Lockport-Batavia Line #112 Rebuild Project

Appendix Y

Culvert Drawings

June 2025 Case 22-T-0654

NIAGARA MOHAWK POWER CORPORATION D/B/A NATIONAL GRID LOCKPORT - BATAVIA 112 REBUILD PROJECT APPENDIX Y PSC CASE NO. 22-T-0654

SHEET NUMBER

TITLE

national<mark>grid</mark>

CP-01 CP-02-03 CP-04-04A CP-05 CP-06-09

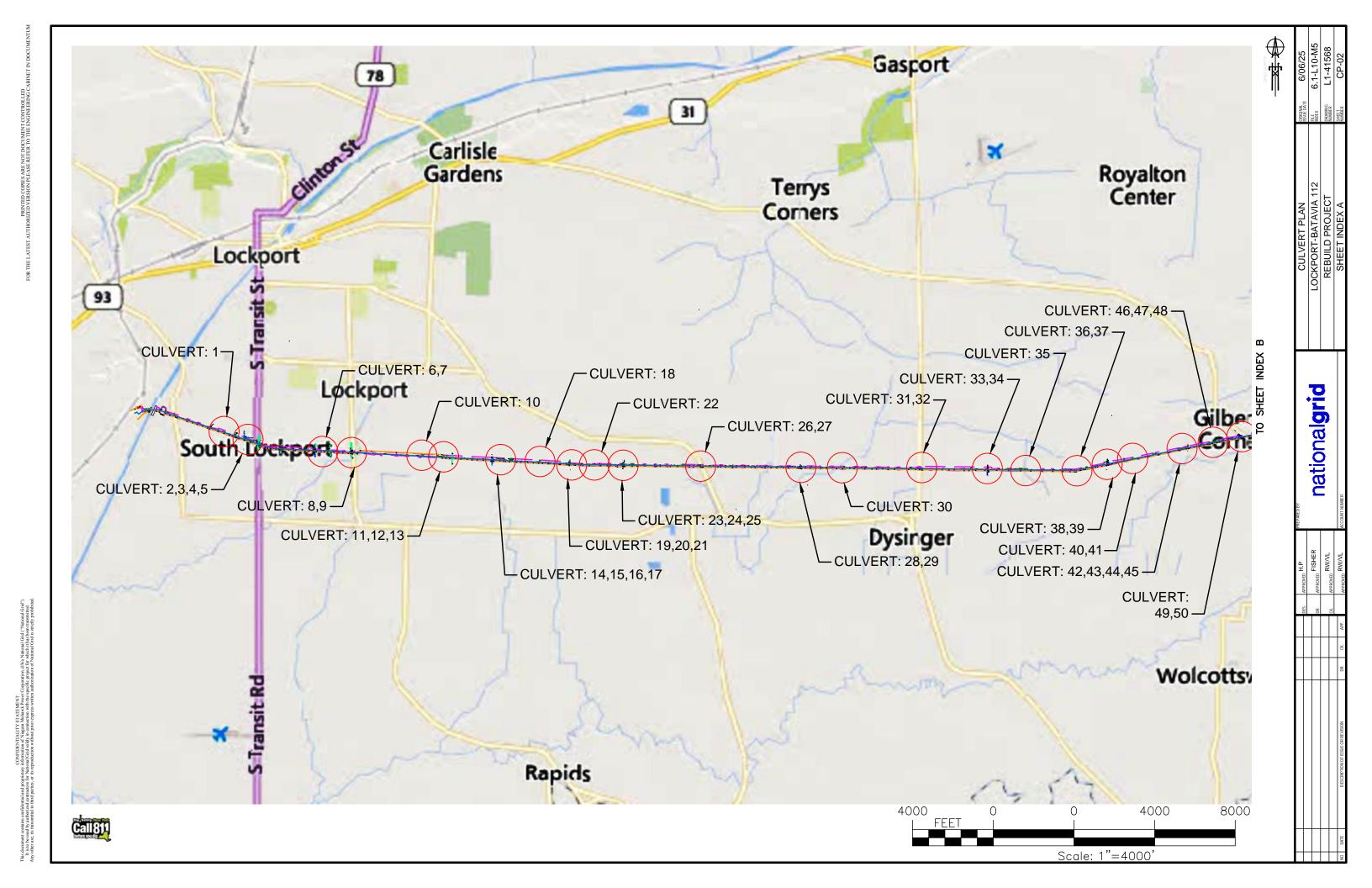
CP-10-72

COVER SHEET
SHEET INDEX
CULVERT INDEX & CULVERT TABLE
LEGEND & NOTES
CULVERT DRAWING DETAILS
CULVERT PLANS

CULVERT DRAWINGS

ISSUED FOR PERMITTING





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DRAWING NUMBER TITLE		CULVERT LOCATION	ASSOCIATED EM&CP SHEET	
CP-10	WETLAND 006 TYPE-PEM CULVERT	BETWEEN STR. 9 & 10	19	
CP-11	WETLAND 007 TYPE-PEM CULVERT BETWEEN STR. 11 & 12			
CP-12	WETLAND 007 TYPE-PEM CULVERT	BETWEEN STR. 11 & 12	19	
CP-13	WETLAND 007 TYPE-PEM CULVERT	BETWEEN STR. 11 & 12	19	
CP-14	WETLAND 007 TYPE-PEM CULVERT	BETWEEN STR. 12 & 13 19		
CP-15	24" ACCESS CULVERT - LOCUST STREET EXT	BETWEEN STR. 20 & 21	20	
CP-16	18" PROPOSED CULVERT	BETWEEN STR. 21 & 22	20/21	
CP-17	18" ACCESS CULVERT - BEATTIE AVENUE	BETWEEN STR. 23 & 24	21	
CP-18	18" ACCESS CULVERT - BEATTIE AVENUE	BETWEEN STR. 23 & 24	21	
CP-19	NYSDEC STREAM 003 CROSSING CULVERT	BETWEEN STR. 30 & 31	22	
CP-20	18" PROPOSED CULVERT	BETWEEN STR. 31 & 32	22	
CP-21	18" PROPOSED CULVERT	BETWEEN STR. 32 & 33	22	
CP-22	18" PROPOSED CULVERT	BETWEEN STR. 32 & 33	22/23	
CP-23	24" ACCESS CULVERT - BOWMILLER ROAD	BETWEEN STR. 36 & 37	23	
CP-24	18" ACCESS CULVERT - BOWMILLER ROAD	BETWEEN STR. 36 & 37	23	
CP-25	24" PROPOSED CULVERT	BETWEEN STR. 37 & 38	23	
CP-26 NYSDEC STREAM 004 CROSSING CULVERT		BETWEEN STR. 38 & 39	24	
CP-27	18" PROPOSED CULVERT	BETWEEN STR. 41 & 42	24	
CP-28	18" ACCESS CULVERT - WYNKOOP ROAD	BETWEEN STR. 44 & 45	25	
CP-29	18" ACCESS CULVERT - WYNKOOP ROAD	BETWEEN STR. 44 & 45	25	
CP-30 WETLAND 011 TYPE-PEM CULVERT		BETWEEN STR. 45 & 46	25	
CP-31 NYSDEC STREAM 005 CROSSING CULVERT		BETWEEN STR. 47 & 48	25	
CP-32	WETLAND 009 TYPE-PEM CULVERT	BETWEEN STR. 49 & 50	25/26	
CP-33	WETLAND 009 TYPE-PEM CULVERT - OAK LANE	BETWEEN STR. 50 & 51	25/26	
CP-34	WETLAND 012 TYPE-PEM CULVERT - OAK LANE	BETWEEN STR. 50 & 51	25/26	
CP-35	18" ACCESS CULVERT - AKRON ROAD	BETWEEN STR. 57 & 58	27	
CP-36	18" ACCESS CULVERT - AKRON ROAD	BETWEEN STR. 57 & 58	27	
CP-37	WETLAND 017 TYPE-PFO CULVERT - SINGER ROAD	BETWEEN STR. 66 & 67	29	
CP-38	18" ACCESS CULVERT - SINGER ROAD	BETWEEN STR. 66 & 67	29	
CP-39	NYSDEC STREAM 007 CROSSING CULVERT	BETWEEN STR. 69 & 70	29	
CP-40	24" ACCESS CULVERT - GASPORT ROAD	BETWEEN STR. 77 & 78	31	
CP-41	24" ACCESS CULVERT - GASPORT ROAD	BETWEEN STR. 77 & 78	31	
CP-42	18" ACCESS CULVERT - WARD ROAD	BETWEEN STR. 83 & 84	32	
CP-43	18" ACCESS CULVERT - WARD ROAD	BETWEEN STR. 83 & 84	32	
CP-44	NYSDEC STREAM 008 CROSSING CULVERT	BETWEEN STR. 86 & 87	32/33	
CP-45	NYSDEC WETLAND 020 TYPE-PEM CULVERT	BETWEEN STR. 90 & 91	33	

CULVERT DRAWING SHEET INDEX					
DRAWING NUMBER	TITLE	CULVERT LOCATION	ASSOCIATED EM&CP A SHEET		
CP-46 18" PROPOSED CULVERT		BETWEEN STR. 94 & 95	33/34		
CP-47	18" ACCESS CULVERT - ROYALTON CENTER ROAD	BETWEEN STR. 96 & 97	34		
CP-48	18" ACCESS CULVERT - ROYALTON CENTER ROAD	BETWEEN STR. 96 & 97	34		
CP-49	PERENNIAL STREAM CROSSING CULVERT	BETWEEN STR. 97 & 98	34		
CP-50	18" PROPOSED CULVERT	BETWEEN STR. 98 & 99	34		
CP-51	WETLAND 024 TYPE-PEM CULVERT	BETWEEN STR. 103 & 104	35		
CP-52	WETLAND 024 TYPE-PEM CULVERT	BETWEEN STR. 103 & 104	35		
CP-53	18" ACCESS CULVERT - ARNOLD ROAD	BETWEEN STR. 103 & 104	35		
CP-54	WETLAND 025 TYPE-PEM CULVERT - ARNOLD ROAD	BETWEEN STR. 103 & 104	35		
CP-55	WETLAND 025 TYPE-PEM CULVERT	BETWEEN STR. 106 & 107	36		
CP-56	WETLAND 025 TYPE-PEM CULVERT	BETWEEN STR. 106 & 107	36		
CP-57	36" PROPOSED CULVERT	BETWEEN STR. 106 & 107	36		
CP-58	24" ACCESS CULVERT - LEWISTON ROAD	BETWEEN STR. 109 & 110	36		
CP-59	24" ACCESS CULVERT - LEWISTON ROAD	BETWEEN STR. 109 & 110	36		
CP-60	WETLAND 026 TYPE-PEM CULVERT	BETWEEN STR. 111 & 112	37		
CP-61	WETLAND 026 TYPE-PEM CULVERT	BETWEEN STR. 112 & 113	37		
CP-62	WETLAND 026 TYPE-PEM CULVERT	BETWEEN STR. 112 & 113	37		
CP-63	24" ACCESS CULVERT - JOHNSON ROAD	BETWEEN STR. 116-1 & 117	38		
CP-64	30" ACCESS CULVERT - GRISWOLD STREET	BETWEEN STR. 120 & 121	39		
CP-65	18" ACCESS CULVERT - GRISWOLD STREET	BETWEEN STR. 120 & 121	39		
CP-66	NYSDEC STREAM 010 CROSSING CULVERT	BETWEEN STR. 130 & 131	41		
CP-67	NYSDEC STREAM 010 CROSSING CULVERT	BETWEEN STR. 130 & 131	41		
CP-68	18" ACCESS CULVERT - LEWISTON ROAD	BETWEEN STR. 136 & 137	43		
CP-69	18" ACCESS CULVERT - ALLEGHANY ROAD	BETWEEN STR. 189 & 190	51/52		
CP-70	18" ACCESS CULVERT - JUDGE ROAD	BETWEEN STR. 197 & 198	53		
CP-71	18" ACCESS CULVERT - KENYON AVENUE	BETWEEN STR. 200 & 201	53/54		
CP-72	18" ACCESS CULVERT - KENYON AVENUE	BETWEEN STR. 200 & 201	53/54		



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CULVERT TABLE							
SHEET NO.	CULVERT ID	20% BURIED INLET INVERT	20% BURIED OUTLET INVERT	SIZE (in.)	MATERIAL/TYPE	LENGTH (FT)	BETWEEN STR_ & STR_
CP-10	1	621.23	620.53	30	HDPE	27	9 & 10
CP-11	2	629.72	628.62	18	HDPE	22	11 & 12
CP-12	3	627.64	627.35	18	HDPE	22	11 & 12
CP-13	4	628.42	628.36	18	HDPE	22	11 & 12
CP-14	5	628.90	628.68	18	HDPE	22	12 & 13
CP-15	6	623.86	622.18	24	HDPE	50	20 & 21
CP-16	7	616.17	614.58	18	HDPE	44	21 & 22
CP-17	8	614.82	614.75	18	HDPE	60	23 & 24
CP-18	9*	615.85	615.49	18	HDPE	66	23 & 24
CP-19	10	618.77	618.64	72 x 48	Concrete	46	30 & 31
CP-20	11	623.60	623.42	18	HDPE	26	31 & 32
CP-21	12	623.54	623.47	18	HDPE	31	32 & 33
CP-22	13	623.60	623.27	18	HDPE	31	32 & 33
CP-23	14	MATCH EXISTING INVERT	621.78	24	HDPE	45	36 & 37
CP-24	15	623.37	622.41	18	HDPE	75	36 & 37
CP-25	16	622.50	622.27	24	HDPE	31	37 & 38
CP-26	17	617.60	617.52	96 x 48	Concrete	35	38 & 39
CP-27	18	623.15	622.17	18	HDPE	31	41 & 42
CP-28	19	619.45	618.07	18	HDPE	75	44 & 45
CP-29	20	617.99	617.84	18	HDPE	74	44 & 45
CP-30	21	614.80	614.60	18	HDPE	20	45 & 46
CP-31	22	609.50	609.28	60	HDPE	30	47 & 48
CP-32	23	612.09	611.20	18	HDPE	20	49 & 50
CP-33	24	609.07	608.22	18	HDPE	65	50 & 51
CP-34	25*	MATCH EXISTING INVERT	608.14	18	HDPE	40	50 & 51
CP-35	26*	MATCH EXISTING INVERT	605.02	18	HDPE	36	57 & 58
CP-36	27*	MATCH EXISTING INVERT	605.34	18	HDPE	60	57 & 58
CP-37	28*	MATCH EXISTING INVERT	606.69	18	HDPE	40	66 & 67
CP-38	29*	MATCH EXISTING INVERT	607.07	18	HDPE	25	66 & 67
CP-39	30	605.22	605.21	96 x 48	Concrete	50	69 & 70
CP-40	31*	613.80	613.47	24	HDPE	50	77 & 78
CP-41	32	MATCH EXISTING INVERT	614.18	24	HDPE	50	77 & 78
CP-42	33	MATCH EXISTING INVERT	645.49	18	HDPE	45	83 & 84
CP-43	34	647.12	646.24	18	HDPE	70	83 & 84
CP-44	35	633.27	633.12	96 x 48	Concrete	50	86 & 87
CP-45	36	632.89	632.88	18	HDPE	22	90 & 91
CP-46	37	653.33	650.10	18	HDPE	24	94 & 95
CP-47	38	644.26	642.90	18	HDPE	74	96 & 97
CP-48	39	643.72	641.78	18	HDPE	85	96 & 97
CP-49	40	635.57	635.46	36	HDPE	28	97 & 98
CP-50	41	637.25	636.72	18	HDPE	28	98 & 99

			CULVERT TABL	E			
SHEET NO.	CULVERT ID	20% BURIED INLET INVERT	20% BURIED OUTLET INVERT	SIZE (in.)	MATERIAL/TYPE	LENGTH (FT)	BETWEEN STR_ & STR_
CP-51	42	635.64	635.34	18	HDPE	22	103 & 104
CP-52	43	635.57	635.28	18	HDPE	22	103 & 104
CP-53	44	634.52	634.38	18	HDPE	40	103 & 104
CP-54	45	635.12	634.71	18	HDPE	40	103 & 104
CP-55	46	636.03	635.19	18	HDPE	22	106 & 107
CP-56	47	635.89	634.93	18	HDPE	22	106 & 107
CP-57	48	634.29	634.25	36	HDPE	25	106 & 107
CP-58	49	637.04	636.64	24	HDPE	50	109 & 110
CP-59	50	637.63	637.55	24	HDPE	63	109 & 110
CP-60	51	636.69	636.68	18	HDPE	22	111 & 112
CP-61	52	636.35	636.15	18	HDPE	22	112 & 113
CP-62	53	635.91	635.15	18	HDPE	22	112 & 113
CP-63	54	641.40	641.36	24	HDPE	32	116-1 & 117
CP-64	55*	643.00	641.78	30	HDPE	50	120 & 121
CP-65	56*	642.70	641.15	18	HDPE	50	120 & 121
CP-66	57	611.00	609.40	24	HDPE	32	130 & 131
CP-67	58	609.90	609.00	60	HDPE	57	130 & 131
CP-68	59	635.12	634.64	18	HDPE	39	136 & 137
CP-69	60*	702.72	702.98	18	HDPE	87	189 & 190
CP-70	61*	728.58	727.96	18	HDPE	84	197 & 198
CP-71	62*	739.47	739.34	18	HDPE	40	200 & 201
CP-72	63*	739.94	739.42	18	HDPE	40	200 & 201



NOTES:

- 1. EROSION AND SEDIMENT CONTROL MEASURES TO BE UTILIZED ARE INCLUDED IN THE EM&CP DRAWINGS AND THE PROJECT STORMWATER POLLUTION PREVENTION PLAN (SWPPP). IN THE CASE OF CONFLICTS, THESE PLANS AND DIRECTION PROVIDED BY THE ENVIRONMENTAL MONITOR GOVERN.
- 1.1. SLOPES UP TO 3H:1V SHALL RECEIVE TOPSOIL (APPR. 3"-4" MIN.) SEED, AND MULCH, AND BE STABILIZED WITH EROSION CONTROL BLANKET.
- 1.2. SLOPES FROM 3H:1V TO 2H:1V SHALL RECEIVE TOPSOIL 1.2. (APPR. 3"-4") AND BE STABILIZED WITH HYDROSEED/HYDROMULCH.
- SLOPES STÉEPER THAN 2H:1V SHALL BE STABILIZED WITH RIPRAP.
- 2. FILTER BARRIERS APPROVED FOR USE INCLUDE SILT FENCE, COMPOST FILTER SOCKS, AND STRAW BALES. CONTRACTOR MAY SELECT METHOD UNLESS DIRECTED OTHERWISE BY THE ENVIRONMENTAL MONITOR.
- 3. ALL CULVERT LENGTHS, INVERT AND OUTLET ELEVATIONS DEPICTED IN THE DRAWINGS ARE ESTIMATES BASED ON THE BEST AVAILABLE DATA. FINAL LENGTHS AND ELEVATIONS SHALL BE DETERMINED BY THE CONTRACTOR BASED ON ACTUAL SITE CONDITIONS SO THAT THE FUNCTIONALITY OF THE CULVERT INSTALLATION IS OPTIMIZED.

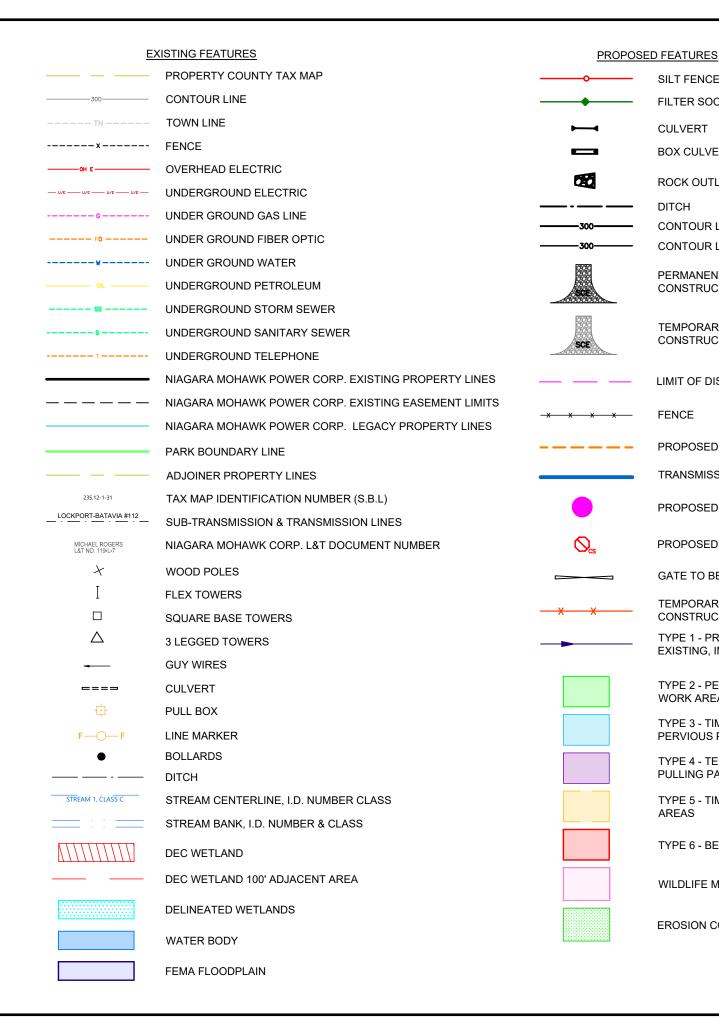
GENERAL SPECIFICATION:

- 1. ALL CULVERT INSTALLATIONS SHALL BE UNDERLAIN BY A LAYER OF GEOTEXTILE FILTER PLACED IN THE STREAMBED TO MITIGATE POTENTIAL SETTLEMENT UNLESS OTHERWISE NOTED.
- 1.1. GEOTEXTILE SHALL BE MIRAFI 160N OR APPROVED EQUAL.
- 2. FOR THOSE INSTALLATIONS REQUIRING FILL TO CREATE THE PROPER COVER OVER THE CULVERT: ALL NON-NATIVE FILL TO CONFORM WITH NYSDOT COURSE SUB-BASE ITEM 4.
- LIFT THICKNESS SHALL BE 12" OR LESS IN LOOSE THICKNESS FOR MINIMUM 10-TON DRUM VIBRATORY ROLLER; 6" FOR PORTABLE PLATE COMPACTORS.
- COMPACTION OF ANY NYSDOT COURSE SUB-BASE ITEM 4 SHALL BE A MINIMUM 92 PERCENT OF THE MAXIMUM DRY DENSITY - MODIFIED PROCTOR (ASTM D1557, METHOD C).

AGGREGATE

- 3.1. RIPRAP SHALL BE USED TO STABILIZE SLOPES IN SPECIFIC INSTANCES AS OUTLINED ON THE PLAN SET AND SHALL CONSIST OF HARD, ANGULAR, AND DURABLE STONE WITH 50 PERCENT OF THE STONE SMALLER THAN 4" SIZE. MAXIMUM STONE SIZE SHALL BE 6".
- 3.2. FILTER STONE SHALL CONSIST OF SIZE 3 CRUSHED SCE STONE AND MEET GRADATION REQUIREMENTS FOR COURSE AGGREGATE IN TABLE 703-4 OF THE NYSDOT STANDARD SPECIFICATION (MAY 2025).
- 4. CULVERT INLETS AND OUTLETS SHALL FEATURE ROCK OUTLET PROTECTION AS DEFINED IN THE NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL (NYSDEC BLUE BOOK). A STANDARD DETAIL IS PROVIDED ON CULVERT PLAN DRAWING CP-06.

SYMBOLS SHOWN HERE MAY BE LARGER OR SMALLER THEN REPRESENTED ON DETAILED DRAWING.



SILT FENCE

FILTER SOCK

BOX CULVERT

ROCK OUTLET PROTECTION

CONTOUR LINE (MAJOR)

CONTOUR LINE (MINOR)

PERMANENT STABILIZED

TEMPORARY STABILIZED

LIMIT OF DISTURBANCE

CONSTRUCTION ENTRANCE

CONSTRUCTION ENTRANCE

PROPOSED PERMANENT EASEMENT

PROPOSED STRUCTURE LOCATION

TYPE 1 - PROPOSED ACCESS OVER

EXISTING, IMPROVE AS NECESSARY

PERVIOUS POST CONSTRUCTION

WILDLIFE MANAGEMENT AREA

EROSION CONTROL FILTER STRIP

TYPE 2 - PERMANENT ACCESS ROADS &

TYPE 3 - TIMBER MAT DURING CONSTRUCTION

TYPE 5 - TIMBER MAT ACCESS ROADS & WORK

TYPE 6 - BERM ACCESS. IMPROVE AS NECESSARY

CLEARING LIMITS FOR THE PROJECT WILL BE THE

EXISTING #112 LINE STRUCTURES TO BE REMOVED.

SAME AS THE LIMITS OF DISTURBANCE.

TYPE 4 - TEMPORARY CONSTRUCTION WORK AREAS,

PULLING PADS OR ACCESS, IMPROVE AS NECESSARY

PROPOSED INVASIVE SPECIES CLEANING STATION

TRANSMISSION LINES (115kV)

GATE TO BE INSTALLED

TEMPORARY ORANGE

WORK AREAS

AREAS

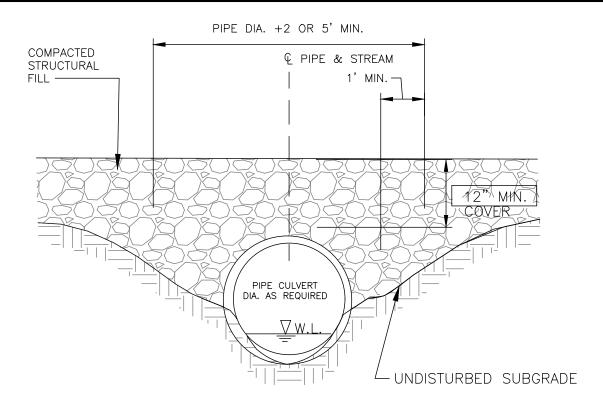
CONSTRUCTION FENCE

CULVER LOCKPORT-B REBUILD F

national**grid**

CULVERT





SECTION VIEW NOT TO SCALE

NOTES:

1. CULVERTS IN STREAMS ARE TO BE 20% EMBEDDED.

SPECIFICATIONS FOR CORRUGATED METAL PIPE-ALUMINIZED TYPE 2 STEEL:

SCOPE: THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE CORRUGATED METAL PIPE (CMP) DETAILED IN THE PROJECT PLANS.

MALLUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M 274 OR ASTM A 929.

<u>PIPE:</u>
THE CMP SHALL BE MANUFACTURED IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF AASHTO M-36 OR ASTM A270. THE PIPE SIZES, GAUGES, AND CORRUGATIONS SHALL BE AS SHOWN ON THE PROJECT PLANS.

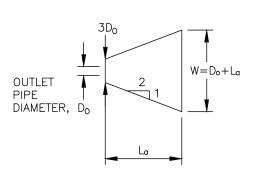
SHALL BE IN ACCORDANCE WITH NCSPA'S (NATIONAL CORRUGATED STEEL PIPE ASSOCIATION) RECOMMENDATIONS.

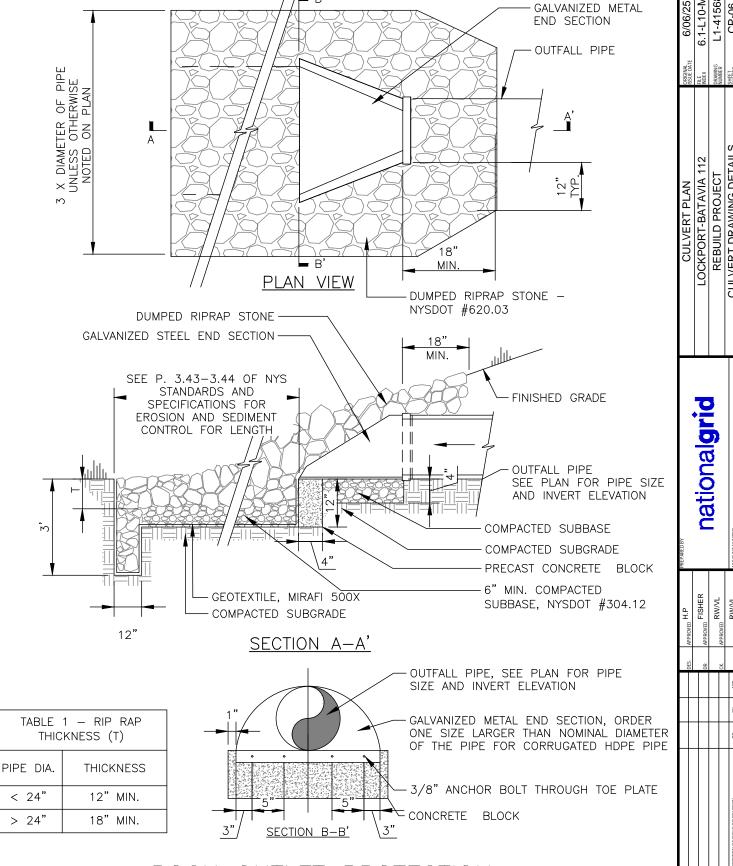
INSTALLATION:
SHALL BE IN ACCORDANCE WITH AASHTO TO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II, OR ASTM A 798 AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS THE CONTRACTOR SHOULD DISCUSS AND RESOLVE WITH THE PROJECT ENGINEER.

IT IS ALWAYS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

CONSTRUCTION LOADS:
CONSTRUCTION LOADS MAY BE HIGHER THAN FINAL LOADS. FOLLOW THE MANUFACTURER'S OR NCSPA GUIDELINES.

Diameter of Culvert (in)	d50 (in)	La (ft)
15-36	9	12
60	12	20
72x48	12	24
96x48	12	32

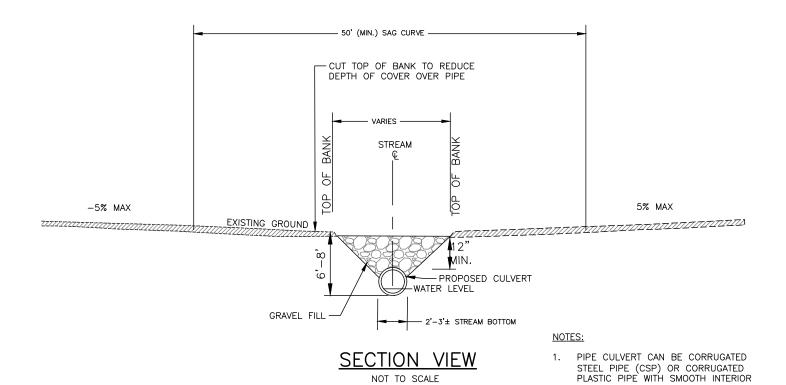




ROCK OUTLET PROTECTION

NOT TO SCALE





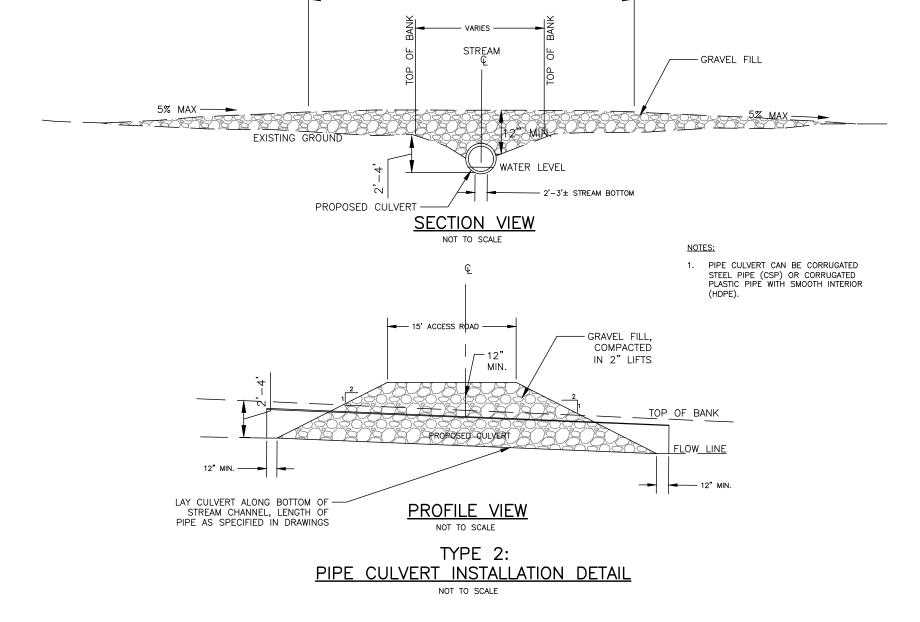
NOT TO SCALE

nationalgrid

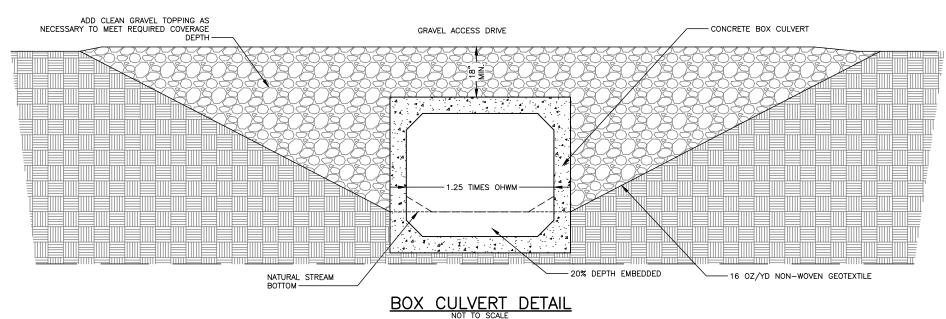
- GRAVEL FILL, COMPACTED IN 12" LIFTS - 15' ACCESS ROAD --12" _<u>MIN.</u> TOP OF BANK PROPOSED COLVERT LAY CULVERT ALONG BOTTOM OF-STREAM CHANNEL, LENGTH OF PIPE AS SPECIFIED IN DRAWINGS PROFILE VIEW NOT TO SCALE

TYPE 1: PIPE CULVERT INSTALLATION DETAIL NOT TO SCALE

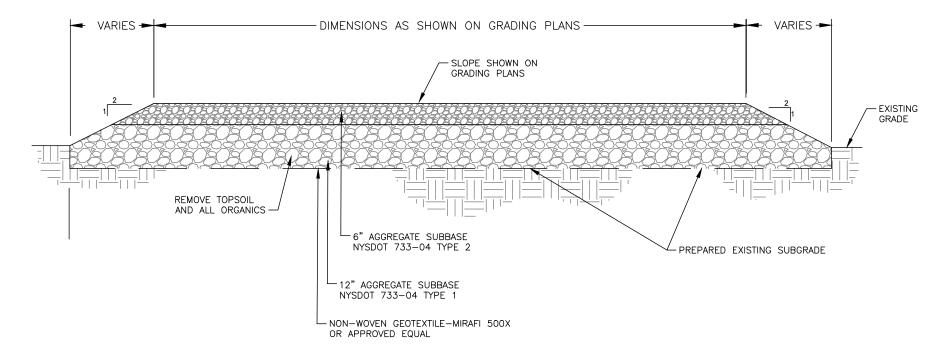




50' (MIN.) CREST CURVE







national<mark>grid</mark>

CONSTRUCTION PAD TYPICAL SECTION

NOT TO SCALE

NOTES:

- 1. DELINEATE LIMITS OF DISTURBANCE AND INSTALL EROSION & SEDIMENT CONTROL BMPs AS SHOWN ON PLAN AND DIRECTED BY ENGINEER OR ENVIRONMENTAL MONITOR.
- 2. STRIP TOP SOIL AND ORGANICS (± 6 INCHES). STOCKPILE TOP SOIL FOR FINAL SITE RESTORATION. REMOVE ALL SOFT, ORGANIC OR OTHER UNACCEPTABLE MATERIAL FROM THE SUBGRADE AND REPLACE WITH SELECT GRANULAR SUBGRADE, NYSDOT 733-1302.
- 3. COMPACT THE TOP SIX (6) INCHES OF SUBGRADE TO 95% MAXIMUM DRY DENSITY (MINIMUM) PER ASTM D1557. DURING COMPACTION THE SUBGRADE SHALL BE AT MINUS 3 TO PLUS 2 PERCENT (-3% TO +2%) OF THE OPTIMUM MOISTURE CONTENT.
- 4. INSTALL GEOTEXTILE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- 2. PLACE AGGREGATE SUBBASE IN MAXIMUM 12" LIFTS (LOOSE). GRADE AND COMPACT TO 95% MAXIMUM DRY DENSITY.
- **GEOTEXTILE NOT REQUIRED IN CONSTRUCTION PADS IDENTIFIED AS "IMPROVE AS NECESSARY"**



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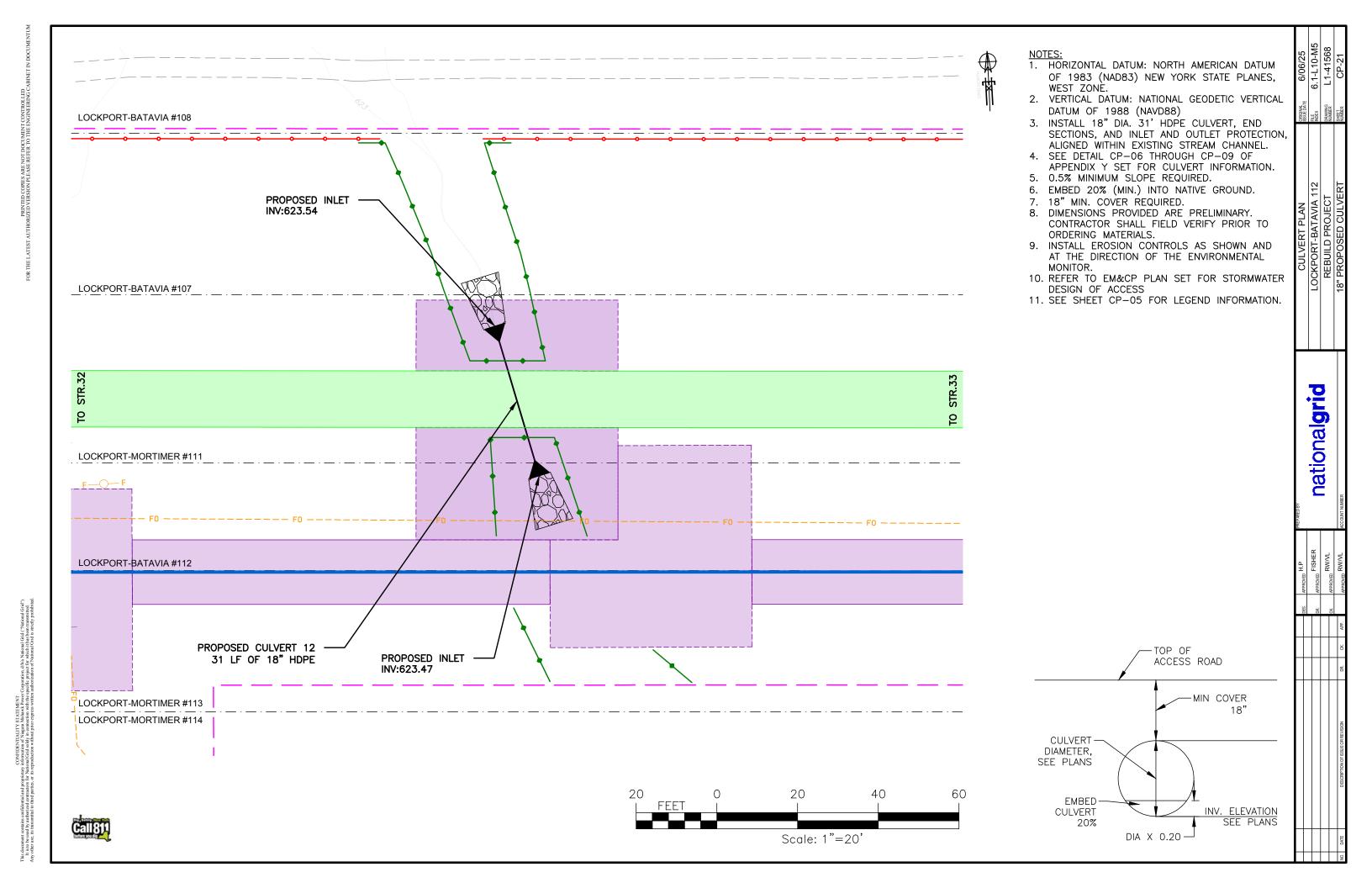
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