn.	GAS Chkd.	ISM Dsgn.	7/26/2018 YY.MM.DD

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Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
CROSS SECTIONS SHEET 5

Project No.	Scale	
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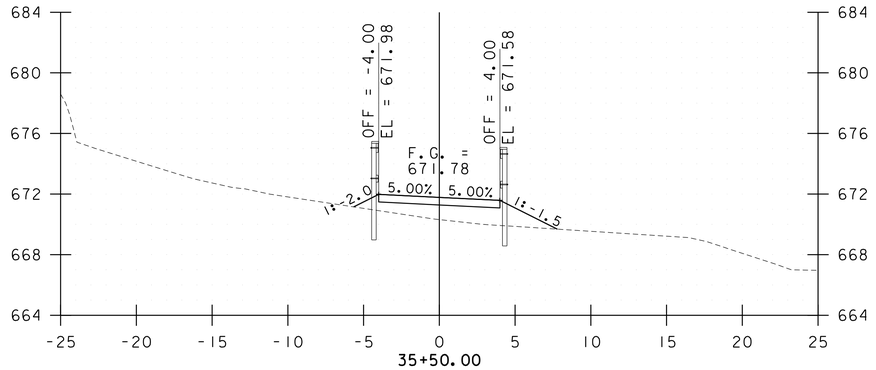
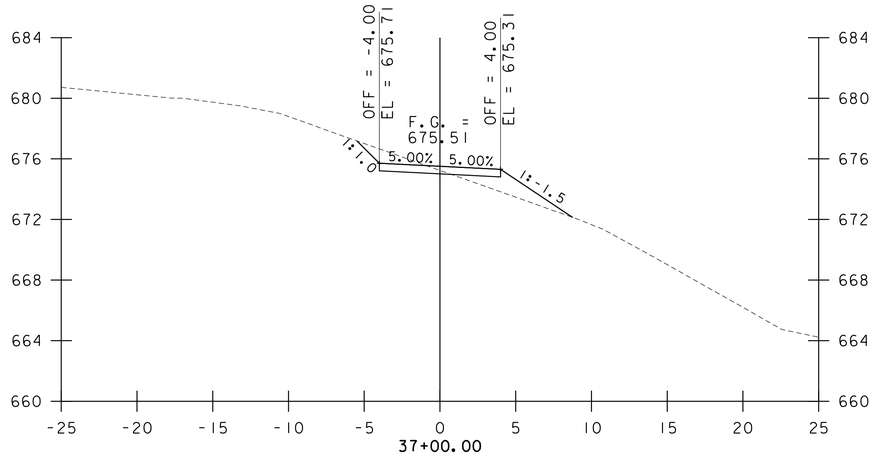
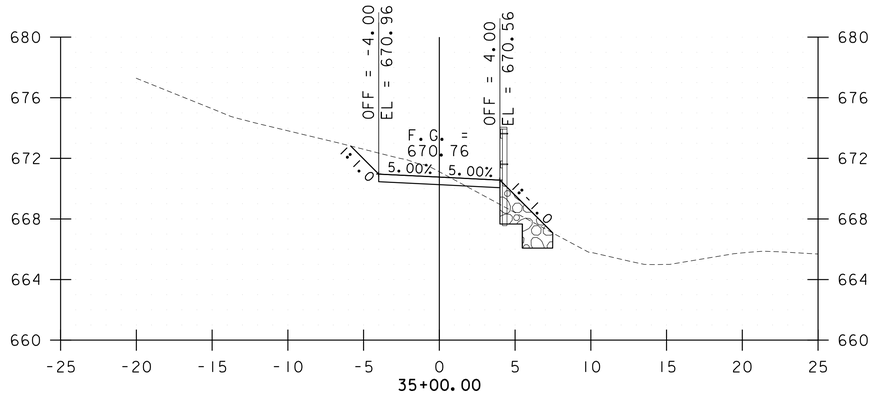
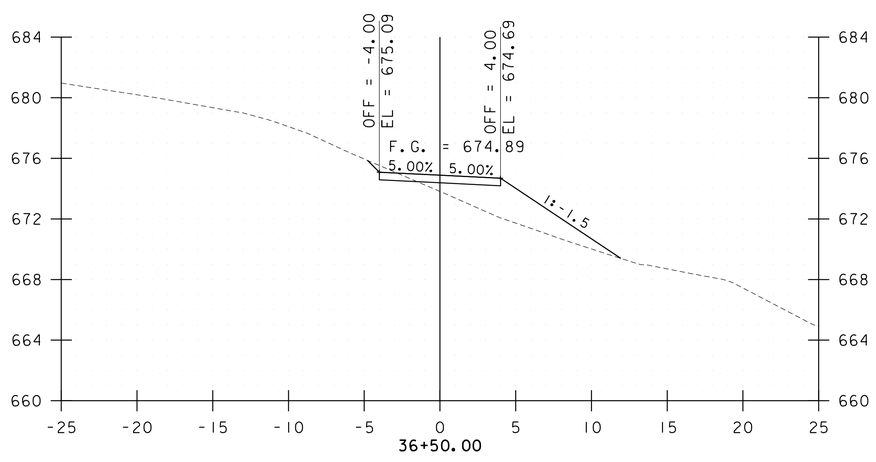
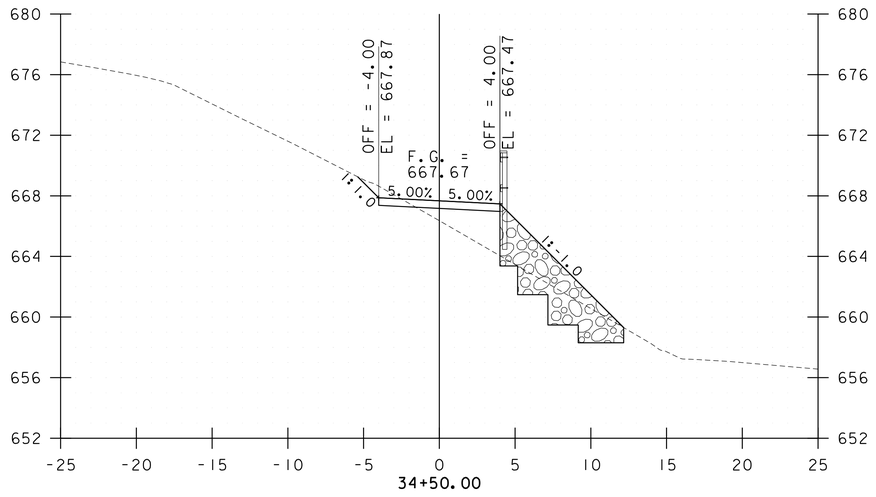
Drawing No.	Sheet	Revision
	46 of 57	0

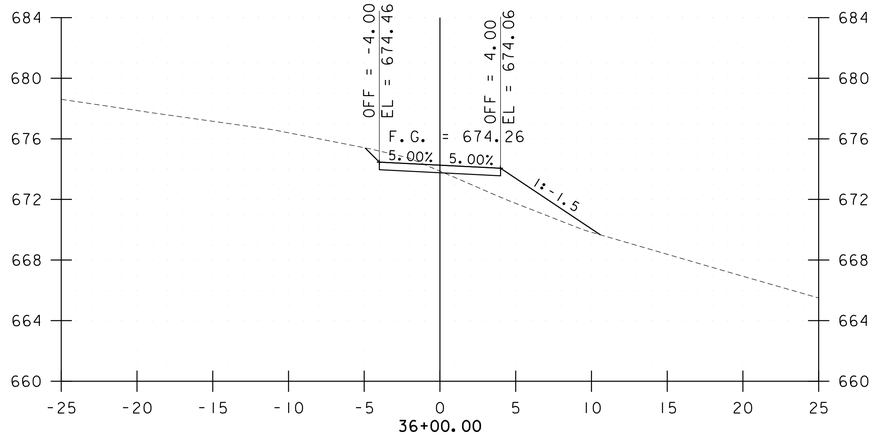












STA. 34+50 TO STA. 37+00

PHASE 2

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Permit-Seal

Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
CROSS SECTIONS SHEET 6

Project No.	Scale	
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Drawing No.	Sheet	Revision
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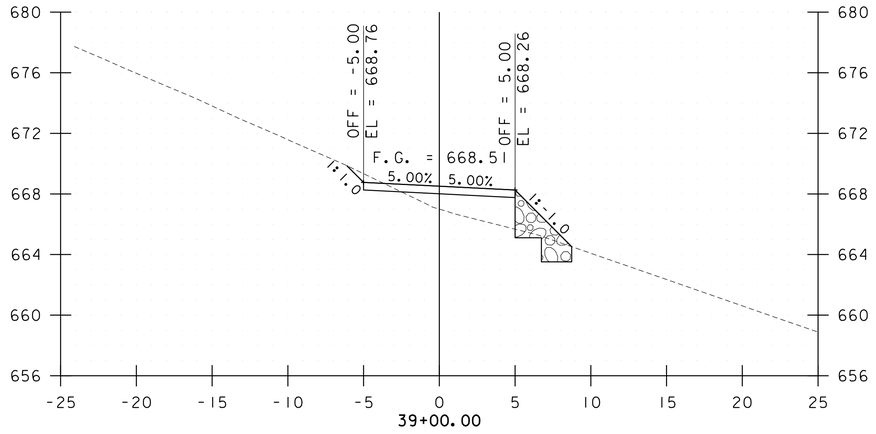

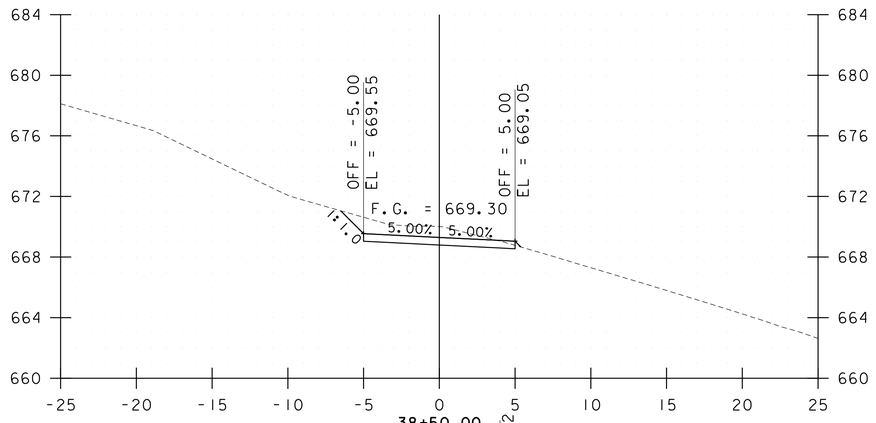

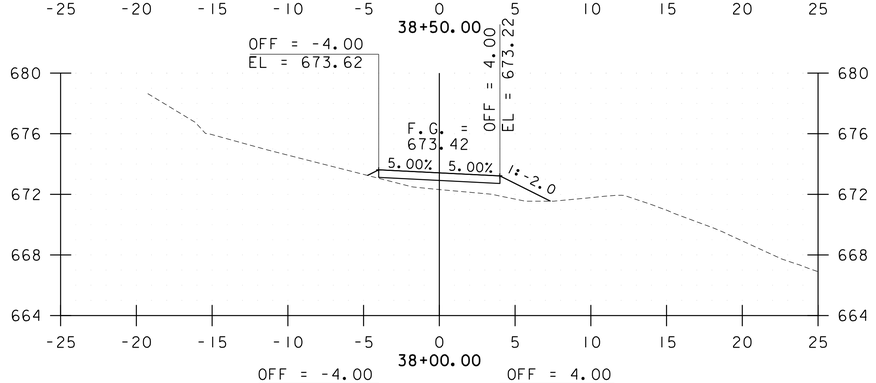

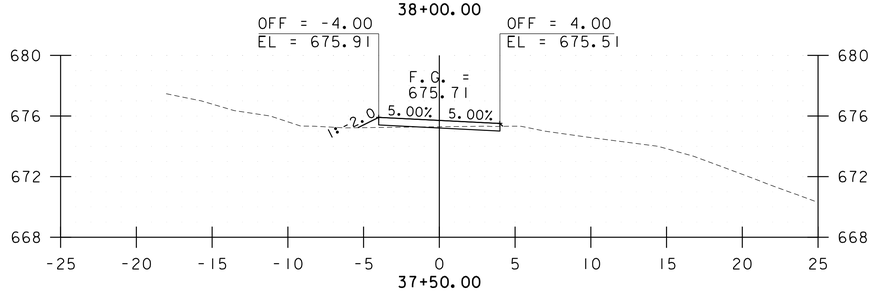

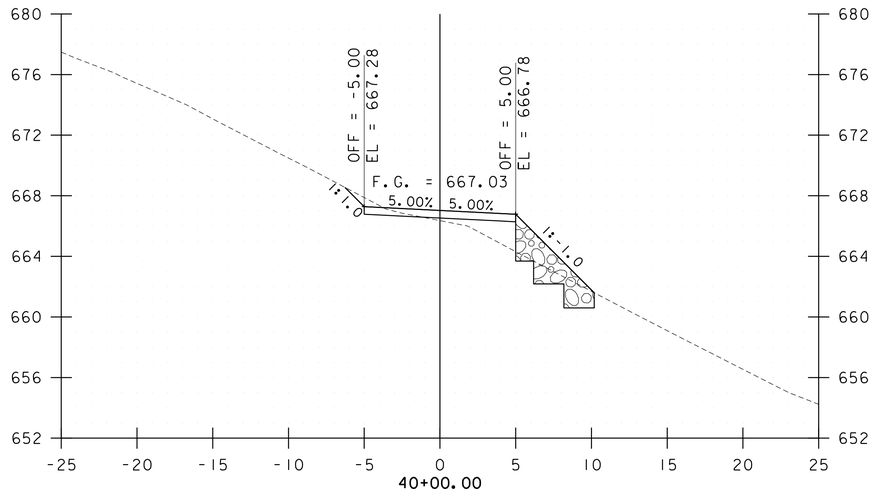

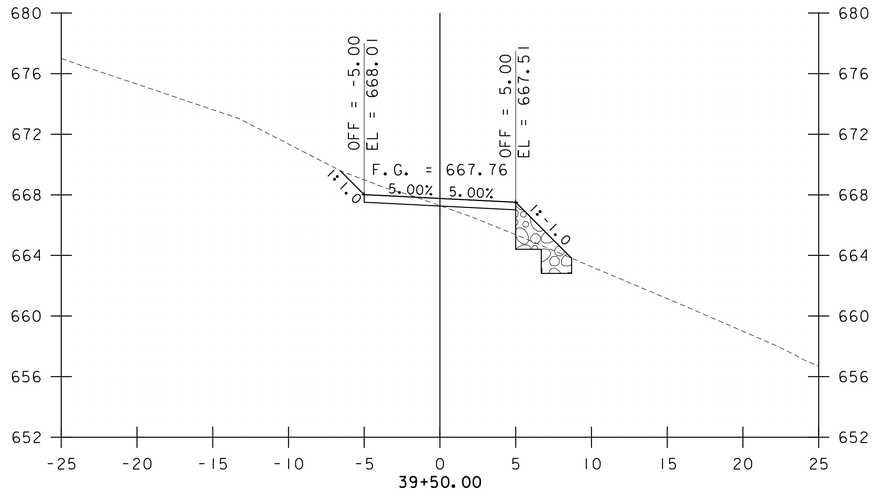

STA. 37+50 TO STA. 40+00

PHASE 2

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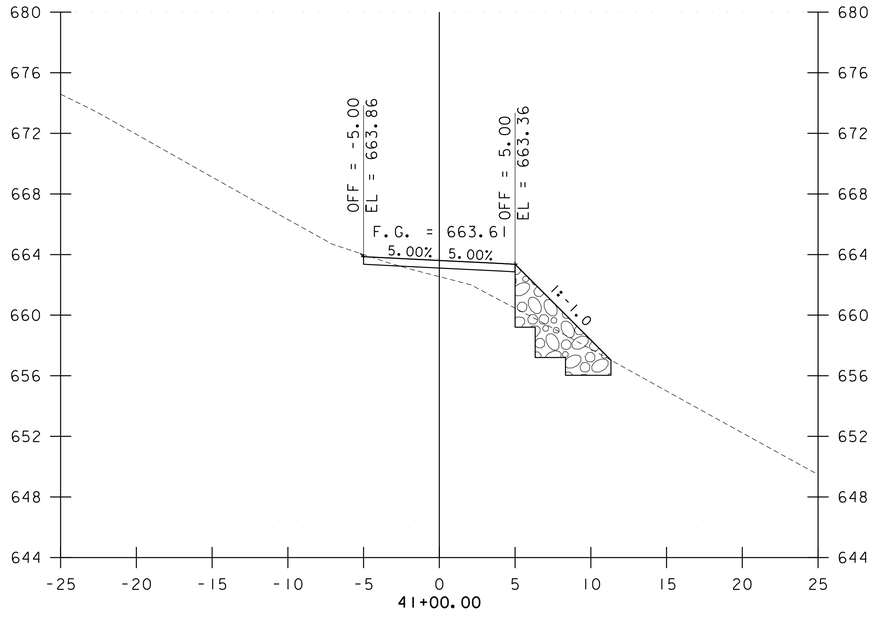
Permit-Seal

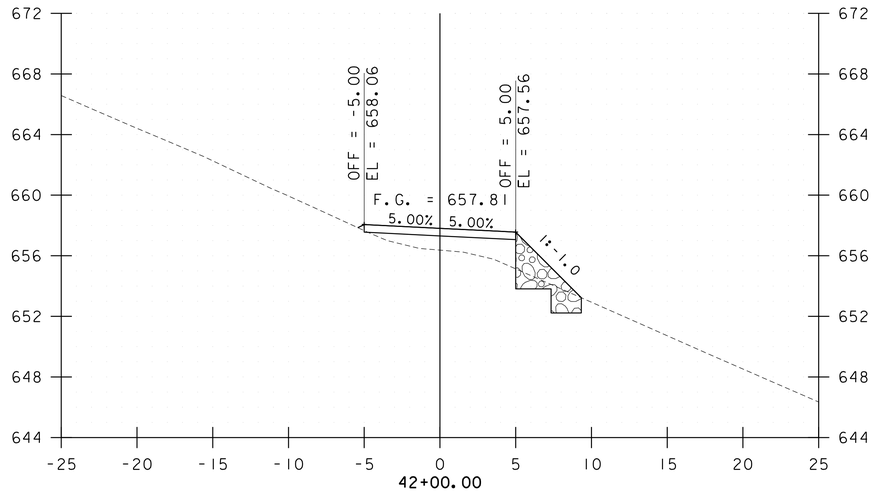
Client/Project
CROSS VT TRAIL ASSOCIATION

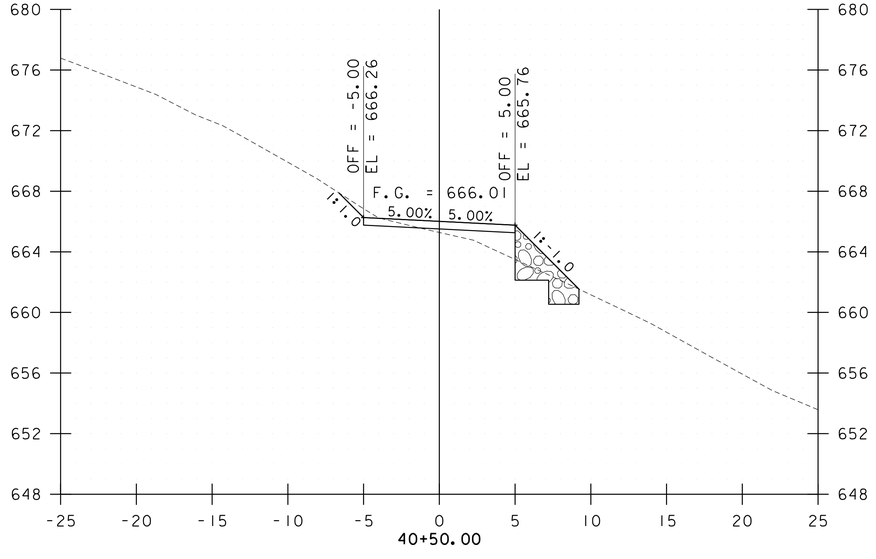
EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

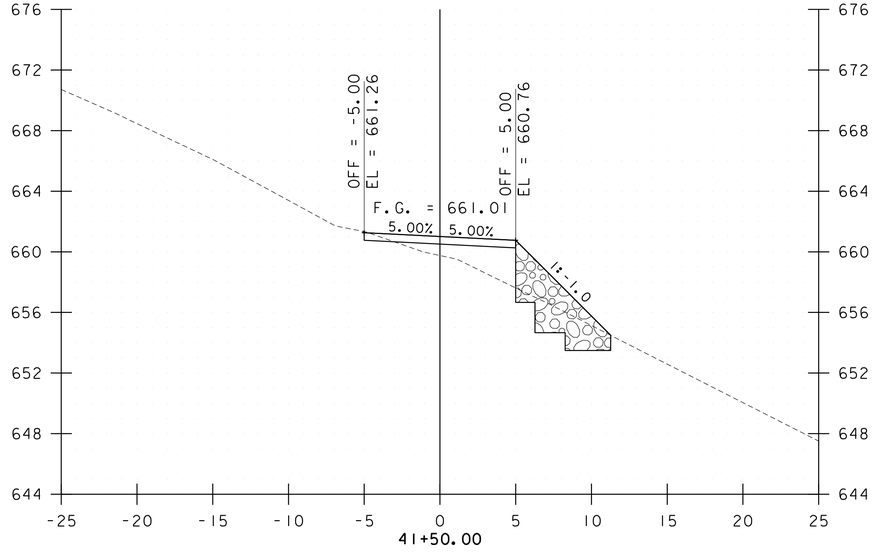
Title
CROSS SECTIONS SHEET 7

Project No.	Scale	
195311563	1" = 5'	
Drawing No.	Sheet	Revision
	48 of 57	0









STA. 40+50 TO STA. 42+00

PHASE 2

Stantec

55 GREEN MOUNTAIN DRIVE
SOUTH BURLINGTON, VT 05403
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Consultants

Legend

Notes

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD

File Name: xs.dgn	PZA	GAS	ISM	7/26/2018
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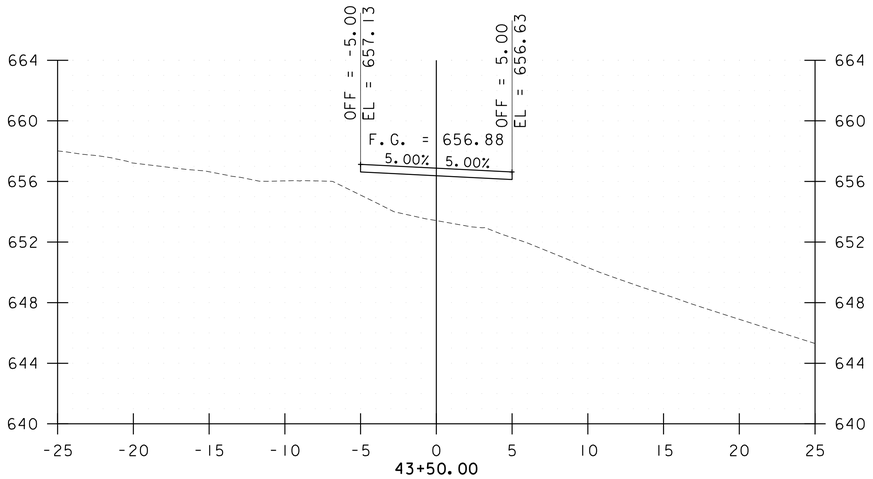
Permit-Seal

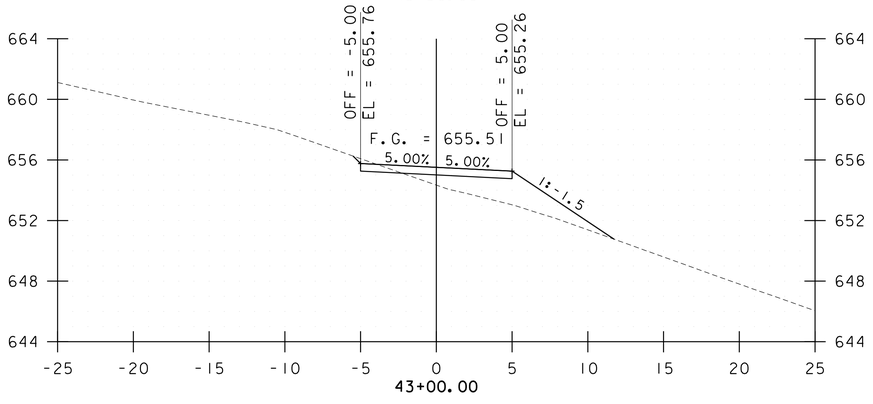
Client/Project
CROSS VT TRAIL ASSOCIATION

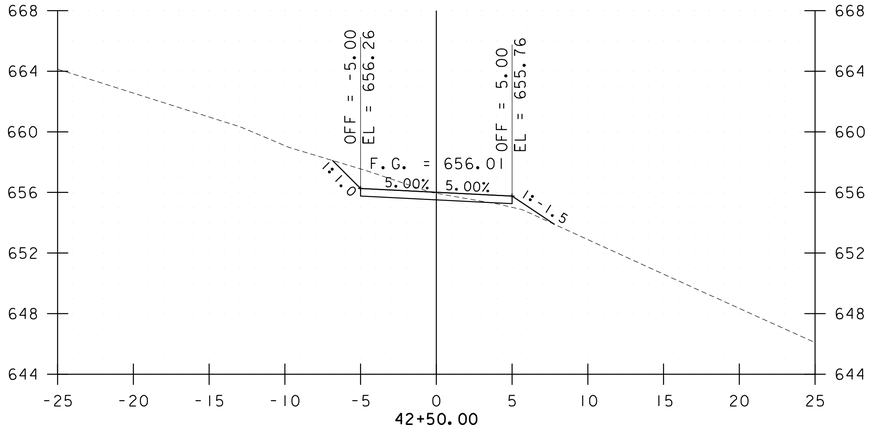
EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

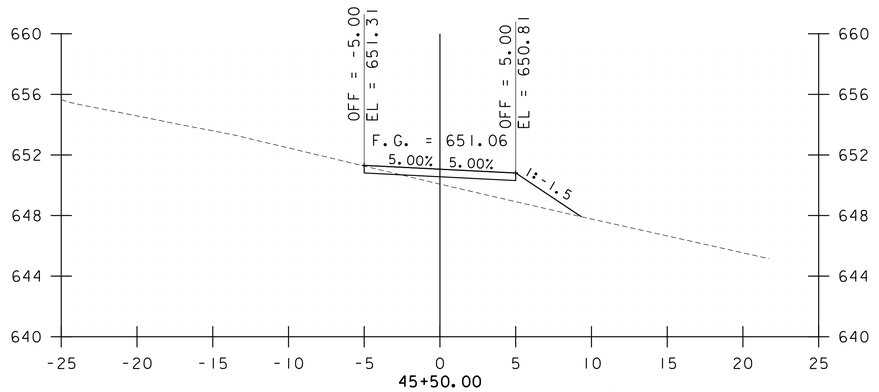
Title
CROSS SECTIONS SHEET 8

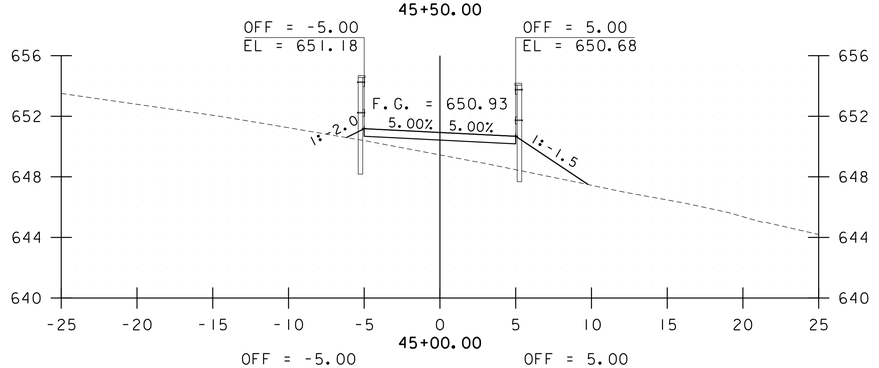
Project No.	Scale	
195311563	1" = 5'	
Drawing No.	Sheet	Revision
	49 of 57	0

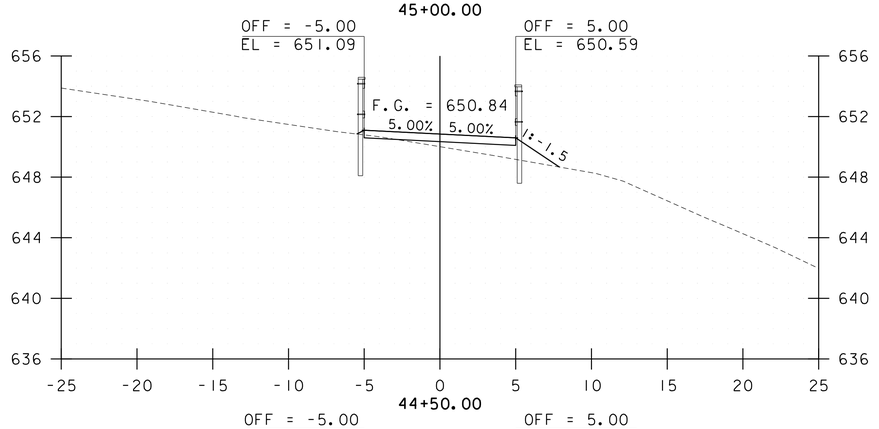


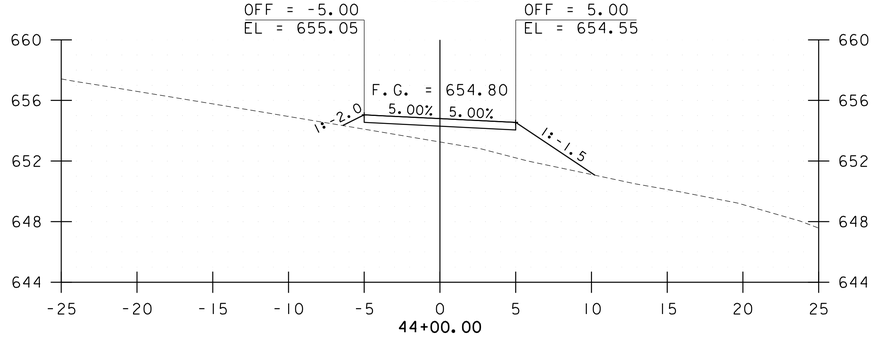












STA. 42+50 TO STA. 45+50

PHASE 2

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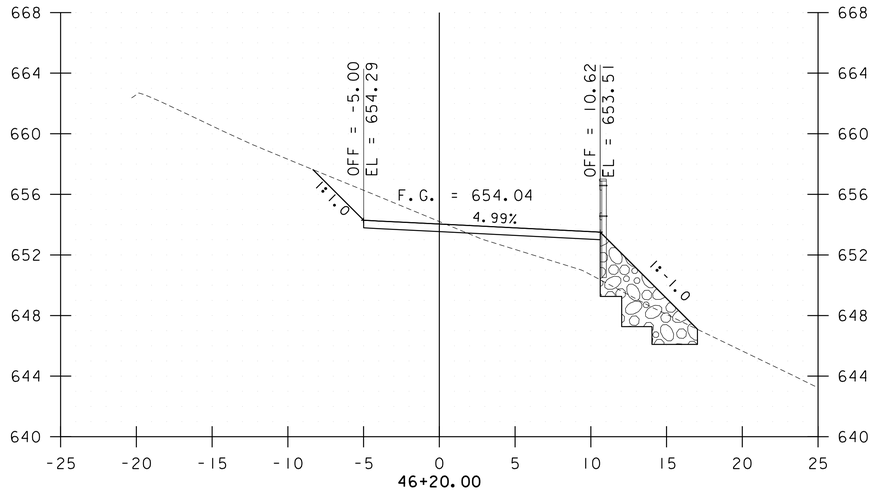
Permit-Seal

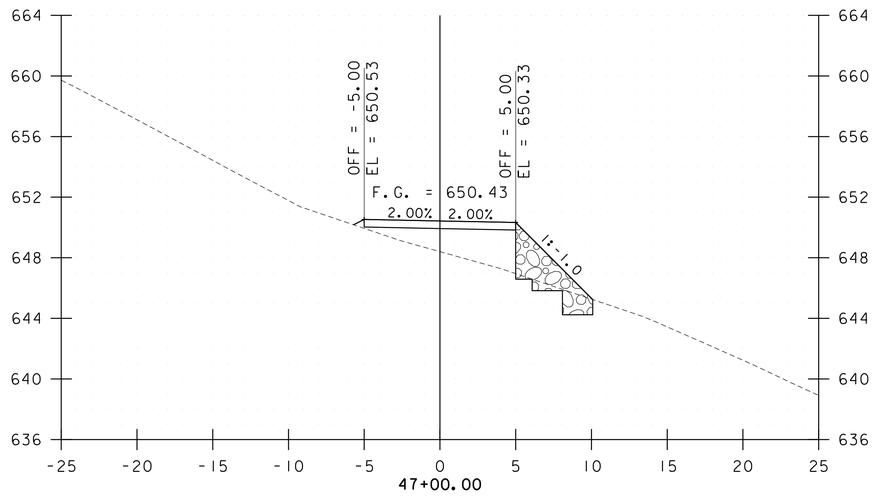
Client/Project
CROSS VT TRAIL ASSOCIATION

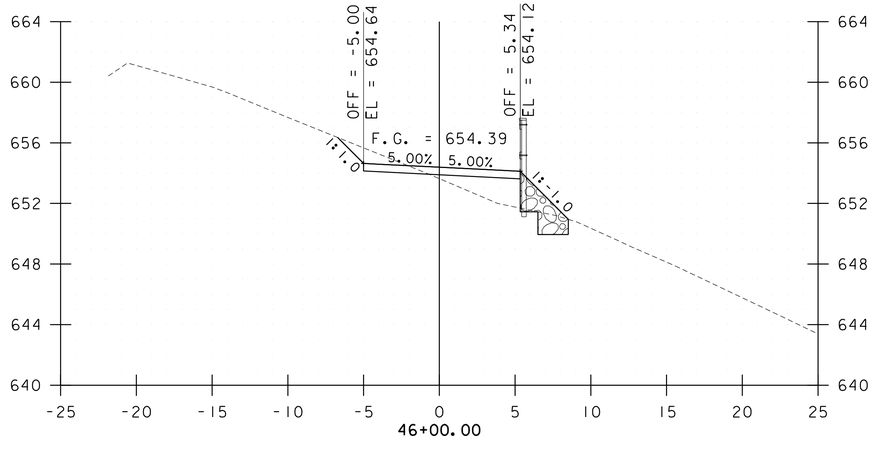
EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

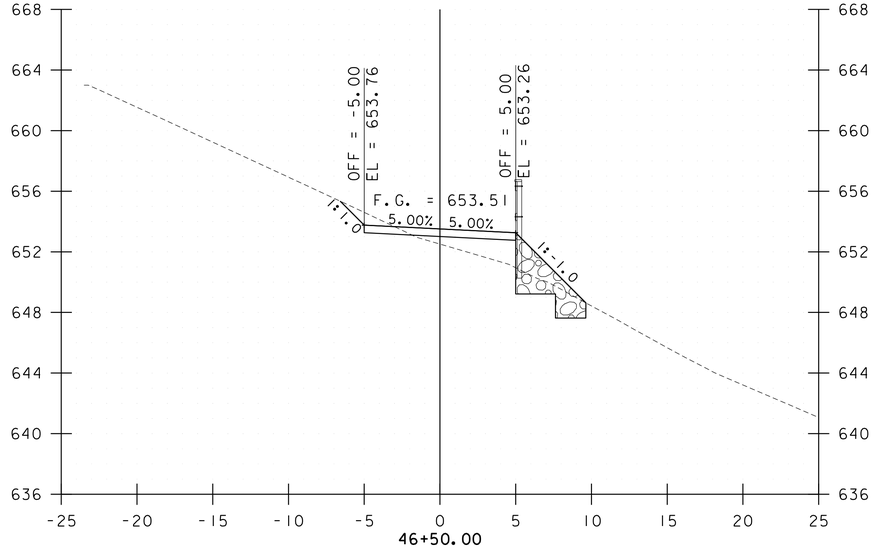
Title
CROSS SECTIONS SHEET 9

Project No.	Scale	
195311563	1" = 5'	
Drawing No.	Sheet	Revision
	50 of 57	0









STA. 46+00 TO STA. 47+00

PHASE 2, 3

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File Name: xs.dgn	PZA	GAS	ISM	7/26/2018
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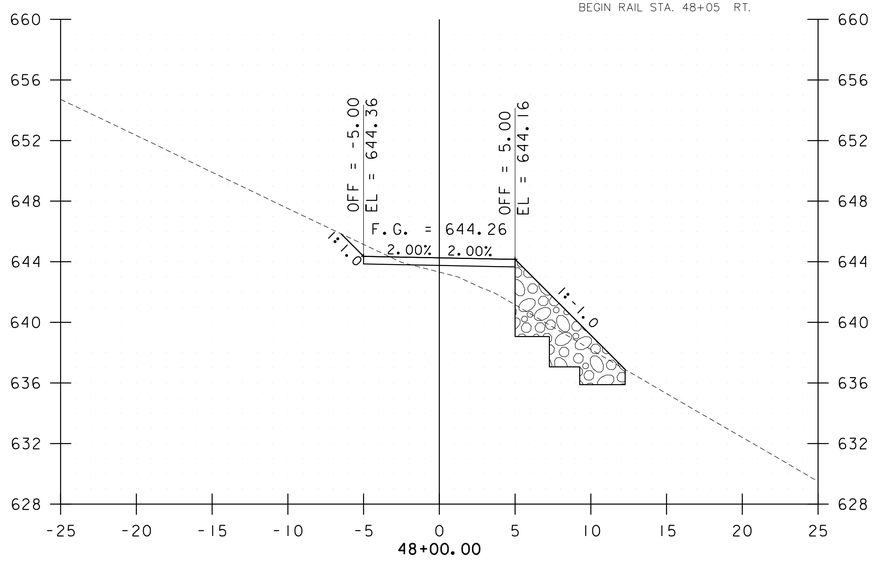
Permit-Seal

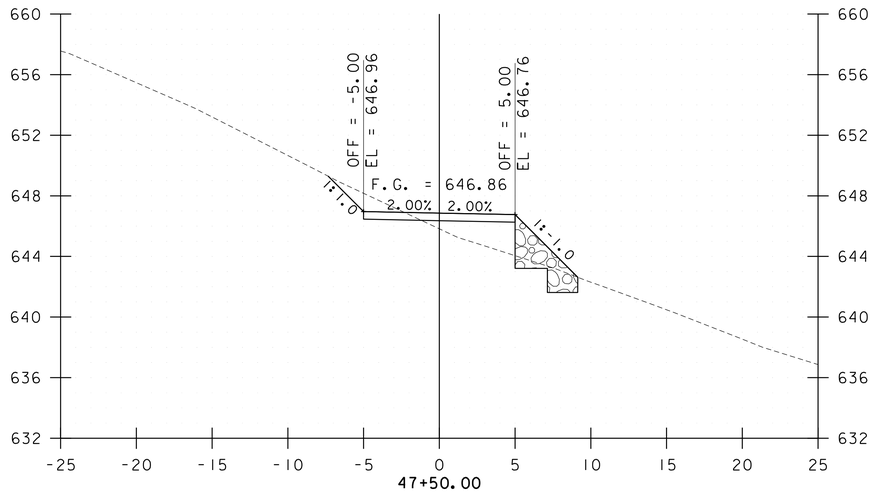
Client/Project
CROSS VT TRAIL ASSOCIATION

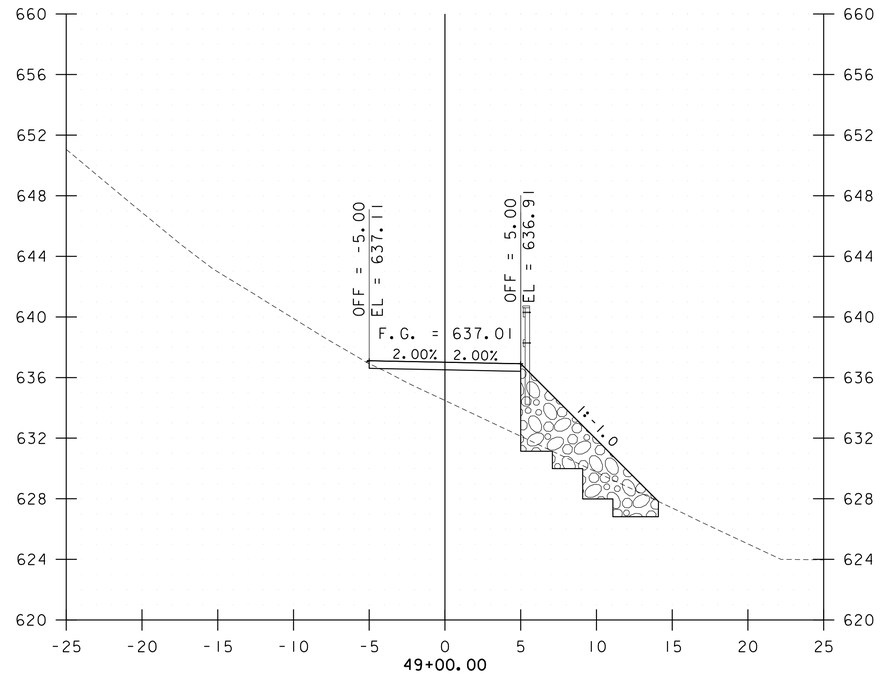
EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

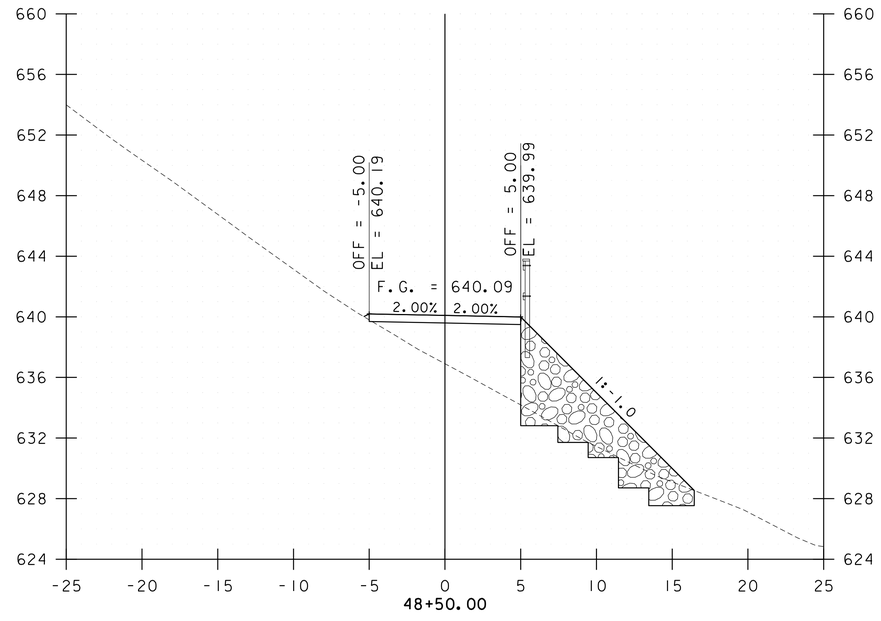
Title
CROSS SECTIONS SHEET 10

Project No.	Scale	
1953111563	1" = 5'	
Drawing No.	Sheet	Revision
	51 of 57	0









STA. 47+50 TO STA. 49+00

PHASE 3

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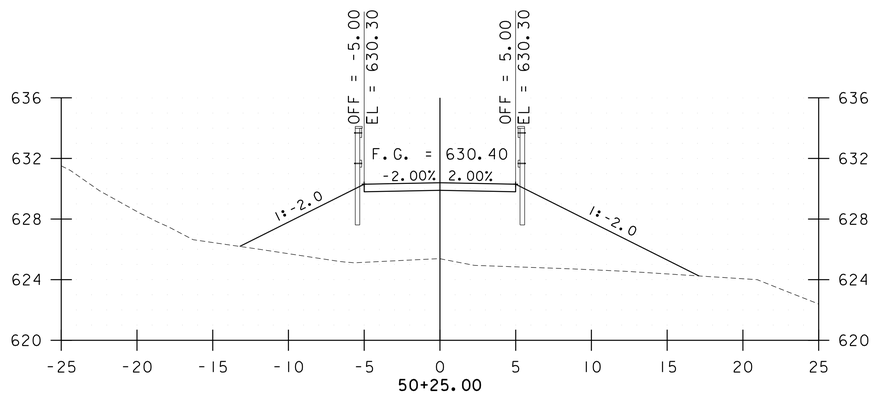
Permit-Seal

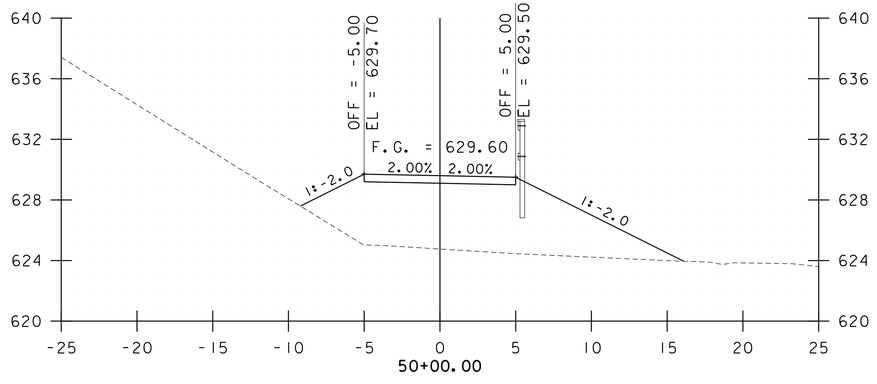
Client/Project
CROSS VT TRAIL ASSOCIATION

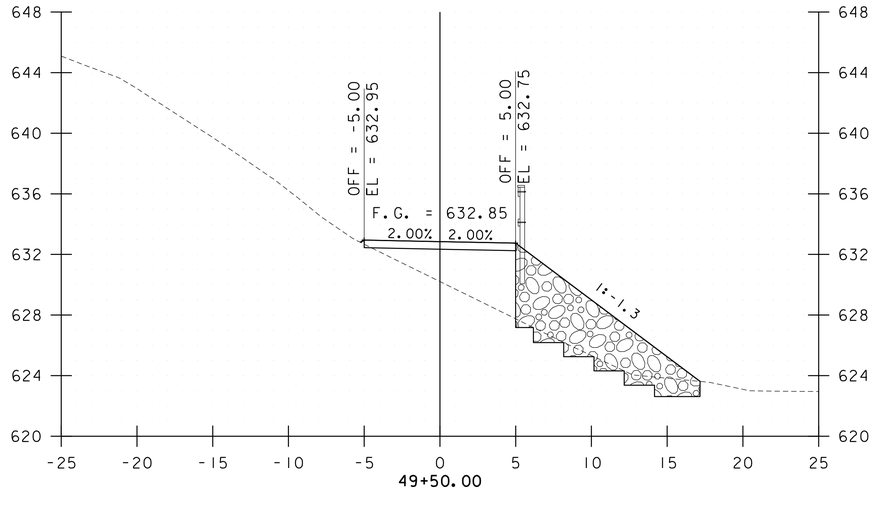
EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

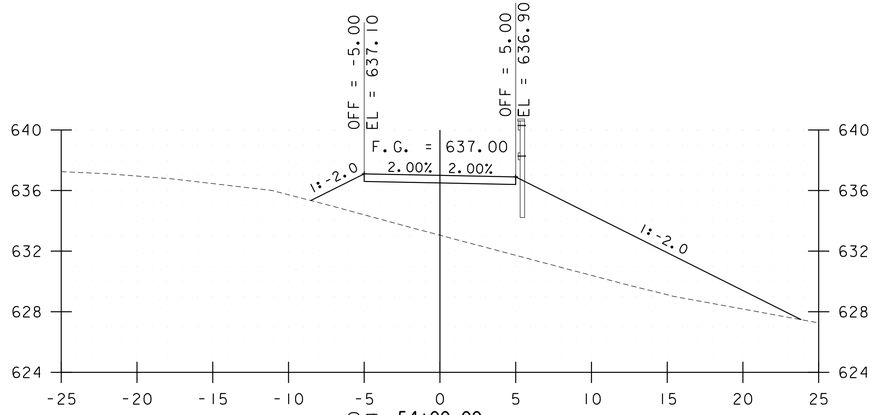
Title
CROSS SECTIONS SHEET 11

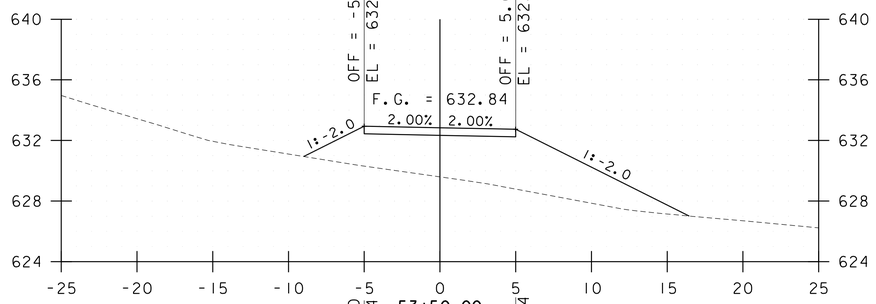
Project No.	Scale	
195311563	1" = 5'	
Drawing No.	Sheet	Revision
	52 of 57	0

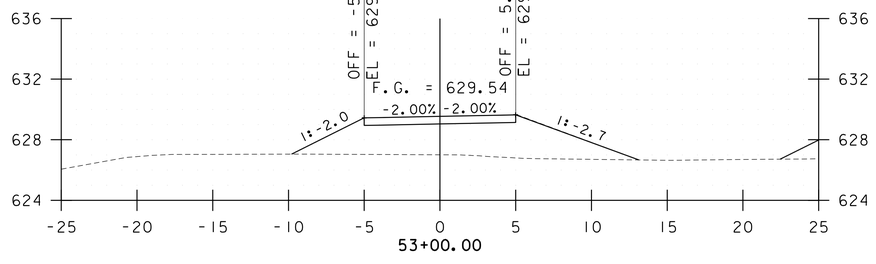


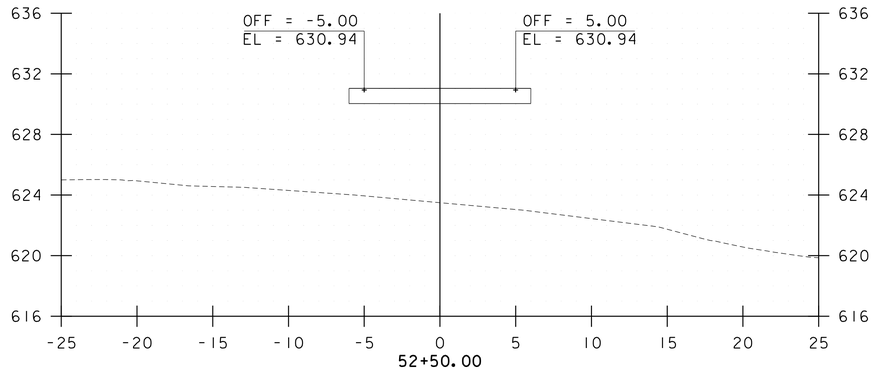












STA. 49+50 TO STA. 54+00

PHASE 3

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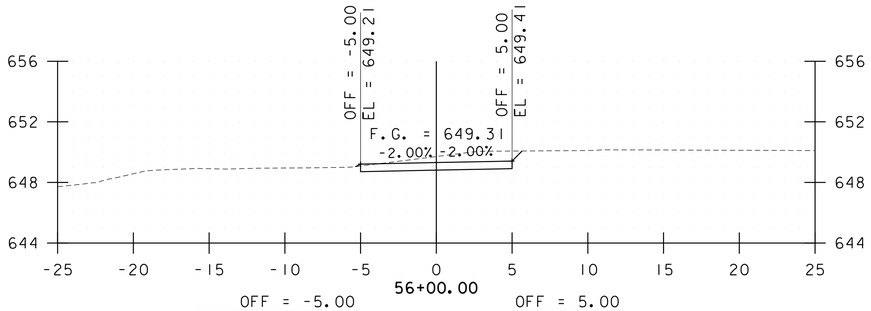
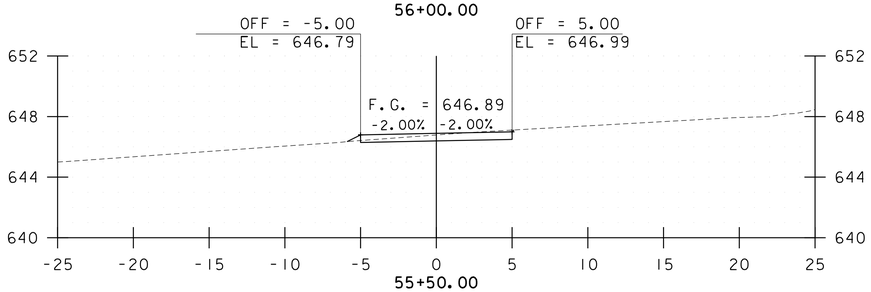
Client/Project
CROSS VT TRAIL ASSOCIATION

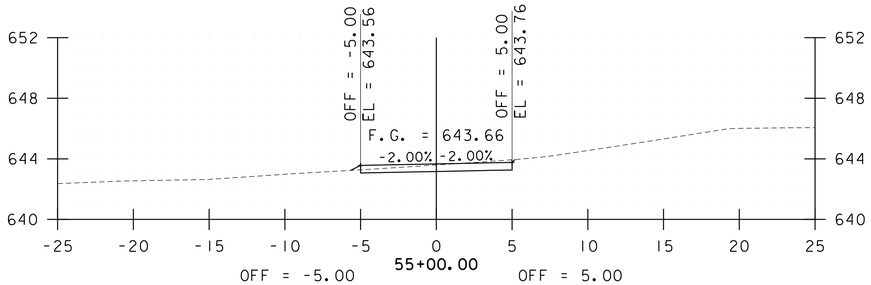
EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

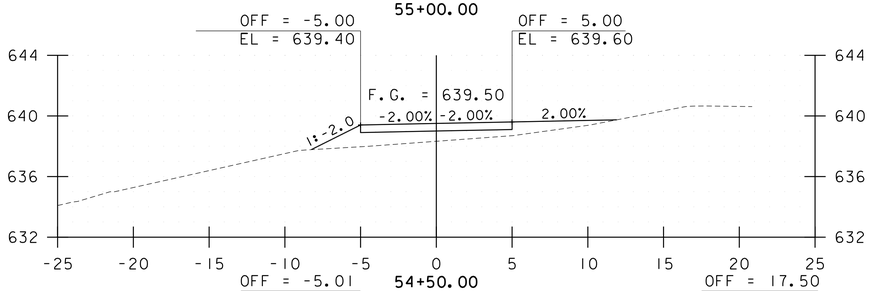
Title
CROSS SECTIONS SHEET 12

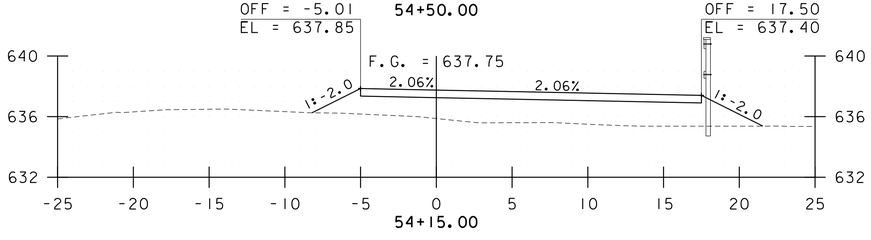
Project No.	Scale	
195311563	1" = 5'	
Drawing No.	Sheet	Revision
	53 of 57	0

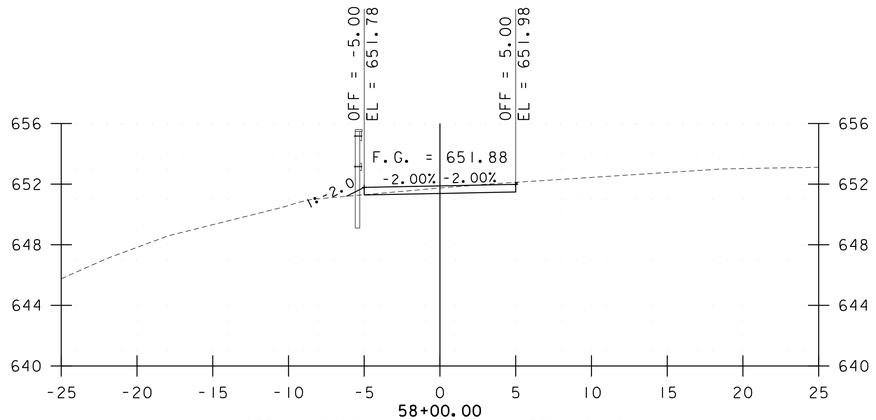


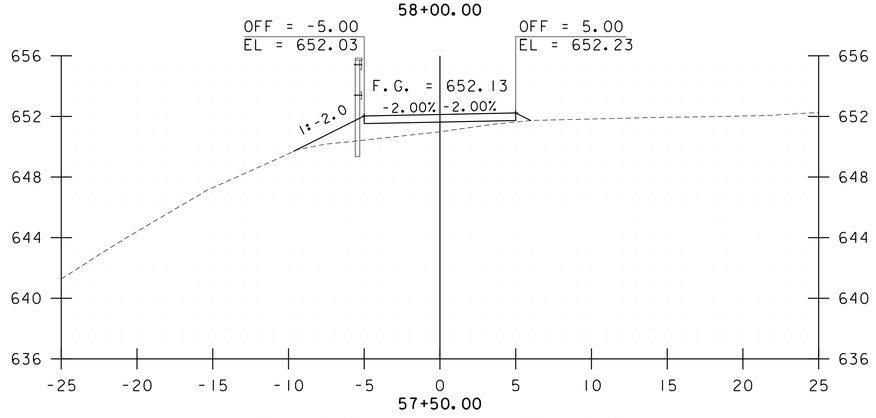


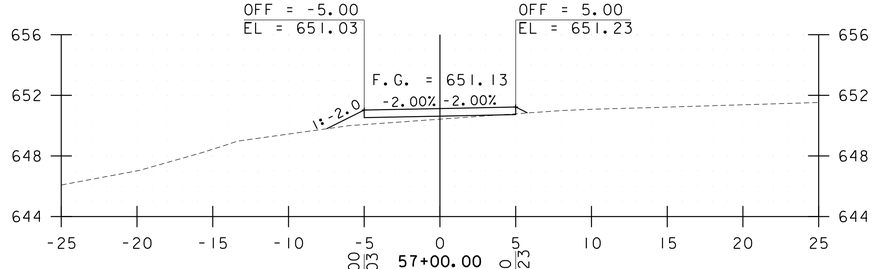


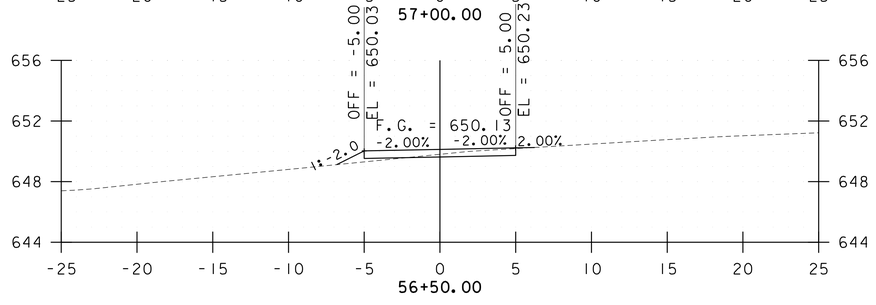












STA. 54+15 TO STA. 58+00

PHASE 2

Stantec

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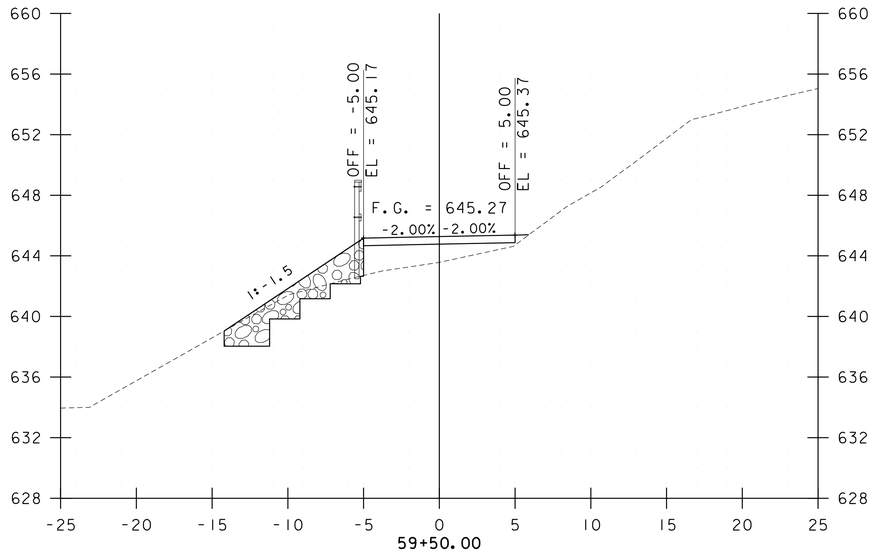
Permit-Seal

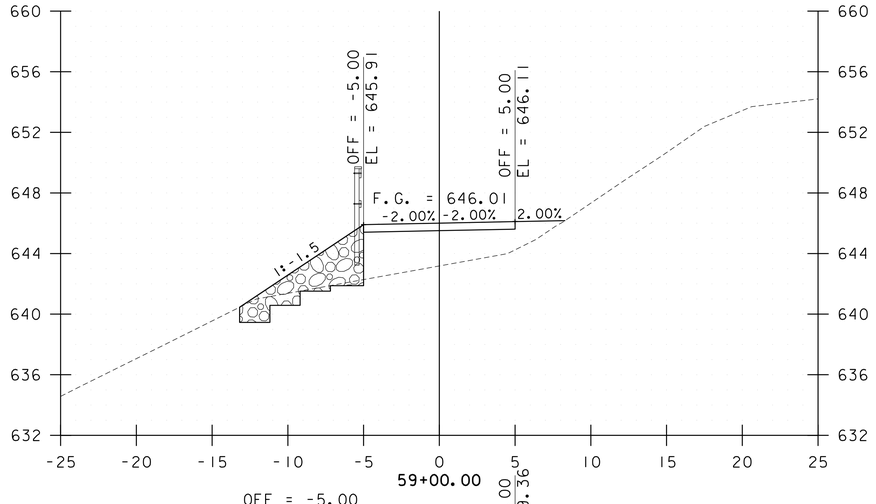
Client/Project
CROSS VT TRAIL ASSOCIATION

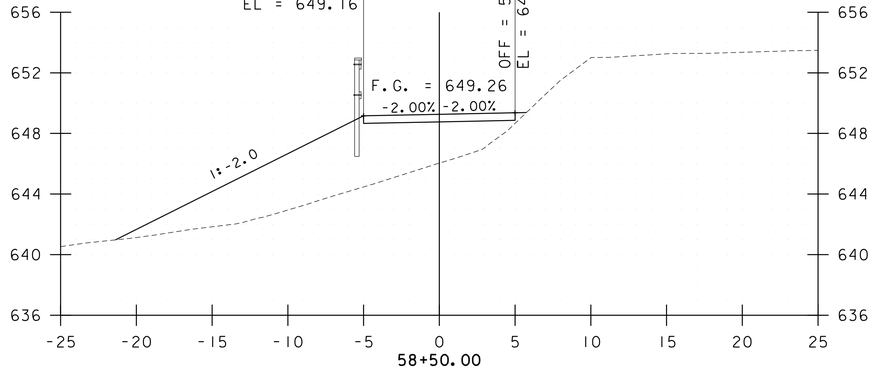
EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

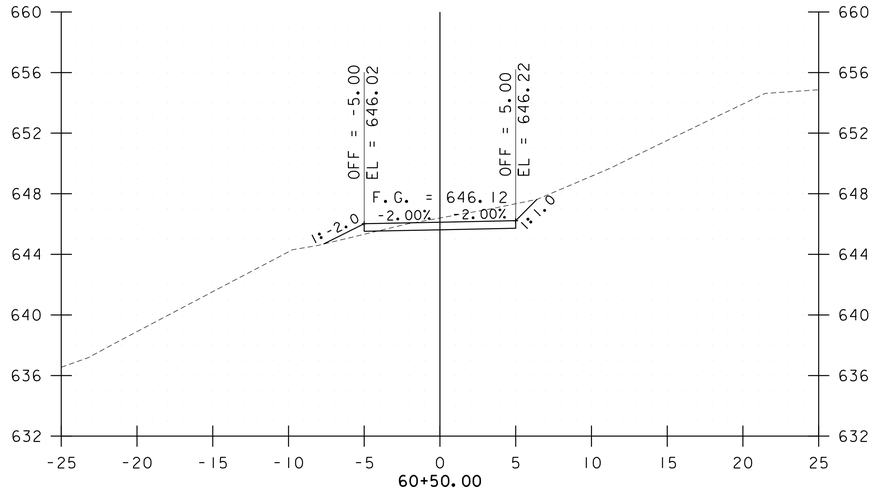
Title
CROSS SECTIONS SHEET 13

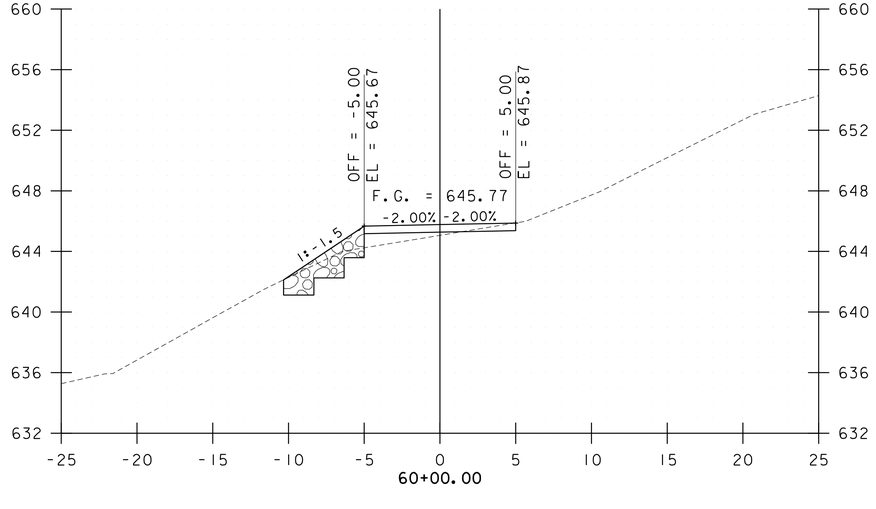
Project No.	Scale	
195311563	1" = 5'	
Drawing No.	Sheet	Revision
	54 of 57	0











STA. 58+50 TO STA. 60+50

PHASE 2

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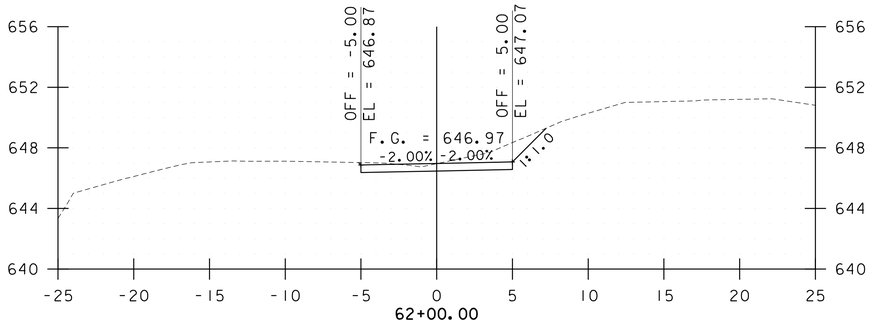
Permit-Seal

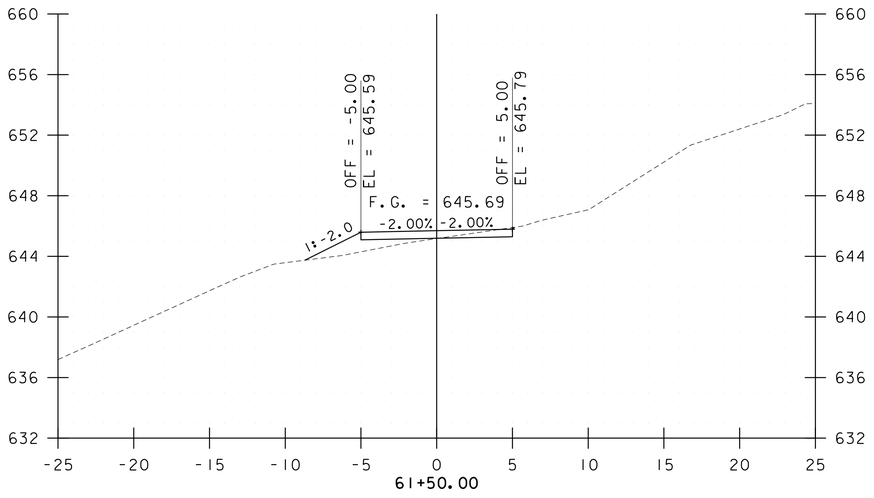
Client/Project
CROSS VT TRAIL ASSOCIATION

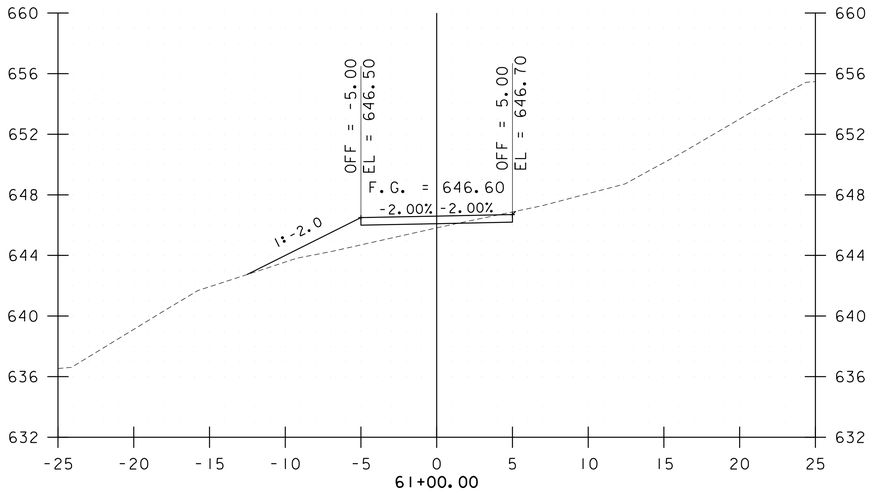
EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

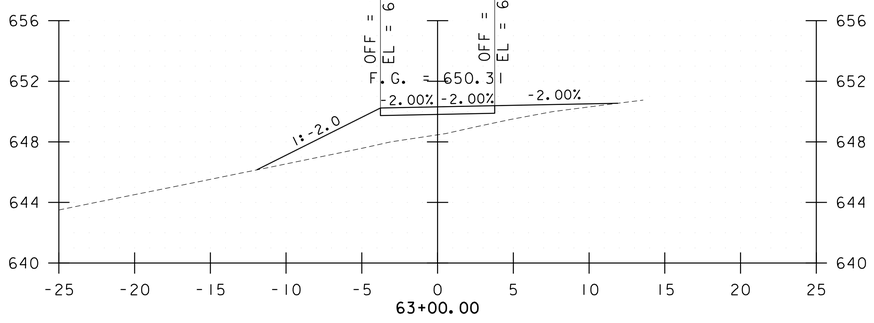
Title
CROSS SECTIONS SHEET 14

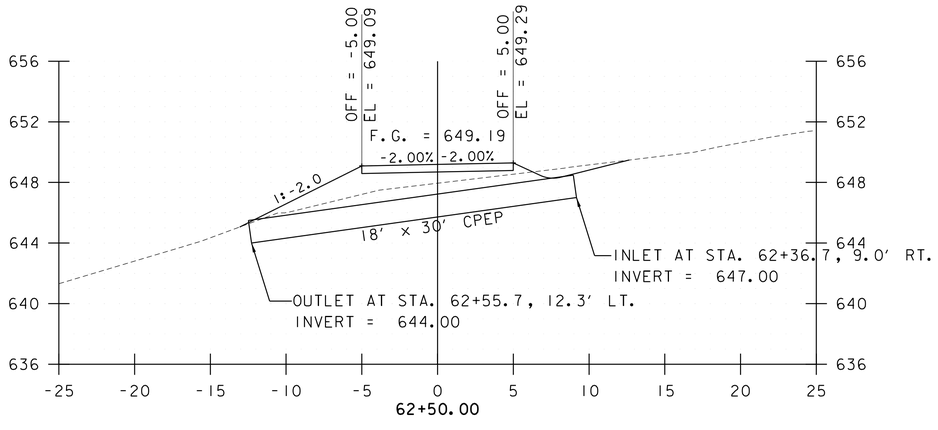
Project No.	Scale	
195311563	1" = 5'	
Drawing No.	Sheet	Revision
	55 of 57	0











STA. 61+00 TO STA. 63+00

PHASE 2

Stantec

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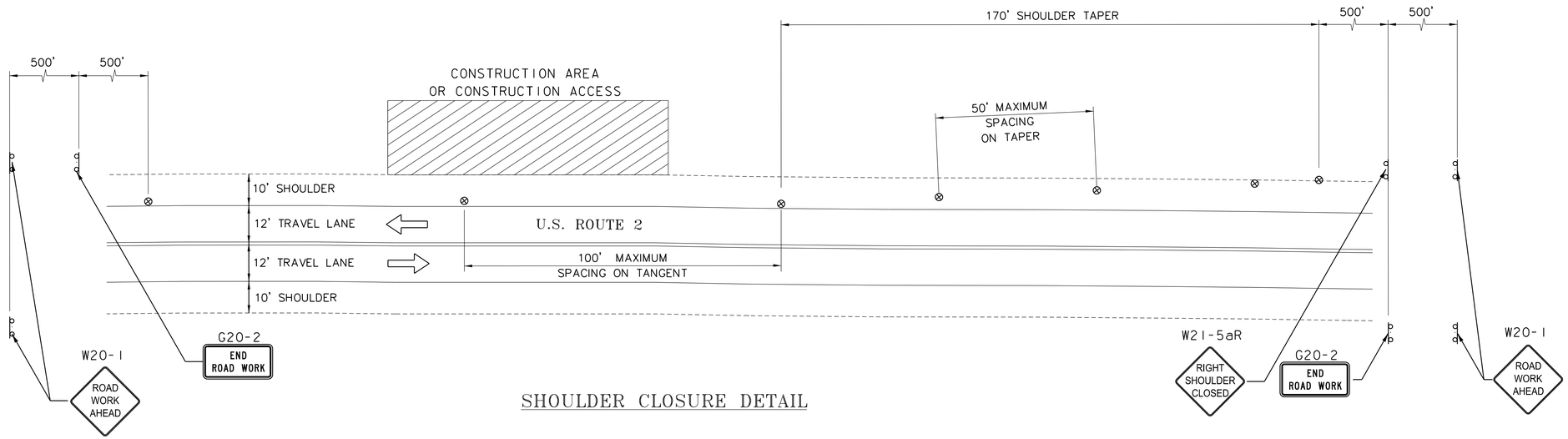
Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
CROSS SECTIONS SHEET 15

Project No.	Scale	
195311563	1" = 5'	
Drawing No.	Sheet	Revision
	56 of 57	0



SHOULDER CLOSURE DETAIL

TEMPORARY TRAFFIC CONTROL NOTES

1. THE FOLLOWING TRAFFIC CONTROL INFORMATION IS INTENDED TO BE A GENERAL OUTLINE FOR HOW THE WORK SHOULD PROCEED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE SITE SPECIFIC DETAILS TO ADDRESS SPECIFIC SITUATIONS. THIS RESPONSIBILITY INCLUDES PROVIDING A PLAN DETAILING THE USE AND PLACEMENT OF SIGNS, CHANNELING DEVICES, ARROW PANELS, FLAGGERS DURING LANE CLOSURES. ALL TRAFFIC CONTROL DETAILS MUST BE DESIGNED AND IMPLEMENTED IN ACCORDANCE WITH THE MUTCD AND VAOT STANDARDS T-1, T-10, T-17, T-24, T-28, T-29, T-30, T-31, T-35 AND T-36. WHERE CONFLICTS EXIST, THE MUTCD SHALL GOVERN. CONTRACTOR TO PROVIDE TRAFFIC CONTROL PLAN TO THE ENGINEER FOR REVIEW AND APPROVAL AT LEAST 14 DAYS PRIOR TO THE START OF CONSTRUCTION. THE COST OF PREPARING THIS PLAN (AND MAKING CHANGES IF NECESSARY) SHALL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 641.10, TRAFFIC CONTROL.

2. ALL TEMPORARY TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THESE PROJECT PLANS, APPLICABLE VAOT STANDARD DRAWINGS, AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), DATED 2009, AND ITS LATEST REVISIONS, OR AS DIRECTED BY THE ENGINEER.

3. THE CONTRACTOR MUST PROVIDE ACCESS THROUGH THE WORK ZONE FOR EMERGENCY VEHICLES AT ALL TIMES.

4. SIGNS SHALL ONLY BE VISIBLE TO MOTORISTS AT THE TIMES WHEN THE MESSAGE IS PERTINENT, I.E. A "FLAGGER AHEAD" SIGN SHALL ONLY BE VISIBLE TO MOTORISTS WHEN THE FLAGGER IS ACTUALLY PRESENT PERFORMING THEIR DUTIES.

5. MAINTAIN ACCESS TO ALL PROPERTIES AT ALL TIMES FOR EMERGENCY VEHICLES. MAINTAIN ACCESS TO ALL COMMERCIAL AND MUNICIPAL PROPERTIES DURING BUSINESS HOURS. ACCESS TO RESIDENTIAL PROPERTIES MAY BE RESTRICTED FOR A SHORT DURATION (A FEW HOURS). THIS WORK WILL BE COORDINATED WITH THE OWNER. COORDINATE MAJOR WORK ON COMMERCIAL OR MUNICIPAL ACCESSES WITH THE OWNER AT LEAST ONE WEEK PRIOR TO STARTING THE WORK. ALL ACCESSES SHALL ALSO BE KEPT FREE OF WORK AND TRAFFIC CONTROLLED BY UTO'S OR FLAGGERS AS REQUIRED.

6. ALL REASONABLE EFFORTS SHALL BE MADE TO ACCOMMODATE PEDESTRIAN TRAVEL AT ALL TIMES. THIS CAN INCLUDE, BUT IS NOT LIMITED TO A DEDICATED PEDESTRIAN ESCORT, SIGNAGE AND CONED OFF WALKING AREAS WITHIN CLOSED LANES. FLAGGERS SHALL NOT BE USED AS PEDESTRIAN ESCORTS. WHEN EXISTING PEDESTRIAN FACILITIES ARE DISRUPTED, CLOSED, OR RELOCATED IN A TEMPORARY TRAFFIC CONTROL ZONE, THE TEMPORARY FACILITIES SHALL BE DETECTABLE, SHALL MAINTAIN ADA STANDARDS AND SHALL INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH THE FEATURES PRESENT IN THE EXISTING PEDESTRIAN FACILITY. PAYMENT WILL BE INCLUDED IN THE UNIT PRICE FOR ITEM 641.10 TRAFFIC CONTROL.

7. IT IS ANTICIPATED THAT MUCH OF THE WORK WILL TAKE PLACE OUTSIDE OF THE EXISTING TRAVEL WAY. FOR WORK ENCROACHING ONTO THE TRAVEL WAY, CONTRACTOR SHALL SHIFT TRAFFIC AND MAINTAIN TWO-WAY TRAFFIC AT ALL TIMES.

8. NO CONSTRUCTION SIGNS SHALL BE INSTALLED AS TO INTERFERE OR OBSTRUCT THE VIEW OF EXISTING TRAFFIC CONTROL DEVICES, STOPPING SIGHT DISTANCE, AND CORNER SIGHT DISTANCE FROM DRIVES AND TOWN HIGHWAYS. EXISTING SIGNS WHICH CONFLICT WITH TEMPORARY TRAFFIC CONTROL SHALL BE COMPLETELY COVERED OR REMOVED.

9. CONSTRUCTION ZONE SIGN LAYOUT SHALL BE IN ACCORDANCE WITH SECTION 6 OF THE LATEST EDITION OF THE MUTCD, AND AS OUTLINED IN THE SPECIAL PROVISIONS.

10. DIAMOND SHAPED SIGNS SHALL BE 4' X 4' WITH BLACK TEXT AND BORDER ON A RETROREFLECTIVE FLUORESCENT ORANGE BACKGROUND.

25. RETROREFLECTIVE SHEETING SHALL BE AS NOTED ON VAOT STANDARD T-1 AND IN SUBSECTION 750.08

11. AS THE CONSTRUCTION OPERATION MOVES, FLAGGER SIGNS SHALL BE MOVED ACCORDINGLY. AT NO TIME SHOULD THE FLAGGER SYMBOL SIGN BE MORE THAN 500 FEET FROM THE FLAGGER STATION. FLAGGER SIGNS SHALL BE COVERED OR TURNED AWAY FROM TRAFFIC WHEN FLAGGING OPERATIONS CEASE FOR LONGER THAN 15 MINUTES.

12. BARRELS/DRUMS SHALL BE USED TO CLEARLY DEFINE THE TRAVEL SPACE AND PROVIDE SEPARATION FROM THE WORK SPACE ALONG ITS ENTIRE LENGTH. REFLECTORIZED CONES OR DRUMS MAY BE USED TO DELINEATE COMMERCIAL DRIVEWAYS WITHIN THE WORK ZONE.

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Consultants

Legend

Notes

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD

File Name: 11c.dgn	PZA	GAS	ISM	7/26/2018
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project
CROSS VT TRAIL ASSOCIATION

EAST MONTPELIER STP EHO6(3)
MONTPELIER-BERLIN STP CVRT(2)

Title
TEMPORARY TRAFFIC CONTROL PLAN

Project No.	Scale	
195311563	1" = 20'	
Drawing No.	Sheet	Revision
	57 of 57	0

AGGREGATE SURFACE COURSE, TRAIL

xx. DESCRIPTION. This work shall consist of furnishing and placing a wearing course of approved aggregate on a prepared surface.

The work under this Section shall be performed in accordance with these provisions, the Plans, and Section 401 of the Standard Specifications.

xx. MATERIALS. Aggregate for Aggregate Surface Course, Trail shall meet the gradation requirements of the following table as determined in accordance with AASHTO T 27 and AASHTO T 11:

TABLE A – AGGREGATE SURFACE COURSE, TRAIL

Sieve Designation	Percentage by Mass (Weight) Passing Square Mesh Sieves
12.5 mm (1/2 inch)	100
9.5 mm (3/8 inch)	80 to 100
4.75 mm (No. 4)	60 to 90
1.18 mm (No. 16)	20 to 40
600 µm (No. 30)	14 to 30
300 µm (No. 50)	10 to 25
150 µm (No. 100)	8 to 15
75 µm (No. 200)	0 to 10

xx. PLACING. The maximum layer thickness for placement of Aggregate Surface Course, Sidewalk/Trail shall be 75 ± 10 mm (3 ± 1/2 inches) after compaction.

xx. METHOD OF MEASUREMENT. The quantity of Special Provision (Aggregate Surface Course, Trail) to be measured for payment will be the number of cubic meters (cubic yards) used in the complete and accepted work, as determined by the Plan dimensions of the compacted material or as ordered by the Engineer. No allowance will be made for material placed to a depth greater than that shown on the Plans unless ordered by the Engineer.

xx. BASIS OF PAYMENT. The accepted quantity of Special Provision (Aggregate Surface Course, Trail) will be paid for at the Contract unit price per cubic meter (cubic yard). Payment will be full compensation for performing the work specified and for furnishing all materials, labor, tools, equipment, and incidentals necessary to complete the work.

Water used for obtaining the required compaction will not be paid for separately but will be considered incidental to Special Provision (Aggregate Surface Course, Trail).

Payment will be made under:

Pay Item	Pay Unit
900.608 Special Provision (Aggregate Surface Course, Trail)	Cubic Yard

DRILLED MICROPILE & CONCRETE ABUTMENTS

XX. DESCRIPTION. This work shall consist of constructing micropiles and steel reinforced concrete abutments as shown on the contract plans and approved working drawings and as specified herein. Contractor is referred to VTrans 2018 Standard Specifications for Construction Section 501 – HPC Structural Concrete and Section 507 – Reinforcing Steel for further information in regards to construction of the steel reinforced concrete abutments.

The Contractor is responsible for furnishing of all design, materials, products, accessories, tools, equipment, services, transportation, labor and supervision, and manufacturing techniques required for design, installation and testing of micropiles and pile top attachments for this project. The Contractor is responsible for furnishing of all design, materials, equipment, labor and supervision required for design, detailing and installation of the steel reinforced concrete abutments. Contractor’s Engineer shall work closely with the Prefabricated Multi-Modal Bridge manufacturer to determine foundation loadings (both axial and lateral) and tolerance of the bridge for total and differential settlement prior to commencing design work on the micropiles or concrete abutments.

The selected Contractor shall select the micropile type, size, pile top attachment, installation means and methods, estimate the ground-grout bond value and determine the required grout bond length and final micropile diameter. The Contractor shall design and install micropiles that will develop the load capacities required by the chosen superstructure manufacturer. The micropile load capacities shall be verified by proof load testing as required and must meet the test acceptance criteria specified herein. Bridge abutment dimensions have been provided and are to be considered approximate. These dimensions shall be verified or adjusted by the Contractor’s Engineer during the shop submittal process to accommodate the Contractor’s chosen superstructure manufacturer’s design and clearance requirements and the Contractor’s chosen micropile type, size, layout and design.

XX. CONTRACTOR'S EXPERIENCE REQUIREMENTS AND SUBMITTAL. The Contractor shall be experienced in the construction and load testing of micropiles and have successfully constructed at least 5 projects in the last 5 years involving construction totaling at least 100 micropiles of similar capacity to those required in these plans and specifications.

The Contractor shall have previous micropile drilling and grouting experience in soil/rock similar to project conditions. The Contractor shall submit construction details, structural details and load test results for at least three previous successful micropile load tests from different projects of similar scope to this project.

The Contractor shall assign a Professional Engineer, licensed in the State of Vermont, to supervise the work. This Engineer shall have experience on at least 3 projects of similar scope to this project completed over the past 5 years. The Contractor shall not use manufacturers' representatives to satisfy the supervising Engineer requirements of this section. The Contractor may use a single independent Consultant for this purpose, provided the consultant has specific experience as listed above, and operates their business specifically for the purpose of transferring technology and skills in micropiling to Contractors. The on-site foremen

and drill rig operators shall also have experience on at least 5 projects over the past 5 years installing micropiles of equal or greater capacity than required in these plans and specifications.

The micropiles shall be designed by a Vermont licensed Professional Engineer with pile expertise and experience in the design of at least 3 successfully completed micropile projects over the past 5 years, with micropiles of similar capacity to those required in these plans and specifications. The micropile designer may be either an employee of the Contractor or a separate Consultant designer meeting the stated experience requirements. This Engineer shall also be responsible for design, supervision and reporting of the proof tests.

The abutments shall be designed by a Vermont licensed Professional Engineer with experience in designing steel reinforced concrete structures. The abutment designer need not be the same Engineer that designs the micropiles. However, if multiple designers are involved, close coordination will be required by all, including the bridge manufacturer's designer, to ensure that appropriate loads are used in the design of each element.

At least 45 calendar days before the planned start of micropile construction, the Contractor shall submit 5 copies of the completed project reference list and a personnel list. The project reference list shall include a brief project description with the owner's name and current phone number and load test reports. The personnel list shall identify the micropile system designer (if applicable), the abutment designer, the bridge manufacturer, supervising project Engineer, drill rig operators, and on-site foremen to be assigned to the project. The personnel list shall contain a summary of each individual's experience and be complete enough for the Engineer to determine whether each individual satisfies the required qualifications. The Engineer will approve or reject the Contractor's qualifications within 15 calendar days after receipt of a complete submission. Additional time required due to incomplete or unacceptable submittals will not be cause for time extension or impact or delay claims. All costs associated with incomplete or unacceptable submittals shall be borne by the Contractor.

Work shall not be started, nor materials ordered, until the Engineer's written approval of the Contractor's experience qualifications is given. The Engineer may suspend the Work if the Contractor uses non-approved personnel. If work is suspended, the Contractor shall be fully liable for all resulting costs and no adjustment in contract time will result from the suspension.

XX. REFERENCED CODES AND STANDARDS. The following publications form a part of this specification to the extent indicated by the references. The latest publication as of the issue date of this specification shall govern, unless indicated otherwise.

(a) American Society for Testing and Materials (ASTM)

American Association of State Highway and Transportation Officials (AASHTO)

ASTM	AASHTO	SPECIFICATIONS TEST
A36, A572	M183, M223	Structural Steel
A82	M55	Cold-Drawn Steel Wire for Concrete Reinforcement
A252		Welded and Seamless Steel Pipe Piles
A615	M31	Deformed and Plain Billet Steel Bars for Concrete Reinforcement
A722	M275	Uncoated High-Strength Steel Bar for Prestressing Concrete
A775		Epoxy -Coated Reinforcing Steel Bars
A934		Epoxy-Coated Prefabricated Steel Reinforcing Bars
C33	M80	Concrete Aggregates
C 109	T106	Compressive Strength of Hydraulic Cement Mortar
C 188	T133	Density of Hydraulic Cement
C 144	M45	Aggregate for Masonry Mortar
C150	M85	Portland Cement
C494	M194	Chemical Admixtures for Concrete
D1143		Method of Testing Piles Under Statis Axial Compressive Load
D1784		Polyvinyl Chloride (PVC) Pipe (Class 13464-B)
D3350	M252	Polyethylene Corrugated Tubing
D3689		Method of Testing Individual Piles Under Static Axial Tensile Load
D3966		Standard Test Method for Piles Under Lateral Load
	T26	Quality of Water to be Used in Concrete

(b) American Welding Society (AWS)

D1.1 Structural Welding Code-Steel

D1.2 Structural Welding Code-Reinforcing Steel

(c) American Petroleum Institute (API)

5CT (N-80) Specification for casing and tubing

RP 13B-1 Recommended Practice — Standard Procedure for Field Testing

Water Based Drilling Fluids

XX. AVAILABLE INFORMATION. Available information developed by the Owner, or by the Owner's duly authorized representative includes the following items:

(a) Plans prepared by Stantec Consulting Services, Inc. The plans include the abutment plan view, elevation and typical cross section for the proposed micropile locations.

(b) Geotechnical Report prepared by GeoDesign, Inc. titled Geotechnical Engineering Recommendations – Final Design, dated February 25, 2010, included or referenced in the bid documents, contains the results of test pits, exploratory borings and other site

investigation data obtained in the vicinity of the proposed micropile locations.

XX. CONSTRUCTION SITE SURVEY. Before bidding the Work, the Contractor shall review the available subsurface information and visit the site to assess the site geometry, equipment access conditions, and location of existing structures and above ground facilities.

The Contractor is responsible for field locating and verifying the location of all utilities shown on the plans prior to starting the Work. Maintain uninterrupted service for those utilities designated to remain in service throughout the Work. Notify the Engineer of any utility locations different from that shown on the plans that may require micropile relocations or structure design modification.

Prior to start of any micropile or abutment construction activity, the Contractor and Engineer shall jointly inspect the site to observe and document the pre-construction condition of the site, existing structures and facilities.

XX. FOUNDATION DESIGN REQUIREMENTS. The micropiles and abutments shall be designed to meet the specified loading conditions, as required by the Prefabricated Multi-Modal Bridge manufacturer. Design the micropiles, pile top to footing connections and steel reinforced concrete abutments using the Load Resistance Factor Design (LRFD) procedures contained in the AASHTO Bridge Design Specifications.

The required geotechnical load and resistance factors shall be in accord with the AASHTO Specifications. Estimated soil/rock design shear strength parameters, unit weights, applied foundation loadings, slope and external surcharge loads, corrosion protection requirements, known utility locations, easements, right-of-ways and other applicable design criteria will be as shown on the plans or specified herein.

Steel pipe used for micropile permanent casing shall incorporate an additional 1/16 inch thickness for sacrificial steel corrosion protection.

Where required as shown on the contract plans, corrosion protection of the internal steel reinforcing bars, consisting of either encapsulation, epoxy coating, or grout, shall be provided in accordance with Materials Section 2.0. Where permanent casing is used for a portion of the micropile, encapsulation shall extend at least 5 ft into the casing.

XX. MICROPILE & CONCRETE ABUTMENT DESIGN SUBMITTALS. At least 21 calendar days before the planned start of micropile and abutment structure construction, Contractor shall prepare and submit to the Engineer complete design calculations and working drawings for review and approval. Include all details, dimensions, quantities, ground profiles, and cross-sections necessary to construct the micropile and abutment structure. Verify the limits of the structures and ground survey data before preparing the detailed working drawings.

The drawings and calculations shall be signed and sealed by the Contractor's Vermont licensed Professional Engineer(s) with pile and steel reinforced concrete structure expertise. If the Contractor uses a Consultant designer to prepare the design, the Contractor shall still

have overall contract responsibility for both the design and the construction.

(a) Design Calculations. Design calculations shall include, but not be limited to, the following items:

(1) A written summary report which describes the overall micropile and abutment design.

(2) Applicable code requirements and design references.

(3) Micropile and abutment structure critical design cross-section(s) geometry including soil/rock strata and piezometric levels and location, magnitude and direction of design applied loadings, including slope or external surcharge loads.

(4) Design criteria including, soil/rock shear strengths (friction angle and cohesion), unit weights, ground-grout bond values, micropile drillhole diameter assumptions for each soil/rock strata and earth pressure coefficients.

(5) Load and resistance factors used in the design of the ground-grout bond values, surcharges, soil/rock and material unit weights, steel, grout, and concrete materials.

(6) Design calculation sheets (both static and seismic) with the project number, micropile and abutment structure location, designation, date of preparation, initials of designer and checker, and page number at the top of each page. Provide an index page with the design calculations.

(7) Design notes including an explanation of any symbols and computer programs used in the design.

(8) Pile to footing connection calculations.

(9) Calculations for abutment reinforcement to accommodate the Contractor designed pile layout.

(10) Calculations for necessary modifications to the bridge substructure, the bearing device design, the anchor bolt design and pattern, and any other modifications necessary to fit the abutments to the micropiles.

(b) Working Drawings. The working drawings shall include all information required for the construction and quality control of the piling and abutments. Working drawings shall include, but not be limited to, the following items unless provided in the contract plans:

(1) A plan view of the micropile and abutment structure(s) identifying:

a. A reference baseline and elevation datum.

b. The offset from the construction centerline or baseline to the face of the micropile and abutment structure at all changes in horizontal alignment.

c. Beginning and end of micropile and abutment structure stations.

(2) An elevation view of the micropile and abutment structure(s) identifying:

a. Elevation view showing micropile locations and elevations; vertical and horizontal spacing of piles and abutment reinforcing steel; batter and alignment of piling and the location of drainage elements (if applicable).

b. Existing and finish grade profiles both behind and in front of the micropile and abutment structure.

(3) Design parameters and applicable codes.

(4) General notes for constructing the micropile and abutment structure including construction sequencing or other special construction requirements.

(5) Horizontal and vertical curve data affecting the micropile and abutment structure and control points. Match lines or other details to relate micropile and abutment structure stationing to centerline stationing.

(6) A listing of the summary of quantities on the elevation drawing of each micropile and abutment structure.

(7) Micropile and abutment typical sections including micropile spacing and inclination; steel reinforcing bar spacing, minimum drillhole diameter; pipe casing and reinforcing bar sizes and details; splice types and locations; centralizers and spacers; grout bond zone and casing plunge lengths (if used); corrosion protection details; and connection details to the substructure footing, anchorage, plates, etc.

(8) A typical detail of verification and production proof test micropiles defining the micropile length, minimum drillhole diameter, inclination, and load test bonded and unbonded test lengths.

(9) Details, dimensions, and schedules for all micropiles and abutments, casing and reinforcing steel, including reinforcing bar bending details.

The working drawings and design calculations shall be signed and sealed by the Contractor's Vermont licensed Professional Engineer. If the Contractor uses a Consultant designer to prepare the design, the Contractor shall still have overall contract responsibility for both the design and the construction of the piling and abutments.

The working drawings shall be prepared and provided in accord with Subsection 105.03, Plans and Working Drawings.

Revise the drawings when plan dimensions are changed due to field conditions or for other reasons. Within 30 days after completion of the work, submit as-built drawings to the Engineer. Provide revised design calculations signed by the approved Vermont licensed Professional Engineer for all design changes made during the construction of the micropile and abutment structure.

XX. CONSTRUCTION SUBMITTALS. The Contractor shall prepare and submit to the Engineer, for review of completeness, 5 copies of the following for the micropile and abutment system or systems to be constructed:

(a) Detailed step-by-step description of the proposed micropile and abutment construction procedure, including personnel, testing and equipment to assure quality control. This step-by-step procedure shall be shown on the working drawings in sufficient detail to allow the Engineer to monitor the construction and quality of the micropile and abutment work.

(b) Proposed start date and time schedule of abutment construction and micropile installation schedule providing the following:

(1) Micropile number

(2) Micropile and abutment design loads

(3) Type and size of reinforcing steel

(4) Minimum total bond length

(5) Total micropile length

(6) Total volume of abutment concrete

(7) Micropile top footing attachment

(c) If welding of casing is proposed, submit the proposed welding procedure. All welding shall be done in accordance with the current AWS Structural Welding Code.

(d) Information on headroom and space requirements for installation equipment that verify the proposed equipment can perform at the site.

(e) Plan describing how surface water, drill flush, and excess waste grout will be controlled and disposed.

(f) Certified mill test reports for the reinforcing steel or coupon test results for permanent casing without mill certification. The ultimate strength, yield strength, elongation, and material properties composition shall be included. For API N-80 pipe casing, coupon test results may be submitted in lieu of mill certification.

(g) Proposed Grouting Plan. The grouting plan shall include complete descriptions, details, and supporting calculations for the following:

(1) Grout mix design and type of materials to be used in the grout including certified test data and trial batch reports. The Contractor shall also provide specific gravity of the wet mix design.

(2) Methods and equipment for accurately monitoring and recording the grout depth, grout volume and grout pressure as the grout is being placed.

(3) Grouting rate calculations, when requested by the Engineer. The calculations shall be based on the initial pump pressures or static head on the grout and losses throughout the placing system, including anticipated head of drilling fluid (if applicable) to be displaced.

(4) Estimated curing time for grout to achieve specified strength. Previous test results for the proposed grout mix completed within one year of the start of grouting may be submitted for initial verification and acceptance and start of production work. During production, grout shall be tested in accord with Section 3.4.5.

(5) Procedure and equipment for Contractor monitoring of grout quality. At a minimum, the Contractor shall be required to use a Baroid Mud Balance (per API RP-13B-1) to check the specific gravity of the mixed grout prior to placement of the grout into each drilled micropile.

(h) Detailed plans for the proposed micropile load testing method. This shall include all drawings, details, and structural design calculations necessary to clearly describe the proposed test method, reaction load system capacity and equipment setup, types and accuracy of apparatus to be used for applying and measuring the test loads and pile top movements in accordance with Section 3.6, Pile Load Tests.

(i) Calibration reports and data for each test jack, pressure gauge and master pressure gauge and electronic load cell to be used. The calibration tests shall have been performed by an independent testing laboratory, and tests shall have been performed within 90 calendar days of the date submitted. Testing shall not commence until the Engineer has reviewed and accepted the jack, pressure gauge, master pressure gauge and electronic load cell calibration data.

Work shall not begin until the construction submittals have been received, reviewed, and accepted in writing by the Engineer. Any submittals that are found to be unacceptable by the Engineer shall be revised, resubmitted and accepted prior to commencing work.

XX. PRE-CONSTRUCTION MEETING. A pre-construction meeting will be scheduled by the Engineer and held prior to the start of micropile and abutment construction. The Engineer, prime Contractor, micropile specialty

Contractor, micropile designer, abutment designer, excavation Contractor and geotechnical instrumentation specialist (if applicable) shall attend the meeting. Attendance is mandatory.

The pre-construction meeting will be conducted to clarify the construction requirements for the work, to coordinate the construction schedule and activities, and to identify contractual relationships and delineation of responsibilities amongst the prime Contractor and the various Subcontractors - specifically those pertaining to excavation for micropile structures, anticipated subsurface conditions, micropile installation and testing, micropile structure survey control and site drainage control.

XX. MATERIALS. Furnish materials new and without defects. Remove defective materials from the jobsite at no additional cost. Materials for steel reinforced concrete abutments shall be as specified in VTrans 2018 Standard Specifications for Construction Sections 501 – HPC Structural Concrete and 507 – Reinforcing Steel. Materials for micropiles shall consist of the following:

(a) Admixtures for Grout. Admixtures shall conform to the requirements of ASTM C 494/AASHTO M194. Admixtures that control bleed, improve flowability, reduce water content, and retard set may be used in the grout, subject to the review and acceptance of the Engineer. Admixtures shall be compatible with the grout and mixed in accordance with the manufacturer's recommendations. Expansive admixtures shall only be added to the grout used for filling sealed encapsulations and anchorage covers. Accelerators are not permitted. Admixtures containing chlorides are not permitted.

(b) Cement: All cement shall be Portland cement conforming to ASTM C 150/AASHTO M85, Types II, HI or V.

(c) Centralizers and Spacers: Centralizers and spacers shall be fabricated from schedule 40 PVC pipe or tube, steel, or material non-detrimental to the reinforcing steel. Wood shall not be used. Centralizers and spacers shall be securely attached to the reinforcement; sized to position the reinforcement within 3/8″ of plan location from center of pile; sized to allow grout tremie pipe insertion to the bottom of the drillhole; and sized to allow grout to freely flow up the drillhole and casing and between adjacent reinforcing bars.

(d) Encapsulation: Encapsulation (double corrosion protection) shall be shop fabricated using high-density, corrugated polyethylene tubing conforming to the requirements of ASTM D3350/AASHTO M252 with a nominal wall thickness of 1/32″. The inside annulus between the reinforcing bars and the encapsulating tube shall be a minimum of ¼″ and be fully grouted with non-shrink grout conforming to Materials Section 2.0.

(e) Epoxy Coating: The minimum thickness of coating applied electrostatically to the reinforcing steel shall be 0.0118″. Epoxy coating shall be in accordance with ASTM A775 or ASTM A934. Bend test requirements are waived. Bearing plates and nuts encased in the pile concrete footing need not be epoxy coated.

(f) Fine Aggregate: If sand - cement grout is used, sand shall conform to ASTM C 144/AASHTO M45.

(g) Grout: Neat cement or sand/cement mixture. The designer is responsible for indicating the 3 day and 28 day compressive strengths. The grout shall conform to the specification AASHTO T106 / ASTM C109 and to any minimum and/or maximum properties required by the designer.

(h) Grout Protection: Provide a minimum 1″ grout cover over bare or epoxy coated bars (excluding bar couplers) or minimum ½″ grout cover over the encapsulation of encapsulated bars.

(i) Permanent Casing Pipe: Permanent steel casing/pipe shall have the diameter and at least minimum wall thickness shown on the approved Working Drawings. The permanent steel casing/pipe:

(1) shall conform to one or more of the following specifications ASTM 252, ASTM 106, or API (N-80).
(2) may be new "Structural Grade" (a.k.a. "Mill Secondary") steel pipe meeting above but without Mill Certification, free from defects (dents, cracks, tears) and with two coupon tests per truckload delivered to the fabricator.
(3) shall be designed to withstand the design service loadings required by the designer and the proof test loading described in this specification.

For permanent casing/pipe that will be welded, the following material conditions apply:

(1) the carbon equivalency (CE) as defined in AWS D1.1, Section X15.1, shall not exceed 0.45, as demonstrated by mill certifications
(2) the sulfur content shall not exceed 0.05%, as demonstrated by mill certifications.

For permanent casing/pipe that will be shop or field welded, the following fabrication or construction conditions apply:

(1) the steel pipe shall not be joined by welded lap splicing
(2) welded seams and splices shall be complete penetration welds
(3) partial penetration welds may be restored in conformance with AWS D1.1
(4). the proposed welding procedure certified by a welding specialist shall be submitted for approval

Threaded casing joints shall develop at least the required nominal resistance used in the design of the micropile.

(j) Plates and Shapes: Structural steel plates and shapes for pile top attachments shall conform to ASTM A 36/AASHTO M183, or ASTM A 572/AASHTO M223, Grade 50.

(k) Reinforcing Bars: Reinforcing steel shall be deformed bars in accordance with ASTM A 615/AASHTO M31, Grade 60 or Grade 75 or ASTM A 722/AASHTO M275, Grade 150. The grade, thickness and number of bars shall be indicated by the designer and shall conform to any

minimum and/or maximum properties so required. Continuous spiral deformations (ie continuous threadbars) shall be used. Bar tendon couplers, if required, shall develop the ultimate tensile strength of the bars without evidence of any failure.

(l) Sheathing: Smooth plastic sheathing, including joints, shall be watertight. Polyvinyl chloride (PVC) sheathing shall conform to ASTM D 1784, Class 13464-B.

(m) Water: Water used in the grout mix shall conform to AASHTO T 26 and shall be potable, clean, and free from substances that may be injurious to cement and steel.

XX. DEFINITIONS.

Alignment Load (AL): A minimum initial load (5 percent DL maximum) applied to micropile during testing to keep the testing equipment correctly positioned.

Bonded Length: The length of the micropile that is bonded to the ground and conceptually used to transfer the applied axial loads to the surrounding soil or rock. Also known as the load transfer length.

Bond-breaker: A sleeve placed over the steel reinforcement to prevent load transfer.

Contractor: The person/firm responsible for performing the micropile work.

Coupler: The means by which load capacity can be transmitted from one partial length of reinforcement to another.

Creep Movement: The movement that occurs during the creep test of a micropile under a constant load.

Design Load (DL): The maximum unfactored load expected to be applied to the micropile during its service life.

Engineer: The Owner or Owner's authorized agent.

Free (unbonded) length: The designed length of the micropile that is not bonded to the surrounding ground or grout.

Geotechnical Bond Design Strength: For Load Resistance Factor Design (LRFD), computed as the nominal grout-to-ground bond strength (abond nominal strength), multiplied by a geotechnical resistance factor fG. Use fG = 0.6 for typical designs and non-seismic load groups; use fG = 1.0 for seismic loads groups.

Micropile: A small-diameter, bored, cast-in-place composite pile, in which the applied load is resisted by steel reinforcement, cement grout and frictional grout/ground bond.

Maximum Test Load: The maximum load to which the micropile is subjected during testing. Recommended as 2.5 x DL for verification load tests and as 1.67 X DL for proof load tests.

Nominal Grout-to-Ground Bond Strength: The estimated ultimate geotechnical unit grout-to-ground bond strength selected for use in design.

Overburden: Material, natural or placed, that may require cased drilling methods to provide an open borehole to underlying strata.

Post-grouting: The injection of additional grout into the load transfer length of a micropile after the primary grout has set. Also known as regrouting or secondary grouting.

Primary Grout: Portland-cement-based grout injected into the micropile hole prior to or after the installation of the reinforcement to direct the load transfer to the surrounding ground along the micropile.

Proof Load Test: Incremental loading of a production micropile, recording the total movement at each increment.

Reinforcing Bars: Sheathing: Smooth or corrugated piping or tubing that protects the reinforcing steel against corrosion.

XX. CONSTRUCTION REQUIREMENTS.

(a) Site Drainage Control. The Contractor shall control and properly dispose of drill flush and construction related waste, including excess grout, in accord with the standard specifications and all applicable local codes and regulations. Provide positive control and discharge of all surface water that will affect construction of the micropile installation. Maintain all pipes or conduits used to control surface water during construction. Repair damage caused by surface water at no additional cost. Upon substantial completion of the Work, remove surface water control pipes or conduits from the site. Alternatively, with the approval of the Engineer, pipes or conduits that are left in place, may be fully grouted and abandoned or left in a way that protects the structure and all adjacent facilities from migration of fines through the pipe or conduit and potential ground loss. Immediately contact the Engineer if unanticipated existing subsurface drainage structures are discovered during excavation or drilling.

(b) Excavation. Coordinate the work and the excavation so the micropile and abutment structures are safely constructed. Perform the micropile and abutment construction and related excavation in accordance with the Plans and approved submittals. No excavations steeper than those specified herein or shown on the Plans will be made above or below the micropile and abutment structure locations without written approval of the Engineer.

(c) Micropile Allowable Construction Tolerances.

(1) Centerline of piling shall not be more than 3 in from indicated plan location.
(2) Pile shall be plumb within 2 percent of total-length plan alignment.
(3) Top elevation of pile shall be plus 1 in or minus 1 in maximum from vertical elevation indicated.

(4) Centerline of reinforcing steel shall not be more than 1/2″ from indicated location.

(d) Micropile Installation. The micropile Contractor shall select the drilling method, the grouting procedure, and the grouting pressure used for the installation of the micropiles. The micropile Contractor shall also determine the micropile casing size, final drillhole diameter and bond length, and central tendon reinforcement steel sizing necessary to develop the specified load capacities and load testing requirements. The micropile Contractor is also responsible for estimating the grout take. There will be no extra payment for grout overruns.

(1) Drilling. The drilling equipment and methods shall be suitable for drilling through the conditions to be encountered, without causing damage to any overlying or adjacent structures or services. The drillhole must be open along its full length to at least the design minimum drillhole diameter prior to placing grout and reinforcement.

Temporary casing or other approved method of pile drillhole support will be required in caving or unstable ground to permit the pile shaft to be formed to the minimum design drillhole diameter. The Contractor's proposed method(s) to provide drillhole support and to prevent detrimental ground movements shall be reviewed by the Engineer. Detrimental ground movement is defined as movement which requires remedial repair measures. Use of drilling fluid containing bentonite is not allowed.

(2) Ground Heave or Subsidence. During construction, the Contractor shall observe the conditions vicinity of the micropile construction site on a daily basis for signs of ground heave or subsidence. Immediately notify the Engineer if signs of movements are observed. Contractor shall immediately suspend or modify drilling or grouting operations if ground heave or subsidence is observed, if the micropile structure is adversely affected, or if adjacent structures are damaged from the drilling or grouting. If the Engineer determines that the movements require corrective action, the Contractor shall take corrective actions necessary to stop the movement or perform repairs. When due to the Contractor's methods or operations or failure to follow the specified/approved construction sequence, as determined by the Engineer, the costs of providing corrective actions will be borne by the Contractor.

(3) Pipe Casing and Reinforcing Bars Placement and Splicing. Reinforcement shall be placed prior to grouting the drillhole. Reinforcement surface shall be free of deleterious substances such as soil, mud, grease or oil that might contaminate the grout or coat the reinforcement and impair bond. Pile cages and reinforcement groups, if used, shall be sufficiently robust to withstand the installation and grouting process and the withdrawal of the drill casings without damage or disturbance.

The Contractor shall check pile top elevations and adjust all installed micropiles to the planned elevations.

Centralizers and spacers (if used) shall be provided at 10 ft centers maximum spacing. The upper and lower most centralizer shall be located a maximum of 3 ft from the top and bottom of the micropile. Centralizers and spacers shall permit the free flow of grout without misalignment of the reinforcing bar(s) and permanent casing. The central reinforcement bars with centralizers shall be lowered into the stabilized drillhole and set. The reinforcing steel shall be inserted into the drill hole to the desired depth without difficulty. Partially inserted reinforcing bars shall not be driven or forced into the hole. Contractor shall redrill and reinsert reinforcing steel when necessary to facilitate insertion.

Lengths of casing and reinforcing bars to be spliced shall be secured in proper alignment and in a manner to avoid eccentricity or angle between the axes of the two lengths to be spliced. Splices and threaded joints shall meet the requirements of Materials Section 2.0. Threaded pipe casing joints shall be located at least two casing diameters (OD) from a splice in any reinforcing bar. When multiple bars are used, bar splices shall be staggered at least 1 ft.

(4) Grouting. Micropiles shall be primary grouted the same day the load transfer bond length is drilled. The Contractor shall use a stable neat cement grout or a sand cement grout with a minimum 28-day unconfined compressive strength of 4ksi. Admixtures, if used, shall be mixed in accordance with manufacturer's recommendations. The grouting equipment used shall produce a grout free of lumps and undispersed cement. The Contractor shall have means and methods of measuring the grout quantity and pumping pressure during the grouting operations. The grout pump shall be equipped with a pressure gauge to monitor grout pressures. A second pressure gauge shall be placed at the point of injection into the pile top. The pressure gauges shall be capable of measuring pressures of at least 150 psi or twice the actual grout pressures used, whichever is greater. The grout shall be kept in agitation prior to mixing. Grout shall be placed within one hour of mixing. The grouting equipment shall be sized to enable each pile to be grouted in one continuous operation. The grout shall be injected from the lowest point of the drill hole and injection shall continue until uncontaminated grout flows from the top of the pile. The grout may be pumped through grout tubes, casing, hollow-stem augers, or drill rods. Temporary casing, if used, shall be extracted in stages ensuring that, after each length of casing is removed the grout level is brought back up to the ground level before the next length is removed. The tremie pipe or casing shall always extend below the level of the existing grout in the drillhole. The grout pressures and grout takes shall be controlled to prevent excessive heave or fracturing of rock or soil formations. Upon completion of grouting, the grout tube may remain in the hole, but must be filled with grout.

If the Contractor elects to use a postgrouting system, Working Drawings and details shall be submitted to the Engineer for review in accordance with Section 1.6, Construction Submittals.

(5) Grout Testing. Grout within the micropile verification and proof test piles shall attain the minimum required 3-day compressive strength prior to load testing. Previous test results for the proposed grout mix completed within one year of the start of work may be submitted for initial verification of the required compressive strengths for installation of pre-production verification test piles and initial production piles. During production, micropile grout shall be tested by the Contractor for compressive strength in accordance with AASHTO T106/ASTM C109 at a frequency of no less than one set of three 2 in grout cubes, or 3 in cylinders, from each grout plant each day of operation or per every 10 piles, whichever occurs more frequently. The compressive strength shall be the average of the 3 cubes tested.

Grout consistency as measured by grout density shall be determined by the Contractor per ASTM C 188/AASHTO T 133 or API RP-138-1 at a frequency of at least one test per pile, conducted just prior to start of pile grouting. The Baroid Mud Balance used in accordance with API RP-13B-1 is an approved device for determining the grout density of neat cement grout.

Grout samples shall be taken directly from the grout plant. Provide grout cube compressive strength and grout density test results to the Engineer within 24 hours of testing.

XX. MICROPILE INSTALLATION RECORDS. Contractor shall prepare and submit to the Engineer full-length installation records for each micropile installed. The records shall be submitted within one work shift after that pile installation is completed. The data shall be recorded on an approved micropile installation log. A separate log shall be provided for each micropile.

XX. PILE LOAD TESTS. Perform proof testing of piles at the locations specified herein or designated by the Engineer. Perform compression load testing in accord with ASTM D1143 and tension load testing in accord with ASTM D3689, except as modified herein. Pile load tests shall be performed as specified herein and in accord with Sections 505.04(b) and (c).

(a) Testing Equipment and Data Recording. Testing equipment shall include dial gauges, dial gauge support, jack and pressure gauge, electronic load cell, and a reaction frame. The load cell is required only for the creep test portion of the verification test. The contractor shall provide a description of test setup and jack, pressure gauge and load cell calibration curves in accordance with the Submittals Section.

Design the testing reaction frame to be sufficiently rigid and of adequate dimensions such that excessive deformation of the testing equipment does not occur. Align the jack, bearing plates, and

stressing anchorage such that unloading and repositioning of the equipment will not be required during the test.

Apply and measure the test load with a hydraulic jack and pressure gauge. The pressure gauge shall be graduated in 100 psi increments or less. The jack and pressure gauge shall have a pressure range not exceeding twice the anticipated maximum test pressure. Jack ram travel shall be sufficient to allow the test to be done without resetting the equipment. Monitor the creep test load hold during verification tests with both the pressure gauge and the electronic load cell. Use the load cell to accurately maintain a constant load hold during the creep test load hold increment of the verification test.

Measure the pile top movement with a dial gauge capable of measuring to 0.001 in. The dial gauge shall have a travel sufficient to allow the test to be done without having to reset the gauge. Visually align the gauge to be parallel with the axis of the micropile and support the gauge independently from the jack, pile or reaction frame. Use a minimum of two dial gauges when the test setup requires reaction against the ground or single reaction piles on each side of the test pile.

The required load test data shall be recorded by the Engineer.

(b) Proof Load Tests. Perform proof load tests on the first set of production piles installed at each designated substructure unit prior to the installation of the remaining production piles in that unit. The first set of production piles is the number required to provide the required reaction capacity for the proof tested pile. A total of 2 proof tests (1 at each abutment) shall be performed. Upon completion of each test, the Contractor shall submit a report stamped by a qualified Professional Engineer licensed in the State of Vermont of the test results for review and acceptance by the Engineer.

(c) Proof Test Loading Schedule. Test piles designated for compression or tension proof load testing to a maximum test load of 1.67 times the micropile Design Load as required by the Prefabricated Multi-Modal Bridge manufacturer. Proof tests shall be made by incrementally loading the micropile in accordance with the following schedule, to be used for both compression and tension loading:

AL = Alignment Load DL = Design Load		
	LOAD	**HOLD TIME**
1	AL	1 minute
2	0.25 DL	1 minute
3	0.50 DL	1 minute
4	0.75 DL	1 minute
5	1.00 DL	1 minute
6	1.33 DL	**10 or 60 minutes Creep Test**
7	**1.67 DL**	1 minute
8	**(Maximum Test Load)**	
	AL	1 minute

Depending on performance, either a 10 minute or 60 minute creep test shall be performed at the 1.33 DL Test Load. Where the pile top movement between 1 and 10 minutes exceeds 1 mm, the Maximum Test Load shall be maintained an additional 50 minutes. Movements shall be recorded at 1, 2, 3, 5, 6, 10, 20, 30, 50 and 60 minutes. The alignment load shall not exceed 5 percent of DL. Dial gauges shall be reset to zero after the initial AL is applied.

The acceptance criteria for micropile proof load tests are:

(1) The pile shall sustain the compression or tension 1.0 DL test load with no more than ¼" total vertical movement at the top of the pile, relative to the position of the top of the pile prior to testing.

(2) At the end of the 1.33 DL creep test load increment, test piles shall have a creep rate not exceeding 0.050"/log cycle time (1 to 10 minutes) or 0.1"/log cycle time (6 to 60 minutes). The creep rate shall be linear or decreasing throughout the creep load hold period.

(3) Failure does not occur at the 1.67 DL maximum test load. Failure is defined as the load at which attempts to further increase the test load simply result in continued pile movement.

(d) Proof Test Pile Rejection. If a proof-tested micropile fails to meet the acceptance criteria, the Contractor shall immediately proof test another micropile within that footing. For failed piles and further construction of other piles, the Contractor shall modify the design, the construction procedure, or both. These modifications may include installing replacement micropiles, incorporating piles at not more than 50% of the maximum load attained, post-grouting, modifying installation methods, increasing the bond length, or changing the micropile type. Any modification that necessitates changes to the structure design shall require the Engineer's prior review and acceptance. Any modifications of design or construction procedures, or cost of additional verification test piles and verification and/or proof load testing, or replacement production micropiles, shall be at the Contractor's expense.

XX. METHOD OF MEASUREMENT.

(a) The quantity of Drilled Micropile & Concrete Abutment to be measured for payment will be on a lump sum basis which shall include design and installation of a complete foundation system accepted by the Engineer. The complete system shall consist of two sets of drilled micropiles and two steel reinforced concrete abutments, one at each location specified.

No separate measurement will be made for reinforcing steel, drilling, cleaning of drilled holes, drilling fluids, sealing materials, concrete, required casing and other items required to complete the work unless otherwise indicated on the plans.

(b) Load tests will be measured by the number of unit tests authorized and satisfactorily made.

(c) Mobilization for pile installation, excavation, backfill, geotextile fabric and bedding material will be measured and paid for under the appropriate Contract items as indicated on the Plans.

XX. BASIS OF PAYMENT.

The quantity of Drilled Micropile & Concrete Abutment accepted for payment will be paid for in accordance with a mutually agreed upon schedule of values to be established between the Contractor and Engineer following contract award. Progress payments shall follow the construction milestones outlined in the schedule of values and shall not be made until the applicable work has been accepted by the Engineer.

Pile load tests will be paid for at the contract unit price each.

Preboring, jetting or other methods used to facilitate the installation of piling will not be paid for separately, but will be considered incidental to the contract pay item for Drilled Micropiles & Concrete Abutment.

Pay Item	Pay Unit
900.620 Proof Test of Micropiles	Each
900.645 Drilled Micropile & Concrete Abutment	Lump Sum

GABION RETAINING WALL

xx. DESCRIPTION. This work shall consist of furnishing and installing wire mesh gabion baskets and fill material in accordance with these specifications, in accordance with the lines, grades, and dimensions shown on the Plans, and as directed by the Engineer.

xx. MATERIALS. Materials shall meet the requirements of the following Subsections:

Rock Fill for Gabions 706.06
Gabion Baskets 712.04

xx. CONSTRUCTION REQUIREMENTS. The furnishing and installing of gabion baskets shall be performed in accordance with the manufacturer's recommendations.

The Contractor should expect to perform some manual stone placement to minimize voids and to create a neat, flat vertical surface of gabions.

xx. METHOD OF MEASUREMENT. The quantity of Gabion Retaining Wall to be measured for payment will be the number of cubic yards of Rock Fill for Gabions placed in the complete and accepted work.

Excavation, geotextile fabric, and bedding material will be measured and paid for under the appropriate Contract items as indicated on the Plans.

xx. BASIS OF PAYMENT. The accepted quantity of Gabion Retaining Wall will be paid for at the Contract unit price per cubic yard. Payment shall be full compensation for furnishing, transporting, handling, and placing the material specified and for furnishing all labor, materials, tools, equipment, and incidentals necessary to complete the work.

Payment will be made under:

Item No.	Description	Pay Unit
900.608	Gabion Retaining Wall	Cubic Yard

PREFABRICATED MULTI-MODAL BRIDGE

XX. DESCRIPTION. This work shall consist of the design, fabrication, transport, and erection of a truss bridge superstructure in accordance with these specifications, and in reasonably close conformity with the lines, grades, and dimensions shown in the Plans.

XX. MATERIALS. Materials shall meet the following requirements:

(a) Structural Steel. Structural Steel shall meet the requirements of Section 506 of the Standard Specifications. The minimum thickness of any structural steel member shall be 3/16″ nominal.

(c) Timber Decking. Wood for timber decking shall be preservative treated Southern Pine, #2 grade or better. The minimum nominal thickness of timber decking shall be 3″.

(d) Bearings. Bearings shall meet the requirements of Section 531 of the Standard Specifications.

XX. DESIGN. The prefabricated truss bridge shall be designed in accordance with the AASHTO LRFD GUIDE SPECIFICATIONS FOR THE DESIGN OF PEDESTRIAN BRIDGES, dated 2009 and its latest interim revisions.

The structure shall be designed for a uniform pedestrian loading of 90 psf.

The following data are provided in the Contract Documents:

(a) Bridge typical sections, plans, profile and elevation showing bridge likeness.

(b) Minimum truss span and low beam elevation.

The following are design requirements:

(a) The structure shall include an expansion joint to accommodate rotation and thermal expansion at the ends of the structure. An armored compression seal joint or overlapping steel plate joint will be required at the expansion end of the structure. A compression seal or deck over backwall configuration will be acceptable at the fixed end of the structure. The contractor is responsible for detailing any proposed modifications to the backwall and/or approach slab to accommodate the joint type.

(b) The top of the top chord shall not be less than 54 inches above the deck (measured from the high point of the riding surface) on bike path structures.

(c) Vertical pickets or horizontal rails shall be placed on the structure to a minimum height of 54 inches above the deck surface. The pickets or rails shall be spaced so as to prevent a 4 inch sphere from passing through the truss. Pickets or rails shall be placed on the inside of the structure. The top of vertical pickets shall have a continuous cap angle or some other means to prevent bridge users from cutting or scraping their hands.

(d) Design loads for the railing shall be in accordance with the AASHTO LRFD Bridge Design Specifications Article 13.8.2.

(e) The vertical deflection of the main trusses due to service pedestrian live load shall not exceed 1/400 of the span.

(f) When the collection of water inside a structural tube is a possibility, either during construction or during service, the tube shall be provided with a drain hole at its lowest point to let water out.

(g) The bridges shall include a 1" x 5-1/2" (actual size) naturally durable hardwood Ipe (Tabebuia Spp Lapacho Group) rubrail. Rubrail shall be partially air dried to a moisture content of 15% to 20%, shall be supplied S4S (surfaced four sides), E4E (eased four edges), with the edges eased to a radius of 1/8". Ends of each piece shall be sealed with "Anchorseal" Mobil CER-M or an equal aquious wax log sealer. Rubrails shall be attached flush to the inside face of the bridge truss. The span of the rubrail from centerline to centerline of support shall not exceed 6'-6".

(h) The Contractor shall work closely with the bridge manufacturer to determine foundation loadings (both axial and lateral) and the tolerance of the bridge for total and differential settlement, prior to commencing design work. The Contractor's Engineer is referred to the project Geotechnical report for design recommendations.

XX. FINISH. The bridge members shall be fabricated from high strength, low alloy, atmospheric corrosion resistant ASTM A847 cold-formed welded square and rectangular tubing and /or ASTM A588, or ASTM A242, ASTM A606 plate and structural steel shapes (Fy = 50,000 psi). The minimum corrosion index of atmospheric corrosion resistant steel, as determined in accordance with ASTM G101, shall be 6.0.

XX. SUBMITTALS.

(a) Design. Three (3) copies of the bridge design shall be submitted to the Engineer a minimum of 28 days prior to beginning any work. The design calculations shall substantiate that all proposed bridge components, including but not limited to the truss bridge, the bridge deck, and the bearings, satisfy the requirements of the Contract Documents.

The design shall be submitted as Working Drawings to be reviewed for conformance in accordance with Subsection 105.03. The submitted documents shall be signed, stamped, and dated by a Professional Engineer (Structural or Civil) licensed in the State of Vermont. The Professional Engineer is responsible for ensuring that the design and details of the proposed bridge components conform to the requirements of the Contract Documents.

(b) Working Drawings. Working Drawings shall be submitted in accordance with Section 105 for any item of work requiring Fabrication or Construction Drawings under Section 105; submitted drawings shall meet the requirements of the specifications for the item of work.

XX. METHOD OF MEASUREMENT. The quantity of Special Provision (Prefabricated Multi-Modal Bridge) to be measured for payment will be on a lump sum basis in the complete and accepted work.

XX. BASIS OF PAYMENT. The accepted quantity of Special Provision (Prefabricated Multi-Modal Bridge) will be paid for at the Contract lump

sum price. Payment will be full compensation for designing and detailing bridge components; making the required submittals; fabricating, furnishing, and erecting the bridge, including but not limited to the truss bridge superstructure, timber deck, bearings, joint plates and miscellaneous hardware; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

Partial payments will be made as follows:

(a) An initial payment of 15% of the Contract lump sum price will be made when all Working Drawings have been submitted and marked conforming in accordance with Section 105.

(b) The next 70% of the Contract lump sum price will be paid on a prorated basis for the estimated duration of the Contract work remaining.

(c) The remaining 15% of the Contract lump sum price will be paid when construction of the bridge is completed to the satisfaction of the Engineer.

Payment will be made under:

Pay Item	Pay Unit
900.645 Special Provision (Prefabricated Multi-Modal Bridge)	Lump Sum

TIMBER RAIL

xx. DESCRIPTION. This work shall consist of furnishing and installing timber rail at the locations indicated in the Plans and as directed by the Engineer.

The work under this Section shall be performed in accordance with these provisions, the Plans, and Section 621 of the Standard Specifications.

xx. MATERIALS. Materials shall meet the requirements of the following Subsections:

Bolts, Nuts, and Washers.....714.04
Wood Posts and Rails.....727.01(c)

xx. CONSTRUCTION REQUIREMENTS. Wood posts shall be set in previously dug holes and backfilled. When tops of treated posts are cut, the cut end shall be treated with two coats of copper naphthenate solution meeting the requirements of Subsection 726.04. When boulders are encountered, they shall be removed, the hole backfilled with suitable materials and thoroughly compacted, and the holes re-dug before installing the posts in the usual manner. The rail shall be braced as directed by the Engineer.

xx. METHOD OF MEASUREMENTS. The quantity of Special Provision (Plank Rail) to be measured for payment will be the number of meters (linear feet) installed in the complete and accepted work measured from end to end of plank rail.

xx. BASIS OF PAYMENT. The accepted quantity of Special Provision (Plank Rail) will be paid for at the Contract unit price per meter (linear foot). Payment will be full compensation for furnishing, transporting, handling, and placing the materials specified, and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

The costs of excavation and backfilling will not be paid for directly but will be considered incidental to Special Provision (Plank Rail).

Payment will be made under:

Pay Item	Pay Unit
900.640 Special Provision (Timber Rail)	Linear Foot

CVRT (2) VTrans comments and CVTA response. 2018-08-06

#	Comment By	Page	VTrans Comments	CVTA Response
1	Ande Deforge (ande.deforge@state.vt.us)	1	Have all necessary standards been included w/ most recent dates?	Yes.
2	Jon Kaplan (jon.kaplan@state.vt.us)	1	VT Agency of Transportation	Included in revised plans.
3	Todd Sumner (todd.sumner@state.vt.us)	2	what about staging area near sta 53+00? Has it been approved?	Staging areas, and all rights, will be approved during ROW phase.
4	Jon Kaplan (jon.kaplan@state.vt.us)	2	Any additional staging (or waste or borrow sites) will need to be reviewed and approved by the VTrans Environmental section prior to use.	Agreed.
5	Ande Deforge (ande.deforge@state.vt.us)	2	need to ensure that all standards are referenced on the title sheet	Included in revised plans.
6	Todd Sumner (todd.sumner@state.vt.us)	2	VYCC is federally funded. If their work is to be used for the local share, I have a concern about the fact that Federal funds can't be used to match FHWA funds.	VYCC is not being used as local share.
7	Jon Kaplan (jon.kaplan@state.vt.us)	2	The eastern end of the project probably will require traffic control on Route 2. How will this get accomplished and paid for? Shouldn't expect VYCC to do this.	Traffic control included in revised plans. VYCC work Is off of the shoulder and minimal traffic control is warranted. CVTA will engage qualified traffic control as needed.
8	Ande Deforge (ande.deforge@state.vt.us)	2	is this correct?	re: height of railings independent of bridges. Yes.
9	Todd Sumner (todd.sumner@state.vt.us)	2	Will this include regrading the road to drain?	re: Phase 1 work, stormwater treatment ditch, deleted from federal project.
10	Ande Deforge (ande.deforge@state.vt.us)	2	at their own cost?	Agreed.
11	Todd Sumner (todd.sumner@state.vt.us)	2	Sta 56+00 RT to Sta 59+50 RT ?	Staging areas are as shown on revised plans.
13	Jon Kaplan (jon.kaplan@state.vt.us)	2	Note that the Aggregate surface spec has been modified since issuance of this standard. I will provide a copy of a special provision that includes the new spec.	Included in revised plans.
14	Ande Deforge (ande.deforge@state.vt.us)	2	2% MAX?	Vermont Pedestrian and Bicycle Facility Planning and Design Manual (5.3.5) says that on unpaved paths minimum cross slope is 2% and maximum cross slope is 5%. Currently in force ADAAG specs are the same.
15	Ande Deforge (ande.deforge@state.vt.us)	2	proprietary?	No.
16	Todd Sumner (todd.sumner@state.vt.us)	2	Sta 171+00 RT to Sta 173+65 RT ?	Staging areas are as shown on revised plans.
18	Ande Deforge (ande.deforge@state.vt.us)	2	Should this be 10'?	All path widths and clearances approved by VTrans.
19	Todd Sumner (todd.sumner@state.vt.us)	2	Typically, quantity sheets are included in the plans.	Quantity Sheets are included.
21	Jon Kaplan (jon.kaplan@state.vt.us)	4	No bearings or other horizontal (or vertical) control is provided. How will the contractor layout this centerline and establish elevations?	Included in revised plans.
22	Todd Sumner (todd.sumner@state.vt.us)	4	Would this be PDF fence?	All "flag" changed to PDF.
23	Jon Kaplan (jon.kaplan@state.vt.us)	4	Since volunteers will be constructing Phase 2 of the project, I recommend that the contractor hired for Phase 1 layout the centerline and stake the entire project. This should be made clear in the plans/documents.	CVTA will engage qualified personnel to lay out centerline.
24	Todd Sumner (todd.sumner@state.vt.us)	5	Is the property owner okay with the removal of their field drive access?	They do not currently have access. And, outside of federal project area.
25	Jon Kaplan (jon.kaplan@state.vt.us)	7	I recommend that a Station reference be provided for all signs - TYP. all signs.	Station references for signs included.
26	Todd Sumner (todd.sumner@state.vt.us)	7	What surface is being roughened?	See typ.
27	Todd Sumner (todd.sumner@state.vt.us)	7	Why is the surface being roughened?	See typ.
28	Todd Sumner (todd.sumner@state.vt.us)	7	What is the specifications/instructions of the roughening?	See typ.
29	Todd Sumner (todd.sumner@state.vt.us)	7	Even though this proposed work is not to be done as part of this contract, it is still associated/tied to it from a permitting point of view.	Agreed.
30	Todd Sumner (todd.sumner@state.vt.us)	7	1. Does the CE reflect the future anticipated work?	All work including future anticipated work that may need a CE has been anticipated.
31	Todd Sumner (todd.sumner@state.vt.us)	7	2. Should show the proposed future alignment.	Outside of federal project area.
32	Todd Sumner (todd.sumner@state.vt.us)	7	3. FHWA takes a dim view of approving construction work that does not have independent utility and logical termini.	The project has independent utility and logical termini.
33	Todd Sumner (todd.sumner@state.vt.us)	7	4. Need to show that the future work will not be affecting the constructed grass lined ditch and stone fill. FHWA/VTrans will not participate in doing work twice in the same area.	Grass lined ditch is deleted from project.
34	Ande Deforge (ande.deforge@state.vt.us)	7	Is this sign in the correct location?	Yes. (Where trail heads away from Powerplant Rd into forest, a good place for the signs indicated.)
35	Jon Kaplan (jon.kaplan@state.vt.us)	7	Is a detail provided for this non-MUTCD sign?	Deleted, interpretive signs are not a part of the federal project.
36	Todd Sumner (todd.sumner@state.vt.us)	8	Does VYCC have the excavation and truck equipment to perform this work? There is a lot of fill that needs to be hauled in and out of this area. I was not aware that VYCC handled this type of serious construction.	No trucks are needed. Small equipment is available. The project as designed in Phase II is appropriate for construction by VYCC and volunteers supported by CVTA staff.
37	Ande Deforge (ande.deforge@state.vt.us)	9	Gabion Retaining Wall or Stone Wall? Description needs to match item	Stone walls replaced with alternate design in revised plan.
38	Todd Sumner (todd.sumner@state.vt.us)	9	FHWA takes a dim view on improvements to private property.	There is no improvement to private property.
39	Todd Sumner (todd.sumner@state.vt.us)	9	1. Will a permanent easement be obtained for using the road and ditch?	Yes in general to all the questions about "will we get an easement where needed" - but this work specifically has been removed from this project.

CVRT (2) VTrans comments and CVTA response. 2018-08-06

#	Comment By	Page	VTrans Comments	CVTA Response
40	Todd Sumner (todd.sumner@state.vt.us)	9	2. Who will be maintaining ditches and the proper roadway slope so it drains to the ditch?	Comment is about work that is no longer part of the project. In any case, CVTA will be responsible for maintaining all ditches and treadway grading throughout the project.
41	Todd Sumner (todd.sumner@state.vt.us)	12	Survey control points? Curves? Offsets? How is contractor to layout this ditch?	Agreed that ditch design was incomplete. Ditch has been deleted from project.
42	Todd Sumner (todd.sumner@state.vt.us)	12	Should show all of the potential contractor staging area.	It does.
43	Jon Kaplan (jon.kaplan@state.vt.us)	12	Is this the Gabion Retaining wall? Use the same language on the layout and the detail. Also must be consistent with the pay item.	Stone walls replaced with alternate design in revised plan.
44	Jon Kaplan (jon.kaplan@state.vt.us)	12	Need a detail for this special provision item.	Stockade Fence deleted.
45	Ande Deforge (ande.deforge@state.vt.us)	13	Need to ensure that all signs conform to the 2009 MUTCD	All signs are compliant.
46	Jon Kaplan (jon.kaplan@state.vt.us)	13	Horizontal curve info?	Included in revised plans.
47	Jon Kaplan (jon.kaplan@state.vt.us)	14	If this is the note referred to above - it doesn't seem to apply to removing old Route 2 pavement?	Removal of old rte 2 pavement deleted.
48	Jon Kaplan (jon.kaplan@state.vt.us)	14	What note?	Notes have been clarified in revised plans.
49	Jon Kaplan (jon.kaplan@state.vt.us)	14	Reference a number and sheet number if not on this sheet - preferred to have it on this sheet.	Notes are clarified in revised plans.
50	Todd Sumner (todd.sumner@state.vt.us)	14	Will this staging area be top soiled and seeded?	Yes
51	Todd Sumner (todd.sumner@state.vt.us)	14	Will this staging area be returned to a gravel surface? Will the gravel surface be graded to drain? To where?	No, not gravel surface.
52	Todd Sumner (todd.sumner@state.vt.us)	14	Gravel or topsoil and seed for the areas where pavement is removed.	Pavement is not being removed.
53	Jon Kaplan (jon.kaplan@state.vt.us)	14	Horiz. Curve info? TYP all curves.	Included in revised plans.
54	Todd Sumner (todd.sumner@state.vt.us)	14	Is this line the edge of the surveyed area? Edge of Route 2 Pavement? Edge of Shoulder? Gravel Shoulder?	Edge of Rte 2 pavement.
55	Todd Sumner (todd.sumner@state.vt.us)	14	Shouldn't the limits of the construction entrance be shown on the plans? Not just a symbol. Permitters usually like to see the impacts.	Limits are shown on the planes.
56	Ande Deforge (ande.deforge@state.vt.us)	16	Section 1111 Permit?	Agreed.
57	Jon Kaplan (jon.kaplan@state.vt.us)	16	It may make it easier for the contractor to show the sign legend on the layout sheets, rather than having them cross-reference back to a single sheet. TYP - all signs.	Signs are shown clearly on current plans.
58	Jon Kaplan (jon.kaplan@state.vt.us)	16	I think that technically a detectable warning surface is needed where the path meets the shoulder for the full width of the path.	Path is not meeting the shoulder of the road, will be connecting directly to adjoining project EH10(17).
59	Jon Kaplan (jon.kaplan@state.vt.us)	16	Will need some traffic control plans for this work immediately adjacent to Route 2	Traffic control included in revised plans.
60	Jon Kaplan (jon.kaplan@state.vt.us)	17	VTrans has gone to all square tube posts. Must make that change for posts in AOT ROW. Recommend changing all for consistency.	Sign posts are as in revised plans.
61	Jon Kaplan (jon.kaplan@state.vt.us)	17	What is this dimension?	Included in revised plans.
62	Todd Sumner (todd.sumner@state.vt.us)	17	granular/free draining material below the wall? Behind the wall?	Stone walls replaced with alternate design in revised plan.
63	Ande Deforge (ande.deforge@state.vt.us)	17	Gabion Retaining Wall or Stone Wall?	Stone walls replaced with alternate design in revised plan.
64	Jon Kaplan (jon.kaplan@state.vt.us)	17	VD-503 is not an MUTCD designation.	"or VTrans Standard E-131B" added to revised plans.
65	Jon Kaplan (jon.kaplan@state.vt.us)	17	Also, what about the interpretive signs?	Deleted, interpretive signs are not a part of the federal project.
66	Jon Kaplan (jon.kaplan@state.vt.us)	17	Is there enough information here for this to be built?	Stone walls replaced with alternate design in revised plan.
67	Ande Deforge (ande.deforge@state.vt.us)	17	galvanized?	Construction details clarified in revised plans.
68	Todd Sumner (todd.sumner@state.vt.us)	17	1. Grade and species of Wood?	Construction details clarified in revised plans.
69	Todd Sumner (todd.sumner@state.vt.us)	17	2. Preservative treatment Type as per VTrans Spec's?	Construction details clarified in revised plans.
70	Todd Sumner (todd.sumner@state.vt.us)	17	3. Connection/hardware specifications?	Construction details clarified in revised plans.
71	Todd Sumner (todd.sumner@state.vt.us)	17	4. All hardware to be galvanized?	Construction details clarified in revised plans.
72	Todd Sumner (todd.sumner@state.vt.us)	17	You don't really want to build the wall on muck.	Stone walls replaced with alternate design in revised plan.
73	Todd Sumner (todd.sumner@state.vt.us)	18	Usually incidental to the items that are being connected.	Language corrected in revised plans.
74	Jon Kaplan (jon.kaplan@state.vt.us)	18	Where is the deeryard delineated on the plans?	Delineated between st 22+00 and st 38+00 on the plans.
75	Ande Deforge (ande.deforge@state.vt.us)	18	incidental??	Language corrected in revised plans.
76	Ande Deforge (ande.deforge@state.vt.us)	18	These dimensions are confusing	re: placement of railings on small bridges. Dimensions are clear.
77	Todd Sumner (todd.sumner@state.vt.us)	18	1. Grade and species of Wood?	Construction details clarified in revised plans.
78	Todd Sumner (todd.sumner@state.vt.us)	18	2. Preservative treatment Type as per VTrans Spec's?	Construction details clarified in revised plans.
79	Todd Sumner (todd.sumner@state.vt.us)	18	3. Timber Sizes?	Construction details clarified in revised plans.
80	Todd Sumner (todd.sumner@state.vt.us)	18	4. Connection/hardware specifications?	Construction details clarified in revised plans.

CVRT (2) VTrans comments and CVTA response. 2018-08-06

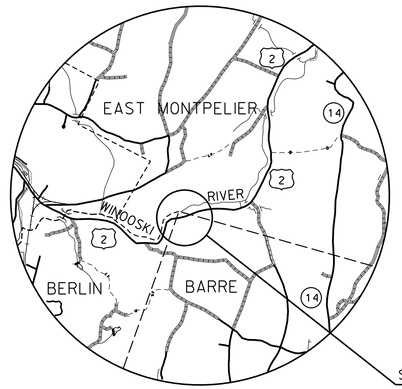
#	Comment By	Page	VTrans Comments	CVTA Response
81	Todd Sumner (todd.sumner@state.vt.us)	18	5. All hardware to be galvanized?	Construction details clarified in revised plans.
82	Todd Sumner (todd.sumner@state.vt.us)	18	6. Specifications of wire fabric?	Construction details clarified in revised plans.
83	Todd Sumner (todd.sumner@state.vt.us)	18	7. Wire fabric to be coated with ...?	Construction details clarified in revised plans.
84	Todd Sumner (todd.sumner@state.vt.us)	18	8. Should include forest service standard R-9 in the plans.	Construction details clarified in revised plans.
85	Todd Sumner (todd.sumner@state.vt.us)	18	9. are additional details needed to supplement the R-9 standard? End of Bridge details?	Construction details clarified in revised plans.
86	Todd Sumner (todd.sumner@state.vt.us)	18	10. Typical bridge section? Connection details? Railing to Bridge connection details?	Construction details clarified in revised plans.
87	Todd Sumner (todd.sumner@state.vt.us)	18	11. The typical users of this Bike/Ped path will be different than a hiking trail in the woods. Has consideration for Emergency vehicles to access injured users?	Yes. We are coordinating with local rescue squads. There is sufficient access to all parts of the trail from nearby roadways.
88	Todd Sumner (todd.sumner@state.vt.us)	18	12. Are these Bridges sufficient in strength to handle the loads of emergency or maintenance vehicles? Ambulances can be quite heavy.	It is a non-motorized trail. Maintenance vehicles will be small equipment only. Ambulance crews will access trail from nearby roadways.
89	Todd Sumner (todd.sumner@state.vt.us)	18	13. Allowable bearing loads/capacity?	Construction details clarified in revised plans.
90	Todd Sumner (todd.sumner@state.vt.us)	18	14. Substructure details?	Construction details clarified in revised plans.
91	Todd Sumner (todd.sumner@state.vt.us)	19	1. Wood grade, species and treatment?	Construction details clarified in revised plans.
92	Todd Sumner (todd.sumner@state.vt.us)	19	2. Dimensions of timber?	Construction details clarified in revised plans.
93	Todd Sumner (todd.sumner@state.vt.us)	19	3. Any wearing/runner planks?	No. Decking on bike/ped bridges must be perpendicular to travel.
94	Todd Sumner (todd.sumner@state.vt.us)	19	4. We have had some issues with treated wood on weathering steel.	re: Winooski Bridge. If it is weathering steel, there is a correct method to avoid issues; VTrans Structures Design Manual, 5th edition, section 8.2.2.3 "Timber Deck on Steel Supports".
95	Todd Sumner (todd.sumner@state.vt.us)	19	Weathering Steel, Galvanized or Painted?	Weathering.
96	Todd Sumner (todd.sumner@state.vt.us)	19	What about Emergency and maintenance vehicle loads?	It is a non-motorized trail. Maintenance vehicles will be small equipment only. Ambulance crews will access trail from nearby roadways.
97	Jon Kaplan (jon.kaplan@state.vt.us)	19	Why place bollards this far away from where a vehicle might access the path? If they are justified, they should be placed near the road.	Location of bollards required by VDFW. Intention is to choke off vehicle access at a place that is a bottle neck in reality.
98	Ande Deforge (ande.deforge@state.vt.us)	19	Are bollards necessary?	Yes.
99	Todd Sumner (todd.sumner@state.vt.us)	20	Provisions for planing or shimming the wood deck to match concrete elevation.	Construction details clarified in revised plans.
100	Todd Sumner (todd.sumner@state.vt.us)	20	If contractor is going to be responsible for the design of the superstructure and substructure, why limit them to just micropiles? Other deep foundations are possible.	Because that is what the geotechnical analysis determined.
101	Todd Sumner (todd.sumner@state.vt.us)	20	No cross slope?	Construction details clarified in revised plans.
102	Todd Sumner (todd.sumner@state.vt.us)	20	Boring logs/results should be part of the plans.	They are.
103	Todd Sumner (todd.sumner@state.vt.us)	20	Any additional design parameters?	Construction details clarified in revised plans.
104	Todd Sumner (todd.sumner@state.vt.us)	20	1. Specifications of the steel plate and hardware?	Construction details clarified in revised plans.
105	Todd Sumner (todd.sumner@state.vt.us)	20	2. What about slip resistance? Metal plate can be very slippery when wet.	Construction details clarified in revised plans.
106	Todd Sumner (todd.sumner@state.vt.us)	20	Detail for expansion end? What about fixed end?	Construction details clarified in revised plans.
107	Ande Deforge (ande.deforge@state.vt.us)	20	galvanized?	Construction details clarified in revised plans.
108	Todd Sumner (todd.sumner@state.vt.us)	20	1. Not a very good location for using weathering steel?	Disagree. It is an acceptable location.
109	Todd Sumner (todd.sumner@state.vt.us)	20	Maybe use stainless steel.	Construction details clarified in revised plans.
110	Todd Sumner (todd.sumner@state.vt.us)	20	2. Difficult to finish concrete without variation to allow the plate to slide smoothly or rest evenly.	Construction details clarified in revised plans.
111	Ande Deforge (ande.deforge@state.vt.us)	21	Is this the correct reference for wood preservative?	Construction details clarified in revised plans.
112	Jon Kaplan (jon.kaplan@state.vt.us)	21	Type II marker is either 3 yellow devices on a white background or a solid yellow marker measuring at least 6 x12 inches - see VTrans Standard Drawing A-80	Marker corrected in revised plans.
113	Jon Kaplan (jon.kaplan@state.vt.us)	21	See Gabion Wall Note #xx. Be more specific.	The referenced note is in geotechnical engineer's report. Geodesign, 2/25/2010, p 7, paragraph 5 "Densify subgrade with minimum 8 passes 40,000 pound dynamic force vibratory drum roller" (etc.). And yes, clear path to notes makes sense.
114	Todd Sumner (todd.sumner@state.vt.us)	21	Gabion wall length?	Construction details clarified in revised plans.

CVRT (2) VTrans comments and CVTA response. 2018-08-06

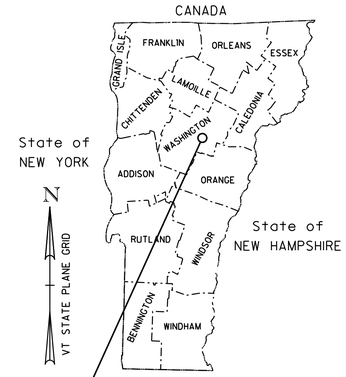
#	Comment By	Page	VTrans Comments	CVTA Response
115	Todd Sumner (todd.sumner@state.vt.us)	21	Any connection between gabion wall and concrete abutment?	It shows no connection on plans, to allow for settlement as prescribed in geotechnical report.
116	Todd Sumner (todd.sumner@state.vt.us)	21	Use VTrans spec's for preservative Type.	Construction details clarified in revised plans.
117	Jon Kaplan (jon.kaplan@state.vt.us)	21	Must maintain a minimum of 4 feet to meet ADA requirements. No exceptions. Suggest using center bollard only.	Minimum width for ADA is 32".
118	Jon Kaplan (jon.kaplan@state.vt.us)	21	Where is the gabion wall used?	On the plans, gabions are shown as the wingwalls of the Winooski River bridge abutments.
119	Todd Sumner (todd.sumner@state.vt.us)	22	I don't believe these are prudent assumptions:1. This trail may need to accommodate recreational vehicles for Other Powered Mobility Devices.	1.) The trail does accommodate Other Powered Mobility Devices. 2.) And in any case, DOJ ruling on accessibility specifically says trails do NOT have to be built to allow vehicles of any particular type or size..
120	Todd Sumner (todd.sumner@state.vt.us)	22	2. This trail will attract users that are not your typical trail hikers. Are you really going to create a bike path where emergency vehicles can't reach them?	We are coordinating with local rescue squads. There is sufficient access to all parts of the trail from nearby roadways.
121	Todd Sumner (todd.sumner@state.vt.us)	22	3. Unless CVTA will own or have a permanent easement to the GMP road, how are you going to get equipment (maintenance vehicles) to the west side of the bridge for future repairs? What happens if a trail washout occurs?	We will have a permanent easement to the GMP road. It is outside of the federal project.
122	Todd Sumner (todd.sumner@state.vt.us)	22	4. Are you going to limit for construction activities by not allowing heavy equipment to cross the wooden bridges?	Bridges are sufficient for the construction equipment required.
123	Todd Sumner (todd.sumner@state.vt.us)	22	VTrans Hydraulics section probably should weigh in on if it is reasonable to move forward without a Hydrology or Hydraulic study.	They did weigh in.
124	Ande Deforge (ande.deforge@state.vt.us)	26	stormwater permits?	Yes, we are getting a stormwater permit.
125	Ande Deforge (ande.deforge@state.vt.us)	26	permit expiration dates??	This comment is pointing at the mention of having construction span multiple seasons. Yes, we know about need to manage permit periods.
127	Ande Deforge (ande.deforge@state.vt.us)	37	609.10?	Dust and ice control is not needed.
128	Ande Deforge (ande.deforge@state.vt.us)	37	This decision should have been made by now as these are preliminary plans	Deciduous Trees deleted.
129	Ande Deforge (ande.deforge@state.vt.us)	37	Recommend that you use project phases	Agreed.
130	Ande Deforge (ande.deforge@state.vt.us)	37	square tube?	Sign posts are as in revised plans.
131	Ande Deforge (ande.deforge@state.vt.us)	37	Recommend that you use 1 LS and split by percentage between the three phases (i.e. - 0.50, 0.20 and 0.30)	Only Phase III is being bid.
132	Ande Deforge (ande.deforge@state.vt.us)	37	Is this all-inclusive? Is there a need for item 630.15 - flaggers?	Quantity items are as per revised plans.
133	Jon Kaplan (jon.kaplan@state.vt.us)	37	What is the distinction among these? Project phases?	Project phases are clearly shown on revised plans.
135	Ande Deforge (ande.deforge@state.vt.us)	37	618.30?	There is no detectible warning surface.
137	Ande Deforge (ande.deforge@state.vt.us)	39	Need to ensure that the estimate matches the quantity sheets	Agreed.

INDEX OF SHEETS

SHEET	SHEET TITLE
1	TITLE SHEET
2	TYPICAL SECTIONS AND DETAILS
3	QUANTITY SHEET #1
4	CONVENTIONAL SYMBOLOGY LEGEND
5	PLAN, PROFILE & ROW LIMITS
6-8	CROSS SECTIONS 1-3
9	TRAFFIC CONTROL DETAILS AND NOTES
10	EPSC NARRATIVE
11	EPSC EXISTING CONDITIONS PLAN
12	EPSC CONSTRUCTION SITE PLAN
13	EPSC FINAL SITE PLAN
14	EPSC DETAILS



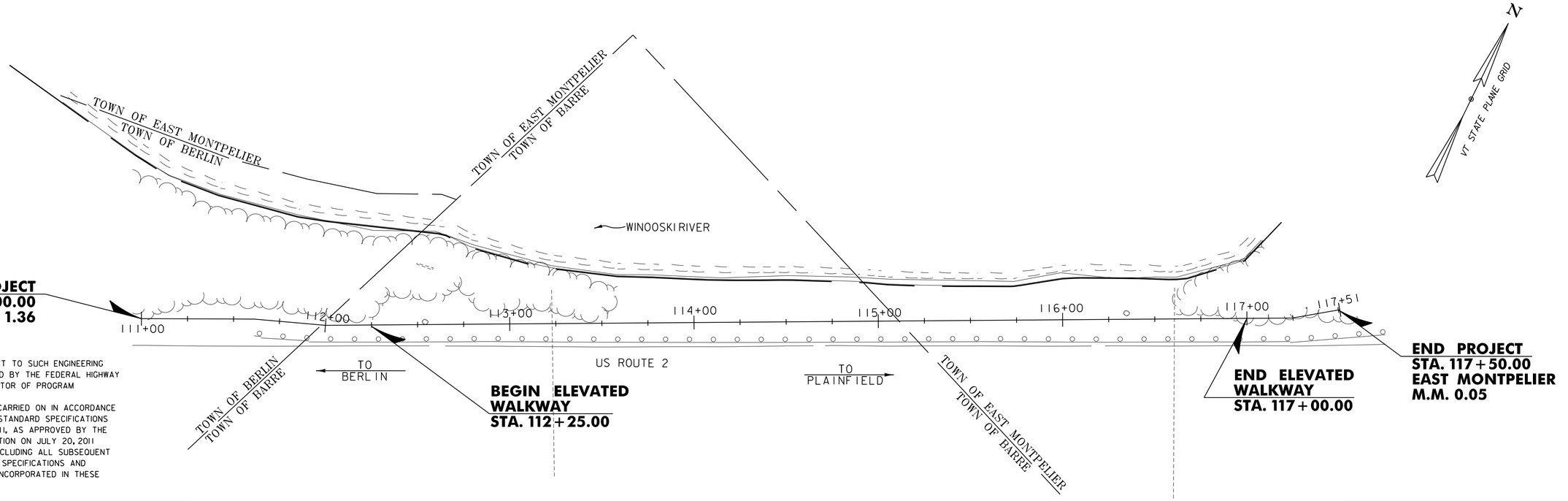
LOCATION MAP
NOT TO SCALE



TOWN OF EAST MONTPELIER
COUNTY OF WASHINGTON
CROSS VERMONT TRAIL ASSOCIATION
U.S. ROUTE 2 (PRINCIPAL ARTERIAL)

THIS PROJECT IS LOCATED IN THE TOWNS OF BERLIN, BARRE AND EAST MONTPELIER ALONG THE NORTH SIDE OF US ROUTE 2. WORK TO BE PERFORMED UNDER THIS PROJECT INCLUDES CONSTRUCTING THE ABUTMENTS, PIERS AND APPROACHES FOR A NEW ELEVATED WALKWAY.

LENGTH OF PROJECT = 650 FEET



THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE DIRECTOR OF PROGRAM DEVELOPMENT.

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2011, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JULY 20, 2011 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

QUALITY ASSURANCE PROGRAM : LEVEL I

SURVEYED BY : VT SURVEY & ENGINEERING
SURVEYED DATE : 10/2007

DATUM
VERTICAL NAVD 88 FT
HORIZONTAL NAD 83(CORS96) SPC(4400-VT) sFT

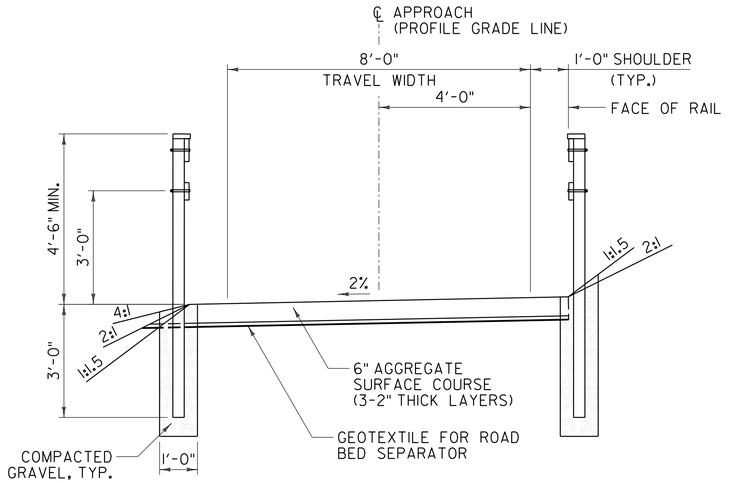
0 30 60
SCALE IN FEET

Stantec
Stantec Consulting Services Inc.
55 Green Mountain Drive
South Burlington VT U.S.A. 05403
Tel. 802.864.0223
Fax. 802.864.0165
www.stantec.com

PROJECT MANAGER : GREG WESTERN

PROJECT NAME : CROSS VT TRAIL ASSOCIATION
PROJECT NUMBER : STP EH10(17)

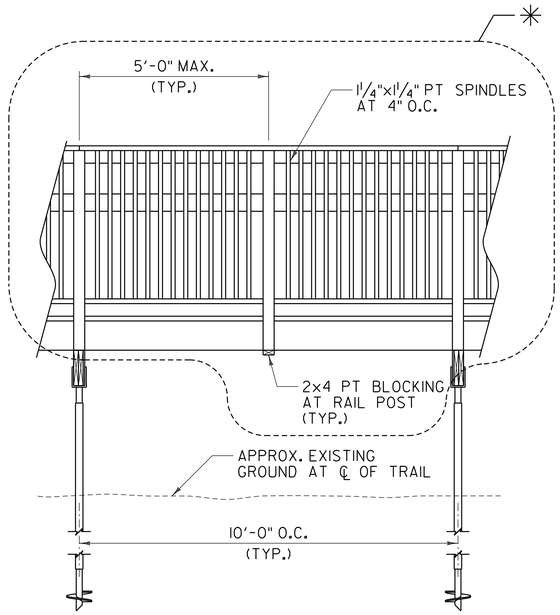
SHEET 1 OF 14 SHEETS



TYPICAL APPROACH SECTION

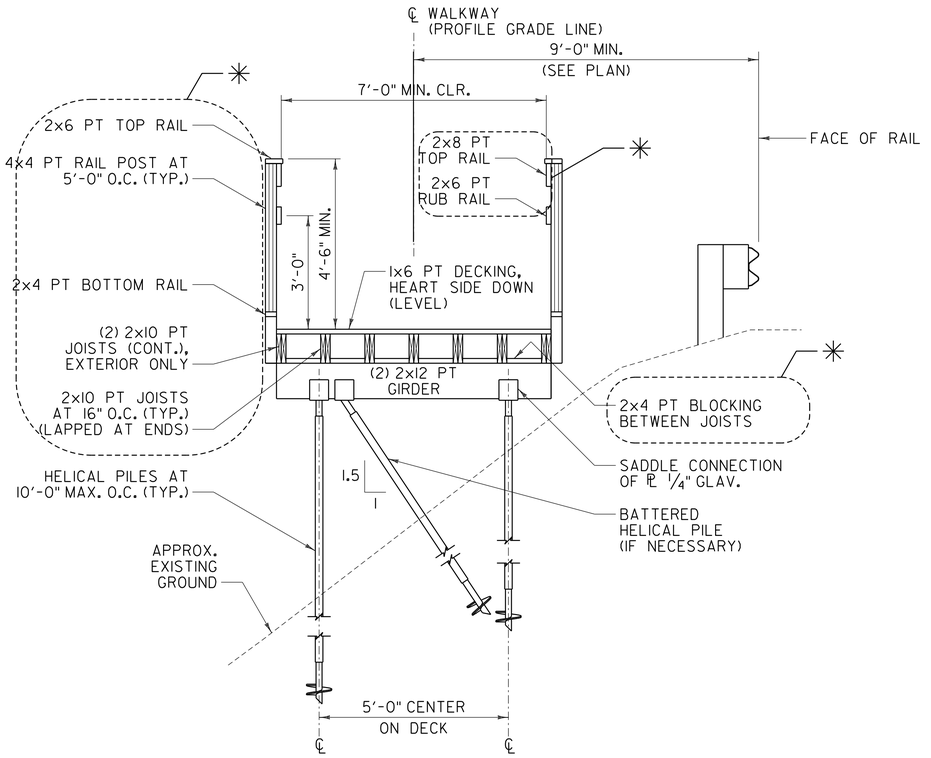
SCALE: 1/2" = 1'-0"

STA. 111+00 - STA. 112+25 AND
STA. 117+00 - STA. 117+50



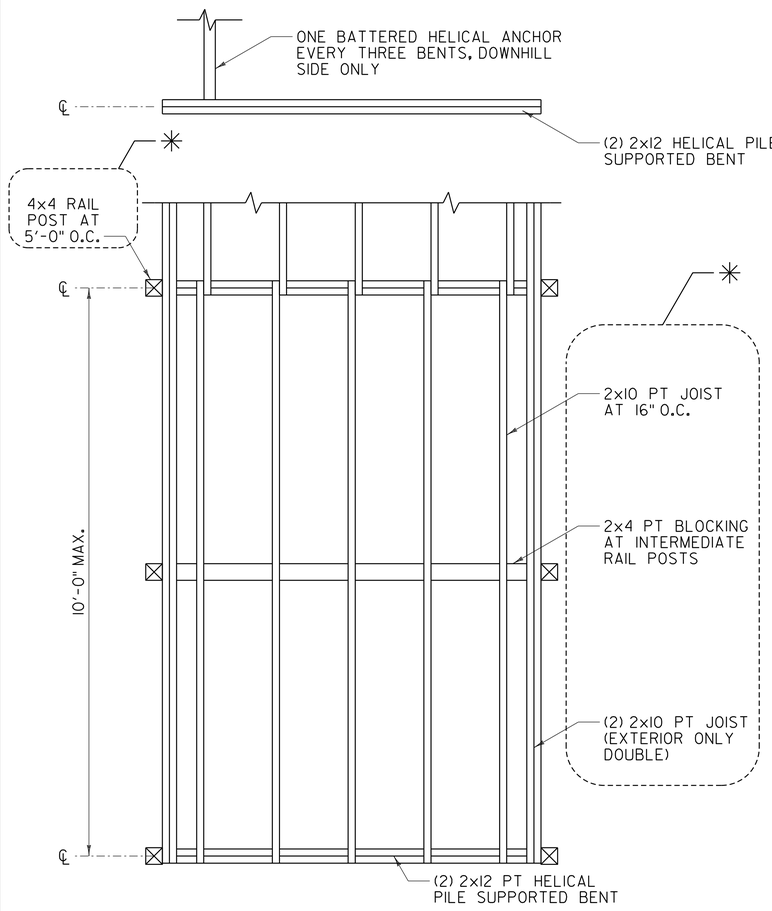
TYPICAL ELEVATION

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



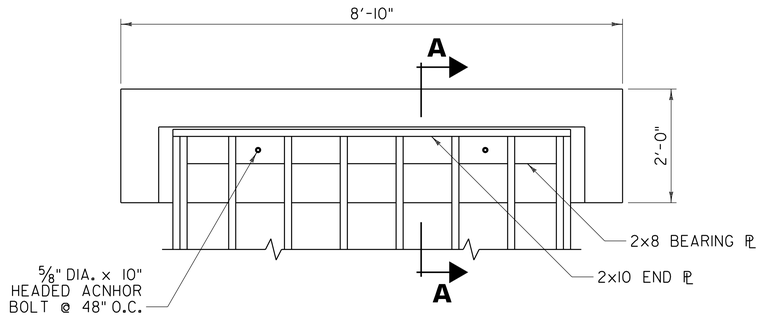
TYPICAL SECTION

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

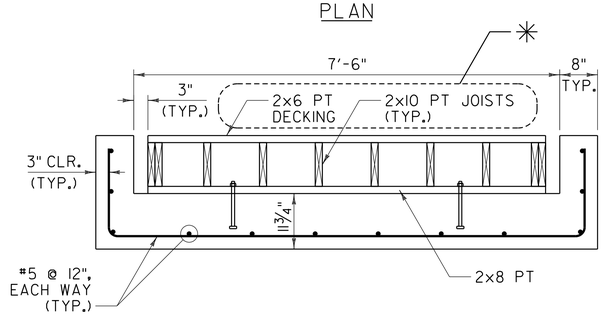


TYPICAL DECK FRAMING PLAN

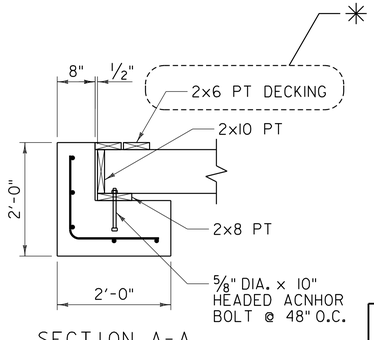
SCALE: 3/4" = 1'-0"



PLAN



ELEVATION



SECTION A-A

DECK END SUPPORT DETAIL

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

DECK DESIGN NOTES:

1. DESIGN LIVE LOAD IS 65 PSF.
2. DESIGN SNOW LOAD IS 60 PSF; NOT COINCIDENTAL WITH LIVE LOAD.
3. DECK NOT DESIGNED FOR SNOW REMOVAL VEHICLE OR ANY OTHER VEHICLE.

✳ - INDICATES ITEMS TO BE COMPLETED BY THE CROSS VERMONT TRAIL ASSOCIATION.

Stantec

PROJECT NAME:	CROSS VT TRAIL ASSOCIATION
PROJECT NUMBER:	STP EHI0(17)
FILE NAME: 11073_elev_walk_dets.dgn	PLOT DATE: 8/21/2018
PROJECT LEADER: G. BOGUE	DRAWN BY: J. SOTER
DESIGNED BY: N. TIRK	CHECKED BY: G. BOGUE
TYPICAL SECTIONS AND DETAILS	SHEET 2 OF 14

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES		TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
Erosion Control	Elevated Walkway	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
	1	1		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10				
	10	10		CY	COMMON EXCAVATION	203.15				
	20	20		CY	EARTH BORROW	203.30				
	1	1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22				
	2	2		CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34				
	200	200		LB	REINFORCING STEEL, LEVEL I	507.11				
	4.3	4.3		MFBM	STRUCTURAL LUMBER AND TIMBER, TREATED	522.25				
	750	750		LF	REMOVE AND RESET GUARDRAIL	621.75				
	100	100		HR	UNIFORMED TRAFFIC OFFICERS	630.10				
	160	160		HR	FLAGGERS	630.15				
	1	1		LS	MOBILIZATION/DEMOBILIZATION	635.11				
	220	220		SY	GEOTEXTILE FOR ROADBED SEPARATOR	649.11				
680		680		SY	GEOTEXTILE FOR SILT FENCE	649.51				
65		65		LB	SEED	651.15				
260		260		LB	FERTILIZER	651.18				
1		1		TON	AGRICULTURAL LIMESTONE	651.20				
1		1		TON	HAY MULCH	651.25				
30		30		CY	TOPSOIL	651.35				
1		1		LS	EPSC PLAN	652.10				
40		40		HR	MONITORING EPSC PLAN	652.20				
1		1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30				
350		350		SY	TEMPORARY EROSION MATTING	653.20				
760		760		LF	BARRIER FENCE	653.50				
	10	10		CY	SPECIAL PROVISION (AGGREGATE SURFACE COURSE, TRAIL)	900.608				
	200	200		EACH	SPECIAL PROVISION (HELICAL PILE)	900.620				
	1	1		LS	SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE)	900.645				
					WORK TO BE COMPLETED BY OWNER					
	27.5	27.5		MFBM	STRUCTURAL LUMBER AND TIMBER, TREATED	522.25				

PROJECT NAME: CROSS VT TRAIL ASSOCIATION
PROJECT NUMBER: STP EH10(17)

FILE NAME: QtySheet.xlsm
PROJECT LEADER: G. BOGUE
DESIGNED BY: G. BOGUE
QUANTITY SHEET #1

PLOT DATE: 04/04/2017
DRAWN BY: J. SOTER
CHECKED BY: G. BOGUE

GENERAL INFORMATION

SYMBOLOGY LEGEND NOTE

THE SYMBOLOGY ON THIS SHEET IS INTENDED TO COVER STANDARD CONVENTIONAL SYMBOLOGY. THE SYMBOLOGY IS USED FOR EXISTING & PROPOSED FEATURES WITH HEAVIER LINEWEIGHT, IN COMBINATION WITH PROJECT ANNOTATION, AS NOTED ON PROJECT PLAN SHEETS. THIS LEGEND SHEET COVERS THE BASICS. SYMBOLOGY ON PLANS MAY VARY, PLAN ANNOTATIONS AND NOTES SHOULD BE USED TO CLARIFY AS NEEDED.

R.O.W. ABBREVIATIONS (CODES) & SYMBOLS

POINT	CODE	DESCRIPTION
	CH	CHANNEL EASEMENT
	CONST	CONSTRUCTION EASEMENT
	CUL	CULVERT EASEMENT
	D&C	DISCONNECT & CONNECT
	DIT	DITCH EASEMENT
	DR	DRAINAGE EASEMENT
	DRIVE	DRIVEWAY EASEMENT
	EC	EROSION CONTROL
	HWY	HIGHWAY EASEMENT
	I&M	INSTALL & MAINTAIN EASEMENT
	LAND	LANDSCAPE EASEMENT
	R&RES	REMOVE & RESET
	R&REP	REMOVE & REPLACE
	SR	SLOPE RIGHT
	UE	UTILITY EASEMENT
	(P)	PERMANENT EASEMENT
	(T)	TEMPORARY EASEMENT
■	BNDNS	BOUND SET
⧈	BNDNS	BOUND TO BE SET
●	IPNS	IRON PIN SET
◎	IPNS	IRON PIN TO BE SET
⊠	CALC	EXISTING ROW POINT
○	PROW	PROPOSED ROW POINT
[LENGTH]		LENGTH CARRIED ON NEXT SHEET

COMMON TOPOGRAPHIC POINT SYMBOLS

POINT	CODE	DESCRIPTION
	APL	BOUND APPARENT LOCATION
	BM	BENCHMARK
	BND	BOUND
	CB	CATCH BASIN
	COMB	COMBINATION POLE
	DITHR	DROP INLET THROATED DNC
	EL	ELECTRIC POWER POLE
	FPOLE	FLAGPOLE
	GASFIL	GAS FILLER
	GP	GUIDE POST
	GSO	GAS SHUT OFF
	GUY	GUY POLE
	GUYW	GUY WIRE
	GV	GATE VALUE
	H	TREE HARDWOOD
	HCTRL	CONTROL HORIZONTAL
	HVCTRL	CONTROL HORIZ. & VERTICAL
	HYD	HYDRANT
	IP	IRON PIN
	IPIPE	IRON PIPE
	LI	LIGHT - STREET OR YARD
	MB	MAILBOX
	MH	MANHOLE (MH)
	MM	MILE MARKER
	PM	PARKING METER
	PMK	PROJECT MARKER
	POST	POST STONE/WOOD
	RRSIG	RAILROAD SIGNAL
	RRSL	RAILROAD SWITCH LEVER
	S	TREE SOFTWOOD
	SAT	SATELLITE DISH
	SHRUB	SHRUB
	SIGN	SIGN
	STUMP	STUMP
	TEL	TELEPHONE POLE
	TIE	TIE
	TSIGN	SIGN W/DOUBLE POST
	VCTRL	CONTROL VERTICAL
	WELL	WELL
	WSO	WATER SHUT OFF

THESE ARE COMMON VAOT SURVEY POINT SYMBOLS FOR EXISTING FEATURES, ALSO USED FOR PROPOSED FEATURES WITH HEAVIER LINEWEIGHT, IN COMBINATION WITH PROPOSED ANNOTATION.

PROPOSED GEOMETRY CODES

CODE	DESCRIPTION
PC	POINT OF CURVATURE
PI	POINT OF INTERSECTION
CC	CENTER OF CURVE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVE
PRC	POINT OF REVERSE CURVE
POB	POINT OF BEGINNING
POE	POINT OF ENDING
STA	STATION PREFIX
AH	AHEAD STATION SUFFIX
BK	BACK STATION SUFFIX
D	CURVE DEGREE OF (100FT)
R	CURVE RADUIS OF
T	CURVE TANGENT LENGTH
L	CURVE LENGTH OF
E	CURVE EXTERNAL DISTANCE

UTILITY SYMBOLOGY

UNDERGROUND UTILITIES

- UGU — UTILITY (GENERIC-UNKNOWN)
- UT — TELEPHONE
- UE — ELECTRIC
- UC — CABLE (TV)
- UEC — ELECTRIC+CABLE
- UET — ELECTRIC+TELEPHONE
- UCT — CABLE+TELEPHONE
- UECT — ELECTRIC+CABLE+TELEP.
- G — GAS LINE
- W — WATER LINE
- S — SANITARY SEWER (SEPTIC)

ABOVE GROUND UTILITIES (AERIAL)

- AGU — UTILITY (GENERIC-UNKNOWN)
- T — TELEPHONE
- E — ELECTRIC
- C — CABLE (TV)
- EC — ELECTRIC+CABLE
- ET — ELECTRIC+TELEPHONE
- AER E&T — ELECTRIC+TELEPHONE
- CT — CABLE+TELEPHONE
- ECT — ELECTRIC+CABLE+TELEP.
- UTILITY POLE GUY WIRE

PROJECT CONSTRUCTION SYMBOLOGY

PROJECT DESIGN & LAYOUT SYMBOLOGY

- CZ — CLEAR ZONE
- PLAN LAYOUT MATCHLINE

PROJECT CONSTRUCTION FEATURES

- TOP OF CUT SLOPE
- TOE OF FILL SLOPE
- STONE FILL
- BOTTOM OF DITCH ℄
- CULVERT PROPOSED
- STRUCTURE SUBSURFACE
- PDF — PROJECT DEMARCATION FENCE
- BF — BARRIER FENCE
- TREE PROTECTION ZONE (TPZ)
- STRIPING LINE REMOVAL
- SHEET PILES

CONVENTIONAL BOUNDARY SYMBOLOGY

BOUNDARY LINES

- TOWN LINE — TOWN BOUNDARY LINE
- COUNTY LINE — COUNTY BOUNDARY LINE
- STATE LINE — STATE BOUNDARY LINE
- PROPOSED STATE R.O.W. (LIMITED ACCESS)
- PROPOSED STATE R.O.W.
- STATE ROW (LIMITED ACCESS)
- STATE ROW
- TOWN ROW
- PERMANENT EASEMENT LINE (P)
- TEMPORARY EASEMENT LINE (T)
- SURVEY LINE
- P/L — PROPERTY LINE (P/L)
- SR SR SR — SLOPE RIGHTS
- 6f — 6F PROPERTY BOUNDARY
- 4f — 4F PROPERTY BOUNDARY
- HAZ — HAZARDOUS WASTE

EPSC LAYOUT PLAN SYMBOLOGY

EPSC MEASURES

- FILTER CURTAIN
- SILT FENCE
- SILT FENCE WOVEN WIRE
- CHECK DAM
- DISTURBED AREAS REQUIRING RE-VEGETATION
- EROSION MATTING

SEE EPSC DETAIL SHEETS FOR ADDITIONAL SYMBOLOGY

ENVIRONMENTAL RESOURCES

- WETLAND BOUNDARY
- RIPARIAN BUFFER ZONE
- WETLAND BUFFER ZONE
- SOIL TYPE BOUNDARY
- T&E — THREATENED & ENDANGERED SPECIES
- HAZ — HAZ — HAZARDOUS WASTE AREA
- AG — AGRICULTURAL LAND
- HABITAT — FISH & WILDLIFE HABITAT
- FLOOD PLAIN — FLOOD PLAIN
- OHW — ORDINARY HIGH WATER (OHW)
- STORM WATER
- USDA FOREST SERVICE LANDS
- WILDLIFE HABITAT SUIT/CONN

ARCHEOLOGICAL & HISTORIC

- ARCH — ARCHEOLOGICAL BOUNDARY
- HISTORIC DIST — HISTORIC DISTRICT BOUNDARY
- HISTORIC — HISTORIC AREA
- (H) HISTORIC STRUCTURE

CONVENTIONAL TOPOGRAPHIC SYMBOLOGY

EXISTING FEATURES

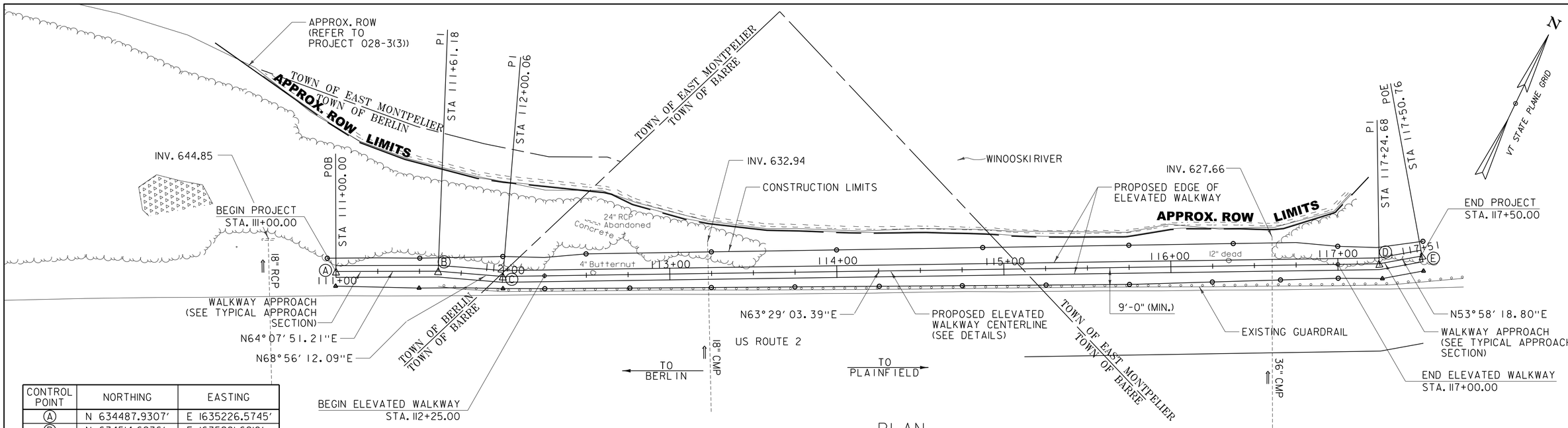
- ROAD EDGE PAVEMENT
- ROAD EDGE GRAVEL
- DRIVEWAY EDGE
- DITCH
- FOUNDATION
- FENCE (EXISTING)
- FENCE WOOD POST
- FENCE STEEL POST
- GARDEN
- ROAD GUARDRAIL
- RAILROAD TRACKS
- CULVERT (EXISTING)
- STONE WALL
- WALL
- WOOD LINE
- BRUSH LINE
- HEDGE
- BODY OF WATER EDGE
- LEDGE EXPOSED

Stantec

PROJECT NAME: CROSS VT TRAIL ASSOCIATION
PROJECT NUMBER: STP EHIO(17)

FILE NAME: 11073_legend.dgn
PROJECT LEADER: G. BOGUE
DESIGNED BY: M. LONGSTREET
CONVENTIONAL SYMBOLOGY LEGEND

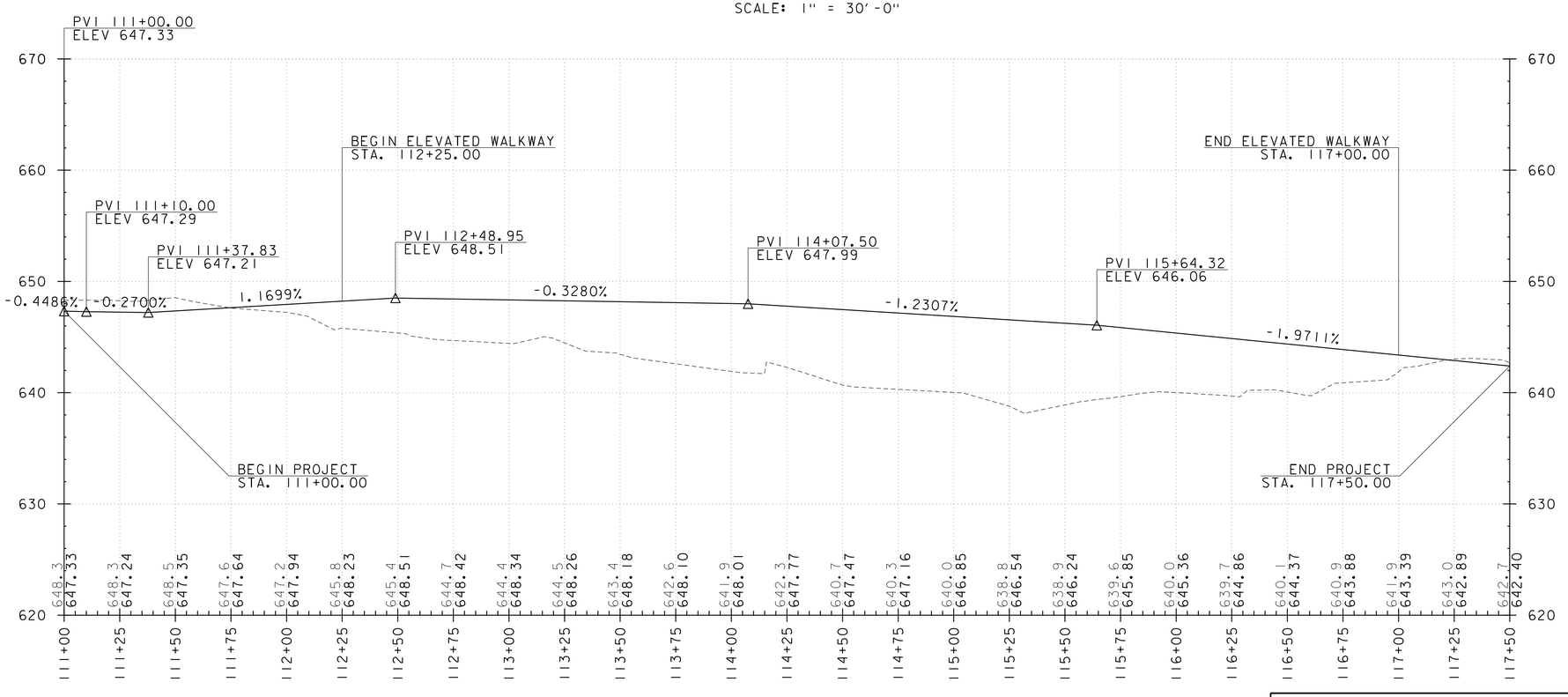
PLOT DATE: 8/21/2018
DRAWN BY: M. LONGSTREET
CHECKED BY: M. LONGSTREET
SHEET 4 OF 14



CONTROL POINT	NORTHING	EASTING
Ⓐ	N 634487.9307'	E 1635226.5745'
Ⓑ	N 634514.6236'	E 1635281.6218'
Ⓒ	N 634528.5971'	E 1635317.9040'
Ⓓ	N 634762.8109'	E 1635787.3417'
Ⓔ	N 634778.1527'	E 1635808.4360'

PLAN

SCALE: 1" = 30'-0"

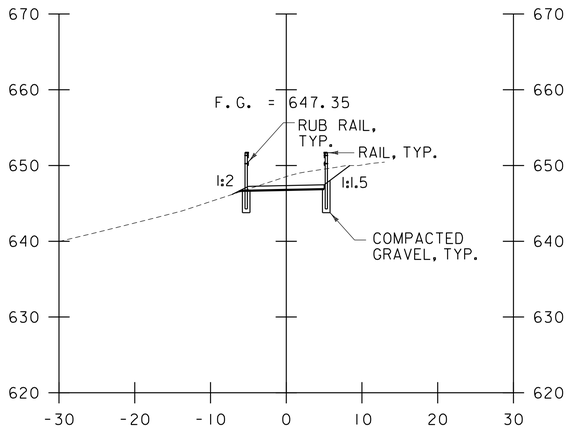


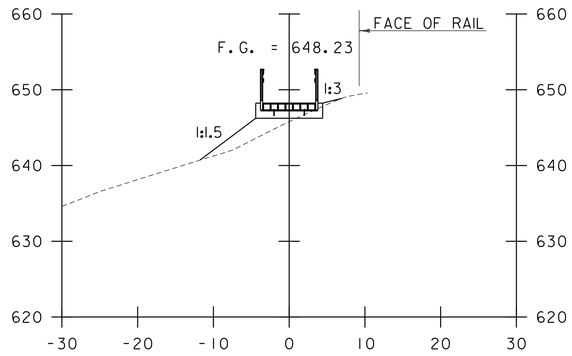
PROFILE

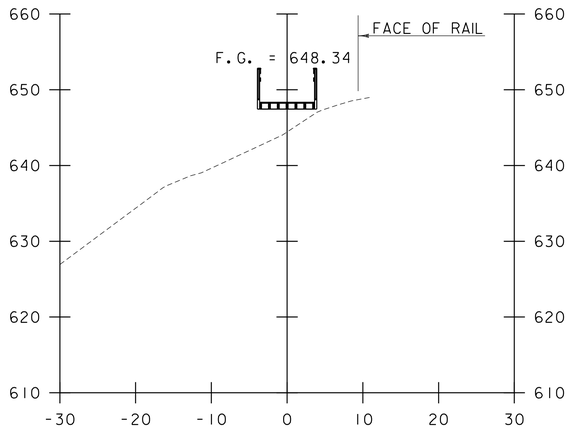
SCALE: 1" = 30' HORIZ.
1"=5' VERT.

Stantec

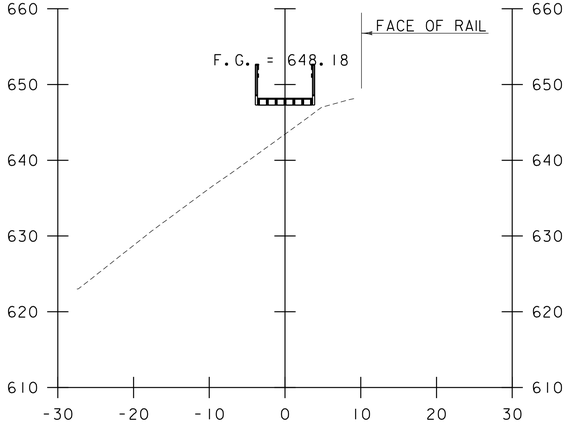
PROJECT NAME:	CROSS VT TRAIL ASSOCIATION
PROJECT NUMBER:	STP EHIO(17)
FILE NAME: 11073_bdr.dgn	PLOT DATE: 8/21/2018
PROJECT LEADER: G. BOGUE	DRAWN BY: J. SOTER
DESIGNED BY: G. BOGUE	CHECKED BY: N. TIRK
PLAN, PROFILE & ROW LIMITS	SHEET 5 OF 14







112+25
BEGIN ELEVATED WALKWAY



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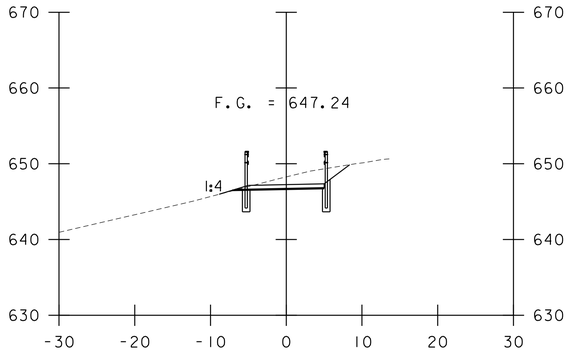

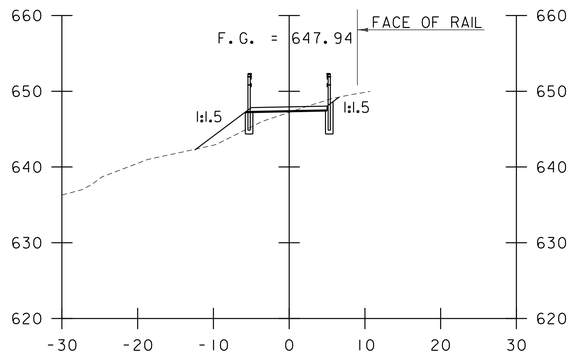

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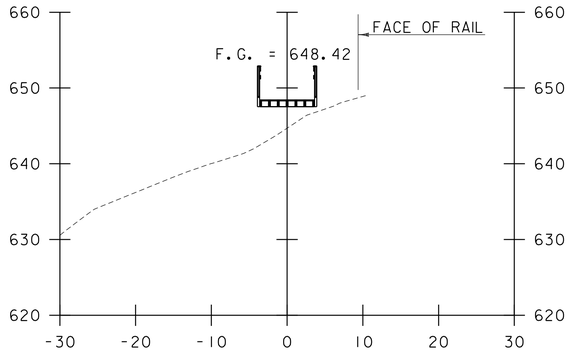
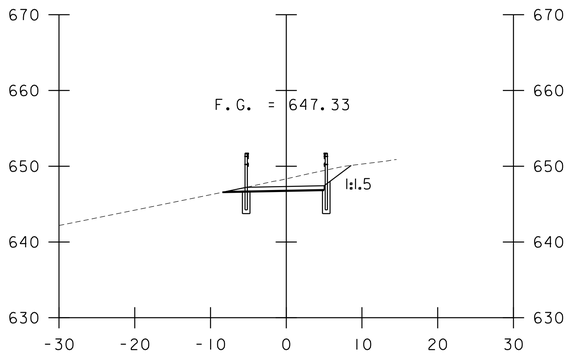
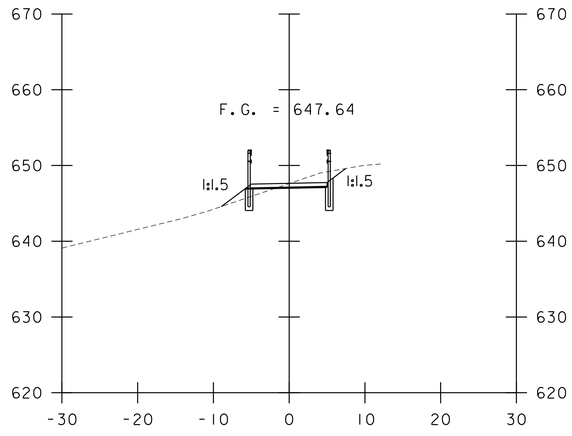


112+00

113+50

111+25





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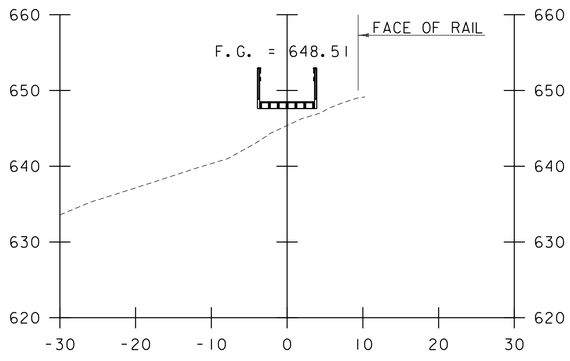
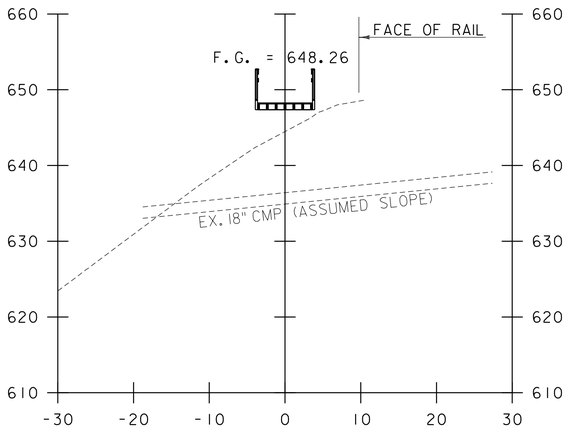




111+00
BEGIN PROJECT

111+75

112+50

113+25

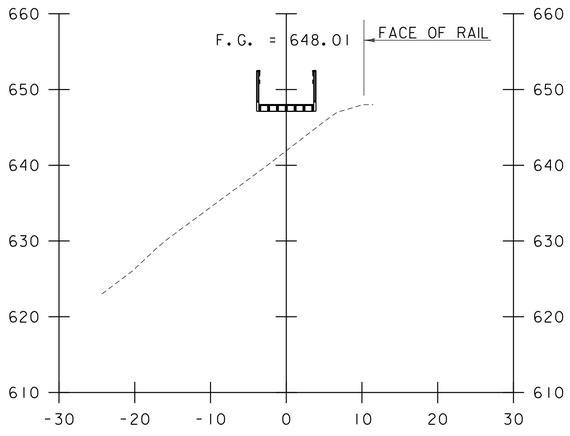
STA. 111+00 TO STA. 113+50

0 10 20
SCALE: 1" = 10'

Stantec

PROJECT NAME:	CROSS VT TRAIL ASSOCIATION
PROJECT NUMBER:	STP EHIO(17)

FILE NAME: 11073_xs.dgn	PLOT DATE: 8/21/2018
PROJECT LEADER: G. BOGUE	DRAWN BY: J. SOTER
DESIGNED BY: G. BOGUE	CHECKED BY: N. TIRK
CROSS SECTIONS 1	SHEET 6 OF 14



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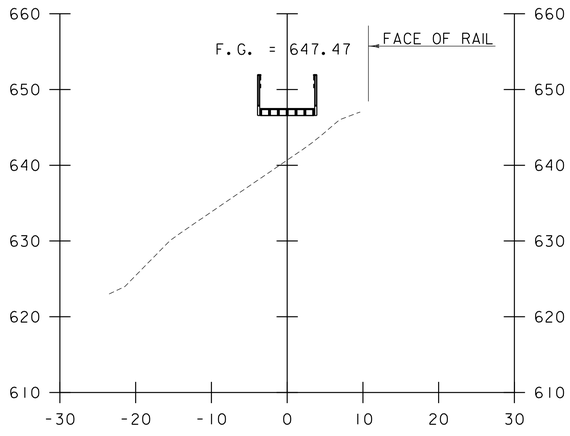

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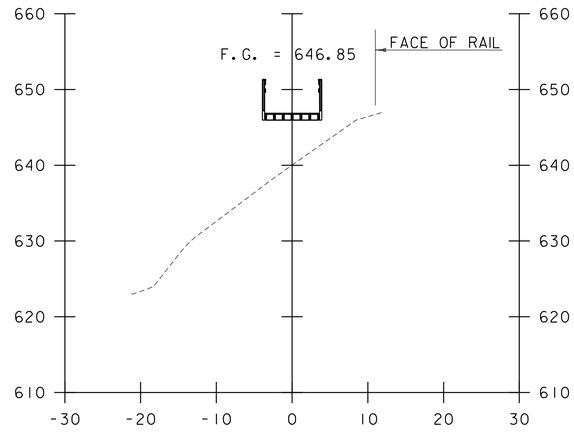

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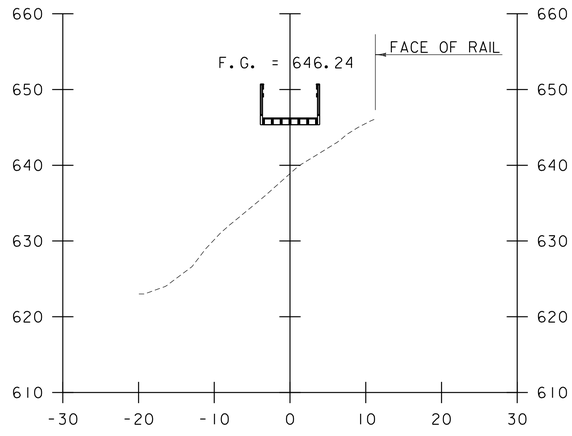

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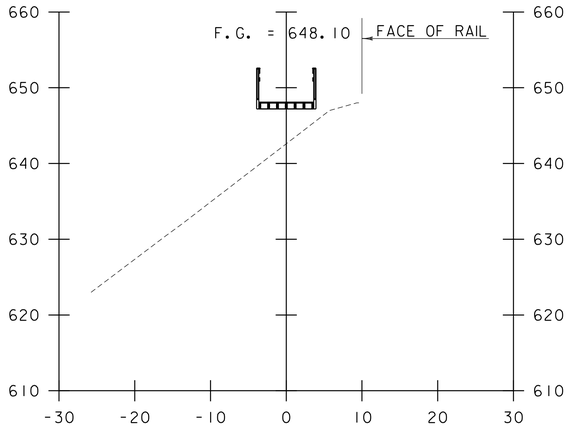

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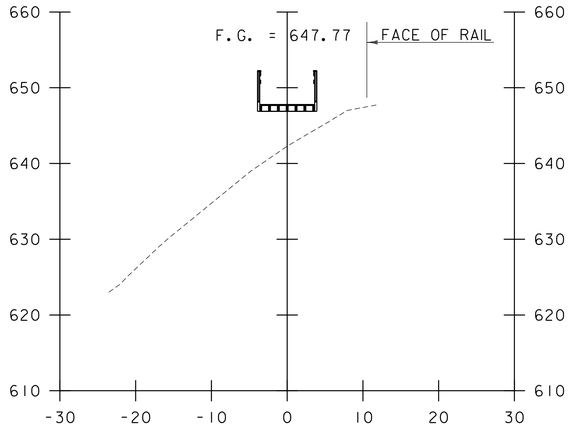

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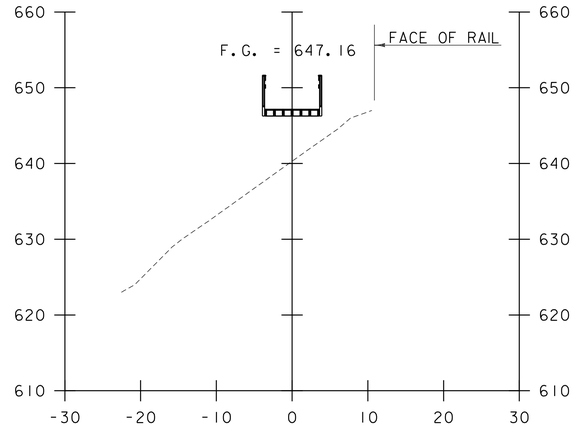

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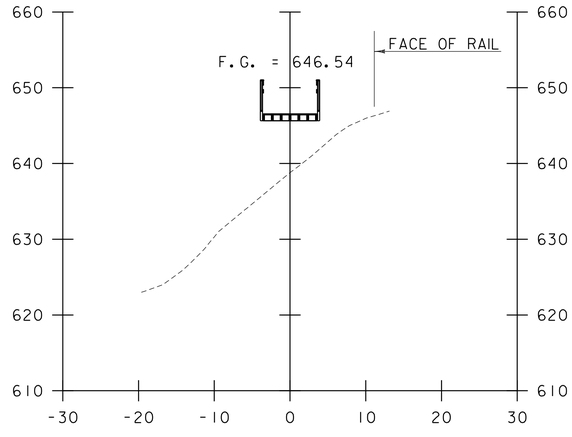

115+25

STA. 113+75 TO STA. 115+50

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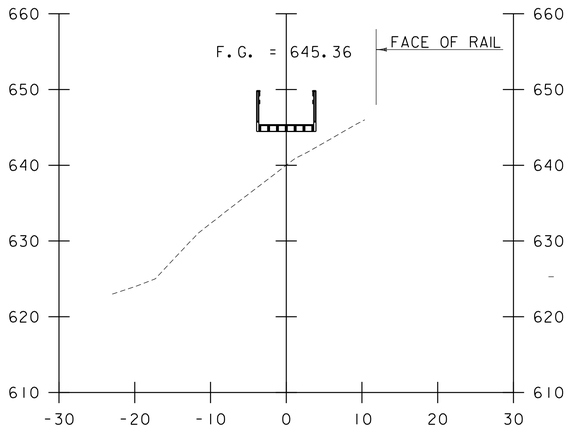
SCALE: 1" = 10'

Stantec

PROJECT NAME: CROSS VT TRAIL ASSOCIATION
PROJECT NUMBER: STP EHIO(17)

FILE NAME: 11073_xs.dgn
PROJECT LEADER: G. BOGUE
DESIGNED BY: G. BOGUE
CROSS SECTIONS 2

PLOT DATE: 8/21/2018
DRAWN BY: J. SOTER
CHECKED BY: N. TIRK
SHEET 7 OF 14



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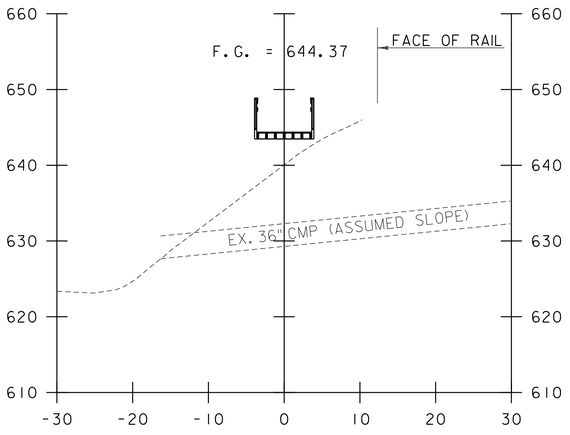

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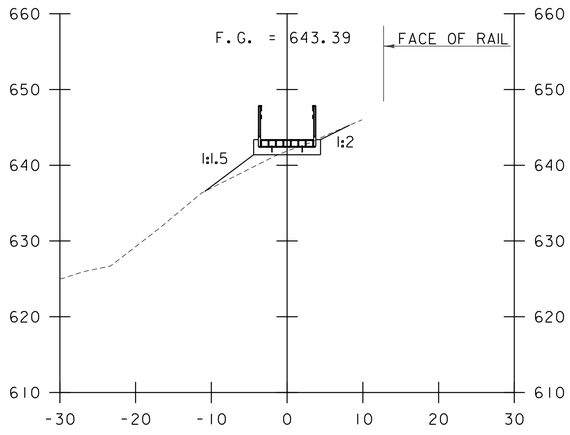
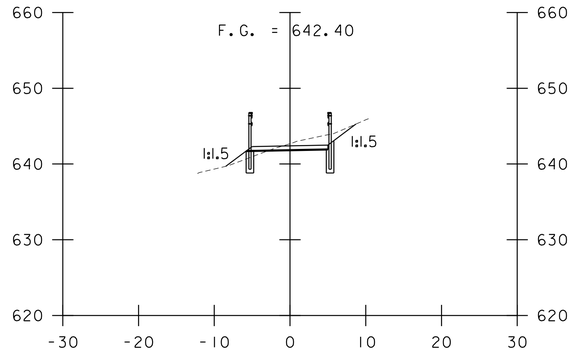


117+00
END ELEVATED WALKWAY



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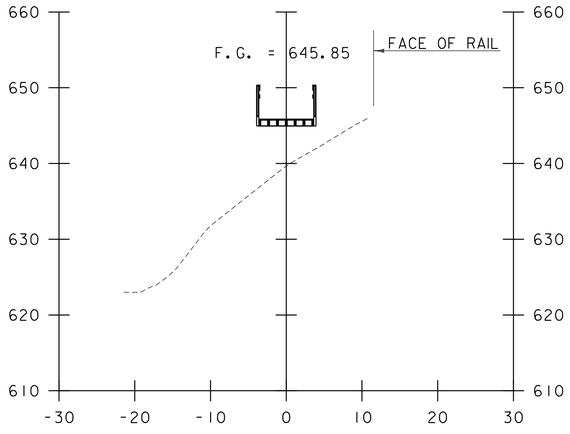
END PROJECT



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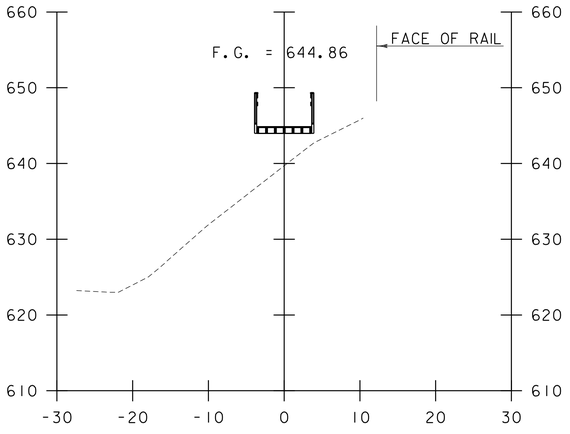

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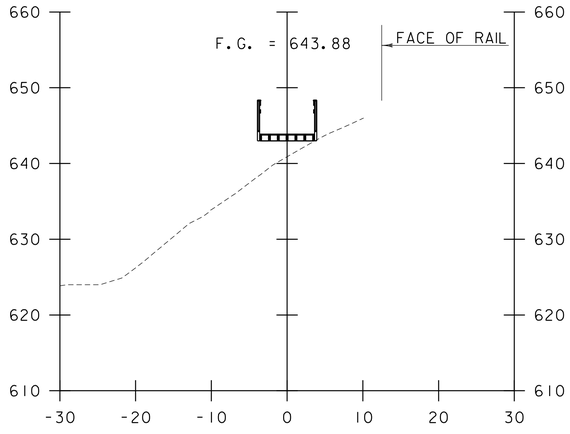

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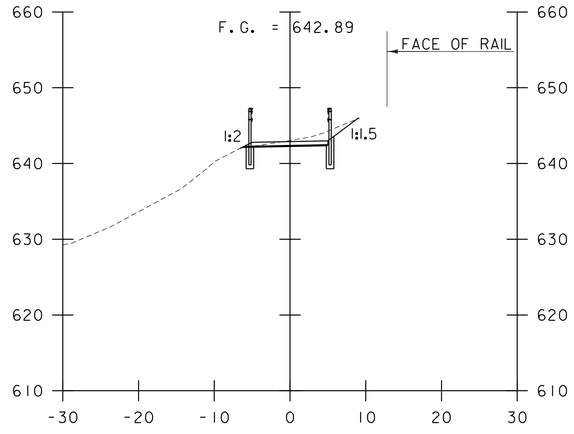


117+25

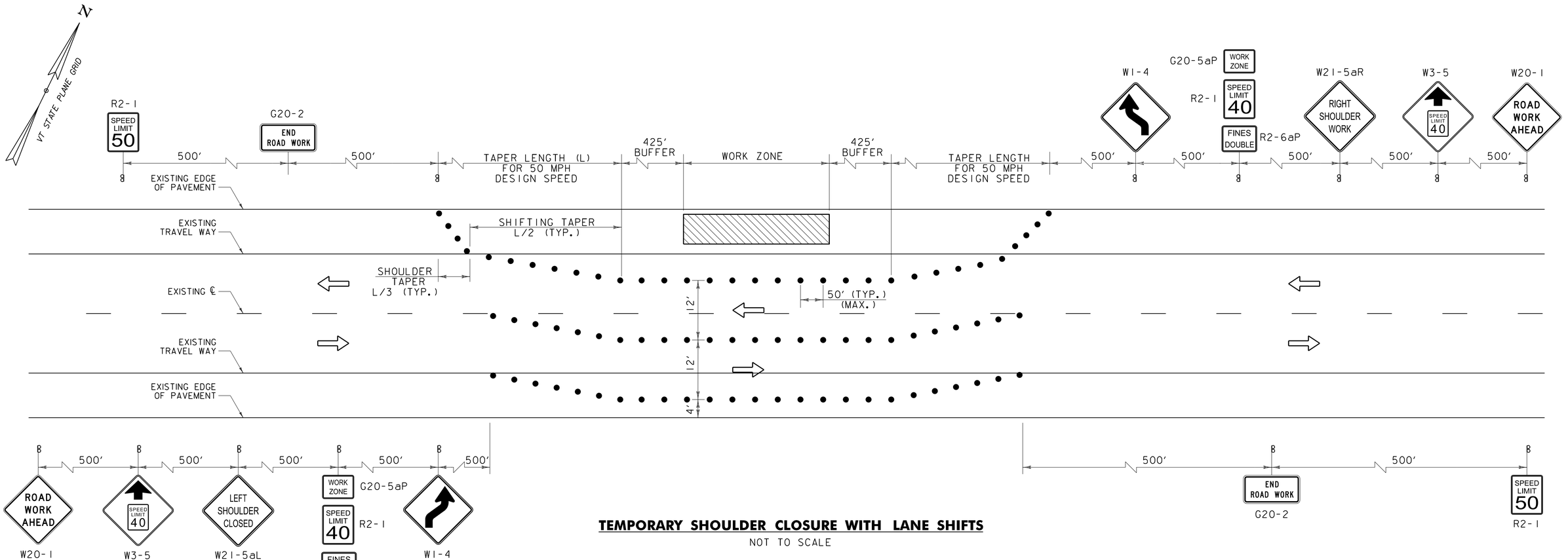
STA. 115+75 TO STA. 117+50

0 10 20
SCALE: 1" = 10'

Stantec

PROJECT NAME:	CROSS VT TRAIL ASSOCIATION
PROJECT NUMBER:	STP EHI0(17)

FILE NAME: 11073_xs.dgn	PLOT DATE: 8/21/2018
PROJECT LEADER: G. BOGUE	DRAWN BY: J. SOTER
DESIGNED BY: G. BOGUE	CHECKED BY: N. TIRK
CROSS SECTIONS 3	SHEET 8 OF 14



TEMPORARY SHOULDER CLOSURE WITH LANE SHIFTS

NOT TO SCALE

1.0 INTRODUCTION

1.1 THE FOLLOWING TEMPORARY TRAFFIC CONTROL INFORMATION IS INTENDED TO BE A GENERAL OUTLINE FOR HOW THE WORK SHOULD PROCEED. CONTRACTOR MAY ACCESS THE SITE FROM OTHER LOCATIONS THAT DO NOT REQUIRE A SHOULDER CLOSURE OR LANE SHIFTS.

1.2 IT IS ANTICIPATED THAT THE CONTRACTOR WILL NEED TO OCCUPY THE EXISTING ROADWAY SHOULDER AND SHIFT LANES TO PROVIDE A SAFE WORK AREA FOR WORKERS AND TRAVELING PUBLIC. THE DURATION OF THIS DAILY LANE SHIFT IS ANTICIPATED TO BE UP TO TWO WEEKS. IT IS ANTICIPATED THAT THE CONTRACTOR WILL REMOVE ALL TEMPORARY TRAFFIC CONTROL DEVICES AT THE END OF EACH WORKING DAY AND RESTORE THE ROADWAY TO NORMAL OPERATIONS. NO EQUIPMENT MAY REMAIN IN THE CLEAR ZONE AT THE END OF THE WORK DAY. THE PLAN ON THIS SHEET SHOWS THE TTC DEVICES NECESSARY FOR THIS SCENARIO.

1.3 IF THE WORK REQUIRING THE TEMPORARY SHOULDER CLOSURE WILL BE GREATER THAN TWO WEEKS IN DURATION OR REQUIRES A FULL OR OTHER ROADWAY OPERATION LANE CLOSURE; THE CONTRACTOR SHALL SUBMIT AN ALTERNATE TTC PLAN DETAILING ALL SIGNS, TEMPORARY STRIPING, TEMPORARY TRAFFIC BARRIER AND ANY OTHER TTC MEASURES AS REQUIRED BY THE MUTCD.

1.4 ASSUMING THE TEMPORARY LANE SHIFT SHOWN ON THIS SHEET IS FOLLOWED, THE CONTRACTOR SHALL PROVIDE A TEMPORARY TRAFFIC CONTROL PLAN STAMPED BY A VERMONT P.E. FOR REVIEW BY THE RESIDENT ENGINEER. THE CONTRACTOR SHALL NOT COMMENCE WORK UNTIL THE RESIDENT ENGINEER APPROVES THE TTC. THIS PLAN SHALL INCLUDE SPECIFIC DETAILS TO ADDRESS PROJECT SPECIFIC SITUATIONS, PAID UNDER ITEM 900.645 - SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE). THIS PLAN SHALL BE CREATED IN ACCORDANCE WITH THE CURRENT VERSION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND VTRANS STANDARDS. IN SITUATIONS WHERE CONFLICT EXISTS, THE MUTCD SHALL GOVERN.

1.0 INTRODUCTION (CONTINUED)

1.5 IF THE CONTRACTOR DOES NOT WISH TO FOLLOW THIS OUTLINE, AN ALTERNATE PROPOSAL PREPARED AND STAMPED BY A VERMONT P.E. MAY BE SUBMITTED TO THE RESIDENT ENGINEER. THE CONTRACTOR MUST ALLOW AT LEAST 4 WEEKS FOR REVIEW AND APPROVAL OF A COMPREHENSIVE PLAN AND 2 WEEKS FOR REVIEW AND APPROVAL OF MINOR CHANGES/DETAILS. PAID UNDER ITEM 900.645 - SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE).

2.0 GENERAL

2.1 THE CONTRACTOR SHALL NOT MIX DELINEATION DEVICES IN A LINEAR CLOSURE OR TAPER, I.E. CONES , VERTICAL PANELS, OR DRUMS SHALL NOT BE USED IN THE SAME TAPER OR CLOSURE. HOWEVER, DIFFERENT DELINEATION DEVICES MAY BE USED IN DIFFERENT AREAS OF THE PROJECT.

2.2 THE MAXIMUM TRAFFIC CONTROL DEVICE SPACING IS 1.0 TIMES THE CONSTRUCTION ZONE SPEED LIMIT FOR TAPERS, AND 1.0 TIMES THE SPEED LIMIT FOR TANGENTS. TAPER LENGTHS (L) PER MUTCD.

2.3 TRAFFIC CONTROL FOR THE PROJECT WILL BE PAID UNDER ITEM 900.645 - SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE). WORK TO BE PAID UNDER THIS ITEM SHALL INCLUDE, BUT IS NOT LIMITED TO: APPROACH AND ON-PROJECT CONSTRUCTION SIGNING, TEMPORARY LINE STRIPING, PORTABLE ARROW BOARDS, BARRELS, CONES, BARRICADES AND TEMPORARY REGULATORY AND WARNING SIGNS AND POSTS. ALL ADJUSTING, RELOCATING AND REMOVING OF THESE DEVICES SHALL ALSO BE INCLUDED. TEMPORARY SIGNAL WORK AND OTHER NECESSARY ADJUSTMENTS TO ACCOMMODATE EACH STAGE OF CONSTRUCTION SHALL BE INCLUDED. DEVELOPING DETAILED TRAFFIC CONTROL PLANS FOR LANE CLOSURES, DETOURS AND OTHER WORK REQUIRING TEMPORARY TRAFFIC CONTROL SHALL ALSO BE INCLUDED. THE FOLLOWING ITEMS WILL BE PAID UNDER THEIR RESPECTIVE BID PRICES:
- ITEM 630.10 - UNIFORMED TRAFFIC OFFICERS
- ITEM 630.15 - FLAGGERS

2.0 GENERAL (CONTINUED)

2.4 TWO LANES OF TRAFFIC SHALL BE MAINTAINED ON ROUTE 2 FROM 6AM TO 9AM AND 3PM TO 6PM. IF ONE LANE CLOSURE IS REQUIRED, COST SHALL BE INCIDENTAL TO ITEM 900.645 - SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE).

2.5 LANE WIDTHS SHALL NOT BE LESS THAN 12'.

2.6 VEHICLES SHALL NOT BE PARKED IN A MANNER WHICH OBSTRUCTS ANY SIGNS, BANNERS, BARRICADES OR OTHER TRAFFIC CONTROL DEVICES.

2.7 ANY SEGMENTS OF GUARDRAIL REMOVED DURING WORKING HOURS SHALL BE REINSTALLED AT THE END OF DAILY CONSTRUCTION ACTIVITIES. PAID AS ITEM 900.645 - SPECIAL PROVISION TRAFFIC CONTROL, ALL-INCLUSIVE).

2.8 IF TEMPORARY CONCRETE BARRIERS ARE USED, THEN THEY MUST BE DELINEATED TO MATCH CORRESPONDING TEMPORARY PAVEMENT MARKINGS.

2.9 AN ESTIMATED QUANTITY OF ITEM 630.10 - UNIFORMED TRAFFIC OFFICERS HAS BEEN INCLUDED AS IT IS ASSUMED THAT A UTO WILL BE NEEDED ON SITE WHILE LANE SHIFTS ARE BEING INSTALLED, USED AND REMOVED AT END OF WORK DAY.

2.10 AN ESTIMATED QUANTITY OF ITEM 630.15 - FLAGGERS HAS BEEN INCLUDED AS IT IS ASSUMED THAT FLAGGERS MAY BE USED IF APPROVED BY THE RESIDENT ENGINEER. APPROPRIATE SIGNING PER THE MUTCD IS REQUIRED IF FLAGGERS ARE USED. THIS SIGNING IS INCIDENTAL TO ITEM 630.15 - FLAGGERS.

2.11 U.S. ROUTE 2 IN EAST MONTPELIER IS A HIGH USE/PRIORITY BICYCLE ROUTE. BICYCLE ACCOMODATIONS SHALL BE CONSIDERED IN TRAFFIC CONTROL PLAN.

2.12 THE CONTRACTOR SHALL PROVIDE ACCESS THROUGH THE WORK ZONE FOR EMERGENCY VEHICLES.

2.13 DAILY TRAFFIC CONTROL SIGN PACKAGE TO BE REMOVED AT END OF WORK DAY AFTER LANE SHIFT IS REMOVED. COST SHALL BE INCIDENTAL TO ITEM 900.645 - SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE).

3.0 SIGNS & SIGNALS

3.1 EXISTING SIGNING SHALL REMAIN, WHEN RELOCATION IS NECESSARY, UNTIL ITS NEED NO LONGER EXISTS. ALL EXISTING SIGNS THAT DO NOT APPLY TO TEMPORARY CONDITIONS SHALL BE COMPLETELY COVERED BY THE CONTRACTOR. TEMPORARY SIGNING SHALL BE INSTALLED, AS NEEDED AND AS REQUIRED BY THE MUTCD. COST SHALL BE INCIDENTAL TO ITEM 900.645 - SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE).

LEGEND

- FLOW OF TRAFFIC
- CHANNELIZING DEVICE
- WORK AREA

Stantec

PROJECT NAME: CROSS VT TRAIL ASSOCIATION
PROJECT NUMBER: STP EHIO(17)

FILE NAME: 11073_traffic.dgn
PROJECT LEADER: G. BOGUE
DESIGNED BY: T. LUTHER
PLOT DATE: 8/21/2018
DRAWN BY: J. SOTER
CHECKED BY: G. GOYETTE

TRAFFIC CONTROL DETAILS AND NOTES

EPSC PLAN NARRATIVE

1.1 PROJECT DESCRIPTION

THIS PROJECT INVOLVES CONSTRUCTING A NEW ELEVATED WALKWAY AND APPROACHES. THE WALKWAY IS LOCATED IN THE TOWNS OF BERLIN, BARRE AND EAST MONTPELIER ALONG THE WEST SIDE OF US ROUTE 2. THE LENGTH OF THE PROJECT IS 650 FEET.

NOTE: AREA OF DISTURBANCE INCLUDES LIMITS OF EARTH DISTURBANCE WITHIN THE PROJECT AREA, AS WELL AS WASTE, BORROW AND STAGING AREAS, AND OTHER EARTH DISTURBING ACTIVITIES WITHIN OR DIRECTLY ADJACENT TO THE PROJECT LIMITS AS SHOWN ON THE ATTACHED EPSC PLAN.

TOTAL AREA OF DISTURBANCE AS SHOWN ON THE ATTACHED EPSC PLAN IS APPROXIMATELY 0.51 ACRES.

IT IS ANTICIPATED THAT THIS PROJECT WILL LAST ONE CONSTRUCTION SEASON.

1.2 SITE INVENTORY

1.2.1 TOPOGRAPHY

THE TOPOGRAPHY OF THE AREA HAS STEEP SLOPES UP TO 1.5 HORIZONTAL AND 1 VERTICAL THAT DEFINE THE FLOODPLAIN BOUNDARIES THAT LEAD DOWN TO THE RIVER.

1.2.2 DRAINAGE, WATERWAYS, BODIES OF WATER, AND PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES

THE WINOOSKI RIVER IS THE ONLY WATER SOURCE ON THE PROJECT SITE. DISTURBANCE OF SOILS NEAR NATURAL OR MAN-MADE WATERS WILL CONSIST OF THAT WHICH IS NECESSARY FOR THE PLACEMENT OF THE ELEVATED WALKWAY AND RELATED APPROACH WALKWAY WORK.

1.2.3 VEGETATION

THE VEGETATION IN THE PROJECT AREA CONSISTS OF HARDWOOD TREES, BRUSH AND GRASS. THE IMPACT TO VEGETATION WILL BE LIMITED TO THAT WHICH IS AFFECTED BY INSTALLATION OF THE ELEVATED WALKWAY AND RELATED APPROACH WALK WORK. UPON COMPLETION SLOPES WILL BE STABILIZED WITH STONE FILL AND VEGETATION WILL BE RE-ESTABLISHED WITH STANDARD SEED AND MULCH PRACTICES.

1.2.4 SOILS

ALL SOIL DATA CAME FROM THE U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE FOR THE COUNTY OF WASHINGTON, VERMONT. SOILS ON THE PROJECT SITE ARE VERSHIRE-DUMMERSTON, ROCKY, 25% TO 60% SLOPES, “K FACTOR” = 0.43. THE SOIL IS CONSIDERED HIGHLY ERODIBLE DUE TO SIGNIFICANT SLOPES. ALSO ON SITE IS BUCKLAND LOAM SOIL, VERY STONY, 15% TO 35% SLOPES WITH MODERATE ERODIBILITY POTENTIAL.

NOTE: K-VALUES GENERALLY INDICATE THE FOLLOWING:
0.0-0.23 = LOW EROSION POTENTIAL
0.24-0.36 = MODERATE EROSION POTENTIAL
0.37 AND HIGHER = HIGH EROSION POTENTIAL

1.2.5 SENSITIVE RESOURCE AREAS

CRITICAL HABITATS: NO
HISTORICAL OR ARCHEOLOGICAL AREAS: NO
PRIME AGRICULTURAL LAND: NO
THREATENED AND ENDANGERED SPECIES: NO
WATER RESOURCE: WINOOSKI RIVER
WETLANDS: NO

1.3 RISK EVALUATION

THIS PROJECT DOES NOT FALL UNDER THE JURISDICTION OF GENERAL PERMIT 3-9020 FOR STORMWATER RUNOFF FROM CONSTRUCTION SITES. SHOULD CHANGES PRIOR TO OR DURING CONSTRUCTION RESULT IN ONE OR MORE ACRES OF EARTH DISTURBANCE OR SHOULD THE PROJECT BECOME PART OF A LARGER PLAN OF DEVELOPMENT, THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY ADDITIONAL PERMITTING.

1.4 EROSION PREVENTION AND SEDIMENT CONTROL

THE EROSION CONTROL PLANS ARE MEANT AS A GUIDELINE FOR PREVENTING EROSION AND CONTROLLING SEDIMENT TRANSPORT. THE PRINCIPLES OUTLINED IN THIS NARRATIVE CONSIST OF APPLYING MEASURES THROUGHOUT CONSTRUCTION OF THE PROJECT IN ORDER TO MINIMIZE SEDIMENT TRANSPORT TO THE RECEIVING WATERS. THE MEASURES INCLUDE STABILIZATION AND STRUCTURAL PRACTICES, STORM WATER CONTROLS AND OTHER POLLUTION PREVENTION PRACTICES. THEY HAVE BEEN PROPOSED BY THE DESIGNER AS A BASIS FOR PROTECTING RESOURCES AND WILL NEED TO BE BUILT UPON BASED ON THE SPECIFIC MEANS AND METHODS OF THE CONTRACTOR. REFER TO THE LOW RISK SITE HANDBOOK AND APPROPRIATE DETAIL SHEETS FOR SPECIFIC GUIDANCE AND CONSTRUCTION DETAILING.

ALL MEASURES SHALL BE REGULARLY MAINTAINED AND SHALL BE CHECKED FOR SEDIMENT BUILD-UP. SEDIMENT SHALL BE DISPOSED OF AT AN APPROVED SITE WHERE IT WILL NOT BE SUBJECT TO EROSION.

1.4.1 MARK SITE BOUNDARIES

SITE BOUNDARIES AND AREAS CONSTRUCTION EQUIPMENT CAN ACCESS SHALL BE DELINEATED.

PROJECT DEMARCATION FENCING (PDF) SHALL BE USED TO PHYSICALLY MARK SITE BOUNDARIES.

1.4.2 LIMIT DISTURBANCE AREA

PREVENTING INITIAL SOIL EROSION BY MINIMIZING THE EXPOSED AREA IS MUCH MORE EFFECTIVE THAN TREATING ERODED SEDIMENT. EARTH DISTURBANCE CAN BE MINIMIZED THROUGH CONSTRUCTION PHASING BY ONLY OPENING UP EARTH AS NECESSARY. THIS CAN LIMIT THE AREA THAT WILL BE DISTURBED AND EXPOSED TO EROSION. EMPLOY TEMPORARY CONSTRUCTION STABILIZATION PRACTICES IN INCREMENTAL STAGES AS PHASES CHANGE. FOR PROJECTS WHICH FALL UNDER THE CONSTRUCTION GENERAL PERMIT, ONLY THE ACREAGE LISTED ON THE PERMIT AUTHORIZATION MAY BE EXPOSED AT ANY GIVEN TIME.

MAINTAINING VEGETATED BUFFERS ALONG STREAM BANKS, WETLANDS OR OTHER SENSITIVE AREAS IS A CRUCIAL EROSION AND SEDIMENT CONTROL MEASURE THAT SHOULD BE ESTABLISHED WHEREVER POSSIBLE.

1.4.3 SITE ENTRANCE/EXIT STABILIZATION

TRACKING OF SEDIMENT ONTO PUBLIC HIGHWAYS SHALL BE MINIMIZED TO REDUCE THE POTENTIAL FOR RUNOFF ENTERING RECEIVING WATERS. INSTALLATION SHALL COINCIDE WITH THE CONTRACTORS PROGRESS SCHEDULE.

IT IS NOT ANTICIPATED THAT STABILIZED CONSTRUCTION ENTRANCES WILL BE NECESSARY.

1.4.4 INSTALL SEDIMENT BARRIERS

SEDIMENT BARRIERS SHALL BE UTILIZED TO INTERCEPT RUNOFF AND ALLOW SUSPENDED SEDIMENT TO SETTLE OUT. THEY SHALL BE INSTALLED PRIOR TO ANY UP SLOPE WORK.

SILT FENCE WILL BE INSTALLED AS PROPOSED ON THE EPSC PLAN.

1.4.5 DIVERT UPLAND RUNOFF

DIVERSIONARY MEASURES SHALL BE USED TO INTERCEPT RUNOFF FROM ABOVE THE CONSTRUCTION AND DIRECT IT AROUND THE DISTURBED AREA SO THAT CLEAN WATER DOES NOT BECOME MUDDIED WHILE TRAVELING OVER EXPOSED SOILS ON THE CONSTRUCTION SITE.

IT IS NOT ANTICIPATED THAT DIVERSION MEASURES WILL BE NECESSARY.

1.4.6 SLOW DOWN CHANNELIZED RUNOFF

CHECK STRUCTURES SHALL BE UTILIZED TO REDUCE THE VELOCITY, AND THUS THE EROSIVE POTENTIAL, OF CONCENTRATED FLOW IN CHANNELS.

IT IS NOT ANTICIPATED THAT STONE CHECK DAMS WILL BE INSTALLED.

1.4.7 CONSTRUCT PERMANENT CONTROLS

PERMANENT STORMWATER TREATMENT DEVICES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH PERMIT CONDITIONS.

1.4.8 STABILIZE EXPOSED SOILS DURING CONSTRUCTION

ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY STABILIZATION IN PLACE WITHIN 48 HOURS OF DISTURBANCE.

SURFACE ROUGHENING OF ALL EXPOSED SLOPES, COMBINED WITH TEMPORARY MULCHING, SHALL BE UTILIZED ON A REGULAR BASIS. BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED TO STABILIZE ALL SLOPES STEEPER THAN 1:3.

THE FORECAST OF RAINFALL EVENTS SHALL TRIGGER IMMEDIATE PROTECTION OF EXPOSED SOILS.

1.4.9 WINTER STABILIZATION

VARIOUS MEASURES SPECIFIC TO WINTER MAY BE NECESSARY SHOULD THE PROJECT EXTEND INTO WINTER (OCTOBER 15 THROUGH APRIL 15). REFER TO THE LOW RISK SITE HANDBOOK FOR GUIDANCE.

1.4.10 STABILIZE SOIL AT FINAL GRADE

EXPOSED SOIL MUST BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE.

SEED, MULCH, FERTILIZER AND LIME SHALL BE USED TO ESTABLISH PERMANENT VEGETATION. FOR SLOPES STEEPER THAN 1:3, BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED INSTEAD OF MULCH.

1.4.11 DE-WATERING ACTIVITIES

DISCHARGE FROM DEWATERING ACTIVITIES THAT FLOWS OFF OF THE CONSTRUCTION SITE MUST NOT CAUSE OR CONTRIBUTE TO A VIOLATION OF THE VERMONT WATER QUALITY STANDARDS.

IT IS NOT ANTICIPATED THAT DE-WATERING WILL BE NECESSARY.

1.4.12 INSPECT YOUR SITE

INSPECT THE PROJECT SITE BASED ON SPECIAL PROVISION REQUIREMENTS OR CONSTRUCTION GENERAL PERMIT AUTHORIZATION STIPULATIONS.

1.5 SEQUENCE AND STAGING

THIS SECTION WILL BE DEVELOPED BY THE CONTRACTOR USING THE GUIDANCE OUTLINED IN THE VTRANS EPSC PLAN CONTRACTOR CHECKLIST.

1.5.1 CONSTRUCTION SEQUENCE

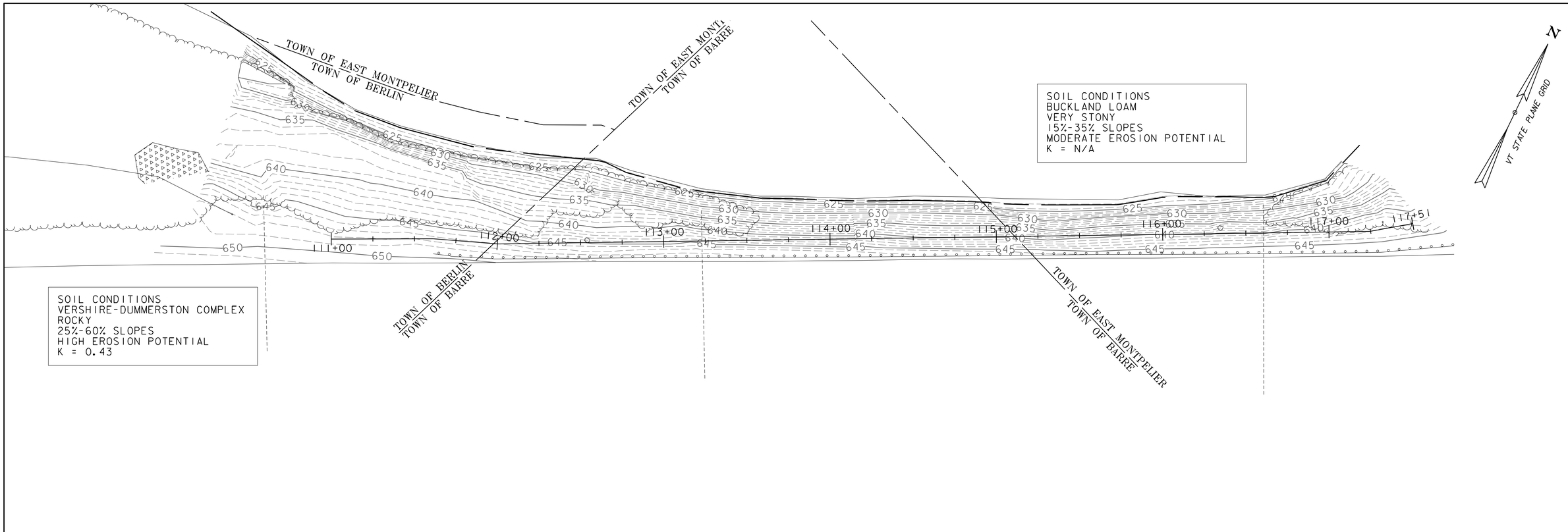
1.5.2 OFF-SITE ACTIVITIES

IN ADDITION TO THE CONTRACTOR CHECKLIST ANY ACTIVITIES OUTSIDE THE CONSTRUCTION LIMITS SHALL FOLLOW SPECIFICATION 105.25- 105.29 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.

1.5.3 UPDATES

Stantec

PROJECT NAME:	CROSS VT TRAIL ASSOCIATION
PROJECT NUMBER:	STP EHIO(17)
FILE NAME: 11073_epsc_narrative.dgn	PLOT DATE: 8/21/2018
PROJECT LEADER: G. BOGUE	DRAWN BY: J. SOTER
DESIGNED BY: T. LUTHER	CHECKED BY: E. ALLING
EPSC NARRATIVE	SHEET 10 OF 14

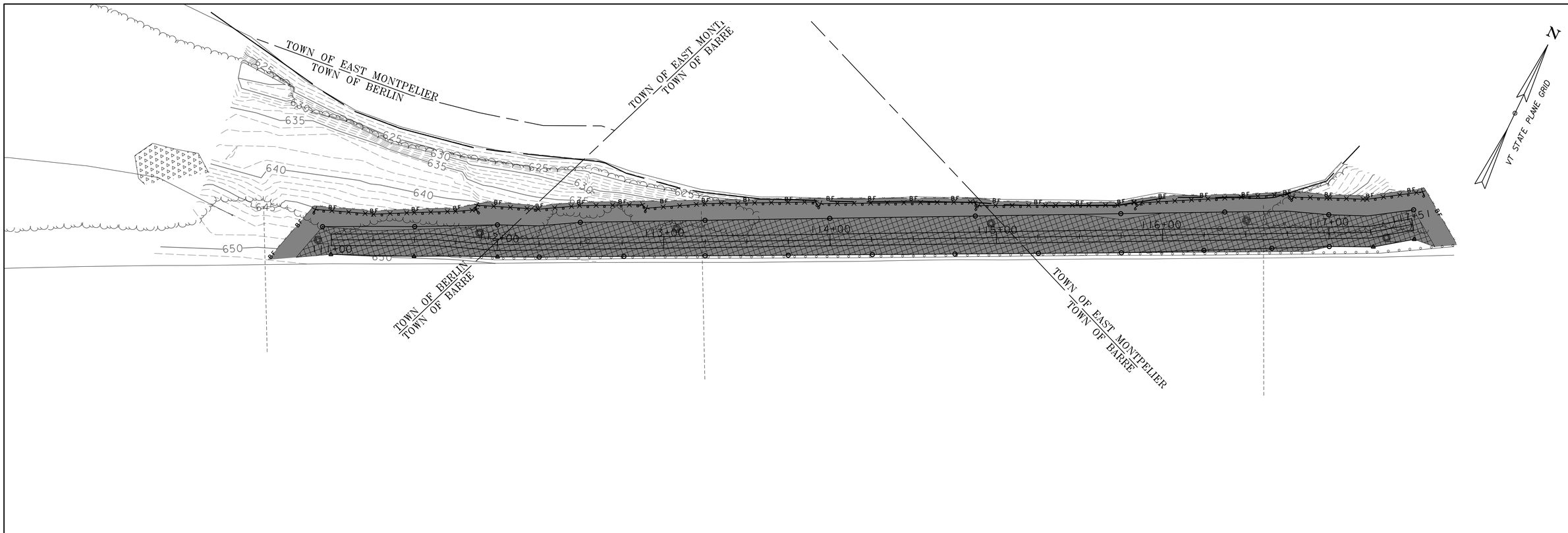


0 30 60

SCALE: 1" = 30'-0"

Stantec

PROJECT NAME:	CROSS VT TRAIL ASSOCIATION
PROJECT NUMBER:	STP EHIO(17)
FILE NAME: 11073_bdr_ero.dgn	PLOT DATE: 8/21/2018
PROJECT LEADER: G. BOGUE	DRAWN BY: J. SOTER
DESIGNED BY: T. LUTHER	CHECKED BY: E. ALLING
EPSC EXISTING CONDITIONS SITE PLAN	SHEET 11 OF 14

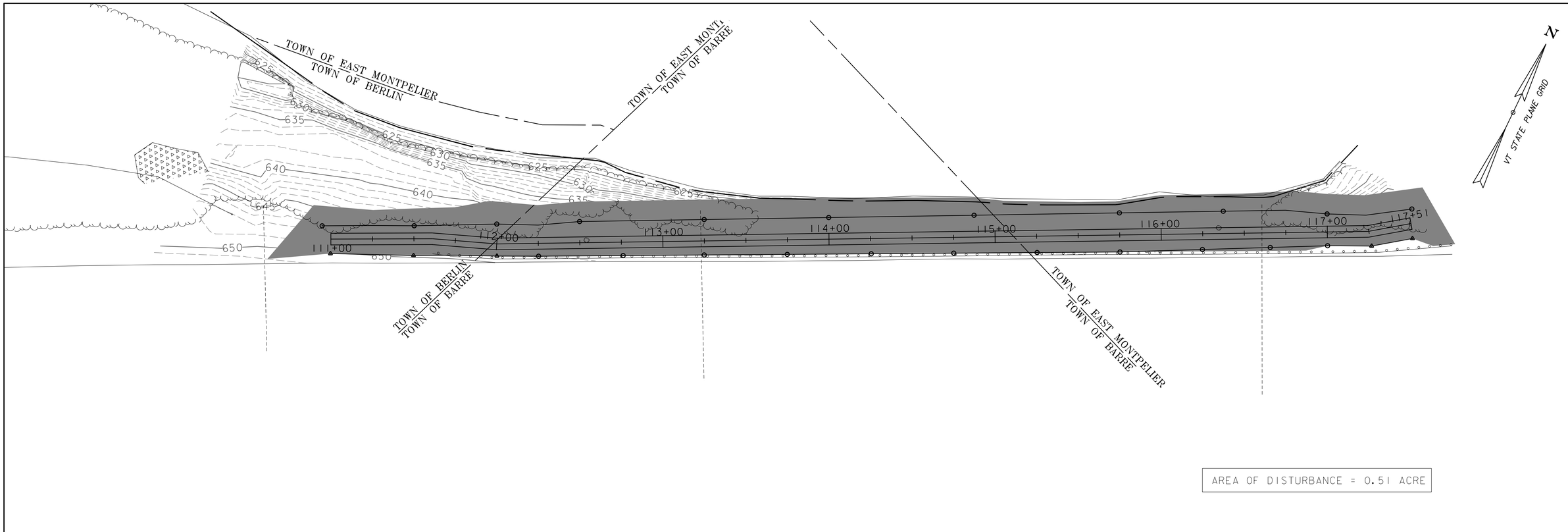


0 30 60

SCALE: 1" = 30'-0"

Stantec

PROJECT NAME:	CROSS VT TRAIL ASSOCIATION
PROJECT NUMBER:	STP EHIO(17)
FILE NAME: 11073_bdr_ero.dgn	PLOT DATE: 8/21/2018
PROJECT LEADER: G. BOGUE	DRAWN BY: J. SOTER
DESIGNED BY: T. LUTHER	CHECKED BY: E. ALLING
EPSC CONSTRUCTION SITE PLAN	SHEET 12 OF 14



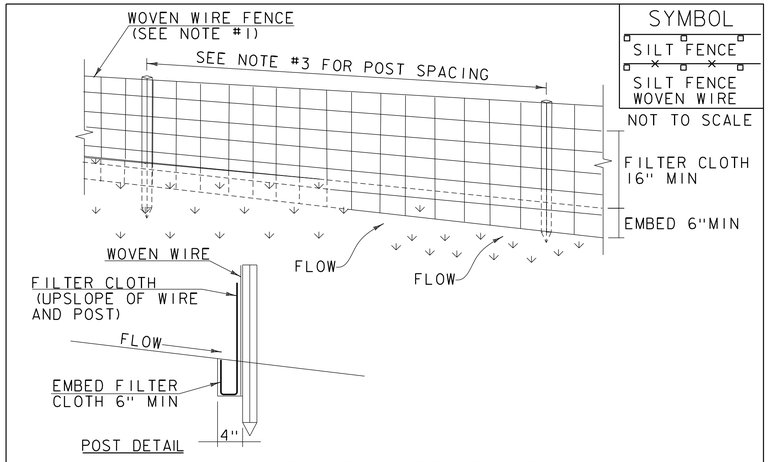
AREA OF DISTURBANCE = 0.51 ACRE

0 30 60

SCALE: 1" = 30'-0"

Stantec

PROJECT NAME:	CROSS VT TRAIL ASSOCIATION
PROJECT NUMBER:	STP EHIO(17)
FILE NAME: 11073_bdr_ero.dgn	PLOT DATE: 8/21/2018
PROJECT LEADER: G. BOGUE	DRAWN BY: J. SOTER
DESIGNED BY: T. LUTHER	CHECKED BY: E. ALLING
EPSC FINAL SITE PLAN	SHEET 13 OF 14



SYMBOL

SILT FENCE

SILT FENCE WOVEN WIRE

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE REINFORCED FENCE IS REQUIRED WITHIN 100' UPSLOPE OF RECEIVING WATERS WHEN THE PROJECT FALLS UNDER A CONSTRUCTION STORMWATER PERMIT. WOVEN WIRE SHALL BE A MIN. 14 GAUGE WITH A 6" MAX. MESH OPENING.
2. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI100X, STABILINKA T140N OR APPROVED EQUIVALENT.
3. POST SPACING FOR WIRE-BACKED FENCE SHALL BE 10' MAXIMUM. FOR FILTER-CLOTH FENCE, WHEN ELONGATION IS >50%, POST SPACING SHALL NOT EXCEED 4' AND WHEN ELONGATION IS <50%, POST SPACING SHALL NOT EXCEED 6'.
4. WOVEN WIRE FENCE IS TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY 6" AND FOLDED.
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SEDIMENT REACHES HALF OF FABRIC HEIGHT.

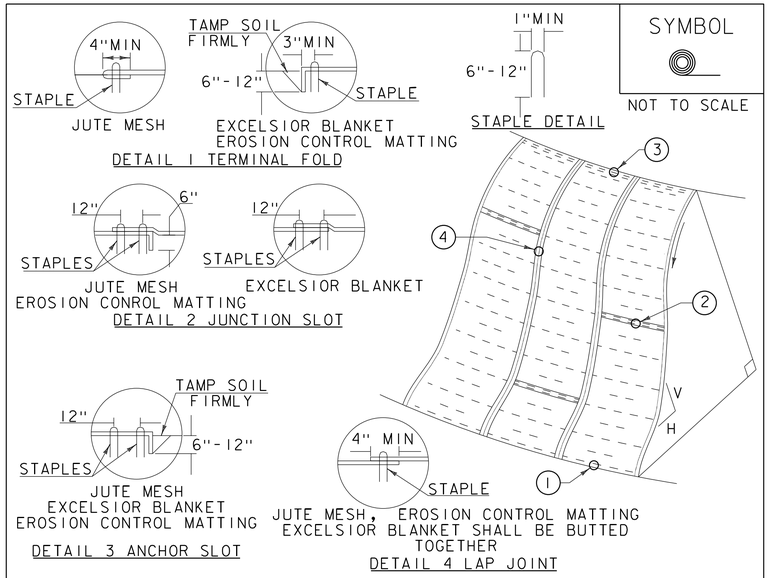
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SILT FENCE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 AND AS SHOWN IN THE PLANS FOR GEOTEXTILE FOR SILT FENCE (PAY ITEM 649.51) OR GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED (PAY ITEM 649.515).

REVISIONS		
MARCH 21, 2008		WHF
DECEMBER 11, 2008		WHF
JANUARY 13, 2009		WHF



SYMBOL

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. APPLY TO SLOPES GREATER THAN 3H:1V OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4'X225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4'X150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 AND AS SHOWN IN THE PLANS FOR TEMPORARY EROSION MATTING (PAY ITEM 653.20) OR PERMANENT EROSION MATTING (PAY ITEM 653.21).

REVISIONS		
APRIL 16, 2007		JMF
JANUARY 13, 2009		WHF

VAOT LOW GROW/FINE FESCUE MIX

LBS/AC						
WEIGHT	BROADCAST	HYDROSEED	NAME	LATIN NAME	GERM	PURITY
38%	57	95	CREEPING RED FESCUE	FESTUCA RUBRA VAR. RUBRA	90%	98%
29%	43.5	72.5	HARD FESCUE	FESTUCA LONGIFOLIA	85%	95%
15%	22.5	37.5	CHEWINGS FESCUE	FESTUCA RUBRA VAR. COMMUTATA	87%	95%
15%	22.5	37.5	ANNUAL RYEGRASS	LOLIUM MULTIFLORUM	90%	95%
3%	4.5	7.5	INERTS			
100%	150	250				

VAOT RURAL AREA MIX

LBS/AC						
WEIGHT	BROADCAST	HYDROSEED	NAME	LATIN NAME	GERM	PURITY
37.5%	22.5	45	CREEPING RED FESCUE	FESTUCA RUBRA VAR. RUBRA	85%	98%
37.5%	22.5	45	TALL FESCUE	FESTUCA ARUNDINACEA	90%	95%
5.0%	3	6	RED TOP	AGROSTIS GIGANTEA	90%	95%
15.0%	9	18	WHITE FIELD CLOVER	TRIFOLIUM REPENS	85%	98%
5.0%	3	6	ANNUAL RYE GRASS	LOLIUM MULTIFLORUM	85%	95%
100%	60	120				

GENERAL AMENDMENT GUIDANCE

FERTILIZER	LIME	
10/20/10	AG LIME	PELLITIZED
500 LBS/AC	2 TONS/AC	1 TONS/AC

CONSTRUCTION GUIDANCE

1. SEED MIX: THE CONTRACTOR SHALL COORDINATE WITH THE RESIDENT ENGINEER ON WHICH SEED MIX TO USE.
2. SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED UPLAND (NON WETLAND) AREAS DISTURBED BY THE CONTRACTOR.
3. ALL SEED MIXTURES: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.
4. FERTILIZER AND LIMESTONE: SHALL FOLLOW RATES SHOWN ON PLAN OR AS DIRECTED BY THE ENGINEER.
5. HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2 TONS/ACRE, ACHIEVE 90% GROUND COVER OR AS DIRECTED BY THE ENGINEER.
6. HYDROSEEDING: ALTHOUGH GUIDANCE IS GIVEN ABOVE THE SITE CONDITIONS AND THE TYPE OF HYDROSEED PROPOSED FOR USE WILL ULTIMATELY DICTATE THE AMOUNTS AND TYPES OF SOIL AMENDMENTS TO BE APPLIED.
7. TURF ESTABLISHMENT: PLACING SEED, FERTILIZER, LIME AND MULCH PRIOR TO SEPTEMBER 15 AND AFTER APRIL 15 CAN BETTER ENSURE A VIGOROUS GROWTH OF GRASS.

ADAPTED FROM VTRANS TECHNICAL LANDSCAPE MANUAL FOR ROADWAYS AND TRANSPORTATION FACILITIES

TURF ESTABLISHMENT

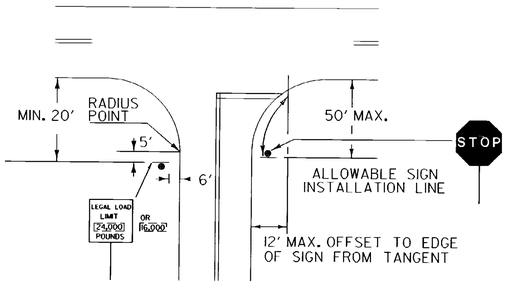
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 651 FOR SEED (PAY ITEM 651.15)

REVISIONS		
JANUARY 12, 2015		WHF

PROJECT NAME: CROSS VT TRAIL ASSOCIATION
PROJECT NUMBER: STP EHI0(17)

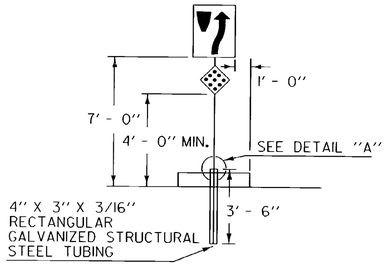
FILE NAME: 11073_ero_dets.dgn
PROJECT LEADER: G. BOGUE
DESIGNED BY: VAOT
EPSC DETAILS

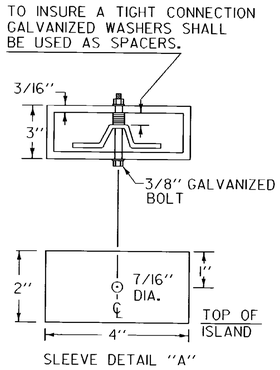
PLOT DATE: 8/21/2018
DRAWN BY: VAOT
CHECKED BY: VAOT
SHEET 14 OF 14



STOP SIGN SHALL BE PLACED ON DRIVERS RIGHT, MAINTAINING MAXIMUM VISIBLITY. CLEARANCE SHALL BE A MINIMUM OF 6' AND A MAXIMUM OF 50' FROM EDGE LINE OF INTERSECTING ROADWAY AND DOES NOT HAVE TO BE ADJACENT TO THE STOP BAR.

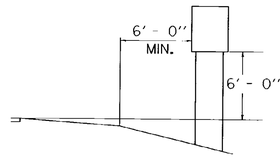
LEGAL LOAD LIMIT AND STOP SIGNS AT INTERSECTIONS WITH TOWN HIGHWAYS

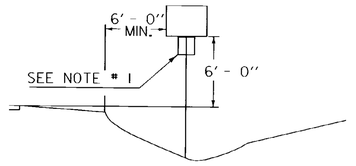


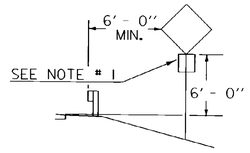


SIGNS ON MEDIAN ISLANDS IN THE LINE OF TRAFFIC

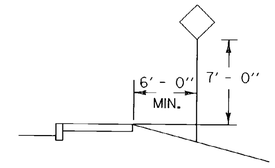
INCREASE VERTICAL CLEARANCE TO 7' IN AREAS OF FREQUENT ROADSIDE PARKING OR PEDESTRIAN ACTIVITY

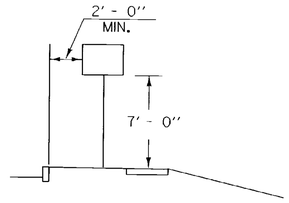




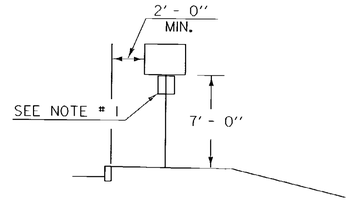


RURAL





IF SUFFICIENT CLEARANCE IS NOT AVAILABLE BETWEEN CURB AND SIDEWALK MOUNT SIGN BEHIND SIDEWALK AS SHOWN AT TOP. CHECK FOR ADEQUATE R.O.W..



URBAN

NOTES:

1. IN BOTH RURAL AND URBAN LOCATIONS, IF A SECONDARY SIGN IS MOUNTED BELOW ANOTHER SIGN, THE MINIMUM CLEARANCE MAY BE REDUCED BY ONE FOOT.
2. IN RURAL AREAS WITH NO OR MINIMAL SHOULDER, THE LATERAL CLEARANCE TO THE EDGE OF A SIGN SHOULD BE A MINIMUM OF 12' FROM THE EDGE OF THE TRAVELED WAY.
3. ALSO SEE OTHER STANDARD SHEETS FOR MOUNTING CLEARANCE AND SPACING OF DESTINATION AND ROUTE MARKER ASSEMBLIES AND TOWN LINE SIGNS.

POST REFERENCE:

REFER TO THE DETAILS ON THE APPROPRIATE STANDARD DRAWING FOR INFORMATION CONCERNING THE PROPER MOUNTING OF SIGNS ON APPROPRIATE POSTS.

OTHER STDS. REQUIRED: **E-160** **E-161** **E-162** **E-163** **E-164**

REVISIONS AND CORRECTIONS

JAN. 23, 1995 - DATE OF ORIGINAL ISSUE

AUG. 08, 1995 - VARIOUS MINOR NOTE REVISIONS

APPROVED FOR THIS PROJECT AND/OR DESIGN IMPLEMENTATION. FHWA FINAL APPROVAL PENDING.

APPROVED

DIRECTOR OF ENGINFERING

TRAFFIC AND SAFETY ENGINEER

STANDARD SIGN PLACEMENT CONVENTIONAL ROAD

/traf/std/stdel21.dgn : stdel21.i

VERMONT AGENCY OF TRANSPORTATION

STANDARD

E-121