



**United States Department of Agriculture
Forest Service**

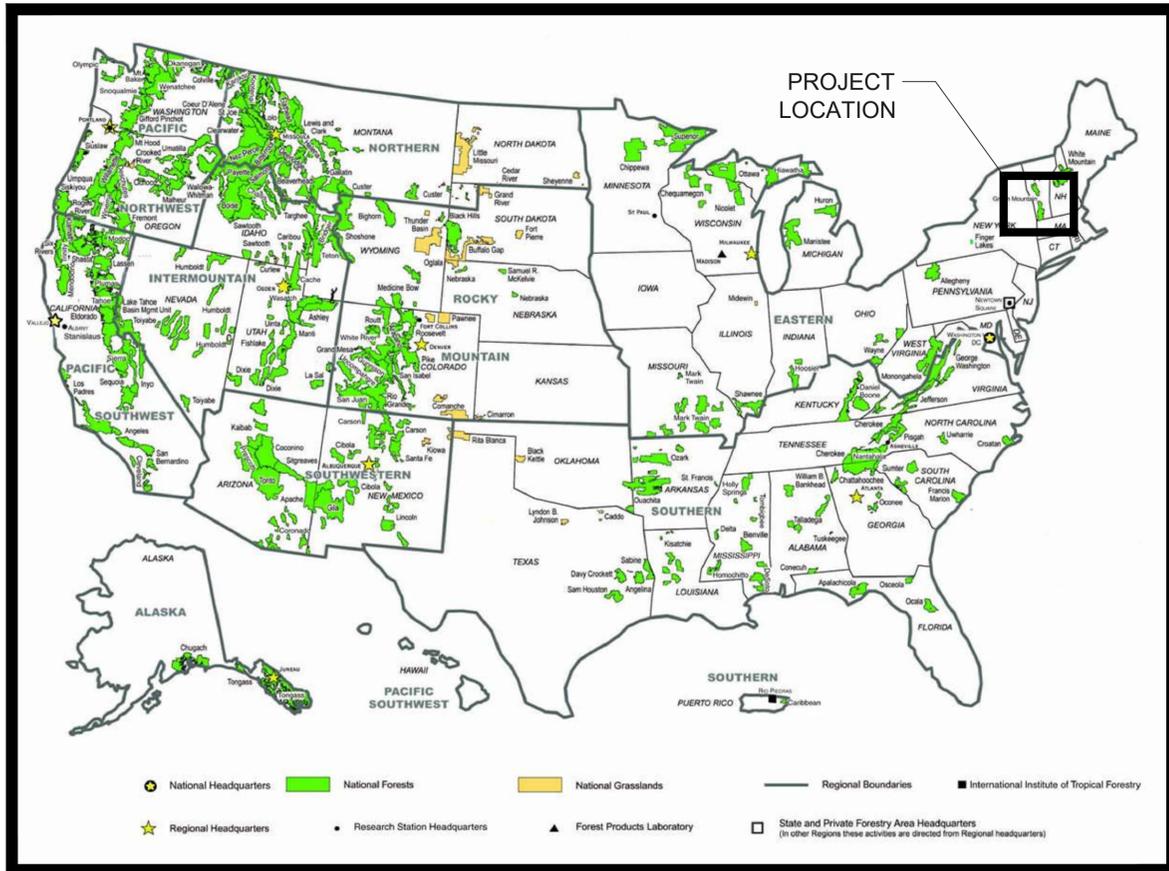
**(R09) EASTERN REGION
GREEN MOUNTAIN NATIONAL FOREST
RUTLAND COUNTY
VERMONT**



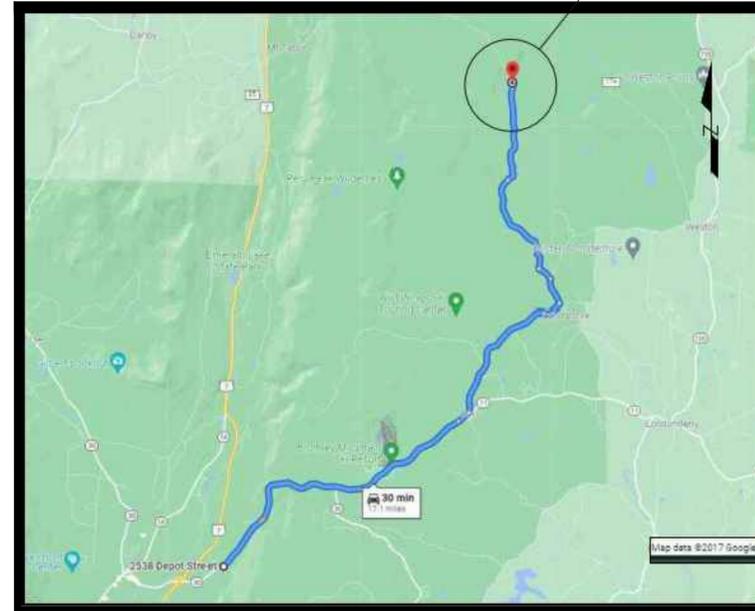
FOR CONSTRUCTION

FR 10-8.4 CULVERT REPLACEMENT OVER MT. TABOR BROOK STRUCTURE NUMBER: 092002000035801

INDEX OF SHEETS		
SHEET	SHEET TITLE	DATE
C-01	TITLE SHEET	
C-02	GENERAL NOTES	
C-03	EXISTING CONDITIONS PLAN	
C-04	BORING LOGS	
C-05	PROFILE	
C-06	GENERAL PLAN AND ELEVATION	
C-07	TYPICAL SECTIONS	
C-08	ALUMINUM ARCH ELEVATION AND TYPICAL SECTION	
C-09	FOOTING MASONRY AND REINFORCEMENT	
C-10	TYPICAL ABUTMENT MASONRY	
C-11	TYPICAL ABUTMENT REINFORCEMENT	
C-12	REINFORCING STEEL SCHEDULE	
C-13	TIE SHEET	
C-14	ROADWAY CROSS SECTIONS (1 OF 2)	
C-15	ROADWAY CROSS SECTIONS (1 OF 2)	
C-16	EPSC NOTES AND DETAILS	
C-17	EPSC CONSTRUCTION PLAN SHEET	
C-18	TERMINAL UNIT DELINEATION	
HSD-621.07A	MIDWEST GUARDRAIL SYSTEM	
G-1D	STEEL BEAM GUARDRAIL END TERMINALS, ANCHOR FOR STEEL BEAM GUARDRAIL, STEEL BEAM MEDIAN BARRIER	
21		
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FOREST LOCATION



VICINITY MAP

TRAVEL DIRECTIONS:

FROM THE INTERSECTION OF US-7 AND VT-11 E, TRAVEL EAST ALONG VT-11 E FOR 8.4 MILES. TAKE A SLIGHT LEFT ONTO MAIN ST. FOR .3 MILES. TAKE A SLIGHT LEFT ONTO HAPGOOD POND RD. FOR 3.7 MILES. TURN LEFT ONTO LANDGROVE RD. FOR .6 MILES. TURN LEFT ONTO LITTLE MICHIGAN RD. FOR .4 MILES. TURN RIGHT ONTO FOREST ROAD 10 FOR 4.9 MILES TO REACH THE CULVERT LOCATED AT MILE POST 8.4. 43°20'27" N, 72°52'44" W.

FROM THE INTERSECTION OF VT-155 S AND VT-100 S, TRAVEL SOUTH ALONG VT-100 S FOR 3.4 MILES. TURN RIGHT ONTO LAWRENCE HILL ROAD FOR .3 MILES. TURN LEFT ONTO LANDGROVE ROAD FOR 4 MILES. TURN RIGHT ONTO LITTLE MICHIGAN RD. FOR .4 MILES. TURN RIGHT ONTO FOREST ROAD 10 FOR 4.9 MILES TO REACH THE CULVERT LOCATED AT MILE POST 8.4. 43°20'27" N, 72°52'44" W.



RECOMMENDED BY:

FOREST ENGINEER _____
DISTRICT RANGER _____

DATE _____
DATE _____

APPROVED:

FOREST SUPERVISOR _____

DATE _____

DESIGN LOADS, MATERIALS AND SPECIFICATIONS:

- (1) DESIGN LOADING: HL-93
- (2) DESIGN METHOD: LOAD AND RESISTANCE FACTOR DESIGN (LRFD)
- (3) SPECIFICATIONS: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 8TH ED., 2017

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR THE CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS, FP-14.
- (4) REINFORCING STEEL: AASHTO M31 GRADE 60 PLAIN REINFORCING STEEL.
- (5) CONCRETE: CAST-IN-PLACE CONCRETE FOOTINGS AND STEM WALLS SHALL BE CLASS A CONCRETE WITH A COMPRESSIVE STRENGTH OF 4,500 PSI.

CAST-IN-PLACE LEVELING PAD SHALL BE CLASS S CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

HYDRAULIC DATA:

- 1. DRAINAGE AREA: .60 SQUARE MILES.
- 2. DESIGN FLOOD: 100 YEAR (1% ANNUAL EXCEEDANCE PROBABILITY). Q100 EL. = 1979.26'
- 3. ORDINARY HIGH WATER: 2 YEAR (50% ANNUAL EXCEEDANCE PROBABILITY). Q2 EL. = 1978.42'
- 4. BANKFUL WIDTH: 15'-0".
- 5. MINIMUM VERTICAL HYDRAULIC OPENING: 8'-0".
- 6. MINIMUM U.S. WATERWAY OPENING: 144 SQUARE FEET.
- 7. U.S. CHANNEL INVERT EL. = 1977.96'
- 8. D.S. CHANNEL INVERT EL. = 1968.80'
- 9. CHANNEL ROUGHNESS COEFFICIENT: n = 0.044
- 10. OVERBANK ROUGHNESS COEFFICIENT: n = 0.13

GENERAL NOTES:

- 1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR THE CONSTRUCTION OF ROADS AND BRIDGES ON FEDERAL HIGHWAY PROJECTS, FP-14 (2014).
- 2. ALL DIMENSIONS ARE HORIZONTAL AND VERTICAL, AND ARE GIVEN AT 68 DEGREES FAHRENHEIT.
- 3. ELEVATIONS NOTED ARE BASED ON NAVD88. HORIZONTAL LOCATIONS ARE BASED ON NAD83.
- 4. ALL DIMENSIONS AND FIELD CONDITIONS SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF THE WORK.
- 5. ALL WORK PERFORMED BY THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL REGULATIONS AND REQUIREMENTS.
- 6. THE CONTRACTOR SHALL REVIEW AND UNDERSTAND ALL APPLICABLE ENVIRONMENTAL PERMITS AND ENSURE THAT ALL CONSTRUCTION CONDITIONS ARE MET.
- 7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION SAFETY, AND MEANS AND METHODS TO PERFORM AND COMPLETE THE WORK.
- 8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE TO PRIVATE OR PUBLIC PROPERTY OUTSIDE THE LIMITS OF CONSTRUCTION SHOWN ON THE PLANS CAUSED BY THE CONTRACTOR, AT THE SOLE COST TO THE CONTRACTOR.
- 9. THE CONTRACTOR SHALL SUBMIT LITERATURE (MANUFACTURERS LITERATURE, CUT SHEETS, APPLICATION PROCEDURES, ETC.) FOR ALL PRODUCTS PROPOSED FOR USE ON THE PROJECT, FOR APPROVAL BY THE CONTRACTING OFFICER'S REPRESENTATIVE (C.O.R.).
- 10. THE CONTRACTOR SHALL COMPACT THE ROADWAY SUBGRADE AFTER EXISTING MATERIAL IS REMOVED AND PRIOR TO THE PLACEMENT OF ANY ADDITIONAL OR NEW MATERIAL. SUBGRADE SHALL MEET 95% COMPACTION.
- 11. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO ENSURE THAT DEBRIS DOES NOT FALL ON ANY WATERWAY BELOW THE EXISTING STRUCTURE. ALL COSTS, INCLUDING ERECTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURES OR OTHER SUCH APPROVED METHODS, SHALL BE SUBSIDIARY TO THE APPROPRIATE ITEMS OF WORK BEING PERFORMED.
- 12. ALL WASTE MATERIAL INCLUDING UNUSED EXCAVATED MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF OFF U.S. GOVERNMENT (NATIONAL FOREST) LAND IN AN APPROVED LANDFILL. THERE ARE NO GOVERNMENT DISPOSAL SITES OR PITS AVAILABLE FOR THIS PROJECT.
- 13. ALL SOIL MOVING EQUIPMENT SHALL BE THOROUGHLY CLEANED TO MAKE IT FREE OF SOIL, NON-NATIVE INVASIVE SPECIES OR OTHER DEBRIS THAT COULD CONTAIN OR HOLD SEEDS PRIOR TO BEING DELIVERED TO THE PROJECT SITE. EQUIPMENT SHALL BE CONSIDERED FREE OF NON-NATIVE OR INVASIVE SPECIES AND OTHER SUCH DEBRIS WHEN A VISUAL INSPECTION BY THE C.O.R., COMPLETED PRIOR TO THE EQUIPMENT BEING MOVED TO THE SITE, DOES NOT DISCLOSE SUCH MATERIAL PRESENT.
- 14. PRIOR TO REMOVAL OF EQUIPMENT FROM THE PROJECT SITE, ALL SOIL MOVING EQUIPMENT SHALL BE THOROUGHLY CLEANED TO MAKE IT FREE OF SOIL, VEGETATION, OR OTHER DEBRIS.
- 15. FR-10 SHALL BE CLOSED WITHIN THE PROJECT LIMITS AS SHOWN ON SHEET C-05 FOR THE DURATION OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE TRAFFIC BARRICADES AS APPROVED BY THE C.O.R.. ALL ASSOCIATED COSTS SHALL BE INCIDENTAL TO THE CONTRACT. THE FOREST SERVICE SHALL PROVIDE AND INSTALL SIGNAGE FOR THE ROAD CLOSURE.

- 16. ALL EXPOSED RIPRAP AND AGGREGATE SURFACE COURSE SHALL BE BROWN, DARK GREY OR EARTH TONE IN COLOR. THE C.O.R. SHALL APPROVE COLOR PRIOR TO PURCHASE OR PLACEMENT BY THE CONTRACTOR.
- 17. SUITABLE EXCAVATED MATERIAL AS APPROVED BY THE C.O.R. SHALL BE STOCKPILED FOR USE OUTSIDE THE LIMITS OF ITEM 20801-0000, AND MAY BE USED IN PLACE OF ITEM 20403-0000 WITH APPROVAL FROM THE C.O.R.
- 18. GUARDRAIL TERMINAL UNITS SHALL BE DELINEATED WITH OM3-L AND OM3-R OBJECT MARKERS AS SHOWN ON THE MODIFIED NHDOT TERMINAL UNIT DELINEATION SHEET AS SHOWN ON SHEET C-18. ALL PAYMENT SHALL BE SUBSIDIARY TO ITEM 61701-1850.

CULVERT REMOVAL NOTES:

- 1. THE CONTRACTOR SHALL SUBMIT, FOR DOCUMENTATION, A DETAILED OUTLINE OR PLAN OF THE PROPOSED METHOD OF REMOVAL OF THE EXISTING CULVERT COMPONENTS PRIOR TO THE COMMENCEMENT OF ANY WORK.
- 2. THE EXISTING CULVERT SHALL BE REMOVED IN ITS ENTIRETY AND SHALL BE PAID FOR UNDER ITEM 20301-0300, REMOVAL OF BOX CULVERT.

CAST-IN-PLACE CONCRETE NOTES:

- 1. ITEM 55201-0100 STRUCTURAL CONCRETE CLASS A, SHALL INCLUDE ALL PEDESTALS AND SPREAD FOOTINGS.
- 2. WEEP HOLES SHALL BE PLACED 2'-0" (TYP.) ABOVE THE TOP OF STREAM BED AND SPACED AT ONE (1) LOCATION PER 10'-0" (MAX.) SPACING.
- 3. CAST IN PLACE CONCRETE SHALL BE PLACED IN THE DRY. THE CONTRACTOR IS ALERTED TO THE PRESENCE OF WATER AND SHALL SUBMIT FOR APPROVAL THE MEANS OF DEWATERING FOR PLACEMENT OF CONCRETE.
- 4. ALL GROUT SHALL BE IN CONFORMANCE WITH SECTION 725.13, AND SHALL BE 5,000 PSI MIN, NON-METALLIC, NON-SHRINK GROUT. PAYMENT SHALL BE SUBSIDIARY TO ITEM 55201-0100.
- 5. RELATIVE TO THE GRADE, ALL CONCRETE POURS SHALL BEGIN FROM THE LOW ELEVATION END AND PROCEED TOWARDS THE HIGH ELEVATION END.

FOUNDATION NOTES:

- 1. THE THICKNESS OF THE FOOTINGS SUPPORTING THE ALUMINUM ARCH SHALL BE 2'-0" MINIMUM. THE BOTTOM OF FOOTING ELEVATIONS SHALL VARY BASED ON THE SLOPE OF THE STREAM AND THE PRESENCE OF THE EXISTING BEDROCK, HOWEVER THE TOTAL HEIGHT OF THE PEDESTAL SHALL NOT BE LESS THAN 4'-0".
- 2. THE THICKNESS OF THE FOOTINGS SUPPORTING THE ALUMINUM WINGWALLS SHALL BE 3'-3" MINIMUM OR AS NECESSARY TO MEET THE MINIMUM FROST DEPTH OF 5'-6". THE CONTRACTOR SHALL WORK WITH THE ALUMINUM WINGWALL MANUFACTURERS TO VERIFY THE MINIMUM FROST DEPTH OF 5'-6" IS MET.
- 2. THE WINGWALL FOOTINGS SHALL BE CAST DIRECTLY ON TOP OF THE ALUMINUM ARCH FOOTINGS AND SHALL BE CAST LEVEL TO THE ELEVATIONS SHOWN ON THE PLANS.
- 3. THE FOOTING DESIGN IS BASED ON THE STRUCTURAL RISE AS SHOWN IN THE PLANS.
- 4. WHERE BEDROCK IS WITHIN 6" OF THE PLAN BOTTOM OF FOOTING ELEVATION, THE CONCRETE FOOTING SHALL BE CAST DIRECTLY ON THE BEDROCK. ANCHORS SHALL BE DRILLED AND GROUTED INTO THE BEDROCK WITH A SPACING AND GAUGE NOT EXCEEDING 4'-0" O.C. ANCHORS SHALL BE MINIMUM 2'-0" LONG #5 REBAR AND SHALL HAVE A MINIMUM EMBEDMENT OF 1'-0" INTO THE EXISTING BEDROCK.
- 5. A CONCRETE SUBFOOTING SHALL ONLY BE USED WHERE THE EXISTING BEDROCK IS MORE THAN 6" BELOW THE BOTTOM OF THE FOOTING PROVIDED IN THE PLANS. NO PAYMENT SHALL BE MADE FOR CONCRETE SUBFOOTINGS WHERE THE CONTRACTOR HAS REMOVED ROCK BELOW THE PAY LIMITS FOR ITEM 20801-0000. THE CONCRETE SUBFOOTING, IF NECESSARY, SHALL BE PAID FOR UNDER ITEM 55201-1200.
- 6. IN THE EVENT THAT BEDROCK IS NOT ENCOUNTERED, THE AREA SHALL BE OVER EXCAVATED TO THE DEPTH AS FIELD DIRECTED BY THE C.O.R. AND RETURNED TO THE PLANNED ELEVATION THROUGH THE PLACEMENT AND COMPACTION OF 6" LIFTS OF ITEM 30107-0000.
- 7. IF ROCK EXCAVATION IS REQUIRED TO ACHIEVE THE REQUIRED BOTTOM OF FOOTING IT SHALL BE PAID FOR UNDER ITEM 20421-0000.
- 8. ALL FOUNDATION WORK AND PREPARATIONS SHALL BE REVIEWED AND APPROVED BY THE C.O.R.

REINFORCEMENT NOTES:

- 1. REINFORCEMENT IN CAST-IN-PLACE ELEMENTS SHALL HAVE 3" COVER ON FACES CAST AGAINST EARTH. OTHER FACES SHALL HAVE 2" CLEAR COVER UNLESS OTHERWISE NOTED.

ALUMINUM ARCH NOTES:

- 1. THE SINGLE RADIUS ARCH, WINGWALLS AND HEADWALLS SHALL BE ALUMINUM CONFORMING TO SPECIAL PROVISION 60304-0000 OF THE SPECIFICATIONS, AND SHALL MEET THE MINIMUM DIMENSIONS AS INDICATED ON THE PLANS.
- 2. THE SINGLE RADIUS ARCH, WINGWALLS AND HEADWALLS SHALL BE DESIGNED AND STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF VERMONT.
- 3. ALL ELEMENTS OF THE ALUMINUM STRUCTURE INCLUDING THE ALUMINUM ARCH, WINGWALLS AND HEADWALLS SHALL BE DESIGN BY THE ALUMINUM ARCH FABRICATOR, INCLUDING ANCHORAGE AND CONNECTIONS BETWEEN ELEMENTS. THE FABRICATOR SHALL SUBMIT INSTALLATION REQUIREMENTS AND PROCEDURES AND ALL ELEMENTS SHALL BE INSTALLED IN ACCORDANCE WITH THE FABRICATORS RECOMMENDATIONS. THE CONTRACTOR SHALL SUBMIT FABRICATION DRAWINGS AND CALCULATIONS FOR THE ALUMINUM STRUCTURE AND ALL ELEMENTS FOR ACCEPTANCE. CALCULATIONS SHALL BE IN ACCORDANCE WITH AASHTO SPECIFICATIONS REFERENCED IN GENERAL NOTE 3, AND SHALL INCLUDE A LOAD RATING OF THE STRUCTURE. THE FABRICATION DRAWINGS, RATING, AND BACKUP CALCULATIONS

SHALL BE SIGNED, STAMPED AND DATED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE ENGINEERING IN THE STATE OF VERMONT. NOTE THAT THE FABRICATOR ASSUMES ALL LIABILITY FOR THE ADEQUACY AND ACCURACY OF THE ALUMINUM ARCH, DESIGNS AND LOAD RATING FOR ALL ELEMENTS.

- 4. INCLUDED WITH THE LOAD RATING CALCULATIONS, THE FABRICATOR SHALL PROVIDE LRFD LOAD RATING FACTORS NECESSARY TO COMPLETE LRFD LOAD RATING TABLES.
- 5. THE DESIGN OF THE STRUCTURE SHALL PROVIDE A 75 YEAR DESIGN LIFE.
- 6. DRILLING OF HOLES IN THE ARCH OR WINGWALLS SHALL NOT BE PERMITTED UNLESS APPROVED IN WRITING BY THE FABRICATOR.
- 7. IF DETERMINED NECESSARY BY THE FABRICATOR, HARDWOOD WEDGES, OR OTHER APPROVED METHOD, SHALL BE USED TO RESTRAIN MOVEMENT OF THE ALUMINUM ARCH PRIOR TO GROUT PLACEMENT IN THE KEYWAY.
- 8. SHIMS USED BETWEEN THE ARCH LEG BASES AND KEYWAY SHALL BE OF ADEQUATE THICKNESS TO ALLOW GROUT UNDERNEATH THE LEG BASE, AND SHALL NOT REDUCE THE FRICTION COEFFICIENT BETWEEN THE LEG BASE AND FOOTING.
- 9. THE ALUMINUM ARCH SHALL NOT BE IN CONTACT WITH CONCRETE. A BITUMINOUS COATING SHALL BE APPLIED OVER THE CONTACT AREAS PLUS 3 INCHES, AT A MINIMUM BEYOND THE ESTIMATED LIMITS OF CONCRETE OR GROUT.
- 10. ONLY GALVANIZED HARDWARE SHALL BE IN DIRECT CONTACT WITH THE ALUMINUM ARCH. ALL CONNECTIONS SHALL BE AS DETAILED BY THE FABRICATOR.

STREAM RECONSTRUCTION NOTES:

- 1. FILL PLACED TO ESTABLISH FINISHED STREAMBED GRADES SHALL BE PAID FOR UNDER ITEM 64704-1000, MITIGATION, STREAMBED MATERIAL.
- 2. PLACED STREAMBED MATERIAL SHALL BE A MIXTURE OF RIPRAP WITH STREAMBED FILL MATERIAL USED TO FILL THE VOIDS BETWEEN BOULDERS AND PREVENT SUBSURFACE FLOW. THE RIPRAP AND STREAMBED FILL SHALL BE PLACED IN LIFTS AS SHOWN ON SHEET C-08. THE C.O.R. SHALL OBSERVE THE PLACEMENT OF THE STREAMBED FILL AND DETERMINE ADEQUACY OF THE PLACED STREAMBED FILL TO PREVENT SUBSURFACE FLOW. THE COMBINATION OF RIPRAP AND STREAMBED FILL BY VOLUME SHALL CONSTITUTE THIS BASIS OF PAYMENT FOR ITEM 64704-1000. SEE SPECIAL PROVISIONS.
- 3. THE FINAL 6" OF THE RECONSTRUCTED STREAMBED SHALL BE SOLELY CONSTITUTED OF STREAMBED FILL MATERIAL. THIS FINAL LIFT SHALL BE STABILIZED BY ROCK VANES AS SHOWN ON SHEET C-07.
- 4. THE C.O.R. SHALL OBSERVE THE PLACEMENT OF THE STREAMBED MATERIAL AND SHALL MODIFY THE PERCENTAGES OF RIPRAP AND STREAMBED FILL AS NECESSARY TO FILL ALL VOIDS.
- 5. ALL RIPRAP ROCK VANES SHALL BE APPROXIMATELY 2'-0" IN DIAMETER AND SHALL BE BROWN, DARK GREY OR EARTH TONE IN COLOR. THE C.O.R. SHALL APPROVE COLOR PRIOR TO PURCHASE OR PLACEMENT BY THE CONTRACTOR.



United States Department of Agriculture
Forest Service

(R09)
EASTERN REGION

STAMPS, LOGOS, AND SEALS
FOR CONSTRUCTION



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NO.	REVISION / ISSUE	DATE

PROJECT NAME

**FR 10-8.4
CULVERT
REPLACEMENT
OVER MT. TABOR
BROOK
GREEN MOUNTAIN
NATIONAL FOREST**

MANCHESTER RANGER DISTRICT

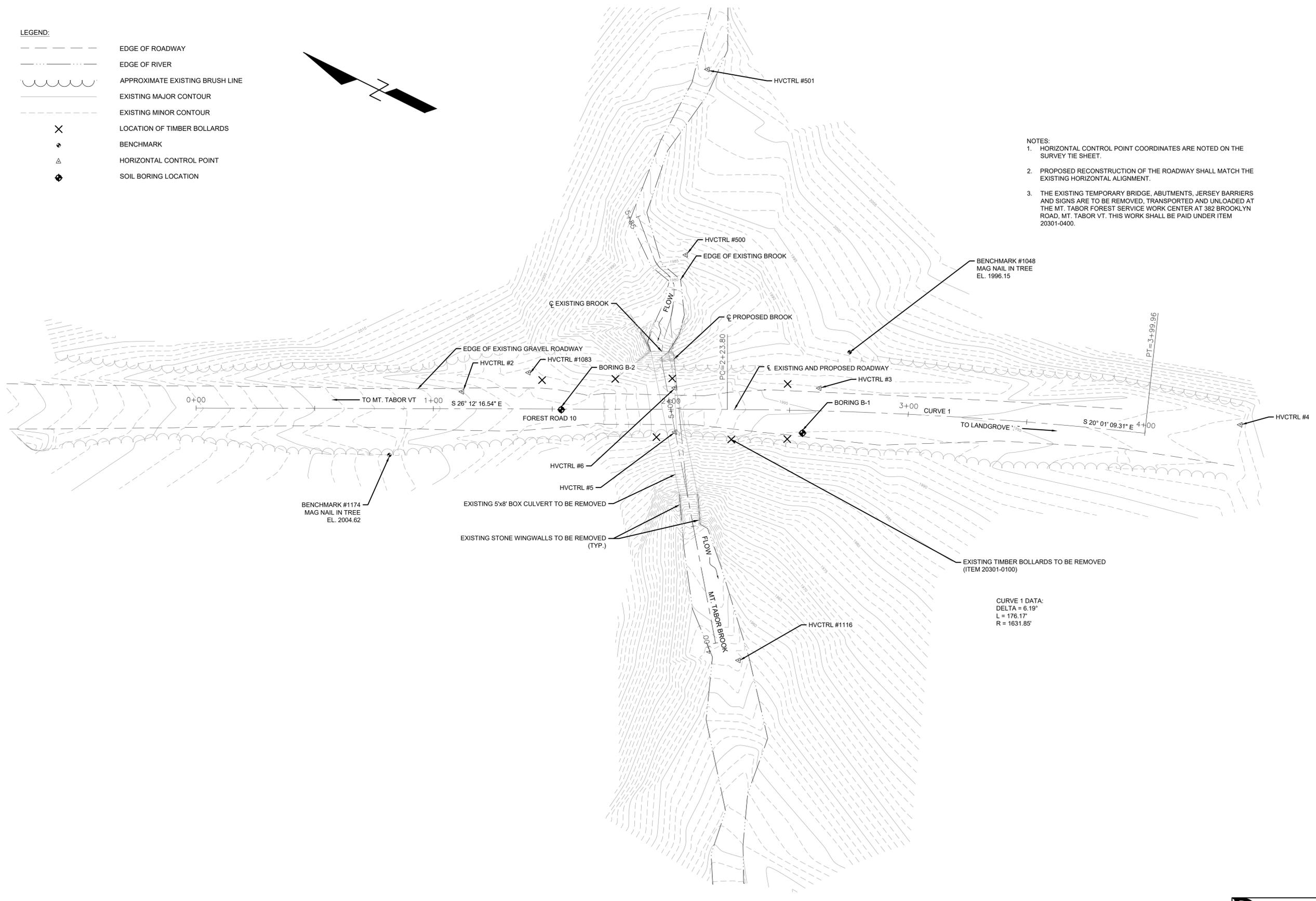
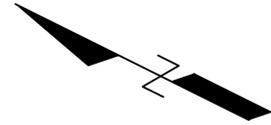
DRAWING TITLE

GENERAL NOTES

DATE 02/14/2022	ARCHIVE NO.
DESIGNER K. KITTREDGE	DRAWING SHEET NO. C-02
DRAWN K. KITTREDGE	
CHECKED R. GAUDREAU	
PROJECT NO. 927152	SHEET 02 OF 20



- LEGEND:
- EDGE OF ROADWAY
 - EDGE OF RIVER
 - APPROXIMATE EXISTING BRUSH LINE
 - EXISTING MAJOR CONTOUR
 - EXISTING MINOR CONTOUR
 - X LOCATION OF TIMBER BOLLARDS
 - BENCHMARK
 - △ HORIZONTAL CONTROL POINT
 - ◆ SOIL BORING LOCATION



- NOTES:
- HORIZONTAL CONTROL POINT COORDINATES ARE NOTED ON THE SURVEY TIE SHEET.
 - PROPOSED RECONSTRUCTION OF THE ROADWAY SHALL MATCH THE EXISTING HORIZONTAL ALIGNMENT.
 - THE EXISTING TEMPORARY BRIDGE, ABUTMENTS, JERSEY BARRIERS AND SIGNS ARE TO BE REMOVED. TRANSPORTED AND UNLOADED AT THE MT. TABOR FOREST SERVICE WORK CENTER AT 382 BROOKLYN ROAD, MT. TABOR VT. THIS WORK SHALL BE PAID UNDER ITEM 20301-0400.

CURVE 1 DATA:
 DELTA = 6.19°
 L = 176.17'
 R = 1631.85'



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 CULVERT
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 BROOK**

**GREEN MOUNTAIN
 NATIONAL FOREST**

MANCHESTER RANGER DISTRICT

DRAWING TITLE

**EXISTING CONDITIONS
 PLAN**

DATE 02/14/2022	ARCHIVE NO.
DESIGNER K. KITTREDGE	DRAWING SHEET NO. C-03
DRAWN K. KITTREDGE	CHECKED R. GAUDREAU
PROJECT NO. 927152	SHEET 03 OF 20



EXISTING CONDITIONS PLAN
 SCALE: 1" = 20'-0"

5/6/22 13:02 KKITREDGE 109/927152.GMFL FR10-8.4 ERF0 CULVERT REPLACEMENT MT. TABOR DRAWINGS STRUCTURAL 02/14/22 03 - SITE RESOLVED.DWG.



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STAMPS, LOGOS, AND SEALS



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4		
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NATIONAL FOREST

MANCHESTER RANGER DISTRICT

DRAWING TITLE
BORING LOGS

DATE 02/14/2022	ARCHIVE NO.
DESIGNER K. KITTREDGE	DRAWING SHEET NO. C-04
DRAWN K. KITTREDGE	CHECKED R. GAUDREAU
PROJECT NO. 927152	SHEET 04 OF 20



BORING LOG											
PROJECT: GMNF - Forest Rd 10 over Mt Tabor Brook						JOB NO. 927152					
LOCATION: Forest Rd 10, Mile 8.4, Mt. Tabor, VT						HOLE NO. B-1					
CONTRACTOR: New England Boring Contractors						GRND ELEV.					
TYPE		CASING	SAMPLE	CORE	GROUNDWATER	DEPTH TO					
SIZE ID		DATE	TIME	WATER	BOT. OF CASING	BOT. OF HOLE					
HAMMER WT.		HAMMER FALL		START DATE						FINISH DATE	
DRILLER		HELPER		DRILLER						INSPECTOR	
M. Matarazzo		K. Kittredge		11/11/21						11/11/21	
K. Kittredge											
DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLE			SAMPLE BLOWS PER 6" ON SAMPLER				SOIL DESCRIPTION		
		No.	Depth	Recovery	0-6	6-12	12-18	18-24			
1											
2											
3											
4											
5		S-1	4'-6"	7"	8	7	6	6	Brown Fine Sands W/ Fines & Gravels		
10		S-2	9'-11"	1'-4"	3	WH	2	7	Brown Fine Sands W/ Fines & Gravels		
15		S-3	15'-17"	N/A	N/A	N/A	N/A	N/A	Rock encountered at 14', drilled through at 15' and began sampling No Recovery Due to Rock Stuck in Sampler		
20		S-4	19'-21"	1'-4"	12	10	13	70	Light Brown Fine Sand W/ Gravels & Fines (Rock fragments throughout)		
25									Hit Rock at 21', attempted to drill through Drilled 2' into rock, Drillers believed this to be bedrock Bottom of Hole 23'		
30									Encountered rock at 29' Drilled through rock to 30.5' and Began Coring		
35									30.5'-31.5': 5:30 31.5'-32.5': 5:05 32.5'-33.5': 5:35 33.5'-34.5': 5:30 34.5'-35.5': 7:12		

NOTES: 53' From Downstream HVCTRL Point
58' From Upstream HVCTRL Point
7' in Front of Last Wooden Post

BORING LOG											
PROJECT: GMNF - Forest Rd 10 over Mt Tabor Brook						JOB NO. 927152					
LOCATION: Forest Rd 10, Mile 8.4, Mt. Tabor, VT						HOLE NO. B-2					
CONTRACTOR: New England Boring Contractors						GRND ELEV.					
TYPE		CASING	SAMPLE	CORE	GROUNDWATER	DEPTH TO					
SIZE ID		DATE	TIME	WATER	BOT. OF CASING	BOT. OF HOLE					
HAMMER WT.		HAMMER FALL		START DATE						FINISH DATE	
DRILLER		HELPER		DRILLER						INSPECTOR	
M. Matarazzo		K. Kittredge		11/11/21						11/12/21	
K. Kittredge											
DEPTH IN FEET	CASING BLOWS PER FOOT	SAMPLE			SAMPLE BLOWS PER 6" ON SAMPLER				SOIL DESCRIPTION		
		No.	Depth	Recovery	0-6	6-12	12-18	18-24			
1											
2											
3											
4									Rock Encountered at 4', Broke Through at 4.5'		
5		S-1	4'-6"	1'-2"	14	9	13	11	Brown Fine Sands W/ Fines & Rock Fragments		
10		S-2	9'-11"	NA	8	5	5	5	Rock encountered at 6', Broke through at 7.5' Rock Stuck in Sampler, No Recovery		
15		S-3	15'-17"	NA	3	2	2	2	Rock encountered at 14', drilled through at 15' and began sampling No Recovery Due to Rock Stuck in Sampler		
20		S-4	19'-21"	1'-4"	2	7	2	6	Brown Fine Sand W/ Gravels & Fines (Rock fragments throughout)		
25		S-5	24'-26"	1'-4"	25	19	13	16	Light Brown Fine Sand W/ Gravels & Fines (Rock fragments throughout)		
30									Encountered rock at 29' Drilled through rock to 30.5' and Began Coring		
35									30.5'-31.5': 5:30 31.5'-32.5': 5:05 32.5'-33.5': 5:35 33.5'-34.5': 5:30 34.5'-35.5': 7:12		

NOTES: 79' From Benchmark, Nail In Tree, North of Bridge
44' From Downstream HVCTRL Point
44' From Upstream HVCTRL Point



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(R09)
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STAMPS, LOGOS, AND SEALS



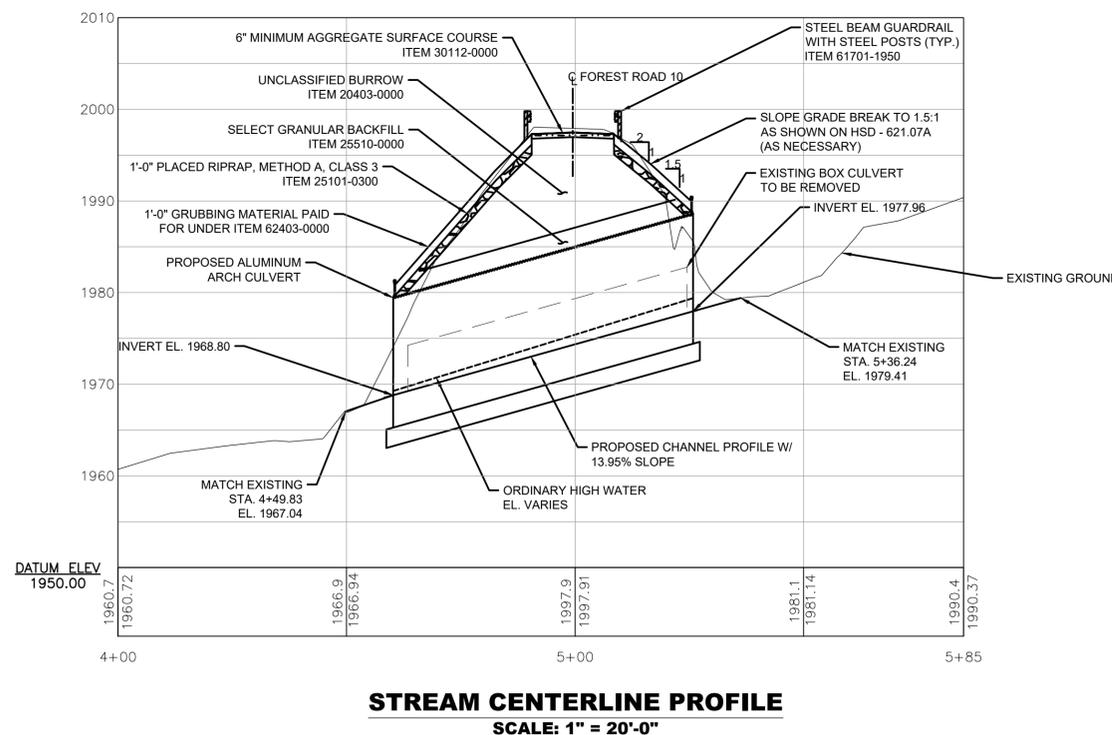
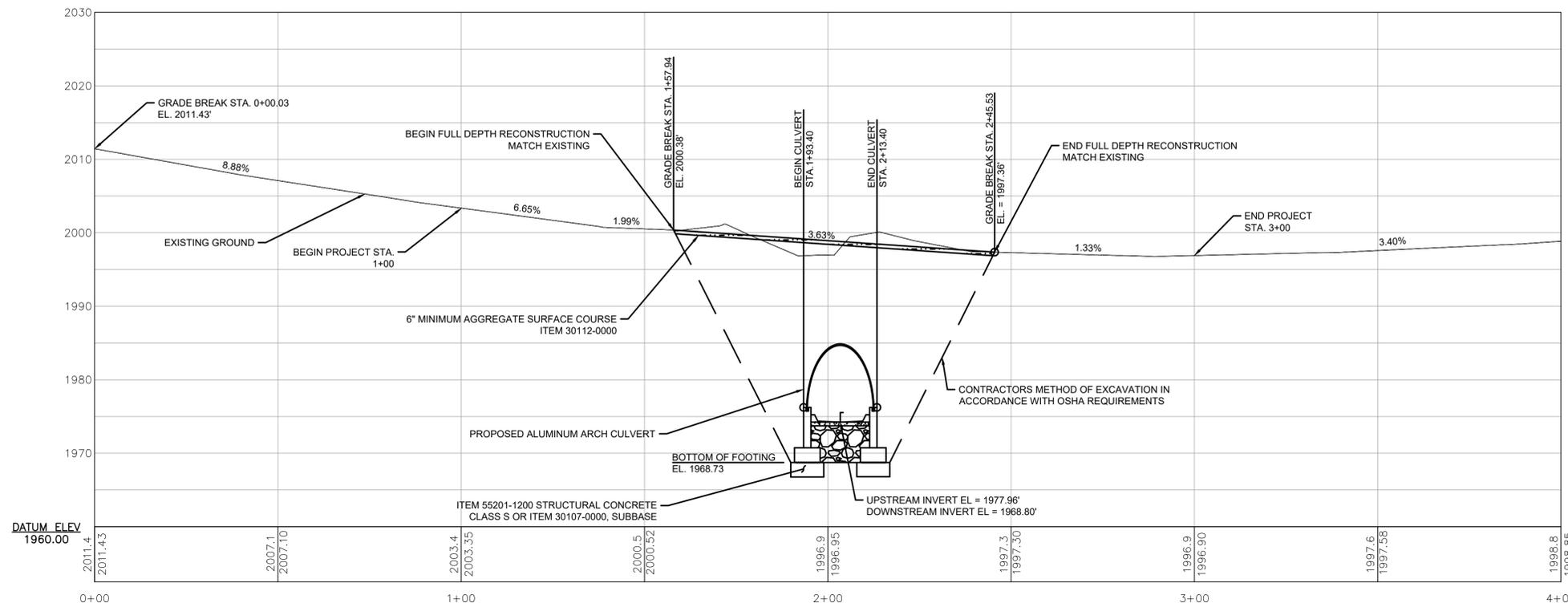
FOR CONSTRUCTION

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NATIONAL FOREST
MANCHESTER RANGER DISTRICT

DRAWING TITLE
PROFILE

DATE 02/14/2022	ARCHIVE NO.
DESIGNER K. KITTREDGE	DRAWING SHEET NO. C-05
DRAWN K. KITTREDGE	CHECKED R. GAUDREAU
PROJECT NO. 927152	SHEET 05 OF 20



- LEGEND:**
- AGGREGATE SURFACE COURSE
 - RIPRAP CLASS 3
 - STREAMBED MATERIAL
 - SUBBASE

- NOTES:**
1. PROFILES ARE SHOWN AT A 2X VERTICAL EXAGGERATION.
 2. TOP OF PEDESTAL LINE IS NOT SHOWN FOR CLARITY.
 3. ROCK VANES NOT SHOWN IN THE STREAM CENTERLINE PROFILE FOR CLARITY.



United States Department of Agriculture
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(R09)
EASTERN REGION

STAMPS, LOGOS, AND SEALS



FOR CONSTRUCTION

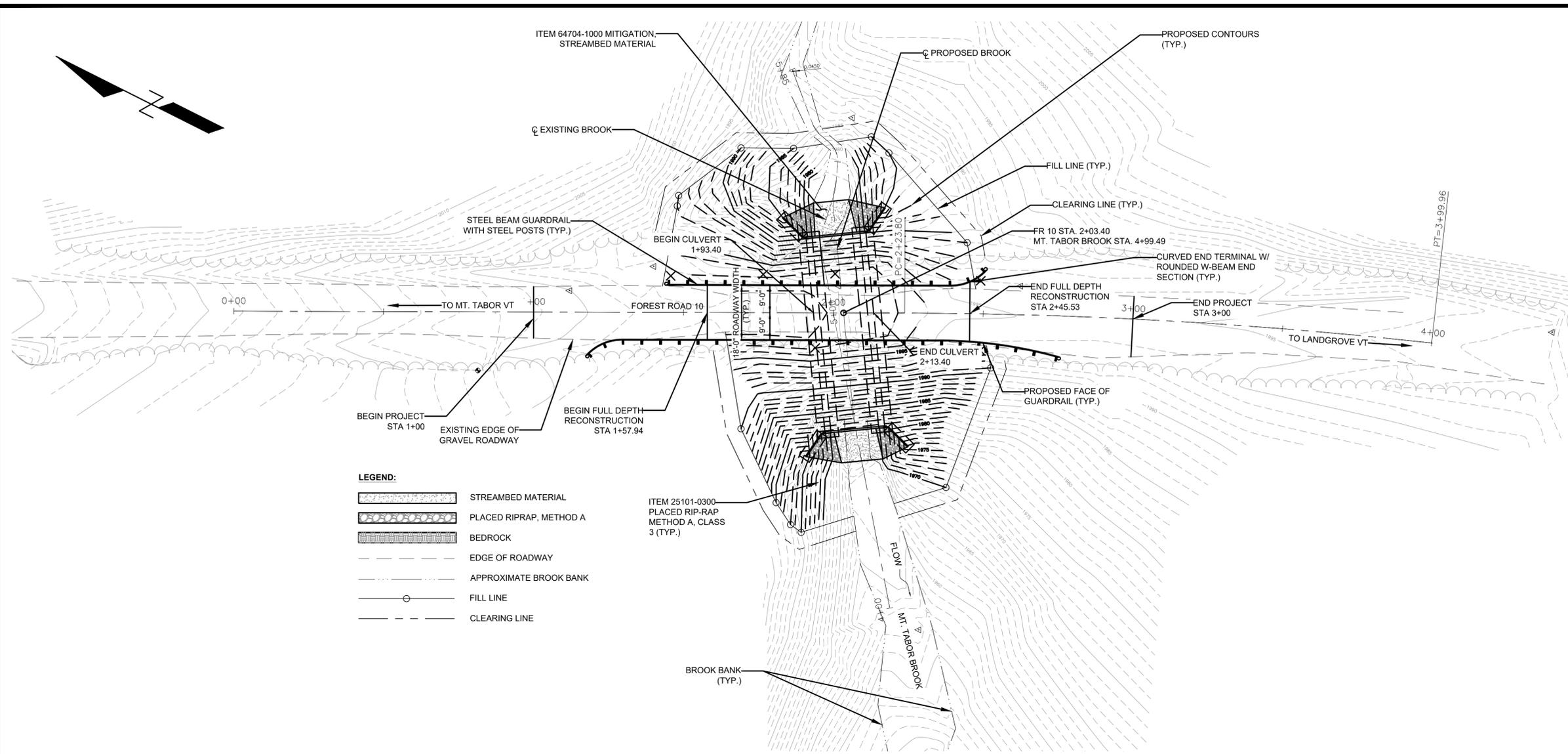
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NO.	REVISION / ISSUE	DATE

PROJECT NAME
**FR 10-8.4
CULVERT
REPLACEMENT
OVER MT. TABOR
BROOK**
GREEN MOUNTAIN
NATIONAL FOREST

MANCHESTER RANGER DISTRICT

DRAWING TITLE
**GENERAL PLAN AND
ELEVATION**

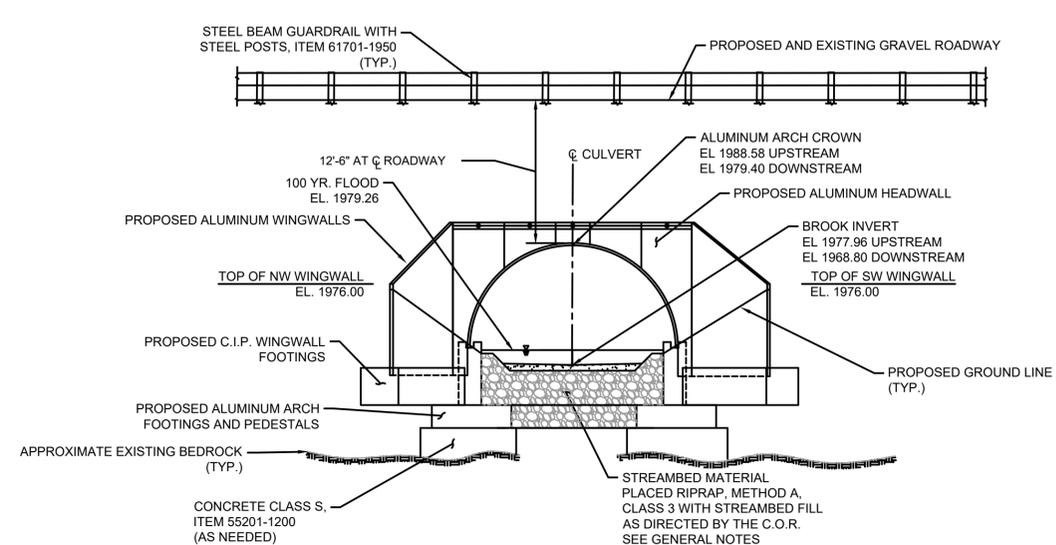
DATE 02/14/2022	ARCHIVE NO.
DESIGNER K. KITTREDGE	DRAWING SHEET NO. C-06
DRAWN K. KITTREDGE	
CHECKED R. GAUDREAU	
PROJECT NO. 927152	SHEET 06 OF 20



GENERAL PLAN
SCALE: 1" = 20'-0"

LEGEND:

	STREAMBED MATERIAL
	PLACED RIPRAP, METHOD A
	BEDROCK
	EDGE OF ROADWAY
	APPROXIMATE BROOK BANK
	FILL LINE
	CLEARING LINE



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

NOTES:
1. RIPRAP PLACED WITHIN THE CULVERT AND WITHIN THE BANKFULL WIDTH LIMITS OUTSIDE OF THE CULVERT, OR ANY OTHER LOCATION DIRECTED BY THE C.O.R. SHALL BE SUPPLEMENTED WITH STREAMBED FILL MATERIAL TO PREVENT SUBSURFACE FLOW AS DEFINED IN THE GENERAL NOTES.

GUARDRAIL TERMINAL UNIT LAYOUT

LOCATION:	STA.	OFFSET:
NORTHWEST CORNER	1+17.56'	14.35' RT
NORTHEAST CORNER	1+44.22'	9.00' LT
SOUTHEAST CORNER	2+50.95'	14.57' LT
SOUTHWEST CORNER	2+75.89'	13.67' RT

5/6/22 12:35 KITTREDGE 109/927152 GMFL FR10-8.4 ERFO CULVERT REPLACEMENT MT. TABOR DRAWINGS STRUCTURAL 1927152_05 GEN PLAN AND ELEVATION.DWG



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FOR CONSTRUCTION

NO.	REVISION / ISSUE	DATE
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PROJECT NAME
**FR 10-8.4
CULVERT
REPLACEMENT
OVER MT. TABOR
BROOK**
GREEN MOUNTAIN
NATIONAL FOREST

MANCHESTER RANGER DISTRICT

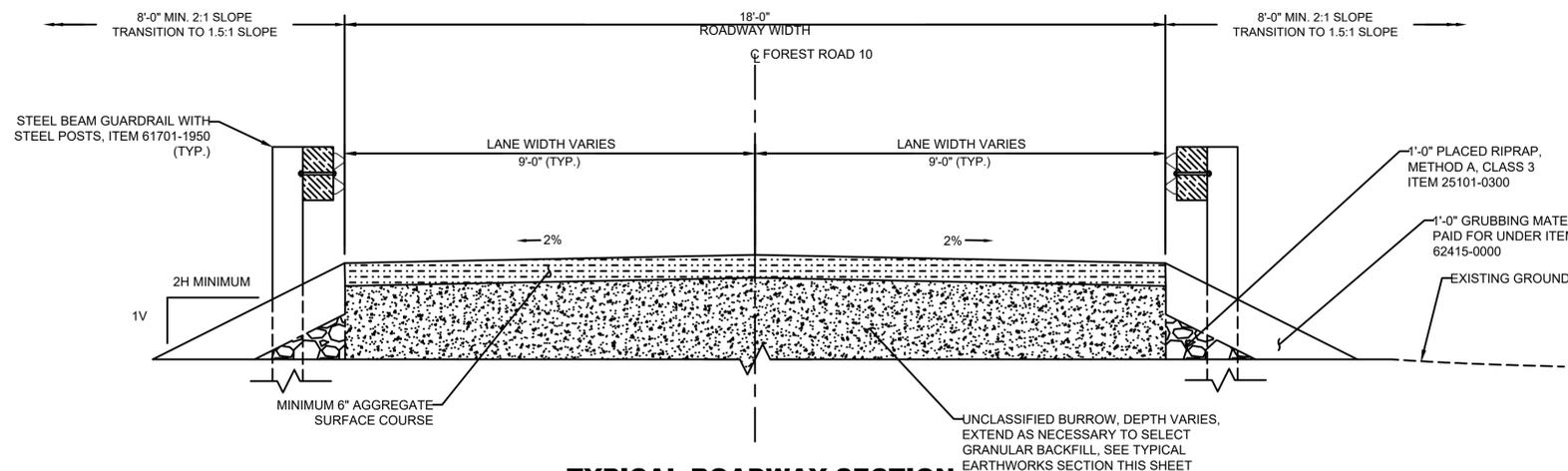
DRAWING TITLE
TYPICAL SECTIONS

DATE 02/14/2022	ARCHIVE NO.
DESIGNER K. KITTREDGE	DRAWING SHEET NO. C-07
DRAWN K. KITTREDGE	CHECKED R. GAUDREAU
PROJECT NO. 927152	SHEET 07 OF 20

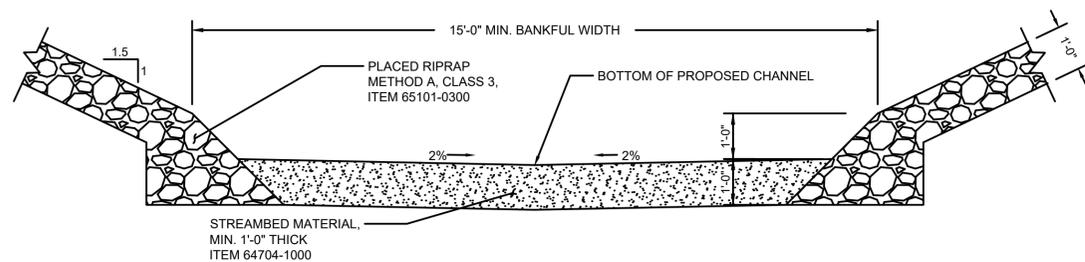


- LEGEND:
- AGGREGATE SURFACE COURSE
 - RIPRAP CLASS 3
 - SELECT GRANULAR BACKFILL
 - UNCLASSIFIED BURROW
 - STREAMBED MATERIAL
 - SUBBASE

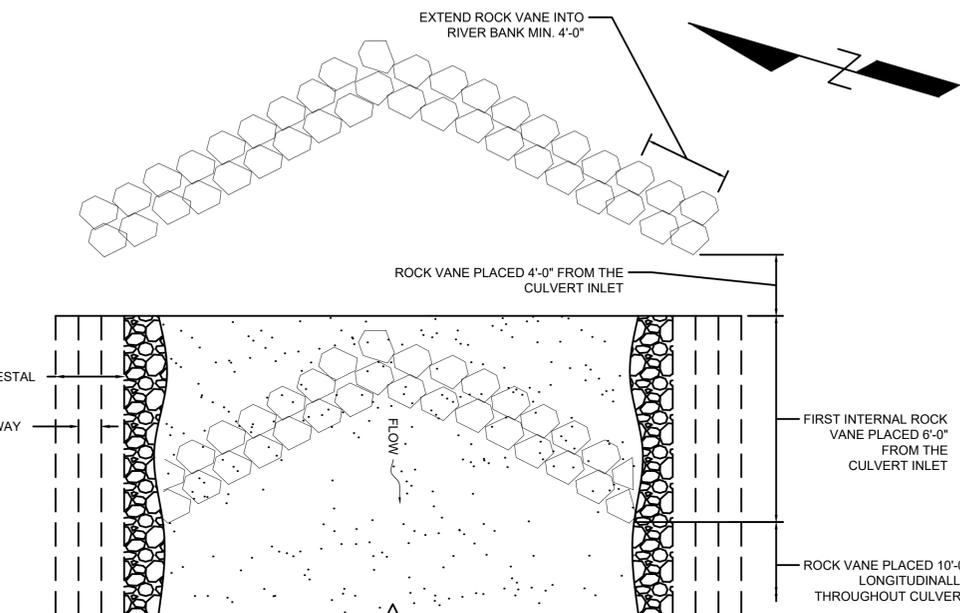
- NOTES:
- EXISTING BOULDERS LOCATED NEAR OR WITHIN THE STREAM THAT MUST BE REMOVED FOR FOOTING CONSTRUCTION SHALL BE STOCKPILED AND REUSED TO CONSTRUCT IMMOBILE BROOK FEATURES.
 - EXISTING BOULDERS LOCATED WITHIN THE STREAM THAT DO NOT NEED TO BE DISTURBED FOR CONSTRUCTION ACTIVITIES MAY BE LEFT IN PLACE.
 - THE CONTRACTOR SHALL COORDINATE WITH THE C.O.R. TO CONFIRM BOULDERS LEFT IN PLACE THAT MAY MEET THE REQUIREMENTS OF THE ROCK CLUSTERS AS NOTED ON THIS SHEET.



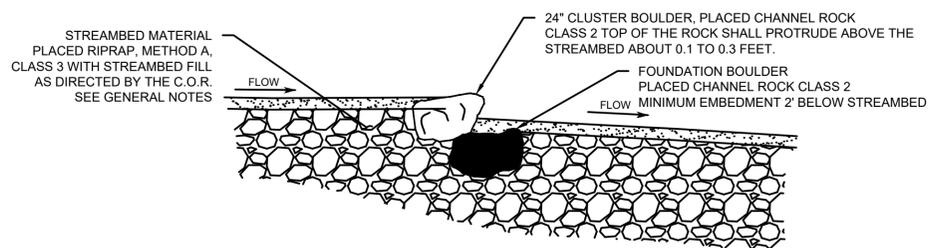
TYPICAL ROADWAY SECTION
SCALE: 1/2" = 1'-0"



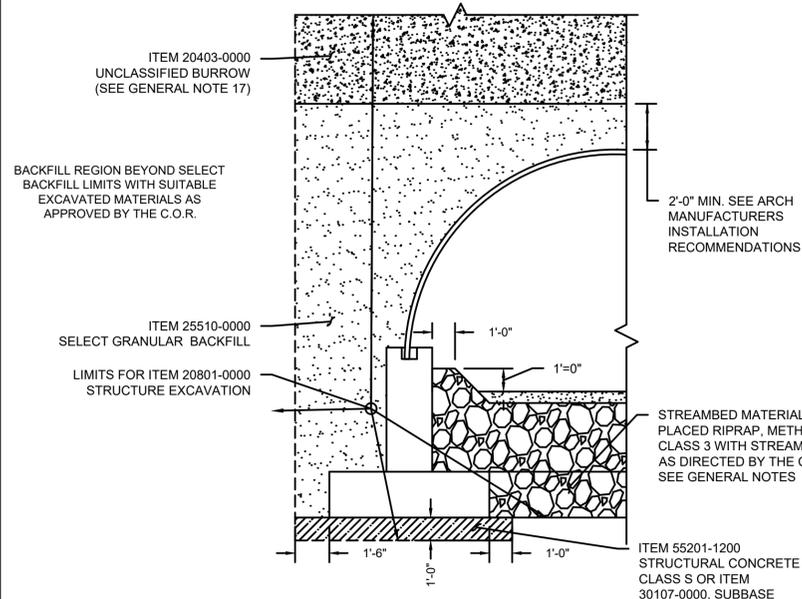
TYPICAL CHANNEL SECTION
SCALE: 1/2" = 1'-0"



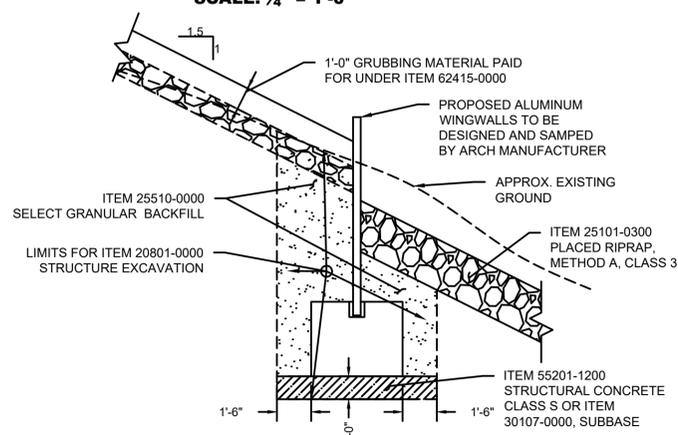
CHANNEL PLAN VIEW
SCALE: 3/8" = 1'-0"



ROCK VANE TYPICAL SECTION
SCALE: 1/4" = 1'-0"



TYPICAL EARTHWORKS SECTION - CULVERT
SCALE: 1/4" = 1'-0"



TYPICAL EARTHWORKS SECTION WINGWALL
SCALE: 1/4" = 1'-0"

5/6/22 2:35 AM KITTREDGE 10/9/21 152 GMFL FR10-8.4 ERFO CULVERT REPLACEMENT MT. TABOR DRAWINGS STRUCTURAL 927152_06 TYP SECTIONS.DWG.



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FOR CONSTRUCTION

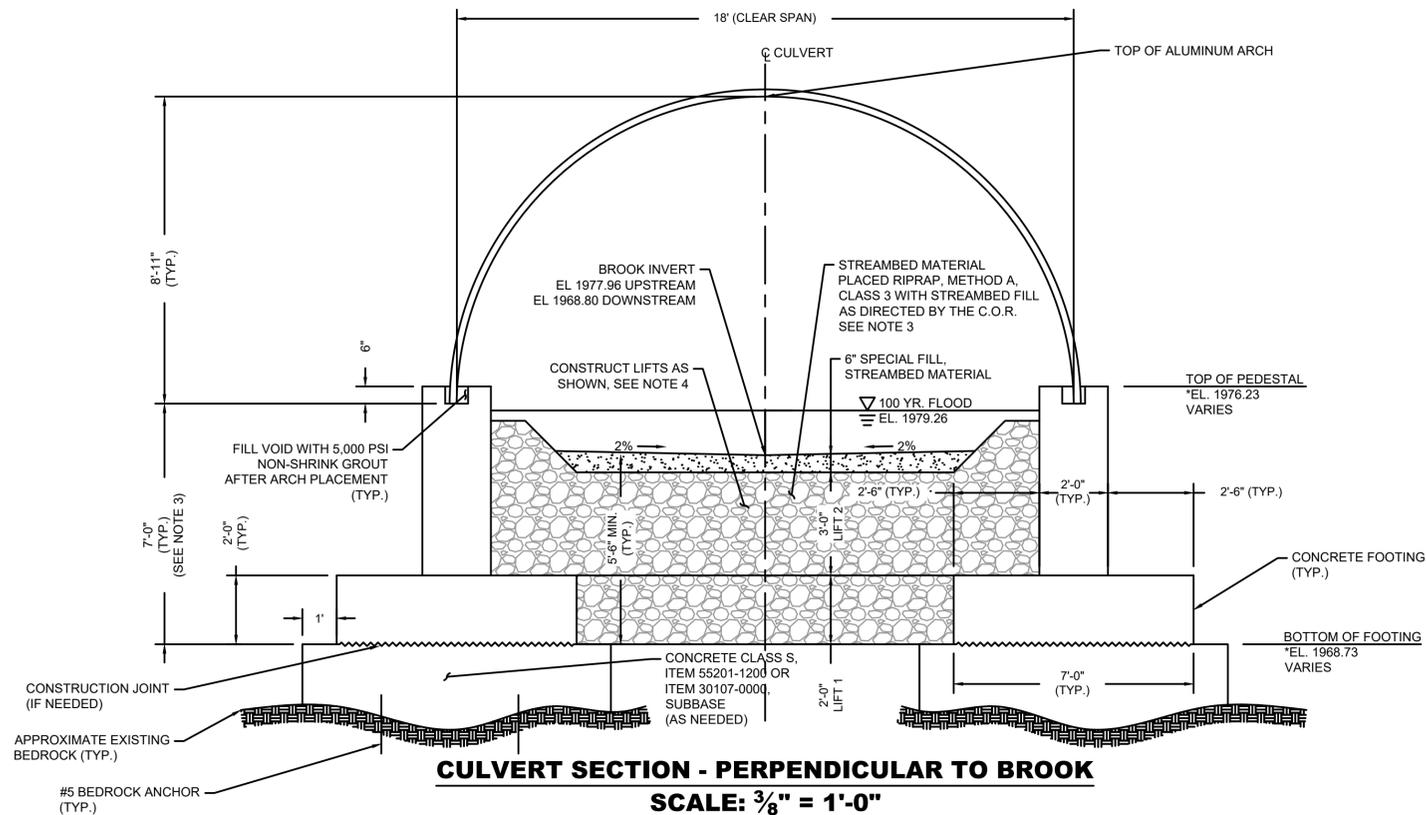
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NO.	REVISION / ISSUE	DATE

PROJECT NAME
**FR 10-8.4
CULVERT
REPLACEMENT
OVER MT. TABOR
BROOK**
GREEN MOUNTAIN
NATIONAL FOREST

MANCHESTER RANGER DISTRICT

DRAWING TITLE
**ALUMINUM ARCH
ELEVATION AND
TYPICAL SECTION**

DATE 02/14/2022	ARCHIVE NO.
DESIGNER K. KITTREDGE	DRAWING SHEET NO. C-08
DRAWN K. KITTREDGE	
CHECKED R. GAUDREAU	
PROJECT NO. 927152	SHEET 08 OF 20



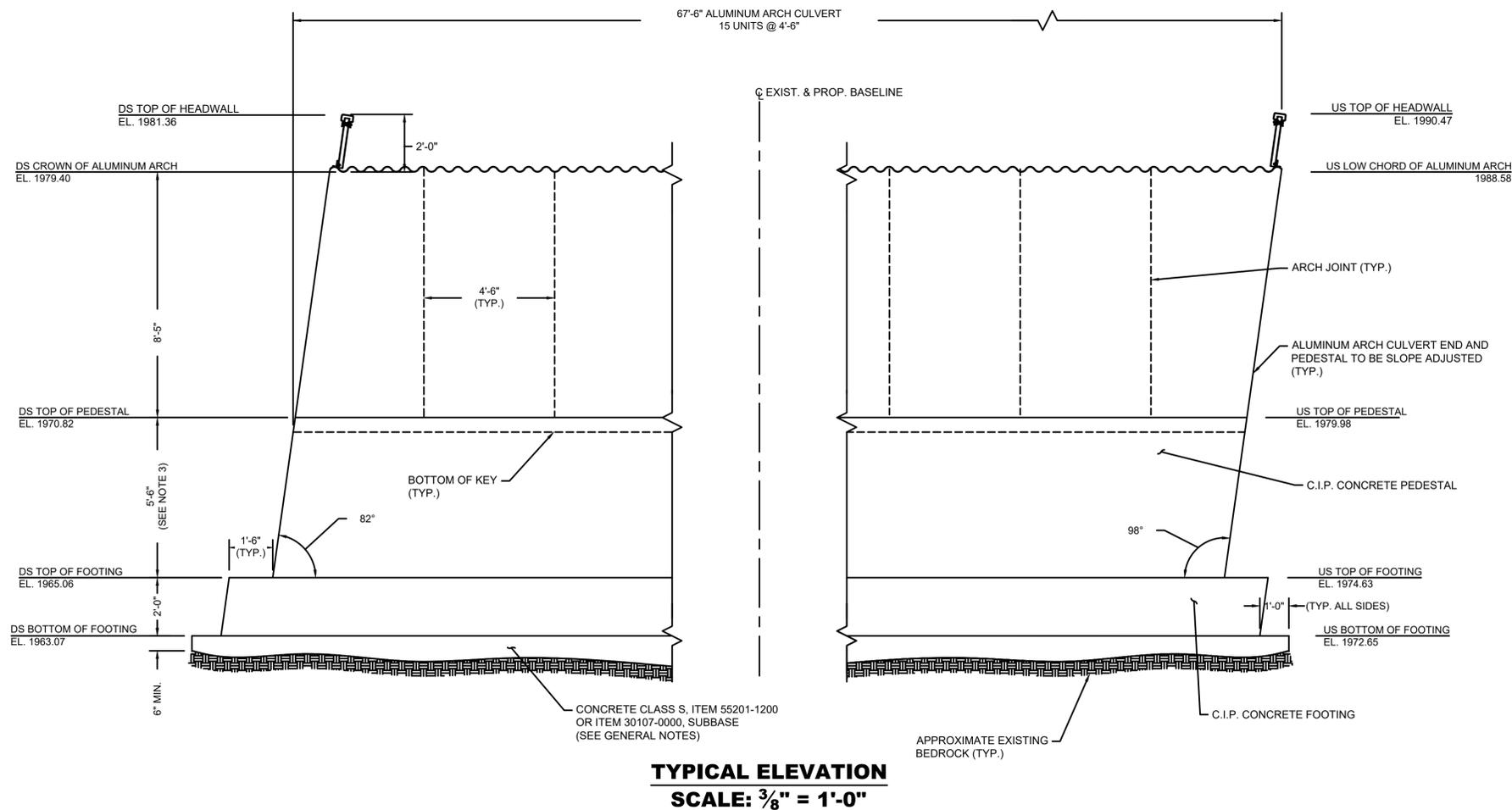
NOTES:

- PEDESTALS SHALL BE CAST WITH A 6" DEEP X 8" WIDE KEY TO RECEIVE THE ALUMINUM ARCH.
- ALL ELEVATIONS THIS SHEET (WITH EXCEPTION OF INVERTS) ARE PROVIDED AT THE CENTERLINE OF FOREST ROAD 10.
- PEDESTAL HEIGHTS MAY BE ADJUSTED FOR HIGH BEDROCK CONDITIONS WITH THE APPROVAL OF THE C.O.R. A MINIMUM STEM HEIGHT OF 2'-0" IS REQUIRED FOR A TOTAL MINIMUM PEDESTAL HEIGHT OF 4'-0". TOP OF PEDESTAL ELEVATIONS AS SHOWN ON THE PLANS SHALL BE MAINTAINED.
- FOR EACH LIFT (1 AND 2) PLACE RIPRAP TO THE DESIRED LIFT LEVEL FOLLOWED BY SPECIAL FILL TO FILL THE VOID SPACES OF THE RIPRAP LAYER. SEE GENERAL NOTES FOR ADDITIONAL INFORMATION.

* DENOTES ELEVATIONS TAKEN AT THE C.O. OF FOREST ROAD 10

LEGEND:

- BEDROCK
- STREAMBED MATERIAL
- STREAMBED MATERIAL, PLACED RIPRAP METHOD A, CLASS 3 WITH STREAMBED FILL AS DIRECTED BY THE C.O.R.



5/6/22 2:35 AM KITTREDGE 109027152.GMFL FR10-8.4 ERFO CULVERT REPLACEMENT MT. TABOR DRAWING STRUCTURAL 02/14/22 07 FRAME ELEVATION AND TYP SECTION.DWG



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STAMPS, LOGOS, AND SEALS



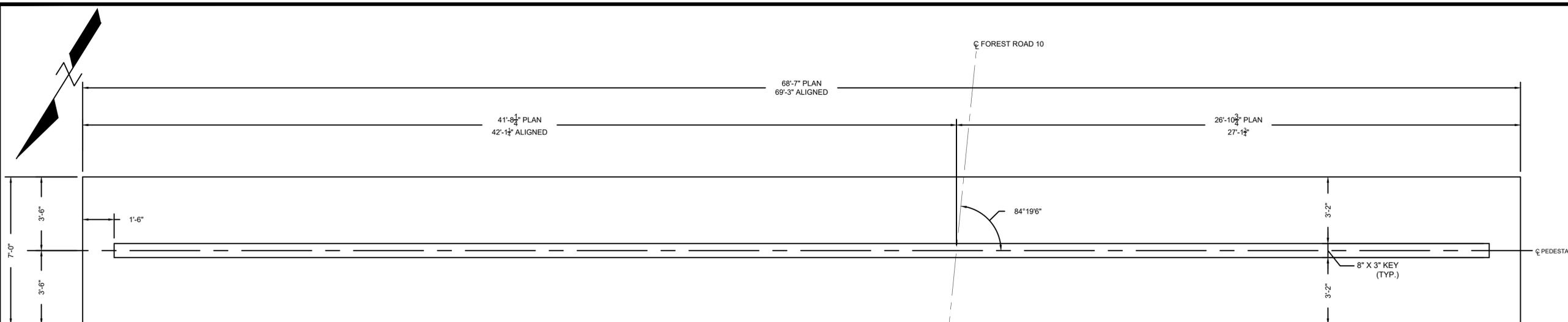
FOR CONSTRUCTION

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NO.	REVISION / ISSUE	DATE

PROJECT NAME
**FR 10-8.4
CULVERT
REPLACEMENT
OVER MT. TABOR
BROOK**
GREEN MOUNTAIN
NATIONAL FOREST
MANCHESTER RANGER DISTRICT

DRAWING TITLE
**FOOTING MASONRY AND
REINFORCEMENT**

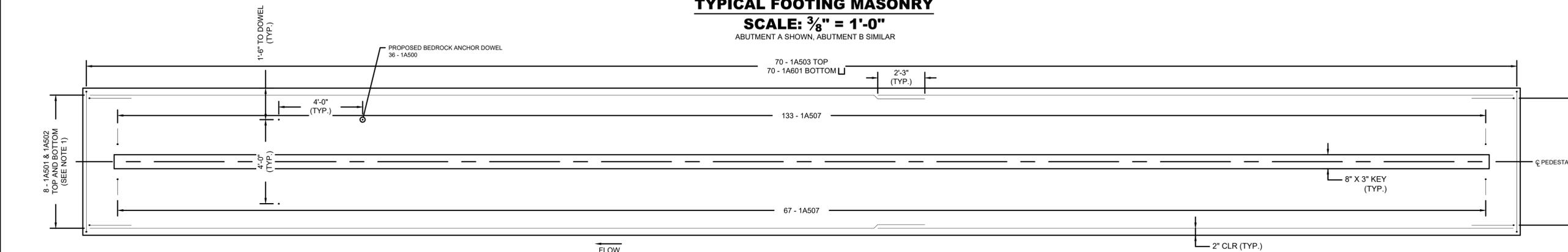
DATE 03/24/2022	ARCHIVE NO.
DESIGNER K. KITTREDGE	DRAWING SHEET NO. C-09
DRAWN K. KITTREDGE	
CHECKED R. GAUDREAU	
PROJECT NO. 927152	SHEET 09 OF 20



TYPICAL FOOTING MASONRY

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

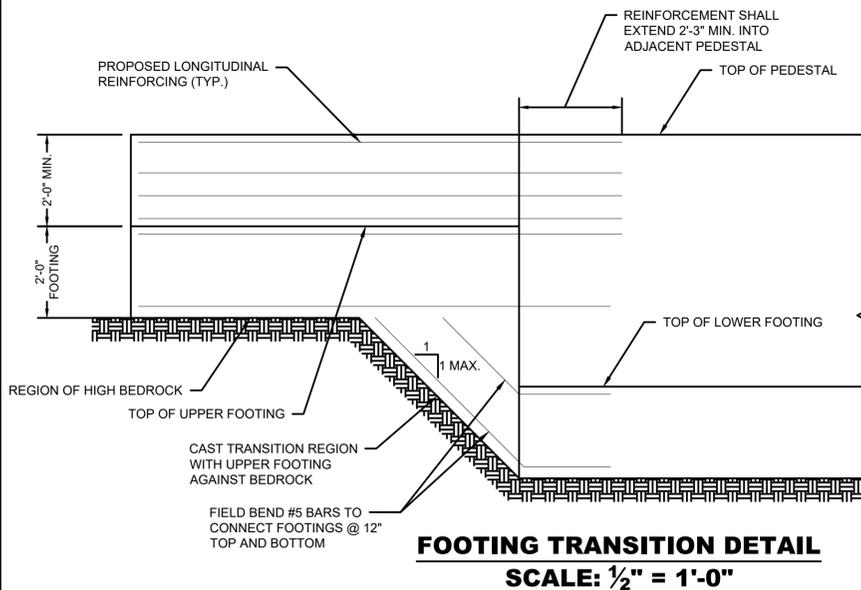
ABUTMENT A SHOWN, ABUTMENT B SIMILAR



TYPICAL FOOTING REINFORCEMENT

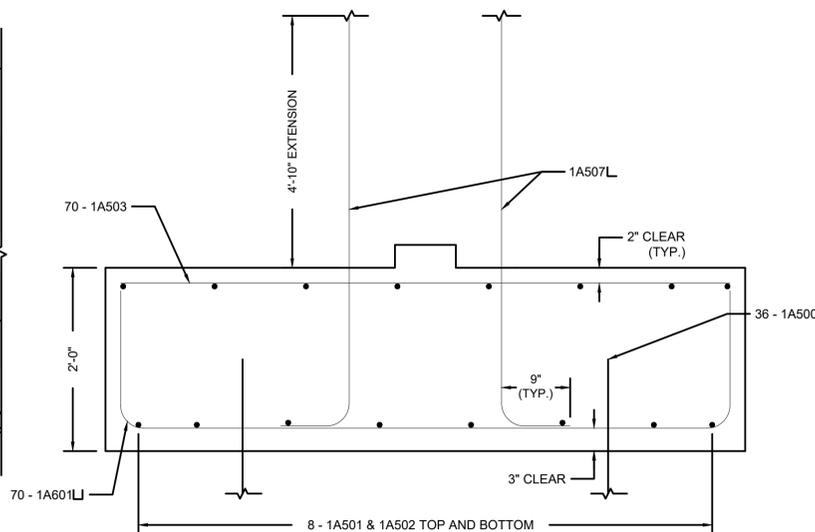
SCALE: 3/8" = 1'-0"

ABUTMENT A SHOWN, ABUTMENT B SIMILAR



FOOTING TRANSITION DETAIL

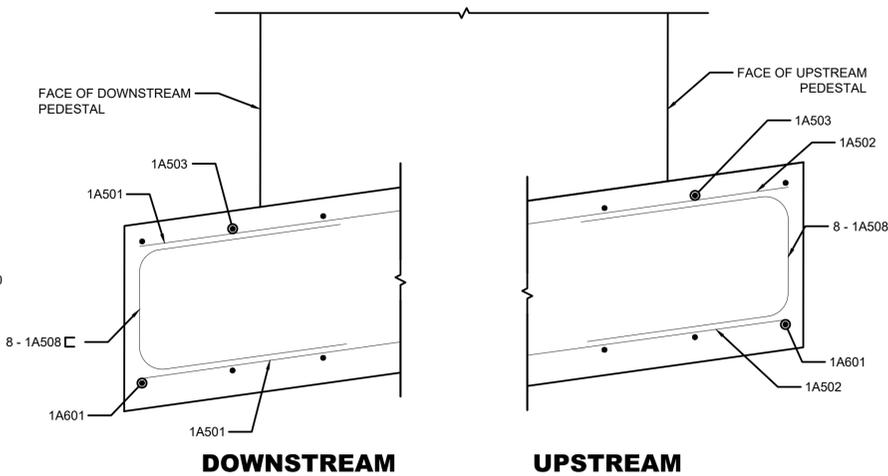
SCALE: 1/2" = 1'-0"



TYPICAL FOOTING REINFORCEMENT

SCALE: 1" = 1'-0"

PEDESTAL REINFORCEMENT NOT SHOWN FOR CLARITY
(ABUTMENT 1 SHOWN, ABUTMENT 2 SIMILAR)



FOOTING END REINFORCEMENT DETAIL

SCALE: 1" = 1'-0"

PEDESTAL REINFORCEMENT NOT SHOWN FOR CLARITY

- NOTES:
1. STAGGER SPLICE LOCATIONS BY ALTERNATING BARS 1A501 AND 1A502 AT THE UPSTREAM END (EVERY OTHER BAR).

5/6/22 2:30 KKITREDGE 109/927152.GMFL FR10-8.4 ERFO CULVERT REPLACEMENT MT. TABOR DRAWINGS STRUCTURAL 1927152_XX FOOTING.DWG;





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FOR CONSTRUCTION

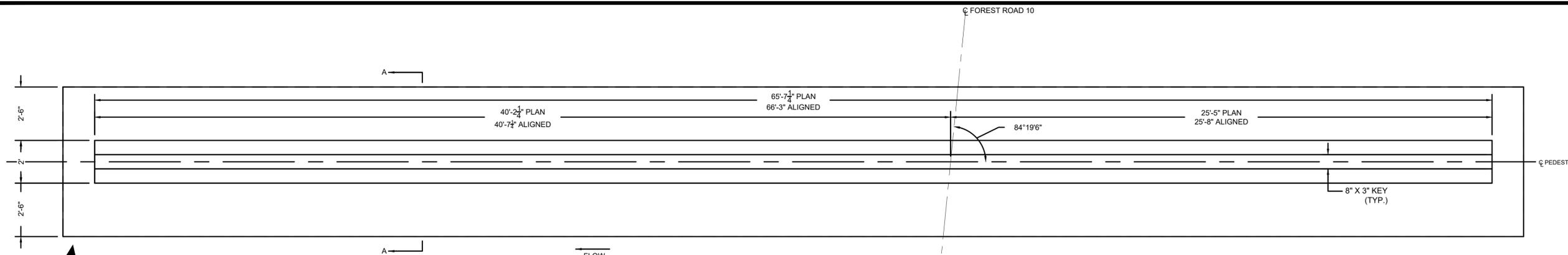
US T.O.F. EL. 1974.83	4		
	3		
US B.O.F. EL. 1972.65	2		
	1		

NO.	REVISION / ISSUE	DATE

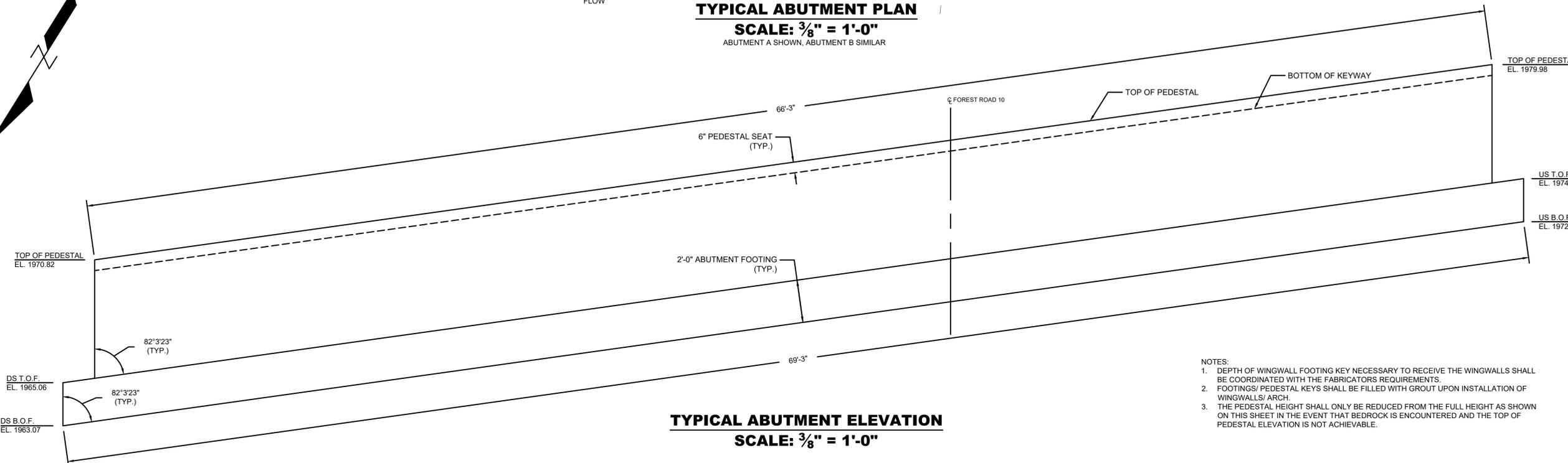
PROJECT NAME
**FR 10-8.4
CULVERT
REPLACEMENT
OVER MT. TABOR
BROOK**
GREEN MOUNTAIN
NATIONAL FOREST
MANCHESTER RANGER DISTRICT

DRAWING TITLE
**TYPICAL ABUTMENT
MASONRY**

DATE 03/24/2011	ARCHIVE NO.
DESIGNER K. KITTREDGE	DRAWING SHEET NO. C-10
DRAWN K. KITTREDGE	CHECKED R. GAUDREAU
PROJECT NO. 927152	SHEET 10 OF 20

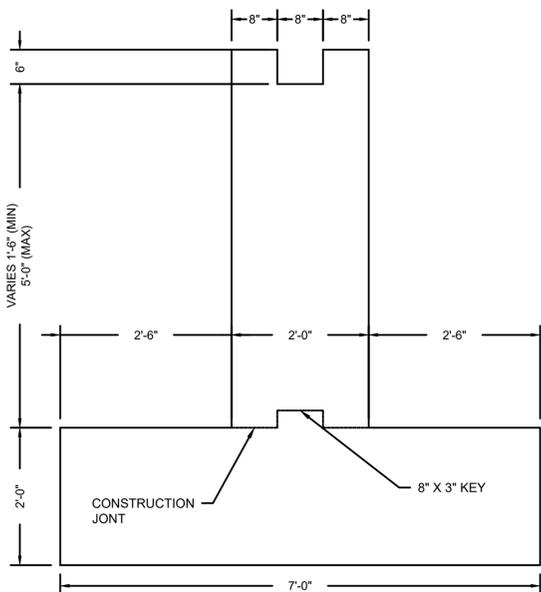


TYPICAL ABUTMENT PLAN
SCALE: 3/8" = 1'-0"
ABUTMENT A SHOWN, ABUTMENT B SIMILAR

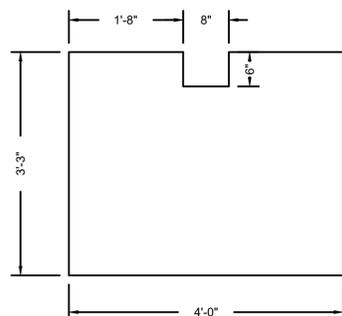


TYPICAL ABUTMENT ELEVATION
SCALE: 3/8" = 1'-0"

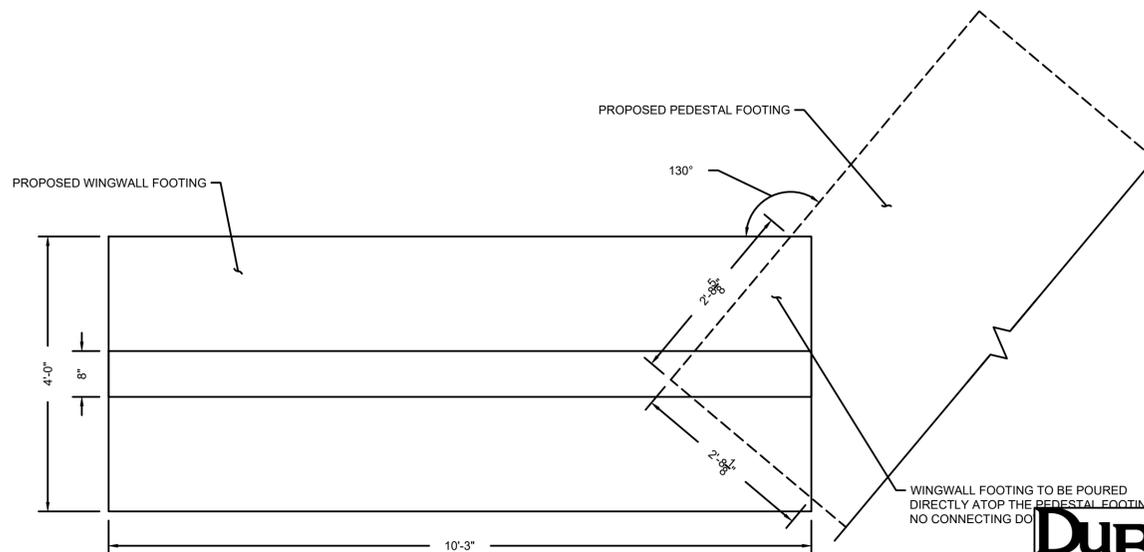
- NOTES:
- DEPTH OF WINGWALL FOOTING KEY NECESSARY TO RECEIVE THE WINGWALLS SHALL BE COORDINATED WITH THE FABRICATORS REQUIREMENTS.
 - FOOTINGS/ PEDESTAL KEYS SHALL BE FILLED WITH GROUT UPON INSTALLATION OF WINGWALLS/ ARCH.
 - THE PEDESTAL HEIGHT SHALL ONLY BE REDUCED FROM THE FULL HEIGHT AS SHOWN ON THIS SHEET IN THE EVENT THAT BEDROCK IS ENCOUNTERED AND THE TOP OF PEDESTAL ELEVATION IS NOT ACHIEVABLE.



TYPICAL ABUTMENT SECTION
SCALE: 3/4" = 1'-0"



TYPICAL WINGWALL FOOTING SECTION
SCALE: 3/4" = 1'-0"



TYPICAL WINGWALL FOOTING PLAN
SCALE: 3/4" = 1'-0"





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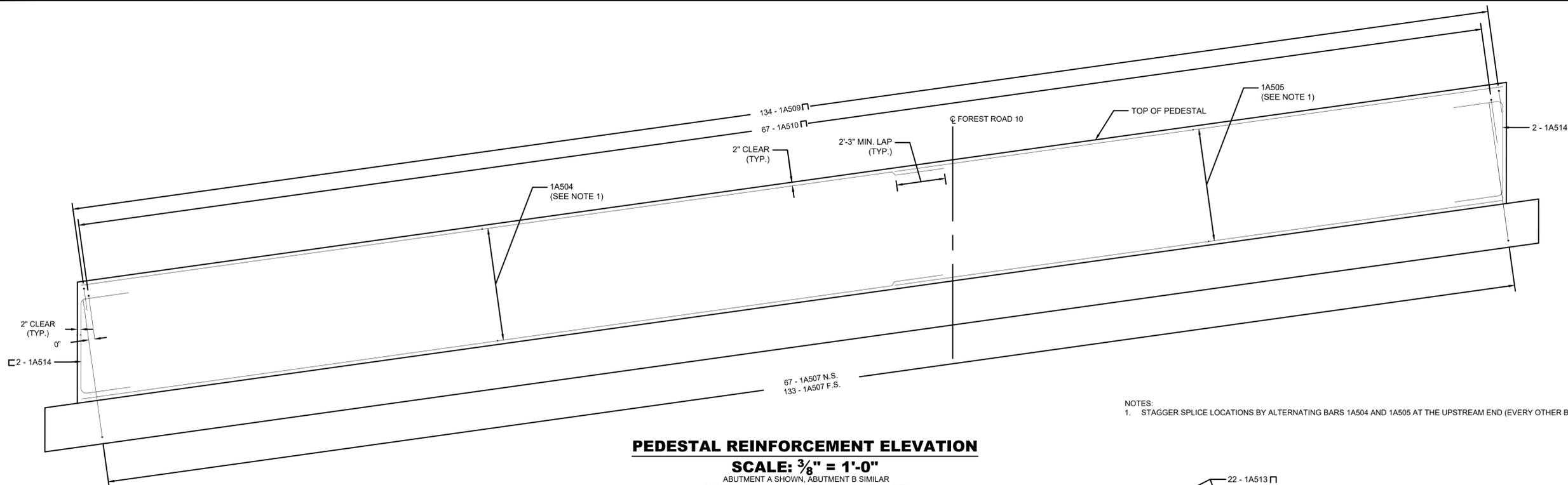
FOR CONSTRUCTION

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NO.	REVISION / ISSUE	DATE

PROJECT NAME
**FR 10-8.4
CULVERT
REPLACEMENT
OVER MT. TABOR
BROOK**
GREEN MOUNTAIN
NATIONAL FOREST
MANCHESTER RANGER DISTRICT

DRAWING TITLE
**TYPICAL ABUTMENT
REINFORCEMENT**

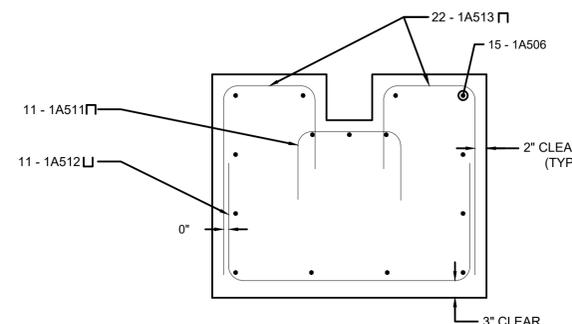
DATE 03/24/2022	ARCHIVE NO.
DESIGNER K. KITTREDGE	DRAWING SHEET NO. C-11
DRAWN K. KITTREDGE	
CHECKED R. GAUDREAU	
PROJECT NO. 927152	SHEET 11 OF 20



PEDESTAL REINFORCEMENT ELEVATION

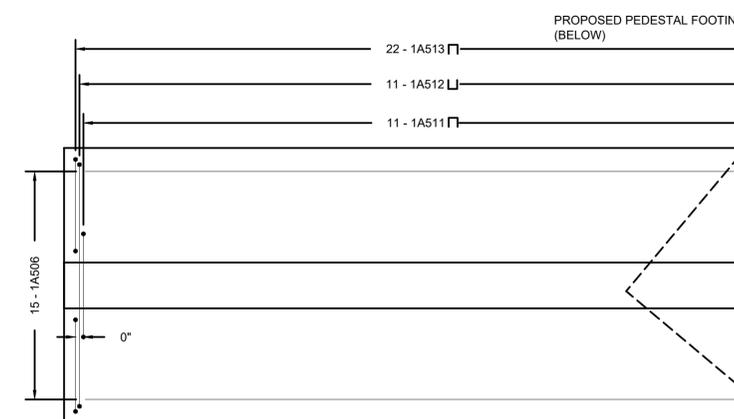
SCALE: $\frac{3}{8}'' = 1'-0''$
ABUTMENT A SHOWN, ABUTMENT B SIMILAR
(FOOTING REINFORCEMENT NOT SHOWN FOR CLARITY)

NOTES:
1. STAGGER SPLICE LOCATIONS BY ALTERNATING BARS 1A504 AND 1A505 AT THE UPSTREAM END (EVERY OTHER BAR).



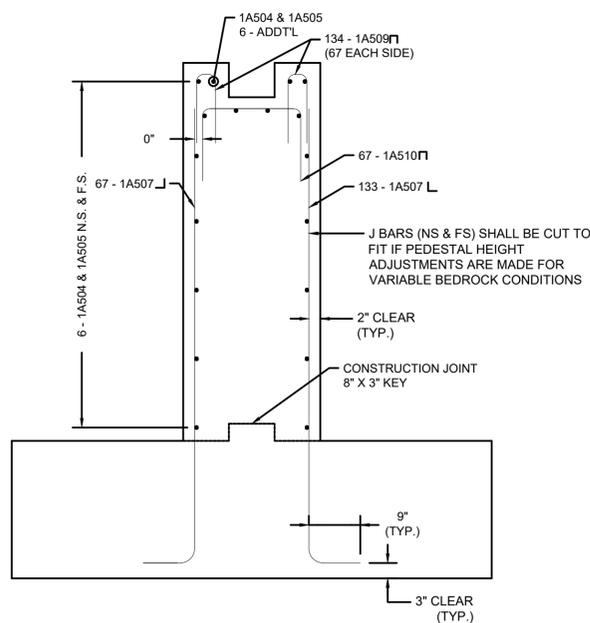
TYPICAL WINGWALL FOOTING REINFORCEMENT

SCALE: $1'' = 1'-0''$



TYPICAL WINGWALL FOOTING PLAN

SCALE: $\frac{3}{4}'' = 1'-0''$

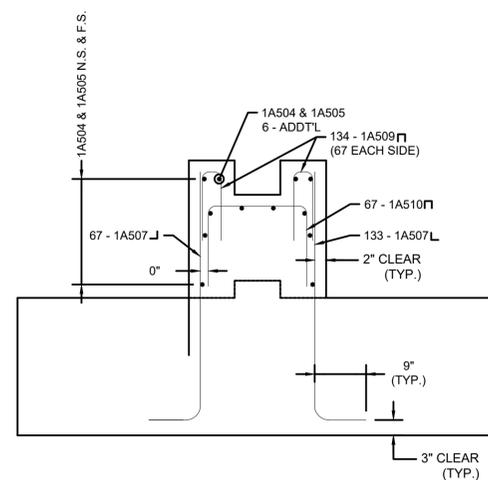


SECTION A-A REINFORCEMENT DETAIL

FULL HEIGHT

SCALE: $\frac{3}{4}'' = 1'-0''$

FOOTING REINFORCEMENT NOT SHOWN FOR CLARITY



SECTION A-A REINFORCEMENT DETAIL

SHORTEST HEIGHT

SCALE: $\frac{3}{4}'' = 1'-0''$

FOOTING REINFORCEMENT NOT SHOWN FOR CLARITY

J BARS (NS & FS) SHALL BE CUT TO FIT IF PEDESTAL HEIGHT ADJUSTMENTS ARE MADE FOR VARIABLE BEDROCK CONDITIONS

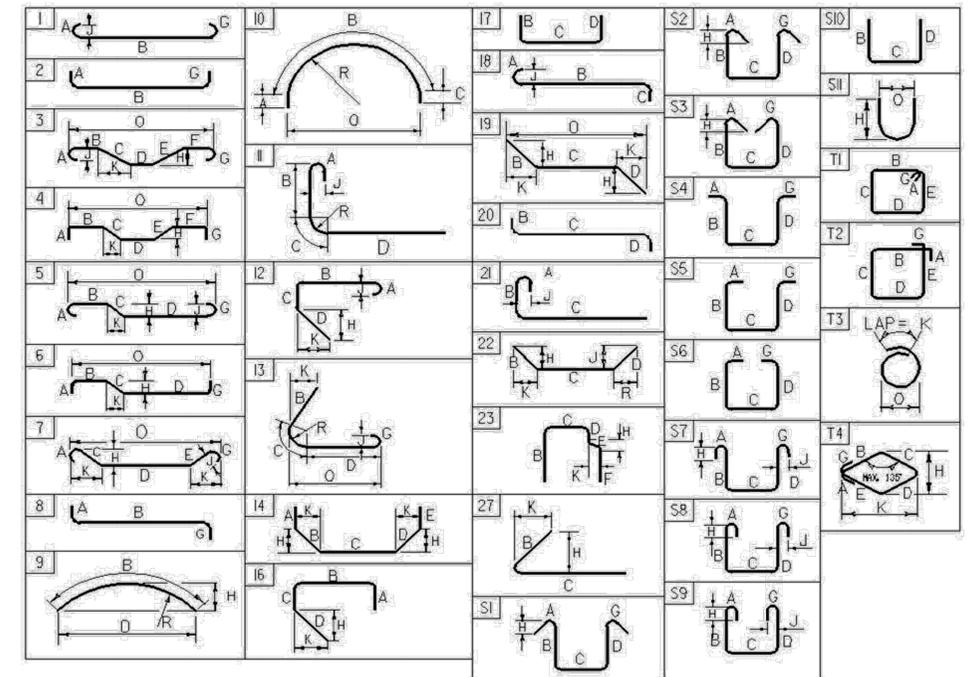
CONSTRUCTION JOINT
8" X 3" KEY

REINFORCING STEEL SCHEDULE

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
ABUTMENT 1																	
	36	5	2'- 0"	1A500		2'- 0"											
	16	5	40'- 0"	1A501		40'- 0"											
	16	5	31'- 2"	1A502		31'- 2"											
*	71	5	6'- 8"	1A503		6'- 8"											
	18	5	40'- 0"	1A504		40'- 0"											
	18	5	28'- 2"	1A505		28'- 2"											
	15	5	9'- 11"	1A506		9'- 11"											
▲	200	5	7'- 4"	1A507	27		0'- 9"	6'- 6.5"									
	16	5	5'- 5"	1A508	17		2'- 0"	1'- 5"	2'- 0"								
	134	5	2'- 1"	1A509	S11								1'- 0"				0'- 0.375"
	67	5	3'- 7"	1A510	17		1'- 0"	1'- 7.375"	1'- 0"								
	11	5	3'- 6"	1A511	17		1'- 0"	1'- 6"	1'- 0"								
	11	5	6'- 7"	1A512	17		1'- 6"	3'- 7.375"	1'- 6"								
	22	5	5'- 0"	1A513	17		1'- 0"	1'- 3.375"	2'- 9"								
	4	5	8'- 6"	1A514	17		2'- 0"	4'- 6"	2'- 0"								
	70	6	9'- 7"	1A601	17		1'- 6"	6'- 7.25"	1'- 6"								
ABUTMENT 2																	
	36	5	2'- 0"	2A500		2'- 0"											
	16	5	40'- 0"	2A501		40'- 0"											
	16	5	31'- 2"	2A502		31'- 2"											
	70	5	6'- 8"	2A503		6'- 8"											
	18	5	40'- 0"	2A504		40'- 2"											
*	19	5	28'- 2"	2A505		28'- 2"											
	15	5	9'- 11"	2A506		9'- 11"											
▲	200	5	7'- 4"	2A507	27		0'- 9"	6'- 6.5"									
	16	5	5'- 5"	2A508	17		2'- 0"	1'- 5"	2'- 0"								
	134	5	2'- 1"	2A509	S11								1'- 0"				0'- 0.375"
	67	5	3'- 7"	2A510	17		1'- 0"	1'- 7.375"	1'- 0"								
	11	5	3'- 6"	2A511	17		1'- 0"	1'- 6"	1'- 0"								
	11	5	6'- 7"	2A512	17		1'- 6"	3'- 7.375"	1'- 6"								
	22	5	5'- 0"	2A513	17		1'- 0"	1'- 3.375"	2'- 9"								
	4	5	8'- 6"	2A514	17		2'- 0"	4'- 6"	2'- 0"								
	70	6	9'- 7"	2A601	17		1'- 6"	6'- 7.25"	1'- 6"								

~ NOTES ~

1. UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING NO. 18 SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M 31 (ASTM A 615-SI). ALL BARS SHALL BE GRADE 60, UNLESS OTHERWISE DESIGNATED.
2. FOR TYPICAL BENDING DETAILS, RECOMMENDED PIN DIAMETER "D" OF BENDS AND HOOKS, AND OTHER STANDARD PRACTICE, SEE CURRENT CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE".
3. BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
4. ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.
5. "J" DIMENSION ON 180 DEGREE HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
6. "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN NECESSARY TO MAINTAIN CLEARANCES.
7. WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
8. ▲ DENOTES BARS TO BE CUT IN FIELD.
9. * DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
10. △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
11. E IN BAR MARK PREFIX DENOTES EPOXY COATED REINFORCING STEEL.



ASTM STANDARD REINFORCING BARS

BAR SIZE DESIGNATION	WEIGHT POUNDS PER FOOT	NOMINAL DIMENSIONS ROUND SECTION		
		DIAMETER INCHES	AREA INCHES ²	PERIMETER INCHES
#3	0.376	0.375	0.11	1.178
#4	0.668	0.500	0.20	1.571
#5	1.043	0.625	0.31	1.963
#6	1.502	0.750	0.44	2.356
#7	2.044	0.875	0.60	2.749
#8	2.670	1.000	0.79	3.142
#9	3.400	1.128	1.00	3.544
#10	4.303	1.270	1.27	3.990
#11	5.313	1.410	1.56	4.430
#14	7.65	1.693	2.25	5.32
#18	13.60	2.257	4.00	7.09

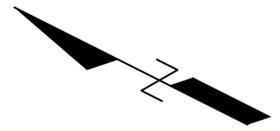
~ REINFORCING STEEL CORROSION RESISTANCE LEVEL ~

THE REINFORCING STEEL MARKS IN THIS SCHEDULE INDICATE THE REQUIRED BAR CORROSION RESISTANCE LEVEL. CORROSION RESISTANCE LEVEL IS DENOTED WITH A .2 FOR LEVEL TWO SUFFIX OR .3 FOR LEVEL THREE SUFFIX. .1 FOR LEVEL ONE IS TO BE OMITTED. THE BAR MATERIAL TYPE AND BAR STEEL GRADE PROVIDED FOR EACH CORROSION LEVEL WILL BE RECORDED ON THE PLAN SET PI SHEET FOR AS-BUILT RECORD PLAN ARCHIVES.



FOR CONSTRUCTION

PROJECT NAME:	FR 10-8.4 CULVERT REPLACEMENT	PLOT DATE:	4/6/2022
PROJECT NUMBER:	927152	DRAWN BY:	K. KITTREDGE
FILE NAME:	REINFORCING SCHEDULE	CHECKED BY:	R. GAUDREAU
DESIGNED BY:	KJK		
REINFORCING STEEL SCHEDULE SHEET #1		SHEET 12 OF 20	



- NOTES:
- CONTROL POINTS ARE GENERALLY LOCATED BY GRADE STAKES, WHICH MAY OR MAY NOT BE VISIBLE AT THE TIME OF CONSTRUCTION.
 - BENCHMARKS ARE MAG NAILS IN TREES WHICH ARE PROVIDED IN THE EVENT THAT HORIZONTAL CONTROL GRADE STAKES HAVE BEEN REMOVED.



United States Department of Agriculture
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EASTERN REGION

TIE INFORMATION			
LOCATION	NORTHING	EASTING	ELEVATION
BENCHMARK #1048	306584.20'	1539723.79'	1996.15'
BENCHMARK #1174	306738.77'	1539599.03'	2004.62'
CONTROL POINT #2	306723.15'	1539636.49'	2001.00'
CONTROL POINT #3	306588.97'	1539704.64'	1995.15'
CONTROL POINT #5	306635.23'	1539661.18'	1995.42'
CONTROL POINT #6	306643.59'	1539677.72'	1996.08'
CONTROL POINT #500	306664.17'	1539729.87'	1987.48'
CONTROL POINT #1083	306701.59'	1539656.15'	1998.59'
BEGIN PROJECT	306730.76'	1539624.73'	NA
END PROJECT	306550.56'	1539711.43'	NA
ε BEGIN CULVERT	306650.17'	1539664.39'	NA
ε END CULVERT	306625.82'	1539676.37'	NA
WP #1	306659.54'	1539687.98'	NA
WP #2	306644.25'	1539697.49'	NA
WP #3	306646.11'	1539666.39'	NA
WP #4	306629.88'	1539674.38'	NA
WP #5	306624.88'	1539632.26'	NA
WP #6	306609.59'	1539641.77'	NA

STAMPS, LOGOS, AND SEALS



FOR CONSTRUCTION

4		
3		
2		
1		
NO.	REVISION / ISSUE	DATE

PROJECT NAME

**FR 10-8.4
CULVERT
REPLACEMENT
OVER MT. TABOR
BROOK
GREEN MOUNTAIN
NATIONAL FOREST**

MANCHESTER RANGER DISTRICT

DRAWING TITLE

TIE SHEET

DATE: 02/14/2022 ARCHIVE NO.

DESIGNER: K. KITTREDGE DRAWING SHEET NO.

DRAWN: K. KITTREDGE **C-13**

CHECKED: R. GAUDREAU

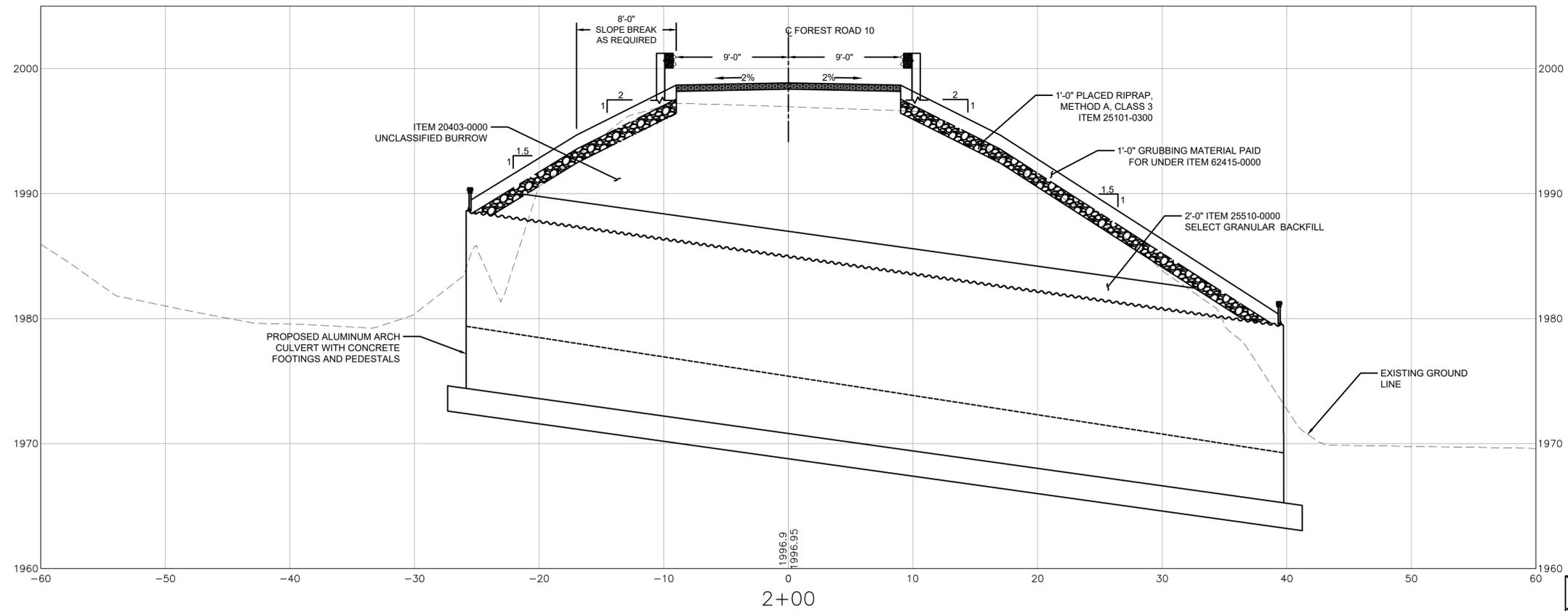
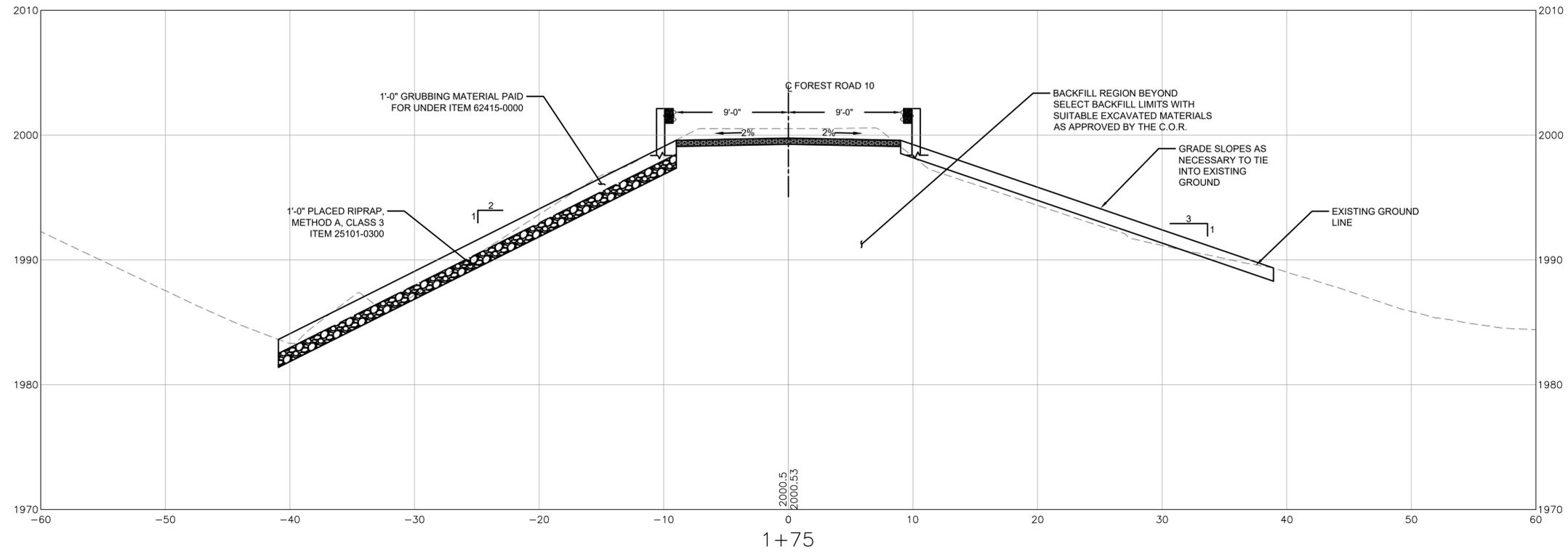
PROJECT NO. 927152 SHEET 13 OF 20



SURVEY TIE PLAN
SCALE: 1" = 20'-0"

5/6/22 12:33 KITTREDGE 109/927152.GMFL FR10-8.4 ERF0 CULVERT REPLACEMENT MT. TABOR DRAWINGS STRUCTURAL 02/14/22 11 TIE SHEET DWG.

- NOTES:
- SLOPES STEEPER THAN 2:1 SHALL BE STABILIZED WITH 1'-0" OF PLACED RIPRAP, METHOD A, CLASS 3, BENEATH 1'-0" GRUBBING MATERIAL.
 - THE EXISTING GROUND SURFACE VARIES SIGNIFICANTLY BETWEEN STA. 1+75 AND STA. 2+25 DUE TO THE EXISTING TEMPORARY BRIDGE ABUTMENTS AND THE EXISTING SCOUR HOLE IN THE ROADWAY.



United States Department of Agriculture
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(R09)
EASTERN REGION

STAMPS, LOGOS, AND SEALS



FOR CONSTRUCTION

4		
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NO.	REVISION / ISSUE	DATE

PROJECT NAME
**FR 10-8.4
CULVERT
REPLACEMENT
OVER MT. TABOR
BROOK**
GREEN MOUNTAIN
NATIONAL FOREST
MANCHESTER RANGER DISTRICT

DRAWING TITLE
**ROADWAY CROSS
SECTIONS
(1 OF 2)**

DATE 03/30/2022	ARCHIVE NO.
DESIGNER K. KITTREDGE	DRAWING SHEET NO. C-14
DRAWN K. KITTREDGE	CHECKED R. GAUDREAU
PROJECT NO. 927152	SHEET 14 OF 20



- NOTES:
- SLOPES STEEPER THAN 2:1 SHALL BE STABILIZED WITH 1'-0" OF PLACED RIPRAP, METHOD A, CLASS 3, BENEATH 1'-0" GRUBBING MATERIAL.
 - THE EXISTING GROUND SURFACE VARIES SIGNIFICANTLY BETWEEN STA. 1+75 AND STA. 2+25 DUE TO THE EXISTING TEMPORARY BRIDGE ABUTMENTS AND THE EXISTING SCOUR HOLE IN THE ROADWAY.



United States Department of Agriculture
Forest Service

(R09)
EASTERN REGION

STAMPS, LOGOS, AND SEALS



FOR CONSTRUCTION

4		
3		
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NO.	REVISION / ISSUE	DATE

PROJECT NAME

**FR 10-8.4
CULVERT
REPLACEMENT
OVER MT. TABOR
BROOK**

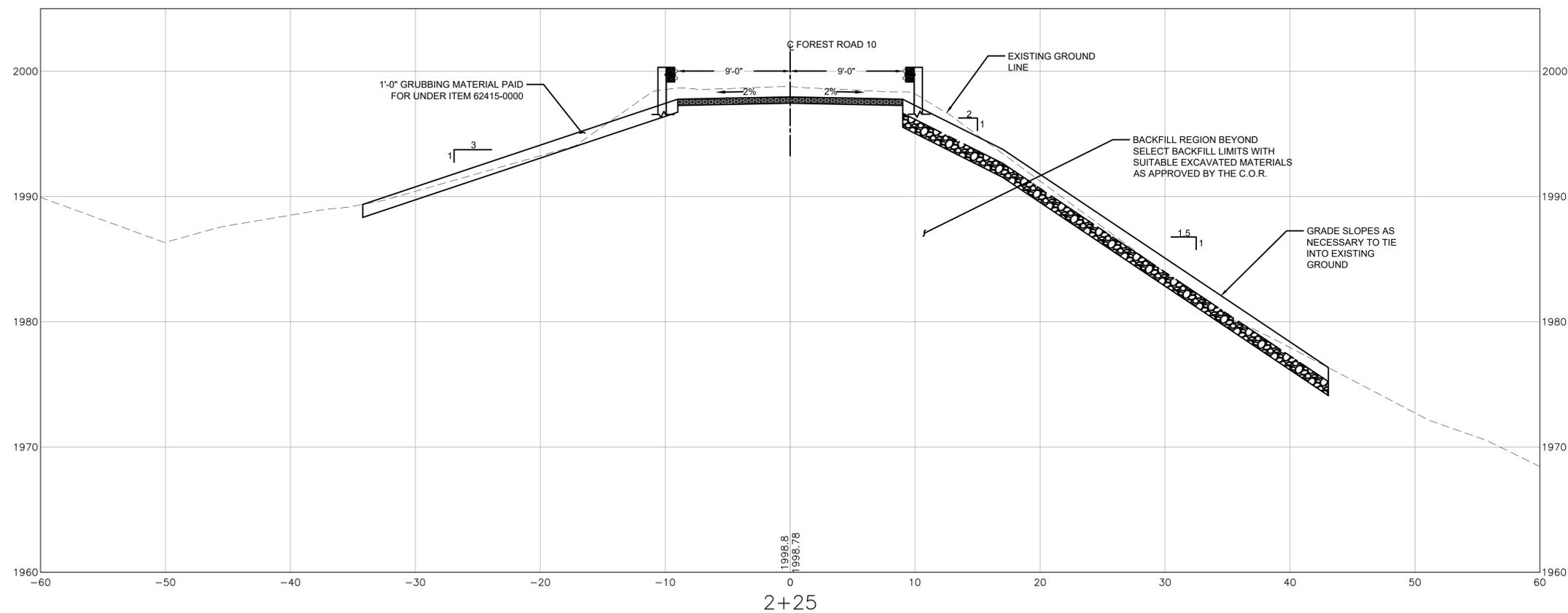
GREEN MOUNTAIN
NATIONAL FOREST

MANCHESTER RANGER DISTRICT

DRAWING TITLE

**ROADWAY CROSS
SECTIONS
(2 OF 2)**

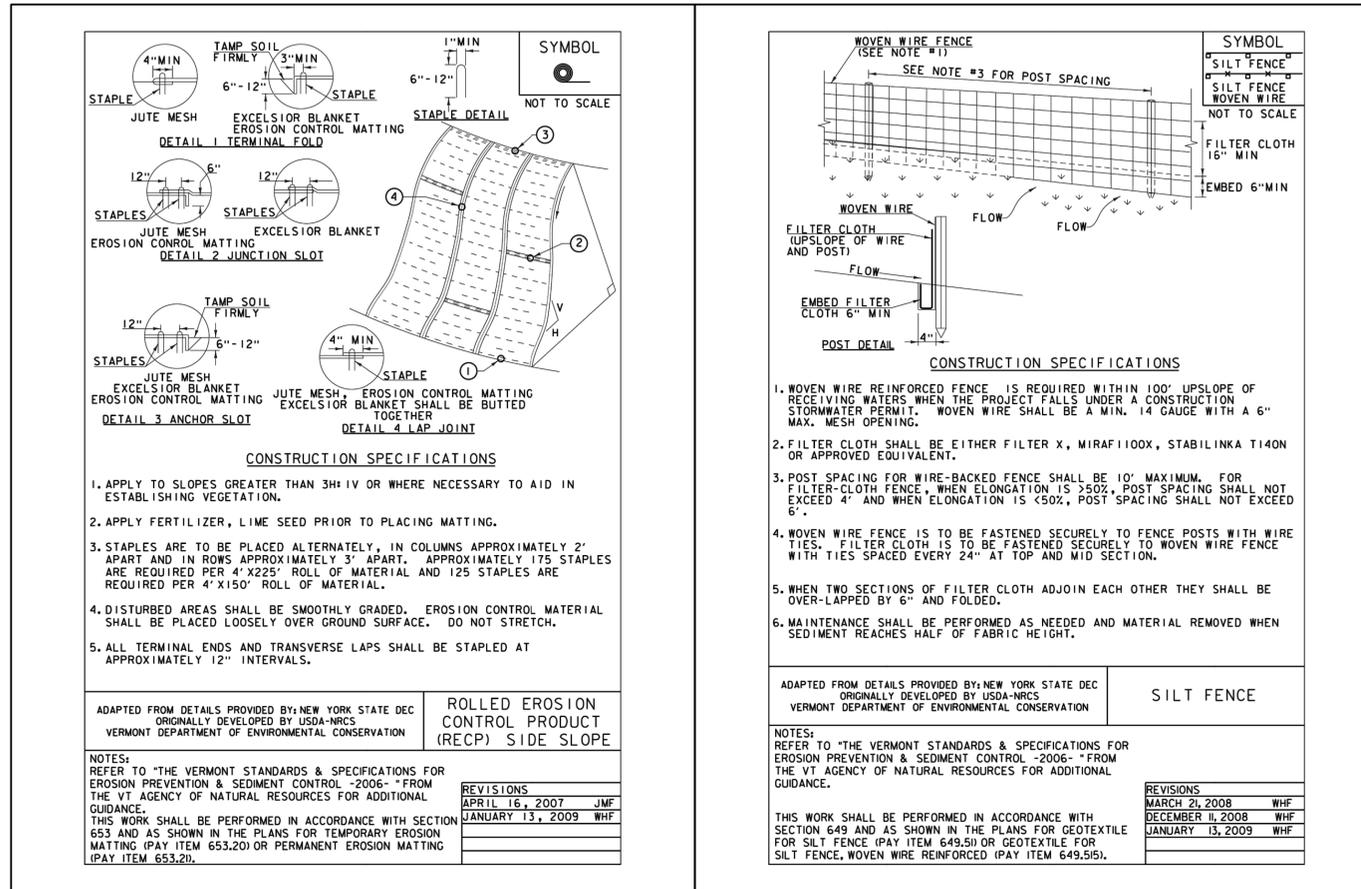
DATE 03/30/2022	ARCHIVE NO.
DESIGNER K. KITTREDGE	DRAWING SHEET NO. C-15
DRAWN K. KITTREDGE	
CHECKED R. GAUDREAU	
PROJECT NO. 927152	SHEET 15 OF 20



5/6/22 12:32 KITTREDGE 109/927152.GMFL FR10-8.4 ERFO CULVERT REPLACEMENT MT. TABOR DRAWINGS/STRUCTURAL/927152_XX CROSS SECTION.DWG.

EROSION CONTROL NOTES:

- PRIOR TO STARTING CONSTRUCTION THE CONTRACTOR SHALL SUBMIT AN EROSION AND SEDIMENT CONTROL PLAN WITH A SCHEDULE OF CONSTRUCTION ACTIVITIES. THE PLAN SHALL BE SITE SPECIFIC AND SHALL BE PAID FOR UNDER ITEM 15701-0000, SOIL EROSION CONTROL.
- THE CONTRACTOR SHALL MINIMIZE THE AMOUNT OF DISTURBED SOIL EXPOSED TO EROSION FROM STORM WATER AND WIND AT ANY TIME BY USING VEGETATIVE AND STRUCTURAL CONTROLS AND PROPER TIMING AND SEQUENCING OF CONSTRUCTION ACTIVITIES.
- ONLY DISTURB, CLEAR, OR GRADE AREAS NECESSARY FOR IMMEDIATE CONSTRUCTION ACTIVITY. FLAG OR OTHERWISE DELINEATE AREAS NOT TO BE DISTURBED. EXCLUDE VEHICLES AND CONSTRUCTION EQUIPMENT FROM THESE AREAS TO PRESERVE NATURAL VEGETATION.
- IF PROJECT IS GREATER THAN 5-ACRES, THE AREA OF UNSTABILIZED SOIL SHALL NOT EXCEED 5 ACRES AT ANY TIME UNLESS PROJECT PERMITS SPECIFICALLY PROVIDE FOR A GREATER AREA OF DISTURBANCE.
- ALL EROSION AND SEDIMENT CONTROL PRACTICES AND MEASURES TO BE CONSTRUCTED, APPLIED AND MAINTAINED IN ACCORDANCE WITH THESE DRAWINGS, PER THESE NOTES AND DETAILS, AND ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
- THE CONTRACTOR SHALL USE PROPER EROSION AND SEDIMENT CONTROL MEASURES TO ENSURE NO SEDIMENT IS TRACKED OFF-SITE (E.G. STABILIZED CONSTRUCTION ENTRANCE).
- DISTURBED AREAS WITH POTENTIAL TO DISCHARGE SEDIMENT-LADEN WATER INTO SURFACE WATERS OR OFF THE SITE MUST BE PROTECTED WITH TEMPORARY EROSION CONTROL MEASURES (E.G., SILT FENCE).
- THE CONTRACTOR SHALL DIVERT OFFSITE STORMWATER RUNOFF FROM HIGHLY ERODIBLE AREAS AND STEEP SLOPES AND CONVEY OFFSITE STORMWATER RUNOFF TO STABLE AREAS. INSTALL PERIMETER SILT FENCE PRIOR TO CLEARING AND GRUBBING AND INSTALL NECESSARY EROSION AND SEDIMENT CONTROL PRACTICES AS WORK TAKES PLACE.
- AREAS TO BE FILLED SHALL BE CLEARED GRUBBED AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIALS.
- EXCAVATED TOPSOIL GRADE MATERIAL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED TEMPORARILY IN THE AMOUNT NECESSARY TO COMPLETE FINISHED GRADING (WITHIN PROPOSED CONSTRUCTION LIMITS) AND USED IN CONJUNCTION WITH SEEDING AND PLANTING THE PROJECT AREA.
- ALL STOCKPILES, BORROW AREAS, AND SPOILS SHALL BE PROTECTED FROM EROSION AND SURROUNDED BY SILT FENCE AND COVERED WITH A BLANKET OF STRAW MULCH.
- FROZEN MATERIAL OR SOFT, MUCKY OR HIGHLY COMPRESSIBLE MATERIALS ARE SUSCEPTIBLE TO ACCELERATED SETTLEMENT AND POTENTIAL ACCELERATED EROSION. WORK IN THESE MATERIALS TO BE PERFORMED UNDER THE DIRECTION OF A PROFESSIONAL ENGINEER.
- REPAIR OR REPLACEMENT OF EROSION CONTROL MEASURES SHALL BE MADE PROMPTLY AS NEEDED, AND AS DESCRIBED IN THE INSPECTION, MONITORING AND MAINTENANCE NOTES ON THESE DRAWINGS.
- THE OUTER FACE OF THE FILL SLOPE SHALL BE ALLOWED TO STAY LOOSE, NOT ROLLED, COMPACTED, OR BLADED SMOOTH. ROUGHEN THE SURFACE OF ALL SLOPES DURING THE CONSTRUCTION OPERATION TO RETAIN WATER, INCREASE INFILTRATION, AND FACILITATE VEGETATION ESTABLISHMENT.
- USE SLOPE BREAKS, SUCH AS DIVERSIONS, BENCHES, OR CONTOUR FURROWS AS APPROPRIATE, TO REDUCE THE LENGTH OF CUT-AND-FILL SLOPES TO LIMIT SHEET AND RILL EROSION AND PREVENT GULLY EROSION. ALL BENCHES TO BE KEPT FREE OF SEDIMENT DURING ALL PHASES OF DEVELOPMENT.
- AREAS SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 INCHES PRIOR TO PLACEMENT OF TOPSOIL. TOPSOIL TO BE PLACED WITHOUT SIGNIFICANT COMPACTION TO PROVIDE A LOOSE BEDDING FOR PLACEMENT OF SEED.
- PLACED ALL GRADED AREAS WITH VEGETATION, CRUSHED STONE, COMPOST BLANKET, OR OTHER GROUND COVER AS SOON AS GRADING IS COMPLETED OR IF WORK IS INTERRUPTED FOR 21 WORKING DAYS OR MORE. USE MULCH OR OTHER APPROVED METHODS TO STABILIZE AREAS TEMPORARILY WHERE FINAL GRADING MUST BE DELAYED.
- ALL GRADED AREAS TO BE PERMANENTLY STABILIZED IMMEDIATELY FOLLOWING FINISHED GRADING.
- SEED MIXTURE FOR THE PURPOSES OF TURF ESTABLISHMENT SHALL BE THE NEW ENGLAND EROSION CONTROL/ RESTORATION MIX (FOR DETENTION BASINS AND MOIST SITES) BY NEW ENGLAND WETLANDS, INC. OR AN APPROVED EQUAL. THE MIX SHALL BE APPLIED PER THE SEEDING FORMULA AND MANUFACTURERS RECOMMENDATIONS. ALL SEEDED AREAS SHALL RECEIVE EROSION CONTROL MATTING IMMEDIATELY FOLLOWING SEEDING. NATURAL FIBER MATTING ONLY SHALL BE ALLOWED. THIS WORK SHALL BE PAID FOR UNDER ITEM 62542-1000.
- PERMANENT OR TEMPORARY COVER MUST BE IN PLACE BEFORE THE GROWING SEASON ENDS. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO EARLY OCTOBER. WHEN SEEDED AREAS ARE NOT MULCHED, SEED SHOULD BE PLACED FROM EARLY SPRING TO MAY 20 OR FROM AUGUST 15 TO SEPTEMBER 15. NO DISTURBED AREA SHALL BE LEFT EXPOSED DURING WINTER MONTHS (NOVEMBER THROUGH MARCH).
- ONCE DISTURBED AREAS HAVE BEEN STABILIZED AND VEGETATION IS ESTABLISHED, ALL TEMPORARY EROSION CONTROL MEASURES SUCH AS SILT FENCE SHALL BE REMOVED. AREAS DISTURBED BY REMOVAL OF THESE MEASURES SHALL BE IMMEDIATELY SEEDED ACCORDING TO SEEDING SPECIFICATIONS ON THESE DRAWINGS.
- AN AREA IS CONSIDERED "STABLE" IF ONE OF THE FOLLOWING HAS OCCURRED: A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED; A MINIMUM OF 3" OF NON-EROSIVE MATERIAL (SUCH AS STONE RIP RAP OR A CERTIFIED COMPOST BLANKET) HAS BEEN INSTALLED; EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
- ALL AREAS OF EXPOSED OR DISTURBED SOIL TO BE TEMPORARILY STABILIZED AS SOON AS PRACTICABLE BUT NO LATER THAN 45 DAYS FROM THE TIME OF INITIAL DISTURBANCE, UNLESS A SHORTER TIME IS SPECIFIED BY LOCAL AUTHORITIES, THE CONSTRUCTION SEQUENCE APPROVED AS PART OF THE ISSUED PERMIT, OR AN INDEPENDENT MONITOR.
- ALL AREAS OF EXPOSED OR DISTURBED SOIL TO BE PERMANENTLY STABILIZED AS SOON AS PRACTICABLE BUT NO LATER THAN 3 DAYS FOLLOWING FINAL GRADING.
- ALL ITEMS SPECIFIED IN THE EROSION CONTROL PLAN BUT NOT INCLUDED AS A SEPARATE PAY ITEM SHALL BE PAID FOR UNDER ITEM 15701-0000, SOIL EROSION CONTROL..



NOTES:

- VTRANS ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE AND SILT FENCE DETAILS ARE ADDED ONLY FOR REFERENCE OF ACCEPTED PRODUCTS AND PROCEDURES. NO PAYMENT SHALL BE MADE TO THE VTRANS ITEMS REFERENCED ABOVE. ALL PAYMENT SHALL BE MADE UNDER ITEM 15701-0000 SOIL EROSION CONTROL OR ITEM 15705-0100 SOIL EROSION CONTROL, SILT FENCE.



United States Department of Agriculture
Forest Service

(R09)
EASTERN REGION

STAMPS, LOGOS, AND SEALS



NO.	REVISION / ISSUE	DATE
4		
3		
2		
1		

PROJECT NAME

**FR 10-8.4
CULVERT
REPLACEMENT
OVER MT. TABOR
BROOK
GREEN MOUNTAIN
NATIONAL FOREST**

MANCHESTER RANGER DISTRICT

DRAWING TITLE

**EPSC NOTES AND
DETAILS**

DATE 02/14/2022	ARCHIVE NO.
DESIGNER K. KITTREDGE	DRAWING SHEET NO. C-16
DRAWN K. KITTREDGE	
CHECKED R. GAUDREAU	
PROJECT NO. 927152	SHEET 16 OF 20





United States Department of Agriculture
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EASTERN REGION

STAMPS, LOGOS, AND SEALS



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4		
3		
2		
1		
NO.	REVISION / ISSUE	DATE

PROJECT NAME
**FR 10-8.4
CULVERT
REPLACEMENT
OVER MT. TABOR
BROOK**
GREEN MOUNTAIN
NATIONAL FOREST
MANCHESTER RANGER DISTRICT

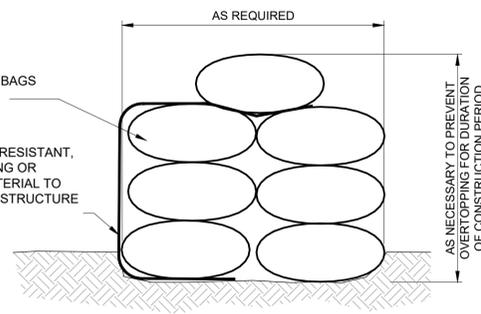
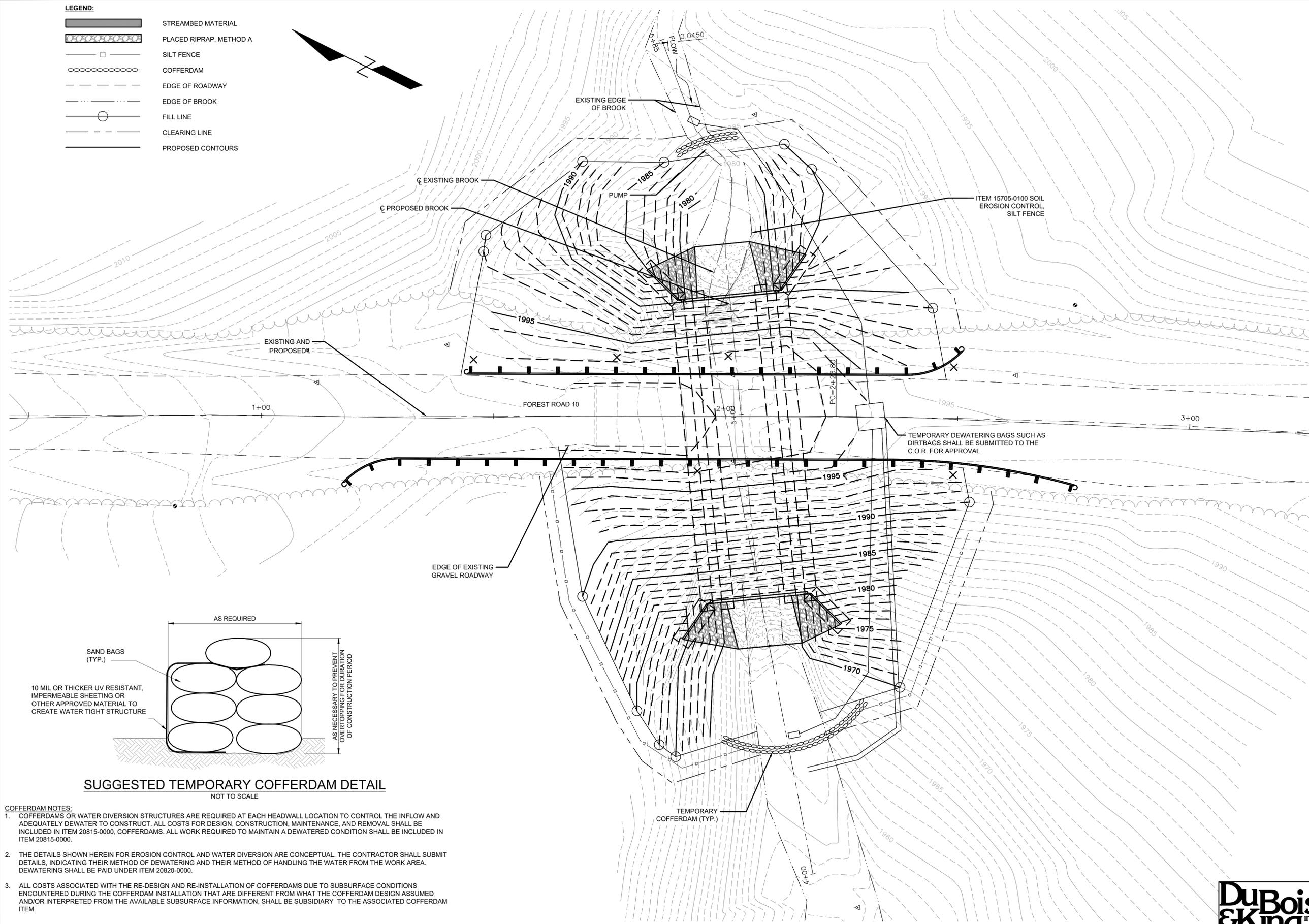
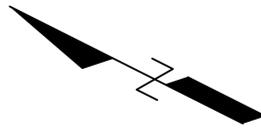
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**EPSC CONSTRUCTION
PLAN SHEET**

DATE 02/14/2022	ARCHIVE NO.
DESIGNER K. KITTREDGE	DRAWING SHEET NO. C-17
DRAWN K. KITTREDGE	CHECKED R. GAUDREAU
PROJECT NO. 927152	SHEET 17 OF 20



LEGEND:

- STREAMBED MATERIAL
- PLACED RIPRAP, METHOD A
- SILT FENCE
- COFFERDAM
- EDGE OF ROADWAY
- EDGE OF BROOK
- FILL LINE
- CLEARING LINE
- PROPOSED CONTOURS



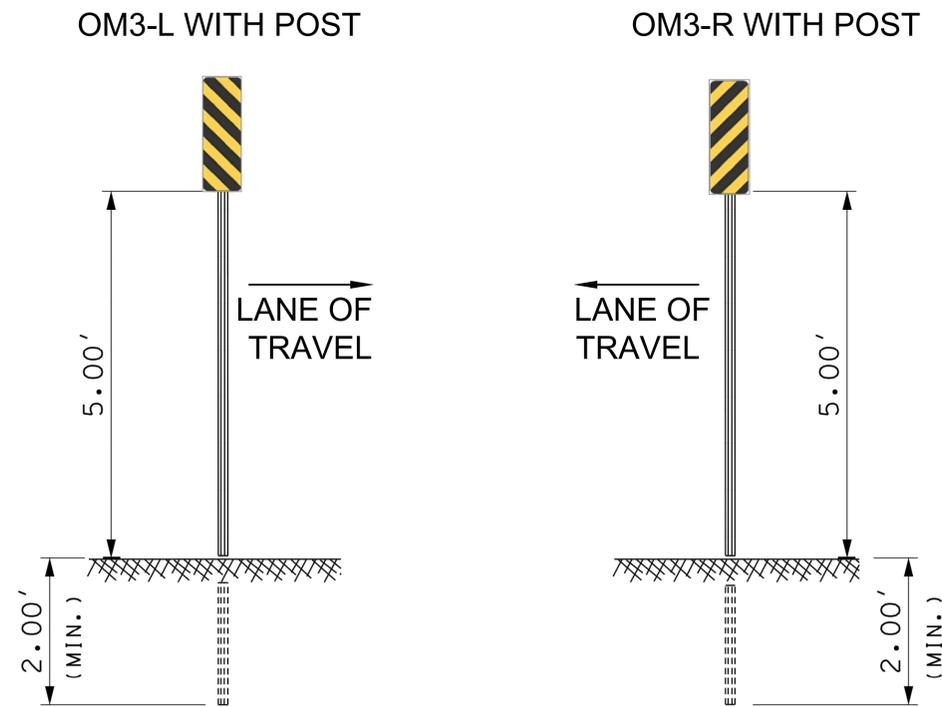
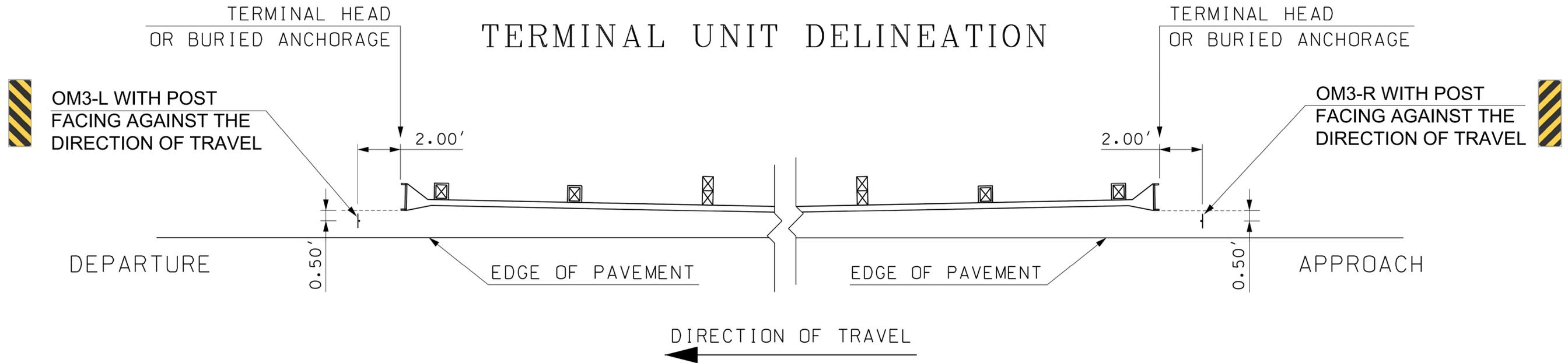
SUGGESTED TEMPORARY COFFERDAM DETAIL
NOT TO SCALE

COFFERDAM NOTES:

- COFFERDAMS OR WATER DIVERSION STRUCTURES ARE REQUIRED AT EACH HEADWALL LOCATION TO CONTROL THE INFLOW AND ADEQUATELY DEWATER TO CONSTRUCT. ALL COSTS FOR DESIGN, CONSTRUCTION, MAINTENANCE, AND REMOVAL SHALL BE INCLUDED IN ITEM 20815-0000, COFFERDAMS. ALL WORK REQUIRED TO MAINTAIN A DEWATERED CONDITION SHALL BE INCLUDED IN ITEM 20815-0000.
- THE DETAILS SHOWN HEREIN FOR EROSION CONTROL AND WATER DIVERSION ARE CONCEPTUAL. THE CONTRACTOR SHALL SUBMIT DETAILS, INDICATING THEIR METHOD OF DEWATERING AND THEIR METHOD OF HANDLING THE WATER FROM THE WORK AREA. DEWATERING SHALL BE PAID UNDER ITEM 20820-0000.
- ALL COSTS ASSOCIATED WITH THE RE-DESIGN AND RE-INSTALLATION OF COFFERDAMS DUE TO SUBSURFACE CONDITIONS ENCOUNTERED DURING THE COFFERDAM INSTALLATION THAT ARE DIFFERENT FROM WHAT THE COFFERDAM DESIGN ASSUMED AND/OR INTERPRETED FROM THE AVAILABLE SUBSURFACE INFORMATION, SHALL BE SUBSIDIARY TO THE ASSOCIATED COFFERDAM ITEM.

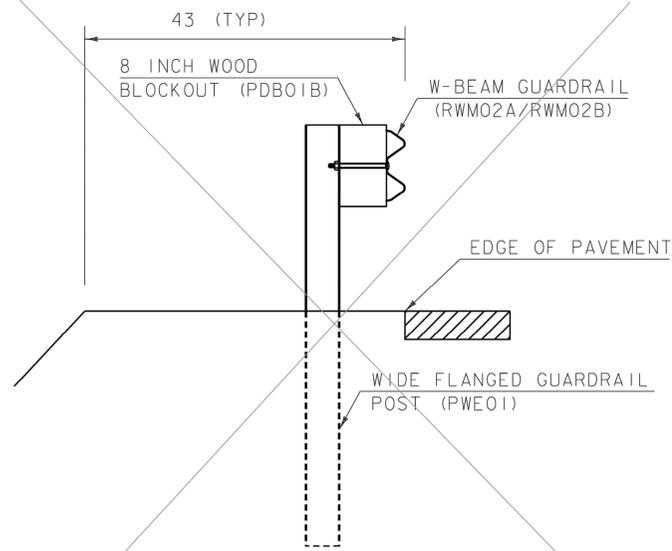
EPSC CONSTRUCTION CONDITIONS PLAN
SCALE: 1" = 10'-0"

TERMINAL UNIT DELINEATION

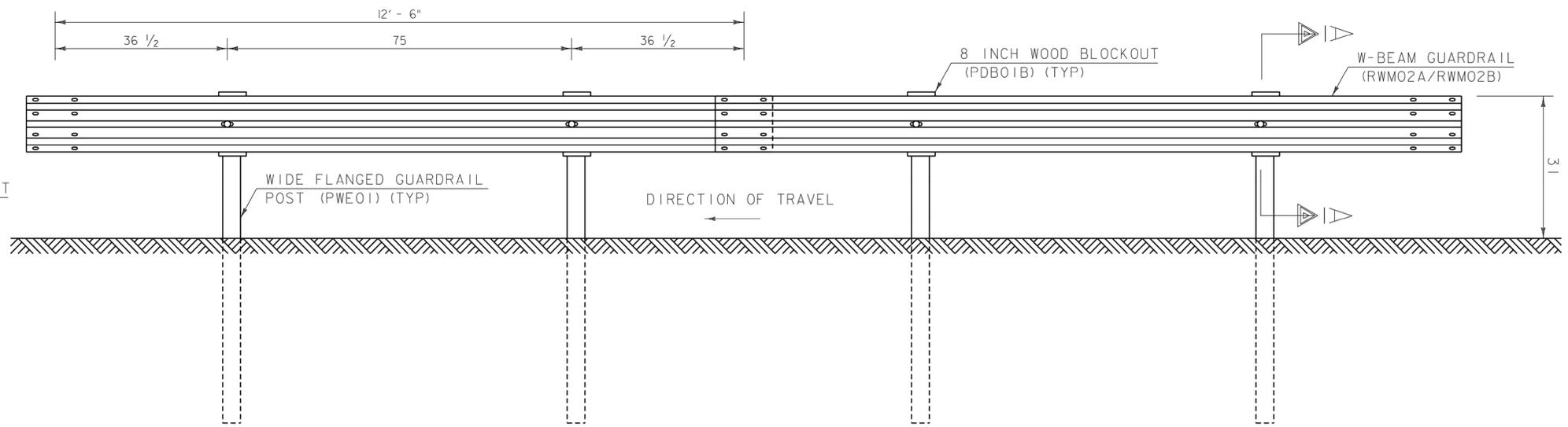


TYPICAL INSTALLATION

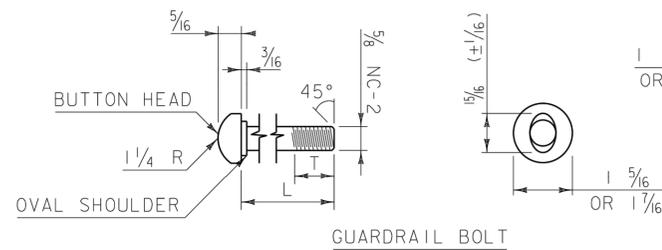
STATE OF NEW HAMPSHIRE				
SPECIAL DETAILS				
DEPARTMENT OF TRANSPORTATION • BUREAU OF HIGHWAY DESIGN				
<i>TERMINAL UNIT DELINEATION</i>				
REVISION DATE	DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
12-05-20	term_unit_delin	-	1	1



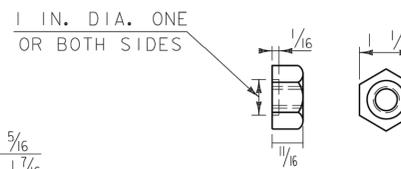
TYPICAL GUARDRAIL DETAIL
SECTION A-A



GUARDRAIL ELEVATION

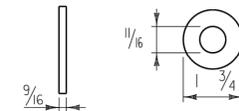


GUARDRAIL BOLT



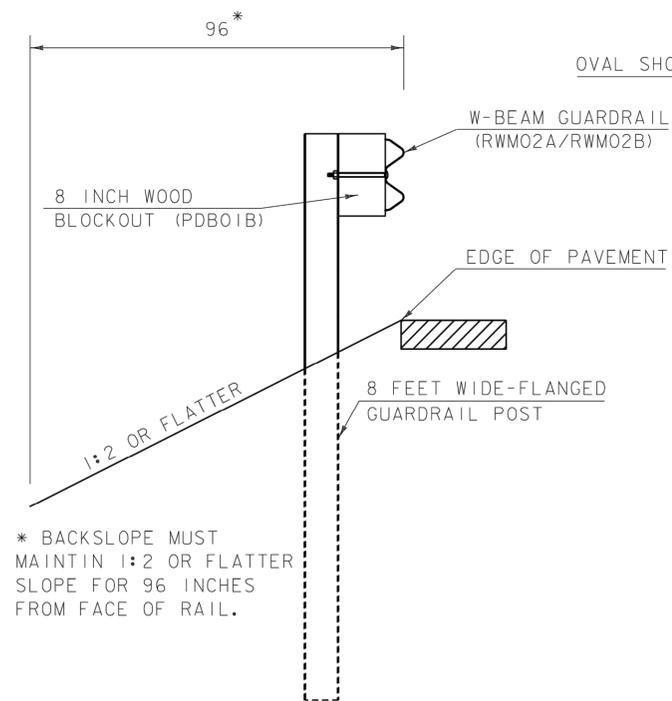
RECESSED NUT FOR GUARDRAIL BOLT

NOTE: WASHER IS USED UNDER RECESSED NUT WHERE GUARDRAIL BOLT IS USED WITH WOOD POSTS.



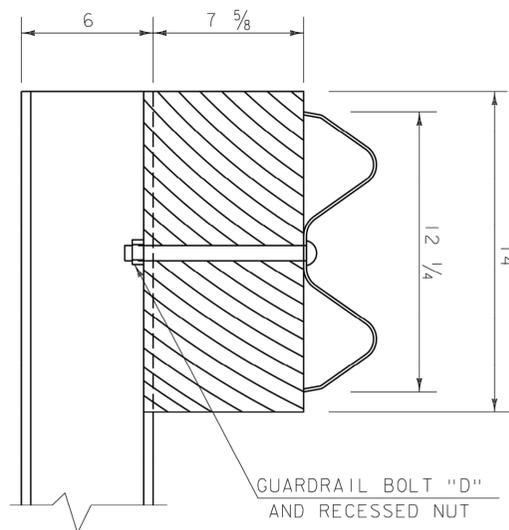
WASHER FOR 5/8" BOLTS
ARTBA F-13-73

BOLT DES.	GUARDRAIL BOLTS		FASTENER USED IN		
	ARTBA REF. NO.	L	T (MIN.)	STEEL POSTS	WOOD POSTS
"A"	F-3[1 1/4]-76	1 1/4"	1"	X	X
"C"	F-3[9 1/2]-76	9 1/2"	1 3/4"	X	
"D"	F-3[18]-76	18"	2 1/2"		X
"F"	F-3[25]-76	25"	2"		X

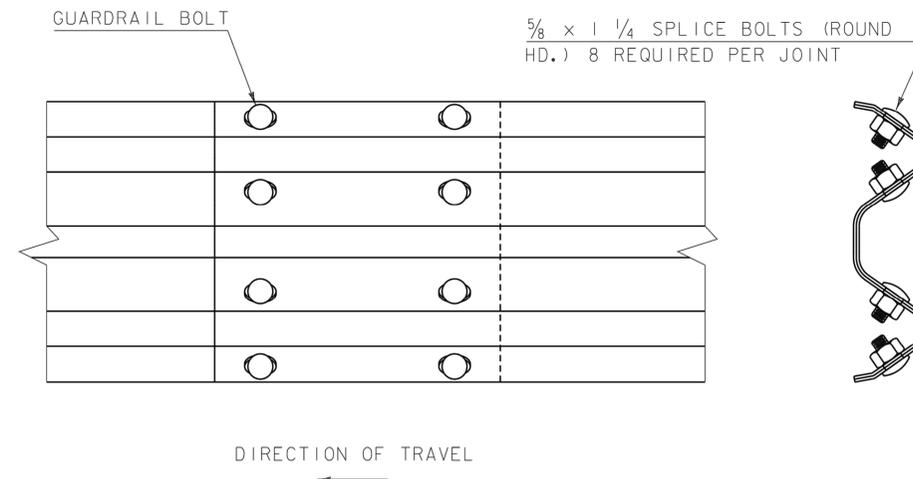


8 FEET POSTS GUARDRAIL DETAIL
SECTION A-A

* BACKSLOPE MUST MAINTAIN 1:2 OR FLATTER SLOPE FOR 96 INCHES FROM FACE OF RAIL.



POST ATTACHMENT DETAIL



SPLICE DETAIL

GENERAL NOTES

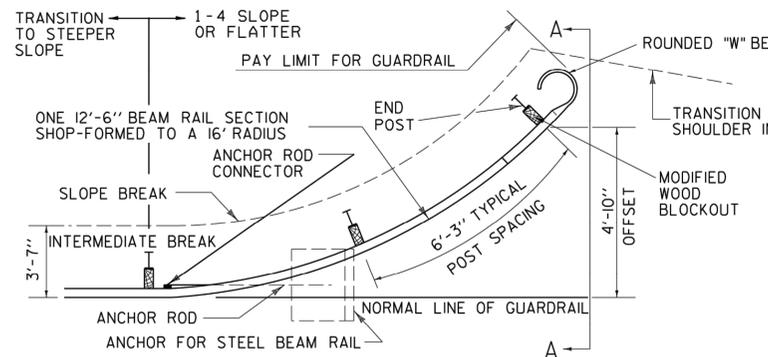
- DESIGNATIONS ARE AS IDENTIFIED IN "A GUIDE TO STANDARDIZED HIGHWAY BARRIER HARDWARE" AS PUBLISHED BY THE "AMERICAN ASSOCIATION OF STATE AND HIGHWAY TRANSPORTATION OFFICIALS" (AASHTO), "ASSOCIATED GENERAL CONTRACTORS OF AMERICA" (AGC) AND THE "AMERICAN ROAD AND TRANSPORTATION BUILDERS ASSOCIATION" (ARTBA).
- MATERIALS SHALL BE IN ACCORDANCE WITH SECTION 728 OF THE CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION, AND ITS LATEST REVISIONS, AS APPLICABLE.
- WHEN W-BEAM GUARDRAIL, 8 FEET POSTS IS SPECIFIED ON THE PLANS, WIDE FLANGED GUARDRAIL POST (PWE01) SHALL BE INCREASED FROM 72 INCHES TO 96 INCHES, SEE DETAIL HSD-621.07B.
- THE DYNAMIC DEFLECTION DISTANCE OF 57 INCHES FOR W BEAM GUARDRAIL SHALL BE MAINTAINED CLEAR OF OBSTACLES, TO BE MEASURED FROM THE BACK OF POST.
- FOR TEST LEVEL 3 APPLICATIONS, AS APPROVED IN THE FEDERAL HIGHWAY ADMINISTRATION'S ELIGIBILITY LETTER, HSST/B-240, DATED NOVEMBER 8, 2012.
- ALL DIMENSION IN INCHES, UNLESS OTHERWISE NOTED.

REV.	DATE	DESCRIPTION
--	APR. 17, 2019	ORIGINAL APPROVAL
I	JAN. 4, 2021	CORRECTED REFERENCE IN NOTE 3
OTHER DETAILS REQUIRED:		621.07B
DETAILS APPROVED FOR USE BY HIGHWAY SAFETY & DESIGN		

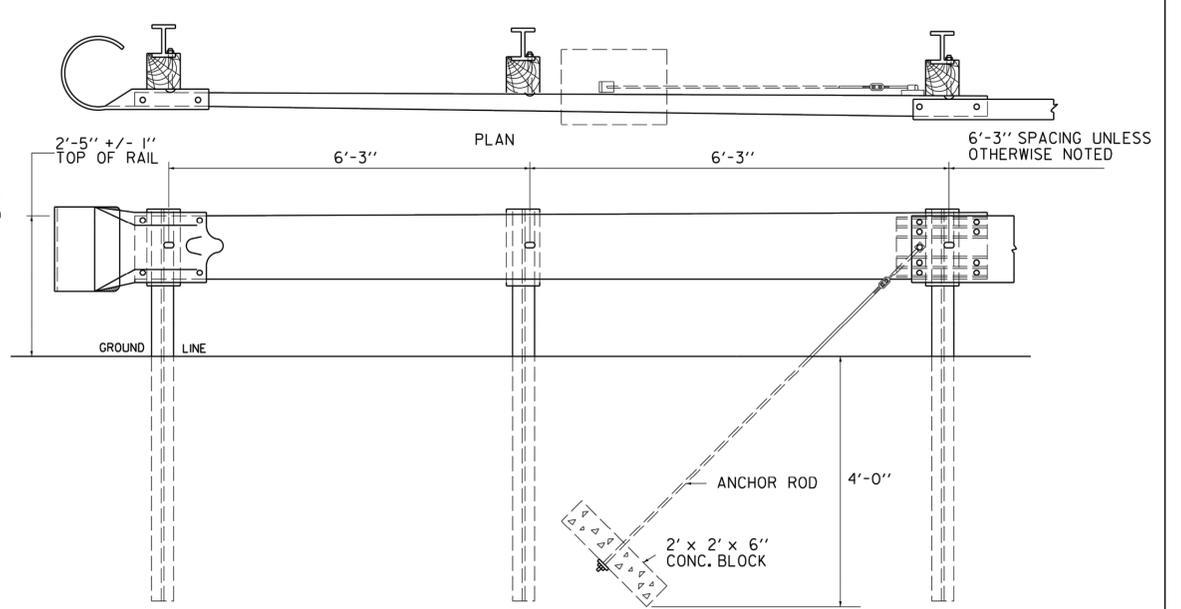
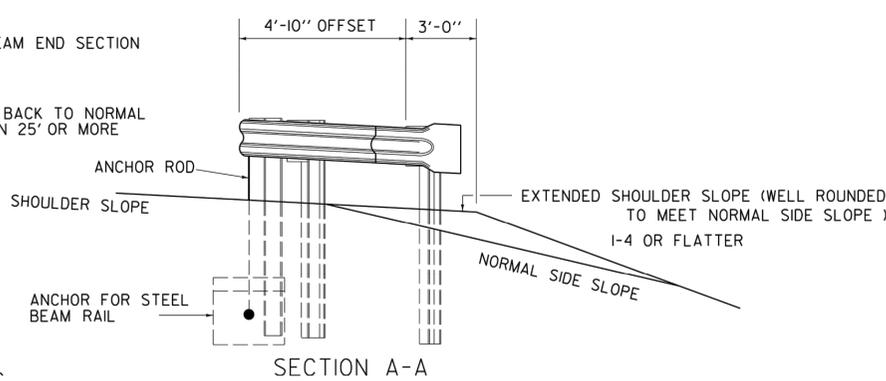
MIDWEST GUARDRAIL SYSTEM (MGS)



HIGHWAY SAFETY
& DESIGN DETAIL
HSD-621.07A

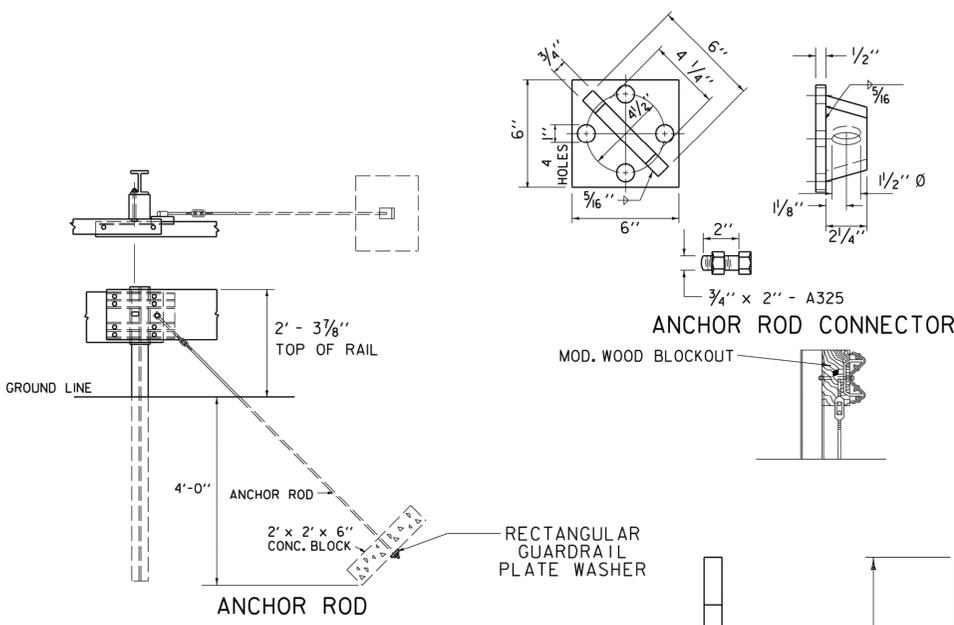


APPROACH END DETAIL
 NHS APPROVED FOR USE WHERE DESIGN SPEED IS 40 OR LESS MPH
 NON-NHS APPROVED FOR USE WHERE DESIGN SPEED IS 50 OR LESS MPH



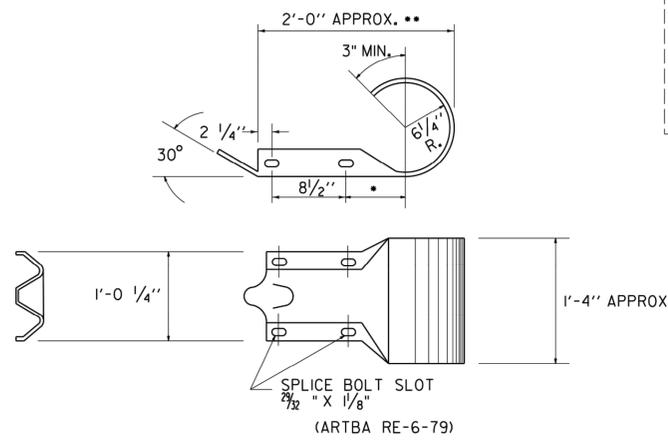
ASSEMBLY ELEVATION

TRAILING END TERMINAL FOR USE ON ONE-WAY HIGHWAYS



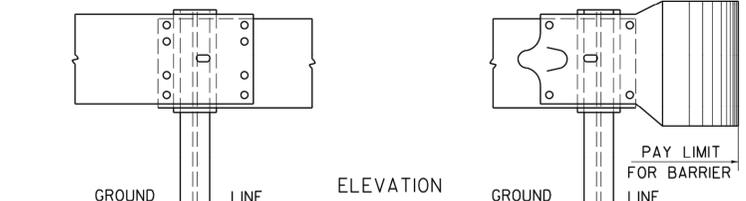
ANCHOR ROD CONNECTOR

ANCHOR ROD

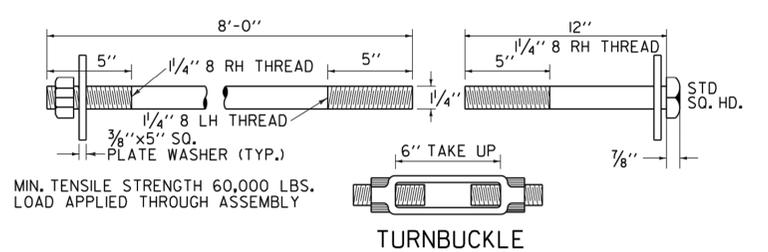


ROUNDED "W" BEAM END SECTION

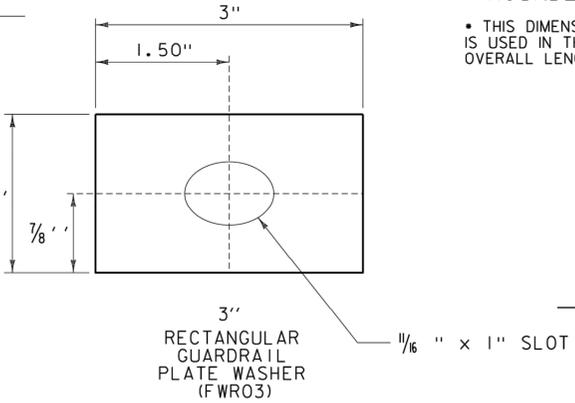
• THIS DIMENSION IS 7/2" IN RE-7-79. IF THE DIMENSION IS USED IN THIS PART, IT WILL GIVE AN ACCEPTABLE OVERALL LENGTH (**) OF APPROXIMATELY 2'-11/2".



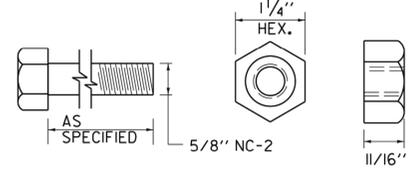
ELEVATION



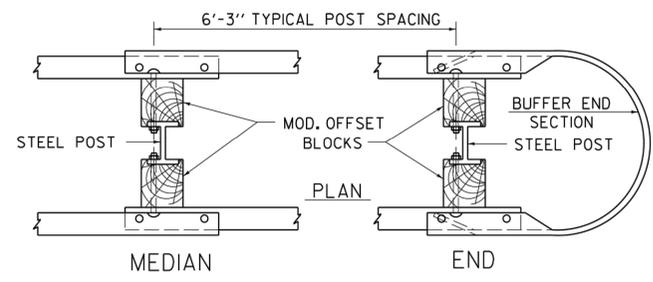
TURNBUCKLE



RECTANGULAR GUARDRAIL PLATE WASHER (FWR03)



5/8" HEX NUT AND BOLT "F" (ARTBA F-8-76)



STEEL BEAM MEDIAN BARRIER

NOTE: TO BE USED OUTSIDE CLEAR ZONE ONLY.

GENERAL NOTES:

1. ALL METAL PARTS SHALL BE GALVANIZED
2. ALL WOOD POSTS SHALL BE GIVEN A PRESERVATIVE TREATMENT
3. DETAILS PERTINENT TO THE STANDARD INSTALLATION OF "W" BEAM SECTIONS WILL BE FOUND ON STANDARD DRAWING G-1.
4. FOR DESCRIPTION AND SPECIFICATIONS OF PARTS IDENTIFIED BY "ARTBA..." AND OTHER DETAILS OF POSTS, POST ACCESSORIES, FASTENERS AND RAIL ELEMENTS, SEE AASHTO-AGC-ARTBA JOINT TASK FORCE NO. 13, TITLED "A GUIDE TO STANDARDIZED HIGHWAY BARRIER HARDWARE", LATEST EDITION.
5. THE TRANSITION FROM THE APPROACH END TO THE STANDARD STEEL BEAM GUARDRAIL SHALL BE 25'-0" UNLESS OTHERWISE SPECIFIED.
6. WHEN STANDARD STEEL BEAM CONNECTS TO BRIDGE APPROACH RAIL OF A DIFFERENT HEIGHT THE LENGTH NEEDED TO TRANSITION THE HEIGHT OF STANDARD STEEL BEAM TO MATCH THE BRIDGE APPROACH RAIL SHALL BE 25'-0" UNLESS OTHERWISE SPECIFIED.
7. WHEN STANDARD STEEL BEAM CONNECTS TO A MANUFACTURED TERMINAL SECTION OF A DIFFERENT HEIGHT THE LENGTH NEEDED TO TRANSITION THE HEIGHT OF STANDARD STEEL BEAM TO MATCH THE MANUFACTURED TERMINAL SECTION SHALL BE 25'-0" UNLESS OTHERWISE SPECIFIED.

REV.	DATE	DESCRIPTION
2	JAN. 3, 2000	UPDATED TO REFLECT METRIC STD. CHANGES
3	FEB. 10, 2014	UPDATED TO REFLECT GUARDRAILS HEIGHT OF 29" AS NOTED IN FHWA LETTER DATED MAY 17, 2000
4	MAR. 10, 2017	UPDATED WASHER DETAILS

OTHER STANDARDS REQUIRED: G-1
 VTRANS AND FHWA APPROVAL ON FILE WITH CONTRACT ADMINISTRATION

STEEL BEAM GUARDRAIL END TERMINALS

ANCHOR FOR STEEL BEAM GUARDRAIL

STEEL BEAM MEDIAN BARRIER



STANDARD
G-1D