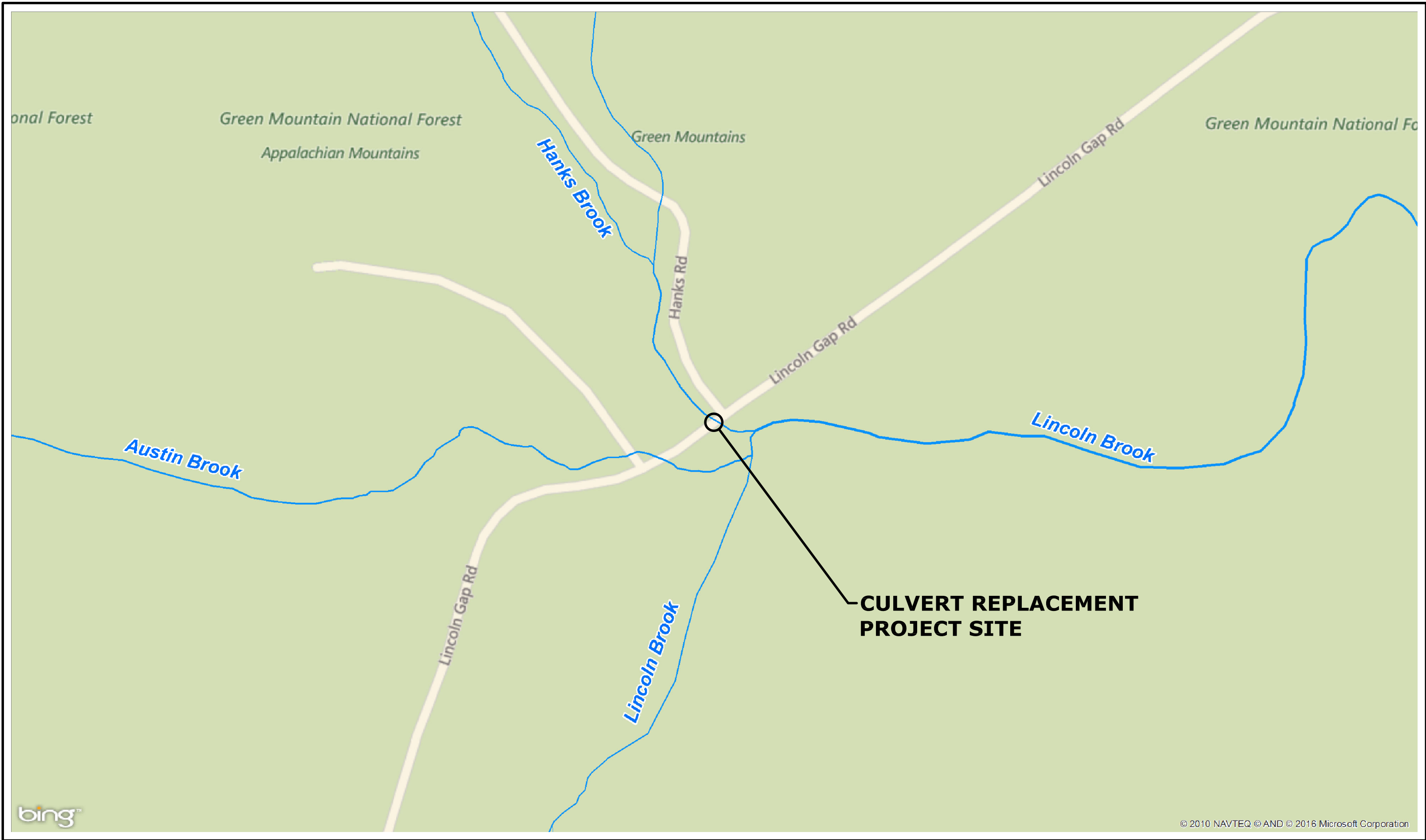


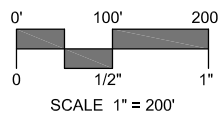
LINCOLN GAP ROAD OVER HANKS BROOK CULVERT REPLACEMENT

WARREN, VERMONT

FINAL DESIGN
SEPTEMBER 14, 2016
REVISED: SEPTEMBER 29, 2016



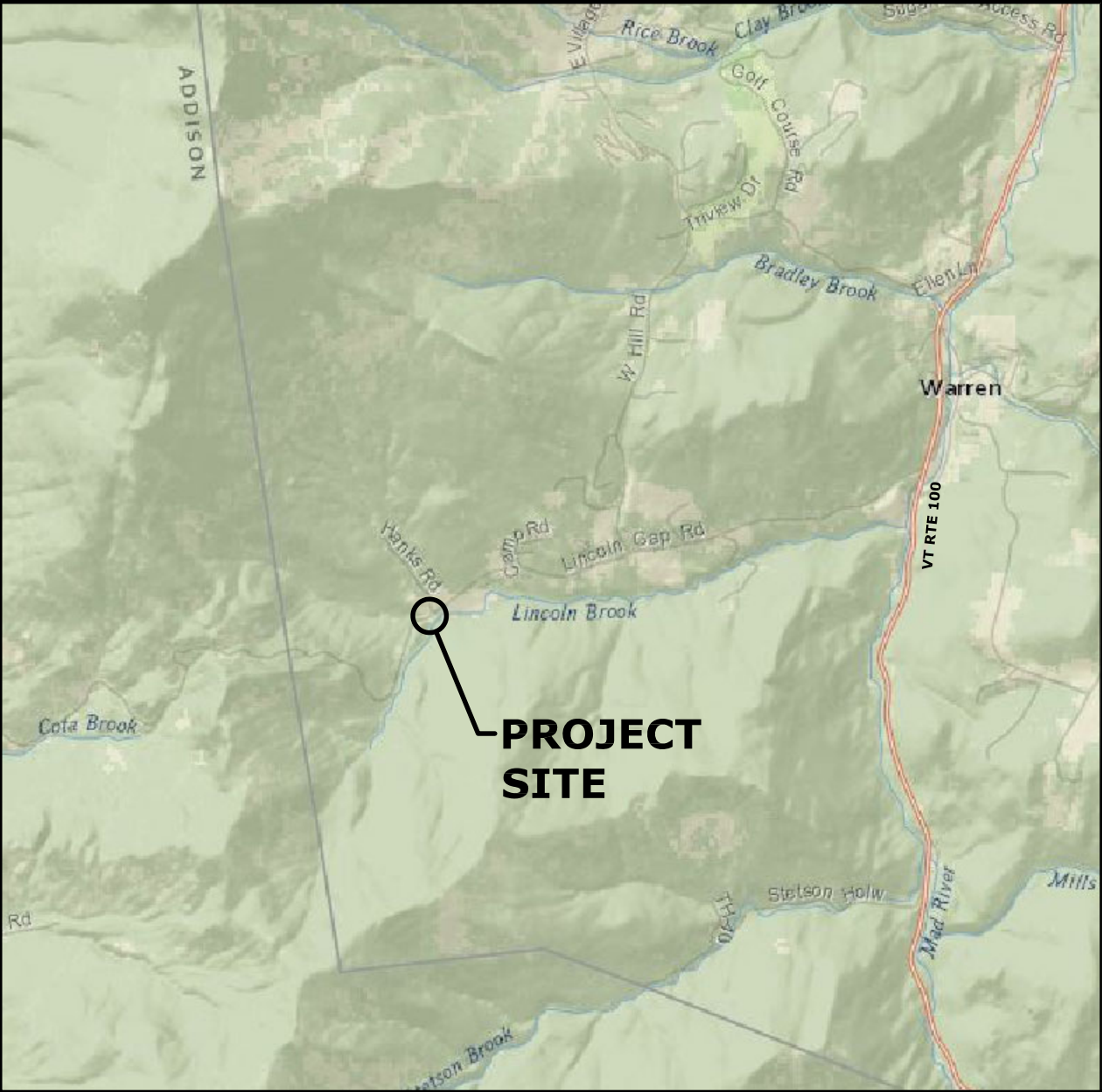
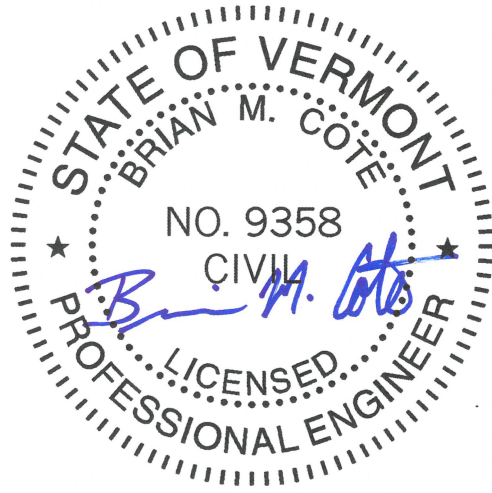
PROJECT SITE VICINITY MAP:



PREPARED BY:



1 South Main Street, 2nd Floor
Waterbury, Vermont 05676
(802) 882-8335 Fax (802) 882-8346
www.miloneandmacbroom.com



LOCATION MAP:

PREPARED FOR:

FRIENDS OF THE MAD RIVER
PO BOX 255
WAITSFIELD, VERMONT 05674

IN PARTNERSHIP WITH:

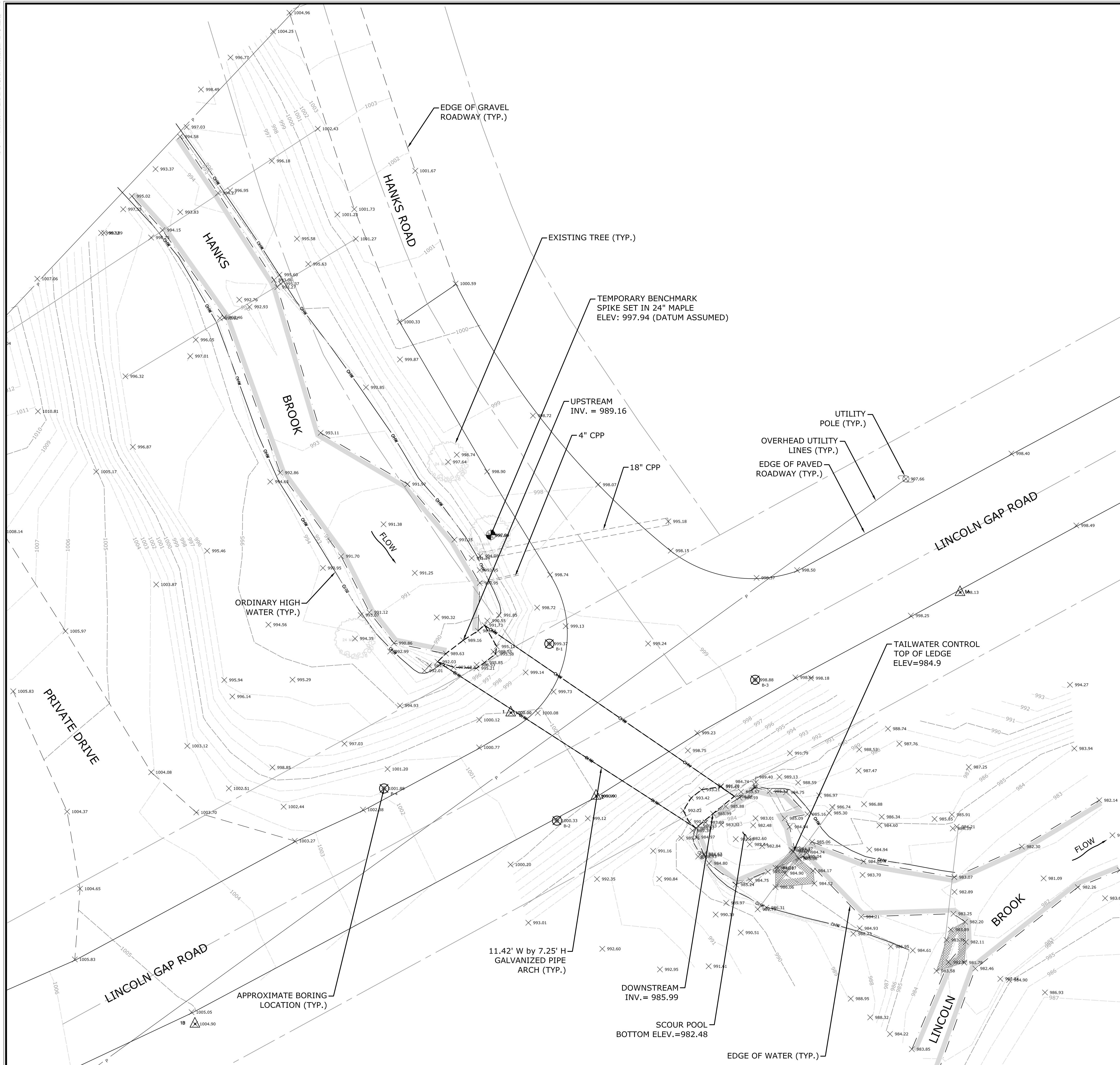
U.S. FISH & WILDLIFE SERVICE
U.S. DEPARTMENT OF AGRICULTURE FOREST SERVICE
VERMONT DEPARTMENT OF FISH & WILDLIFE
VERMONT AGENCY OF NATURAL RESOURCES
TOWN OF WARREN

LIST OF DRAWINGS

NO.	NAME	TITLE
01	--	TITLE SHEET
02	EX	SITE PLAN - EXISTING CONDITIONS
03	PL	SITE PLAN - PROPOSED CONDITIONS
04	LA	SITE PLAN - LAYOUT
05	SE	WATER HANDLING PLAN & NOTES
06	STR-01	STRUCTURAL PLAN
07	STR-02	STRUCTURAL DETAILS
08	STR-03	STRUCTURAL & WATER HANDLING DETAILS
09	B-1	BORING LOGS
10	MPT	TRAFFIC MANAGEMENT PLAN

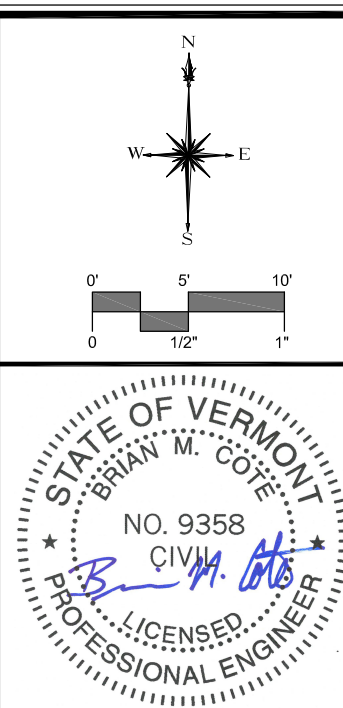



NO.	REVISION	DATE
0	LAYOUT PLAN ADDED.	03/25/19



MAPPING NOTES:

1. TOPOGRAPHY AND BASE MAPPING SURVEYED BY GREINER ENGINEERING, PC, "MILONE & MACBROOM - CULTIVET REPLACEMENT" SITE PLAN, TOWN OF WARREN, VT, LINCOLN GAP ROAD, SCALE 1"=20', DATED AUGUST 16, 2016.
2. CHANNEL EDGE AS SHOWN INDICATES EDGE OF WATER AT TIME OF SURVEY (REFERENCE #1).
3. BANKFULL WIDTH AND DEPTH INDICATORS MEASURED DURING FIELD RECONNAISSANCE WERE FOUND TO CLOSELY COINCIDE WITH ORDINARY HIGH WATER (OHW) AND WAS USED FOR OHW DELINEATION.
4. ALL ELEVATIONS ARE ON ASSUMED DATUM, PROJECT BENCHMARK PROVIDED (SEE PLAN VIEW). HORIZONTAL DATUM IS ASSUMED.
5. LINCOLN GAP ROAD AND HANKS ROAD RIGHT-OF-WAY WERE APPROXIMATED BASED ON A 3 ROD WIDTH.
6. MILONE & MACBROOM ACCEPTS NO RESPONSIBILITY FOR THE ACCURACY OF MAPPING AND DATA THAT HAVE BEEN SUPPLIED BY OTHERS.



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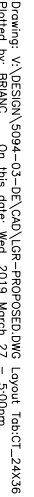
SITE PLAN - EXISTING CONDITIONS

LINCOLN GAP ROAD OVER HANKS BROOK
CULVERT REPLACEMENT

LINCOLN GAP ROAD
WARREN, VERMONT

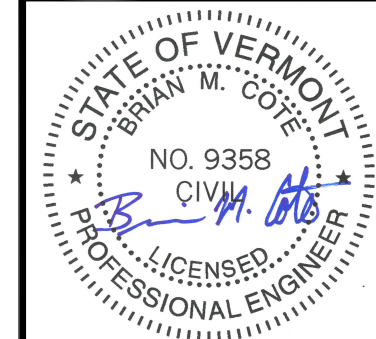
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1"=10'		
SCALE		
SEPTEMBER 14, 2016		
DATE		
5094-03		
PROJECT NO.		
02 OF 10		
DRAWING NO.		

EX



1. THE PROJECT INCLUDES RESTORATION OF AQUATIC ORGANISM PASSAGE AT A CULVERT IN WARREN, VERMONT. THE CROSSING HAS BEEN REDESIGNED TO INCLUDE A NATURAL STREAM BOTTOM BY REPLACING THE STRUCTURE WITH AN OPEN-BOTTOM ARCH AND CORRECTING SLOPE AND INVERT DROPS.
2. OBTAIN ANY NECESSARY WORK PERMITS AND SUBMIT SCHEDULES, PLANS AND PRODUCT INFORMATION, INCLUDING THE SEDIMENT AND EROSION CONTROL PLAN, WATER HANDLING, TRAFFIC MANAGEMENT PLAN, CONSTRUCTION SEQUENCE, AND EMERGENCY OPERATION FLOOD AND SPILL PLAN TO THE PROJECT ENGINEER FOR REVIEW FIVE DAYS PRIOR TO INITIATION OF CONSTRUCTION. INSTALL CONSTRUCTION WARNING SIGNS AND FENCING.
3. CONTRACTOR SHALL PARTICIPATE IN A PRE-CONSTRUCTION SITE MEETING WITH THE PROJECT ENGINEER TO REVIEW CONSTRUCTION DETAILS, PERMIT REQUIREMENTS, CONTRACT PROVISIONS, SPECIFICATIONS AND PROJECT LIMITS.
4. SUBMIT ANTICIPATED WORK SCHEDULE TO THE PROJECT ENGINEER PRIOR TO THE COMMENCEMENT OF WORK. THE PROJECT ENGINEER SHALL BE NOTIFIED OF ANY CHANGES IN SCHEDULE IMMEDIATELY.
5. THE FINAL LOCATION OF THE PROPOSED STRUCTURES SHALL BE DETERMINED IN THE FIELD BY THE PROJECT ENGINEER PRIOR TO CONSTRUCTION.
6. THE ELEVATIONS PROPOSED FOR THE STRUCTURE BOTTOM INVERT, CHANNEL INVERT, AND STREAM BED MAY BE ADJUSTED SLIGHTLY BY THE PROJECT ENGINEER BASED ON FIELD CONDITIONS.
7. PERFORM MINIMAL MODIFICATIONS TO THE SITE TO ALLOW EQUIPMENT ACCESS. ALL SITE ACCESS IMPROVEMENTS AND/OR MODIFICATIONS PROPOSED BY THE CONTRACTOR, AS WELL AS THE TYPE OF EQUIPMENT THAT IS PROPOSED, SHALL BE APPROVED BY THE TOWN AND PROJECT ENGINEER PRIOR TO CONSTRUCTION.
8. TEMPORARY STOCKPILE AND STAGING AREAS ARE TO BE FLAGGED BY CONTRACTOR PRIOR TO CONSTRUCTION AND APPROVED BY THE PROJECT ENGINEER.
9. ALL PROPOSED GRADES AND SPOT ELEVATIONS IN PLAN VIEW INDICATE FINISHED GRADE. THE NEED TO MODIFY PROPOSED FINISHED GRADES MAY BE REQUIRED IF UNEXPECTED CONDITIONS ARE ENCOUNTERED (E.G., BEDROCK, LEGGE, ETC.). CONSULT THE PROJECT ENGINEER FOR ANY RECOMMENDED CHANGES.
10. CLEAR AND GRUB TOP AND SIDE SLOPES OF THE EXISTING ROAD EMBANKMENT WITHIN THE ESTABLISHED LIMITS OF CLEARING. STOCKPILE CRUMBINGS TO BE REUSED FOR SITE RECOVERY. ALL CLEARING AND EXCESS GRUBBING MATERIALS SHALL BE DISPOSED OF AT AN APPROVED SITE.
11. NO DISTURBANCE BEYOND THE ESTABLISHED LIMITS OF CLEARING IS ALLOWED UNLESS PRIOR PERMISSION IS OBTAINED FROM THE PROJECT ENGINEER.
12. CONTRACTOR MUST COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL PERMITS AND REGULATIONS THROUGHOUT THE DURATION OF PROJECT.
13. AT THE END OF EACH WORK DAY, THE CONTRACTOR SHALL PROVIDE A FORM OF BARRIER OR CONSTRUCTION FENCING AT THE SITE TO PREVENT MOTORIZED VEHICLE ACCESS.
14. CLOSE ROAD IN COORDINATION WITH THE TOWN OF WARREN AND THE PROJECT ENGINEER.
15. ALL PRECAUTIONS SHALL BE TAKEN TO PREVENT THE POTENTIAL TRANSPORT OF INVASIVE SPECIES TO THE CONSTRUCTION SITE. THE CONTRACTOR SHALL INSPECT AND CLEAN ALL EQUIPMENT PRIOR TO TRANSPORT TO THE CONSTRUCTION SITE.
16. CONSTRUCTION IS TO TAKE PLACE DURING LOW WATER CONDITIONS. A WATER CONTROL PLAN HAS BEEN PROVIDED. THE CONTRACTOR SHALL BE PREPARED TO PROVIDE WATER HANDLING AS SPECIFIED IN THE WATER CONTROL PLAN SHOULD THE NEED ARISE DURING THE CONSTRUCTION. ANY CHANGES OR MODIFICATIONS TO THE WATER HANDLING APPROACH BY THE CONTRACTOR IS SUBJECT TO REVIEW AND APPROVAL BY THE PROJECT ENGINEER.
17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MONITORING THE WEATHER FORECASTS AND SHALL BE RESPONSIBLE FOR STABILIZING THE SITE AND REMOVING EQUIPMENT FROM FLOOD PRONE AREAS IN THE EVENT OF FLOOD WARNINGS. A FLOOD CONTINGENCY AND EMERGENCY ACTION PLAN SHALL BE PROVIDED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
18. ALL EQUIPMENT USED IN OR NEAR TO THE WATER SHALL HAVE TIGHT SEALS, AND SHALL NOT POLLUTE THE WATER.
19. NO CONSTRUCTION VEHICLES SHALL BE STORED, SERVICED, WASHED OR FLUSHED IN A LOCATION WHERE LEAKS, SPILLAGE, WASTE MATERIALS, CLEANERS, OR WATERS WILL BE INTRODUCED OR FLOW INTO WETLANDS, WATERCOURSES, OR STORED DRAINAGE. AN EMERGENCY MANAGEMENT PLAN AND SPILL KIT WILL BE MAINTAINED ON SITE AT ALL TIMES. IN THE EVENT OF AN ACCIDENTAL RELEASE, IMMEDIATELY STOP CONSTRUCTION WORK, CONTAIN THE SPILL, AND NOTIFY APPROPRIATE AUTHORITIES AND PROJECT ENGINEER.
20. ANY MATERIAL EXPORTED OFF-SITE SHALL BE LEGALLY DISPOSED OF IN AN UPLAND LOCATION AT NO ADDITIONAL COST. THE CONTRACTOR IS RESPONSIBLE FOR FINDING A SUITABLE RECIPIENT OF THE MATERIAL, GAINING REGULATORY APPROVAL FOR EXPORTED MATERIAL PLACEMENT IF NEEDED, AND HAULING.
21. ALL AREAS SURROUNDING THE PROJECT SITE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED UPON COMPLETION OF CONSTRUCTION. THE RESTORATION OF THE SITE IS SUBJECT TO APPROVAL BY THE TOWN AND THE PROJECT ENGINEER.
22. THE LOCATION OF ALL EXISTING UTILITIES SHOULD BE CONFIRMED PRIOR TO BEGINNING CONSTRUCTION. CALL "DIG SAFE" AT 1-888-DIG-SAFE (344-7233) A MINIMUM OF 3 DAYS PRIOR TO DIGGING. ALL UTILITY LOCATIONS THAT DO NOT MATCH THE VERTICAL OR HORIZONTAL CONTROL SHOWN ON THE PLANS OR CONFLICT WITH THE PROPOSED CONSTRUCTION SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE TOWN AND PROJECT ENGINEER FOR RESOLUTION. APPROPRIATE ACTION SHALL BE DETERMINED AND AGREED UPON BY THE PROJECT ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.
23. FOLLOWING COMPLETION OF CONSTRUCTION, THE CONTRACTOR SHALL PARTICIPATE IN A FINAL INSPECTION WITH THE PROJECT ENGINEER FOR THE PURPOSE OF DETERMINING THAT THE PROJECT HAS BEEN COMPLETED ACCORDING TO THE CONSTRUCTION DRAWINGS AND THE TERMS AND CONDITIONS OF THE CONTRACT.
24. THE CONTRACTOR SHALL VISIT THE PROJECT SITE WITH THE PROJECT ENGINEER FOLLOWING THE FIRST HIGH FLOW TO OBSERVE SITE CONDITIONS. EROSION AND/OR AOP PROBLEMS WILL BE CORRECTED IF THEY ARE PRESENT. THIS VISIT WILL BE LIKELY OCCUR WITHIN 30 DAYS OF PROJECT COMPLETION AND COULD RESULT IN MAXIMUM OF 1 DAY OF MACHINE TIME TO FINE TUNE STRUCTURE OR ROAD.

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SITE PLAN - LAYOUT

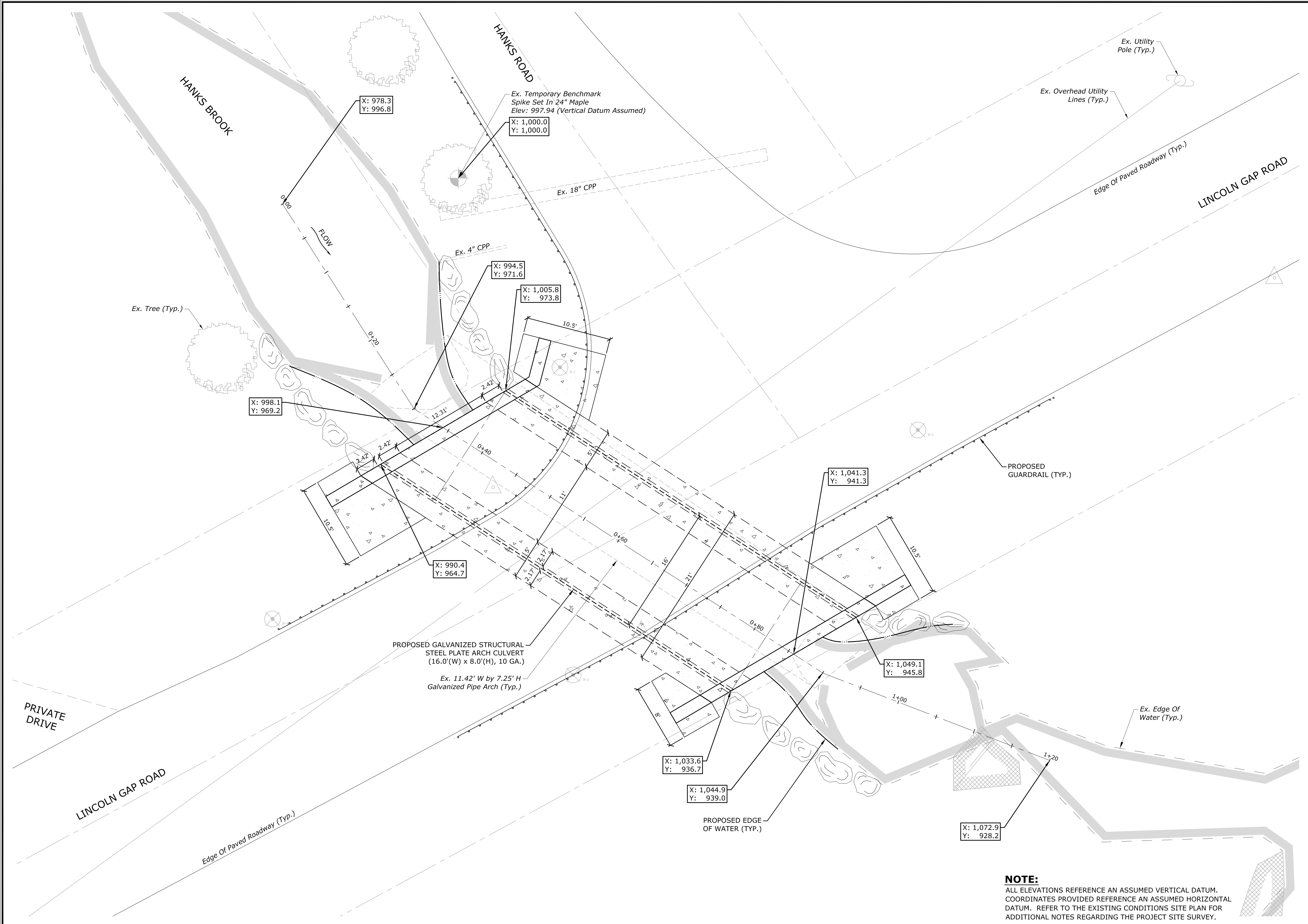
**LINCOLN GAP ROAD OVER HANKS BROOK
CULVERT REPLACEMENT**

LINCOLN GAP ROAD
WARREN, VERMONT

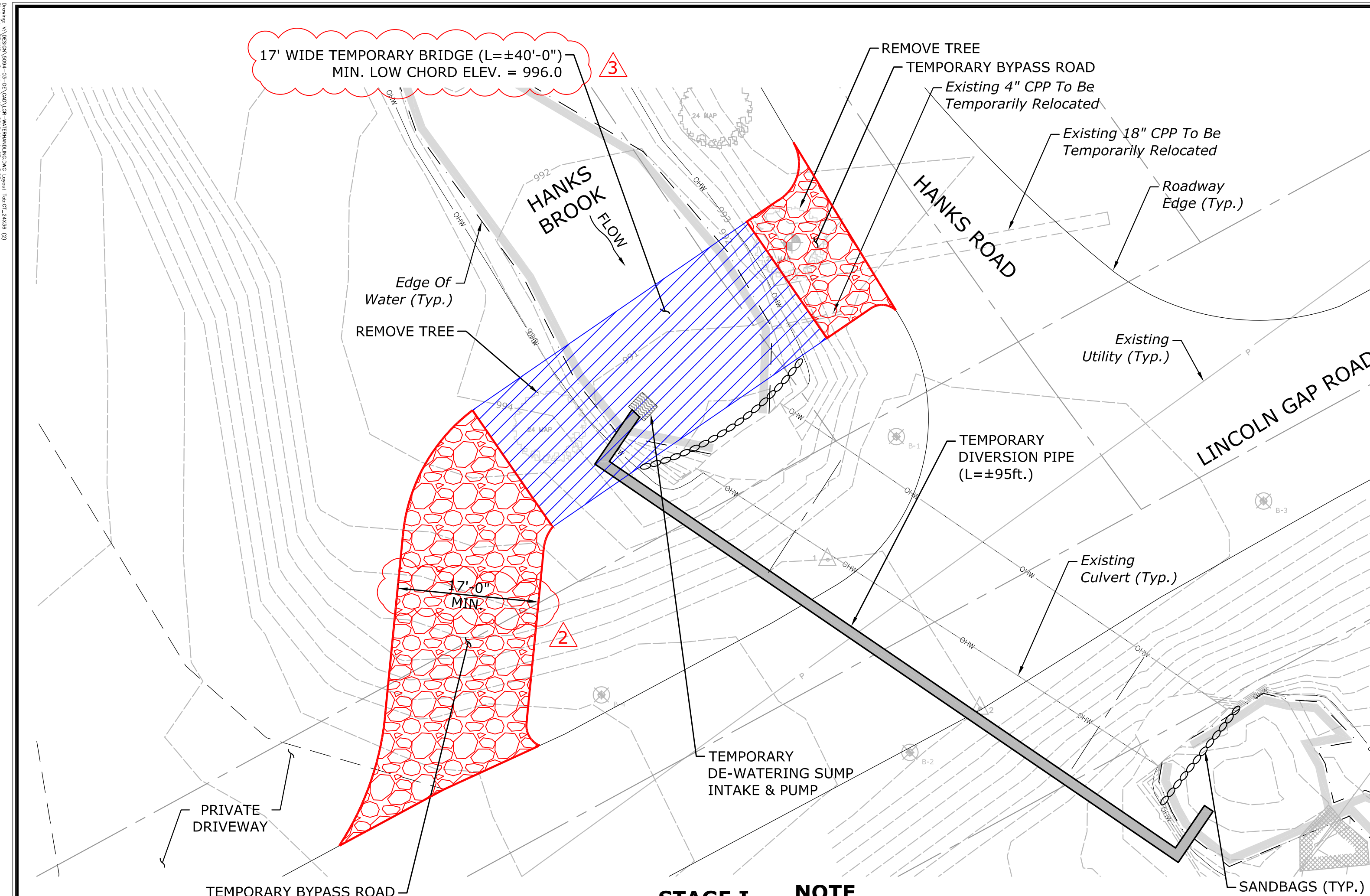
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DESIGNED	DRAWN	CHECKED
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<p>MARCH 25, 2019</p> <p>DATE</p>		
<p>5094-03</p> <p>PROJECT NO.</p>		
<p>04 OF 10</p> <p>DRAWING NO.</p>		

LA

SHEET NO.



NOTE:
ALL ELEVATIONS REFERENCE AN ASSUMED VERTICAL DATUM.
COORDINATES PROVIDED REFERENCE AN ASSUMED HORIZONTAL
DATUM. REFER TO THE EXISTING CONDITIONS SITE PLAN FOR
ADDITIONAL NOTES REGARDING THE PROJECT SITE SURVEY.

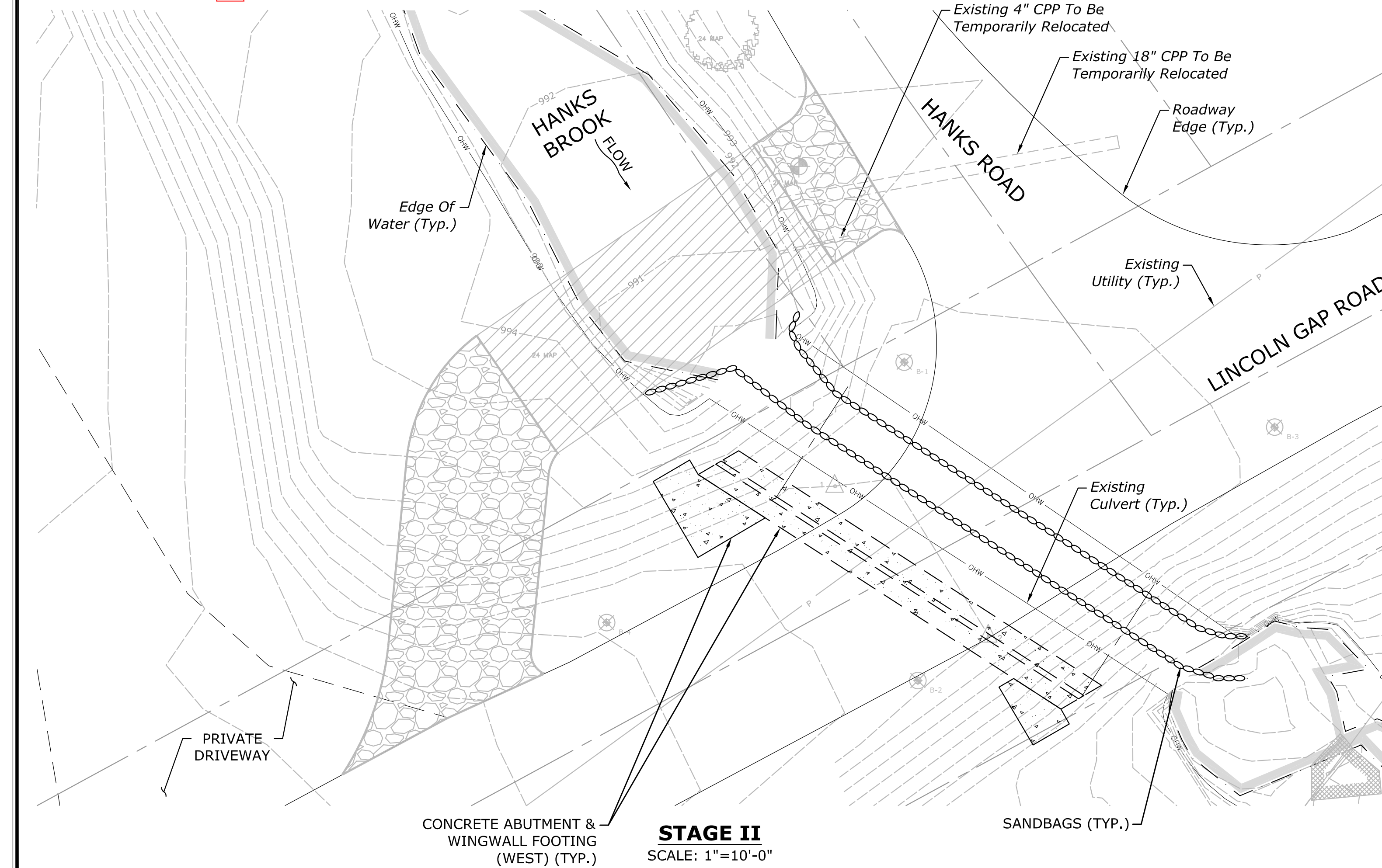


STAGE I
SCALE: 1"=10'-0"

NOTE

* TEMPORARY BRIDGE PER MABEY BRIDGE,
TEL. (410) 379-2800, OR APPROVED EQUAL.
CONTRACTOR TO INSTALL BRIDGE PER MANUFACTURERS
RECOMMENDATIONS AND SPECIFICATIONS.
THE TEMPORARY BRIDGE SHALL HAVE VEHICULAR
PROTECTION RAILINGS AND SHALL BE DESIGNED FOR
HS-20 LOADS MINIMUM.

NO.	REVISION	DATE
2	DIMENSION ADDED TO TEMPORARY BYPASS ROAD.	03/25/19
3	MINIMUM LOW CHORD ELEVATION ADDED.	03/25/19



STAGE II
SCALE: 1"=10'-0"

WATER CONTROL NOTES:

1. THE PROPOSED WATER CONTROL PLAN IS PROVIDED AS A RECOMMENDED APPROACH. THE CONTRACTOR IS RESPONSIBLE FOR SUBMITTING A PROPOSED CONSTRUCTION SEQUENCE TO THE PROJECT ENGINEER FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION
2. WORK DURING LOW WATER.
3. OK TO WORK IN WET, YET MINIMIZE RIVER CHANNEL DISTURBANCE. WORK ON PLATFORM OF RIVER COBBLE ADEQUATE.
4. INSTALL WATER DIVERSION AS SHOWN IN PLAN STAGE I, II & III OR PUMP AROUND PRACTICE.
5. CONTINUE WATER DIVERSION OR PUMP AROUND PRACTICE UNTIL WORK IS COMPLETE.
6. THERE SHALL BE NO CLAIMS FOR EXTRA COMPENSATION FOR PROJECT DELAYS DUE TO WATER CONTROL ASSOCIATED WITH HIGH WATER LEVELS FROM NATURAL EVENTS SUCH AS FLOODS.

CONSTRUCTION SEQUENCE NOTES:

STAGE I

1. INSTALL SEDIMENT & EROSION CONTROLS AS REQUIRED.
2. INSTALL TEMPORARY CONCRETE BLOCK AS REQUIRED FOR TEMPORARY BRIDGE @ BOTH ENDS OF BROOK - SEE DETAIL ON SHEET STR-03.
3. INSTALL TEMPORARY BRIDGE PER MANUFACTURERS RECOMMENDATIONS & SPECIFICATIONS.
4. INSTALL TEMPORARY BYPASS ROAD CONNECTING TO TEMPORARY BRIDGE.
5. INSTALL TRAFFIC MANAGEMENT MEASURES PER PLANS.
6. INSTALL SANDBAGS AND PUMP WATER AROUND.
7. REMOVE EXISTING CULVERT.

STAGE I

1. REMOVE AND REINSTALL SANDBAGS PER PLANS.
2. EXCAVATE FOR WEST ABUTMENT, FOOTINGS, WINGWALLS & CHANNEL MATERIAL FOR REUSE.
3. INSTALL WEST ABUTMENT AND WINGWALL FOOTINGS PER PLANS.

STAGE I

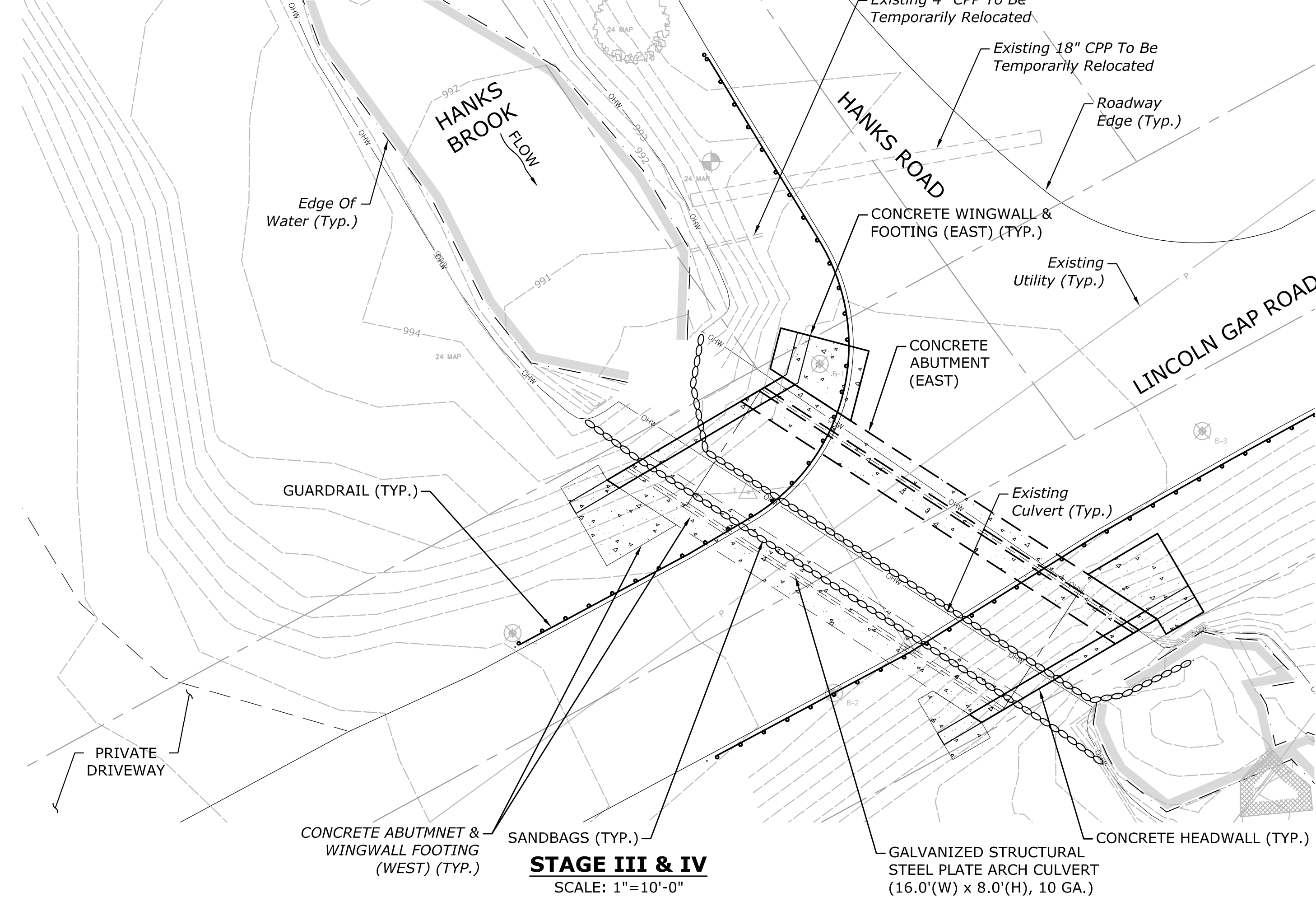
1. REMOVE AND REINSTALL SANDBAGS PER PLANS.
2. EXCAVATE FOR EAST ABUTMENT, FOOTINGS, WINGWALLS & CHANNEL PER PLANS & STOCKPILE FOR REUSE.
3. INSTALL EAST ABUTMENT AND WINGWALL FOOTINGS PER PLANS.
4. INSTALL PLATE ARCH CULVERT PER PLANS.
5. INSTALL HEADWALLS & WINGWALLS PER PLANS.
6. BACKFILL & RESTORE ROADWAY OVER NEW CULVERT.
7. DIVERT TRAFFIC BACK ONTO LINCOLN GAP ROAD.
8. REMOVE TRAFFIC MANAGEMENT MEASURES AND TEMPORARY BYPASS ROAD.

STAGE-I

1. INSTALL GUARDRAIL PER PLANS.
2. CONSTRUCT REMAINING PORTIONS OF PROPOSED CONDITIONS PER PLANS.
3. GRADE CHANNEL BANKS PER PLANS. BACKFILL AND GRADE BEHIND WINGWALLS
4. REMOVE SANDBAGS / TEMPORARY COFFERDAM.
5. REMOVE SEDIMENT & EROSION CONTROLS.
6. RESTORE SITE (SEE SITE RESTORATION NOTES).

NOTE

1. CONTRACTOR MAY SUBMIT ALTERNATE CONSTRUCTION SEQUENCE TO THE ENGINEER FOR APPROVAL
2. WORK TO BE COMPLETED DURING LOW FLOW.



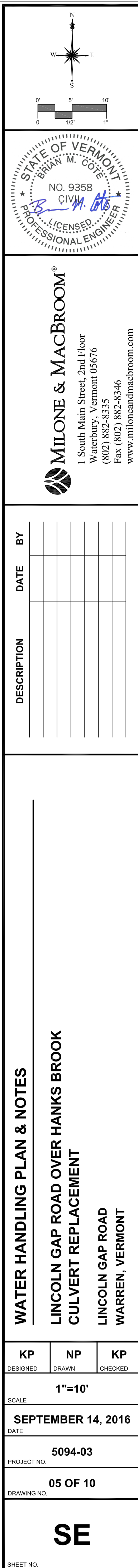
STAGE III & IV
SCALE: 1"=10'-0"

SEDIMENT & EROSION CONTROL NOTES:

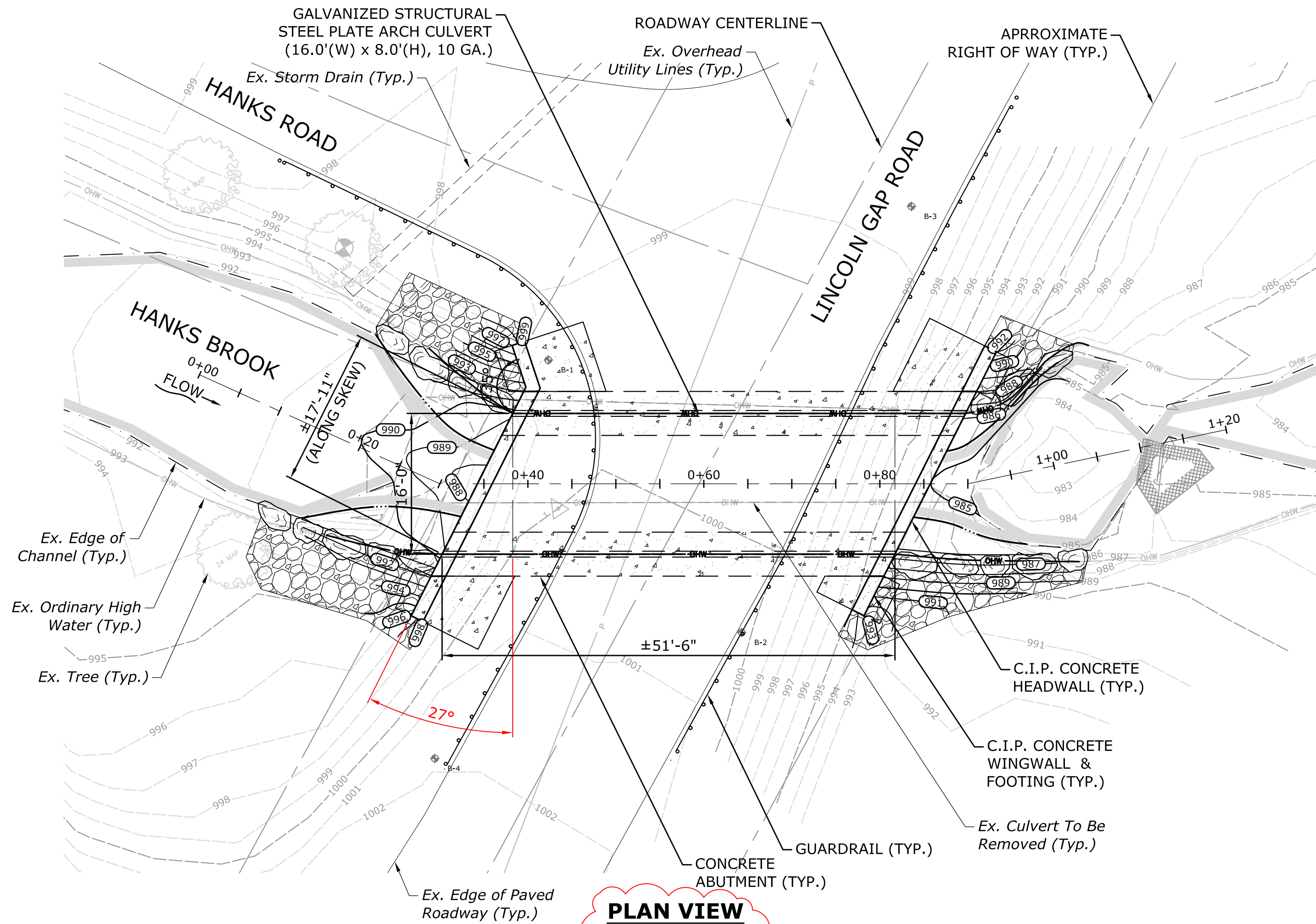
1. THE SEDIMENT AND EROSION CONTROL PRACTICES IMPLEMENTED AS PART OF THE PROJECT SHALL BE IMPLEMENTED AND MAINTAINED ACCORDING TO "THE LOW RISK SITE HANDBOOK FOR EROSION PROTECTION AND SEDIMENT CONTROL" GUIDANCE DOCUMENT FROM THE VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION, WHERE APPLICABLE IN CONSULTATION WITH PROJECT ENGINEER.
2. THE PROJECT IS LOCATED SO RUNOFF WILL BE MOSTLY CONTAINED WITHIN THE PROPOSED STRUCTURE EXCAVATION AND DIRTY WATER PRODUCED DURING CONSTRUCTION WILL BE TREATED AS SHOWN ON PLANS. EROSION CONTROLS NEEDED INCLUDE: DEWATERING BASINS AND POSSIBLY LIMITED SILT FENCING IF SEDIMENT MIGRATION IS OBSERVED DURING CONSTRUCTION, AS DETERMINED BY THE PROJECT ENGINEER IN THE FIELD.
3. THE LIMITS OF DISTURBANCE SHALL BE CLEARLY MARKED IN THE FIELD FOR REVIEW BY THE PROJECT ENGINEER.
4. LIMIT SOIL DISTURBANCE. NO DISTURBED SOIL SURFACES SHALL BE ALLOWED TO REMAIN EXPOSED FOR MORE THAN 7 CONSECUTIVE DAYS.
5. THE CONTRACTOR SHALL MAINTAIN ALL STREETS, SIDEWALKS, AND WALKWAYS IN THE AREA FREE OF SOIL, MUD AND CONSTRUCTION DEBRIS.
6. EXCAVATION AND MOVING OF MATERIAL SHOULD MINIMIZE SPILLING MATERIAL IN THE RIVER. BUCKETS ARE NOT TO OVERFLOW AND SPILL MATERIAL.
7. THE CONTRACTOR IS RESPONSIBLE FOR THE MAINTENANCE OF ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES. THE CONSTRUCTION INSPECTOR WILL VERIFY THE MAINTENANCE ON A PREDETERMINED SCHEDULE AND AFTER RAINFALL EVENTS OF 0.5 INCH OR GREATER.
8. WITHIN 48 HOURS OF FINAL GRADING, EXPOSED SOIL NOT PROTECTED BY STONE RIPRAP MUST BE SEEDED AND MULCH (SEE SITE RESTORATION NOTES).
9. THE SITE SHOULD BE KEPT CLEAN OF LOOSE DEBRIS, LITTER, AND BUILDING MATERIALS.
10. A COPY OF ALL PLANS AND REVISIONS, APPLICABLE PERMITS, AND THE SEDIMENT AND EROSION CONTROL PLAN SHALL BE MAINTAINED ON-SITE BY THE CONTRACTOR AT ALL TIMES DURING CONSTRUCTION.

SITE RESTORATION NOTES:

1. THIS WORK SHALL CONSIST OF RESTORING THE PROJECT SITE, ACCESS ROUTE, AND ALL OTHER AREAS DISTURBED DURING CONSTRUCTION TO PRE-CONSTRUCTION CONDITIONS TO THE EXTEND POSSIBLE. IN ADDITION, THE FOLLOWING SPECIFICATIONS APPLY.
2. RE-CREATE NATIVE STREAMBED WITH MIX OF PARTICLE SIZES THROUGH STRUCTURE AND ON ALL DISTURBED ADJACENT STREAMBED. ROUGHEN CHANNEL WITH RANDOM BOULDER CLUSTERS, WHERE NECESSARY, REFER TO CHANNEL AWAY FROM ROAD FOR EXAMPLE (VTRANS SPECIFICATION 203.27 FOR CHANNEL EXCAVATION).
3. ALL DISTURBED AREAS SHALL BE RESTORED TO PRE-CONSTRUCTION CONDITIONS UPON COMPLETION OF WORK, INCLUDING BUT NOT LIMITED TO STOCKPILE AND STAGING AREAS, CONSTRUCTION EQUIPMENT PARKING AREAS, AND ANY OTHER AREAS DISTURBED OR DAMAGED DURING CONSTRUCTION. RESTORATION MAY INCLUDING LIGHT GRADING, TOPSOIL AND SEED, MULCH, AND/OR PATCHING OF ROAD SURFACE. ANY PATCHING OF THE GRAVEL ROADWAY SHALL USE MATCHING MATERIAL, AS SPECIFIED BY THE TOWN.
4. REAPPLY STOCKPILED GRUBBING MATERIAL TO A DEPTH OF 6" MINIMUM AT ALL DISTURBED AREAS, ACCORDING TO VTRANS SPECIFICATION 651.07.
5. APPLY EROSION CONTROL BLANKET TO SLOPES STEEPER THAN 2:1 SLOPE. USE BIONET SHORT TERM BIODEGRADABLE EROSION CONTROL BLANKETS ITEM NUMBER S150N, AS MANUFACTURED BY NORTH AMERICAN GREEN, 5401 ST. WENDEL-CYNTHIANA ROAD, POSEVILLE, IN 47633, OR APPROVED EQUAL. INSTALL EROSION CONTROL BLANKET ACCORDING TO MANUFACTURER'S INSTRUCTIONS AND SPECIFICATIONS.
6. ALL DISTURBED AREAS WILL BE RE-VEGETATED SHALL BE SEEDDED AND PROTECTED FROM EROSION AS SOON AS PRACTICAL ONCE FINISH GRADE IS ACHIEVED. REVEGETATION PROCEDURES SHOULD FOLLOW VTRANS SPECIFICATION 651 FOR TURF ESTABLISHMENT.
7. SEED MIX FOR RESTORING ALL DISTURBED AREAS WITHIN THE PROJECT SITE SHALL BE NEW ENGLAND CONSERVATION / WILDLIFE MIX (PROVIDED BY NEW ENGLAND WETLAND PLANTS, INC. 820 WEST STREET, AMHERST, MA 01002, OR APPROVED EQUAL) APPLIED AT A RATE OF 25 POUNDS PER ACRE OR APPROVED EQUAL. CONTRACTOR SHALL PROVIDE A LIST OF SPECIES INCLUDED IN THE MIX PRIOR TO APPLICATION FOR REVIEW AND APPROVAL BY THE PROJECT ENGINEER. SEED QUALITY WILL CONFORM TO VTRANS SPECIFICATION 755.04.
8. ALL SEEDDED AREAS WILL BE COVERED WITH HAY MULCH ACCORDING TO VTRANS SPECIFICATION 755.10, APPLIED AT A RATE OF 2 TONS/ACRE, AND MECHANICALLY ANCHORED.
9. ALL RESTORATION WORK IS SUBJECT TO FINAL APPROVAL BY THE TOWN AND PROJECT ENGINEER.

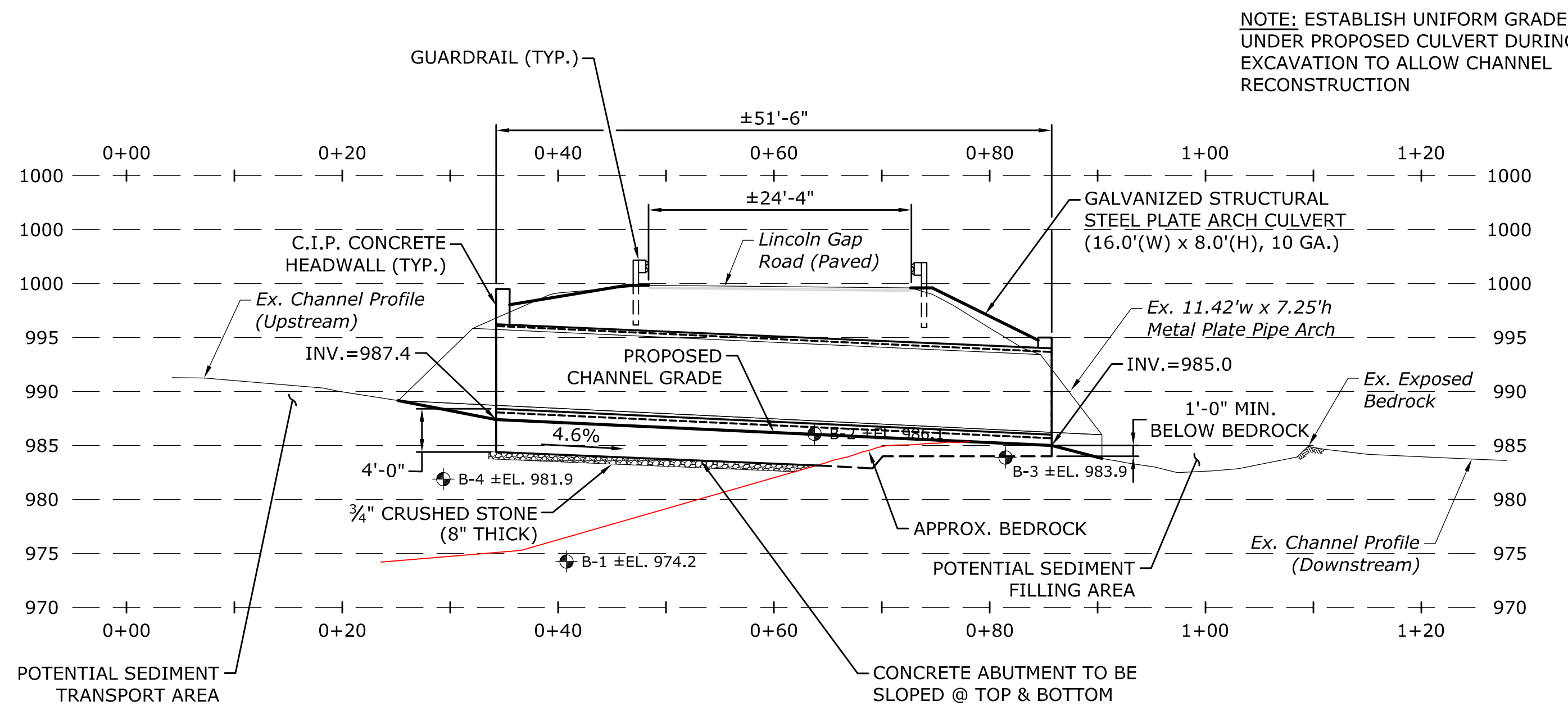


PROJECT: LINCOLN GAP ROAD OVER HANKS BROOK CULVERT REPLACEMENT
DRAWN BY: J. M. COLE
CHECKED BY: J. M. COLE
DATE: 09/25/2016



PLAN VIEW
SCALE: 1"=10'-0"

4



PROFILE VIEW
SCALE: 1"=10'-0"

4

GENERAL STRUCTURAL NOTES:

ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2011, AND ITS LATEST REVISIONS, AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DATED 2007, AND ITS LATEST REVISIONS.

TYPICAL DETAILS AND NOTES ON THESE DRAWINGS SHALL APPLY UNLESS SPECIFICALLY SHOWN OR NOTED OTHERWISE. CONSTRUCTION DETAILS NOT FULLY SHOWN OR NOTED SHALL BE SIMILAR TO DETAILS SHOWN FOR OTHER SIMILAR CONDITIONS.

IF ANY CONDITIONS ARISE DURING CONSTRUCTION THAT PRECLUDE COMPLIANCE WITH THE DETAILS SHOWN ON THESE DRAWINGS, THE WORK IN THE AFFECTED AREAS SHALL CEASE AND THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY.

THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR EXCAVATION PROCEDURES, SHORING, AND PROTECTION. FOUNDATION EXCAVATIONS SHALL BE REVIEWED AND ACCEPTED BY THE ENGINEER OR HIS REPRESENTATIVE PRIOR TO THE PLACEMENT OF ANY REINFORCING STEEL OR CONCRETE.

CONCRETE NOTES:

ALL PORTIONS OF THE FOOTINGS, ABUTMENTS, HEADWALLS, AND WINGWALLS SHALL BE "CONCRETE - CLASS B" GENERALLY CONFORMING TO VTRANS SECTION 501 SPECIFICATIONS.

THE MINIMUM COVER FOR REINFORCING STEEL IN THE SUBSTRUCTURE SHALL BE THREE INCHES ALONG WALL FACES AGAINST EARTH, AND TWO INCHES ELSEWHERE UNLESS NOTED OTHERWISE.

REINFORCING STEEL PLACEMENT TOLERANCES SHALL BE AS FOLLOWS:

SPACING +/- 1"
CLEARANCE +/- 1/4"

REINFORCING SHALL CONFORM TO ASTM A615 GRADE 60. REINFORCING STEEL SHALL BE CONTINUOUS AND SHALL BE FABRICATED AND PLACED IN ACCORDANCE WITH ACI 318, LATEST EDITION.

NOTE:

* THE PLANS SHOW CONTECH BRIDGE SOLUTIONS GALVANIZED STRUCTURAL STEEL PLATE ARCH CULVERT AND HEADWALL DETAILS. CONTRACTOR MAY SUBMIT AN ALTERNATE FOR APPROVAL WITH CALCULATIONS & DRAWINGS.

* ALL ELEVATIONS REFERENCE AN ASSUMED VERTICAL DATUM. REFER TO THE EXISTING CONDITIONS SITE PLAN FOR THE LOCATION OF THE PROJECT SURVEY BENCHMARK.

BACKFILL SPECS:

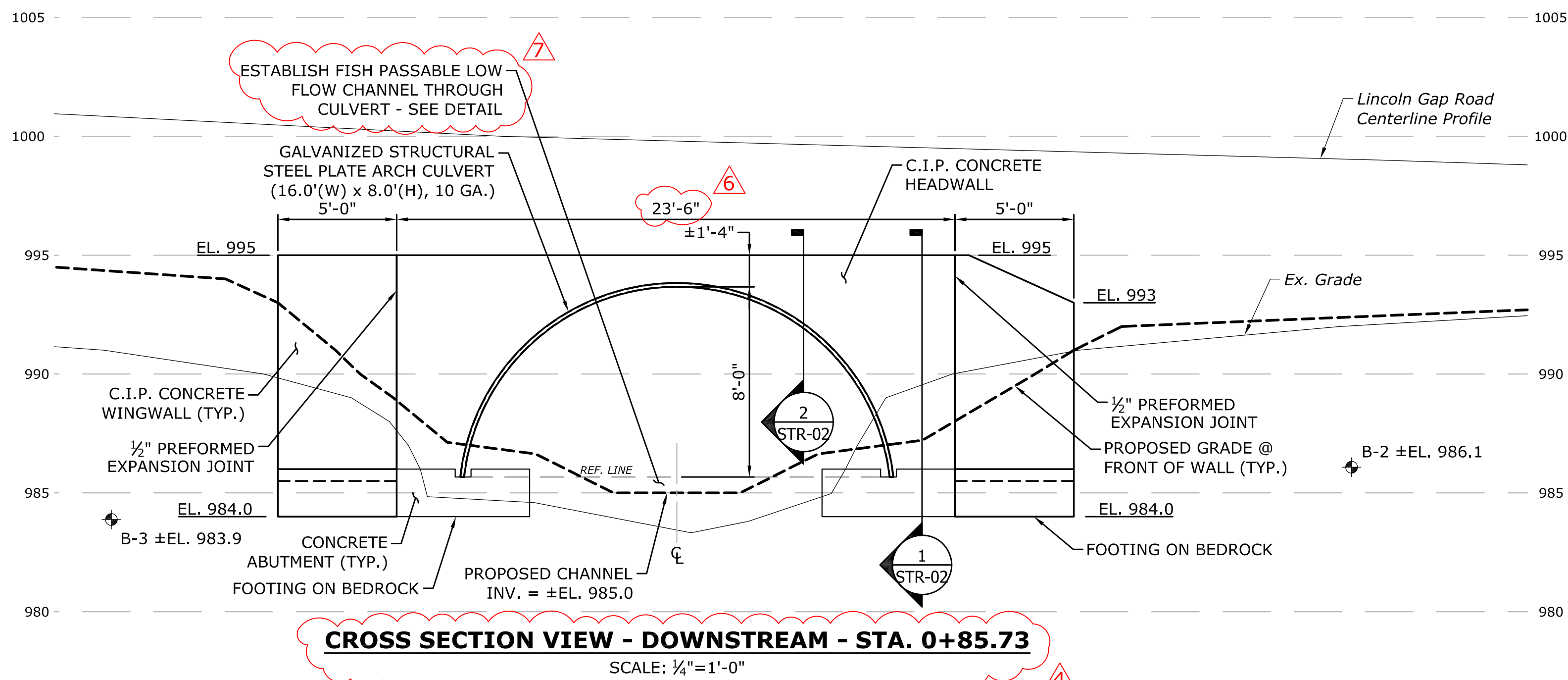
1. **GRANULAR BACKFILL FOR STRUCTURES:** GRANULAR BACKFILL FOR STRUCTURES SHALL BE OBTAINED FROM APPROVED SOURCES, IT SHALL CONSIST OF SATISFACTORILY GRADED, FREE DRAINING GRANULAR MATERIAL REASONABLY FREE FROM LOAM, SILT, CLAY, AND ORGANIC MATERIAL.

COMPACT ALL BACKFILL AROUND PIPE IN 6" LIFTS TO MINIMUM 95% AASHTO T99 STANDARD PROCTOR DENSITY. ASSURE VOIDS AND SOFT SPOTS DO NOT OCCUR UNDER THE HAUNCHES. BACKFILL HEIGHTS MUST NOT HAVE MORE THAN A TWO LIFT DIFFERENTIAL FROM ONE SIDE OF THE PIPE TO THE OTHER TO PREVENT DISTORTION DURING COMPACTION.

GRANULAR BACKFILL FOR STRUCTURES (VTRANS 204.30) SHALL MEET THE GRADATION REQUIREMENTS OF THE FOLLOWING TABLE AS DETERMINED IN ACCORDANCE WITH AASHTO T27 AND AASHTO T11:

TABLE 704.08A	
GRANULAR BACKFILL FOR STRUCTURES	
SIEVE DESIGNATION	PERCENTAGE BY MASS (WEIGHT) PASSING SQUARE MESH SIEVES
75 mm (3 inch)	100
4.75 mm (No. 4)	45 TO 75
150 µm. (No. 100)	0 TO 12
75 µm. (No. 200)	0 TO 6

NO.	REVISION	DATE
4	CENTERLINE STATIONING ADDED.	03/25/19
5	NOTE ADDED.	03/25/19
6	REMOVED ± FROM THE HEADWALL WIDTH DIMENSION.	03/25/19
7	REVISED LOW FLOW CHANNEL REPRESENTATION.	03/25/19



CROSS SECTION VIEW - DOWNSTREAM - STA. 0+85.73
SCALE: 1/4"=1'-0"

4

MILONE & MACBROOM
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www.miloneandmacbroom.com

DESCRIPTION	DATE	BY
REVIEW COMMENTS	09/25/2016	BMC

STRUCTURAL PLAN

LINCOLN GAP ROAD OVER HANKS BROOK

CULVERT REPLACEMENT

LINCOLN GAP ROAD
WARREN, VERMONT

DESIGNED	NP	KP

SCALE: 1"=10'

DATE: **SEPTEMBER 14, 2016**

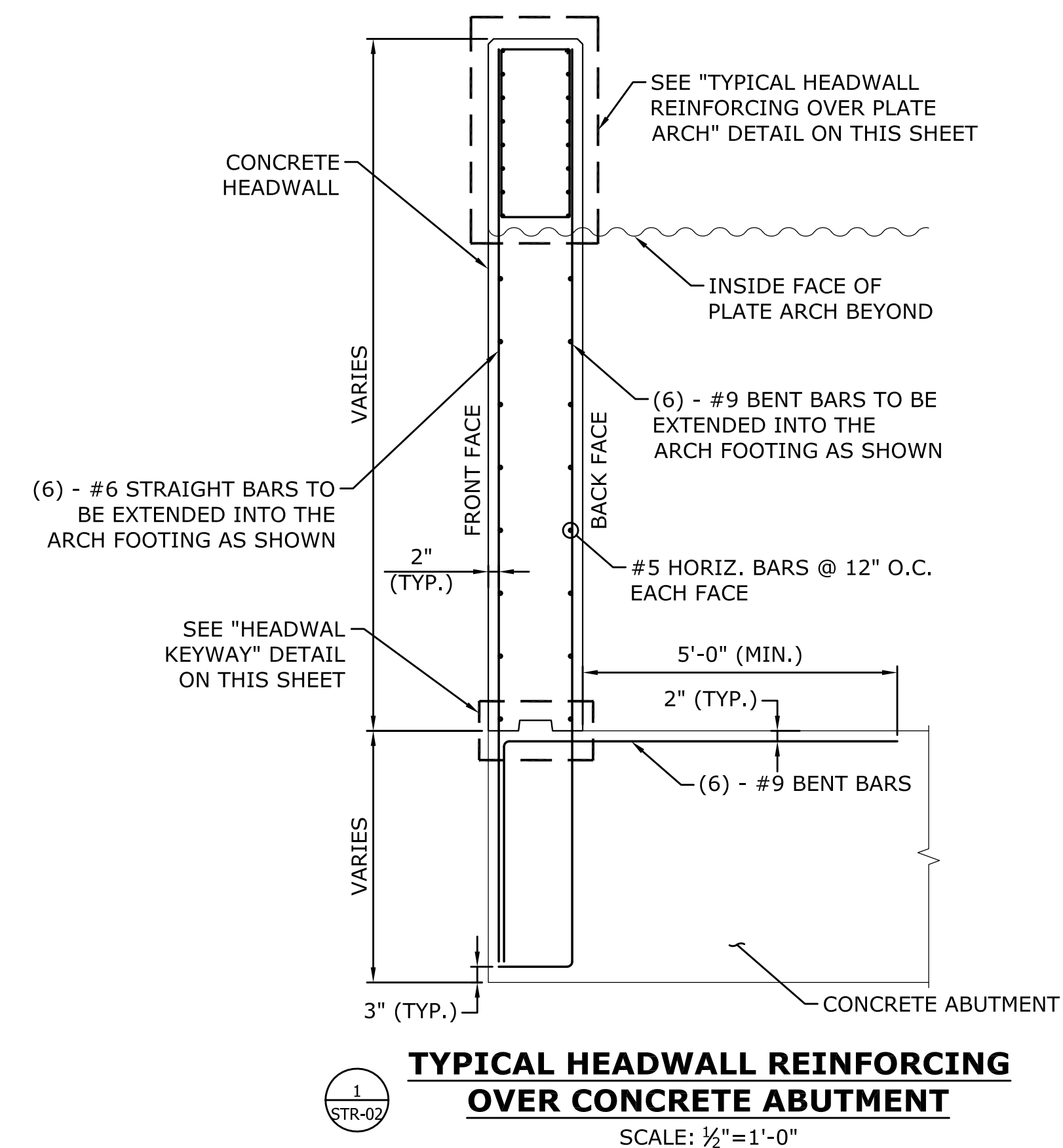
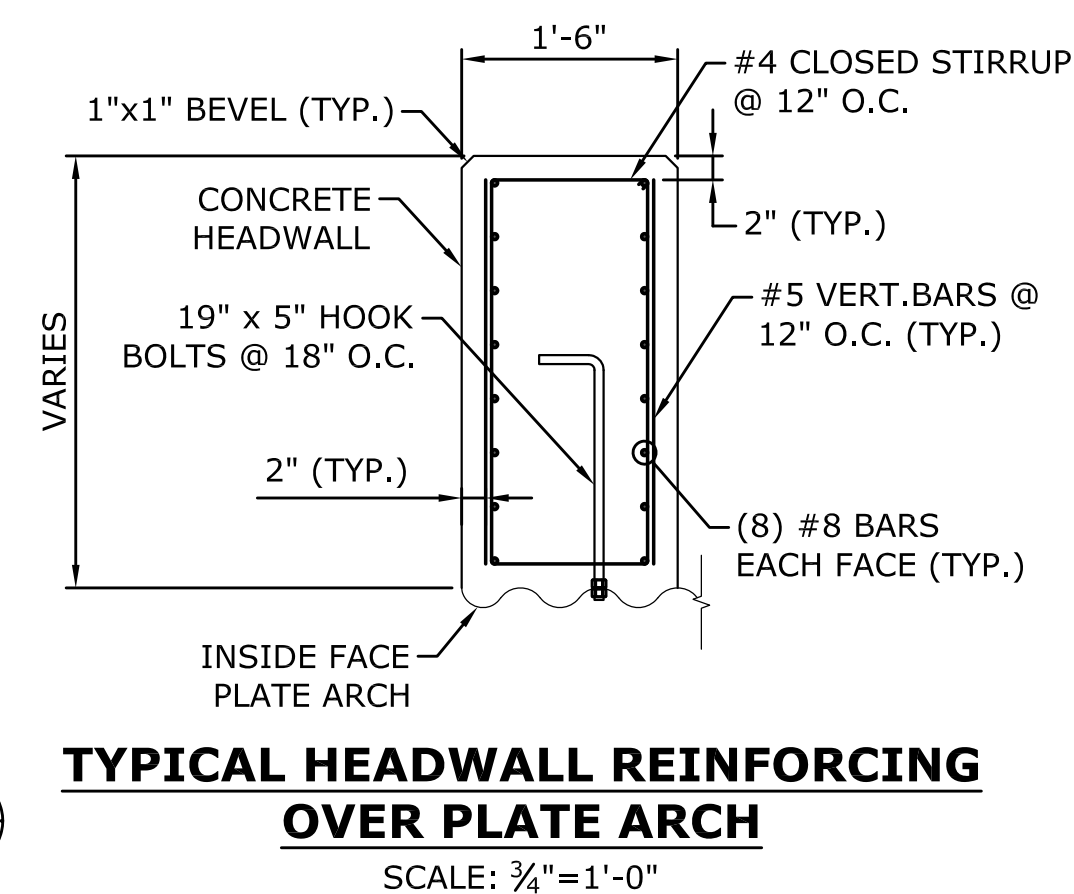
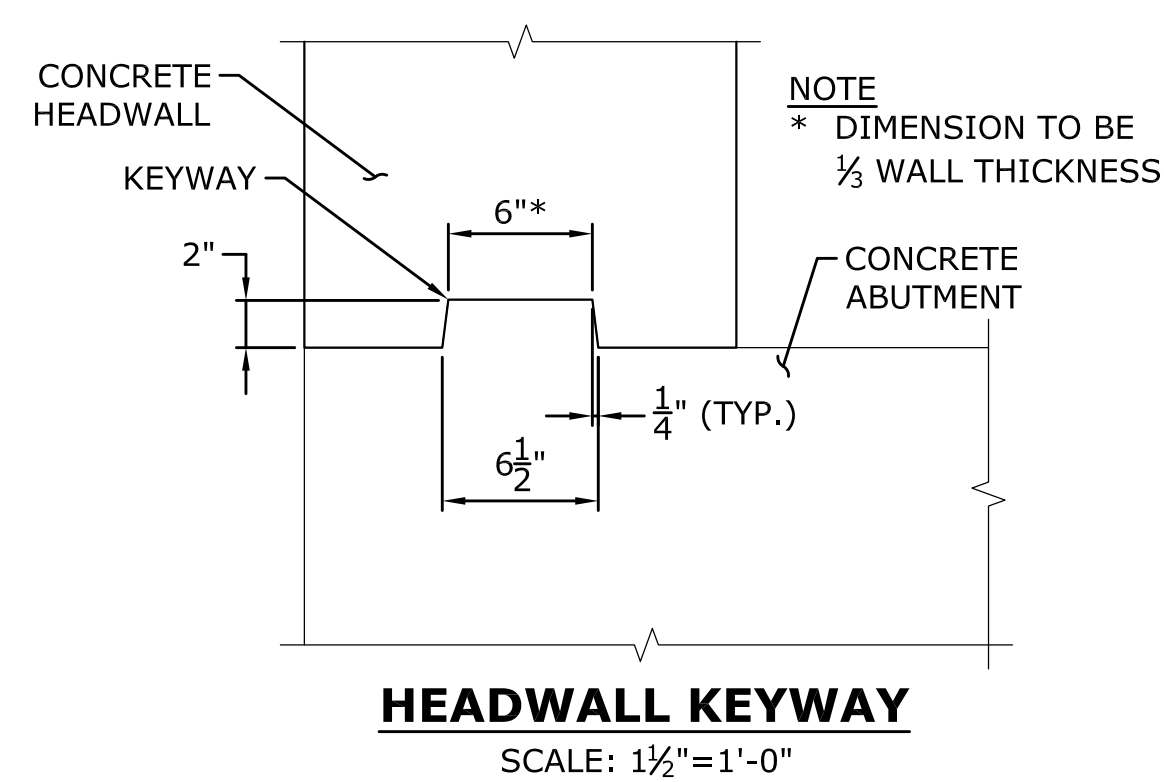
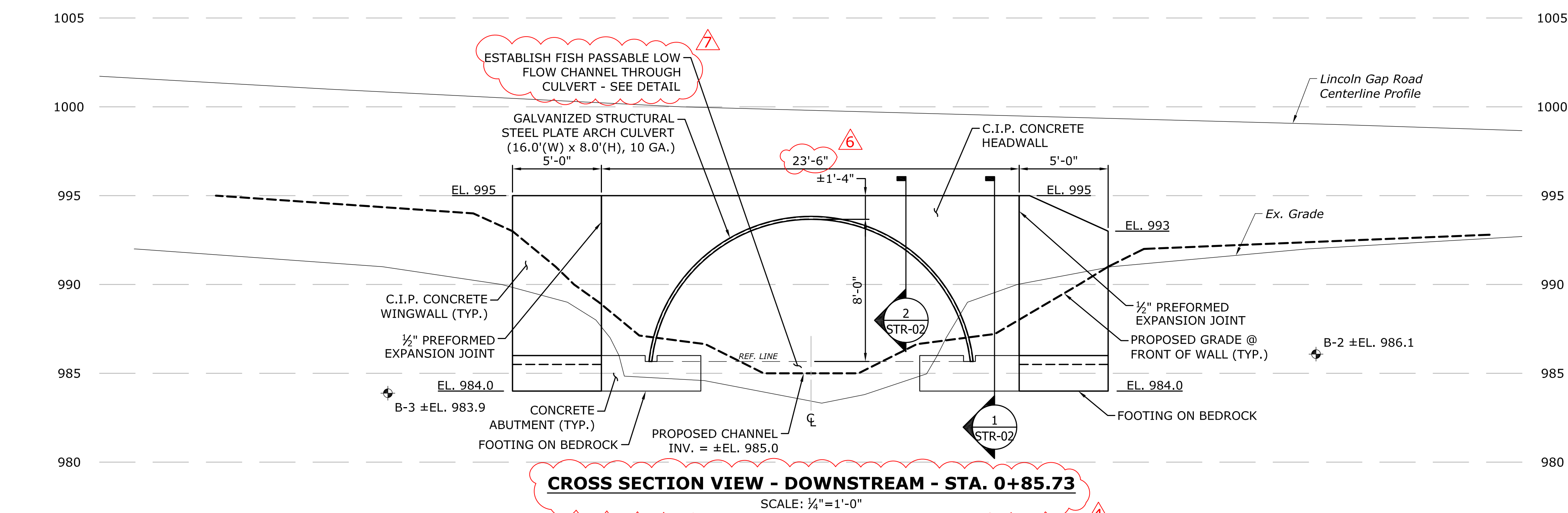
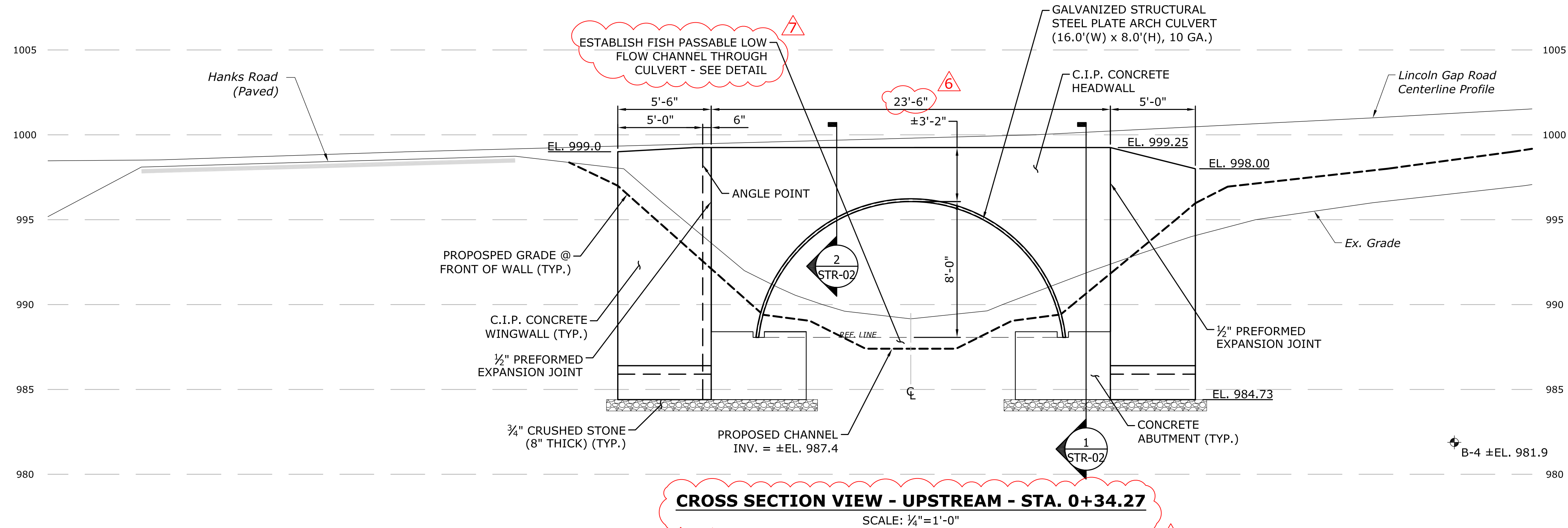
PROJECT NO.: **5094-03**

DRAWING NO.: **06 OF 10**

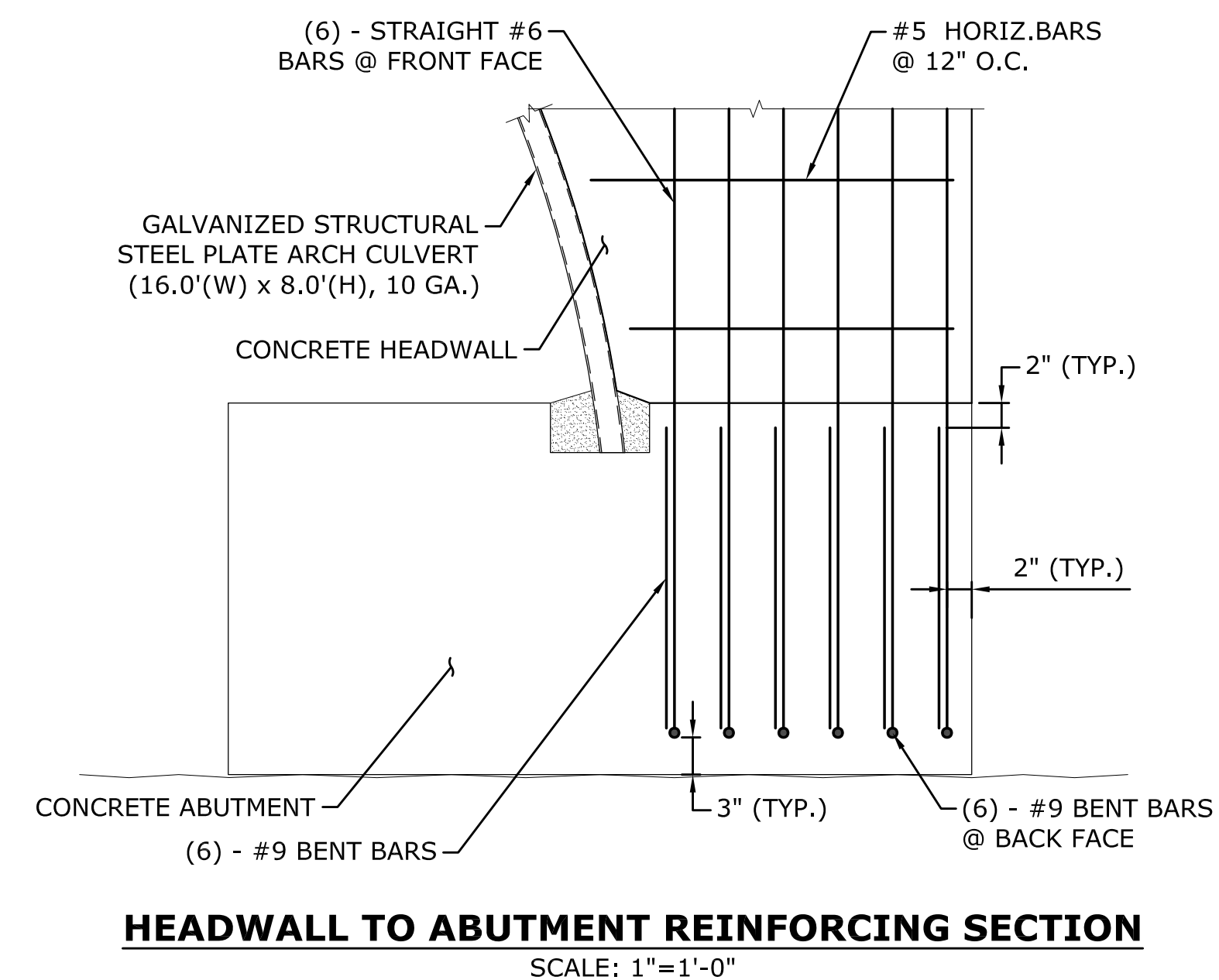
STR-01

SHEET NO.

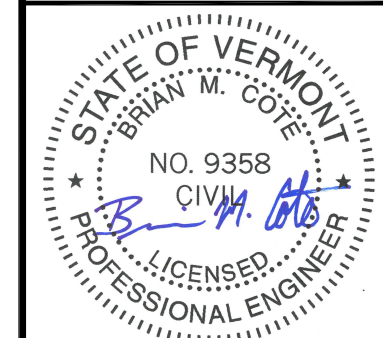
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NO.	REVISION	DATE
4	CENTERLINE STATIONING ADDED.	03/25/19
5	NOTE ADDED.	03/25/19
6	REMOVED ± FROM THE HEADWALL WIDTH DIMENSION.	03/25/19
7	REVISED LOW FLOW CHANNEL REPRESENTATION.	03/25/19



NOTE:
ALL ELEVATIONS REFERENCE AN ASSUMED VERTICAL DATUM.
REFER TO THE EXISTING CONDITIONS SITE PLAN FOR THE
LOCATION OF THE PROJECT SURVEY BENCHMARK.



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STRUCTURAL DETAILS

LINCOLN GAP ROAD OVER CULVERT REPLACEMENT

LINCOLN GAP ROAD WARREN, VERMONT

DESIGNED	NP DRAWN	KP CHECKED
1"=10'		
SCALE		
SEPTEMBER 14, 2016		
DATE		
5094-03		
PROJECT NO.		
07 OF 10		
DRAWING NO.		

STR-02

[illegible][illegible][illegible]

MIKE'S BORING & CORING LLC.
PO Box 75 • East Barre, Vermont 05649 • 802 476-5073

TO: Brian Cote Milone & MacBroom 1 South Main Street, 2 nd Floor Waterbury, VT 05676	PROJECT NAME: Lincoln Gap Culvert LOCATION: Warren, VT MBC JOB #: 16058	SHEET: 4 DATE: 8-2-16 HOLE # B-4 LINE & STA. OFFSET:
--	---	--

Ground Water Observations 14' at _ 0 hours	Augers-Size I.D. Split Spoon Hammer Wt. Hammer Fall 3.25" 2" 140# 30"	Surface Elevation: Date Started: 8-2-16 Date Completed: 8-2-16 Boring Foreman: Mike McGinley Inspector: Soils Engineer:
---	--	--

LOCATION OF BORING: As staked

Sample Depth From/To (feet)	Type of Sample	Blows per 6" on Sampler	Moisture Density or Consist.	Strata Change Elev.	Soil Identification	Sample		
						No.	Pen. Inches	Rec. Inches
0'-2'	Dry	8/8/10/15	Moist		Brown medium fine sand with medium gravel	1	24	18
4'-6'	Dry	20/25/17/11	Moist		Brown medium fine sand with medium gravel	2	24	18
9'-11'	Dry	20/26/38/90	Moist		Brown medium fine sandy gravel	3	24	18
14'-16'	Dry	64/24/40/30	Wet		Brown fine sand with some rock fragments	4	24	20
19'-21'	Dry	50/54/100	Wet		Gray silty very fine sand with rock fragments	5	18	18
					Discontinued			

Ground Surface to 19' Used 3.25" augers: Then SS to refusal at 20' Earth Boring 20'
Samples HOLE NUMBER B-4

