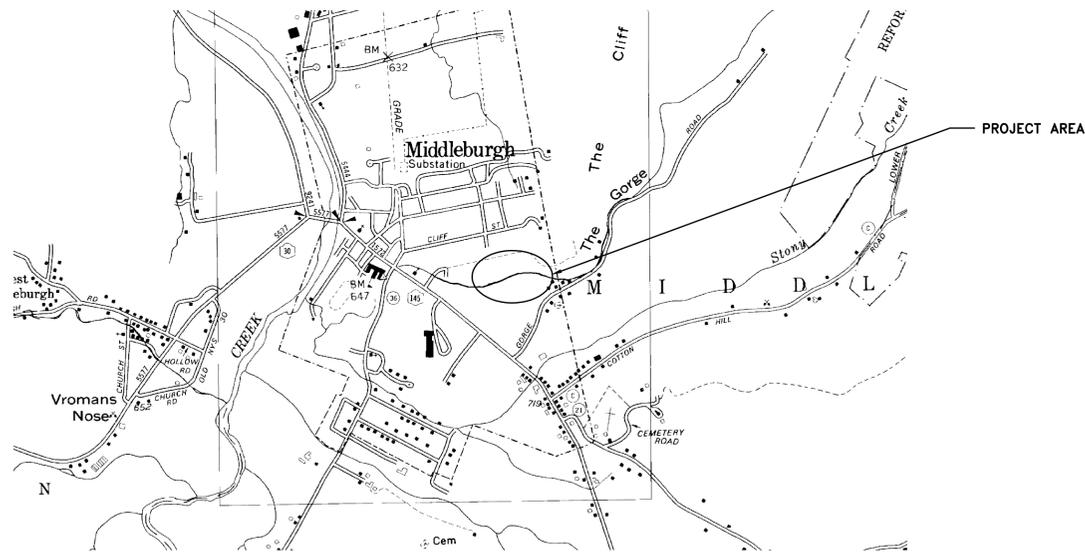


NY RISING - GORGE CREEK PROJECT

VILLAGE OF MIDDLEBURGH
SCHOHARIE COUNTY, NEW YORK

GORGE CREEK CULVERT REPAIR AND STORMWATER IMPROVEMENTS
UPPER GORGE CREEK

MAY 2016
90% DESIGN DRAWINGS



PROJECT LOCATION MAP

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DELAWARE ENGINEERING, P.C.
28 MADISON AVENUE EXTENSION
ALBANY, NEW YORK 12203
PHONE 518-452-1290
FAX 518-452-1335

DATE: 3/2016
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SCALE: AS SHOWN
REVIEWED BY: XXX
PROJECT NO.: XX-XXX
FILE:

DELAWARE ENGINEERING, P.C.
CIVIL AND ENVIRONMENTAL ENGINEERING
28 MADISON AVENUE EXTENSION, ALBANY, NY 12203 - 518.452.1290
8-12 DIETZ STREET, SUITE 303, ONEONTA, NY 13820 - 607.432.8073

REVISIONS	
NO.	DESCRIPTION

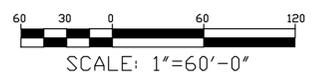
GORGE CREEK CULVERT
REPAIR AND STORM WATER
IMPROVEMENTS
VILLAGE OF MIDDLEBURGH
SCHOHARIE COUNTY, NY

UPPER GORGE CREEK
COVER

SHEET:
COVER

90% DESIGN DRAWINGS

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90% DESIGN DRAWINGS

GORGE CREEK CULVERT
REPAIR AND STORM WATER
IMPROVEMENTS
VILLAGE OF MIDDLEBURGH
SCHOHARIE COUNTY, NY

UPPER GORGE CREEK
EXISTING PLAN VIEW

SHEET:
C100

NO.	DATE	DESCRIPTION

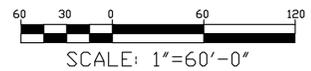
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DELAWARE ENGINEERING, D.P.C.
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*SEE PLANTING PLAN FOR VEGETATION AND LIVE STAKE INFORMATION

90% DESIGN DRAWINGS

GORGE CREEK CULVERT
 REPAIR AND STORM WATER
 IMPROVEMENTS
 VILLAGE OF MIDDLEBURGH
 SCHOHARIE COUNTY, NY

UPPER GORGE CREEK
 PROPOSED PLAN

SHEET:
C101

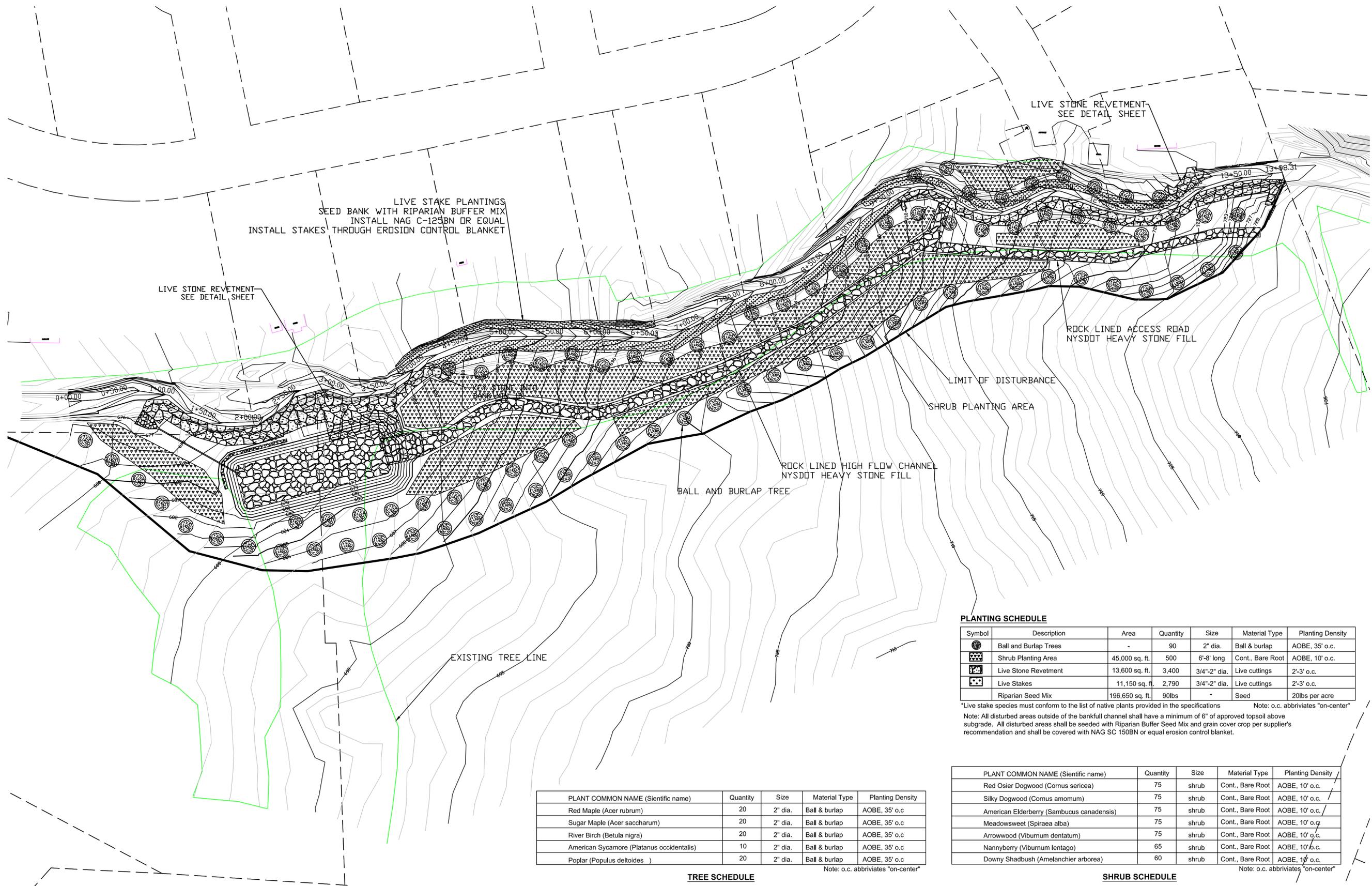
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LIVE STAKE PLANTINGS
SEED BANK WITH RIPARIAN BUFFER MIX
INSTALL NAG C-125BN OR EQUAL
INSTALL STAKES THROUGH EROSION CONTROL BLANKET

LIVE STONE REVETMENT
SEE DETAIL SHEET

LIVE STONE REVETMENT
SEE DETAIL SHEET

ROCK LINED ACCESS ROAD
NYSDDT HEAVY STONE FILL

LIMIT OF DISTURBANCE
SHRUB PLANTING AREA

ROCK LINED HIGH FLOW CHANNEL
NYSDDT HEAVY STONE FILL
BALL AND BURLAP TREE

EXISTING TREE LINE

PLANTING SCHEDULE

Symbol	Description	Area	Quantity	Size	Material Type	Planting Density
	Ball and Burlap Trees	-	90	2" dia.	Ball & burlap	AOBE, 35' o.c.
	Shrub Planting Area	45,000 sq. ft.	500	6'-8' long	Cont., Bare Root	AOBE, 10' o.c.
	Live Stone Revetment	13,600 sq. ft.	3,400	3/4"-2" dia.	Live cuttings	2'-3' o.c.
	Live Stakes	11,150 sq. ft.	2,790	3/4"-2" dia.	Live cuttings	2'-3' o.c.
	Riparian Seed Mix	196,650 sq. ft.	90lbs	-	Seed	20lbs per acre

*Live stake species must conform to the list of native plants provided in the specifications. Note: o.c. abbreviates "on-center"
Note: All disturbed areas outside of the bankfull channel shall have a minimum of 6" of approved topsoil above subgrade. All disturbed areas shall be seeded with Riparian Buffer Seed Mix and grain cover crop per supplier's recommendation and shall be covered with NAG SC 150BN or equal erosion control blanket.

PLANT COMMON NAME (Scientific name)	Quantity	Size	Material Type	Planting Density
Red Maple (<i>Acer rubrum</i>)	20	2" dia.	Ball & burlap	AOBE, 35' o.c.
Sugar Maple (<i>Acer saccharum</i>)	20	2" dia.	Ball & burlap	AOBE, 35' o.c.
River Birch (<i>Betula nigra</i>)	20	2" dia.	Ball & burlap	AOBE, 35' o.c.
American Sycamore (<i>Platanus occidentalis</i>)	10	2" dia.	Ball & burlap	AOBE, 35' o.c.
Poplar (<i>Populus deltoides</i>)	20	2" dia.	Ball & burlap	AOBE, 35' o.c.

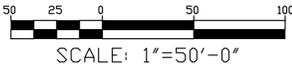
TREE SCHEDULE

Note: o.c. abbreviates "on-center"

PLANT COMMON NAME (Scientific name)	Quantity	Size	Material Type	Planting Density
Red Osier Dogwood (<i>Cornus sericea</i>)	75	shrub	Cont., Bare Root	AOBE, 10' o.c.
Silky Dogwood (<i>Cornus amomum</i>)	75	shrub	Cont., Bare Root	AOBE, 10' o.c.
American Elderberry (<i>Sambucus canadensis</i>)	75	shrub	Cont., Bare Root	AOBE, 10' o.c.
Meadowsweet (<i>Spiraea alba</i>)	75	shrub	Cont., Bare Root	AOBE, 10' o.c.
Arrowwood (<i>Viburnum dentatum</i>)	75	shrub	Cont., Bare Root	AOBE, 10' o.c.
Nannyberry (<i>Viburnum lentago</i>)	65	shrub	Cont., Bare Root	AOBE, 10' o.c.
Downy Shadbush (<i>Amelanchier arborea</i>)	60	shrub	Cont., Bare Root	AOBE, 10' o.c.

SHRUB SCHEDULE

Note: o.c. abbreviates "on-center"



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28 MADISON AVENUE EXTENSION, ALBANY, NY 12203 - 518.452.1290
8-12 DIETZ STREET, SUITE 303, ONEONTA, NY 13820 - 607.432.8073

REVISIONS	NO.	DATE	DESCRIPTION

GORGE CREEK CULVERT
REPAIR AND STORM WATER
IMPROVEMENTS
VILLAGE OF MIDDLEBURGH
SCHOHARIE COUNTY, NY

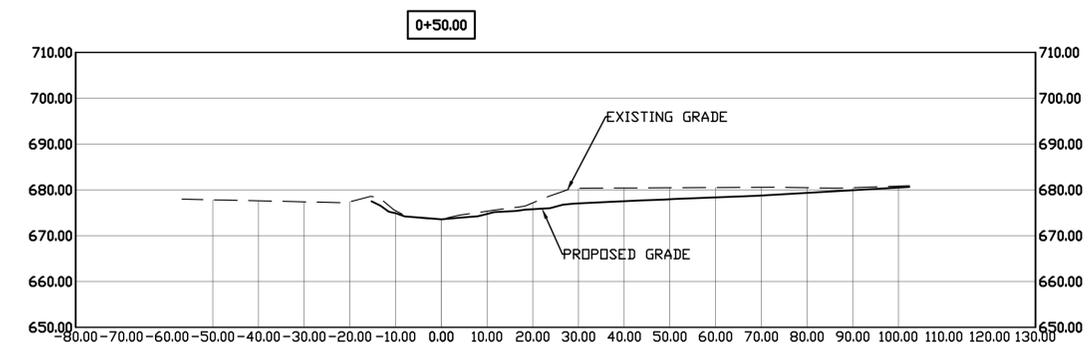
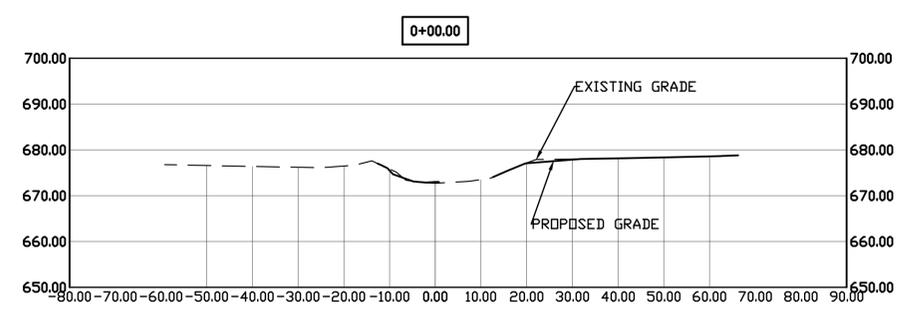
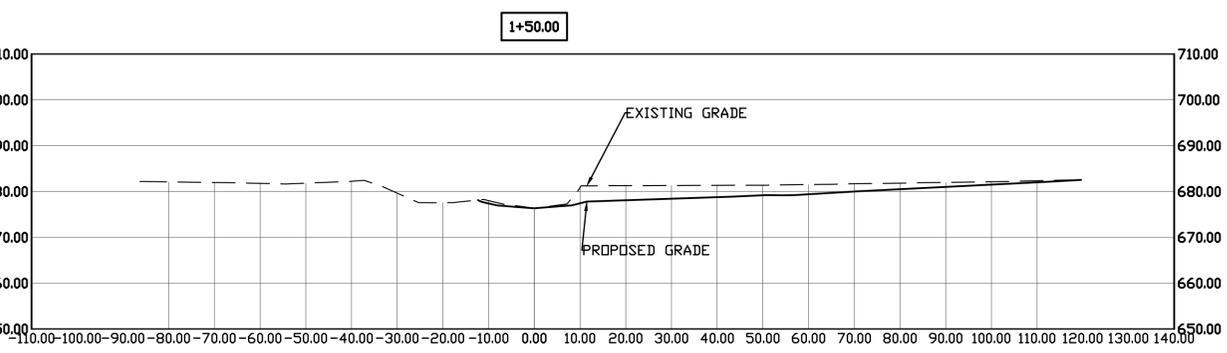
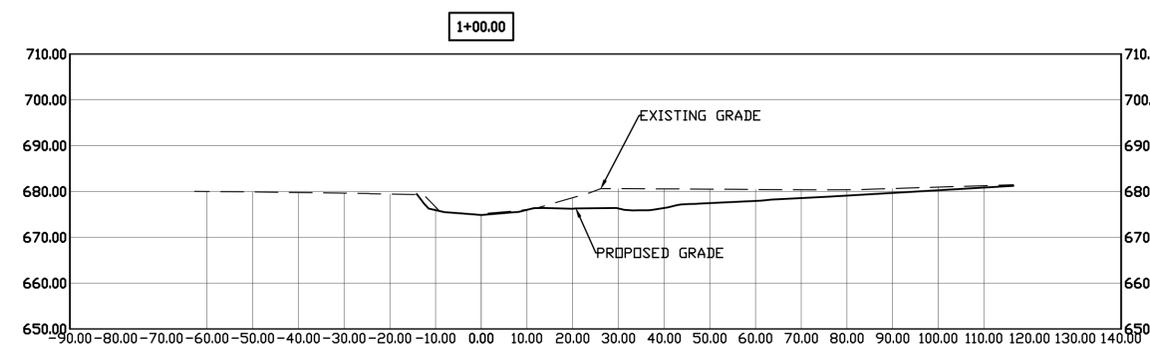
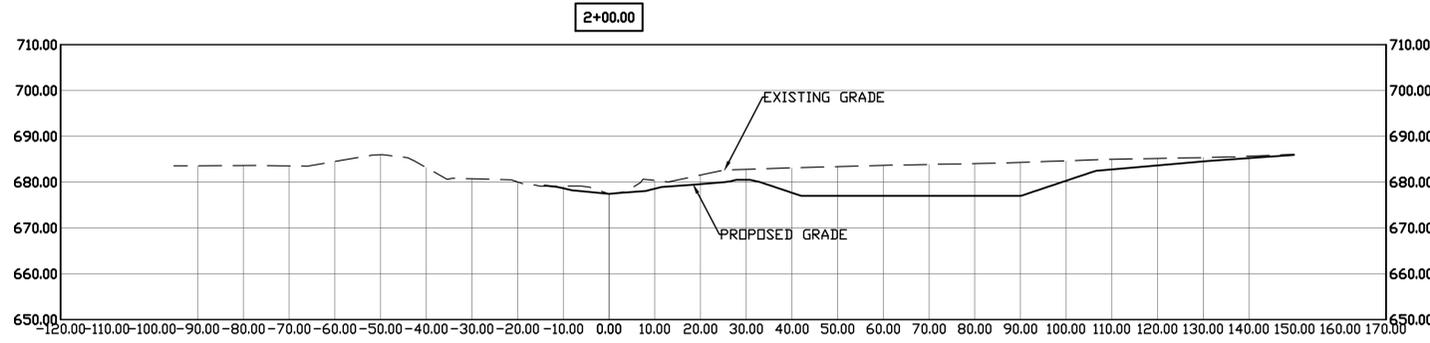
UPPER GORGE CREEK
PROPOSED PLANTING
PLAN

SHEET:
C102

90% DESIGN DRAWINGS

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STREAM CROSS SECTIONS – LOOKING UPSTREAM
 SCALE: 1"=20'

REVISIONS	
NO.	DESCRIPTION

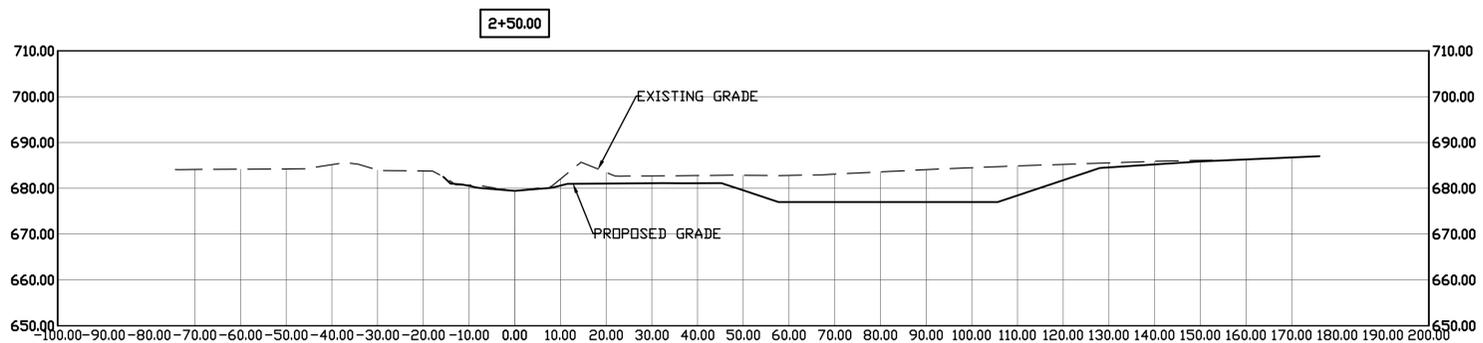
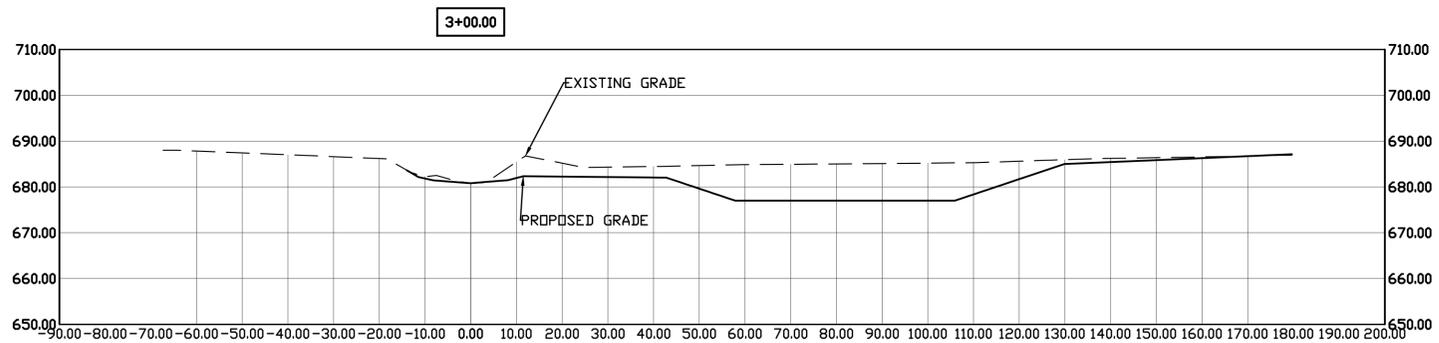
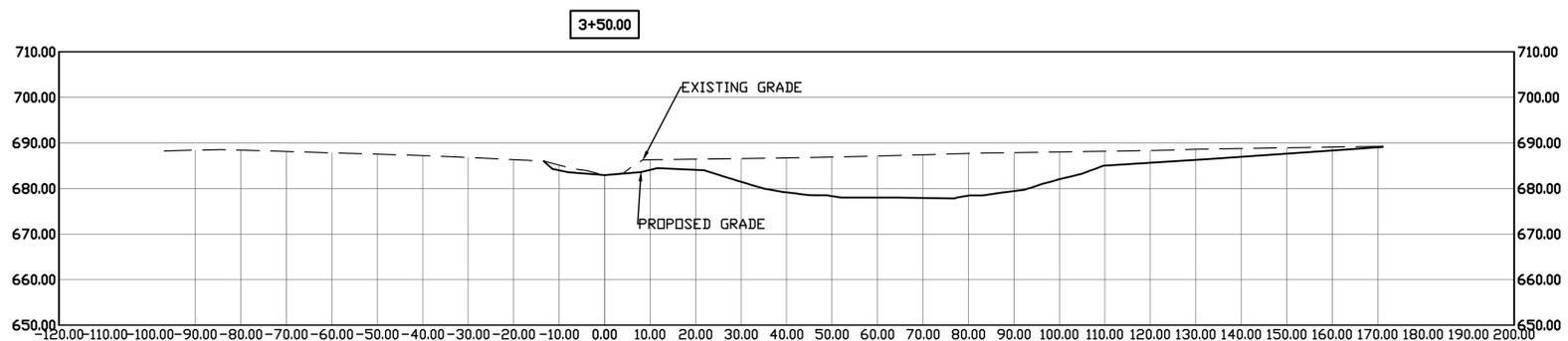
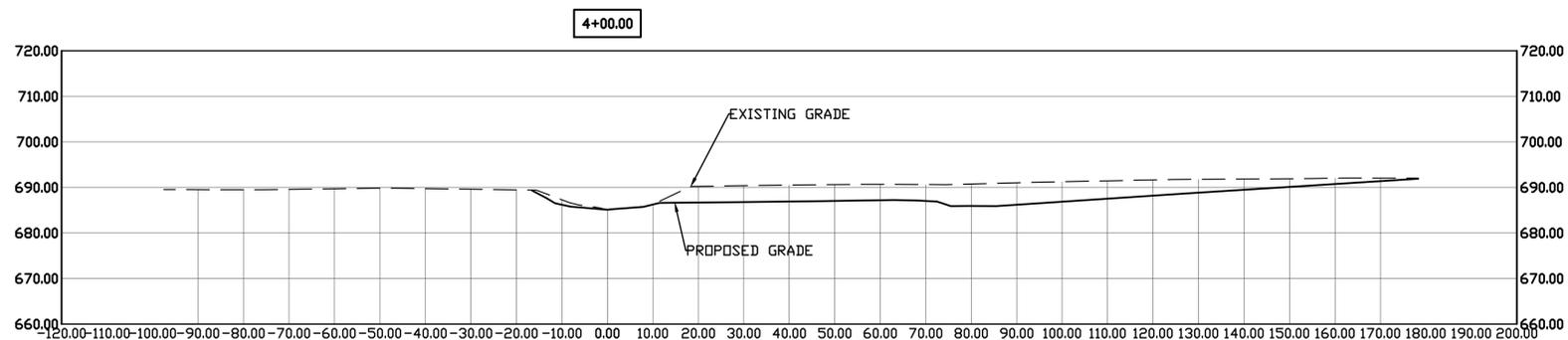
GORGE CREEK CULVERT
 REPAIR AND STORM WATER
 IMPROVEMENTS
 VILLAGE OF MIDDLEBURGH
 SCHOHARIE COUNTY, NY

UPPER GORGE CREEK
 CROSS SECTIONS
 0+00 - 2+00

SHEET:
C110

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STREAM CROSS SECTIONS – LOOKING UPSTREAM
SCALE: 1"=20'

DATE: 3/2016
DRAWN BY: JJF
SCALE: AS SHOWN
REVIEWED BY: XXX
PROJECT NO.: XX-XXX
FILE:

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CIVIL AND ENVIRONMENTAL ENGINEERING
28 MADISON AVENUE EXTENSION, ALBANY, NY 12203 - 518.452.1290
8-12 DIETZ STREET, SUITE 303, ONEONTA, NY 13820 - 607.432.8073

REVISIONS	
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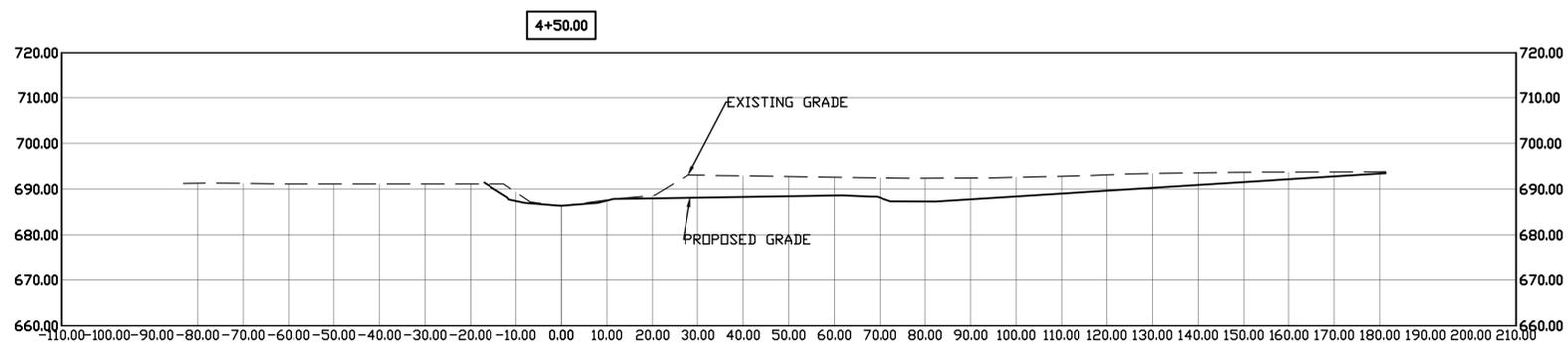
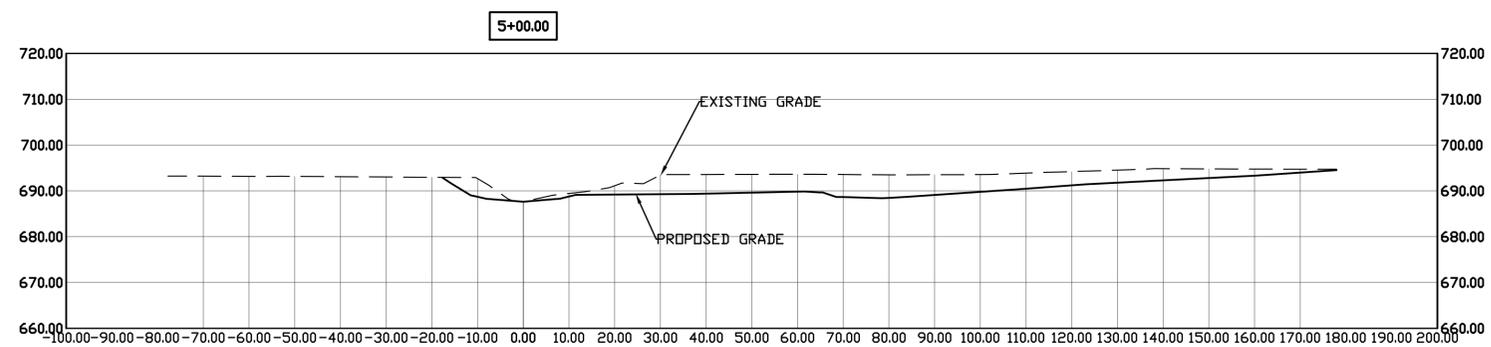
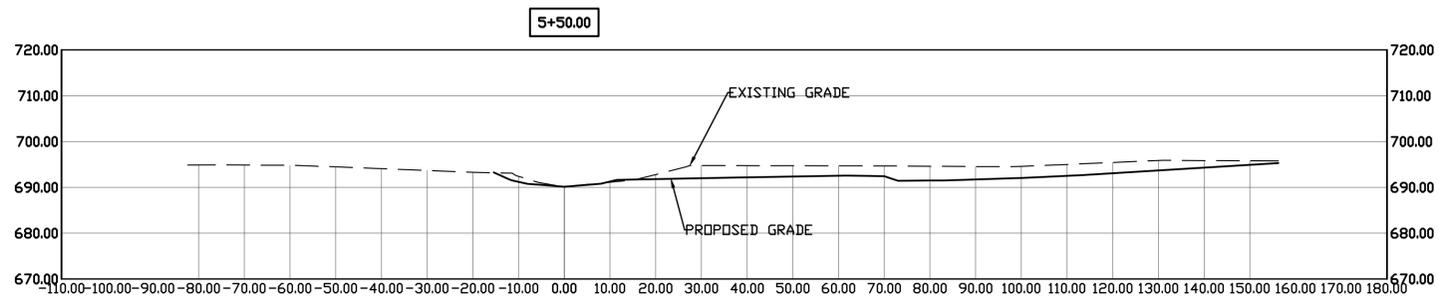
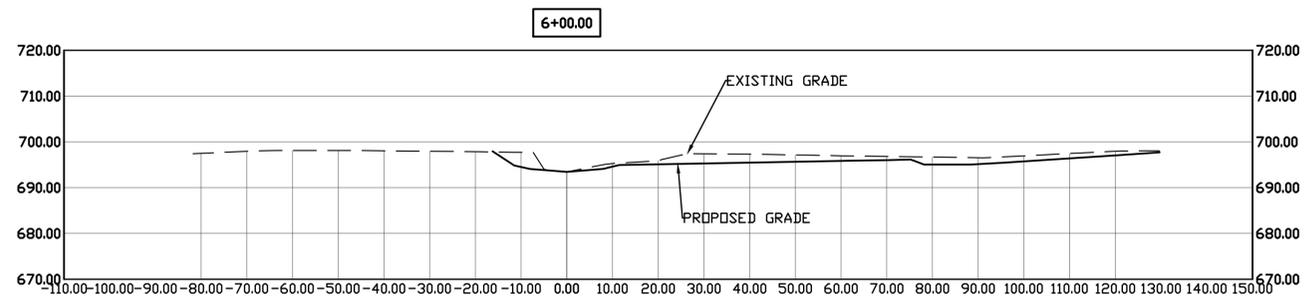
GORGE CREEK CULVERT
REPAIR AND STORM WATER
IMPROVEMENTS
VILLAGE OF MIDDLEBURGH
SCHOHARIE COUNTY, NY

UPPER GORGE CREEK
CROSS SECTIONS
2+50 - 4+00

SHEET:
C111

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STREAM CROSS SECTIONS – LOOKING UPSTREAM
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REVISIONS	
NO.	DESCRIPTION

GORGE CREEK CULVERT
REPAIR AND STORM WATER
IMPROVEMENTS
VILLAGE OF MIDDLEBURGH
SCHOHARIE COUNTY, NY

UPPER GORGE CREEK
CROSS SECTIONS
4+50 - 6+00

SHEET:
C112

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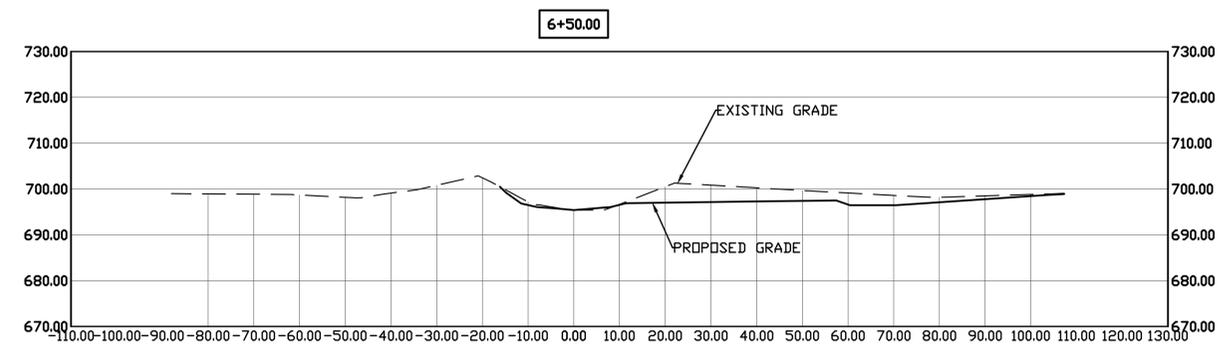
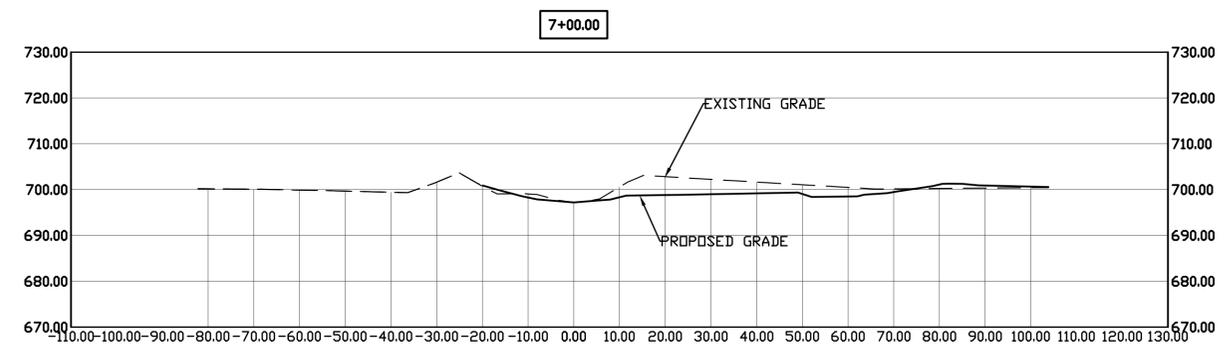
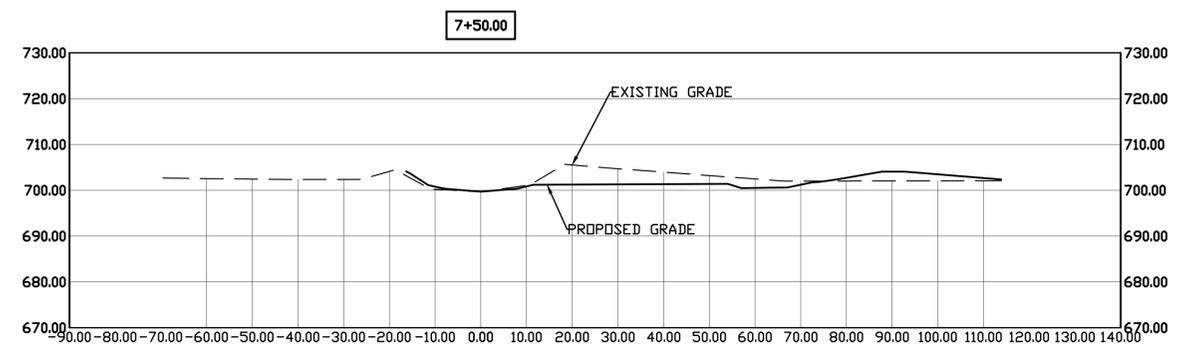
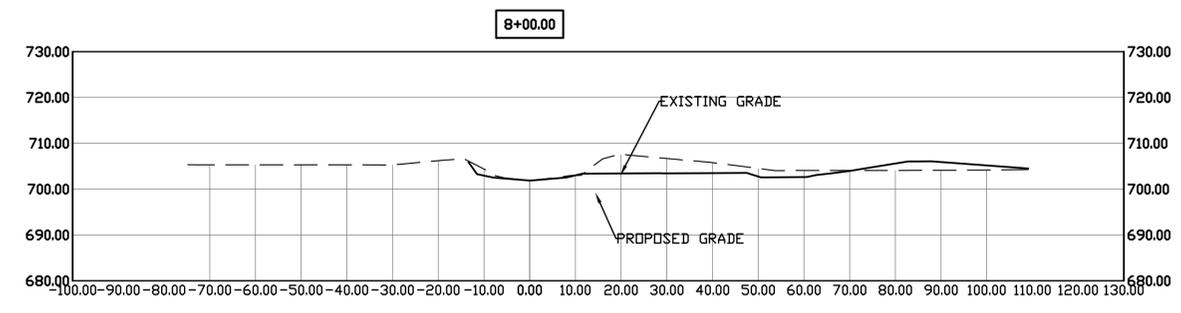
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NO.	DESCRIPTION

GORGE CREEK CULVERT
 REPAIR AND STORM WATER
 IMPROVEMENTS
 VILLAGE OF MIDDLEBURGH
 SCHOHARIE COUNTY, NY

UPPER GORGE CREEK
 CROSS SECTIONS
 6+50 - 8+00

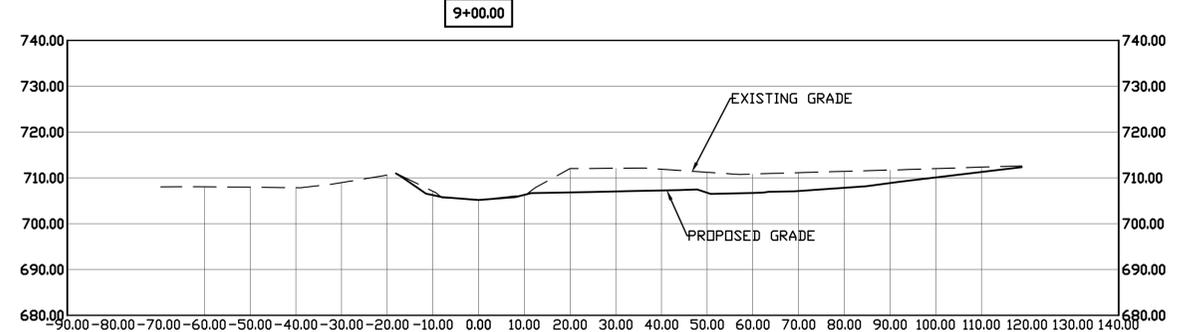
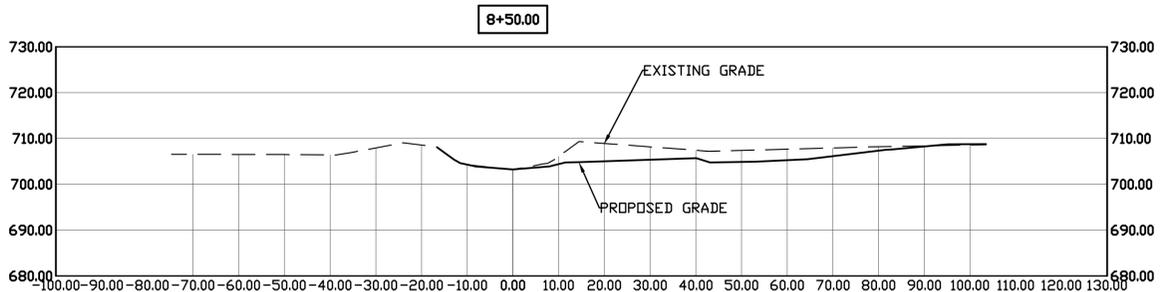
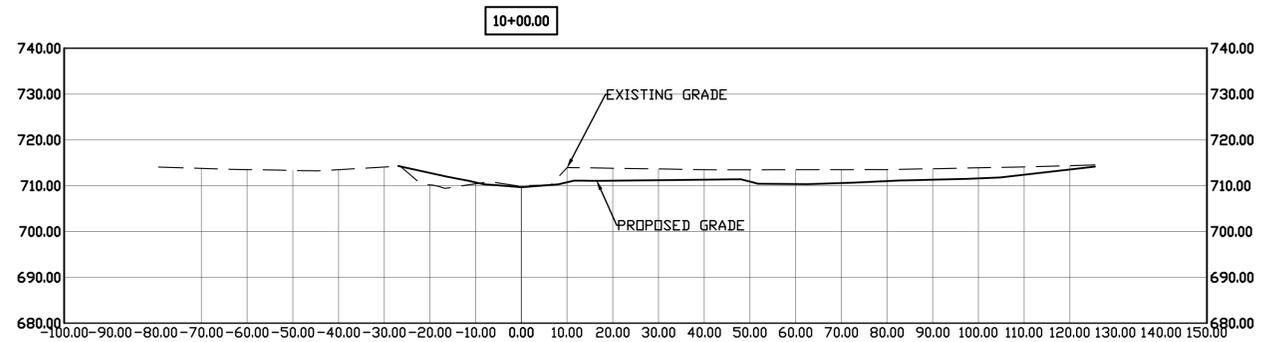
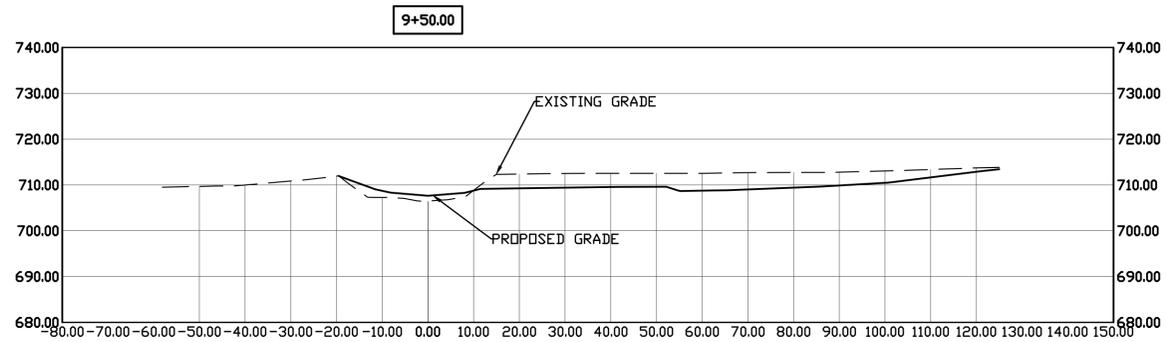
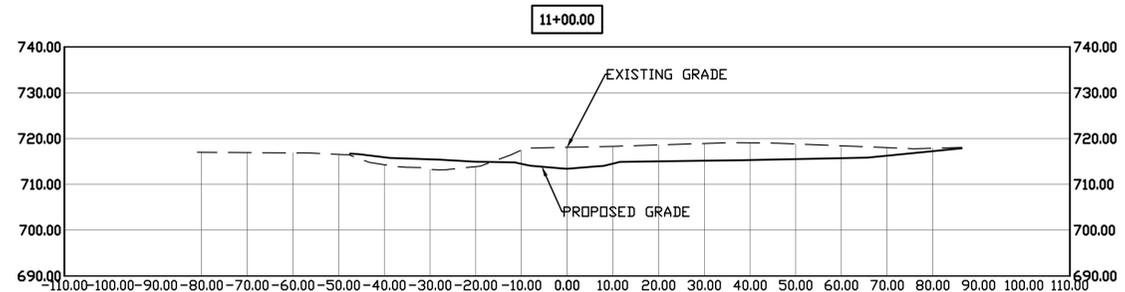
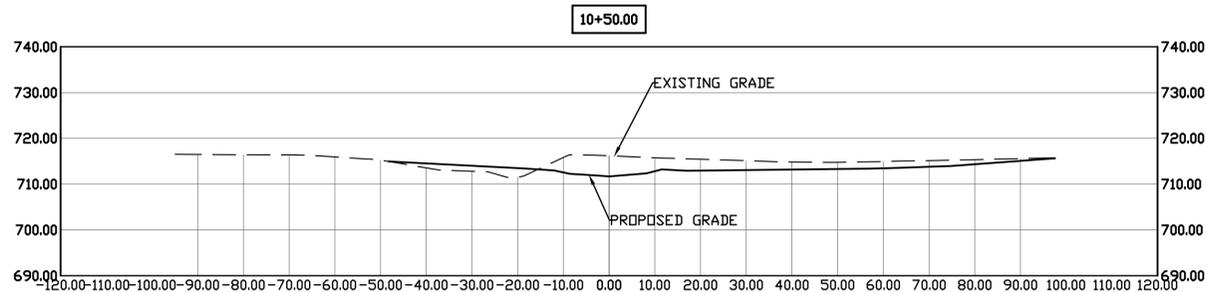
SHEET:
C113

90% DESIGN DRAWINGS



STREAM CROSS SECTIONS - LOOKING UPSTREAM
 SCALE: 1"=20'

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STREAM CROSS SECTIONS – LOOKING UPSTREAM
SCALE: 1"=20'

DATE: 3/2016
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PROJECT NO.: XX-XXX
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8-12 DIETZ STREET, SUITE 303, ONEONTA, NY 13820 - 607.432.8073

REVISIONS	
NO.	DATE DESCRIPTION

GORGE CREEK CULVERT
REPAIR AND STORM WATER
IMPROVEMENTS
VILLAGE OF MIDDLEBURGH
SCHOHARIE COUNTY, NY

UPPER GORGE CREEK
CROSS SECTIONS
8+50 - 11+00

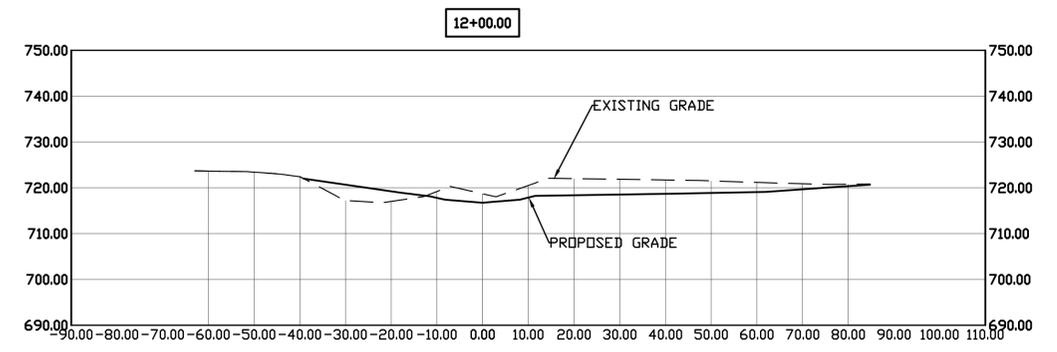
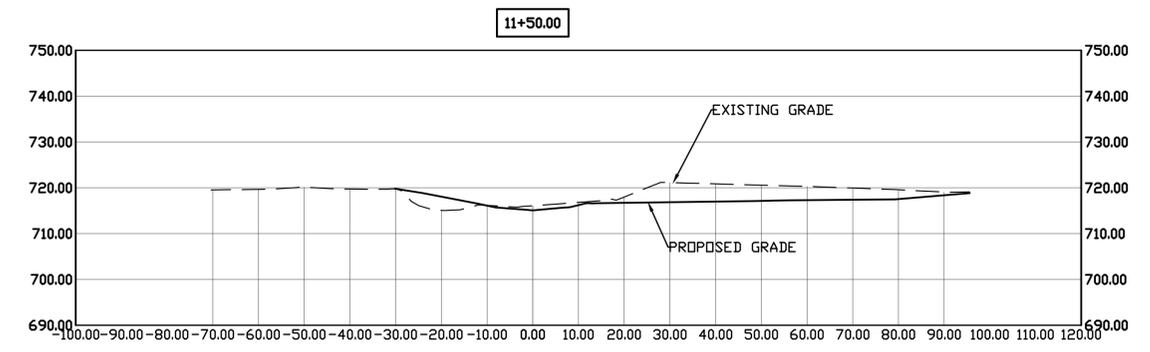
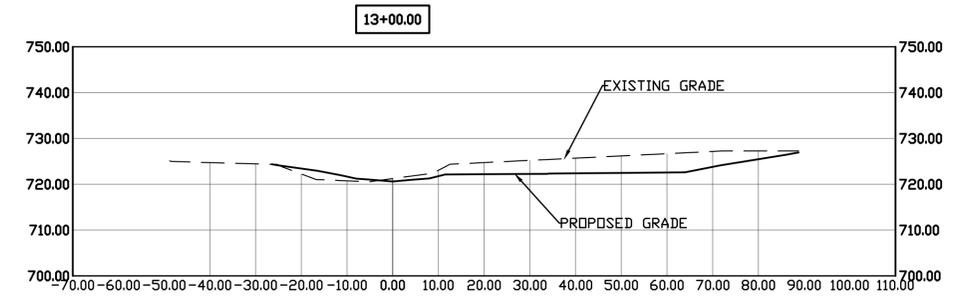
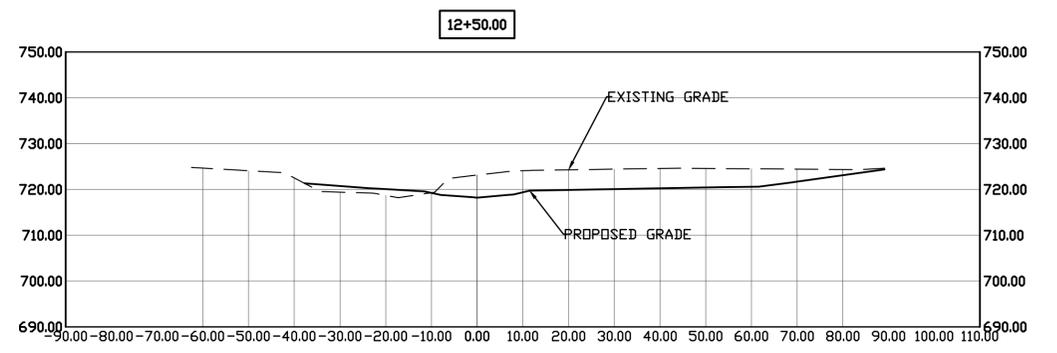
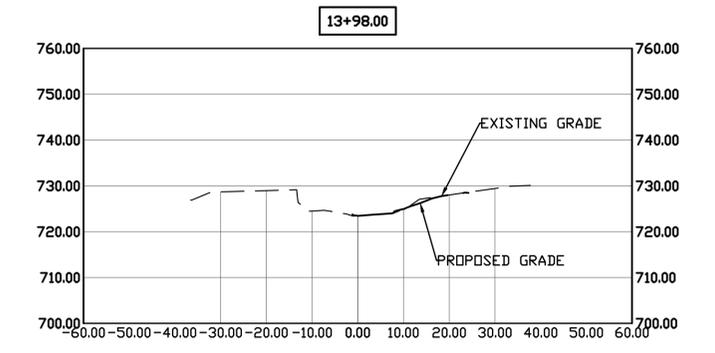
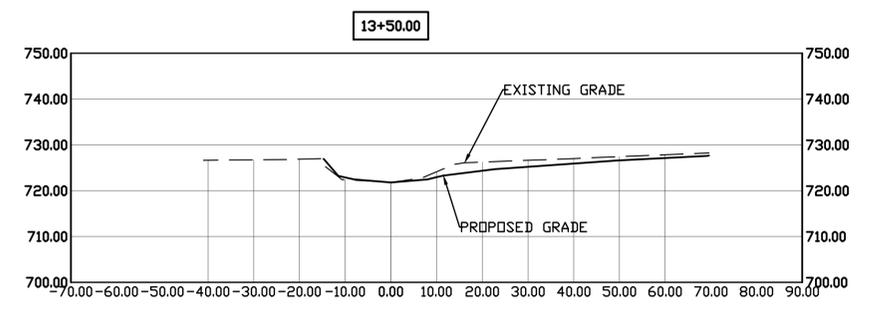
SHEET:
C114

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STREAM CROSS SECTIONS - LOOKING UPSTREAM
 SCALE: 1"=20'

NO.	DATE	DESCRIPTION

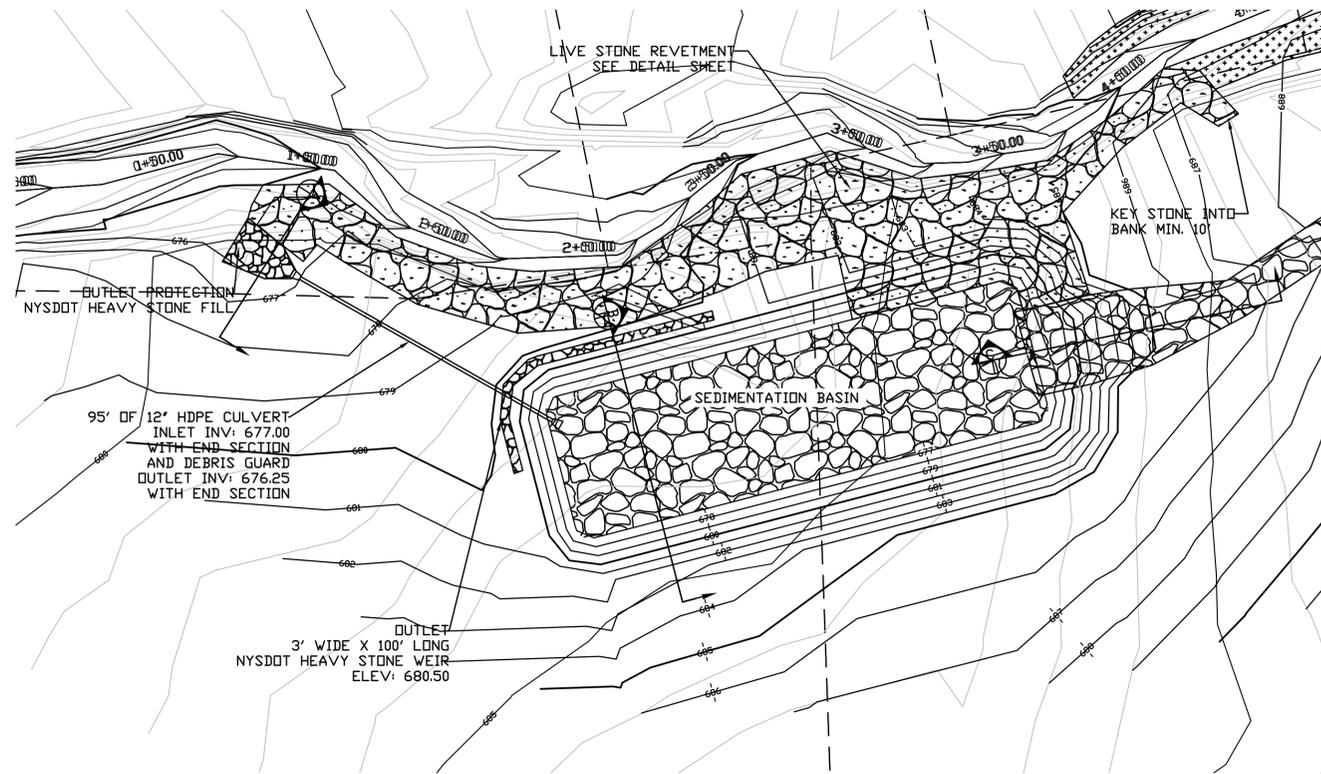
GORGE CREEK CULVERT
 REPAIR AND STORM WATER
 IMPROVEMENTS
 VILLAGE OF MIDDLEBURGH
 SCHOHARIE COUNTY, NY

UPPER GORGE CREEK
 CROSS SECTIONS
 11+50 - 13+98

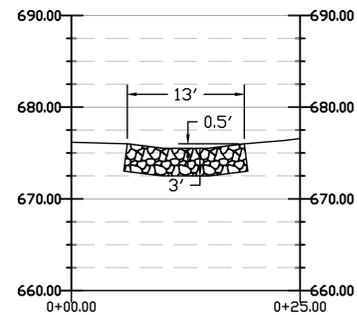
SHEET:
C115

90% DESIGN DRAWINGS

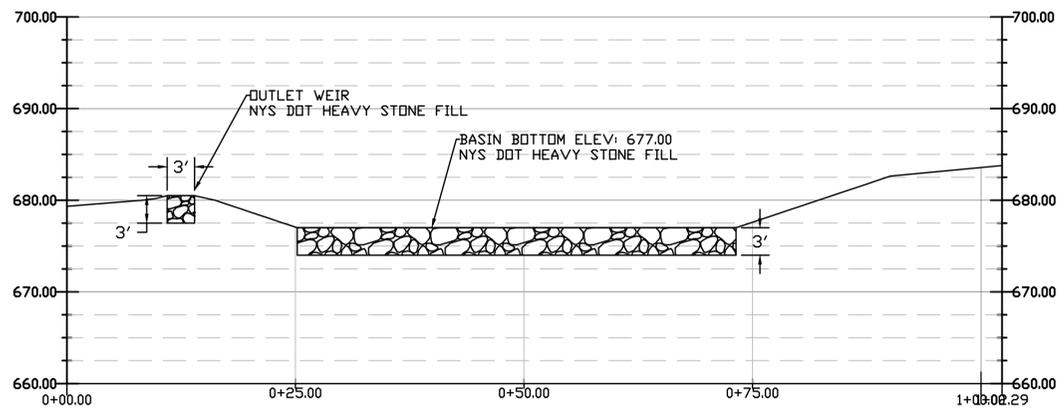
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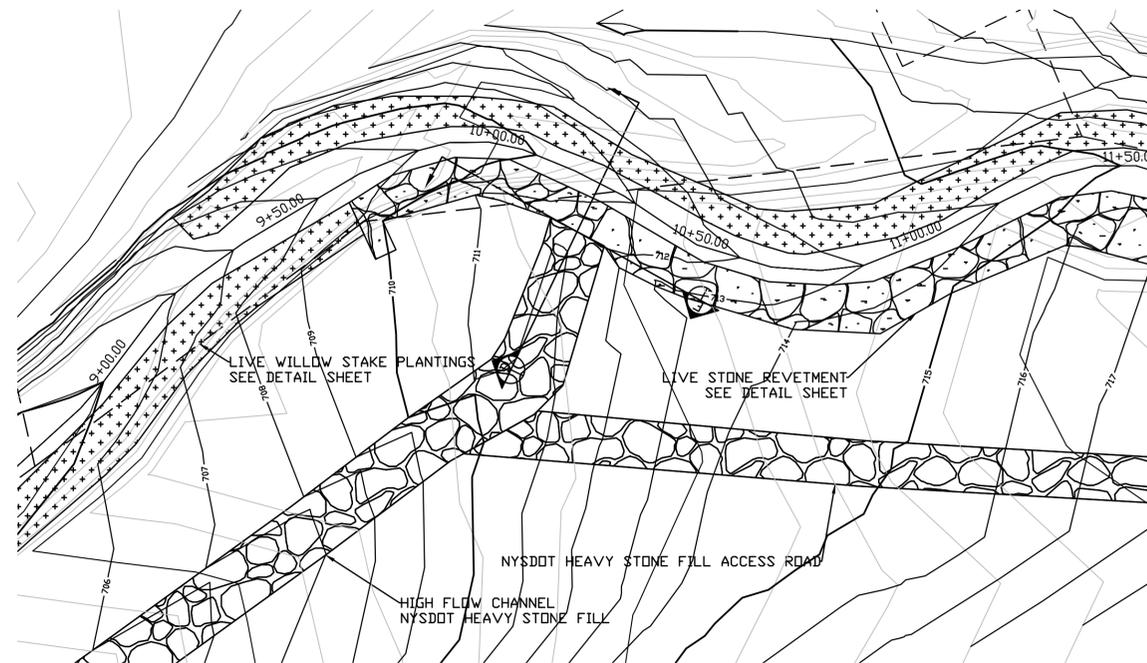
SEDIMENTATION AREA- PLAN
SCALE: 1"=30'



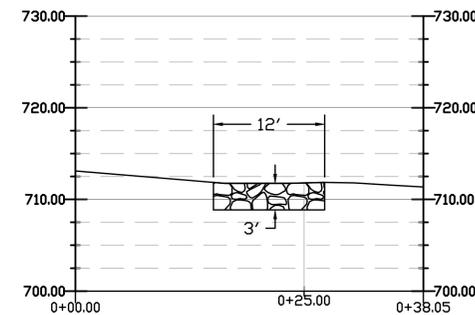
CULVERT OUTLET - SECTION A
SCALE: 1"=10'



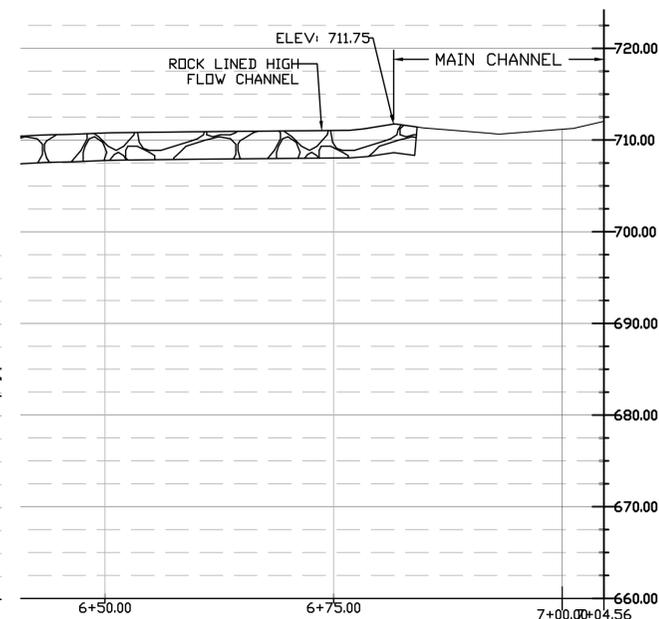
BASIN SECTION AND OUTLET - PROFILE B
SCALE: 1"=10'



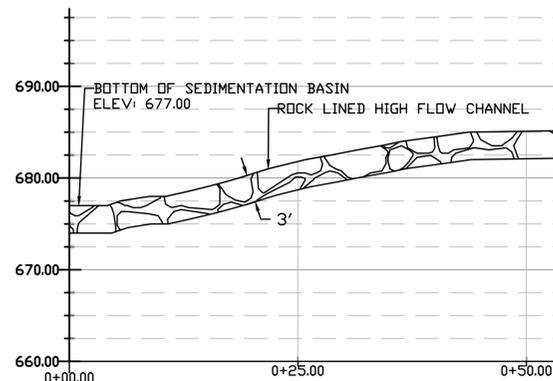
HIGH FLOW CHANNEL INLET - PLAN
SCALE: 1"=20'



HIGH FLOW CHANNEL INLET
SECTION AT MAIN CHANNEL
BANK - SECTION E
SCALE: 1"=10'



HIGH FLOW CHANNEL INLET - PROFILE D
SCALE: 1"=10'



HIGH FLOW CHANNEL OUTLET - PROFILE C
SCALE: 1"=10'

DATE: 3/2016
DRAWN BY: JUF
SCALE: AS SHOWN
REVIEWED BY: XXX
PROJECT NO.: XX-XXX
FILE:

DELAWARE ENGINEERING, D.P.C.
CIVIL AND ENVIRONMENTAL ENGINEERING
28 MADISON AVENUE EXTENSION, ALBANY, NY 12203 - 518.452.1290
8-12 DIETZ STREET, SUITE 303, ONEONTA, NY 13820 - 607.432.8073

NO.	DATE	DESCRIPTION

GORGE CREEK CULVERT
REPAIR AND STORM WATER
IMPROVEMENTS
VILLAGE OF MIDDLEBURGH
SCHOHARIE COUNTY, NY

UPPER GORGE CREEK
INLET/OUTLET DETAILS

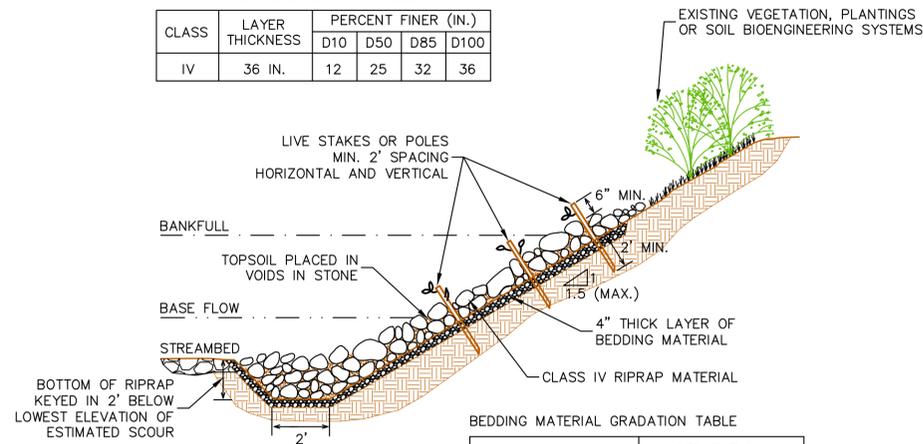
SHEET:
C120

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HE IS ACTING UNDER THE ALTERNATE PERSON SHALL COMPLY WITH THE REQUIREMENTS OF NEW YORK EDUCATION LAW, SECTION 2204.2. MAY, IF ALTERED THE ALTERNATE PERSON SHALL COMPLY WITH THE REQUIREMENTS OF NEW YORK EDUCATION LAW, SECTION 2202.2.

RIPRAP MATERIAL GRADATION TABLE

CLASS	LAYER THICKNESS	PERCENT FINER (IN.)			
		D10	D50	D85	D100
IV	36 IN.	12	25	32	36



NOTES:

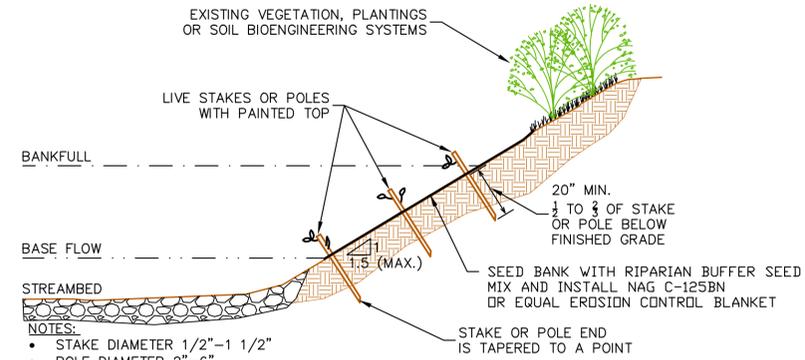
- UPON COMPLETING INSTALLATION ALL AREAS OF DISTURBED SOIL SHALL BE SEEDED AND MULCHED.
- KEY ROCK INTO BANK A MIN. 10' AT BOTH ENDS

BEDDING MATERIAL GRADATION TABLE

SIEVE DESIGNATION	PERCENT BY WEIGHT PASSING
4 IN.	100
1 IN.	15 TO 60
1/4 IN.	0 TO 25
NO. 40	0 TO 10

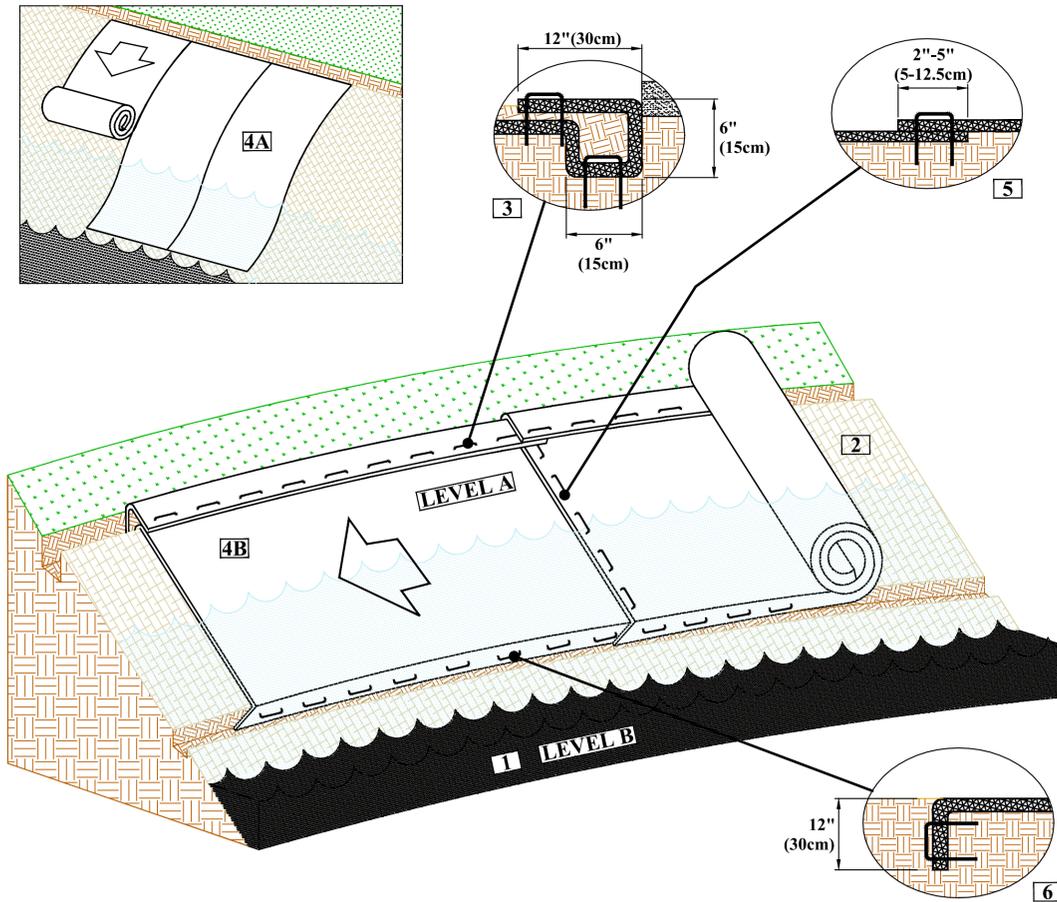
LIVE STONE REVETMENT DETAIL (D-11)

(Not to scale)



LIVE STAKING (STAKES AND POLES) (D-8)

(Not to scale)



EROSION CONTROL BLANKET SHORELINE/STREAMBANK INSTALLATION DETAIL (NOT TO SCALE)

- For easier installation, lower water level from Level A to Level B before installation.
- Prepare soil before installing rolled erosion control products (RECPs), including any necessary application of lime, fertilizer, and seed.
- Begin at the top of the shoreline by anchoring the RECPs in a 6"(15cm) deep X 6"(15cm) wide trench with approximately 12"(30cm) of RECPs extended beyond the up-slope portion of the trench. Anchor the RECPs with a row of staples/stakes approximately 12" (30cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the compacted soil and fold the remaining 12"(30cm) portion of RECPs back over the seed and compacted soil. Secure RECPs over compacted soil with a row of staples/stakes spaced approximately 12"(30cm) apart across the width of the RECPs.
- Roll RECPs either (A) down the shoreline for long banks (top to bottom) or (B) horizontally across the shoreline slope. RECPs will unroll with appropriate side against the soil surface. All RECPs must be securely fastened to soil surface by placing staples/stakes in appropriate locations as shown in the staple pattern guide.
- The edges of all horizontal and vertical seams must be stapled with approximately 2" - 5" (5-12.5cm) overlap. **Note:** In streambank applications seam overlaps should be shingled in the predominant flow direction.
- The edges of the RECPs at or below normal water level must be anchored by placing the RECPs in a 12"(30cm) deep X 6"(15cm) wide anchor trench. Anchor the RECPs with a row of staples/stakes spaced approximately 12"(30cm) apart in the trench. Backfill and compact the trench after stapling (stone or soil may be used as backfill). For installation at or below normal water level, use of ShoreMax mat on top of the RECP or geotextile may be recommended.

NOTES:

- * In loose soil conditions, the use of staple or stake lengths greater than 6" may be necessary to properly secure the RECPs.
- ** Bottom anchor trench can be eliminated when using ShoreMax mat over RECP along the bottom edge.

*Consult the manufacture for further installation guidance.

DATE: 3/2016
 DRAWN BY: JUF
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 PROJECT NO.: XX-XXX
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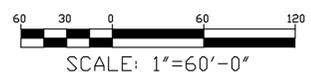
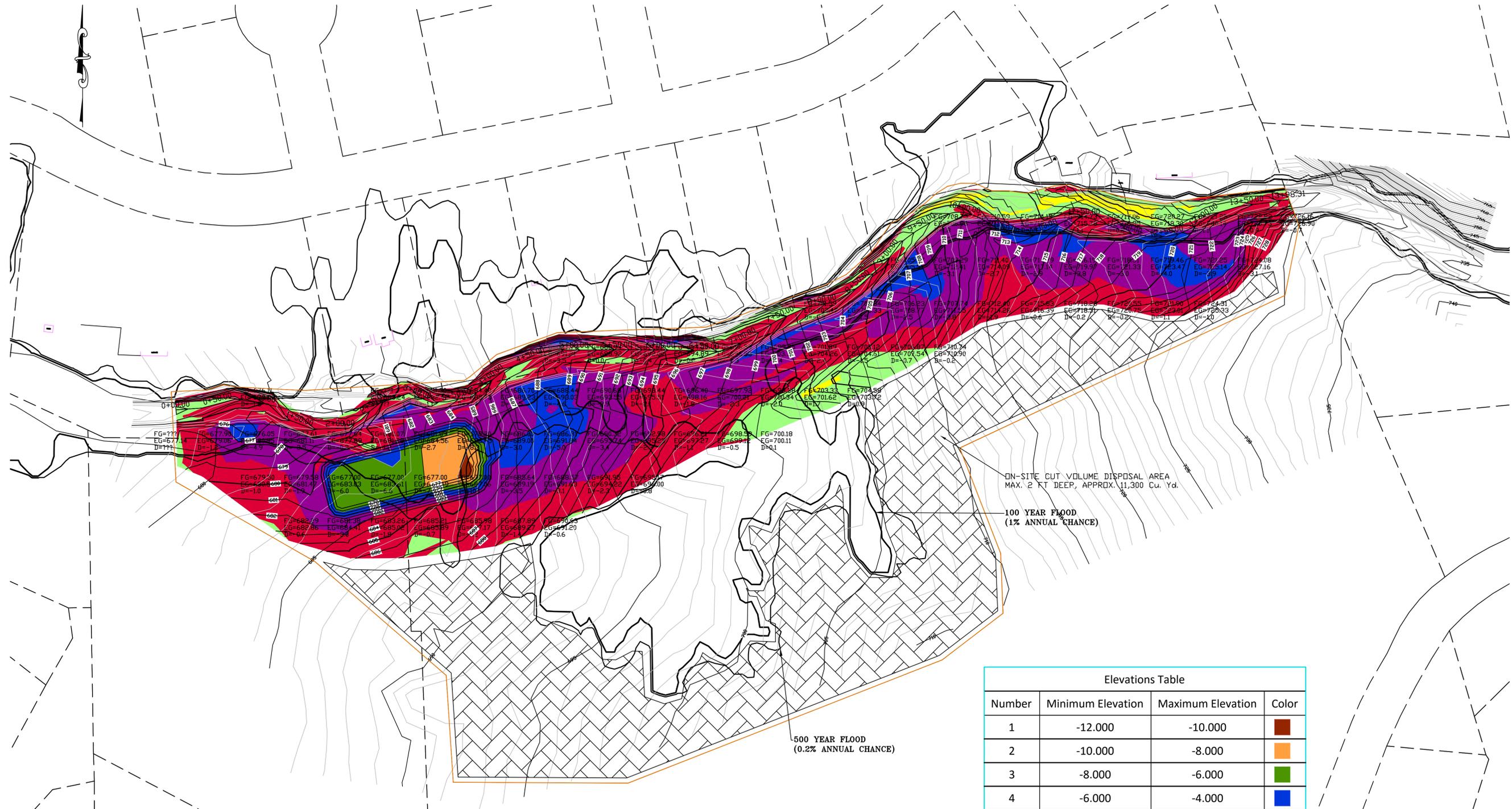
NO.	DATE	DESCRIPTION

GORGE CREEK CULVERT REPAIR AND STORM WATER IMPROVEMENTS VILLAGE OF MIDDLEBURGH SCHOHARIE COUNTY, NY

UPPER GORGE CREEK STREAM BANK DETAILS

SHEET: C121

90% DESIGN DRAWINGS



ON-SITE CUT VOLUME DISPOSAL AREA
MAX. 2 FT DEEP, APPROX. 11,300 Cu. Yd.

Elevations Table			
Number	Minimum Elevation	Maximum Elevation	Color
1	-12.000	-10.000	Dark Red
2	-10.000	-8.000	Orange
3	-8.000	-6.000	Light Green
4	-6.000	-4.000	Blue
5	-4.000	-2.000	Purple
6	-2.000	0.000	Red
7	0.000	2.000	Light Green
8	2.000	4.000	Yellow

Volume
 Cut volume (adjusted) 15431.42 Cu. Yd.
 Fill volume (adjusted) 801.21 Cu. Yd.
 Net volume (adjusted) 14630.21 Cu. Yd.<Cut>

90% DESIGN DRAWINGS

GORGE CREEK CULVERT
 REPAIR AND STORM WATER
 IMPROVEMENTS
 VILLAGE OF MIDDLEBURGH
 SCHOHARIE COUNTY, NY

UPPER GORGE CREEK
 CUT AND FILL ANALYSIS

SHEET:
C130

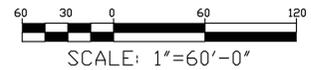
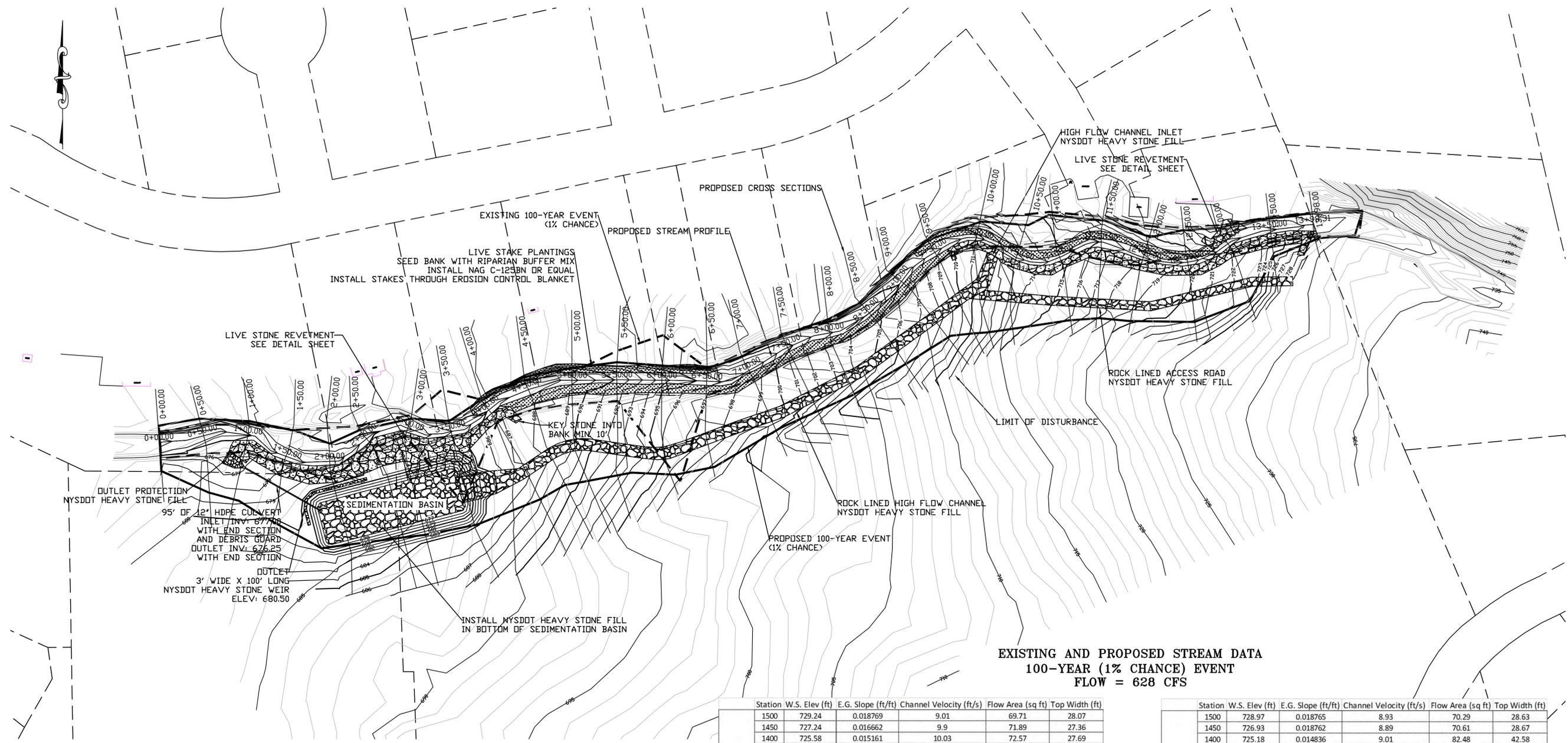
DATE: 3/2016
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 28 MADISON AVENUE EXTENSION, ALBANY, NY 12203 - 518.452.1290
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REVISIONS	
NO.	DESCRIPTION

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EXISTING AND PROPOSED STREAM DATA
100-YEAR (1% CHANCE) EVENT
FLOW = 628 CFS

Station	W.S. Elev (ft)	E.G. Slope (ft/ft)	Channel Velocity (ft/s)	Flow Area (sq ft)	Top Width (ft)
1500	729.24	0.018769	9.01	69.71	28.07
1450	727.24	0.016662	9.9	71.89	27.36
1400	725.58	0.015161	10.03	72.57	27.69
1350	724.08	0.015571	9.23	76.09	32.67
1300	721.84	0.017349	10.3	79.74	32.17
1250	720.08	0.014203	8.48	90.8	45.3
1200	718.22	0.016615	9.37	94.62	46.94
1150	716.47	0.02118	11.11	79.88	39.56
1100	715.1	0.013845	10.09	88.03	38.81
1050	712.48	0.022819	9.86	79.16	34.01
1000	710.05	0.016775	10.54	75.79	28.42
950	708.94	0.014815	10.24	74.09	27.87
900	707.08	0.015193	10.02	71.51	26.6
850	705.7	0.014812	10.01	72.81	27.37
800	703.15	0.015334	9.42	74.09	30.14
750	701.31	0.0144	10.17	81.48	32.21
700	699	0.016763	9.08	72.35	29.54
650	697.99	0.00821	7.23	161	164.57
600	693.75	0.013954	8.33	87.25	55.81
550	691.84	0.017839	8.73	73.02	35.46
500	690.09	0.014198	8.05	80.47	34.08
450	688.96	0.014686	9.66	73.55	30
400	687.44	0.009185	7.34	139.48	127.85
350	685	0.018629	9.25	67.92	25.53
300	683.29	0.01545	10.12	75.39	29.06
250	681.69	0.013692	9.01	106.59	57.21
200	679.72	0.017392	9.37	86.43	40.75
150	678.45	0.016891	9.22	73.18	30.79
100	677.39	0.014682	9.25	77.24	33.17
50	676.26	0.015615	9.54	71.34	28.58

Station	W.S. Elev (ft)	E.G. Slope (ft/ft)	Channel Velocity (ft/s)	Flow Area (sq ft)	Top Width (ft)
1500	728.97	0.018765	8.93	70.29	28.63
1450	726.93	0.018762	8.89	70.61	28.67
1400	725.18	0.014836	9.01	82.48	42.58
1350	723.51	0.014543	7.91	126.55	89.57
1300	721.23	0.013173	7.75	134.7	102.73
1250	719.76	0.013351	7.83	130.38	96.29
1200	718.12	0.012085	7.52	141.35	108.85
1150	716.28	0.013522	7.58	145.76	119.95
1100	714.49	0.013976	7.61	143.67	117.54
1050	711.98	0.019354	7.62	145.35	126.45
1000	710.29	0.015641	7.63	143.34	115.35
950	708.15	0.013181	7.73	132.96	96.43
900	706.31	0.013006	7.85	125.05	85.18
850	704.46	0.017753	8	125.38	88.87
800	702.35	0.017025	7.92	128.61	92.87
750	700.13	0.013875	7.81	128.89	90.29
700	698.26	0.013878	7.62	140.93	109.08
650	696.53	0.011493	7.33	151.89	123.99
600	693.16	0.011681	7.32	152.63	124.93
550	690.28	0.015067	7.43	152.25	127.91
500	689.1	0.013952	7.38	153.75	128.82
450	687.55	0.017823	7.54	149.28	129.24
400	684.4	0.000465	0.75	493.88	120.67
350	682.26	0.001579	1.39	359.77	132.97
300	681.12	0.003568	2.39	279.5	130.77
250	680.08	0.004751	4.14	232.48	117.8
200	679.15	0.014343	7.73	135.57	102.57
150	677.86	0.013702	7.89	126.78	89.28
100	677.16	0.006447	6.29	155.44	82.85
50	676	0.014391	8.79	90.06	50.48

90% DESIGN DRAWINGS

GORGE CREEK CULVERT
REPAIR AND STORM WATER
IMPROVEMENTS
VILLAGE OF MIDDLEBURGH
SCHOHARIE COUNTY, NY

UPPER GORGE CREEK
EXISTING AND PROPOSED
HEC-RAS MODEL WATER
SURFACE 100-YEAR EVENT
(628 CFS)

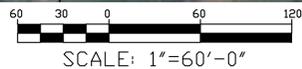
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C140

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CIVIL AND ENVIRONMENTAL ENGINEERING
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8-12 DIETZ STREET, SUITE 303, ONEONTA, NY 13820 - 607.432.8073

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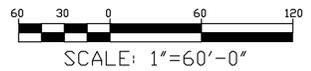
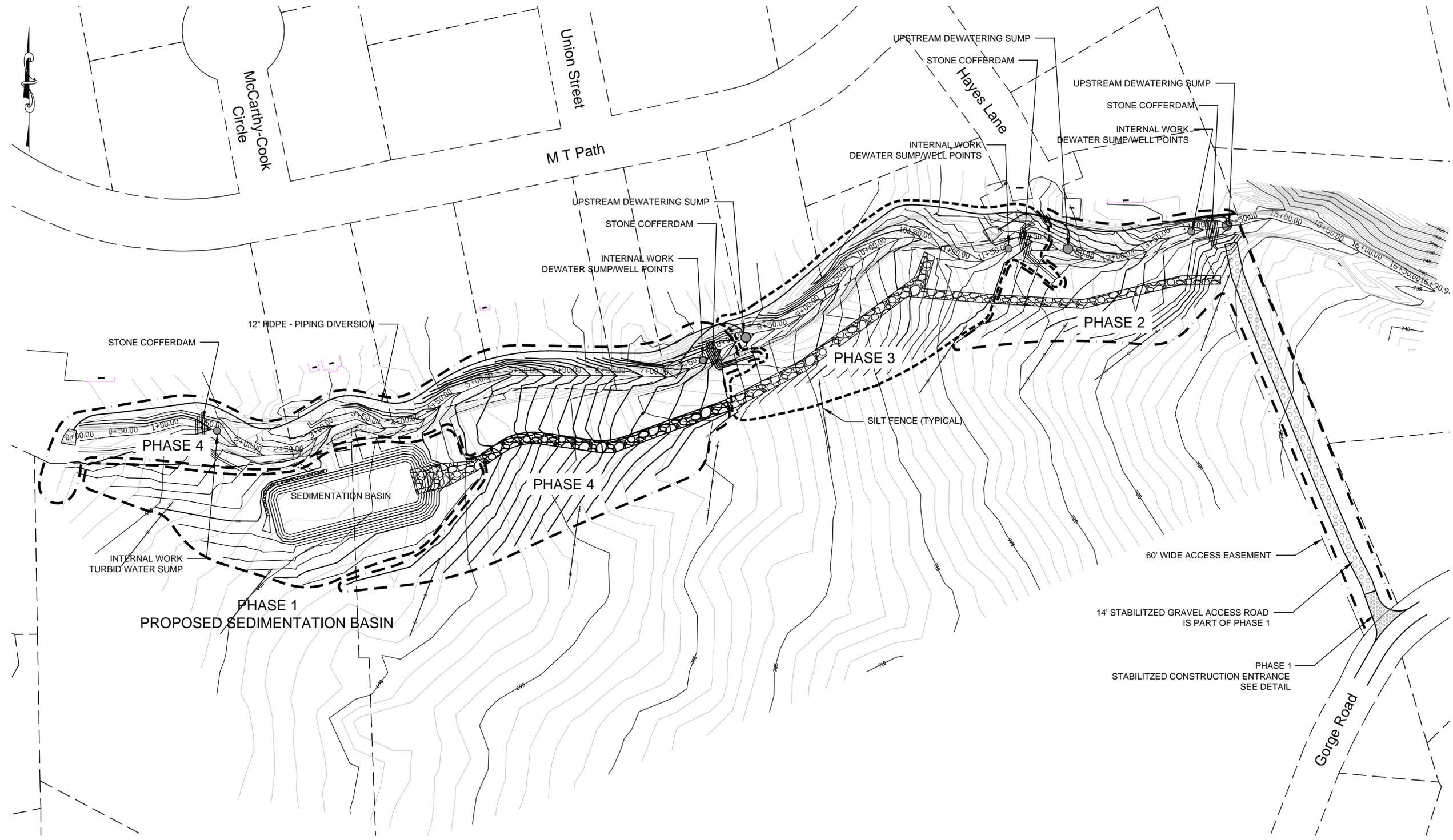
GORGE CREEK CULVERT
 REPAIR AND STORM WATER
 IMPROVEMENTS
 VILLAGE OF MIDDLEBURGH
 SCHOHARIE COUNTY, NY

UPPER GORGE CREEK
 PRIVATE PROPERTY
 IMPACTS

SHEET:
C150

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 8-12 DIETZ STREET, SUITE 303, ONEONTA, NY 13820 - 607.432.8073

NO.	DATE	DESCRIPTION

NO.	DATE	DESCRIPTION

GORGE CREEK CULVERT
 REPAIR AND STORM WATER
 IMPROVEMENTS
 VILLAGE OF MIDDLEBURGH
 SCHOHARIE COUNTY, NY

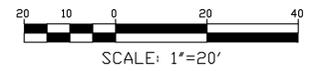
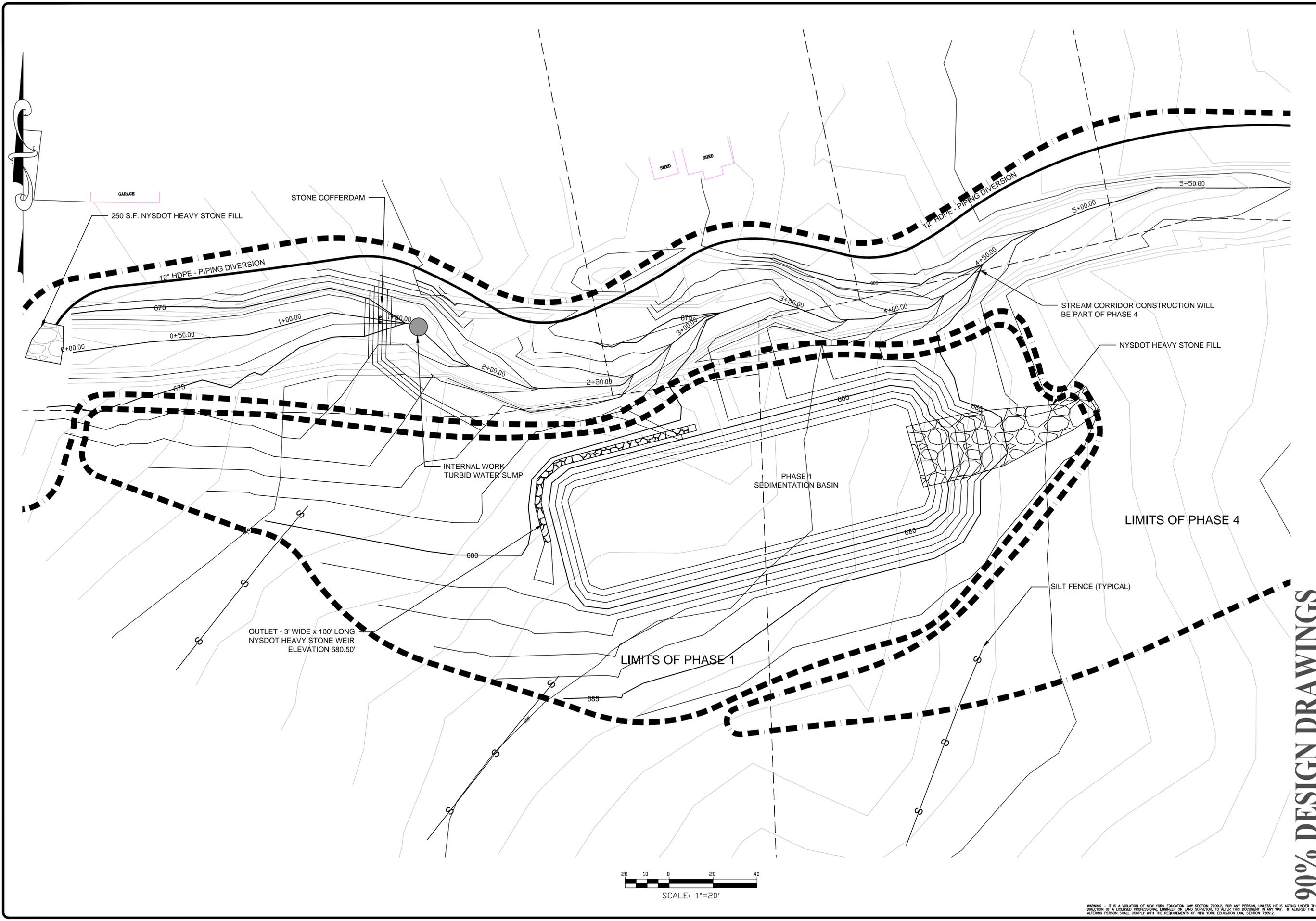
OVERALL PHASING PLAN
 UPPER GORGE CREEK

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E.S.-1

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NO.	DATE	DESCRIPTION

NO.	DATE	DESCRIPTION

GORGE CREEK CULVERT
 REPAIR AND STORM WATER
 IMPROVEMENTS
 VILLAGE OF MIDDLEBURGH
 SCHOHARIE COUNTY, NY

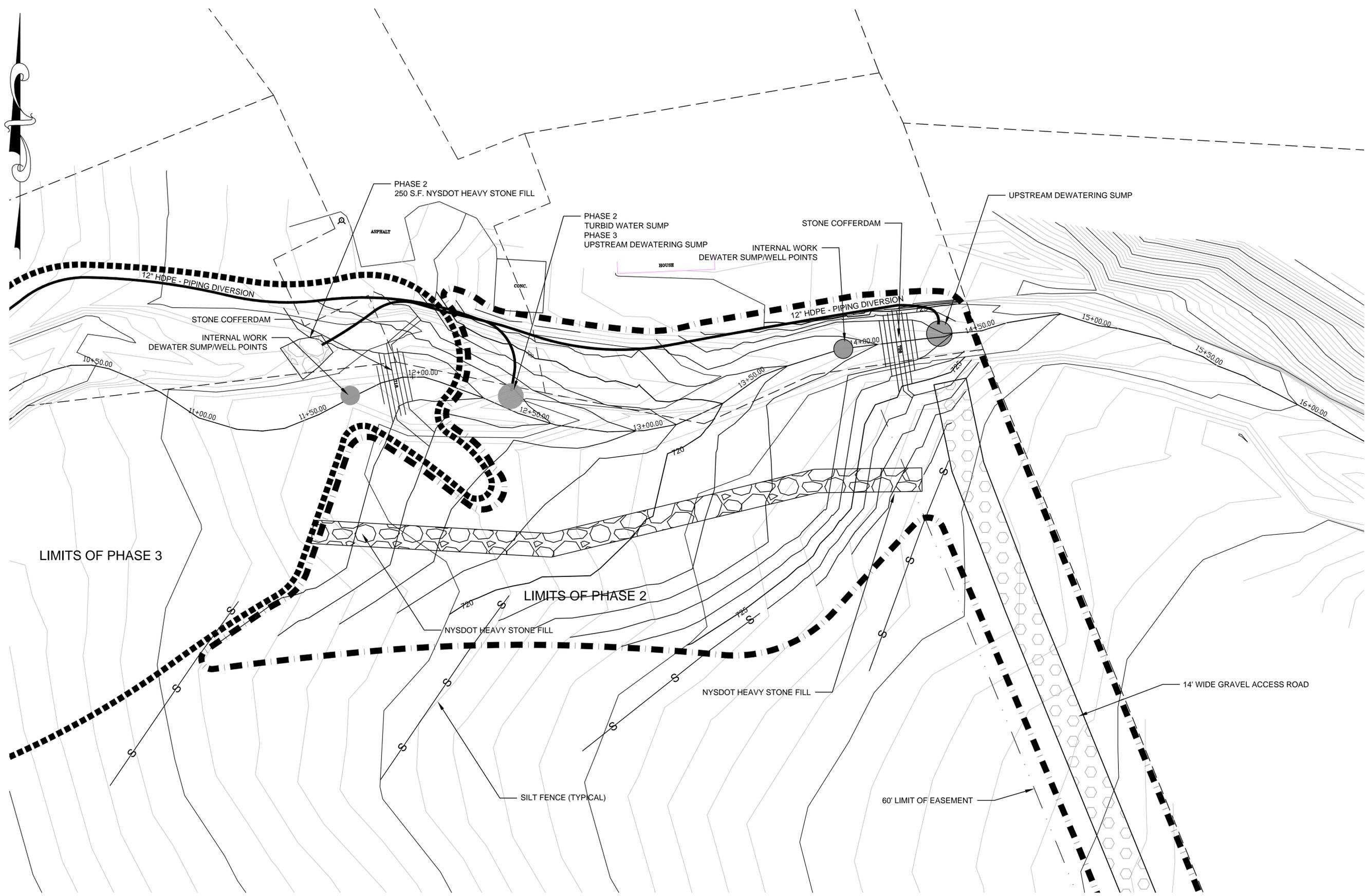
PHASE 1
 UPPER GORGE CREEK
 PROPOSED PLAN

SHEET:
E.S.-2

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 8-12 DIETZ STREET, SUITE 303, ONEONTA, NY 13820-607, 432, 8073

REVISIONS	
NO.	DESCRIPTION

GORGE CREEK CULVERT
 REPAIR AND STORM WATER
 IMPROVEMENTS
 VILLAGE OF MIDDLEBURGH
 SCHOHARIE COUNTY, NY

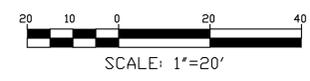
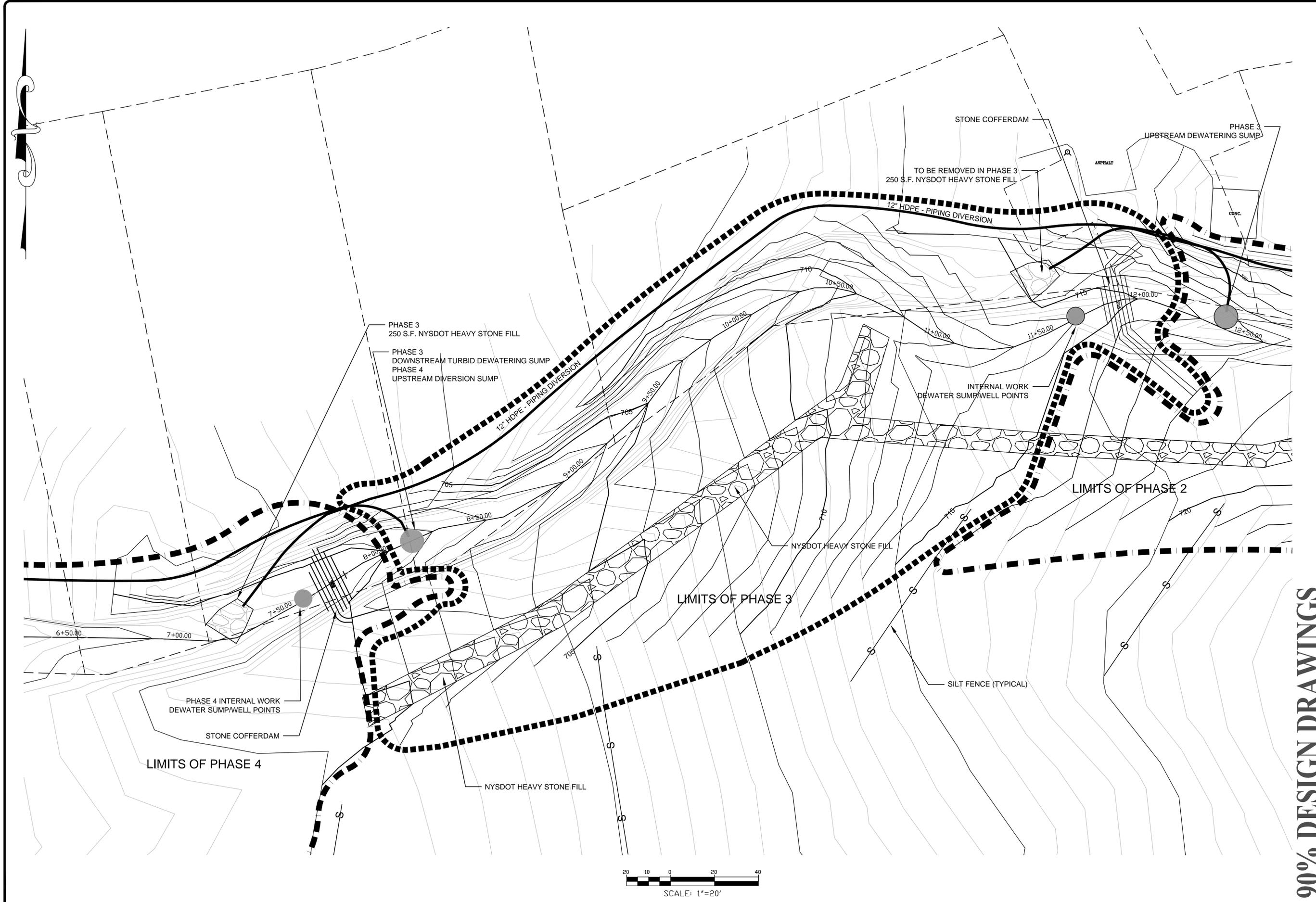
PHASE 2
 UPPER GORGE CREEK
 PROPOSED PLAN

SHEET:
E.S.-3

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NO.	DATE	DESCRIPTION

NO.	DATE	DESCRIPTION

GORGE CREEK CULVERT
 REPAIR AND STORM WATER
 IMPROVEMENTS
 VILLAGE OF MIDDLEBURGH
 SCHOHARIE COUNTY, NY

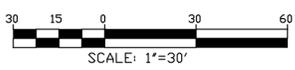
PHASE 3
 UPPER GORGE CREEK
 PROPOSED PLAN

SHEET:
E.S.-4

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REVISIONS	
NO.	DESCRIPTION

GORGE CREEK CULVERT
 REPAIR AND STORM WATER
 IMPROVEMENTS
 VILLAGE OF MIDDLEBURGH
 SCHOHARIE COUNTY, NY

PHASE 4
 UPPER GORGE CREEK
 PROPOSED PLAN

SHEET:
E.S.-5

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