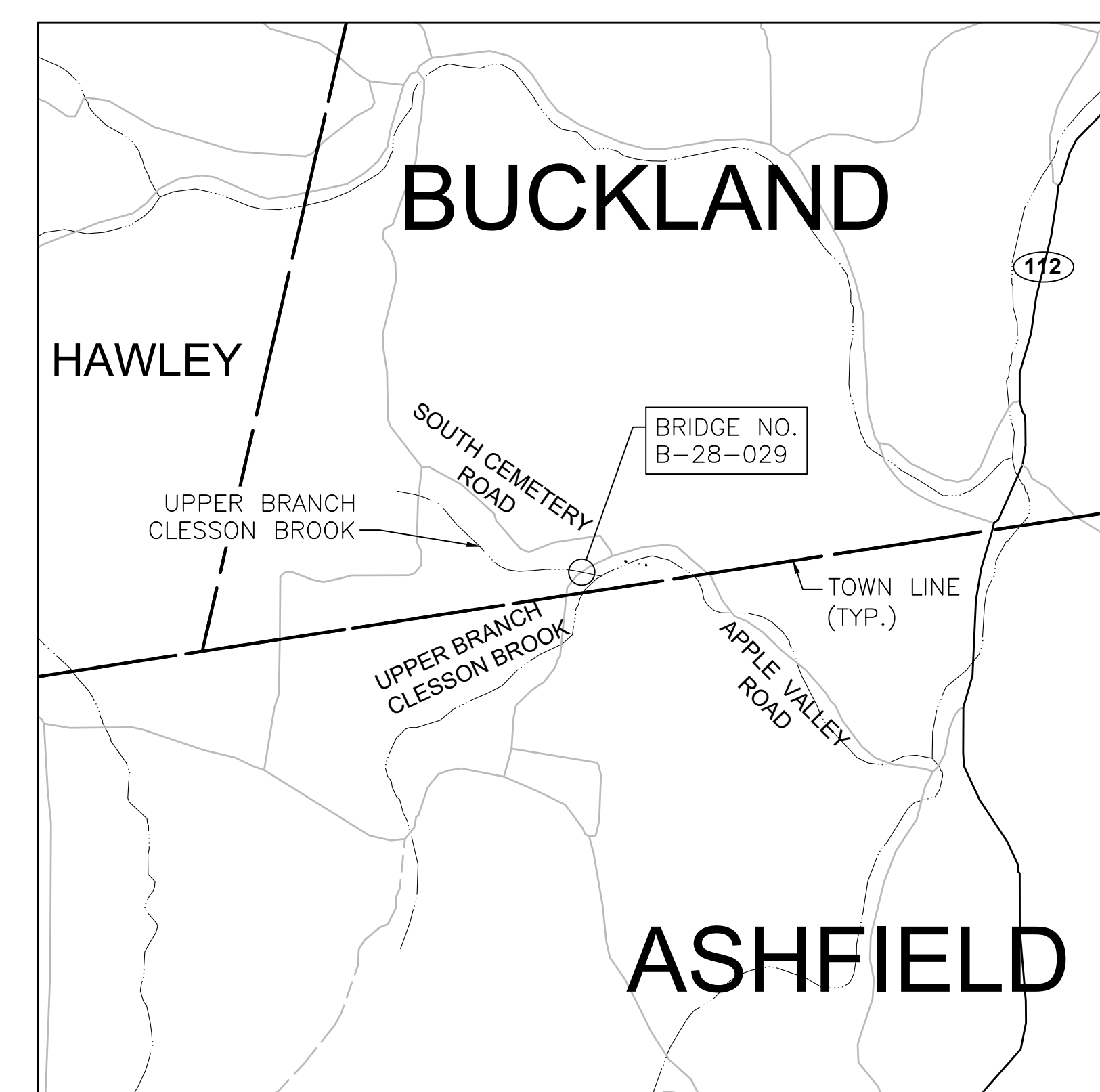


KEY PLAN
SCALE: 1" = 10'



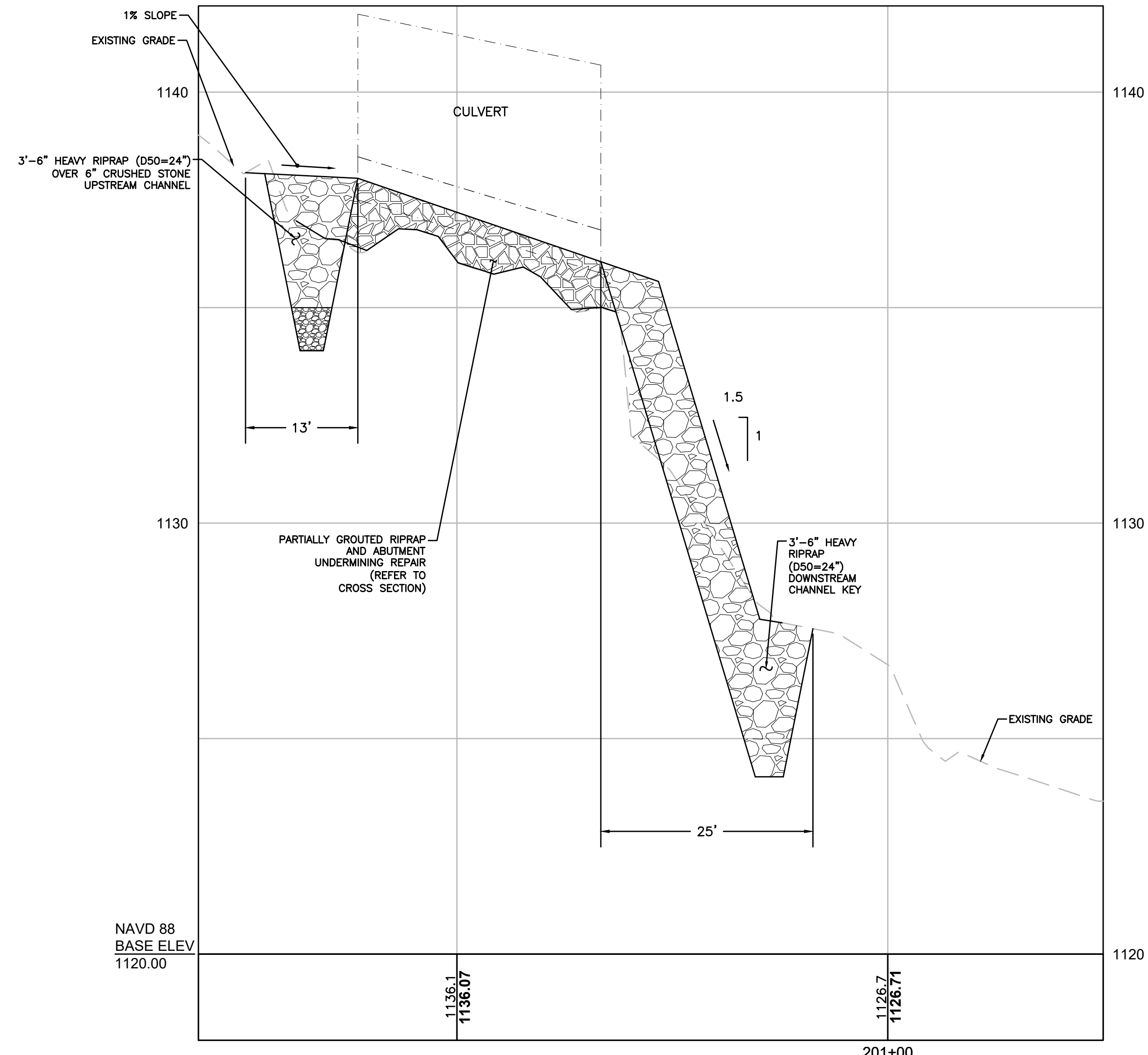
LOCUS
SCALE: 1" = 2000'

BUCKLAND
APPLE VALLEY ROAD

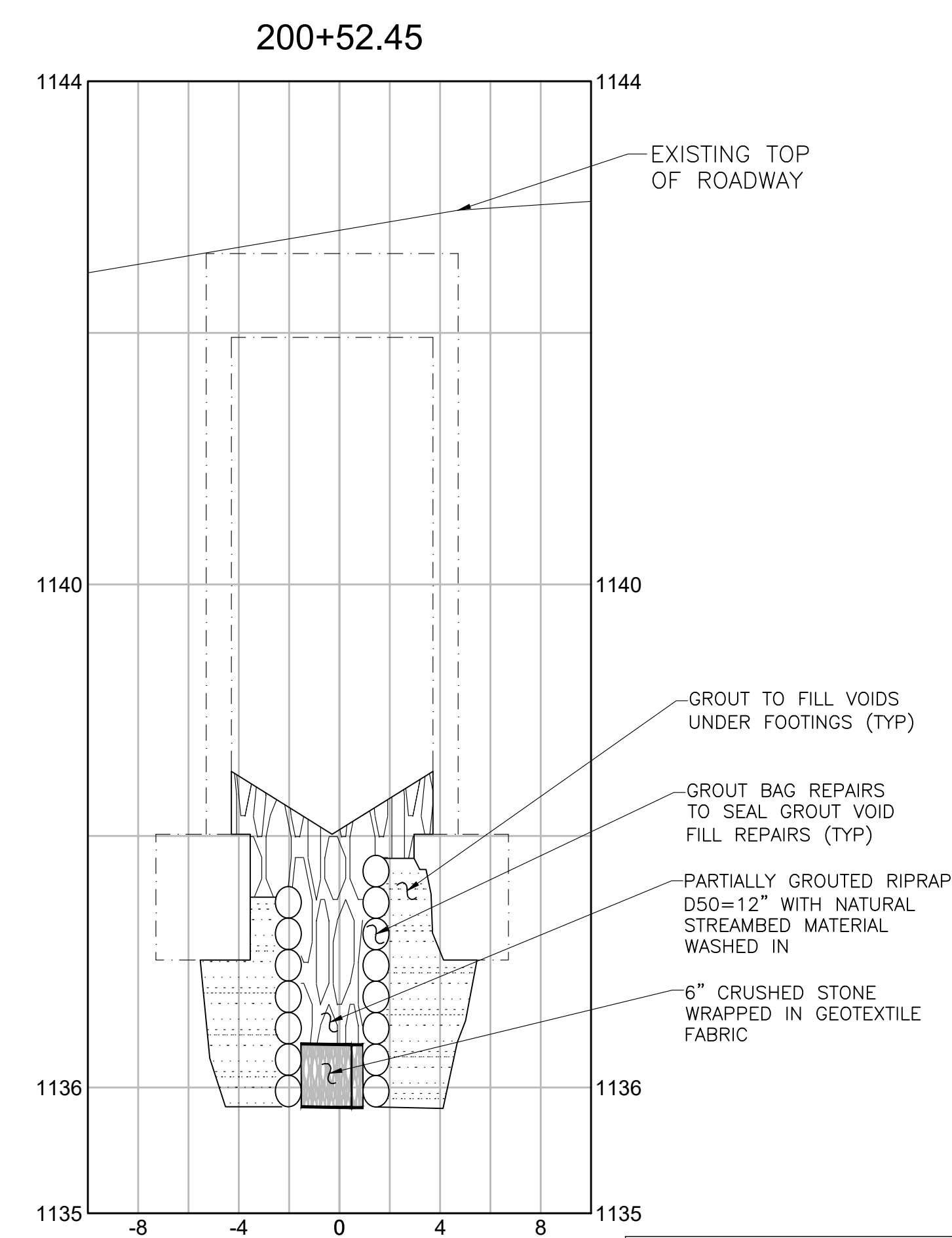
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	N/A	1	5

PROJECT FILE NO. N/A

KEY PLAN AND PROFILE



PROFILE ALONG UPPER BRANCH CLESSON BROOK BASELINE
HORIZ. SCALE: 1" = 10'
VERT. SCALE: 1/4" = 1'-0"

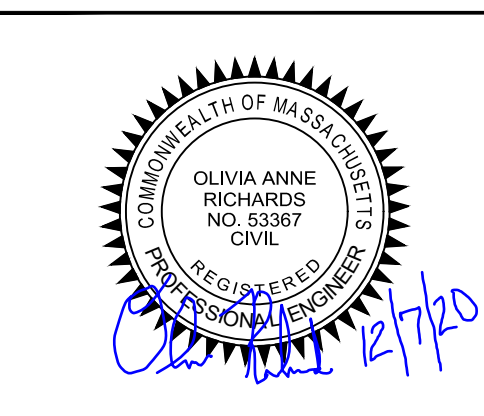


BRIDGE CROSS SECTION
NOTE: SECTION TAKEN AT UPPER BRANCH CLESSON BROOK BASELINE, STA 200+52.45.
HORIZ. SCALE: 1" = 5'
VERT. SCALE: 1/4" = 1'-0"

SHEET INDEX

NO.	TITLE
1	KEY PLAN AND PROFILE
2	GENERAL NOTES
3	GENERAL PLAN & ELEVATION
4	CONTROL OF WATER
5	SCOUR REPAIR DETAILS

COMMONWEALTH OF MASSACHUSETTS
MassDOT, Highway Division
APPROVED UNDER PROVISIONS OF
MASS. GEN. LAWS CH 85 S 35
12/8/2020
DATE



BRIDGE PRESERVATION PROJECT
FOR
BUCKLAND
APPLE VALLEY ROAD OVER
UPPER BRANCH CLESSON BROOK

vhb
Vanasse Hangen Brustlin, Inc.
101 Walnut St. P.O. Box 9151
Watertown, MA 02472
617.924.1770 FAX 617.924.2286

82699.16 BRITTLE SHEET.DWG Plotted on 7-Dec-2020 3:39 PM

BUCKLAND
APPLE VALLEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	N/A	2	5
PROJECT FILE NO. N/A			

GENERAL NOTES

GENERAL NOTES:

DESIGN:

THE SCOUR REPAIR IS DESIGNED IN ACCORDANCE WITH 2020 9TH EDITION OF AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND THE 2013 MASSDOT BRIDGE MANUAL WITH JANUARY 2020 REVISIONS.

EXISTING PLANS:

THERE ARE NO KNOWN AVAILABLE EXISTING BRIDGE PLANS.

EXISTING CONDITIONS:

THE CONTRACTOR SHALL DETERMINE AND ESTABLISH ALL DIMENSIONS AND EXISTING DETAILS NECESSARY FOR THE COMPLETION OF WORK BY FIELD MEASUREMENT AND SURVEY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUACY AND ACCURACY THEREOF AND SHALL NOT ORDER ANY MATERIALS OR COMMENCE ANY FABRICATION UNTIL THE REQUIRED MEASUREMENTS HAVE BEEN MADE ON THE ACTUAL STRUCTURE AND THE EXTENT OF PROPOSED WORK HAS BEEN APPROVED BY THE ENGINEER.

UTILITIES:

THE CONTRACTOR SHALL LOCATE AND PROTECT FROM DAMAGE ALL EXISTING UTILITIES.

SCALES:

THESE DRAWINGS WERE FORMATTED FOR 24" X 36" PLAN SHEETS. SCALES NOTED ON THE DRAWINGS ARE NOT APPLICABLE TO REDUCED SIZE PRINTS.

ELEVATIONS:

NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.

REPORTS:

SEE HYDRAULIC REPORT PREPARED BY VANASSE HANGEN BRUSTLIN, INC. DATED AUGUST 2020.

BENCHMARK:

ALL ELEVATIONS ARE BASED ON THE NORTH AMERICAN DATUM 1988.

BENCHMARKS:

SPIKE SET IN UTILITY POLE #18 N 3032844.3406 E 298762.5660 EL = 1140.33'
SPIKE SET IN UTILITY POLE #19 N 3032629.7367 E 298583.0271 EL = 1158.55'

SURVEY:

SURVEY PERFORMED BY SURVEYING AND MAPPING CONSULTANTS, JANUARY 2020. COPY OF FILE MAY BE OBTAINED FROM VANASSE HANGEN BRUSTLIN, INC.

HYDRAULIC DESIGN DATA		
DRAINAGE AREA:	0.29	SQUARE MILES
DESIGN FLOOD DISCHARGE:	73	CUBIC FEET PER SECOND
DESIGN FLOOD FREQUENCY:	10%	AEP
DESIGN FLOOD VELOCITY:	6.6	FEET PER SECOND
DESIGN HIGH WATER FLOOD ELEVATION:	1144.1	FEET, NAVD 88
BASE (1% AEP) FLOOD DATA		
100-YEAR FLOOD DISCHARGE:	162	CUBIC FEET PER SECOND
WATER SURFACE ELEVATION:	1144.6	FEET, NAVD 88
DESIGN AND CHECK SCOUR DATA		
DESIGN SCOUR FLOOD EVENT:	4%	AEP
CHECK SCOUR FLOOD EVENT:	2%	AEP
FLOOD OF RECORD		
DISCHARGE:	UNKNOWN	
FREQUENCY (IF KNOWN):	APPROX. 1% AEP	
MAXIMUM ELEVATION:	UNKNOWN	
DATE:	UNKNOWN	
HISTORY OF ICE FLOES:	NO	
EVIDENCE OF SCOUR OR EROSION:	YES, UNDERMINED FOOTING	

QUANTITIES

NO.	ITEM	UNIT	QUANTITY
143.	CHANNEL EXCAVATION	90	CY
144.	CLASS B ROCK EXCAVATION	10	CY
150.2	NATURAL STREAMBED MATERIAL	15	CY
156.5	CRUSHED STONE FOR FILTER BLANKET	4	CY
698.3	GEOTEXTILE FABRIC FOR SEPARATION	60	SY
767.121	SEDIMENT CONTROL BARRIER	80	FT
983.01	DUMPED RIPRAP	65	CY
983.211	PARTIALLY GROUTED RIPRAP	7	CY
988.3	CHANNEL PAVING - GROUT FILLED BAGS	15	CY
991.1	CONTROL OF WATER - BRIDGE NO. B-28-029	1	LS

COMMONWEALTH OF MASSACHUSETTS
MassDOT, Highway Division
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MASS. GEN. LAWS CH 85 S 35
[Signature] 12/8/2020
BRIDGE ENGINEER DATE

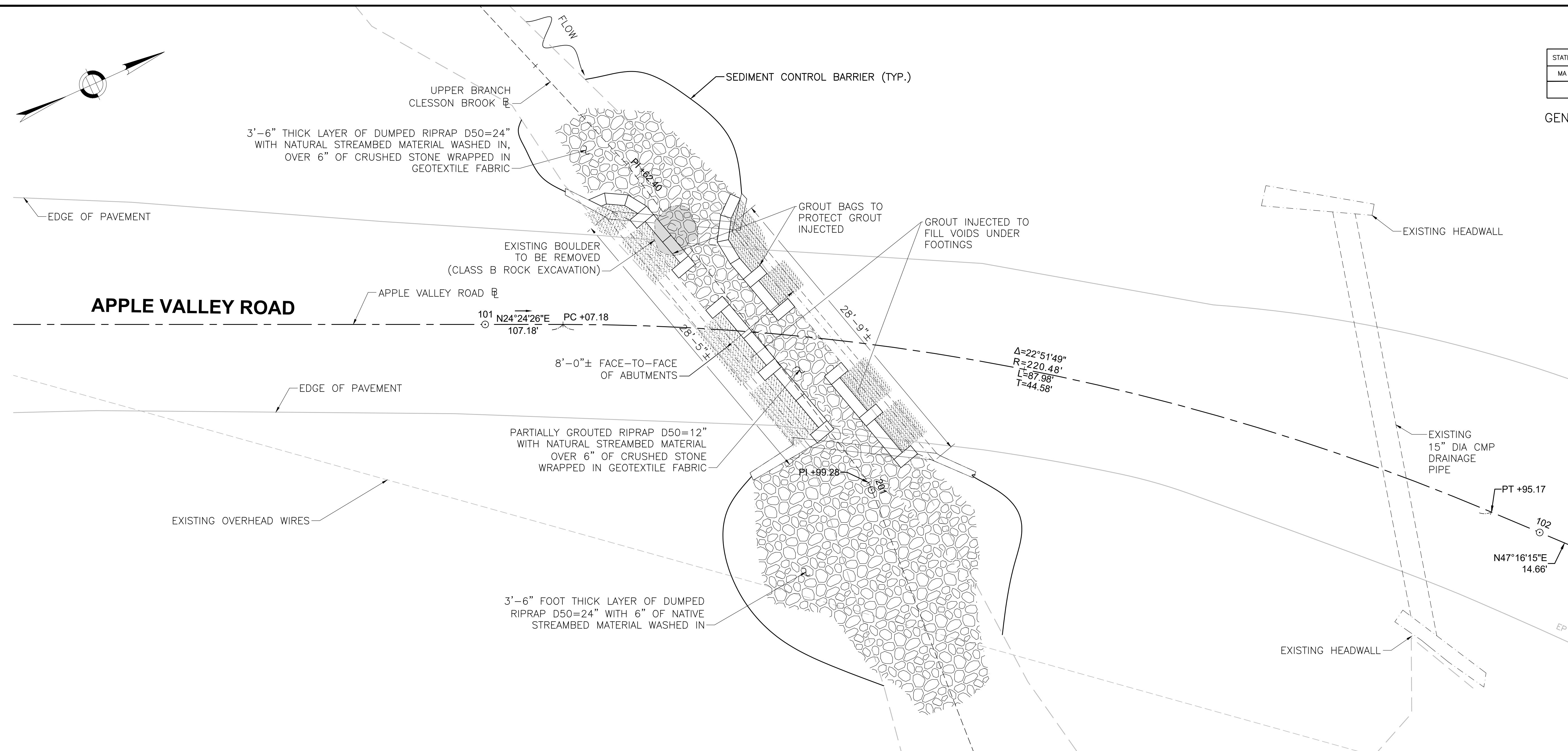
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

BUCKLAND
APPLE VALLEY ROAD

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	N/A	3	5

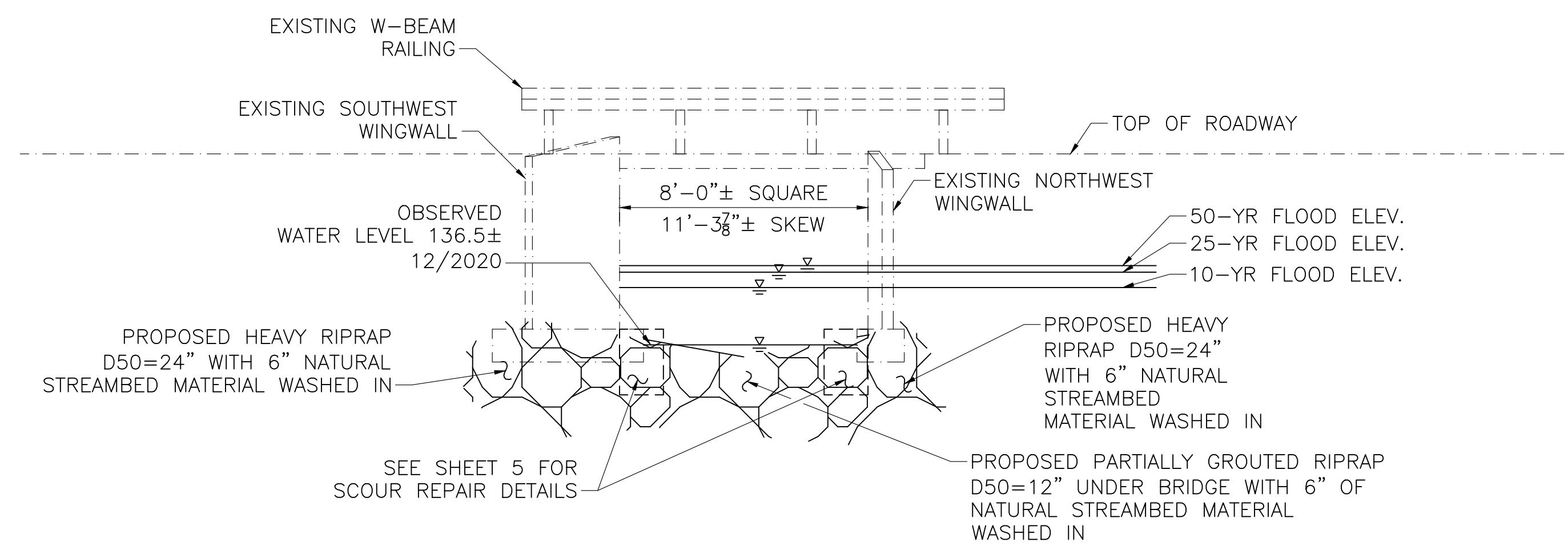
PROJECT FILE NO. N/A

GENERAL PLAN & ELEVATION



GENERAL PLAN

SCALE: 1" = 5'



NOTE:
WATER ELEVATIONS SHOWN ARE MEASURED AT THE UPSTREAM FASCIA OF THE BRIDGE.

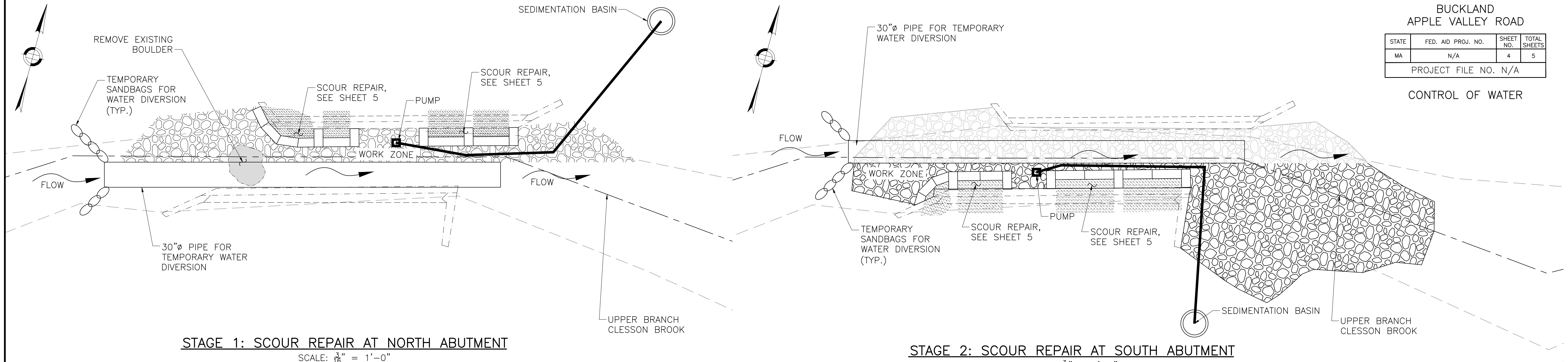
ELEVATION LOOKING UPSTREAM

SCALE: 1" = 5'

DATE	DESCRIPTION

USE ONLY PRINTS OF LATEST DATE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	N/A	4	5

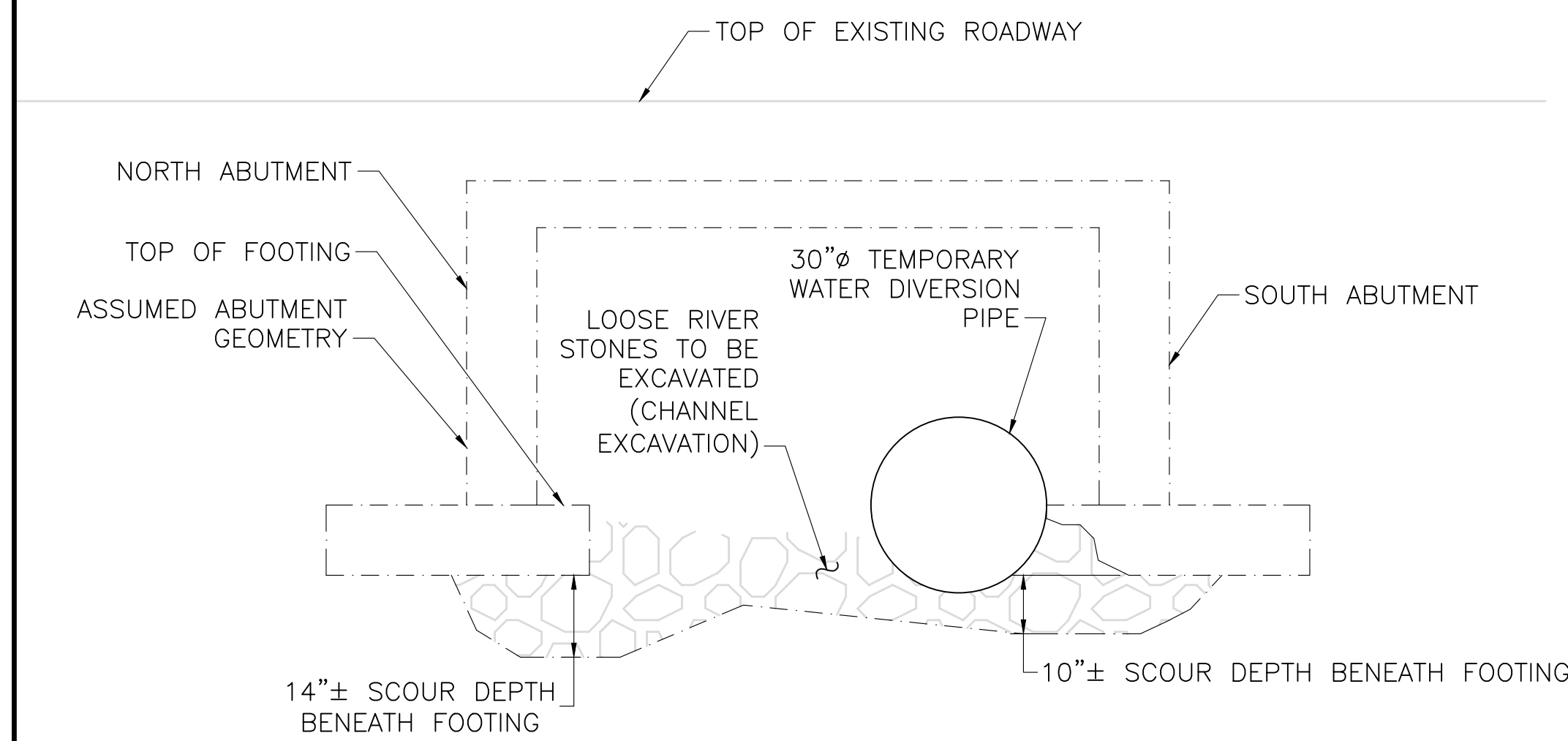


STAGE 1: SCOUR REPAIR AT NORTH ABUTMENT

SCALE: 1/8" = 1'-0"

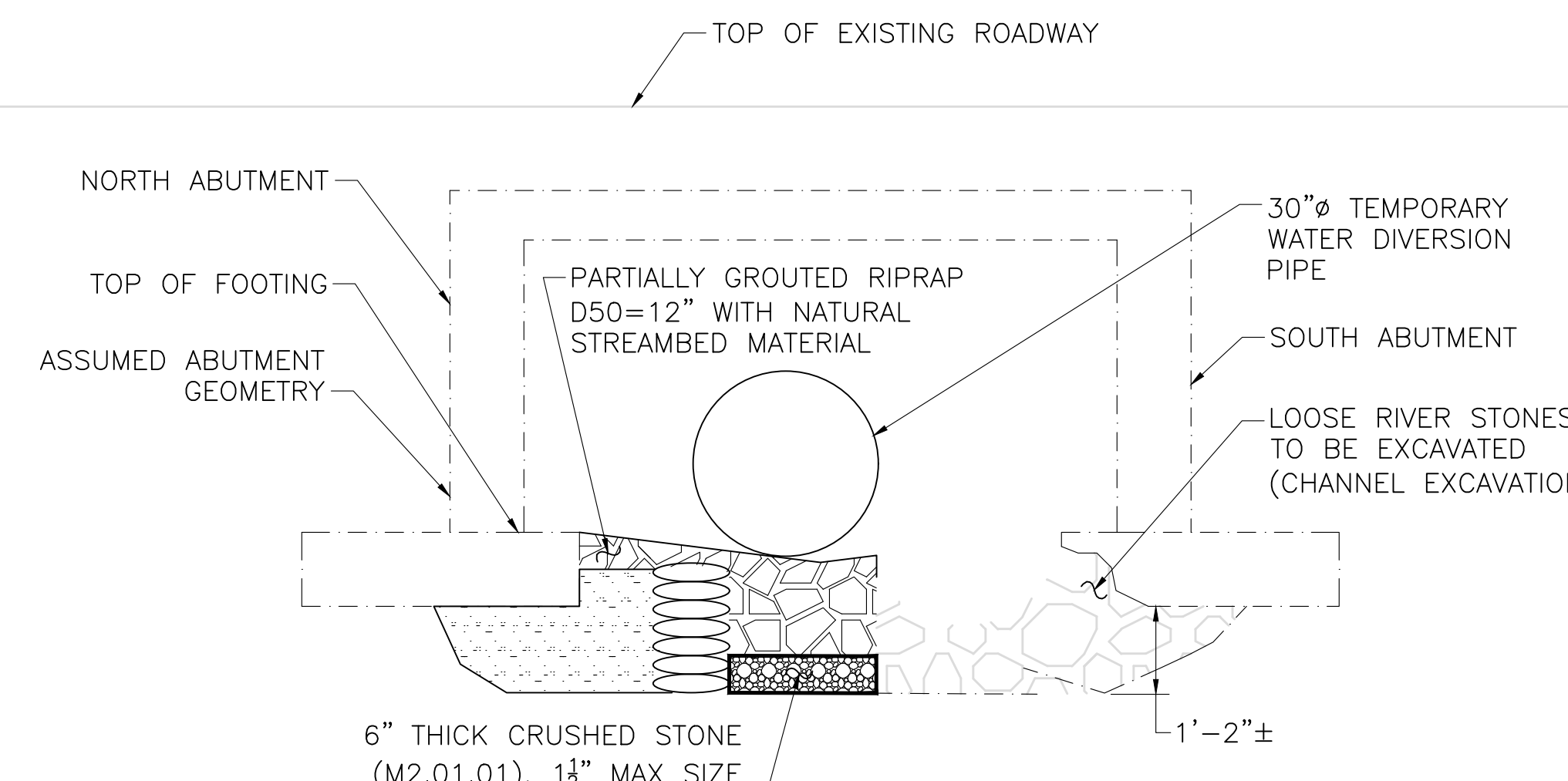
STAGE 2: SCOUR REPAIR AT SOUTH ABUTMENT

SCALE: 1/8" = 1'-0"



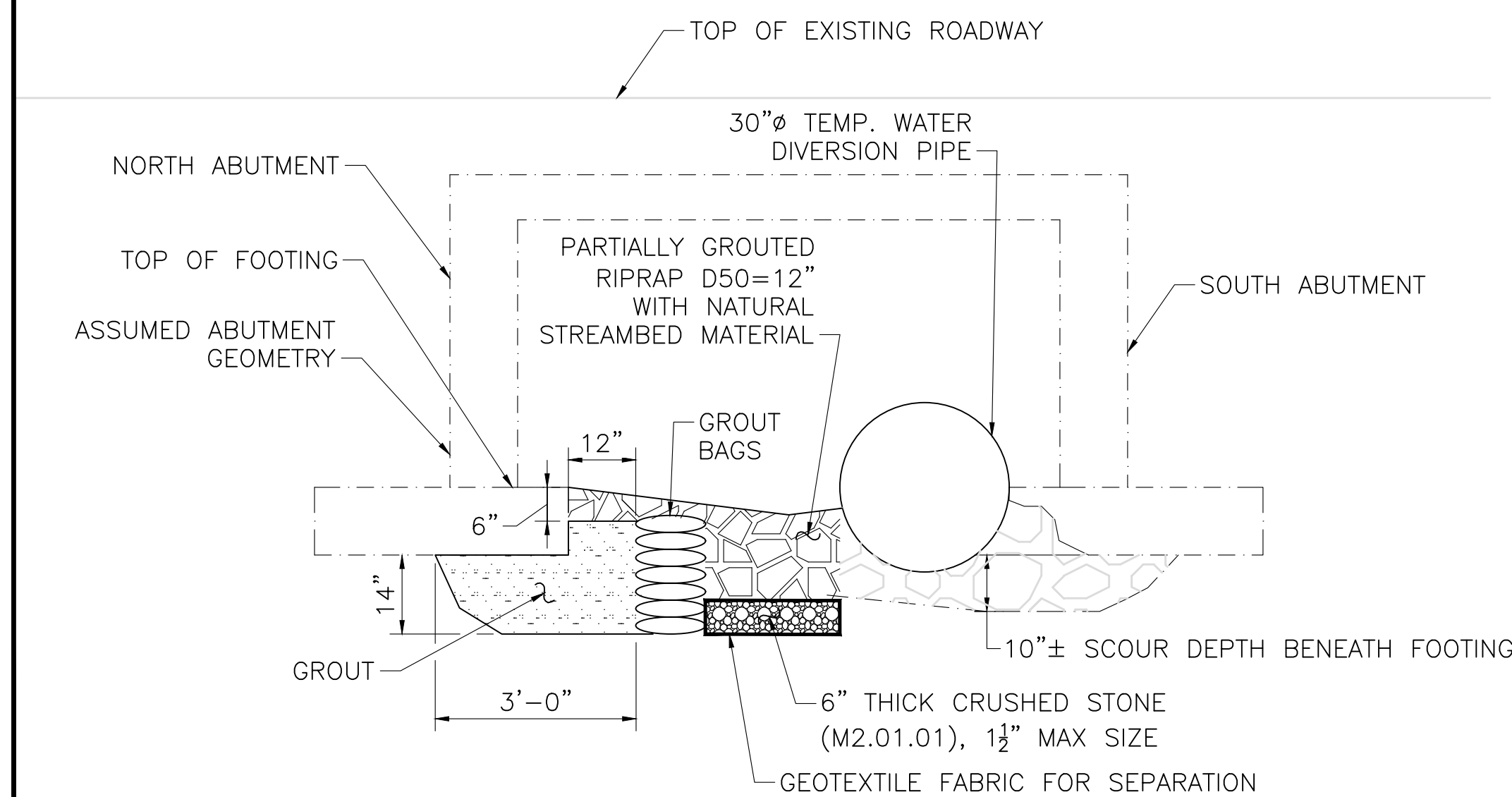
STAGE 1 SECTION: EXCAVATION

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



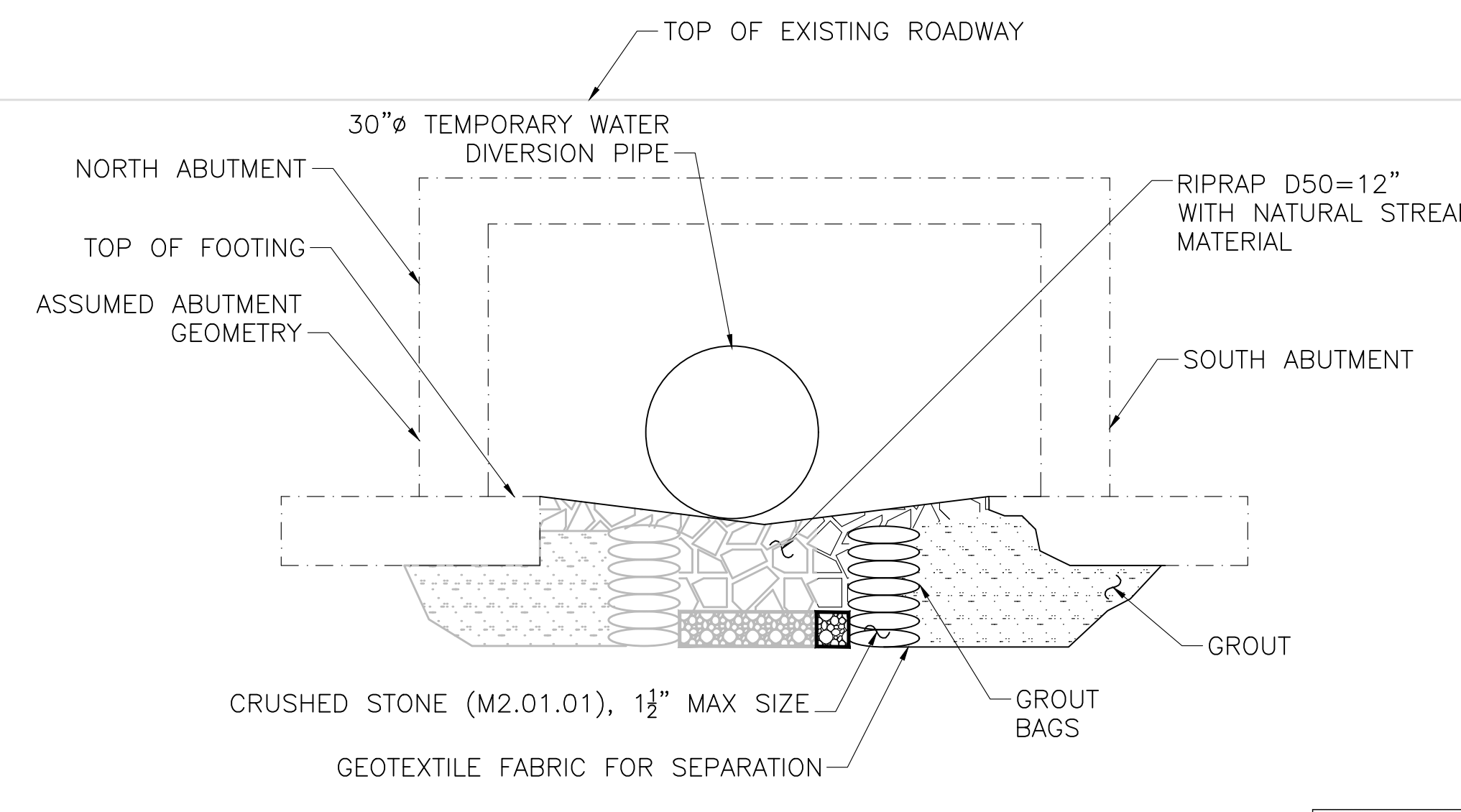
STAGE 2 SECTION: EXCAVATION

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



STAGE 1 SECTION: SCOUR REPAIR

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



STAGE 2 SECTION: SCOUR REPAIR

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

SCOUR REPAIR NOTES:

GENERAL NOTES:

1. THE WORK AND MATERIAL SHALL CONFORM TO THE RELEVANT PROVISIONS OF THE MASSDOT STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGE, 2020 AND SUPPLEMENTAL SPECIFICATIONS.
2. THE CONTRACTOR SHALL SUBMIT A WATER CONTROL PLAN TO THE ENGINEER FOR APPROVAL, PRIOR TO CONSTRUCTION. THE WATER CONTROL PLAN SHALL DEFINE AND DETAIL THE METHODS FOR CONTROL OF WATER AND TYPE OF INSTALLATION TO BE USED.
3. CHANNEL EXCAVATION UNDER THE SUBSTRUCTURE SHALL BE LIMITED TO 8-FOOT SEGMENTS PER BRIDGE ABUTMENT MEASURED ALONG THE FACE OF THE ABUTMENT. ONLY LOOSE STONE UNDER THE ABUTMENT FOOTINGS SHALL BE EXCAVATED. THE CONTRACTOR SHALL SUBMIT A CHANNEL EXCAVATION PLAN. THE CHANNEL EXCAVATION PLAN SHALL DEFINE AND DETAIL THE SEQUENCE OF EXCAVATION TO BE PERFORMED UNDER THE BRIDGE.
4. ALL CHANNEL EXCAVATION SHALL BE CLASSIFIED AS UNCLASSIFIED EXCAVATION.

MATERIALS:

1. SEE SPECIAL PROVISIONS FOR GROUT AND GROUT BAG.
2. PARTIALLY GROUTED RIPRAP SHALL MEET THE REQUIREMENTS STATED IN THE SPECIAL PROVISIONS.

SUGGESTED SEQUENCE OF SCOUR REPAIR:

1. THE SANDBAGS AND WATER DIVERSION PIPE SHALL BE INSTALLED TO TEMPORARILY DIVERT FLOW TO THE SOUTH SIDE OF THE BRIDGE DURING CONSTRUCTION AT THE NORTH SIDE OF THE BRIDGE.
2. THE STREAM BED SHALL BE EXCAVATED TO THE LIMITS SHOWN IN THE DETAILS.
3. THE GROUT BAGS SHALL BE PLACED TO THE LIMITS SHOWN, ENCOMPASSING THE UNDERMINED AREAS.
4. THE GROUT SHALL BE PLACED IN UNDERMINED AREAS.
5. THE GEOTEXTILE FABRIC FOR SEPARATION AND CRUSHED STONE SHALL BE PLACED PER DETAILS SHOWN.
6. THE GROUTED RIPRAP WITH A D50 OF 12" SHALL BE PLACED COVERED WITH NATURAL STREAMBED MATERIAL.
7. THE SANDBAGS AND WATER DIVERSION PIPE SHALL BE RESET TO TEMPORARILY DIVERT FLOW TO THE NORTH SIDE OF THE BRIDGE DURING CONSTRUCTION AT THE SOUTH SIDE OF THE BRIDGE.
8. STEPS 2 THROUGH 6 SHALL BE PERFORMED AT THE SOUTH SIDE OF THE BRIDGE.
9. THE RIPRAP SHALL BE ARRANGED TO CREATE A SYMMETRICAL THALWEG AND THE DIVERSION PIPE SHALL BE REMOVED.

CONSTRUCTION NOTES:

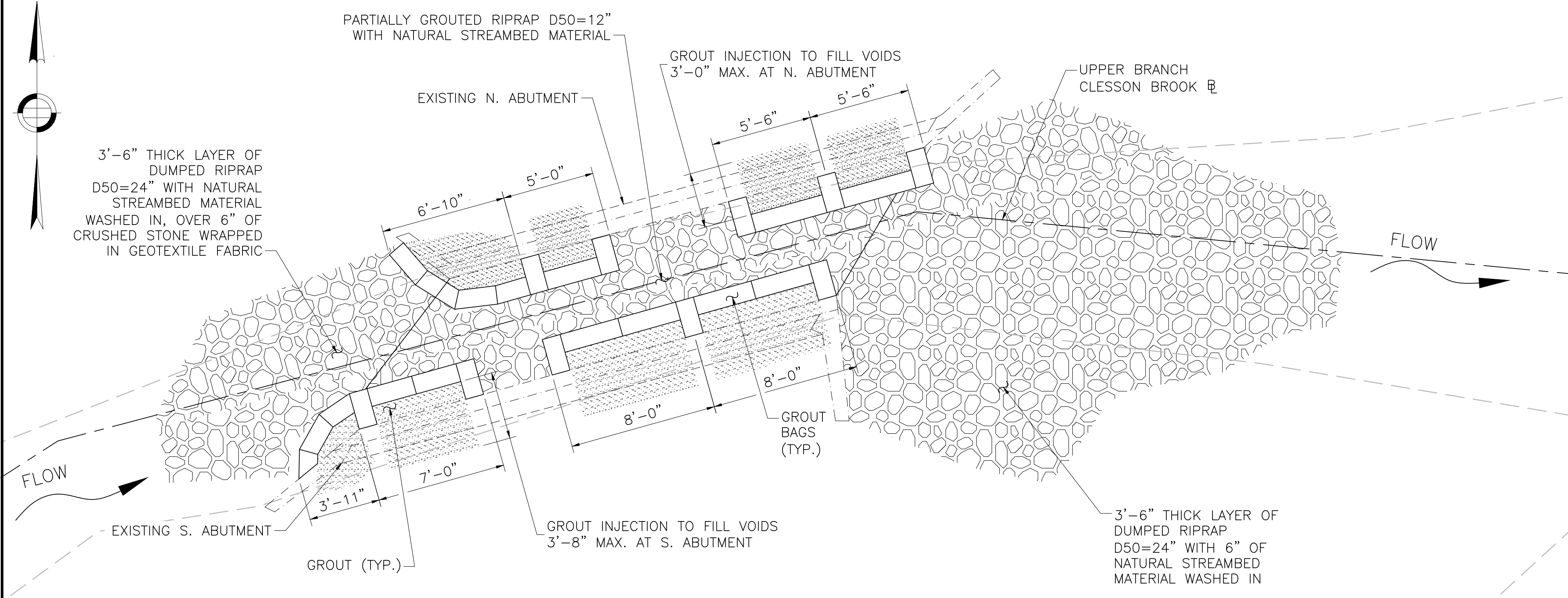
1. CONTRACTOR SHALL PERFORM ALL PROPOSED WORK IN COMPLIANCE WITH THE ORDER OF CONDITIONS ISSUED BY THE BUCKLAND CONSERVATION COMMISSION.
2. CONTRACTOR SHALL DISPOSE OF ANY UNSUITABLE OR EXCESS EARTH MATERIAL EXCAVATED FROM THE SITE IN ACCORDANCE WITH ALL APPLICABLE LAWS AND REGULATIONS.
3. THE HEIGHT OF THE TEMPORARY SANDBAG AND THE DIAMETER OF THE WATER DIVERSION PIPE SYSTEM SHALL BE AS REQUIRED TO DIVERT THE WATER FLOW TO THE NORTH SIDE OF THE BRIDGE OPENING DURING CONSTRUCTION, ALL CONSTRUCTION EQUIPMENT, TOOLS, AND LOOSE SEDIMENT LOCATED WITHIN OVERTOPPING THE SANDBAGS. PREVENTING SEDIMENT FROM ENTERING THE WATER COLUMN IS REQUIRED.

COMMONWEALTH OF MASSACHUSETTS
MassDOT, Highway Division
APPROVED UNDER PROVISIONS OF
MASS. GEN. LAWS CH 85 S 35
[Signature]
BRIDGE ENGINEER 12/8/2020
DATE

MONTH, XX, XXXX	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	N/A	5	5
PROJECT FILE NO. N/A			

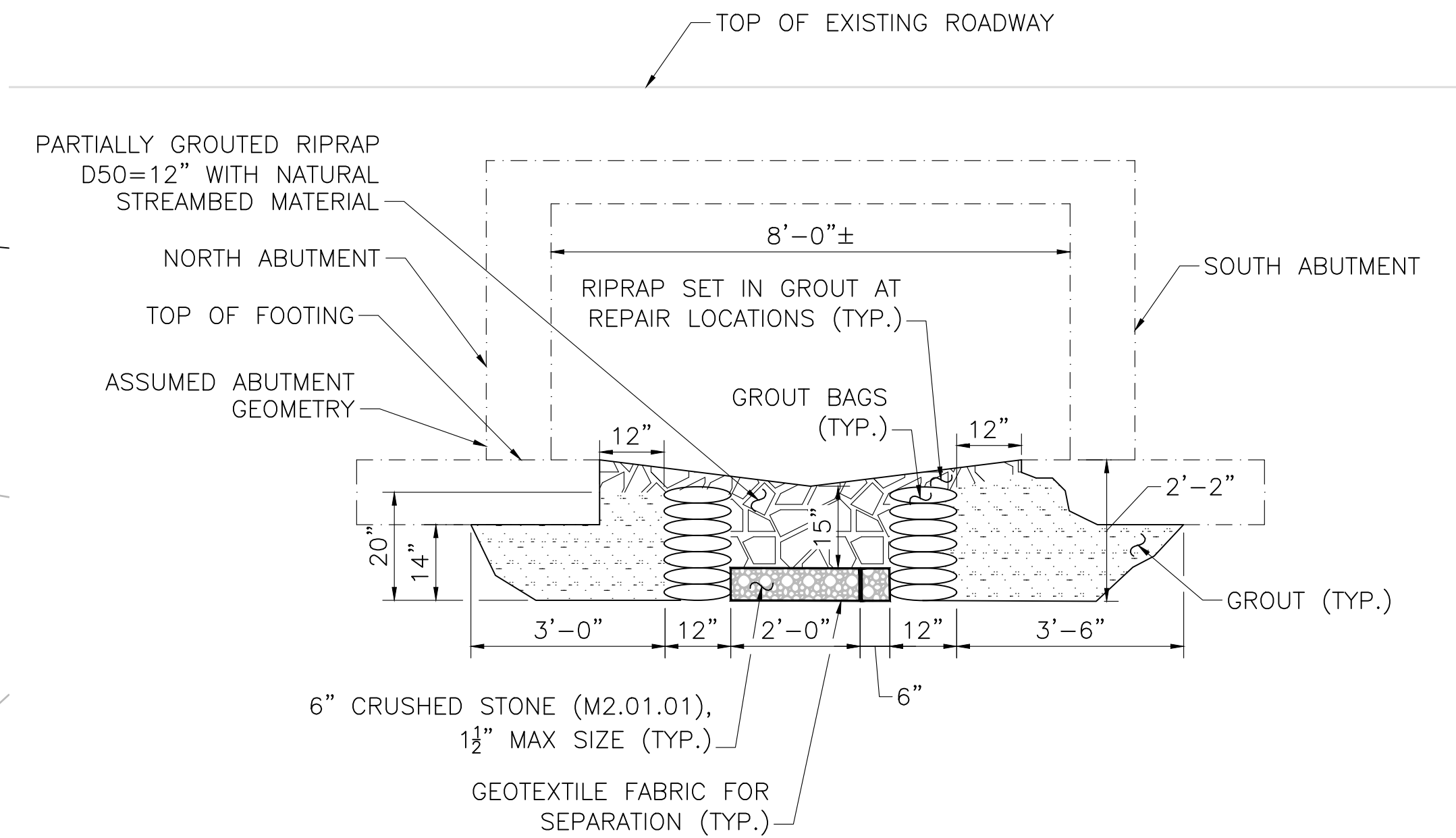
SCOUR REPAIR DETAILS



NOTE:
THERE ARE NO AVAILABLE EXISTING PLANS. THE SUBSTRUCTURE SHOWN IS BASED ON PERFORMED SURVEY. THE LIMITS OF THE EXISTING ABUTMENTS BENEATH THE EXISTING GROUND ARE ASSUMED.

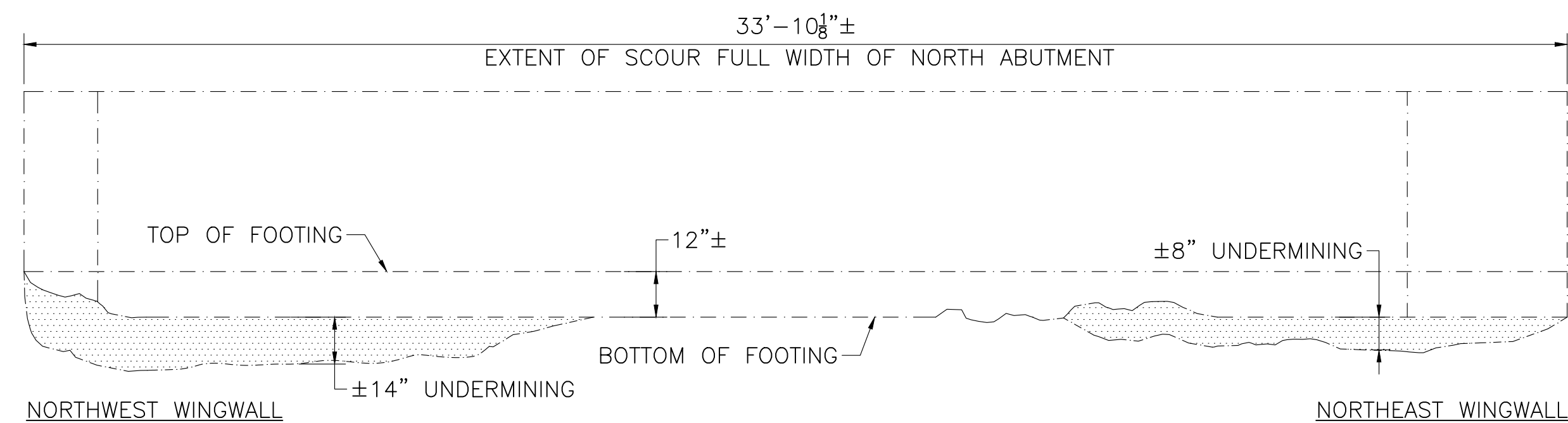
SCOUR REPAIR PLAN

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



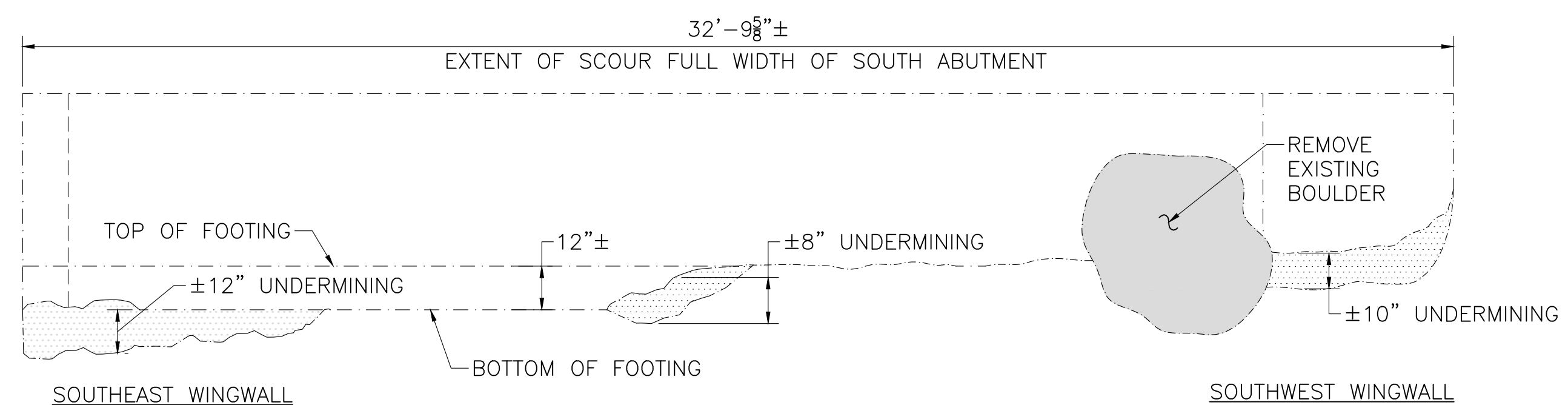
TYPICAL SCOUR REPAIR

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



EXIST. NORTH ABUTMENT UNDERMINING - ELEVATION

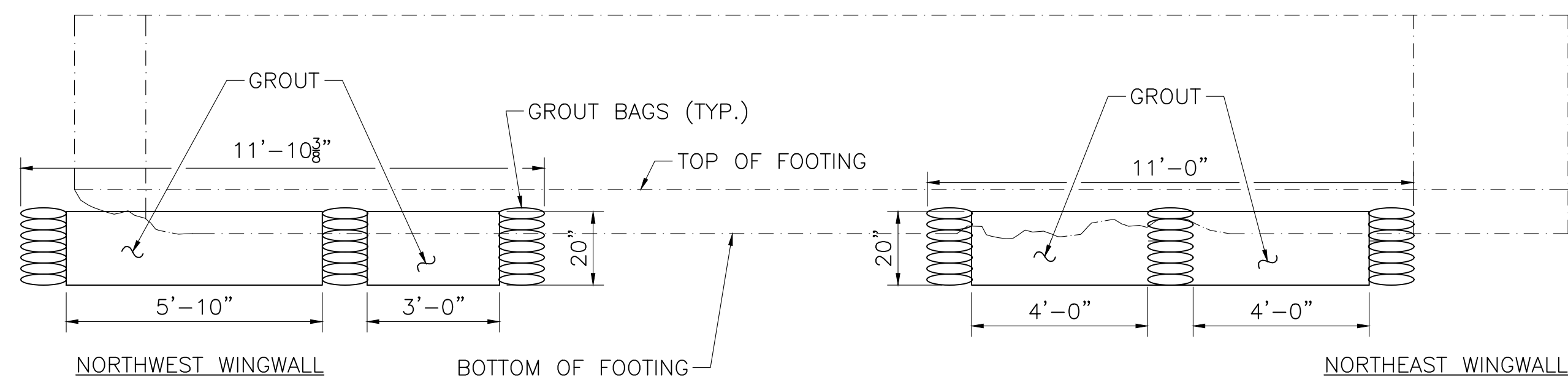
SCALE: 3/8" = 1'-0"



EXIST. SOUTH ABUTMENT UNDERMINING - ELEVATION

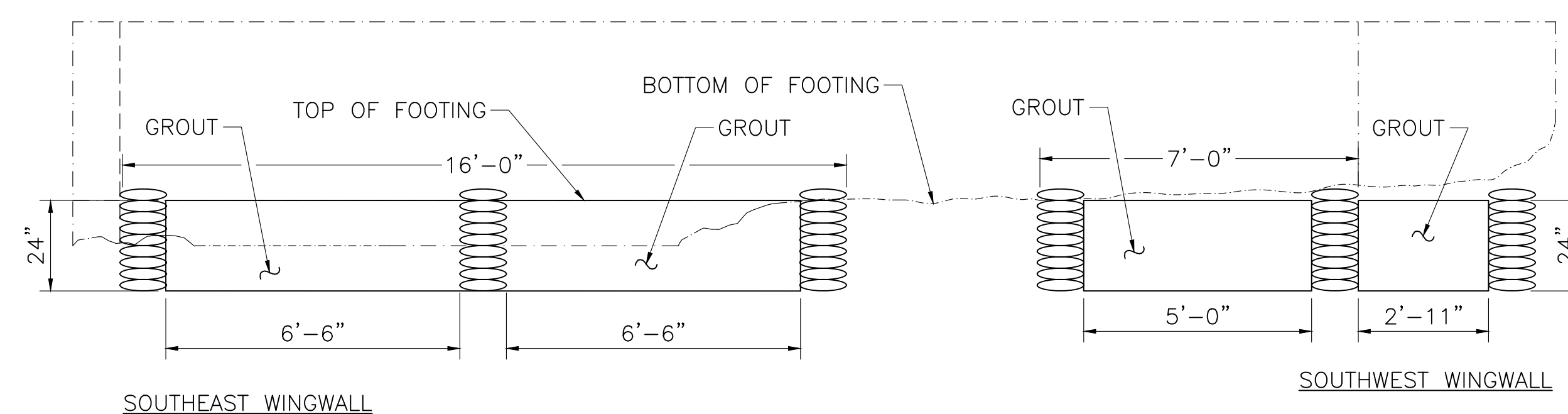
SCALE: 3/8" = 1'-0"

NOTE:
SEE NOTES ON SHEET 4.



NORTH ABUTMENT SCOUR REPAIR - ELEVATION

SCALE: 3/8" = 1'-0"



SOUTH ABUTMENT SCOUR REPAIR - ELEVATION

SCALE: 3/8" = 1'-0"

COMMONWEALTH OF MASSACHUSETTS
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MASS. GEN. LAWS CH 85 S 35
BRIDGE ENGINEER DATE 12/8/2020

MONTH, XX, XXXX	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
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