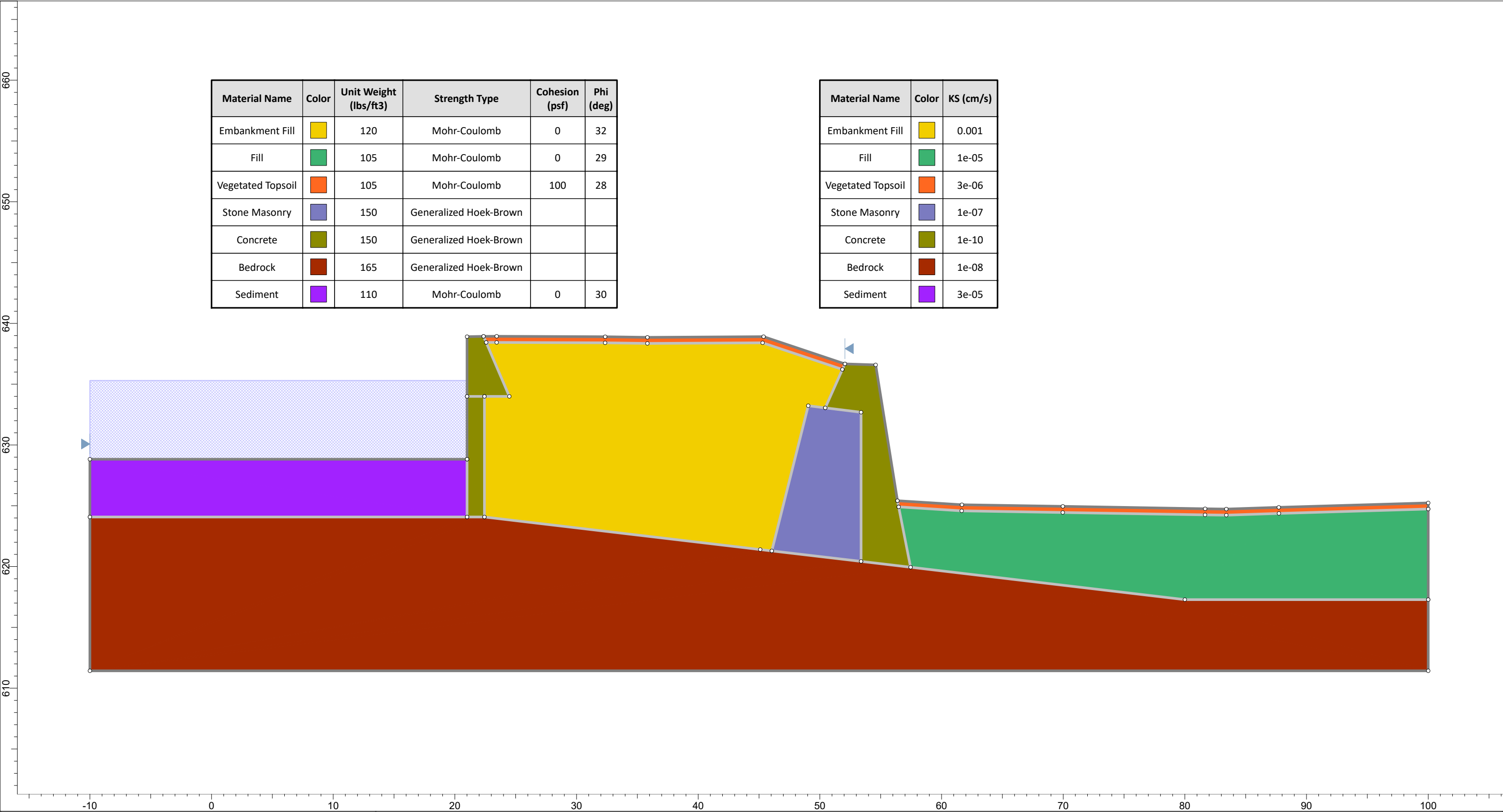
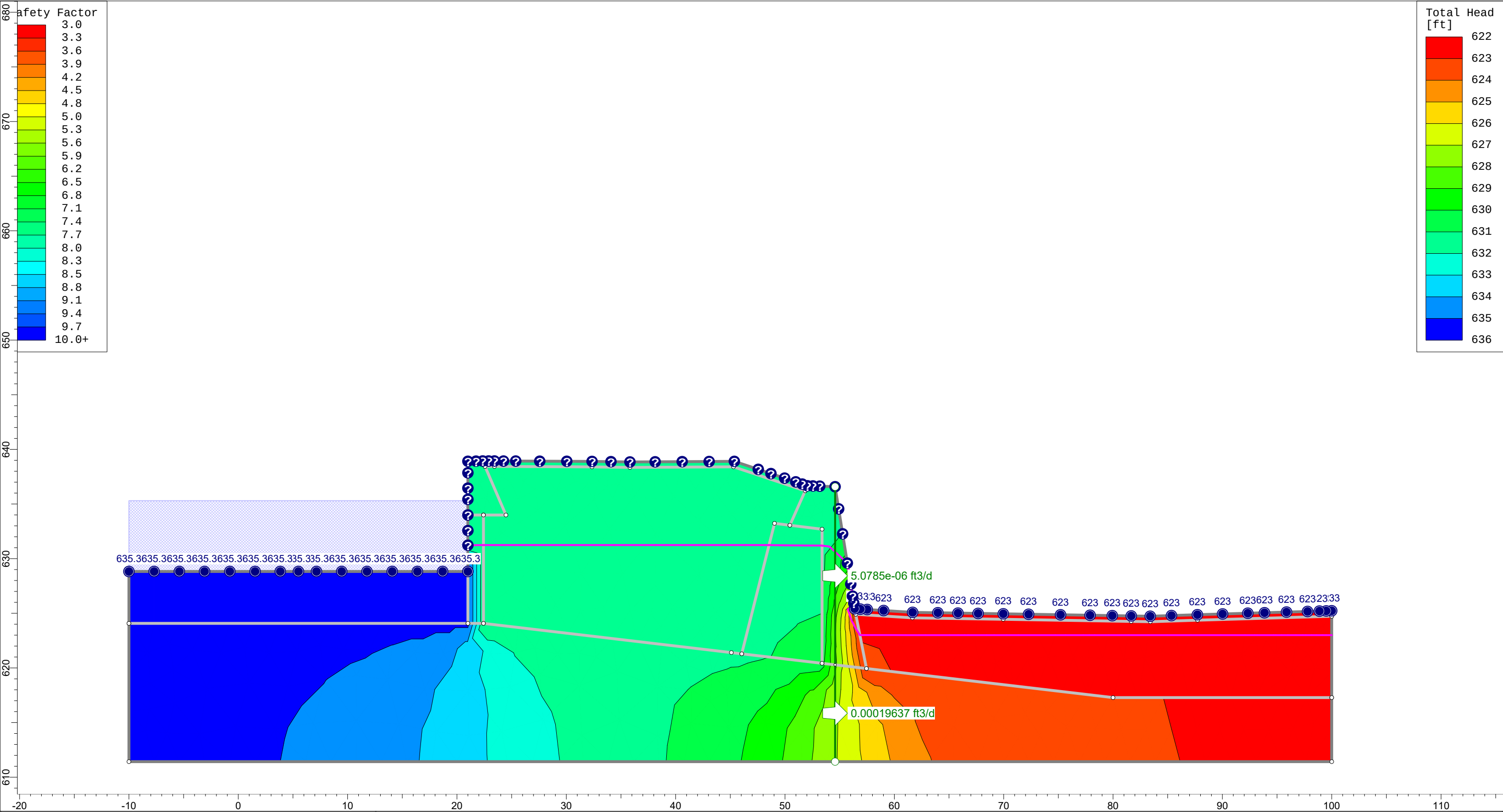


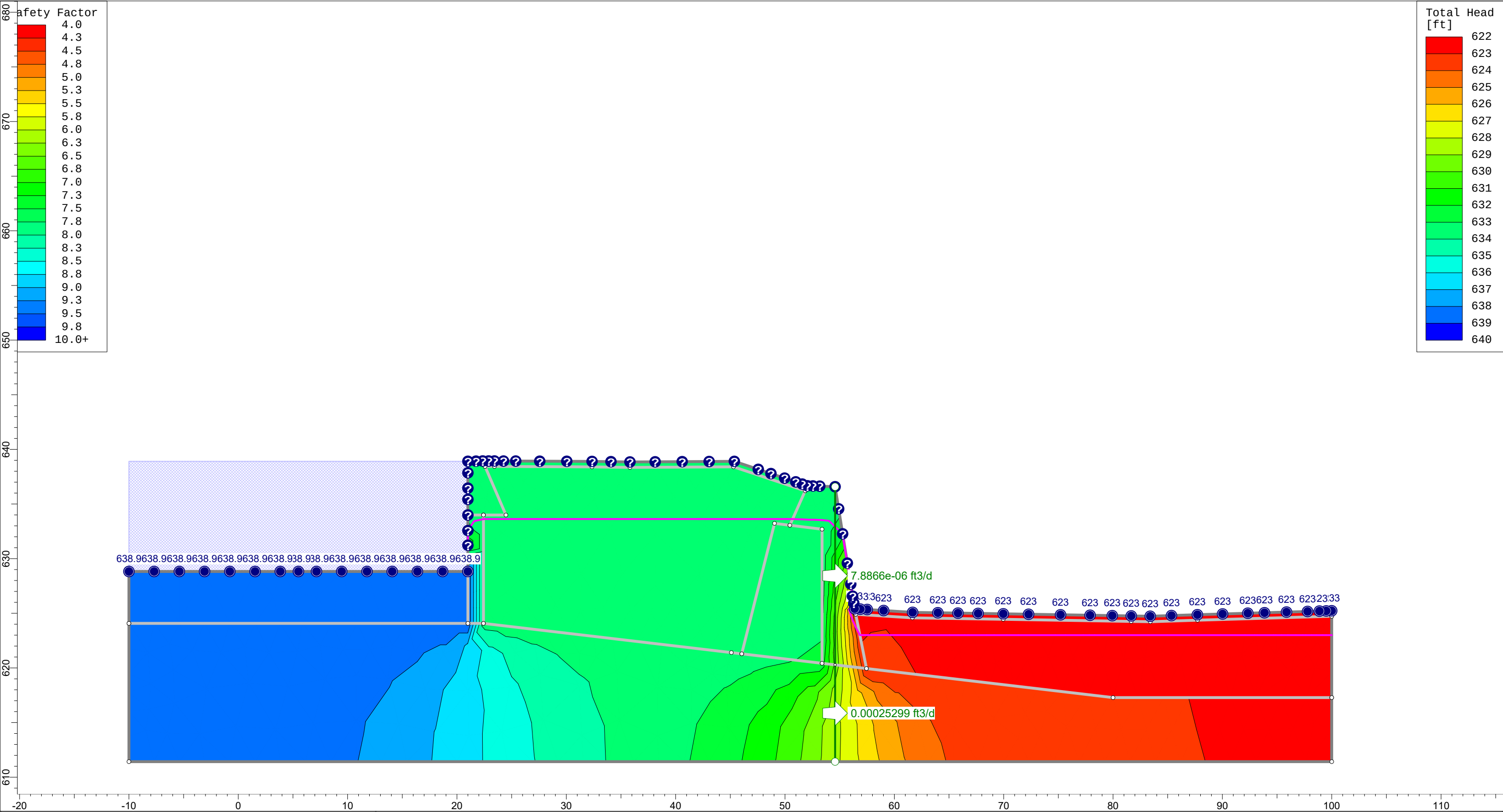
Appendix E

Seepage and Stability Analyses Output

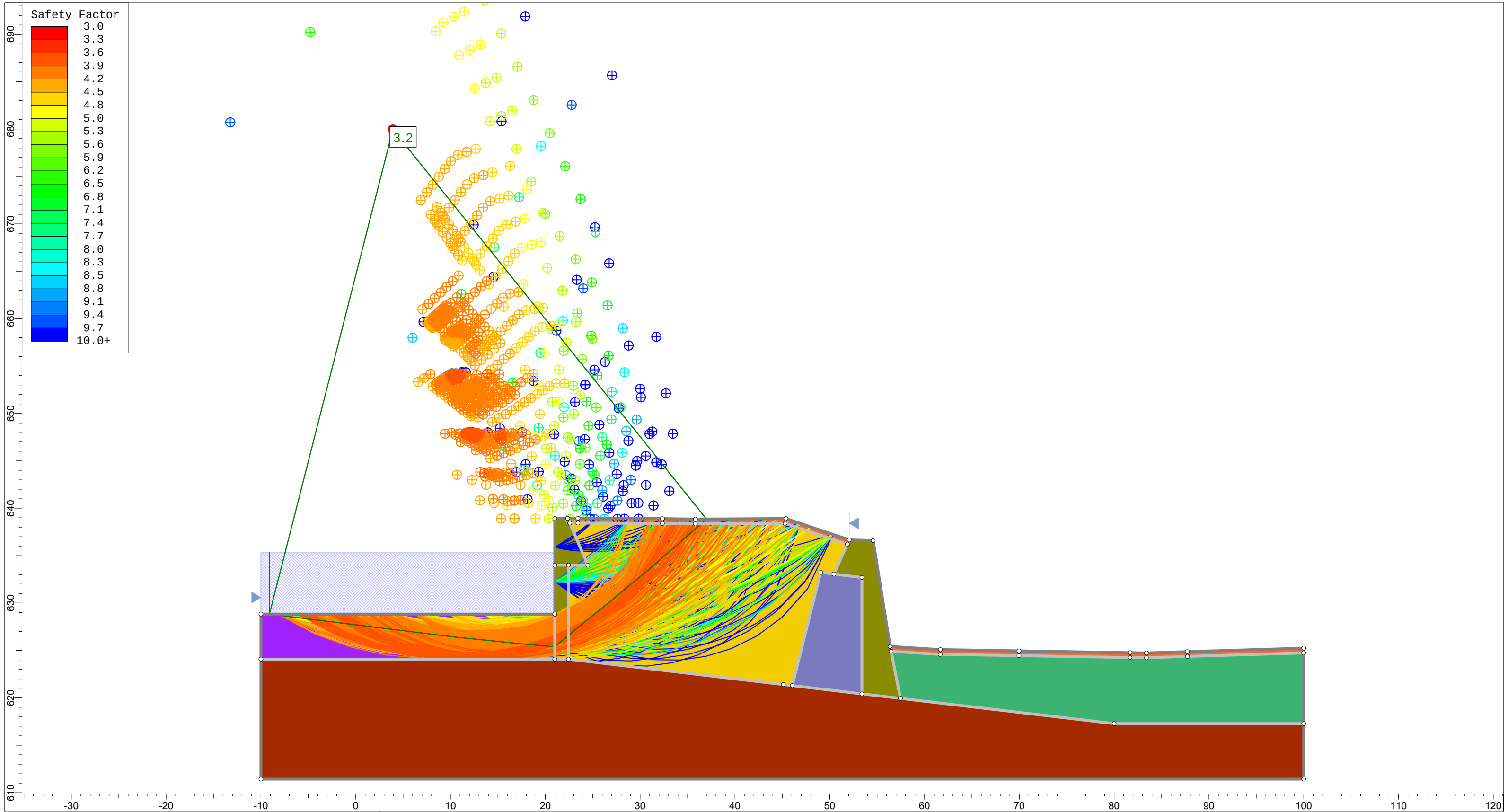




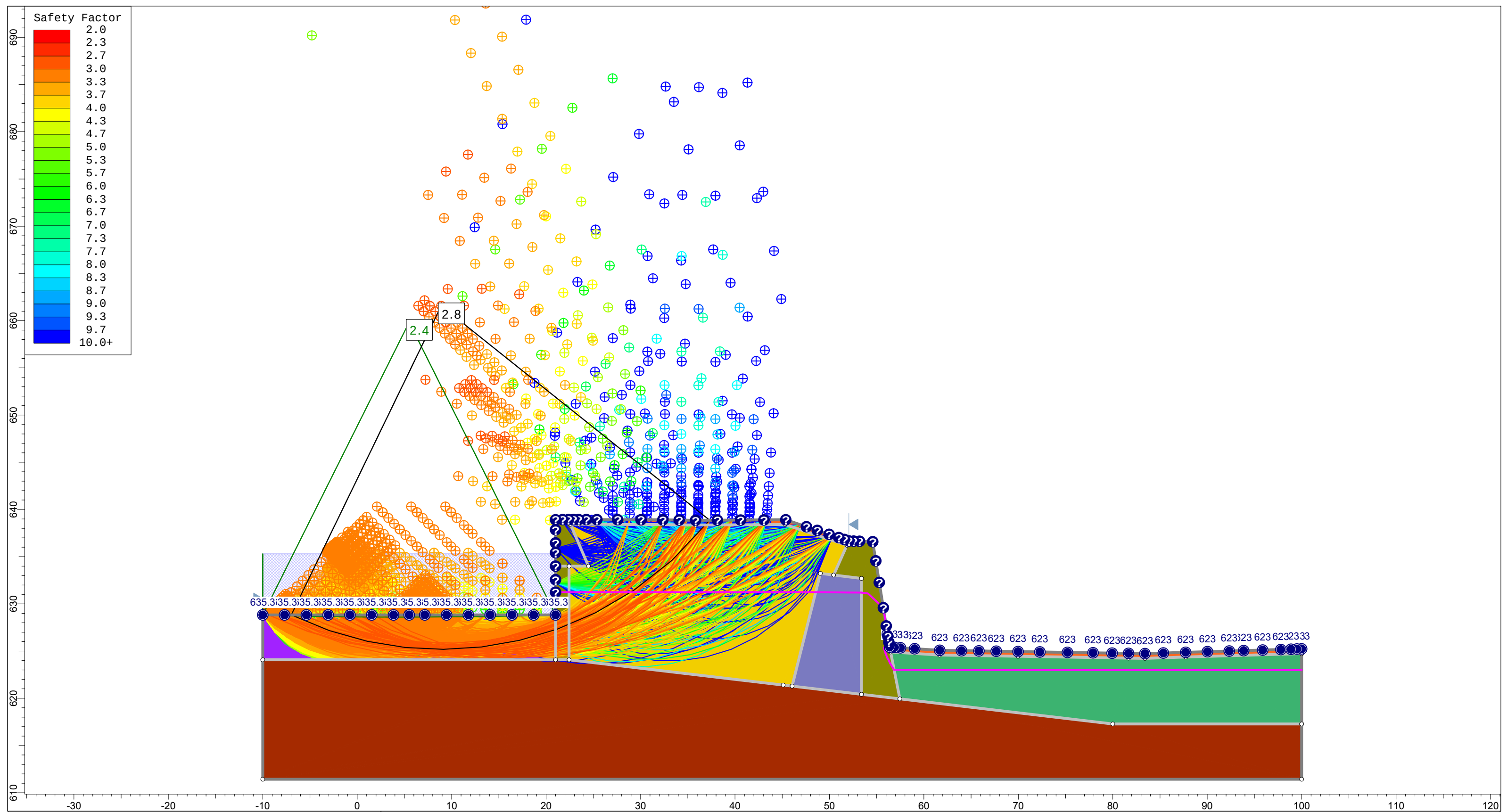
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	Analysis Description			Upstream - Normal Pool		
	Drawn By		D. Gnatek	Scale	1:100	Company
	Date		2/18/2019, 2:11:28 PM	File Name		Tighe & Bond, Inc.
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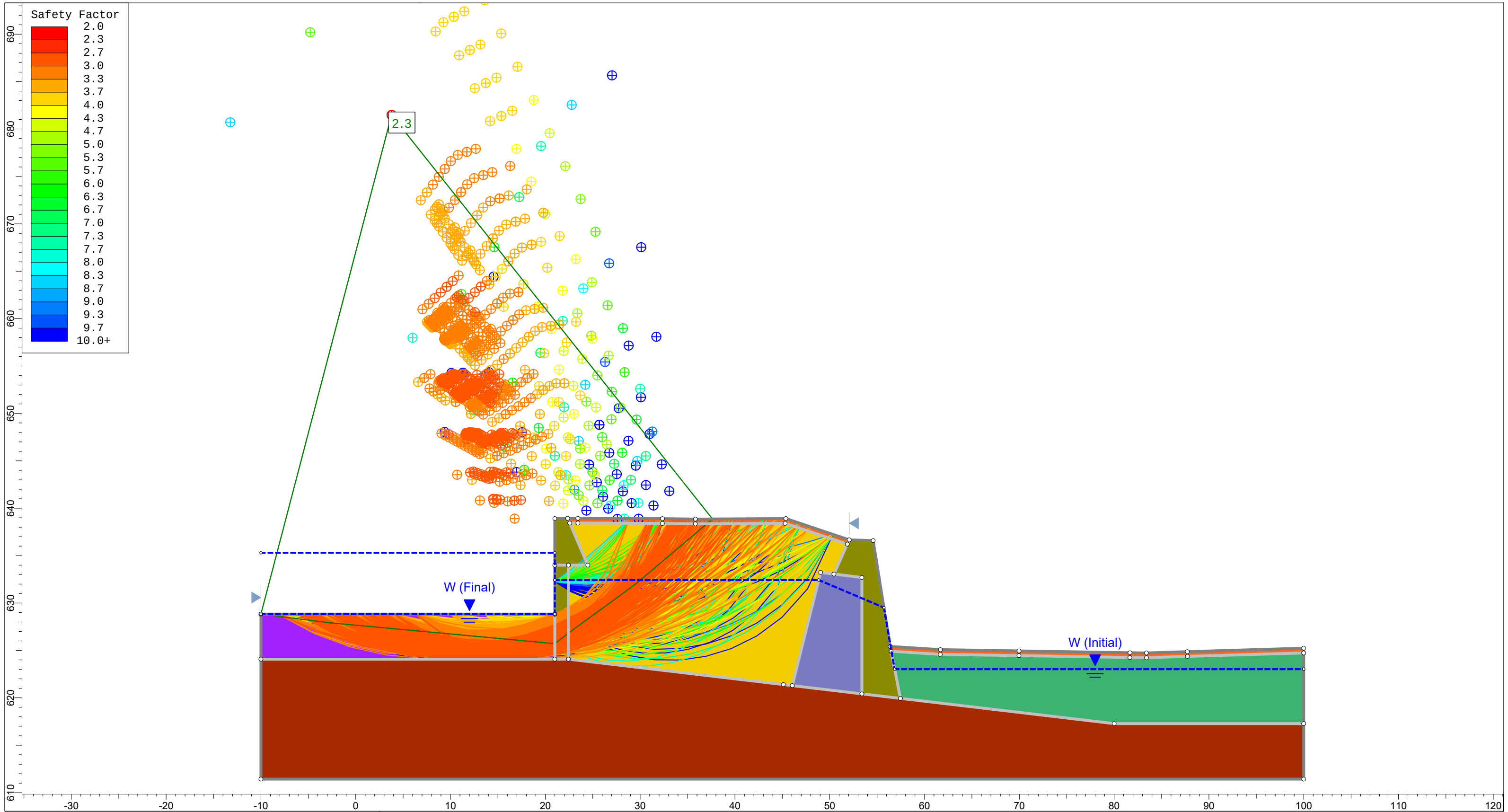
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	Analysis Description			Upstream - Maximum Pool	
	Drawn By		D. Gnatek	Scale	1:100
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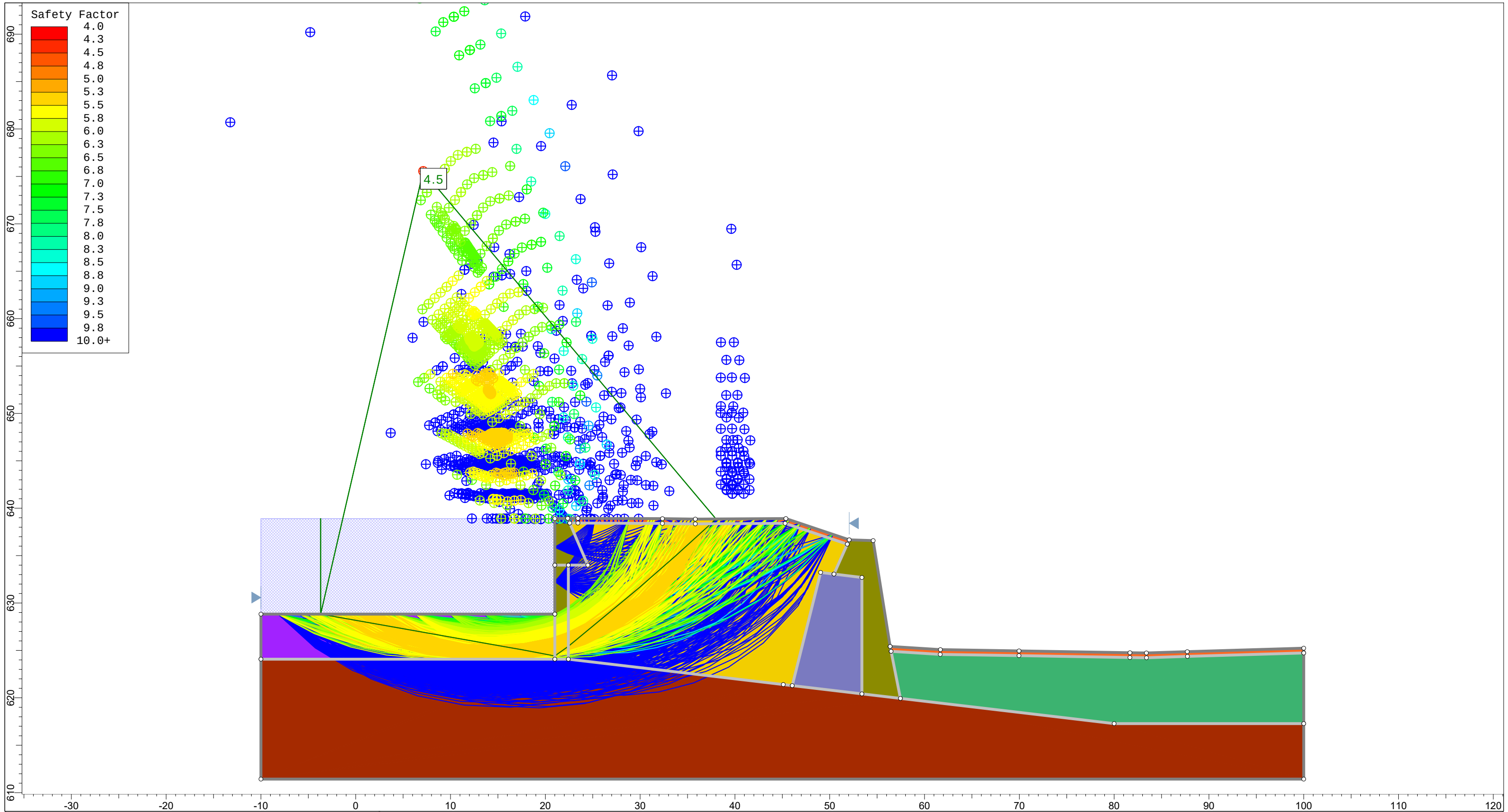


Project				McTaggarts Pond Dam			
Analysis Description				Upstream - Normal Pool			
Drawn By		D. Gnatek		Scale		Company	
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Date		2/18/2019, 2:11:28 PM		File Name		F-0079-047 - Copy.slmd	

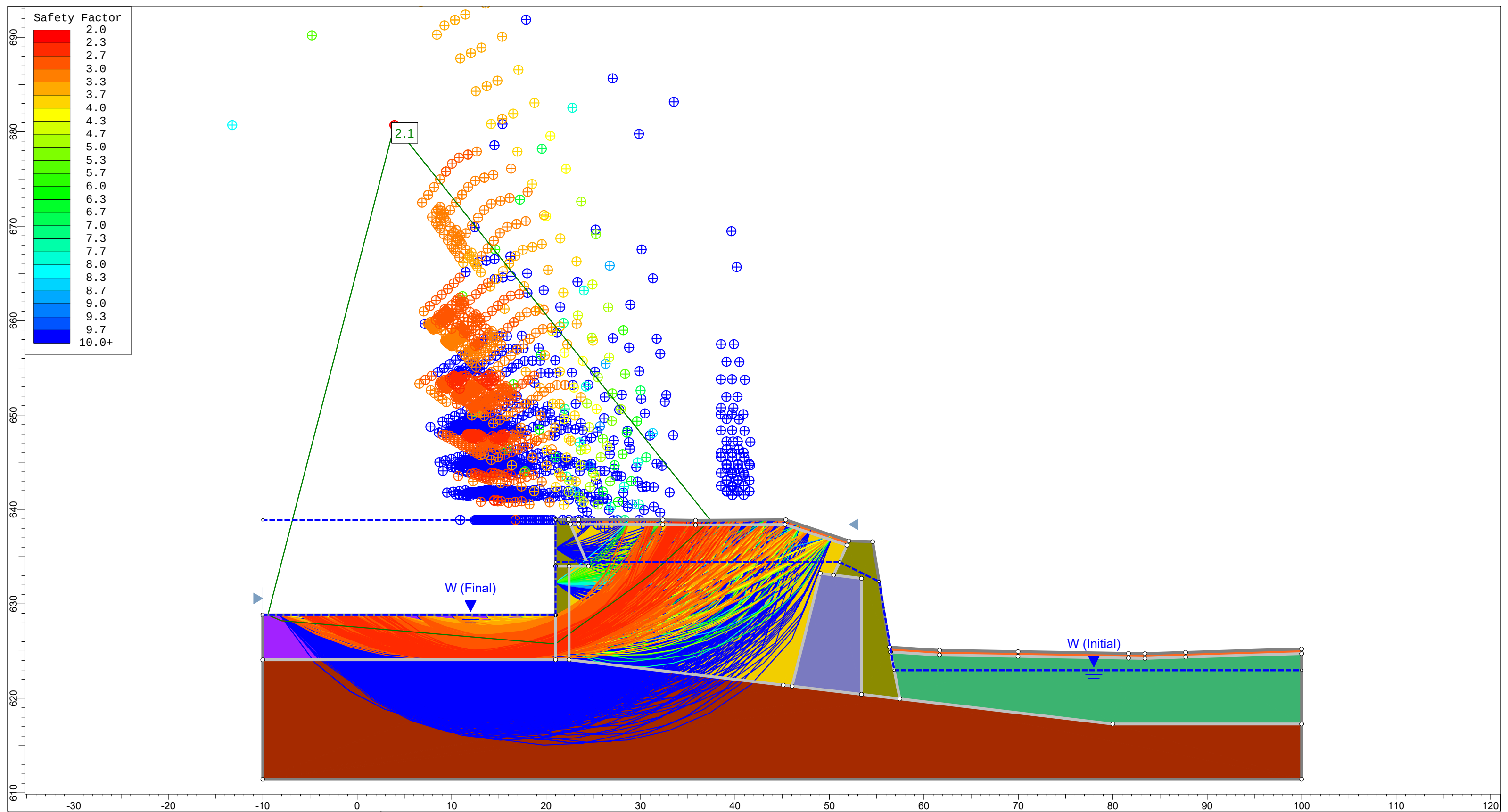


Tighe&Bond Engineers Environmental Specialists SLIDEINTERPRET 8.018	ProjectMcTaggarts Pond Dam		
	Analysis DescriptionUpstream - Normal Pool (Seismic)		
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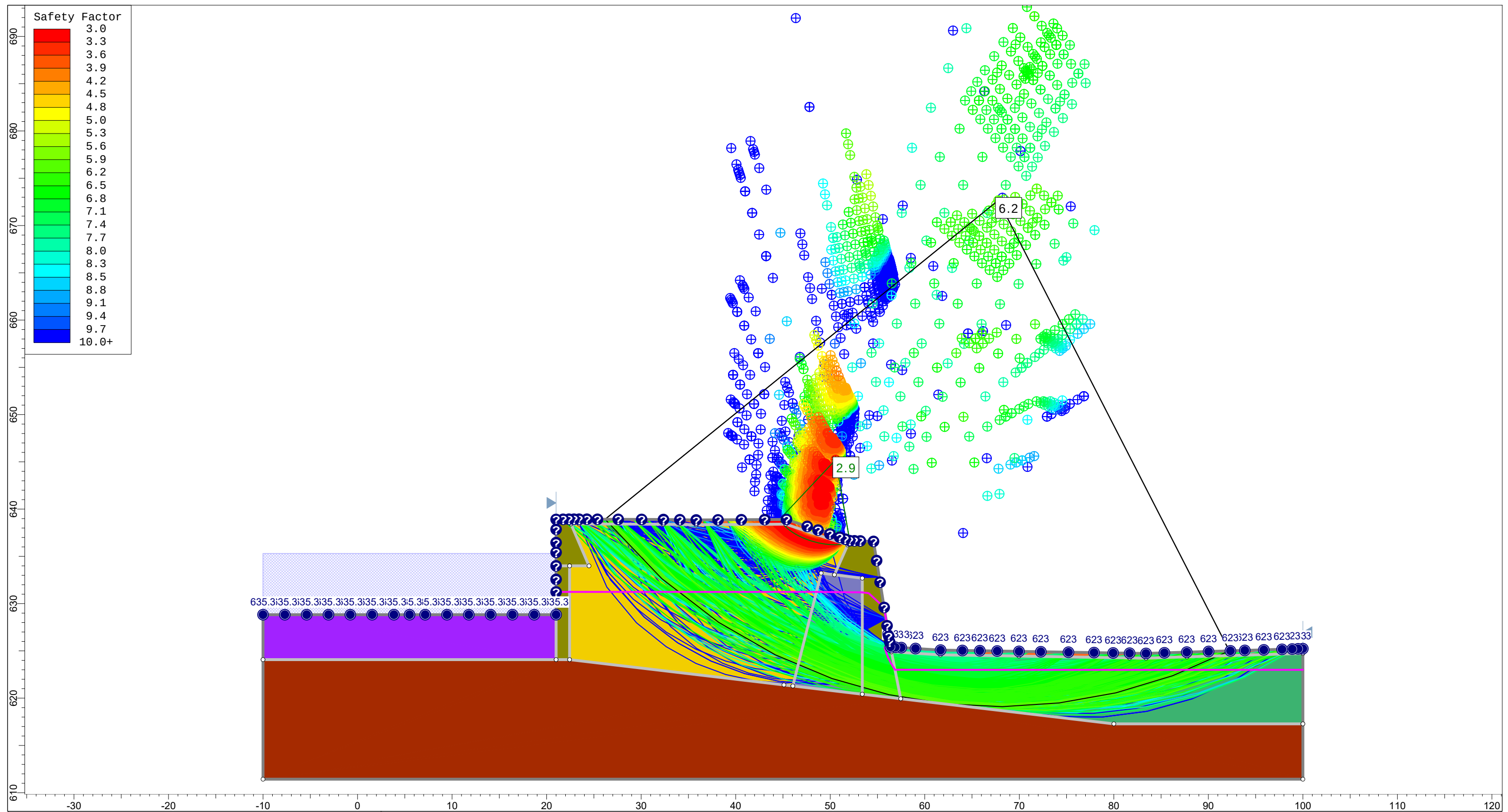


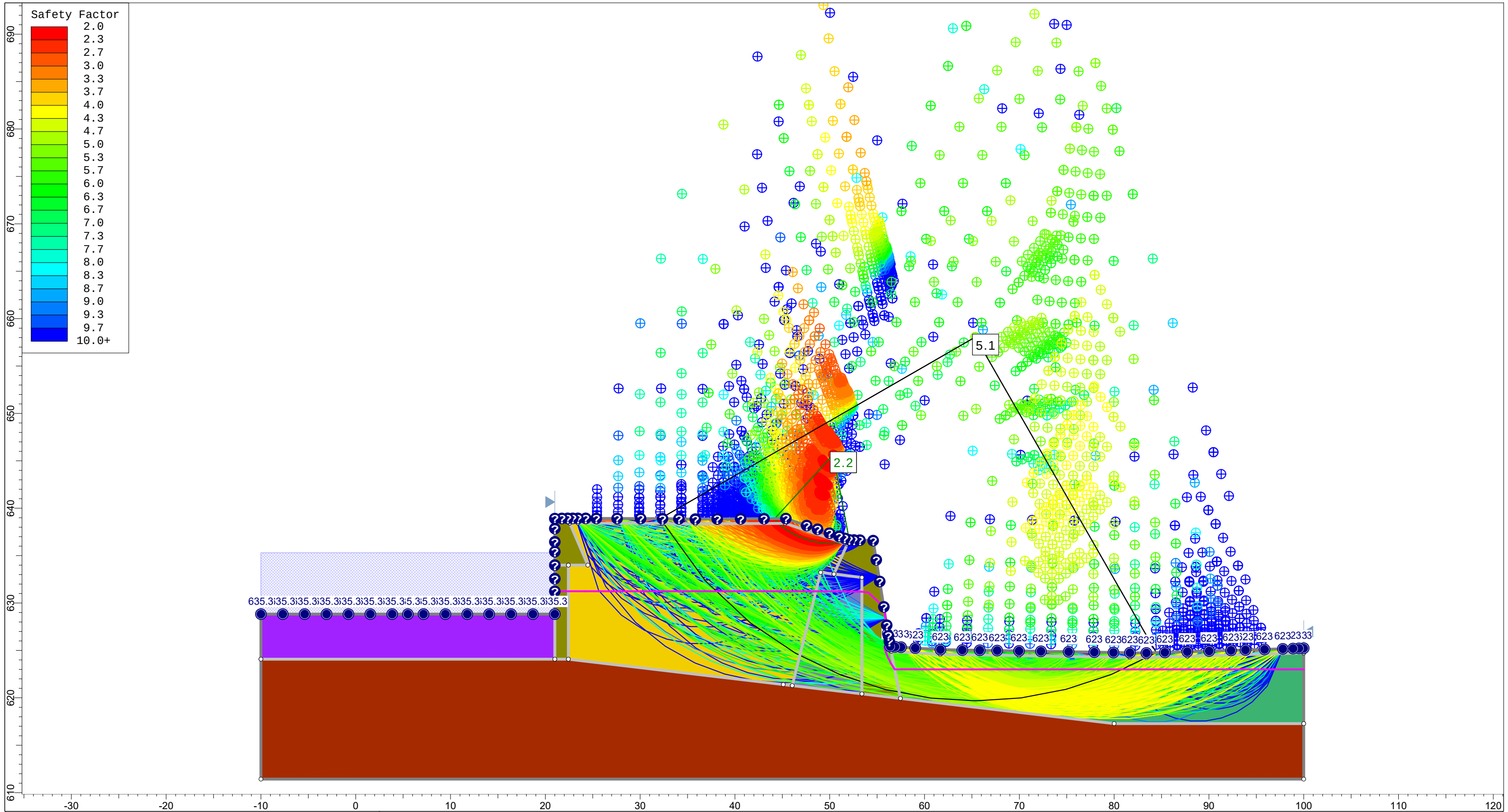


Tighe & Bond Engineers Environmental Specialists SLIDEINTERPRET 8.018	Project			McTaggarts Pond Dam	
	Analysis Description			Upstream - Maximum Pool	
	Drawn By		D. Gnatek	Scale	1:115
	Date		2/18/2019, 2:11:28 PM	Company	Tighe & Bond, Inc.
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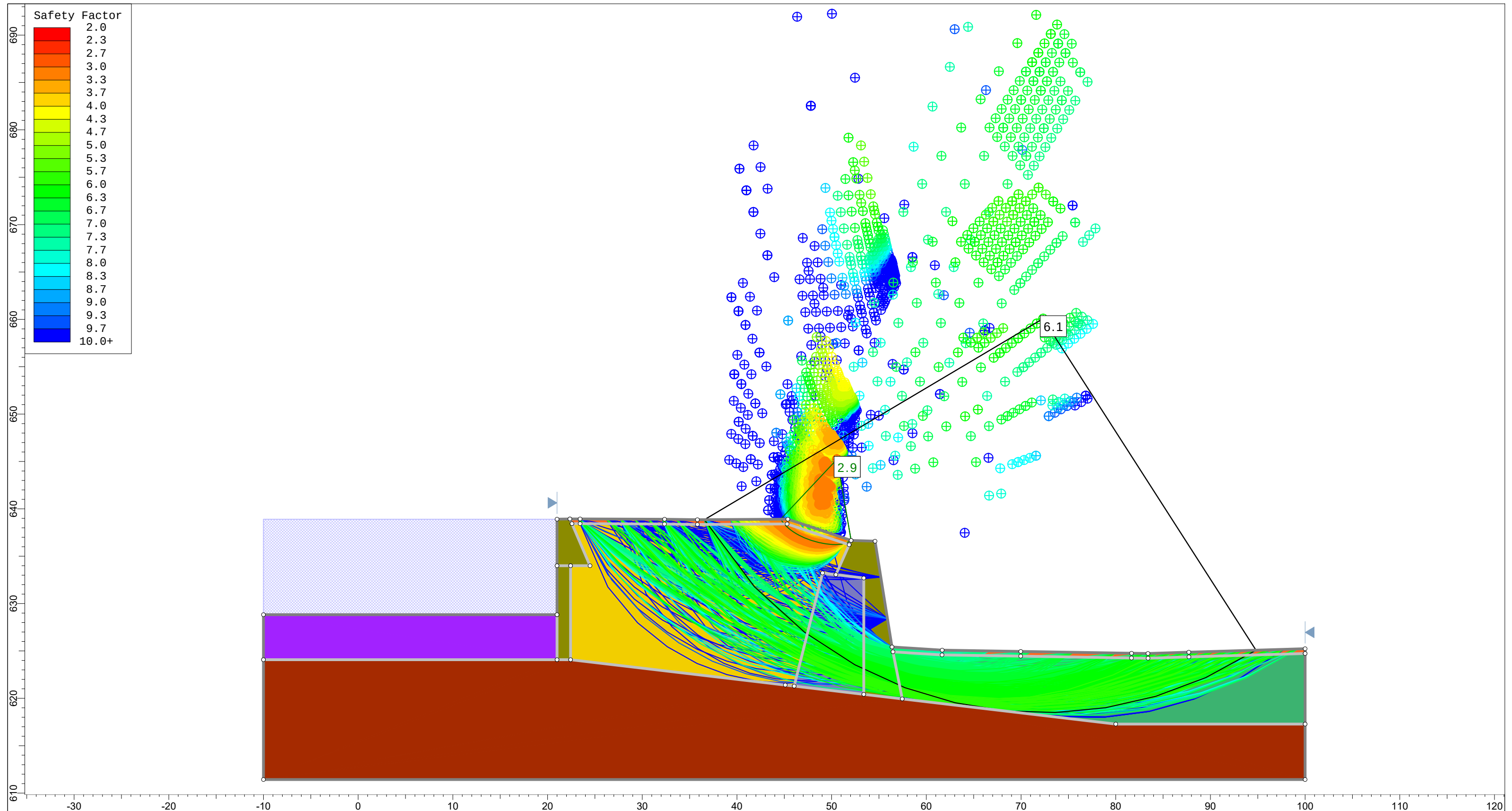


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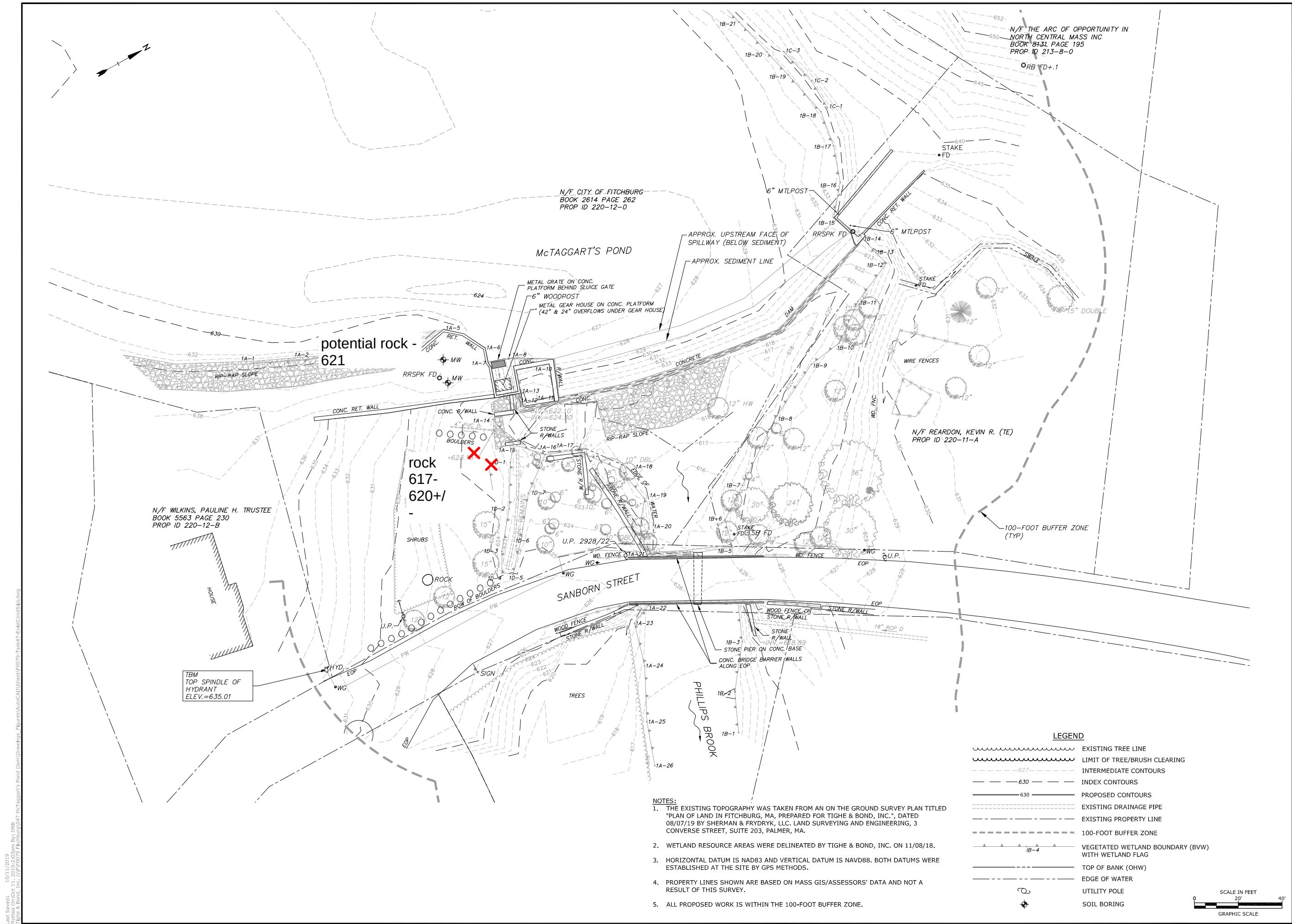


Tighe&Bond Engineers Environmental Specialists SLIDEINTERPRET 8.018	ProjectMcTaggarts Pond Dam		
	Analysis DescriptionDownstream - Normal Pool (Seismic)		
	Drawn ByD. Gnatek	Scale1:115	CompanyTighe & Bond, Inc.
	Date2/18/2019, 2:11:28 PM	File NameF-0079-047 - Copy.slmd	



Tighe&Bond Engineers Environmental Specialists SLIDEINTERPRET 8.018	ProjectMcTaggarts Pond Dam		
	Analysis DescriptionDownstream - Maximum Pool		
	Drawn ByD. Gnatek	Scale1:115	CompanyTighe & Bond, Inc.
	Date2/18/2019, 2:11:28 PM		File NameF-0079-047 - Copy.slmd

APPENDIX G
Drawings



Conceptual
Not For
Construction

**Department
of Public
Works**

McTaggart's
Pond Dam
Rehabilitation

Fitchburg,
Massachusetts

0	10/19	Conceptual Review
MARK	DATE	DESCRIPTION
PROJECT NO:		F0079/047
FILE: F0079-Task47-ExistCondSipl.dwg		
DRAWN BY:		LPT
CHECKED:		DRB
APPROVED:		PMV

EXISTING CONDITIONS
SITE PLAN

SCALE: 1"=20'

Appendix G Figure 1

Conceptual
Not For
Construction

Department
of Public
Works

McTaggart's
Pond Dam
Rehabilitation

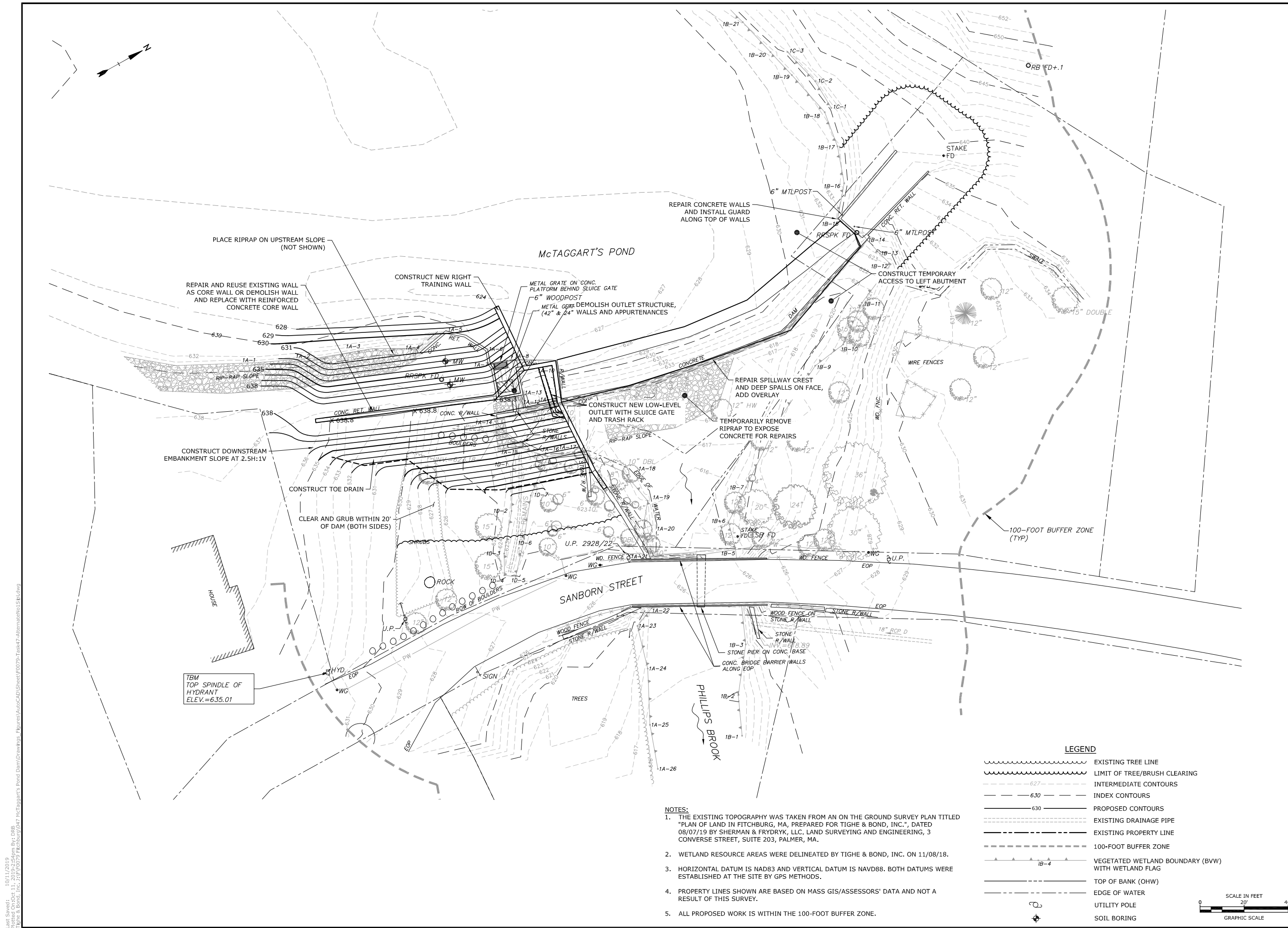
Fitchburg,
Massachusetts

0	10/19	Conceptual Review
MARK	DATE	DESCRIPTION
PROJECT NO:		F0079/047
FILE: F0079-Task47-AlternateNo1.Sipl.dwg		
DRAWN BY:		LPT
CHECKED:		DRB
APPROVED:		PMV

ALTERNATIVE NO. 1
REHABILITATION

SCALE: 1"=20'

Appendix G Figure 2



Conceptual
Not For
Construction

Department
of Public
Works

McTaggart's
Pond Dam
Rehabilitation

Fitchburg,
Massachusetts

MARK	DATE	DESCRIPTION
0	10/19	Conceptual Review
PROJECT NO: F0079/047		
FILE: F0079-Task47-AlternateNo3ASIP.dwg		
DRAWN BY: LPT		
CHECKED: CW, DRB		
APPROVED: PMV		

ALTERNATIVE NO. 3
PARTIAL REMOVAL

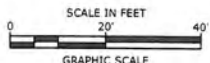
SCALE: 1"=20'

Appendix G Figure 3



- NOTES:
1. THE EXISTING TOPOGRAPHY WAS TAKEN FROM AN ON THE GROUND SURVEY PLAN TITLED "PLAN OF LAND IN FITCHBURG, MA, PREPARED FOR TIGHE & BOND, INC.", DATED 08/07/19 BY SHERMAN & FRYDRYK, LLC. LAND SURVEYING AND ENGINEERING, 3 CONVERSE STREET, SUITE 203, PALMER, MA.
 2. WETLAND RESOURCE AREAS WERE DELINEATED BY TIGHE & BOND, INC. ON 11/08/18.
 3. HORIZONTAL DATUM IS NAD83 AND VERTICAL DATUM IS NAVD88. BOTH DATUMS WERE ESTABLISHED AT THE SITE BY GPS METHODS.
 4. PROPERTY LINES SHOWN ARE BASED ON MASS GIS/ASSESSORS' DATA AND NOT A RESULT OF THIS SURVEY.
 5. ALL PROPOSED WORK IS WITHIN THE 100-FOOT BUFFER ZONE.

LEGEND	
	EXISTING TREE LINE
	LIMIT OF TREE/BRUSH CLEARING
	INTERMEDIATE CONTOURS
	INDEX CONTOURS
	PROPOSED CONTOURS
	EXISTING DRAINAGE PIPE
	EXISTING PROPERTY LINE
	100-FOOT BUFFER ZONE
	VEGETATED WETLAND BOUNDARY (BVW) WITH WETLAND FLAG
	TOP OF BANK (OHV)
	EDGE OF WATER
	UTILITY POLE
	SOIL BORING



Conceptual
Not For
Construction

Department
of Public
Works

McTaggart's
Pond Dam
Rehabilitation

Fitchburg,
Massachusetts



- NOTES:
1. THE EXISTING TOPOGRAPHY WAS TAKEN FROM AN ON THE GROUND SURVEY PLAN TITLED "PLAN OF LAND IN FITCHBURG, MA, PREPARED FOR TIGHE & BOND, INC.", DATED 08/07/19 BY SHERMAN & FRYDRYK, LLC. LAND SURVEYING AND ENGINEERING, 3 CONVERSE STREET, SUITE 203, PALMER, MA.
 2. WETLAND RESOURCE AREAS WERE DELINEATED BY TIGHE & BOND, INC. ON 11/08/18.
 3. HORIZONTAL DATUM IS NAD83 AND VERTICAL DATUM IS NAVD88. BOTH DATUMS WERE ESTABLISHED AT THE SITE BY GPS METHODS.
 4. PROPERTY LINES SHOWN ARE BASED ON MASS GIS/ASSESSORS' DATA AND NOT A RESULT OF THIS SURVEY.
 5. ALL PROPOSED WORK IS WITHIN THE 100-FOOT BUFFER ZONE.

LEGEND

- EXISTING TREE LINE
- LIMIT OF TREE/BRUSH CLEARING
- INTERMEDIATE CONTOURS
- INDEX CONTOURS
- PROPOSED CONTOURS
- EXISTING DRAINAGE PIPE
- EXISTING PROPERTY LINE
- 100-FOOT BUFFER ZONE
- VEGETATED WETLAND BOUNDARY (BVW) WITH WETLAND FLAG
- TOP OF BANK (OHW)
- EDGE OF WATER
- UTILITY POLE
- SOIL BORING

SCALE IN FEET
0 20' 40'
GRAPHIC SCALE

MARK	DATE	DESCRIPTION
0	10/19	Conceptual Review
PROJECT NO: F0079/047		
FILE: F0079-Task47-AlternateNo3B5/PI.dwg		
DRAWN BY: LPT		
CHECKED: CW,DRB		
APPROVED: PMV		
ALTERNATIVE NO. 3 FULL REMOVAL		
SCALE:		1"=20'
Appendix G Figure 4		

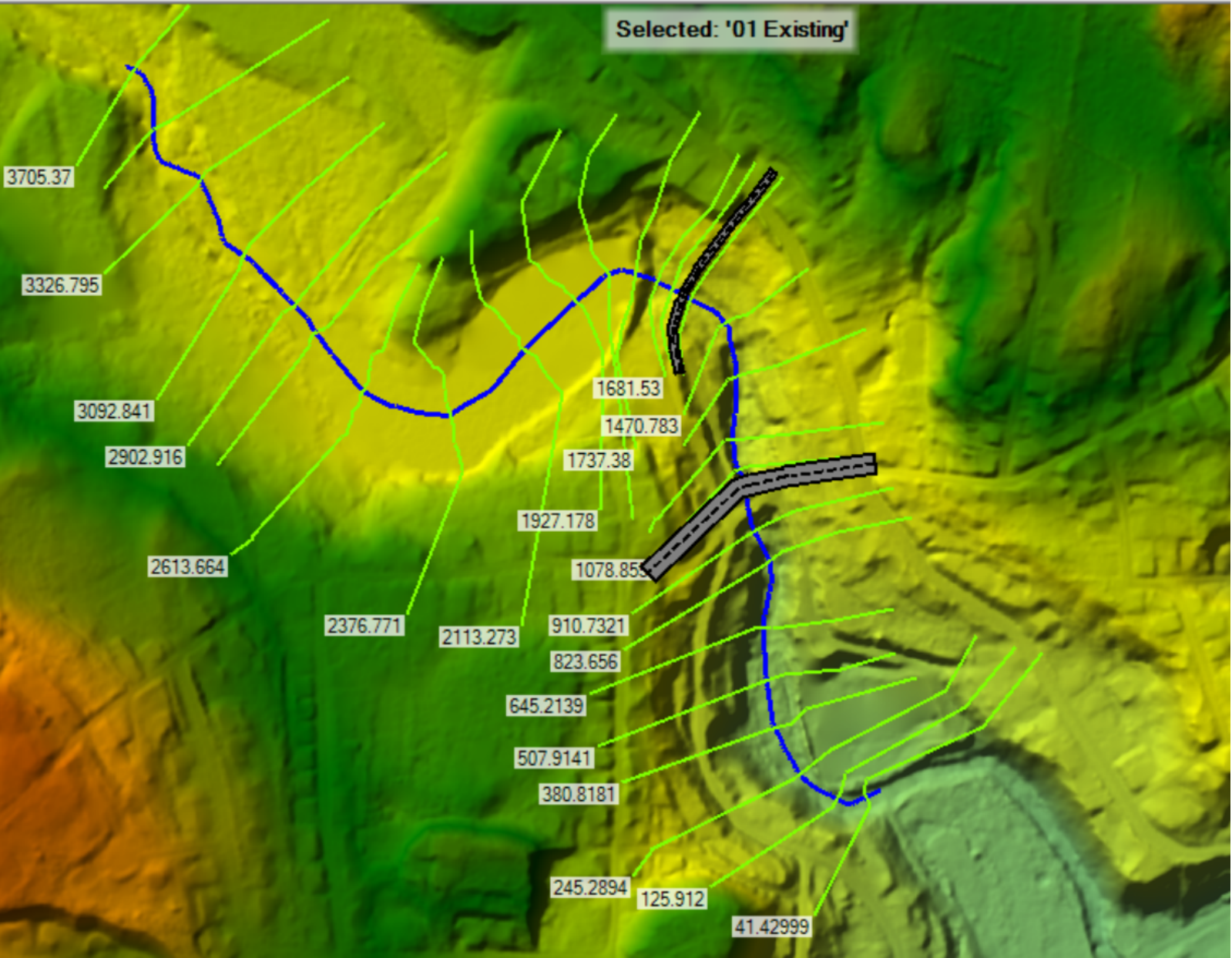
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User: LPT
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Task: 47-AlternateNo3B5/PI.dwg

Appendix B

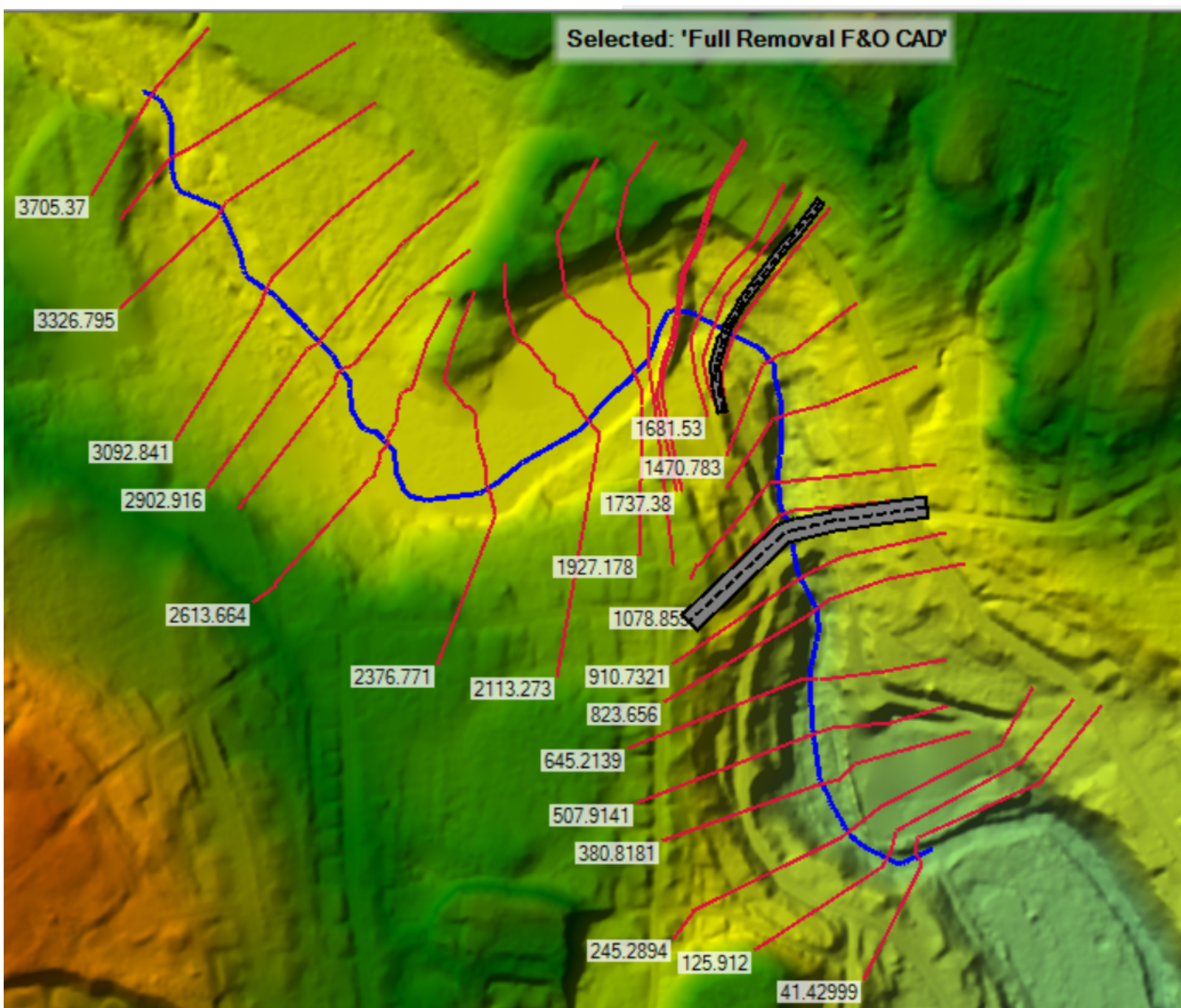
HEC-RAS Output



Existing Conditions Cross Sections



Proposed Conditions Cross Sections



Existing Conditions RAS Model Output

HEC-RAS Plan: 01 Existing CALIBRATED River: River1 Reach: Reach1

Reach	River Sta	Profile	E.G. Elev (ft)	W.S. Elev (ft)	Crit W.S. (ft)	Frctn Loss (ft)	C & E Loss (ft)	Top Width (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Vel Chnl (ft/s)
Reach1	1681.53	2 Year Flood	621.26	621.13		0.09	0.06	101.28		816.80		2.95
Reach1	1681.53	5 Year Flood	623.98	623.85		0.03	0.05	148.96	8.75	1620.38	10.36	2.89
Reach1	1681.53	10 Year Flood	626.12	625.98		0.02	0.06	178.79	39.13	2348.91	43.87	3.01
Reach1	1681.53	25 Year Flood	628.99	628.85		0.02	0.04	228.52	96.02	3391.03	157.15	3.14
Reach1	1681.53	50 Year Flood	629.79	629.60		0.02	0.06	239.91	135.30	4279.97	235.03	3.70
Reach1	1681.53	100 Year Flood	630.53	630.28		0.02	0.08	254.40	180.87	5218.44	318.99	4.25
Reach1	1681.53	500 Year Flood	632.69	632.22		0.04	0.12	330.67	314.88	8376.89	703.63	5.86
Reach1	1636.923	2 Year Flood	621.12	620.79	619.22			63.26		816.80		4.60
Reach1	1636.923	5 Year Flood	623.89	623.58	620.72	0.07	0.56	91.01	0.33	1639.13	0.04	4.48
Reach1	1636.923	10 Year Flood	626.03	625.69	621.59	0.05	0.75	162.05	0.73	2422.83	8.35	4.70
Reach1	1636.923	25 Year Flood	628.93	628.65	622.72	0.03	1.03	229.44	158.86	3268.05	217.29	4.51
Reach1	1636.923	50 Year Flood	629.72	629.32	623.54	0.04	0.22	254.47	193.87	4116.23	340.20	5.33
Reach1	1636.923	100 Year Flood	630.43	629.93	624.31	0.05	0.35	277.92	263.68	4989.17	465.45	6.12
Reach1	1636.923	500 Year Flood	632.53	631.64	626.84	0.07	0.42	326.18	575.73	7777.76	1041.91	8.30
Reach1	1615.645BR U	2 Year Flood	621.02	620.15	619.46			31.67		816.80		7.50
Reach1	1615.645BR U	5 Year Flood	623.26	621.08	621.08	0.42	0.00	31.67		1639.50		11.86
Reach1	1615.645BR U	10 Year Flood	625.23	622.40	622.40	0.44	0.00	31.67		2431.90		13.51
Reach1	1615.645BR U	25 Year Flood	627.87	624.15	624.15	0.47	0.01	31.67		3644.20		15.47
Reach1	1615.645BR U	50 Year Flood	629.46	628.33	627.75	0.38	0.97	214.24	237.42	3866.37	546.51	9.26
Reach1	1615.645BR U	100 Year Flood	630.03	628.35	628.29	0.41	0.15	214.67	294.29	4747.05	676.96	11.33
Reach1	1615.645BR U	500 Year Flood	632.04	629.73	629.73	0.46	0.32	267.59	650.45	7122.34	1622.61	13.78
Reach1	1615.645BR D	2 Year Flood	619.09	617.72	617.72			31.67		816.80		9.37
Reach1	1615.645BR D	5 Year Flood	621.52	619.33	619.33	0.16	0.37	31.67		1639.50		11.88
Reach1	1615.645BR D	10 Year Flood	623.49	620.66	620.66	0.15	0.48	31.67		2431.90		13.50
Reach1	1615.645BR D	25 Year Flood	626.13	622.42	622.42	0.14	0.67	31.67		3644.20		15.44
Reach1	1615.645BR D	50 Year Flood	628.10	623.73	623.73	0.15	0.80	31.67		4650.30		16.77
Reach1	1615.645BR D	100 Year Flood	629.48	628.09	628.09	0.01	0.92	332.87	552.09	4486.28	679.93	10.59
Reach1	1615.645BR D	500 Year Flood	630.99	629.32	629.32	0.12	0.78	346.04	1304.91	6162.23	1928.26	12.47
Reach1	1583.47	2 Year Flood	618.41	617.43	617.40	1.54	0.05	50.89		816.80		7.93
Reach1	1583.47	5 Year Flood	620.09	618.63	618.63	1.41	0.06	59.21	0.09	1639.31	0.10	9.69
Reach1	1583.47	10 Year Flood	621.41	619.54	619.54	1.18	0.19	64.82	3.27	2426.50	2.14	10.99
Reach1	1583.47	25 Year Flood	623.14	620.78	620.78	1.12	0.21	91.74	21.06	3610.56	12.58	12.38
Reach1	1583.47	50 Year Flood	624.38	621.61	621.61	1.07	0.32	111.76	45.63	4568.28	36.39	13.48
Reach1	1583.47	100 Year Flood	625.59	622.47	622.47	1.04	0.36	146.23	77.26	5571.60	69.44	14.35
Reach1	1583.47	500 Year Flood	629.25	624.96	624.96	0.17	0.99	188.45	200.09	8991.27	204.04	16.95
Reach1	1470.783	2 Year Flood	616.81	615.94	615.94	2.02	0.04	91.19	1.69	697.90	117.20	8.05
Reach1	1470.783	5 Year Flood	618.32	616.98	616.98	1.77	0.06	103.76	16.33	1330.01	293.15	10.20
Reach1	1470.783	10 Year Flood	619.53	618.04	618.04	1.49	0.10	137.92	49.29	1913.55	469.06	10.95
Reach1	1470.783	25 Year Flood	620.89	618.96	618.96	1.45	0.12	173.72	101.07	2725.12	818.01	12.77
Reach1	1470.783	50 Year Flood	621.88	619.75	619.75	1.37	0.15	212.87	155.86	3359.54	1134.90	13.62
Reach1	1470.783	100 Year Flood	622.82	620.42	620.42	1.31	0.16	244.66	238.30	4017.86	1462.14	14.63
Reach1	1470.783	500 Year Flood	625.60	621.85	621.85	1.36	0.14	292.12	576.81	6272.05	2546.54	18.73
Reach1	1159.907	2 Year Flood	595.23	594.06	594.06	0.66	0.23	41.00		816.80		8.66
Reach1	1159.907	5 Year Flood	597.17	595.62	595.48	0.59	0.20	48.20		1639.50		9.99
Reach1	1159.907	10 Year Flood	598.63	596.92	596.69	0.66	0.05	68.30	2.61	2428.55	0.74	10.49
Reach1	1159.907	25 Year Flood	601.03	599.81		0.39	0.40	85.37	88.73	3539.95	15.52	9.01
Reach1	1159.907	50 Year Flood	602.86	601.68		0.32	0.58	95.74	181.26	4430.90	38.14	8.90
Reach1	1159.907	100 Year Flood	604.65	603.48		0.27	0.73	137.09	298.60	5361.58	58.12	8.96
Reach1	1159.907	500 Year Flood	610.11	609.07		0.18	1.24	160.22	799.94	8030.96	564.51	8.82
Reach1	1078.855	2 Year Flood	594.01	593.31	592.25	0.17	0.20	34.62		816.80		6.72
Reach1	1078.855	5 Year Flood	596.38	595.23	593.95	0.16	0.26	40.97	1.69	1637.36	0.45	8.58
Reach1	1078.855	10 Year Flood	597.92	596.04	595.19			42.70	7.68	2422.47	1.75	11.00
Reach1	1078.855	25 Year Flood	600.24	597.67	596.81			44.87	27.96	3608.47	7.78	12.92
Reach1	1078.855	50 Year Flood	601.96	598.86	598.00			46.79	48.02	4586.29	15.99	14.23
Reach1	1078.855	100 Year Flood	603.65	600.03	599.15			49.46	73.97	5616.29	28.04	15.40
Reach1	1078.855	500 Year Flood	608.69	603.51	602.99			69.22	195.73	9102.71	96.96	18.54
Reach1	988.8714BR U	2 Year Flood	593.63	592.25	592.25	0.31	0.50	31.39		816.80		9.43
Reach1	988.8714BR U	5 Year Flood	595.95	593.95	593.95	0.37	0.61	36.60	0.00	1639.50	0.00	11.36
Reach1	988.8714BR U	10 Year Flood	597.75	595.19	595.19			40.76	2.31	2428.97	0.61	12.84
Reach1	988.8714BR U	25 Year Flood	600.10	596.81	596.81			43.73	19.60	3619.79	4.80	14.59
Reach1	988.8714BR U	50 Year Flood	601.84	598.00	598.00			45.29	39.40	4599.41	11.50	15.80
Reach1	988.8714BR U	100 Year Flood	603.54	599.15	599.15			47.50	62.43	5634.24	21.63	16.92
Reach1	988.8714BR U	500 Year Flood	608.64	602.62	602.62			50.00	168.40	9146.63	80.37	19.94
Reach1	988.8714BR D	2 Year Flood	582.33	581.95	580.70	0.57	0.16	50.00		816.80		4.99
Reach1	988.8714BR D	5 Year Flood	584.06	583.26	581.90	0.68	0.18	50.00		1639.50		7.14
Reach1	988.8714BR D	10 Year Flood	585.31	584.02	582.86			50.00		2431.90		9.10
Reach1	988.8714BR D	25 Year Flood	587.06	584.98	584.17			50.00		3644.20		11.55
Reach1	988.8714BR D	50 Year Flood	588.36	585.33	585.12			50.00		4650.30		13.97
Reach1	988.8714BR D	100 Year Flood	589.79	586.10	586.10			50.00		5718.30		15.41

Existing Conditions RAS Model Output

HEC-RAS Plan: 01 Existing CALIBRATED River: River1 Reach: Reach1 (Continued)

Reach	River Sta	Profile	E.G. Elev (ft)	W.S. Elev (ft)	Crit W.S. (ft)	Frctn Loss (ft)	C & E Loss (ft)	Top Width (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Vel Chnl (ft/s)
Reach1	988.8714BR D	500 Year Flood	594.15	589.00	589.00			50.00		9395.40		18.20
Reach1	910.7321	2 Year Flood	581.61	580.69	580.69	1.27	0.05	57.76		816.80		7.68
Reach1	910.7321	5 Year Flood	583.20	581.80	581.80	1.13	0.05	61.93		1639.50		9.48
Reach1	910.7321	10 Year Flood	584.44	582.69	582.69	1.03	0.08	65.23	0.00	2431.90		10.61
Reach1	910.7321	25 Year Flood	586.06	583.78	583.78	0.94	0.09	69.36	1.66	3641.90	0.64	12.13
Reach1	910.7321	50 Year Flood	587.27	584.62	584.62	0.87	0.09	72.40	7.20	4640.22	2.88	13.08
Reach1	910.7321	100 Year Flood	588.45	585.41	585.41	0.83	0.10	74.65	17.21	5693.93	7.16	14.00
Reach1	910.7321	500 Year Flood	591.99	587.84	587.84	0.74	0.12	80.91	73.75	9284.39	37.27	16.44
Reach1	823.656	2 Year Flood	567.43	566.36	566.36	2.59	0.01	46.76		816.80		8.30
Reach1	823.656	5 Year Flood	569.22	567.66	567.66	2.22	0.00	54.19	0.02	1639.48		10.02
Reach1	823.656	10 Year Flood	570.60	568.59	568.59	2.00	0.00	58.41	3.09	2428.49	0.33	11.36
Reach1	823.656	25 Year Flood	572.42	569.85	569.85	1.81	0.00	63.39	16.83	3624.07	3.29	12.90
Reach1	823.656	50 Year Flood	573.77	570.81	570.81	1.69	0.00	67.48	37.78	4604.00	8.52	13.86
Reach1	823.656	100 Year Flood	575.07	571.68	571.68	1.63	0.01	70.05	69.02	5633.01	16.27	14.86
Reach1	823.656	500 Year Flood	578.96	574.40	574.40	1.46	0.03	77.48	221.68	9112.28	61.44	17.40

Proposed Conditions RAS Model Output

HEC-RAS Plan: Dam Removal F&O River: River1 Reach: Reach1

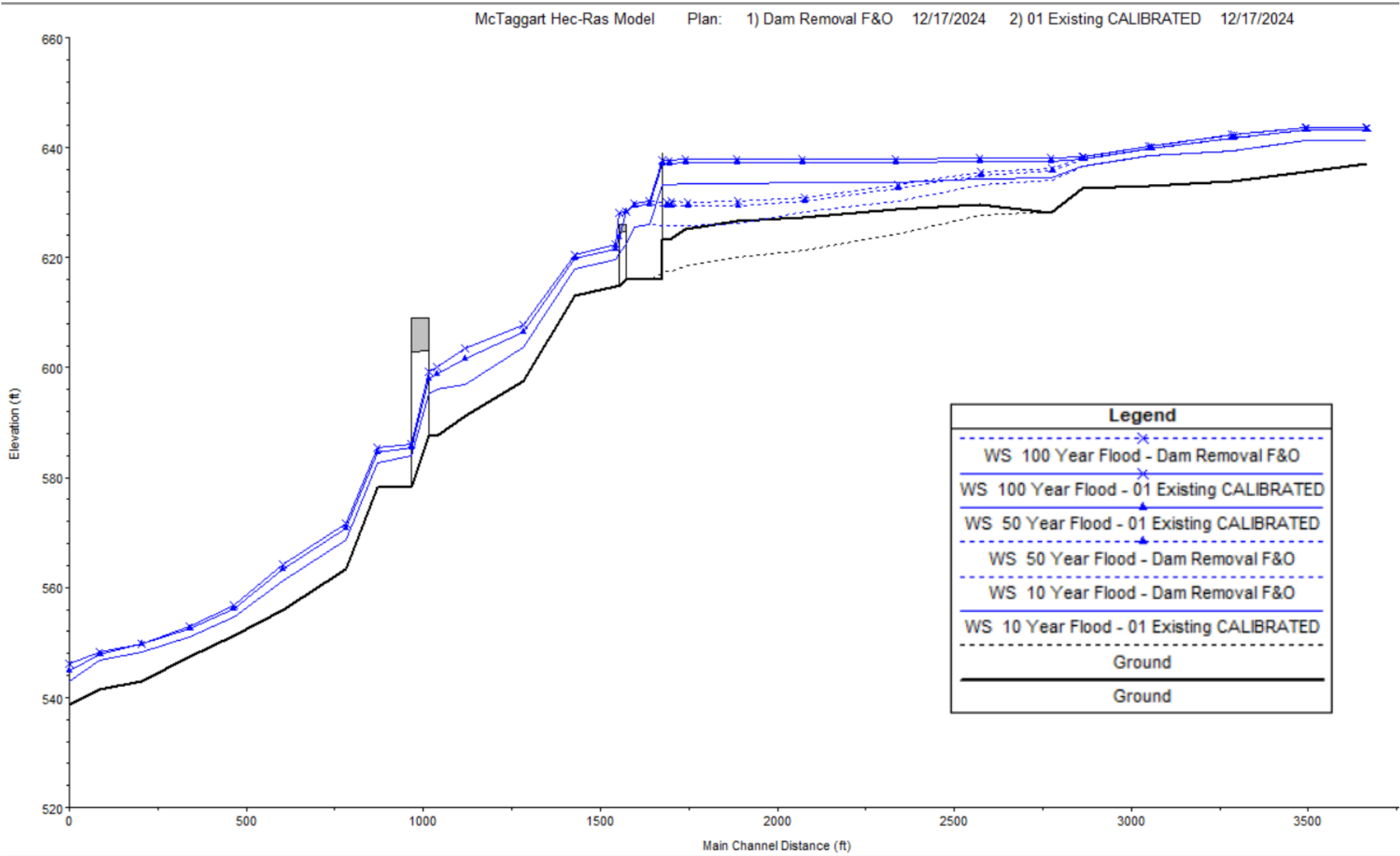
Reach	River Sta	Profile	E.G. Elev (ft)	W.S. Elev (ft)	Crit W.S. (ft)	Frctn Loss (ft)	C & E Loss (ft)	Top Width (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Vel Chnl (ft/s)
Reach1	1681.53	2 Year Flood	621.26	621.13		0.09	0.06	101.28		816.80		2.95
Reach1	1681.53	5 Year Flood	623.98	623.85		0.03	0.05	148.96	8.75	1620.38	10.36	2.89
Reach1	1681.53	10 Year Flood	626.12	625.98		0.02	0.06	178.79	39.13	2348.91	43.87	3.01
Reach1	1681.53	25 Year Flood	628.99	628.85		0.02	0.04	228.52	96.02	3391.03	157.15	3.14
Reach1	1681.53	50 Year Flood	629.79	629.60		0.02	0.06	239.91	135.30	4279.97	235.03	3.70
Reach1	1681.53	100 Year Flood	630.53	630.28		0.02	0.08	254.40	180.87	5218.44	318.99	4.25
Reach1	1681.53	500 Year Flood	632.69	632.22		0.04	0.12	330.67	314.88	8376.89	703.63	5.86
Reach1	1636.923	2 Year Flood	621.12	620.79	619.22			63.26		816.80		4.60
Reach1	1636.923	5 Year Flood	623.89	623.58	620.72	0.07	0.56	91.01	0.33	1639.13	0.04	4.48
Reach1	1636.923	10 Year Flood	626.03	625.69	621.59	0.05	0.75	162.05	0.73	2422.83	8.35	4.70
Reach1	1636.923	25 Year Flood	628.93	628.65	622.72	0.03	1.03	229.44	158.86	3268.05	217.29	4.51
Reach1	1636.923	50 Year Flood	629.72	629.32	623.54	0.04	0.22	254.47	193.87	4116.23	340.20	5.33
Reach1	1636.923	100 Year Flood	630.43	629.93	624.31	0.05	0.35	277.92	263.68	4989.17	465.45	6.12
Reach1	1636.923	500 Year Flood	632.53	631.64	626.84	0.07	0.42	326.18	575.73	7777.76	1041.91	8.30
Reach1	1615.645BR U	2 Year Flood	621.02	620.15	619.46			31.67		816.80		7.50
Reach1	1615.645BR U	5 Year Flood	623.26	621.08	621.08	0.42	0.00	31.67		1639.50		11.86
Reach1	1615.645BR U	10 Year Flood	625.23	622.40	622.40	0.44	0.00	31.67		2431.90		13.51
Reach1	1615.645BR U	25 Year Flood	627.87	624.15	624.15	0.47	0.01	31.67		3644.20		15.47
Reach1	1615.645BR U	50 Year Flood	629.46	628.33	627.75	0.38	0.97	214.24	237.42	3866.37	546.51	9.26
Reach1	1615.645BR U	100 Year Flood	630.03	628.35	628.29	0.41	0.15	214.67	294.29	4747.05	676.96	11.33
Reach1	1615.645BR U	500 Year Flood	632.04	629.73	629.73	0.46	0.32	267.59	650.45	7122.34	1622.61	13.78
Reach1	1615.645BR D	2 Year Flood	619.09	617.72	617.72			31.67		816.80		9.37
Reach1	1615.645BR D	5 Year Flood	621.52	619.33	619.33	0.16	0.37	31.67		1639.50		11.88
Reach1	1615.645BR D	10 Year Flood	623.49	620.66	620.66	0.15	0.48	31.67		2431.90		13.50
Reach1	1615.645BR D	25 Year Flood	626.13	622.42	622.42	0.14	0.67	31.67		3644.20		15.44
Reach1	1615.645BR D	50 Year Flood	628.10	623.73	623.73	0.15	0.80	31.67		4650.30		16.77
Reach1	1615.645BR D	100 Year Flood	629.48	628.09	628.09	0.01	0.92	332.87	552.09	4486.28	679.93	10.59
Reach1	1615.645BR D	500 Year Flood	630.99	629.32	629.32	0.12	0.78	346.04	1304.91	6162.23	1928.26	12.47
Reach1	1583.47	2 Year Flood	618.41	617.43	617.40	1.54	0.05	50.89		816.80		7.93
Reach1	1583.47	5 Year Flood	620.09	618.63	618.63	1.41	0.06	59.21	0.09	1639.31	0.10	9.69
Reach1	1583.47	10 Year Flood	621.41	619.54	619.54	1.18	0.19	64.82	3.27	2426.50	2.14	10.99
Reach1	1583.47	25 Year Flood	623.14	620.78	620.78	1.12	0.21	91.74	21.06	3610.56	12.58	12.38
Reach1	1583.47	50 Year Flood	624.38	621.61	621.61	1.07	0.32	111.76	45.63	4568.28	36.39	13.48
Reach1	1583.47	100 Year Flood	625.59	622.47	622.47	1.04	0.36	146.23	77.26	5571.60	69.44	14.35
Reach1	1583.47	500 Year Flood	629.25	624.96	624.96	0.17	0.99	188.45	200.09	8991.27	204.04	16.95
Reach1	1470.783	2 Year Flood	616.81	615.94	615.94	2.02	0.04	91.19	1.69	697.90	117.20	8.05
Reach1	1470.783	5 Year Flood	618.32	616.98	616.98	1.77	0.06	103.76	16.33	1330.01	293.15	10.20
Reach1	1470.783	10 Year Flood	619.53	618.04	618.04	1.49	0.10	137.92	49.29	1913.55	469.06	10.95
Reach1	1470.783	25 Year Flood	620.89	618.96	618.96	1.45	0.12	173.72	101.07	2725.12	818.01	12.77
Reach1	1470.783	50 Year Flood	621.88	619.75	619.75	1.37	0.15	212.87	155.86	3359.54	1134.90	13.62
Reach1	1470.783	100 Year Flood	622.82	620.42	620.42	1.31	0.16	244.66	238.30	4017.86	1462.14	14.63
Reach1	1470.783	500 Year Flood	625.60	621.85	621.85	1.36	0.14	292.12	576.81	6272.05	2546.54	18.73
Reach1	1159.907	2 Year Flood	595.23	594.06	594.06	0.66	0.23	41.00		816.80		8.66
Reach1	1159.907	5 Year Flood	597.17	595.62	595.48	0.59	0.20	48.20		1639.50		9.99
Reach1	1159.907	10 Year Flood	598.63	596.92	596.69	0.66	0.05	68.30	2.61	2428.55	0.74	10.49
Reach1	1159.907	25 Year Flood	601.03	599.81		0.39	0.40	85.37	88.73	3539.95	15.52	9.01
Reach1	1159.907	50 Year Flood	602.86	601.68		0.32	0.58	95.74	181.26	4430.90	38.14	8.90
Reach1	1159.907	100 Year Flood	604.65	603.48		0.27	0.73	137.09	298.60	5361.58	58.12	8.96
Reach1	1159.907	500 Year Flood	610.11	609.07		0.18	1.24	160.22	799.94	8030.96	564.51	8.82
Reach1	1078.855	2 Year Flood	594.01	593.31	592.25	0.17	0.20	34.62		816.80		6.72
Reach1	1078.855	5 Year Flood	596.38	595.23	593.95	0.16	0.26	40.97	1.69	1637.36	0.45	8.58
Reach1	1078.855	10 Year Flood	597.92	596.04	595.19			42.70	7.68	2422.47	1.75	11.00
Reach1	1078.855	25 Year Flood	600.24	597.67	596.81			44.87	27.96	3608.47	7.78	12.92
Reach1	1078.855	50 Year Flood	601.96	598.86	598.00			46.79	48.02	4586.29	15.99	14.23
Reach1	1078.855	100 Year Flood	603.65	600.03	599.15			49.46	73.97	5616.29	28.04	15.40
Reach1	1078.855	500 Year Flood	608.69	603.51	602.99			69.22	195.73	9102.71	96.96	18.54
Reach1	988.8714BR U	2 Year Flood	593.63	592.25	592.25	0.31	0.50	31.39		816.80		9.43
Reach1	988.8714BR U	5 Year Flood	595.95	593.95	593.95	0.37	0.61	36.60	0.00	1639.50	0.00	11.36
Reach1	988.8714BR U	10 Year Flood	597.75	595.19	595.19			40.76	2.31	2428.97	0.61	12.84
Reach1	988.8714BR U	25 Year Flood	600.10	596.81	596.81			43.73	19.60	3619.79	4.80	14.59
Reach1	988.8714BR U	50 Year Flood	601.84	598.00	598.00			45.29	39.40	4599.41	11.50	15.80
Reach1	988.8714BR U	100 Year Flood	603.54	599.15	599.15			47.50	62.43	5634.24	21.63	16.92
Reach1	988.8714BR U	500 Year Flood	608.64	602.62	602.62			50.00	168.40	9146.63	80.37	19.94
Reach1	988.8714BR D	2 Year Flood	582.33	581.95	580.70	0.57	0.16	50.00		816.80		4.99
Reach1	988.8714BR D	5 Year Flood	584.06	583.26	581.90	0.68	0.18	50.00		1639.50		7.14
Reach1	988.8714BR D	10 Year Flood	585.31	584.02	582.86			50.00		2431.90		9.10
Reach1	988.8714BR D	25 Year Flood	587.06	584.98	584.17			50.00		3644.20		11.55
Reach1	988.8714BR D	50 Year Flood	588.36	585.33	585.12			50.00		4650.30		13.97
Reach1	988.8714BR D	100 Year Flood	589.79	586.10	586.10			50.00		5718.30		15.41

Proposed Conditions RAS Model Output

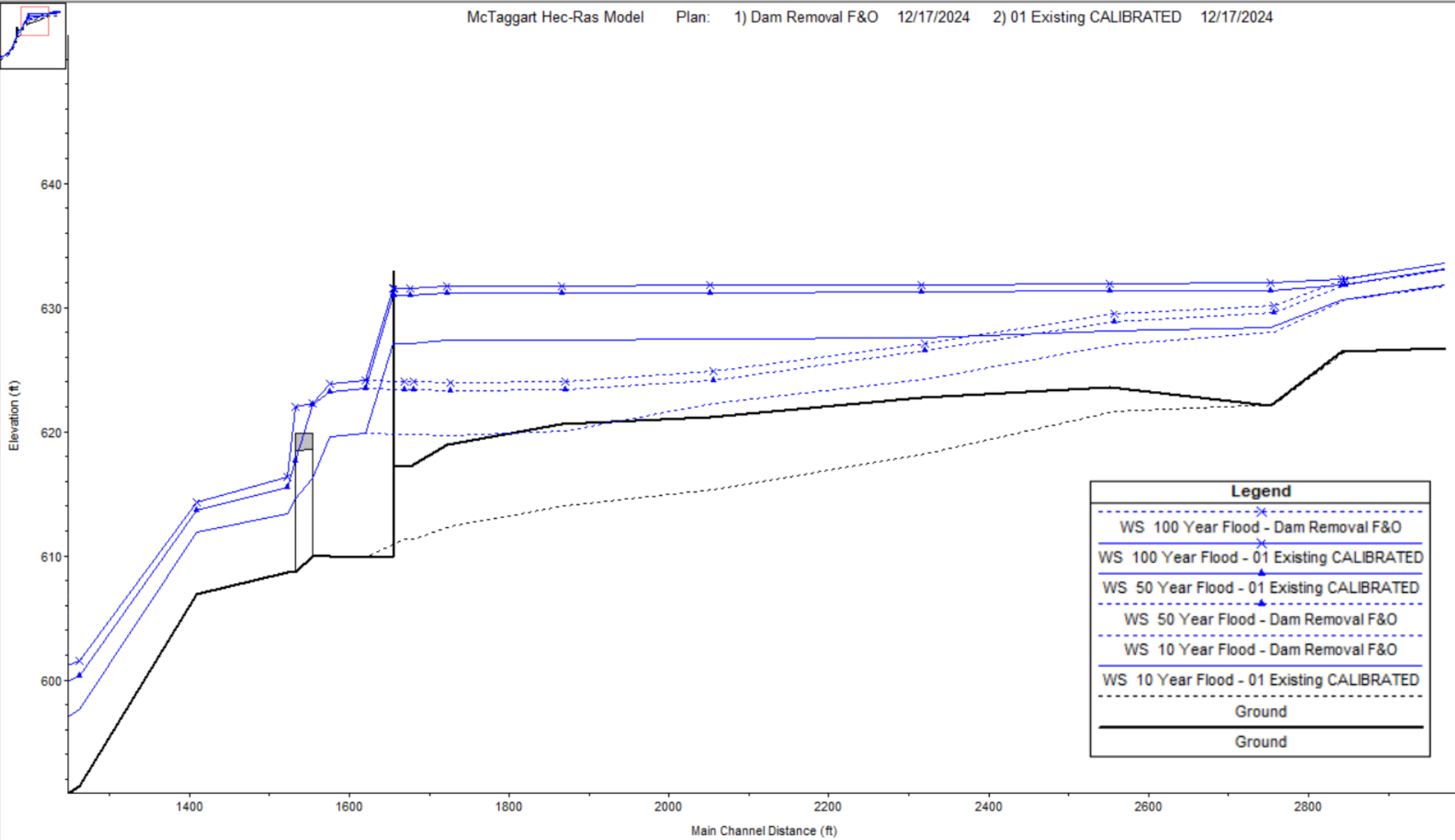
HEC-RAS Plan: Dam Removal F&O River: River1 Reach: Reach1 (Continued)

Reach	River Sta	Profile	E.G. Elev (ft)	W.S. Elev (ft)	Crit W.S. (ft)	Frctn Loss (ft)	C & E Loss (ft)	Top Width (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Vel Chnl (ft/s)
Reach1	988.8714BR D	500 Year Flood	594.15	589.00	589.00			50.00		9395.40		18.20
Reach1	910.7321	2 Year Flood	581.61	580.69	580.69	1.27	0.05	57.76		816.80		7.68
Reach1	910.7321	5 Year Flood	583.20	581.80	581.80	1.13	0.05	61.93		1639.50		9.48
Reach1	910.7321	10 Year Flood	584.44	582.69	582.69	1.03	0.08	65.23	0.00	2431.90		10.61
Reach1	910.7321	25 Year Flood	586.06	583.78	583.78	0.94	0.09	69.36	1.66	3641.90	0.64	12.13
Reach1	910.7321	50 Year Flood	587.27	584.62	584.62	0.87	0.09	72.40	7.20	4640.22	2.88	13.08
Reach1	910.7321	100 Year Flood	588.45	585.41	585.41	0.83	0.10	74.65	17.21	5693.93	7.16	14.00
Reach1	910.7321	500 Year Flood	591.99	587.84	587.84	0.74	0.12	80.91	73.75	9284.39	37.27	16.44
Reach1	823.656	2 Year Flood	567.43	566.36	566.36	2.59	0.01	46.76		816.80		8.30
Reach1	823.656	5 Year Flood	569.22	567.66	567.66	2.22	0.00	54.19	0.02	1639.48		10.02
Reach1	823.656	10 Year Flood	570.60	568.59	568.59	2.00	0.00	58.41	3.09	2428.49	0.33	11.36
Reach1	823.656	25 Year Flood	572.42	569.85	569.85	1.81	0.00	63.39	16.83	3624.07	3.29	12.90
Reach1	823.656	50 Year Flood	573.77	570.81	570.81	1.69	0.00	67.48	37.78	4604.00	8.52	13.86
Reach1	823.656	100 Year Flood	575.07	571.68	571.68	1.63	0.01	70.05	69.02	5633.01	16.27	14.86
Reach1	823.656	500 Year Flood	578.96	574.40	574.40	1.46	0.03	77.48	221.68	9112.28	61.44	17.40

Profile View: Full Model



Profile View: Project Area



Appendix C

Dam Removal Plan Set



MCTAGGART'S POND DAM (MA00879)

REMOVAL AND PHILLIPS BROOK RESTORATION PROJECT

SANDBORN STREET · FITCHBURG · MASSACHUSETTS

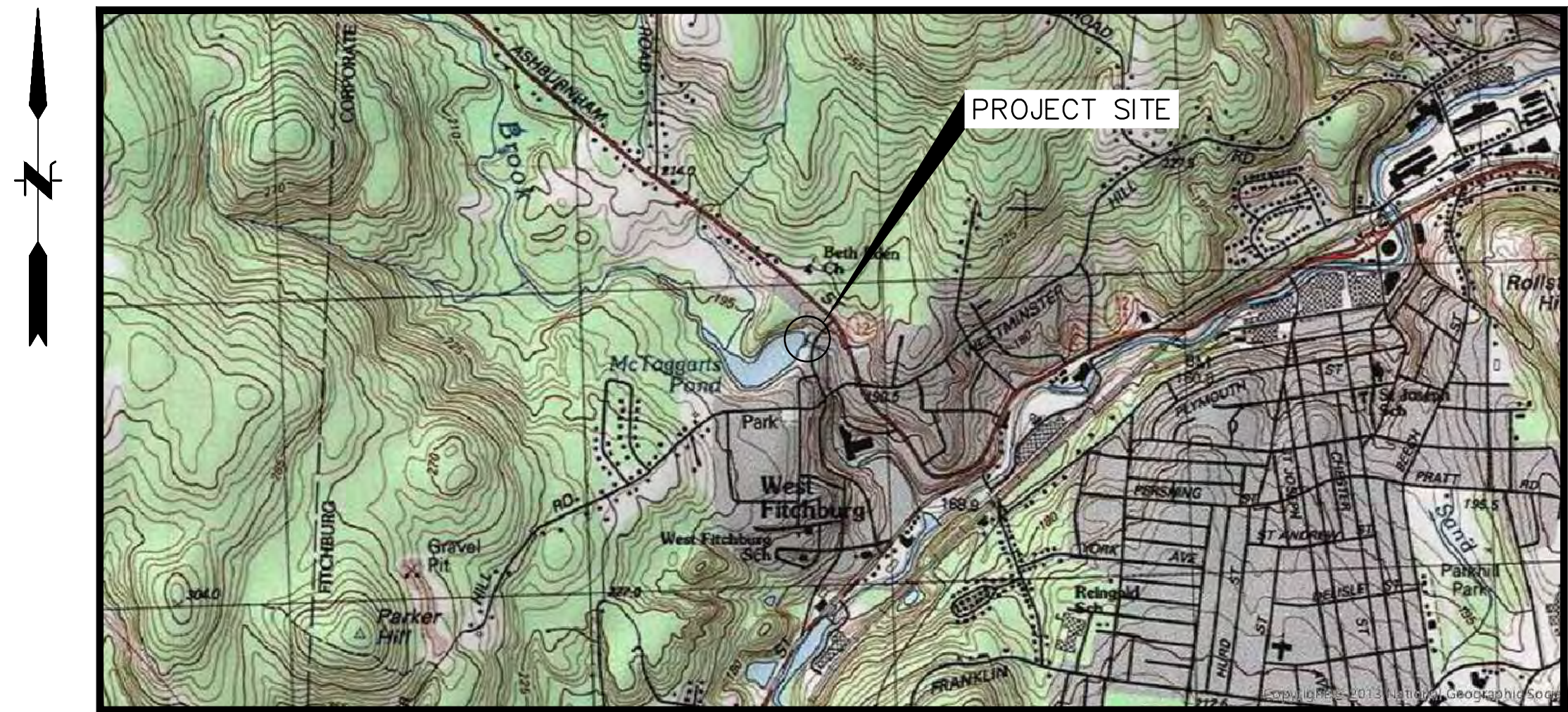
PERMITTING PLANS

DECEMBER 2024



SHEET INDEX

Sheet no.	Sheet Title
GI-001	COVER SHEET
GI-002	GENERAL INFORMATION AND NOTES
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EX-102	EXISTING CONDITIONS PLAN 2
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CE-103	DEMOLITION SECTION
CE-104	EROSION AND SEDIMENTATION CONTROL PLAN 1
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CS-101	PROPOSED CONDITIONS PLAN 1
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CS-105	CONSTRUCTION PHASING AND WATER CONTROL PLAN 1
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CS-107	RESOURCE AREA IMPACT PLAN 1
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CX-101	CHANNEL PROFILE AND DETAILS
CX-102	PROPOSED CROSS SECTIONS
CD-501	CIVIL SITE DETAILS
VR-101	HISTORIC RECORD DRAWINGS
STR-01	GENERAL PLAN AND ELEVATION
STR-02	PROPOSED DAM END CAP DETAILS
STR-03	PROPOSED LIFT GATE MECHANISM SLAB



LOCATION MAP
SCALE: 1" = 2000'



THIS PROJECT IS FUNDED IN PART BY
THE MASSACHUSETTS EXECUTIVE
OFFICE OF ENERGY AND
ENVIRONMENTAL AFFAIRS
(WWW.MASS.GOV/GREEN)

PREPARED BY

**FUSS &
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PREPARED FOR

CITY OF FITCHBURG
718 MAIN STREET
FITCHBURG, MA 01420

NOT FOR CONSTRUCTION

PROJ. No.: 20200263.D20
DATE: DECEMBER 2024

GI-001



ABREVIATIONS

GENERAL

- ## GENERAL

1. DO NOT IMPEDE ACCESS TO AND FROM THE SITE BY THE PROPERTY OWNER.

13. BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. PERFORM CONSTRUCTION ACTIVITIES IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.
14. DISPOSE OF DEMOLITION DEBRIS IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, ORDINANCES AND STATUTES.

1. THE INSTALLATION AND MAINTENANCE OF EROSION CONTROL DEVICES IS THE RESPONSIBILITY OF THE CONTRACTOR. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES, THE CONTRACTOR SHALL INSTALL EROSION CONTROL DEVICES AS SHOWN ON THE PLANS, OR AS INDICATED BY MADCOR AND THE TOWN OF WINDSOR. ALL EROSION CONTROL DEVICES SHALL BE MAINTAINED IN EFFECTIVE CONDITION THROUGHOUT CONSTRUCTION.
2. THE CONTRACTOR SHALL INSPECT ALL EROSION AND SEDIMENT CONTROL DEVICES AT THE END OF EACH WORKING DAY, AFTER EACH STORM EVENT, AND AT LEAST DAILY DURING PROLONGED RAINFALL. REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED. CLEANOUT OF ACCUMULATED SEDIMENT BEHIND SILT FENCE SHALL BE REQUIRED IF ONE-THIRD OF THE ORIGINAL HEIGHT OF THE BALES OR SILT FENCE BECOMES FILLED WITH SEDIMENT.
3. THE CONTRACTOR IS RESPONSIBLE FOR THE TIMELY INSTALLATION, INSPECTION, MAINTENANCE, AND/OR REPLACEMENT OF ALL TEMPORARY AND PERMANENT EROSION CONTROL DEVICES TO ENSURE PROPER OPERATION THROUGHOUT CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF PERMANENT MEASURES UNTIL CONSTRUCTION OF THE PROJECT IS COMPLETED UNTIL IT IS ACCEPTED BY THE CONTRACT OWNER. THE CONTRACT OWNER IS RESPONSIBLE THEREAFTER.
4. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CLEAN ROADS, CONSTRUCTION DUST, AND TAKE ALL NECESSARY MEASURES TO ENSURE THAT THE SITE AND ALL ADJACENT ROADS BE MAINTAINED IN A MUD- AND DUST-FREE CONDITION AT ALL TIMES THROUGHOUT THE LIFE OF THE CONTRACT. DUST CONTROL SHALL INCLUDE, BUT IS NOT LIMITED TO, WATER AND/OR CRUSHED STONE OR COARSE GRAVEL.
5. THE CONTRACTOR SHALL INSTALL ALL PERIMETER SEDIMENT CONTROL BARRIERS (I.E. SILT FENCE) AS SHOWN ON THE PLANS. A SILT FENCE SHALL ALSO BE INSTALLED AROUND ANY SOIL STOCKPILE AREAS.
6. THE CONTRACTOR SHALL RESTORE AREAS DISTURBED BY CONSTRUCTION. AREAS DAMAGED DURING CONSTRUCTION SHALL BE RESTORED BY PLACING 6" OF LOAM AND RESEED OR OTHERWISE RESTORED TO THEIR ORIGINAL STATE AS CLOSELY AS POSSIBLE.
7. TEMPORARY VEGETATIVE COVER SHALL BE APPLIED TO ANY DISTURBED AREAS (INCLUDING SOIL STOCKPILE AREAS) THAT HAVE NOT YET REACHED FINISHED GRADE AS SOON AS POSSIBLE, BUT NOT MORE THAN FOURTEEN (14) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY CEASED, UNLESS THE ACTIVITY IS TO RESUME WITHIN TWENTY-ONE (21) DAYS. THE RECOMMENDED TEMPORARY SEEDING DATES ARE MARCH 15 TO NOVEMBER 15 WITH APPROVAL OF THE ENGINEER.
8. PERMANENT VEGETATIVE COVER SHALL BE APPLIED TO ALL DISTURBED AREAS THAT HAVE REACHED FINISHED GRADE AS SOON AS POSSIBLE, BUT NOT MORE THAN FOURTEEN (14) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY CEASED. THE RECOMMENDED PERMANENT SEEDING DATES ARE APRIL 1 TO JUNE 15 AND AUGUST 15 TO OCTOBER 15.
9. IF SEEDING CANNOT BE COMPLETED IMMEDIATELY OR WITHIN THE RECOMMENDED SEEDING DATES, USE THE TEMPORARY MULCHING MEASURE TO PROTECT THE SITE AND DELAY SEEDING UNTIL THE NEXT RECOMMENDED SEEDING PERIOD. TEMPORARY MULCHING SHOULD BE PERFORMED AS SOON AS POSSIBLE, BUT NOT MORE THAN FOURTEEN (14) DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY CEASED UNLESS THE ACTIVITY IS TO RESUME WITHIN TWENTY-ONE (21) DAYS.
10. ALL MULCHES MUST BE INSPECTED PERIODICALLY, IN PARTICULAR AFTER RAINSTORMS, TO CHECK FOR RILL EROSION. WHERE EROSION IS OBSERVED, ADDITIONAL MULCH MUST BE APPLIED. IF ALTERNATIVE COVER SUCH AS STRAW MULCH OR HYDROMULCH IS USED, THE MATTING MUST BE INSPECTED AFTER RAINSTORMS FOR DISLOCATION OR FAILURE. IF WASHOUTS OR BREAKAGE OCCUR, THE MATTING MUST BE REINSTALLED AS NECESSARY AFTER REPAIRING DAMAGE TO SLOPE. INSPECTIONS SHALL TAKE PLACE UNTIL PERMANENT VEGETATIVE COVER IS FIRMLY ESTABLISHED. GRASS IS CONSIDERED TO BE FIRMLY ESTABLISHED AT A MINIMUM HEIGHT OF THREE (3) INCHES.
11. STRAW MULCH, WOOD FIBER MULCH, OR HYDROMULCH ARE REQUIRED IN SEEDING OR RESTORED UPLAND AREAS. STRAW MULCH SHALL BE APPLIED AT A RATE OF 1,500-2,000 POUNDS PER ACRE, OR HYDROMULCH APPLIED AT A RATE OF 1,500 POUNDS PER ACRE. WOOD FIBER MULCH SHOULD NOT BE USED ALONE IN THE WINTER OR DURING HOT, DRY WEATHER. STRAW MULCH MUST BE ANCHORED IMMEDIATELY AFTER APPLICATION TO PREVENT WIND UPLIFT. MULCH SHOULD ALSO BE USED ON SLOPES GREATER THAN THREE (3) PERCENT. NO MULCH IS TO BE PLACED BELOW NORMAL WATER SURFACE WITHIN THE RIVERBED.
12. WASTE DISPOSAL: MATERIALS WHICH COULD BE A POTENTIAL SOURCE OF STORMWATER POLLUTION SUCH AS GASOLINE, DIESEL FUEL, HYDRAULIC OIL, ETC., SHALL BE STORED AT THE END OF EACH DAY IN A STORAGE TRAILER OR COVERED LOCATION OR TAKEN OFF-SITE AND PROPERLY DISPOSED OF. ALL TYPES OF WASTE OR DEBRIS FROM THIS SITE SHALL BE DISPOSED OF IN A MANNER CONSISTENT WITH STATE LAW AND/OR REGULATIONS.

14. WHERE DEWATERING IS NECESSARY (WITH THE EXCEPTION OF IN-STREAM SEDIMENT DEWATERING) THERE SHALL NOT BE A DISCHARGE DIRECTLY INTO WETLANDS OR WATERCOURSES. PROPER METHODS AND DEVICES SHALL BE UTILIZED TO THE EXTENT PERMITTED BY LAW, SUCH AS PUMPING WATER INTO A TERTIARY SAND TRAP, PUMP SETTLING BASIN, DEWATERING BED, OR OTHER APPROVED METHODS TO MINIMIZE AND RETAIN THE SUSPENDED SOLIDS. IF A PUMPING OPERATION CAUSES TURBIDITY PROBLEMS, CEASE OPERATIONS UNTIL ALTERNATE METHODS ARE SELECTED OR SHOWN TO BE EFFECTIVE AT REDUCING TURBIDITY.

1. PROVIDE PROPER TRANSITIONS BETWEEN EXISTING AND PROPOSED SITE IMPROVEMENTS. FIELD VERIFY EXISTING ELEVATIONS AT THE INTERFACE WITH PROPOSED IMPROVEMENTS BEFORE START OF CONSTRUCTION.
2. IMMEDIATELY INFORM THE ENGINEER IN WRITING IF EXISTING UTILITY CONDITIONS CONFLICT OR DIFFER FROM THAT INDICATED AND IF THE WORK CANNOT BE COMPLETED AS INDICATED.
3. BOUNDS OR MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE SET OR RESET BY A PROFESSIONAL LICENSED SURVEYOR.

1. NOTIFY UTILITY LOCATOR SERVICE AND PROPERTY OWNER AT LEAST 72 HOURS BEFORE STARTING EXCAVATION. CALL MASSACHUSETTS: "DIG SAFE" AT 1-888-344-7233.
2. STOP WORK IN THE VICINITY OF SUSPECTED CONTAMINATED SOIL, GROUNDWATER OR OTHER MEDIA. IMMEDIATELY NOTIFY THE OWNER SO THAT APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN. RESUME WORK IN THE IMMEDIATE VICINITY ONLY UPON DIRECTION BY THE OWNER.
3. LOCATIONS OF UTILITIES SHOWN HEREON ARE THE RESULT OF SURFACE EVIDENCE AS LOCATED BY FIELD SURVEY. UTILITIES WERE NOT RESEARCHED FOR THE DEVELOPMENT OF THIS PLAN. THIS PLAN DOES NOT NECESSARILY DEPICT THE EXACT LOCATIONS OF ALL UTILITIES WHICH MAY EXIST AT THIS TIME WITHIN THE PREMISES SURVEYED.

1. PROVIDE 6 INCHES OF TOPSOIL AND SEED TO AREAS DISTURBED DURING CONSTRUCTION UNLESS OTHERWISE NOTED.
2. RESTORE AREAS DISTURBED BY CONSTRUCTION OPERATIONS TO THEIR ORIGINAL CONDITION OR BETTER, AT NO ADDITIONAL COST TO OWNER.

1. THE CONTRACTOR SHALL VERIFY THE EXISTING LOCATION OF THE DAM FEATURES AND ITS RELATIONSHIP TO THE EXISTING CONDITIONS PLAN. THE CONTRACTOR SHALL ALSO VERIFY ALL DIMENSIONS, SITE CONDITIONS, AND MATERIAL SPECIFICATIONS AND SHALL NOTIFY THE OWNER AND ENGINEER OF ANY ERRORS, OMISSIONS OR DISCREPANCIES BEFORE COMMENCING OR PROCEEDING WITH WORK.
2. DEVIATIONS OR CHANGES FROM THESE PLANS WILL NOT BE ALLOWED UNLESS APPROVED BY THE ENGINEER/OWNER.
3. AN APPROVED SET OF PLANS AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE SITE THROUGHOUT THE ENTIRE PERIOD OF CONSTRUCTION WHEN WORK IS ACTIVELY OCCURRING.
4. ACCESS, STAGING AND TEMPORARY SEDIMENT STOCKPILING AREAS NOT INDICATED ON THE PLANS SHALL BE DELINEATED BY THE CONTRACTOR FOR APPROVAL PRIOR TO PROJECT INITIATION. ALL DISTURBED AREAS OUTSIDE MODIFIED AREAS SHALL BE STABILIZED AND RESTORED IN ACCORDANCE WITH THE DRAWINGS, OR AS OTHERWISE DIRECTED BY THE ENGINEER.
5. VEHICLE STORAGE, AND FUELING SHALL BE PERFORMED AT LEAST 50' OUTSIDE THE POND AND CHANNEL AND ONLY IN DESIGNATED AREAS SUCH THAT THERE WILL BE NO CONTAMINATION OF SOIL, GROUNDWATER OR SURFACE WATER FROM SPILLS OR LEAKS.
6. THE CONTRACTOR SHALL CONDUCT A PRE-CONSTRUCTION SURVEY OF THE DAM AND SURROUNDING STRUCTURES, INCLUDING ACCESS ROUTES WITHIN 200 FEET OF THE WORK AREA. THIS INSPECTION SHALL INCLUDE PHOTOGRAPHIC AND VIDEO DOCUMENTATION. THE CONTRACTOR SHALL SUBMIT THE INSPECTION TO THE ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.

1. THE CONTRACTOR SHALL MAINTAIN BASEFLOW TO THE DOWNSTREAM AREA THROUGHOUT THE WORK.
2. THE TEMPORARY COFFERDAM SYSTEM MUST BE MAINTAINED TO ALLOW A DETERIORATED CONDITION (NO SEDIMENT PLUME) IN THE WATERCOURSE. SOIL DISTURBANCE WITHIN THE WATERCOURSE MUST TEMPORARILY CEASE. IN THE EVENT OF AN ABNORMALLY HIGH STORMWATER RUNOFF EVENT IF A DRY WORKING CONDITION CANNOT BE MAINTAINED WITH THE USE OF WATER PUMPS OR OTHER MEANS.
3. TEMPORARY COFFERDAM(S) AND WATER DIVERSION STRUCTURE(S) ARE TO BE CONSTRUCTED OF MATERIALS THAT CAN BE COMPLETELY REMOVED FROM THE PROJECT AREA UPON COMPLETION OF CONSTRUCTION. REMOVAL OF THE TEMPORARY COFFERDAM(S) SHALL BE CONDUCTED IN A CONTROLLED MANNER.


$$1'' = 200'$$

1. AERIAL IMAGERY OBTAINED FROM NEARMAP LTD. VERTICAL ORTHOGONAL IMAGERY (OCTOBER 2021)

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER
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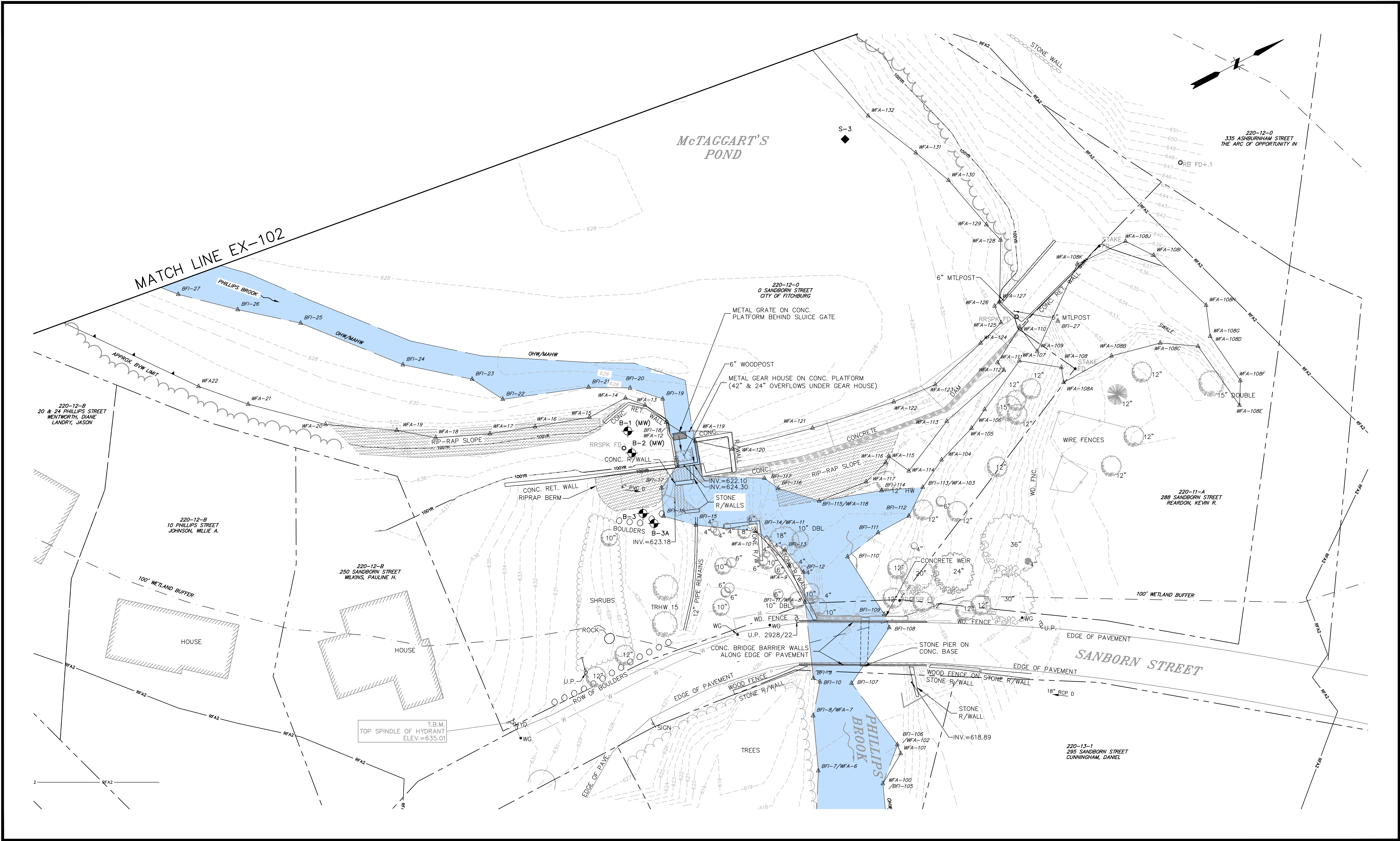
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FITCHBURG MASSACHUSETTS

GI-002

File Path: J:\DWG\2020\20200263.D20\CivilPlan\20200263.D20_EXC01.dwg Layout: EX-101 Plotted: Wed, December 11, 2024 - 4:39 PM User: sam.huffman
MS VIEW: Plotter: AUTOCAD PDF (GENERAL DOCUMENTATION) PC3 CTB File: FO.STB



No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

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GRAPHIC SCALE

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CITY OF FITCHBURG

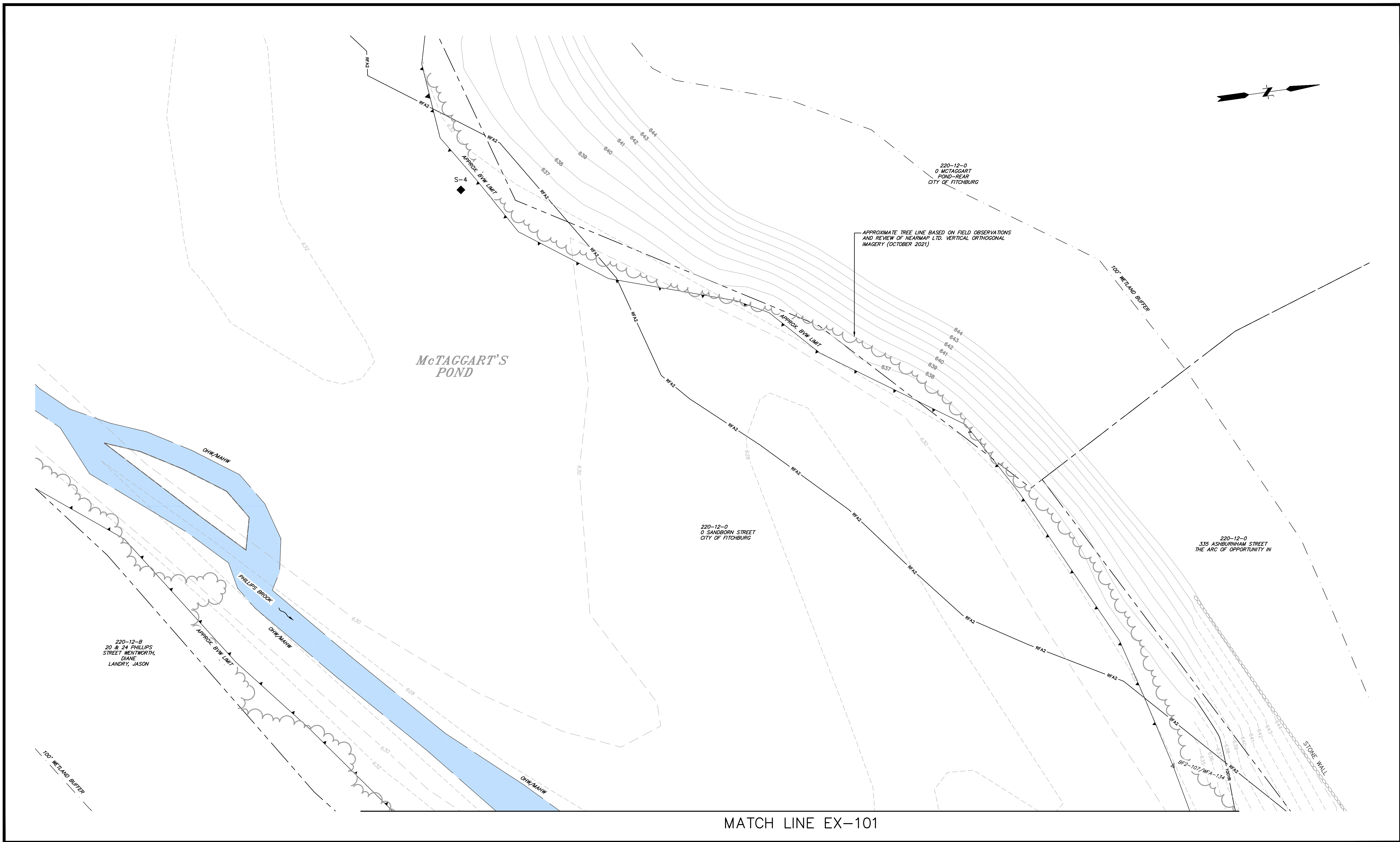
EXISTING CONDITIONS PLAN 1

MCTAGGART'S POND DAM REMOVAL AND
PHILLIPS BROOK RESTORATION PROJECT

FITCHBURG MASSACHUSETTS

PROJ. No.: 20200263.D20
DATE: DECEMBER 2024

EX-101



No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

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EXISTING CONDITIONS PLAN 2

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PHILLIPS BROOK RESTORATION PROJECT

FITCHBURG

MASSACHUSETTS

PROJ. No.: 20200263.D20

DATE: DECEMBER 2024

EX-102

1. SALVAGE A MINIMUM OF 3 TREES WITH 15' ROOTWAD FANS AND MINIMUM 10' LONG, 10" DIAMETER TRUNKS FOR ROOTWAD REVETMENT. SALVAGE A MINIMUM OF 3, 15' LONG, 6" DIAMETER TRUNKS FOR FOOTER LOGS.
2. SALVAGE STONE ARMOR FOR REUSE IN THE PROPOSED RIFFLES, POOLS, AND ROOTWAD REVETMENT.



LAYER STATE:

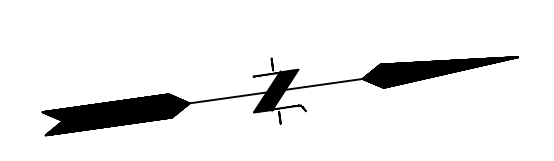
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GRAPHIC SCALE	

CITY OF FITCHBURG

EROSION AND SEDIMENTATION CONTROL PLAN 2

MCTAGGART'S POND DAM REMOVAL AND
PHILLIPS BROOK RESTORATION PROJECT

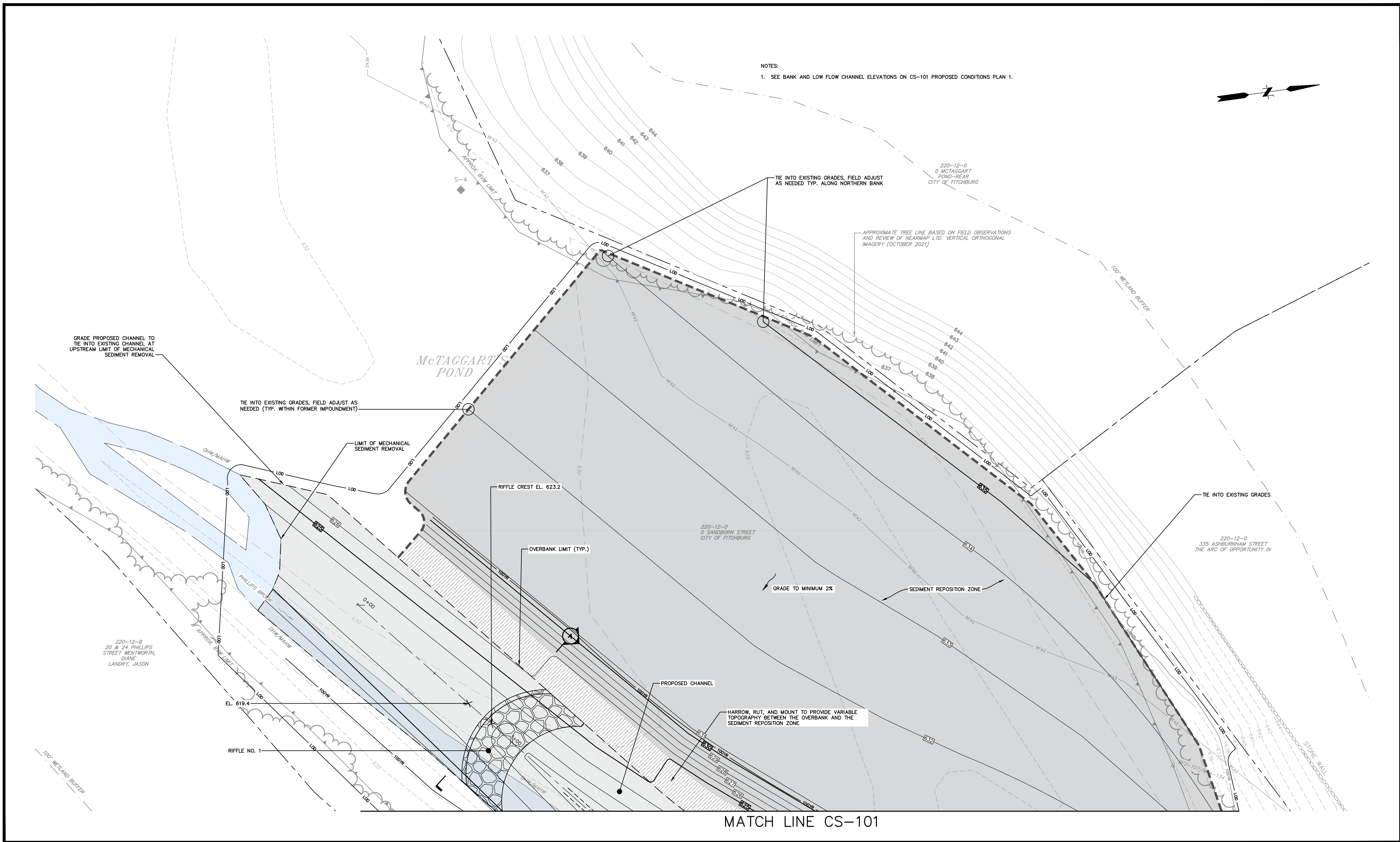
FITCHBURG MASSACHUSETTS

PROJ. No.: 20200263.D20
DATE: DECEMBER 2024

CE-105

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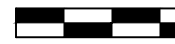


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PROPOSED CONDITIONS PLAN 2

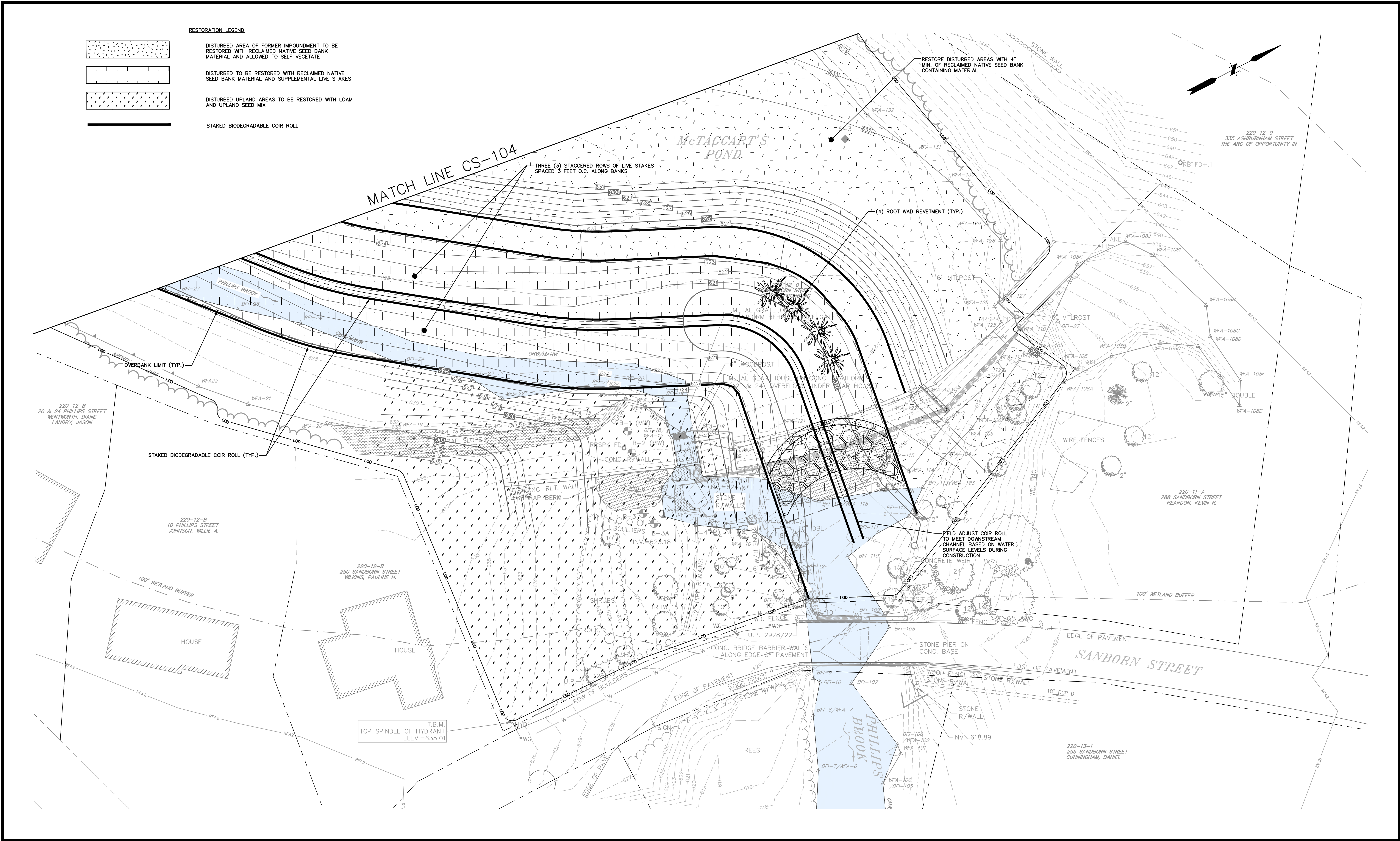
MCTAGGART'S POND DAM REMOVAL AND
PHILLIPS BROOK RESTORATION PROJECT

FITCHBURG MASSACHUSETTS

PROJ. No.: 20200263.D20
DATE: DECEMBER 2024

CS-102

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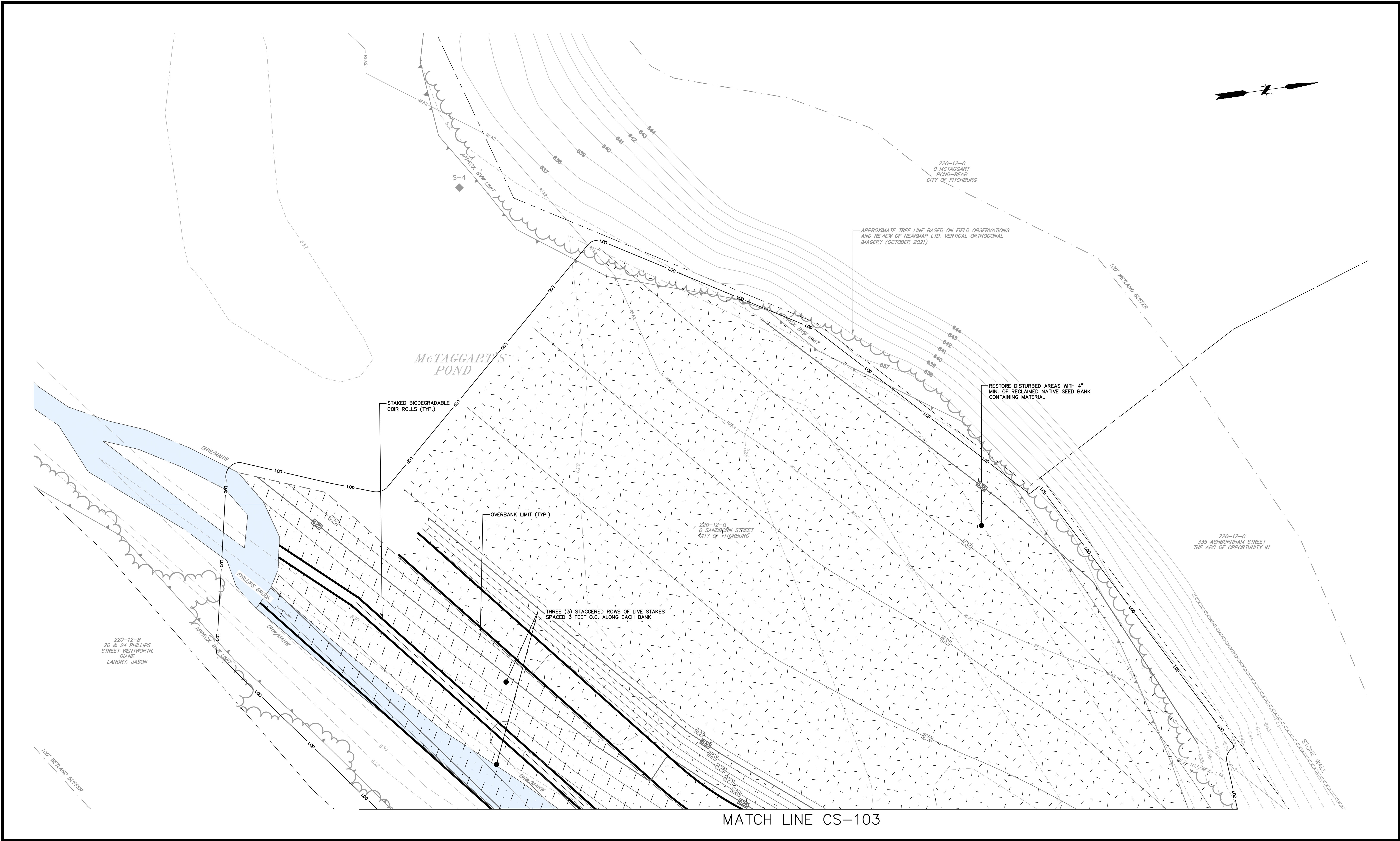
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CITY OF FITCHBURG
SITE RESTORATION PLAN 1
MCTAGGART'S POND DAM REMOVAL AND
PHILLIPS BROOK RESTORATION PROJECT
FITCHBURG MASSACHUSETTS

PROJ. No.: 20200263.D20
DATE: DECEMBER 2024
CS-103

File Path: J:\DWG\2020\2020263.D20\CivilPlan\2020263.D20_STP01.dwg Layout: CS-104 Plotted: Wed, December 11, 2024 - 4:41 PM User: sam.huffman
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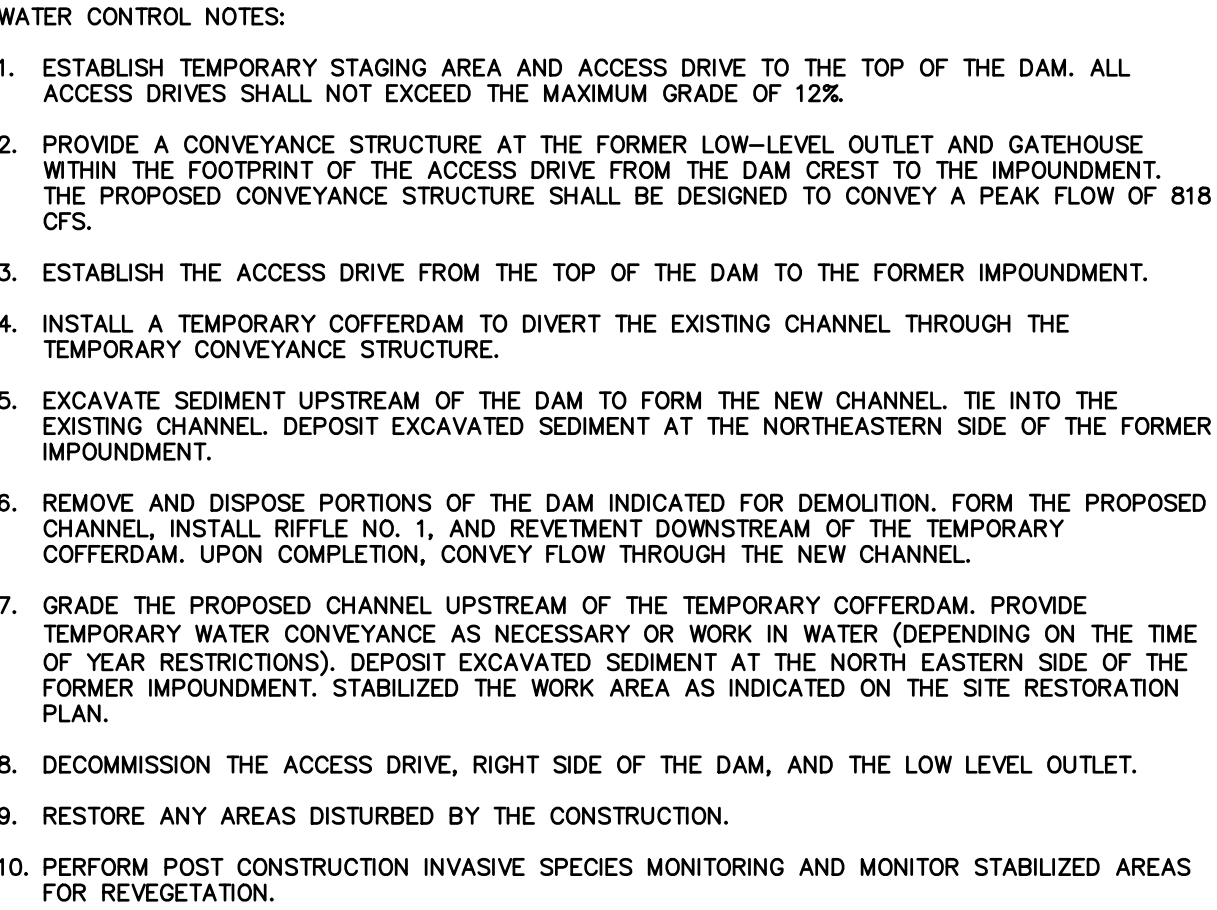
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GRAPHIC SCALE

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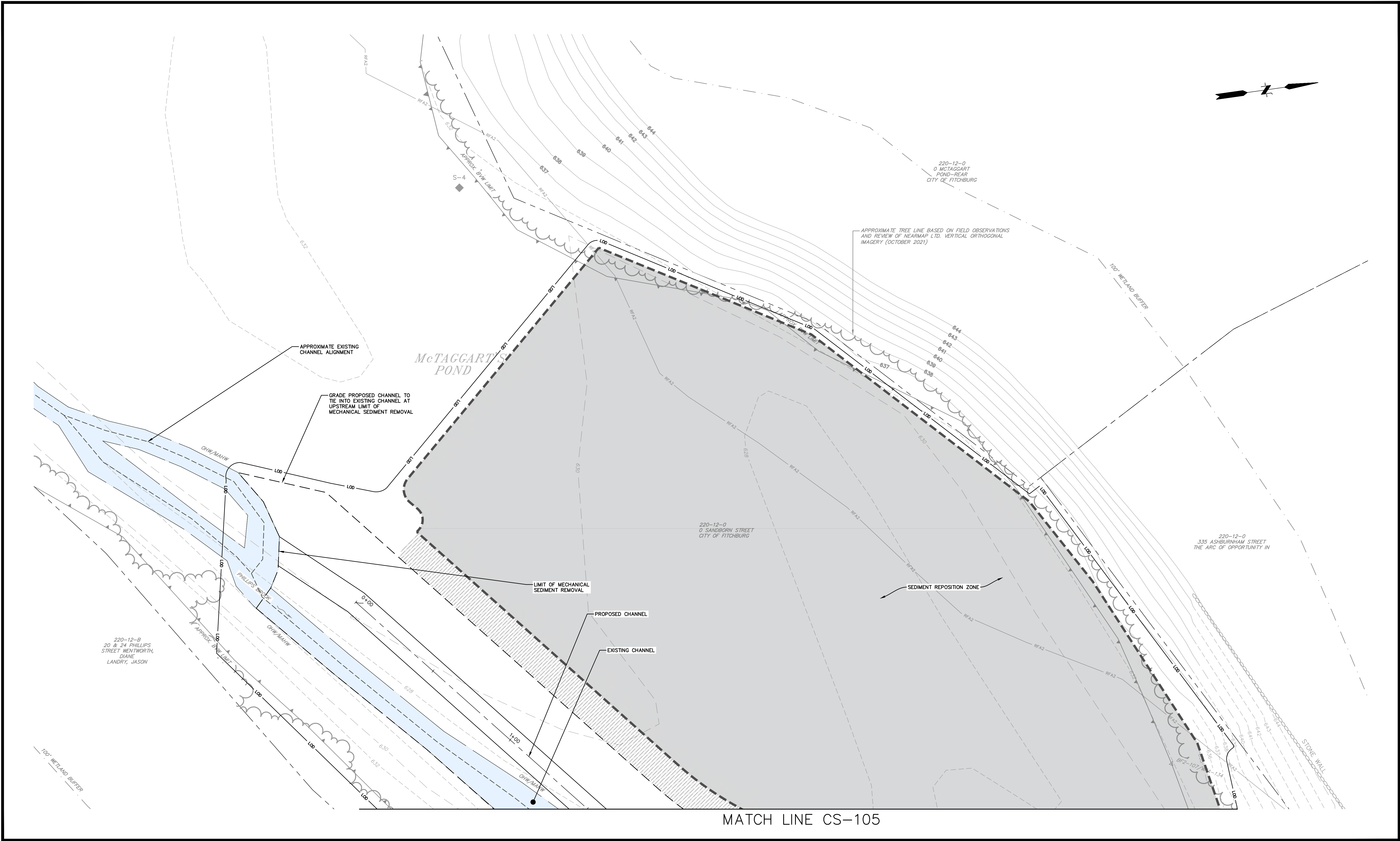
CITY OF FITCHBURG
SITE RESTORATION PLAN 2
MCTAGGART'S POND DAM REMOVAL AND
PHILLIPS BROOK RESTORATION PROJECT
FITCHBURG MASSACHUSETTS

PROJ. No.: 20200263.D20
DATE: DECEMBER 2024
CS-104



PROJ. No.: 20200263.D20
DATE: DECEMBER 2024
CS-105

File Path: J:\DWG\2020\2020263.D20\Civil\Plan\2020263.D20_STP01.dwg Plotted: Wed, December 11, 2024 - 4:41 PM User: sam.huffman
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No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

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CONSTRUCTION PHASING AND WATER
CONTROL PLAN 2

MCTAGGART'S POND DAM REMOVAL AND
PHILLIPS BROOK RESTORATION PROJECT

FITCHBURG MASSACHUSETTS

PROJ. No.: 20200263.D20
DATE: DECEMBER 2024

CS-106

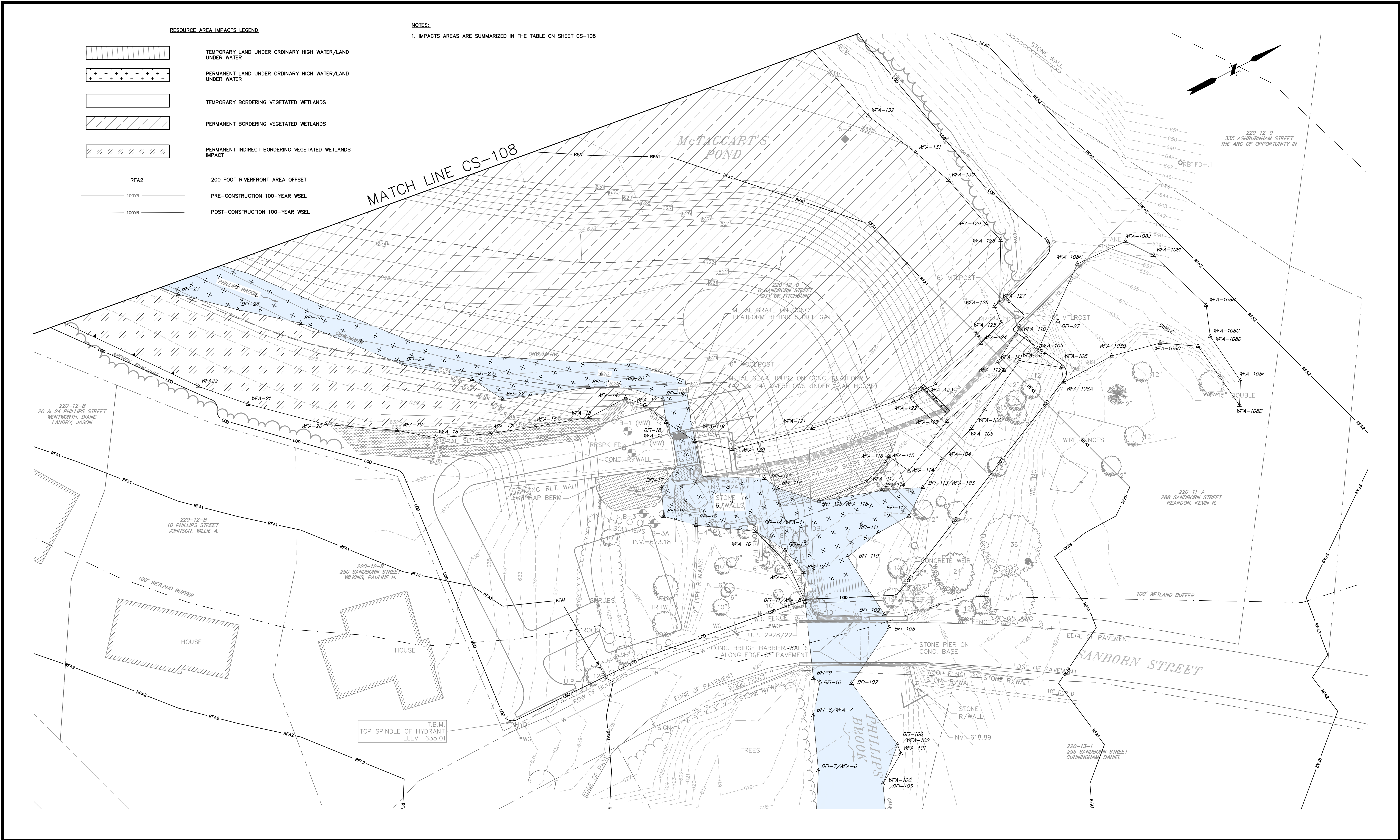
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MS VIEW: LAYER STATE: Plotter: NONE CTB File: FQ.STB

RESOURCE AREA IMPACTS LEGEND

	TEMPORARY LAND UNDER ORDINARY HIGH WATER/LAND UNDER WATER
	PERMANENT LAND UNDER ORDINARY HIGH WATER/LAND UNDER WATER
	TEMPORARY BORDERING VEGETATED WETLANDS
	PERMANENT BORDERING VEGETATED WETLANDS
	PERMANENT INDIRECT BORDERING VEGETATED WETLANDS IMPACT
	200 FOOT RIVERFRONT AREA OFFSET
	PRE-CONSTRUCTION 100-YEAR WSEL
	POST-CONSTRUCTION 100-YEAR WSEL

NOTES:

1. IMPACTS AREAS ARE SUMMARIZED IN THE TABLE ON SHEET CS-108



No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

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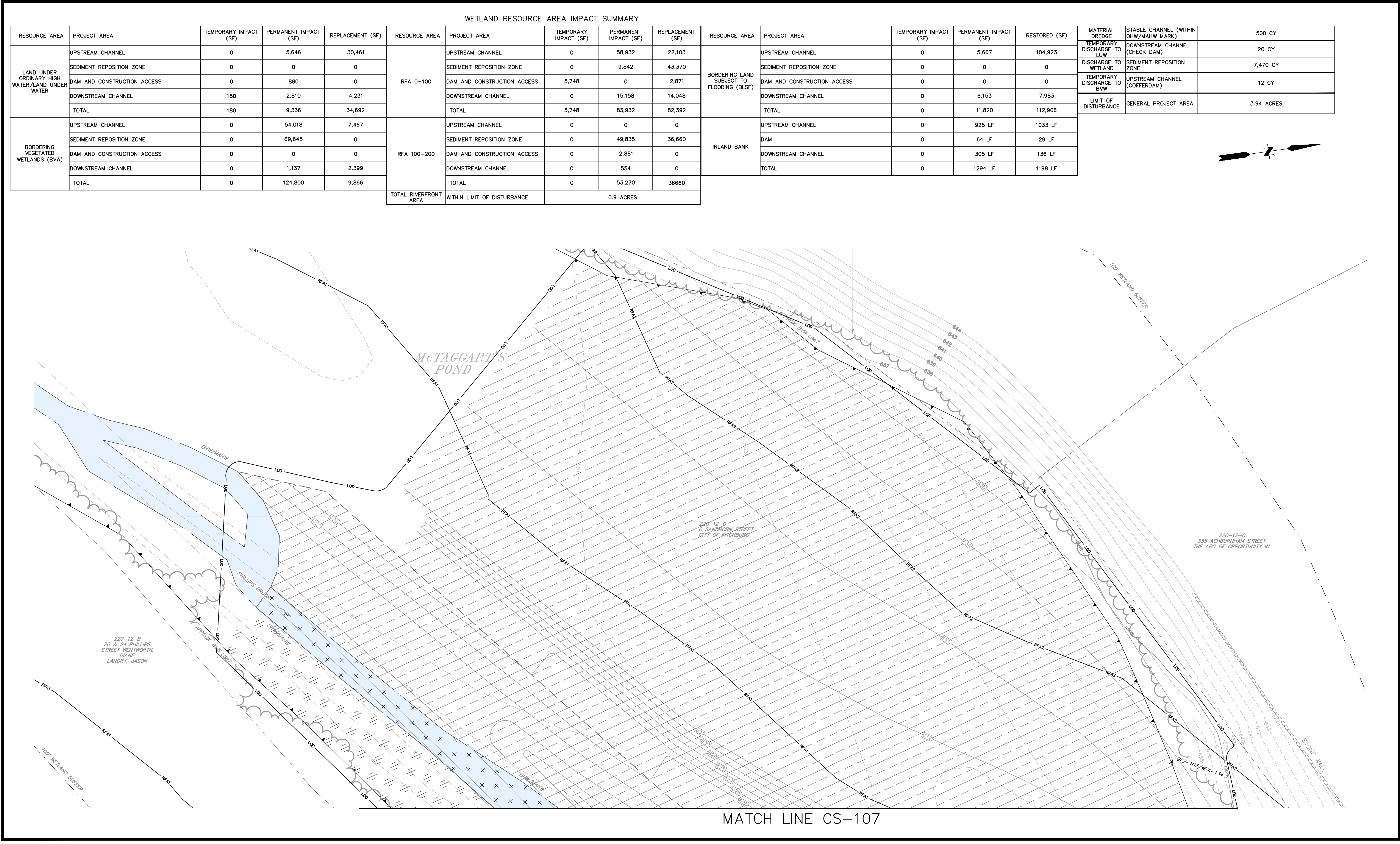
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GRAPHIC SCALE	

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RESOURCE IMPACT AREA PLAN 1
MCTAGGART'S POND DAM REMOVAL AND
PHILLIPS BROOK RESTORATION PROJECT
FITCHBURG MASSACHUSETTS

PROJ. No.: 2020263.D20
DATE: DECEMBER 2024
CS-107

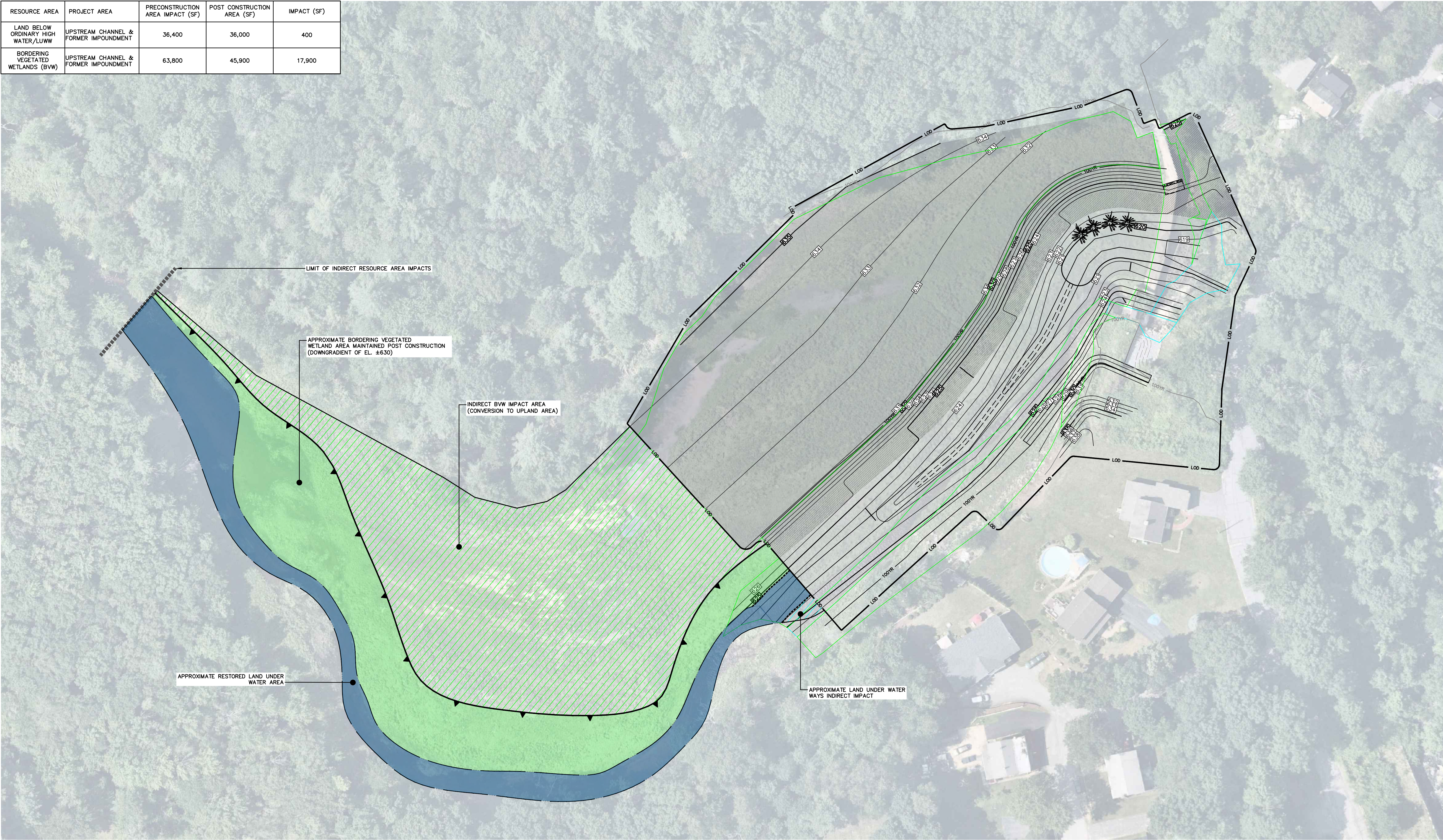
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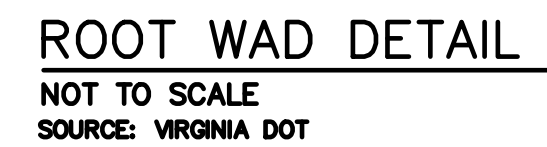


				SEAL	SEAL	NOT FOR CONSTRUCTION	SCALE: HORZ.: 1" = 20' VERT.: DATUM: HORZ.: NAD83 VERT.: NAVD88 20 10 0 20 GRAPHIC SCALE	FUSS & O'NEILL 1550 MAIN STREET, SUITE 400 SPRINGFIELD, MA 01103 413.452.0445 www.fando.com	CITY OF FITCHBURG RESOURCE IMPACT AREA PLAN 2 MCTAGGART'S POND DAM REMOVAL AND PHILLIPS BROOK RESTORATION PROJECT FITCHBURG MASSACHUSETTS	PROJ. No.: 20200263.D20 DATE: DECEMBER 2024
No.	DATE	DESCRIPTION	DESIGNER	REVIEWER	CS-108					

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MS VIEW: LAYER STATE: Plotter: AUTOCAD PDF (GENERAL DOCUMENTATION) PC3 CTB File: FO.STB

INDIRECT IMPACTS				
RESOURCE AREA	PROJECT AREA	PRECONSTRUCTION AREA IMPACT (SF)	POST CONSTRUCTION AREA (SF)	IMPACT (SF)
LAND BELOW ORDINARY HIGH WATER/LUWW	UPSTREAM CHANNEL & FORMER IMPOUNDMENT	36,400	36,000	400
BORDERING VEGETATED WETLANDS (BVW)	UPSTREAM CHANNEL & FORMER IMPOUNDMENT	63,800	45,900	17,900





1. IF THE SALVAGEABLE BANK SEED CONTAINING SOIL IS INSUFFICIENT TO RESTORE DISTURBED AREAS, PROVIDE 4 INCHES OF LOAM AND SEED WITH NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DETENTION BASINS AND MOIST SITES
2. LIVE STAKES SHALL BE DWARF WILLOW OR SALIX COTTETII
3. COIR ROLLS SHALL BE SECURED WITH 2" BY 2" WOODEN STAKES DRIVEN THROUGH THE CENTER OF THE ROLL AT 2' O/C. STAKING DEPTH SHALL BE ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
4. WATER SURFACE ELEVATIONS ARE POST CONSTRUCTION.

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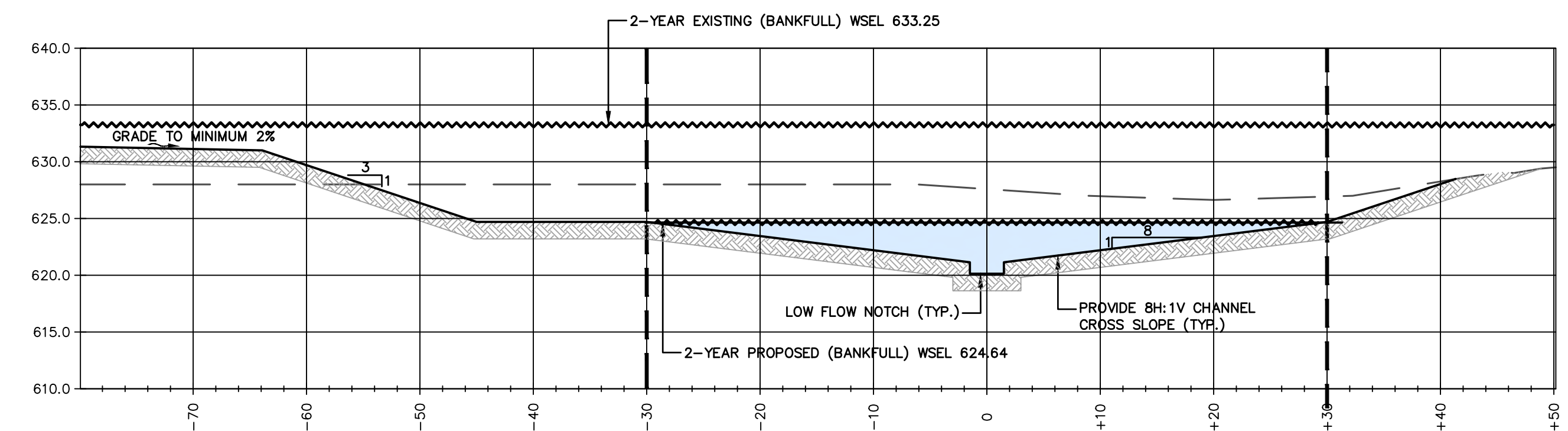
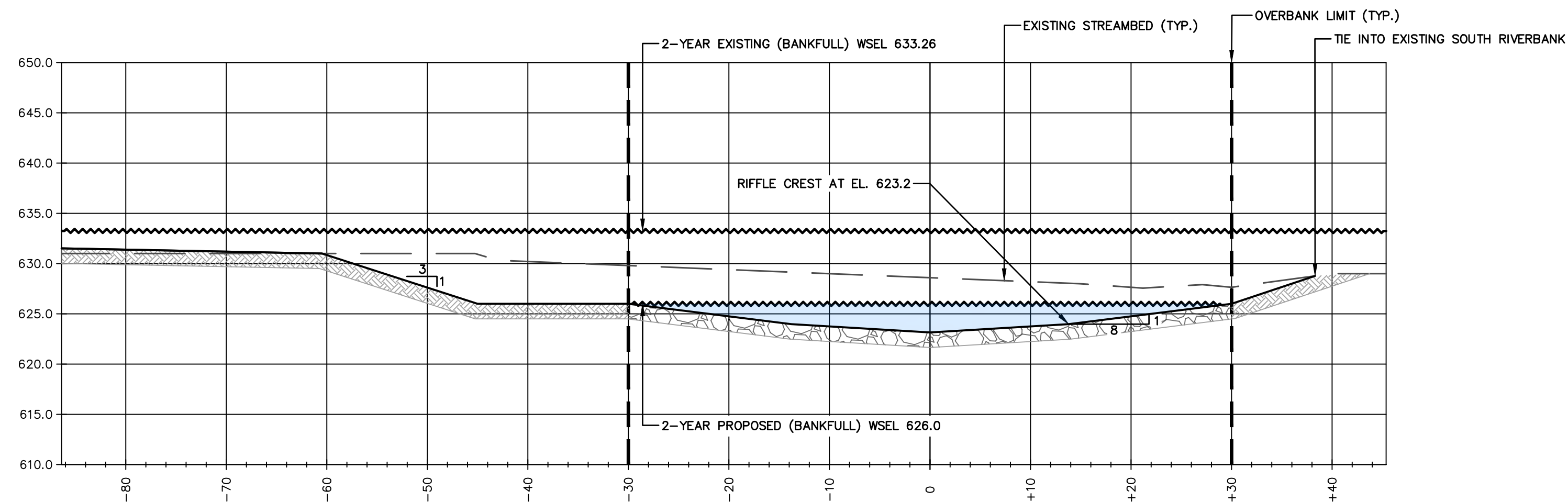
CHANNEL PROFILE AND DETAILS

MCTAGGART'S POND DAM REMOVAL AND
PHILLIPS BROOK RESTORATION PROJECT

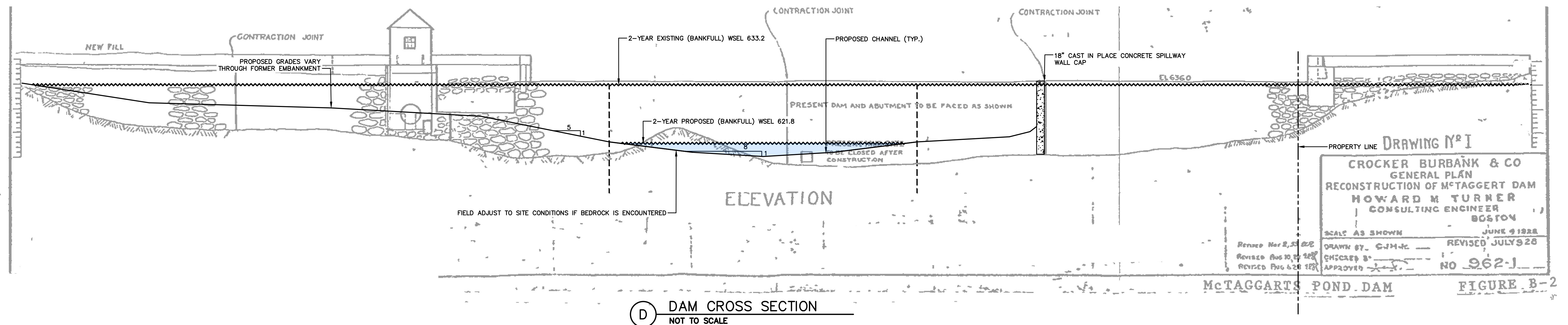
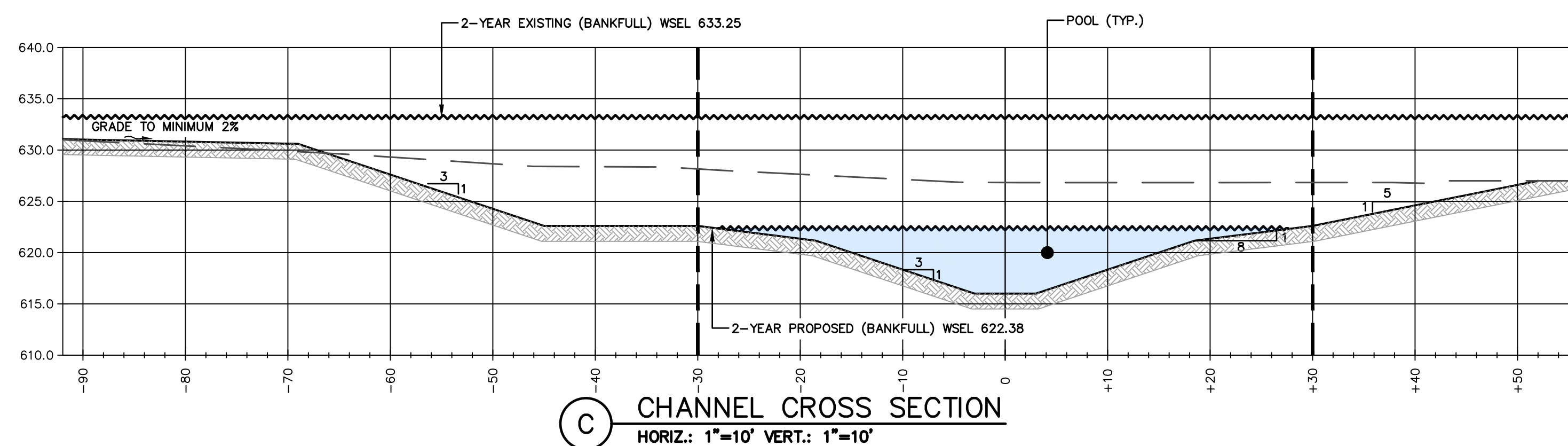
FITCHBURG MASSACHUSETTS

ROJ. No.: 20200263.D20
DATE: DECEMBER 2024

CX-101



- NOTES;
1. CROSS SECTION D WAS INTERPOLATED BASED OFF THE PROPOSED CHANNEL CONDITIONS AT THE DAM. HISTORICAL DRAWINGS ARE NOT TO SCALE. THIS CROSS SECTION SHOULD BE USED AS A REFERENCE ONLY. THE CONTRACTOR SHALL FIELD VERIFY SITE CONDITIONS.
 2. THE ELEVATIONS PROVIDED IN THE HISTORICAL DRAWINGS BELOW REFERENCE AN UNKNOWN DATUM.



No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

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PROPOSED CROSS SECTIONS

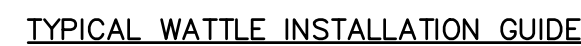
MCTAGGART'S POND DAM REMOVAL AND
PHILLIPS BROOK RESTORATION PROJECT

FITCHBURG

MASSACHUSETTS

PROJ. No.: 20200263.D20
DATE: DECEMBER 2024

CX-102

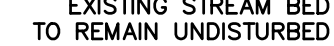


NOTES:

1. WATTLES SHALL BE INSTALLED AT LOCATIONS AS INDICATED ON THE DRAWINGS.
2. WATTLES SHALL BE TRENCHED APPROXIMATE 2-3 INCHES AND STAKED SUCH THAT WATTLES DIRECTLY CONTACT SOIL AND PRECLUDE UNDERMINING OR BLOWOUTS. THE TRENCH SHALL BE APPROXIMATELY 9 INCHES WIDE. STAKES SHALL BE DRIVEN THROUGH THE CENTER OF THE WATTLE AT A SPACING OF 3-4 FEET ON CENTER AND NO GREATER THAN 6" FROM THE EACH END OF THE WATTLE. STAKES SHALL BE 1-INCH BY 1-INCH WOODEN STAKES WITH A LENGTH OF 18-24 INCHES. COMPACT SOIL EXCAVATED TO CREATE TRENCH ON UPHILL SIDE.
3. ENDS OF ADJACENT WATTLES SHALL BE TIGHTLY BUTTED OR OVERLAPPED SO THAT NO OPENING EXISTS FOR WATER TO PASS THROUGH. WATTLES SHALL BE FREE OF DAMAGE OR DEFECTS WHEN DELIVERED TO THE SHIPPER. NO VEHICLES SHALL BE DRIVEN OVER WATTLES.
4. WATTLES SHALL BE 12-INCH WS120 MANUFACTURED BY NORTH AMERICAN GREEN, OR APPROVED EQUAL.

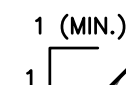
STRAW WATTLES

NOT TO SCALE



SANDBAG COFFERDAM

NOT TO SCALE



TEMPORARY STONE CHECKDAM

NOT TO SCALE



SECTION

TEMPORARY EROSION CONTROL MAT

NOT TO SCALE



PUMP SETTLING BASIN WITH DEWATERING BAG

NOT TO SCALE

- NOTES:

1. THE DEWATERING BAG, DIRTBAG DB 55 OR APPROVED EQUAL, SHALL BE HEAVY DUTY AND CONSIST OF A NONWOVEN BAG SEWN WITH A DOUBLE NEEDLE MATCHING USING A HIGH STRENGTH THREAD.
2. EACH DEWATERING BAG SHALL HAVE A FILL SPOUT LARGE ENOUGH TO ACCOMMODATE A 4-INCH DISCHARGE HOSE. THE BAG SHALL BE PROVIDED WITH STRAPS TO SECURE THE HOSE AND PREVENT PUMPED WATER FROM ESCAPING WITHOUT BEING FILTERED.
3. MAINTAIN DEWATERING BAG(S) AS NECESSARY TO EFFICIENTLY FILTER SEDIMENT OR PASS WATER AT A REASONABLE RATE. USE OF EXCESSIVE FLOW RATES OR OVERFILLING DIRTBAG OF THE HOSE ATTACHMENT STRAPS WITH SEDIMENT WILL CAUSE RUPTURES OF THE BAGS OR FAILURE.
4. DISPOSE OF DEWATERING BAG AND CONTENTS AT OFF-SITE DISPOSAL FACILITY IN ACCORDANCE WITH LOCAL, STATE, AND/OR FEDERAL REGULATIONS.
5. INSTALL DEWATERING BAG AND CRUSHED STONE BEDDING WITH A SLOPE SO INCOMING WATER FLOWS DOWNHILL THROUGH THE BAG WITHOUT CAUSING MORE EROSION. STRAP THE NECK OF DEWATERING BAG TIGHTLY TO THE DISCHARGE HOSE.
6. GEOTEXTILE FILTER FABRIC SHALL CONSIST OF A NONWOVEN GEOTEXTILE FABRIC CONFORMING TO TYPE III FABRIC IN ACCORDANCE WITH TABLE XI, SECTION M.9.50.0 OF THE MASSDOT STANDARD SPECIFICATIONS.
7. THE IMPERMEABLE LINER SHALL CONSIST OF A 30-MIL THICK PVC LINER.

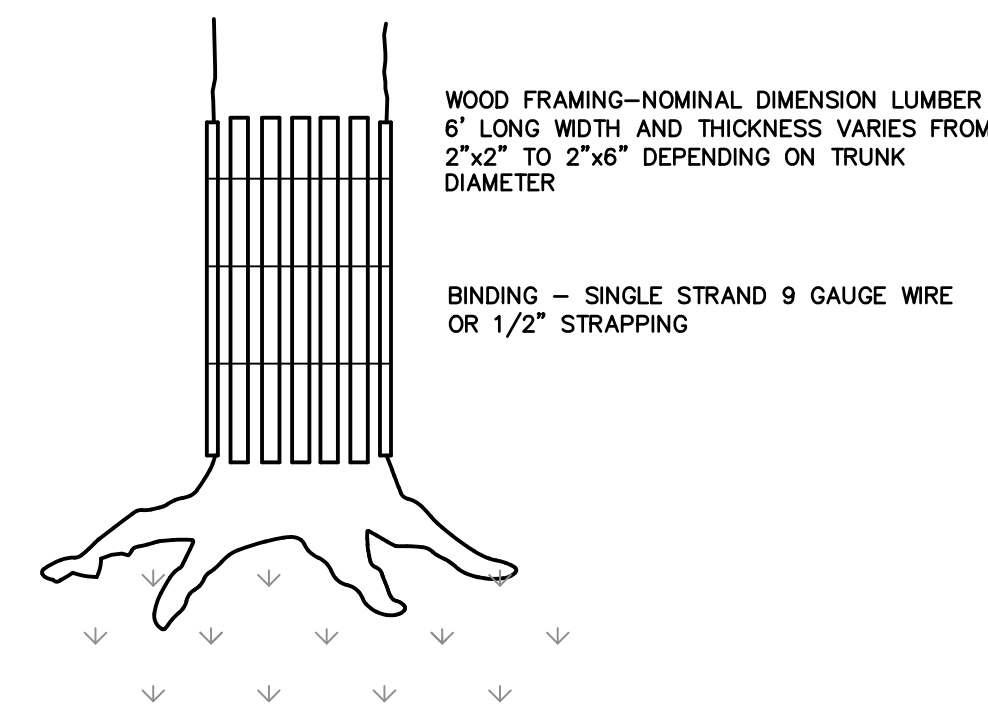


NOTES:

1. MAINTAIN CONSTRUCTION ENTRANCE IN GOOD CONDITION THROUGHOUT CONSTRUCTION PERIOD.
2. ANY PAVED AREAS, ADJACENT TO THE CONSTRUCTION ENTRANCE SHALL BE SWEEPED DAILY TO REMOVE ANY MATERIAL THAT MAY BE TRACKED ONTO PAVEMENT.
3. REMOVE STONE, FABRIC, AND TRACKED MATERIALS FOLLOWING CONSTRUCTION ACTIVITIES AND RESTORE AREA TO ORIGINAL CONDITION.
4. CRUSHED STONE SHALL CONFORM TO THE GRADATION LISTED FOR M2.01.0 OF THE MASSDOT STANDARD SPECIFICATIONS.

TEMPORARY CONSTRUCTION ENTRANCE

NOT TO SCALE



TREE PROTECTION DEVICE

NOT TO SCALE

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

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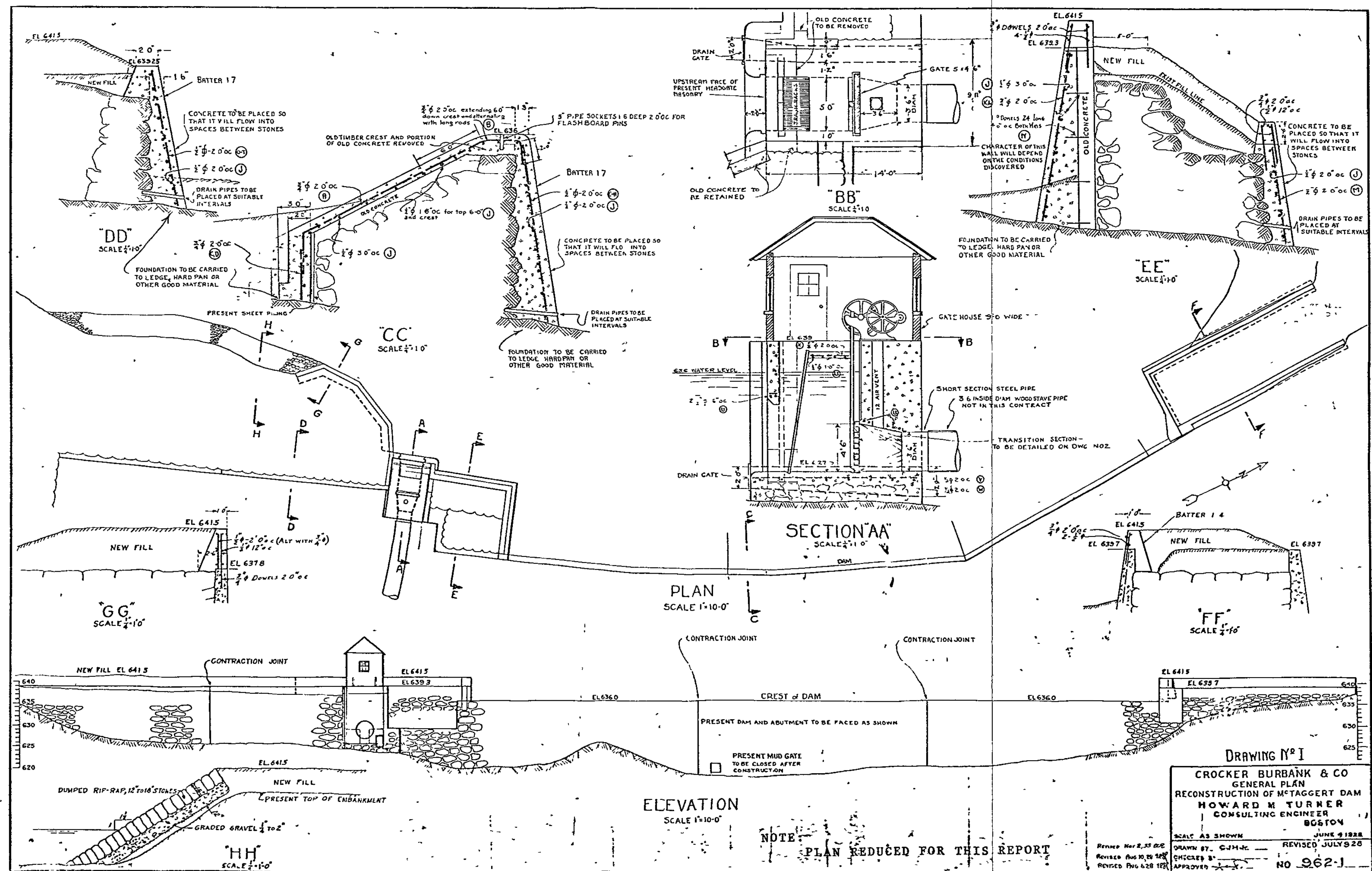
CIVIL SITE DETAILS

MCTAGGART'S POND DAM REMOVAL AND
PHILLIPS BROOK RESTORATION PROJECT

FITCHBURG MASSACHUSETTS

PROJ. No.: 20200263.D20
DATE: DECEMBER 2024

CD-501



McTAGGARTS POND DAM

FIGURE B-2

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

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NOT FOR CONSTRUCTION

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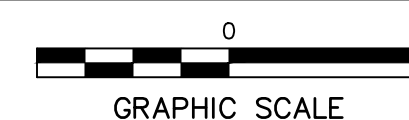
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CITY OF FITCHBURG

HISTORIC RECORD DRAWINGS

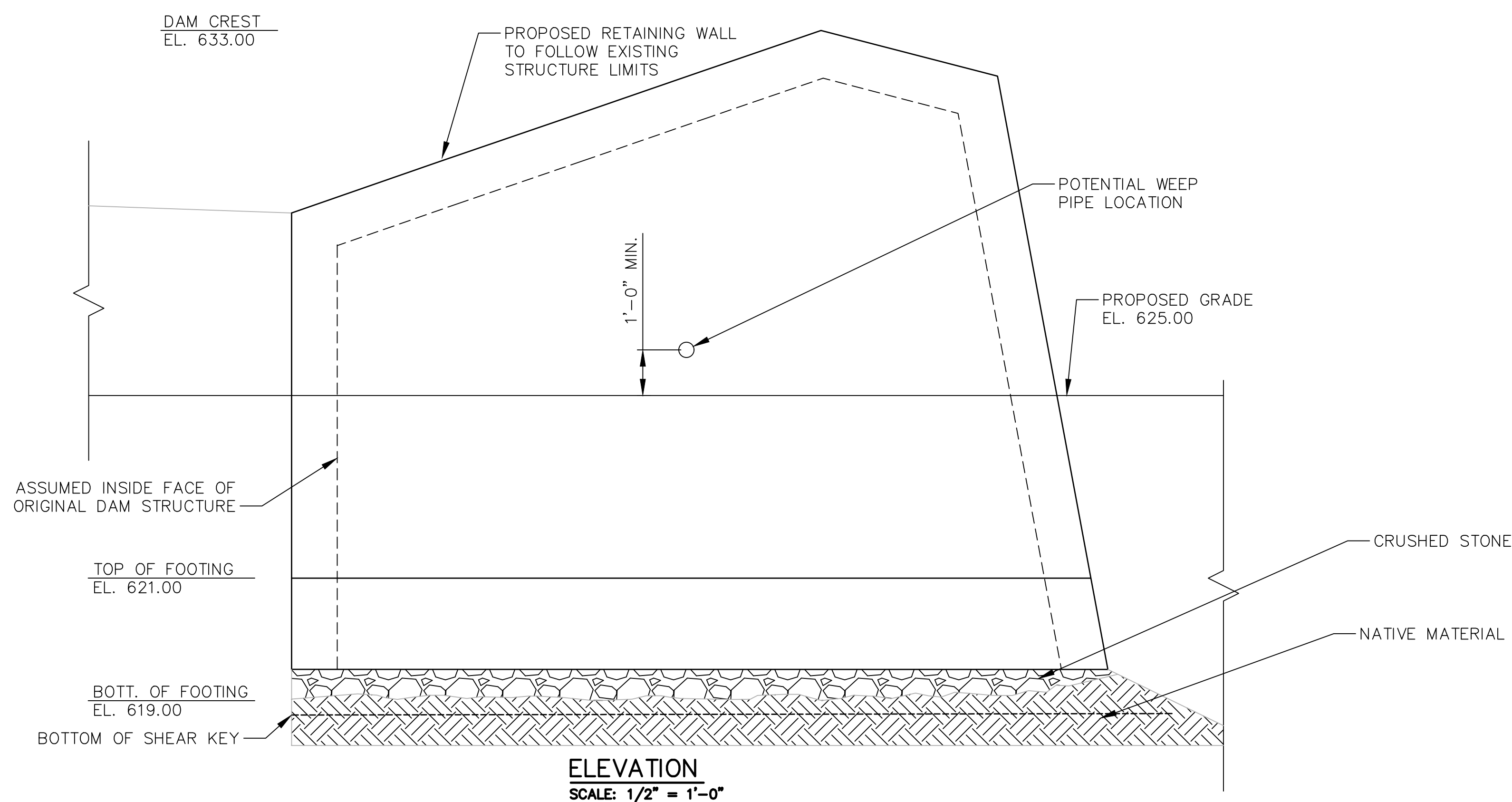
MCTAGGART'S POND DAM REMOVAL AND
PHILLIPS BROOK RESTORATION PROJECT

FITCHBURG

MASSACHUSETTS

PROJ. No.: 20200263.D20
DATE: DECEMBER 2024

VR-101



GENERAL NOTES:

UNSUITABLE MATERIAL:

ALL UNSUITABLE MATERIAL SHALL BE REMOVED WITHIN THE LIMITS OF THE FOUNDATIONS OF THE STRUCTURE, AS DIRECTED BY THE DESIGN ENGINEER OF RECORD.

EXISTING CONSTRUCTION:

DIMENSIONS SHOWN ARE TAKEN FROM SURVEY AND VARIOUS FIELD MEASUREMENTS AND ARE NOT GUARANTEED. THE CONTRACTOR SHALL DETERMINE AND ESTABLISH ALL DIMENSIONS AND DETAILS NECESSARY FOR COMPLETION OF ALL WORK BY FIELD MEASUREMENT AND SURVEY. THE CONTRACTOR SHALL BE RESPONSIBLE AND NOT ORDER ANY MATERIAL OF COMMENCE ANY FABRICATION UNTIL HE HAS MADE THE REQUIRED MEASUREMENTS ON THE ACTUAL STRUCTURE AND THE EXTENT OF THE PROPOSED WORK HAS BEEN APPROVED BY THE ENGINEER.

CONCRETE MIXES:

THE FOLLOWING CONCRETE MIX UNLESS NOTED ELSEWHERE ARE TO BE USED:
4000 PSI, 1 1/2IN, 565 CEMENT

CONCRETE NOTES:

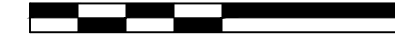
1. ALL CONCRETE WORK SHALL CONFORM TO ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS".
2. ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60 AND BE DETAILED IN ACCORDANCE WITH ACI 315 "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES".
3. REBARS SHALL HAVE A MINIMUM CONCRETE COVER AS FOLLOWS:
CONCRETE DEPOSITED AGAINST GROUND.....3 IN.
CONCRETE EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:
FOR BARS #5 AND LARGER.....2 IN.
FOR BARS SMALLER THAN #5.....1½ IN.
CONCRETE NOT EXPOSED TO THE WEATHER OR THE GROUND:
SLABS AND WALLS.....¾ IN.
4. ALL REINFORCING BARS SHALL BE CONTINUOUS AND LAPPED A MINIMUM OF 48 BAR DIAMETERS AT ALL SPLICES, CORNERS, AND INTERSECTIONS UNLESS NOTED OTHERWISE.
5. ALL REINFORCEMENT SHALL BE SECURELY TIED IN ITS PROPOSED LOCATION PRIOR TO AND DURING PLACEMENT OF CONCRETE USING APPROVED CHAIRS, SPACERS AND TIE WIRE AS REQUIRED. NO BARS SHALL BE CUT OR OMITTED IN THE FIELD WITHOUT THE APPROVAL OF THE ENGINEER.
6. CONCRETE PROTECTION FOR REINFORCEMENT SHALL IN ALL CASES BE AT LEAST EQUAL TO THE DIAMETER OF THE BAR EXCEPT FOR CONCRETE SLABS.
7. ALL FOUNDATION CONCRETE SHALL BE NORMAL WEIGHT CONCRETE AND SHALL DEVELOP A COMPRESSIVE STRENGTH OF 4,000 PSI IN 28 DAYS. CONCRETE SHALL HAVE A MAXIMUM AGGREGATE SIZE OF 1½ INCH, A MINIMUM CEMENT CONTENT OF 565 LBS/CU YD., AND A MAXIMUM SLUMP OF 4 INCHES.
8. ALL FOOTINGS AND PIERS SHALL BE CENTERED BELOW THE MEMBERS WHICH THEY SUPPORT UNLESS SHOWN OTHERWISE.
9. ALL EXPOSED EDGES OF CONCRETE SHALL HAVE A ¾ INCH CHAMFER UNLESS NOTED OTHERWISE.
10. ALL CONCRETE EXPOSED TO THE WEATHER SHALL BE AIR-ENTRAINED.
11. SIZES AND LOCATIONS OF ALL REQUIRED EMBEDDED ITEMS FOR ALL TRADES SUCH AS ANCHOR BOLTS, PIPING SLEEVES, HOLDOWN ANCHORS, ETC., SHALL BE COORDINATED BY THE CONTRACTOR WITH OTHER TRADES.
12. CONSTRUCTION JOINTS SHALL BE DETAILED AND LOCATED ON SHOP DRAWINGS AND APPROVED BY THE ENGINEER. UNLESS SHOWN OTHERWISE, CONSTRUCTION JOINTS ARE TO BE KEYPED AND PROVIDE FOR CONTINUITY OF REINFORCING STEEL. CONSTRUCTION JOINTS ARE TO BE LOCATED WHERE CONSTRUCTION OPERATIONS ARE SUSPENDED FOR 30 MINUTES OR MORE.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LIMITING POURS TO MINIMIZE SHRINKAGE CRACKING. IN GENERAL, WALLS SHALL NOT BE POURED IN CONTINUOUS LENGTHS EXCEEDING 30 FEET WITHOUT CONTRACTION (CONTROL) JOINTS. THE LOCATION AND CONFIGURATION OF JOINTS EXPOSED TO VIEW SHALL BE COORDINATED WITH THE ARCHITECT. CONTRACTION JOINTS IN SLAB-ON-GRADE SHOULD NOT EXCEED 20 FEET IN ANY DIRECTION. TYPICAL CONTRACTION JOINT PATTERNS ARE INDICATED ON FOUNDATION PLANS.
14. IF SHALLOW FOUNDATION WALLS, EXTENDED PLATFORMS, ETC. ARE POURED SEPARATELY FROM THE MAIN FOUNDATION WALLS, PROVIDE 2½ INCH DEEP KEY (FULL AREA) AND DOWEL ALL REINFORCEMENT.
15. THE LIFTING MECHANISM SHALL BE SUPPORTED BY SALVAGED TIMBERS FROM THE GATEHOUSE.

No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

SEAL

SEAL

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SCALE:	HORZ.: AS SHOWN
	VERT.: AS SHOWN
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GRAPHIC SCALE	

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GENERAL PLAN AND ELEVATION

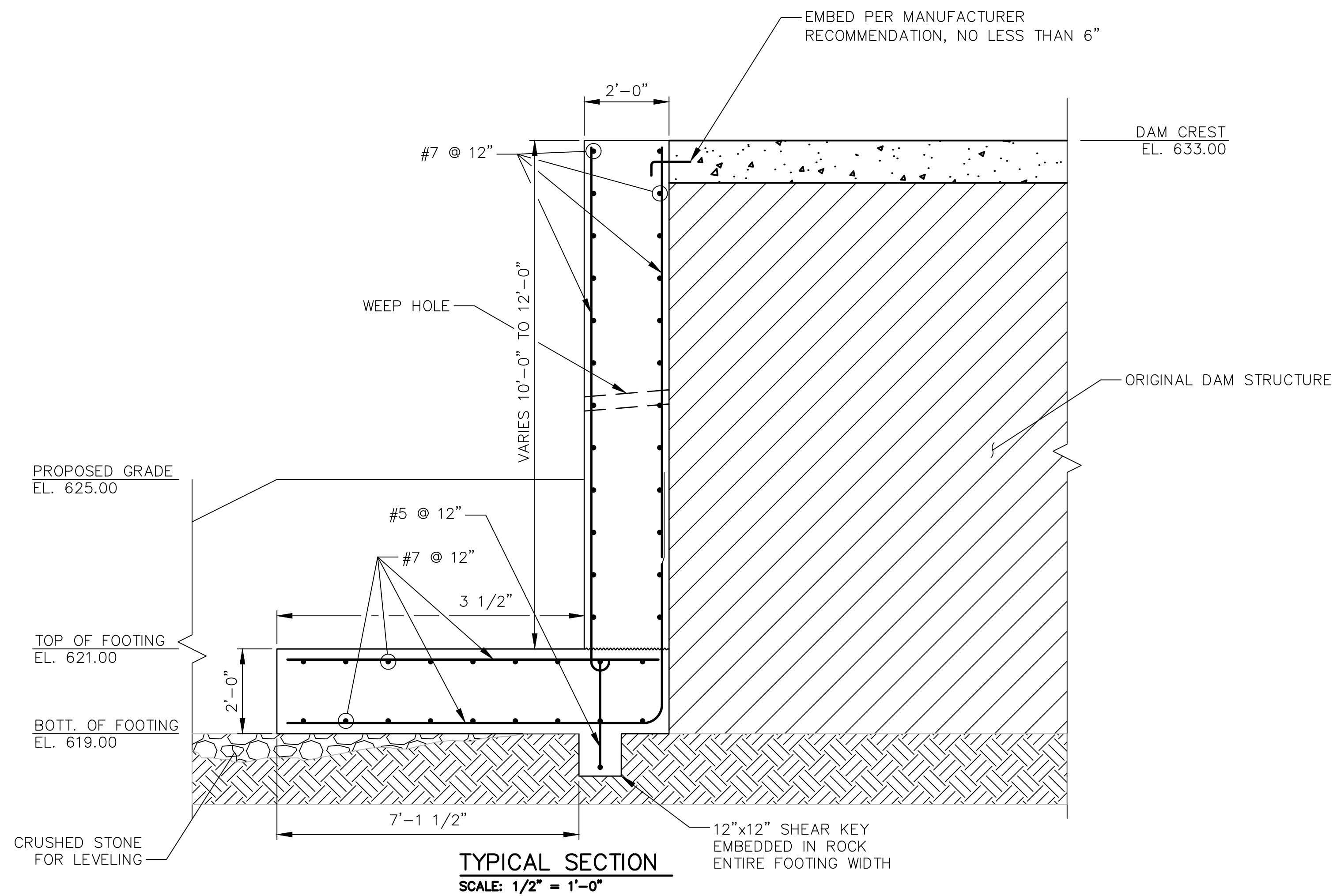
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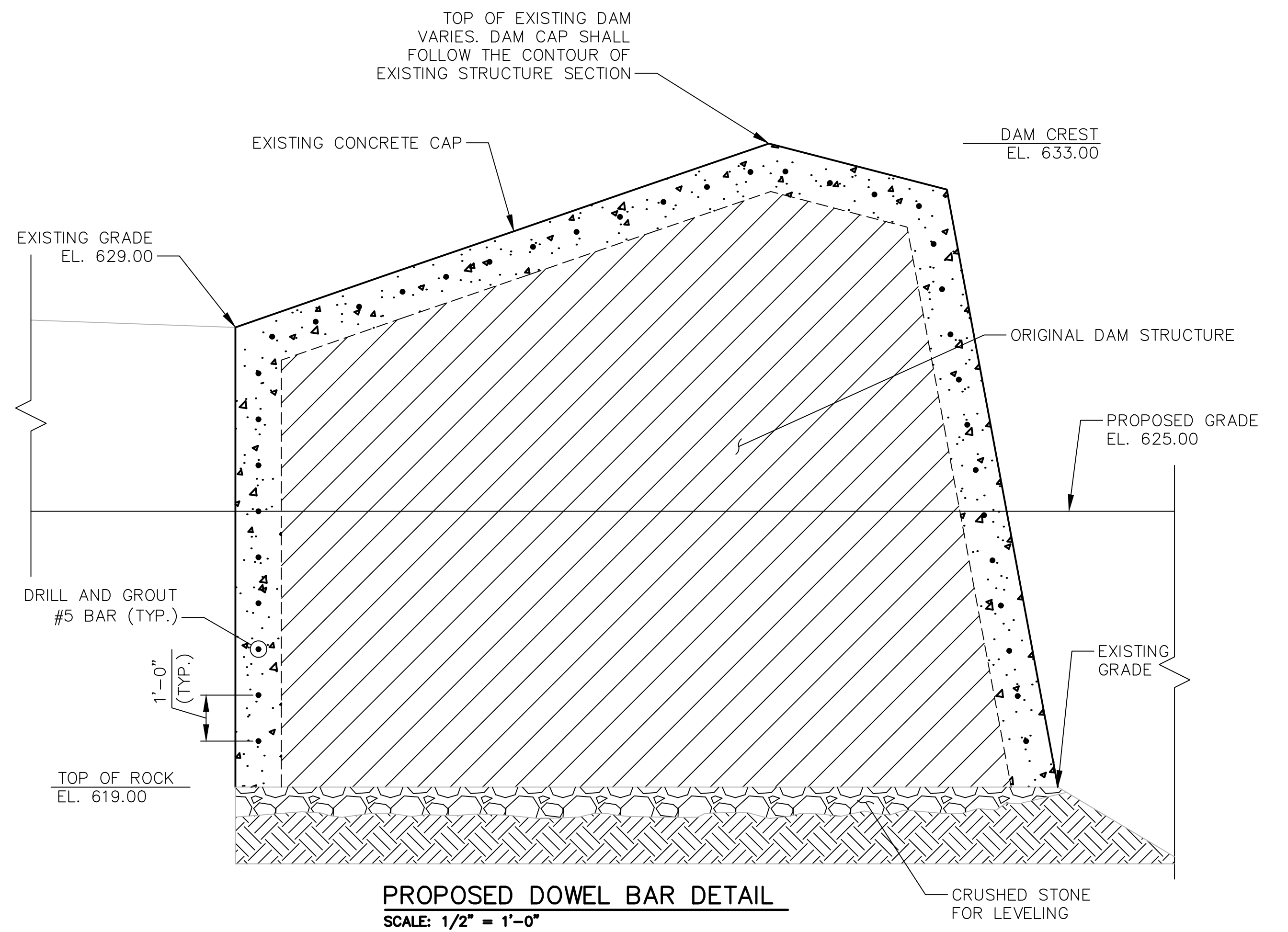
STR-01

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PC3: AUTOCAD PDF (GENERAL DOCUMENTATION) PC3_STB/CTB: FOSTB
MS VIEW: LAYER STATE:



NOTES:

1. RETAINING WALL SHALL BEAR ON ROCK. CRUSHED STONE TO BE USED FOR LEVELING IRREGULARITIES WHERE REQUIRED.
2. WALL DESIGNED FOR MAX. OF 12'-0" STEM FROM TOP OF FOOTING. CONTRACTOR SHALL CONTACT ENGINEER IF FIELD CONDITIONS WARRANT HEIGHTS GREATER THAN 12'-0".



No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

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GRAPHIC SCALE	

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CITY OF FITCHBURG

PROPOSED DAM END CAP DETAILS

MCTAGGART'S POND DAM REMOVAL AND
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FITCHBURG MASSACHUSETTS

PROJ. No.: 20200263.D20
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STR-02

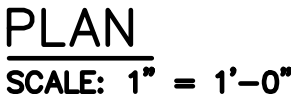
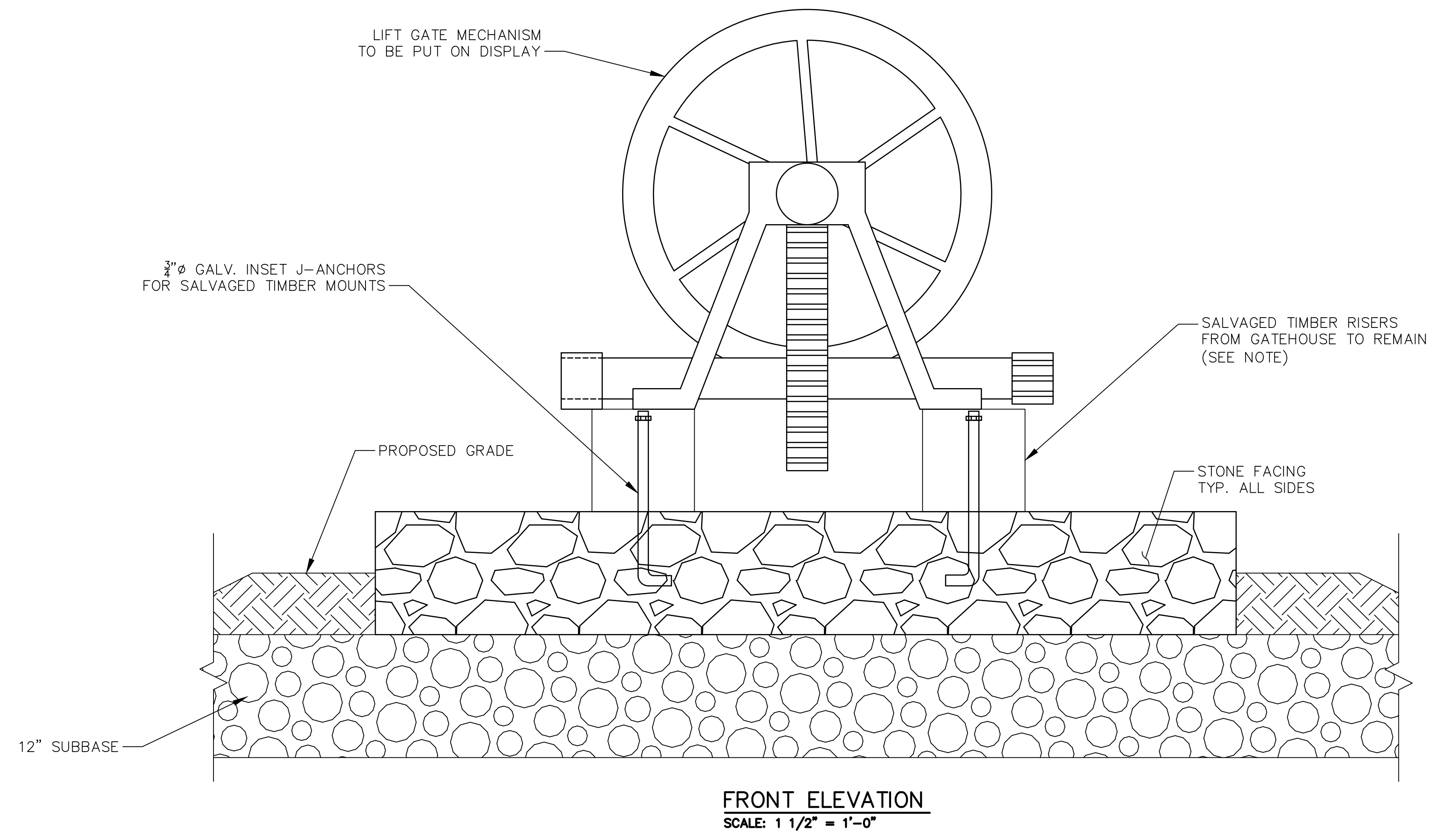


Diagram illustrating the construction of a wall with stone veneer. The wall structure includes a concrete block core, a thinset mortar layer, expanded metal lath attached with Tapcon screws, and a dry-stack stone veneer layer.

- DRY-STACK STONE VENEER
- EXPANDED METAL LATH ATTACHED WITH TAPCON SCREWS
- THINSET MORTAR

STONE FACING DETAIL
N.T.S.



No.	DATE	DESCRIPTION	DESIGNER	REVIEWER

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SEAL

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PROPOSED LIFT GATE MECHANISM SLAB

MCTAGGART'S POND DAM REMOVAL AND
PHILLIPS BROOK RESTORATION PROJECT

FITCHBURG

MASSACHUSETTS

PROJ. No.: 20200263.D20
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STR-03