SEE SHEET 2 FOR INDEX OF SHEETS
AND LIST OF STANDARDS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PROPOSED IMPROVEMENT
BRIDGE PROJECT

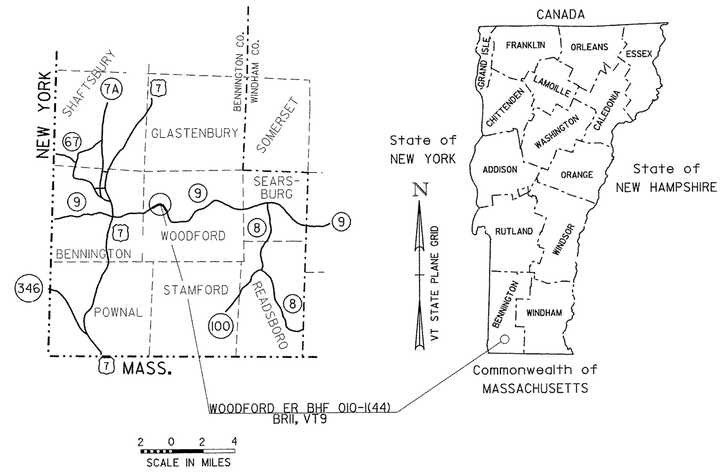
TOWN OF WOODFORD
COUNTY OF BENNINGTON

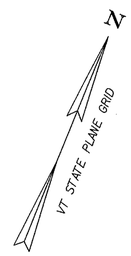
ROUTE NO : VT RT 9, PRINCIPAL ARTERIAL BRIDGE NO : 11

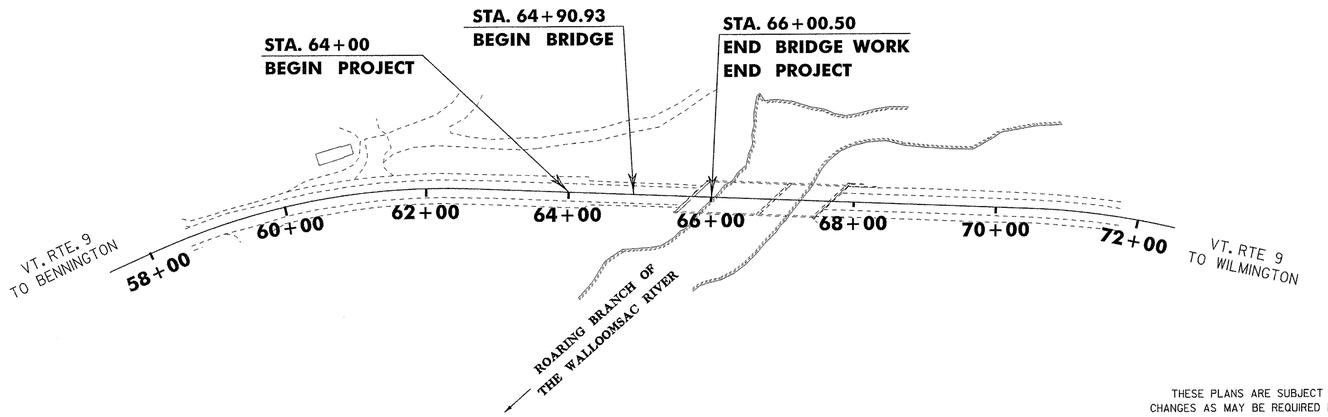
PROJECT LOCATION : BEGINNING AT A POINT 1.206 MILES EAST OF THE BENNINGTON - WOODFORD TOWN LINE AND EXTENDING EASTERLY 0.038 MILES.

PROJECT DESCRIPTION : WORK TO BE PERFORMED UNDER THIS PROJECT INCLUDES REPAIR OF FLOOD DAMAGED BRIDGE NO. 11 WHICH IS OVER THE ROARING BRANCH OF THE WALLOOMSAC RIVER. REPLACEMENT OF STRUCTURAL STEEL, CONCRETE DECK, MUNICIPAL WATERLINE, ALONG WITH ASSOCIATED CHANNEL WORK AND NECESSARY APPROACH WORK, SUBBASE AND PAVEMENT, ALONG EXISTING ALIGNMENT.

LENGTH OF ROADWAY = 90.93 FEET = 0.017 MI
LENGTH OF BRIDGE = 109.57 FEET = 0.021 MI
LENGTH OF PROJECT = 200.50 FEET = 0.038 MI







0 100 200
SCALE IN FEET

RECORD PLANS

CONTRACTOR: T. BUCK CONSTRUCTION, INC.– AUBURN, ME
RESIDENT ENGINEER: RON LEMAIRE
CONSTRUCTION BEGAN: JUNE 4, 2012
CONSTRUCTION COMPLETE: JULY 18, 2013
RECORD PLANS BY: RON LEMAIRE & JENNA HYDE

I HEREBY CERTIFY THAT ALL THE CONSTUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN.

BY _____ RESIDENT ENGINEER
DATE 01/17/15

NOTE: Any further information concerning final quantities, amounts or other details relative to this project may be found at Central Files in the electronic archives.

QUALITY ASSURANCE PROGRAM: LEVEL I

CONVENTIONAL SYMBOLS

COUNTY LINE
TOWN LINE
LIMITS OF ACCESS
POINT OF ACCESS
FENCE LINE
STONE WALL
TRAVELED WAY
GUARD RAIL
RAILROAD
SURVEY LINE
CULVERT
POWER POLE
TELEPHONE POLE
TREES
CONTROL OF ACCESS
PROPERTY LINE
R.O.W. TAKING LINE
SLOPE RIGHTS
TOP OF CUT
TOE OF SLOPE

SURVEYED BY : L. ORVIS
SURVEYED DATE : 11/6/2011

DATUM
VERTICAL NAVD88
HORIZONTAL NAD83 (2007)

THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE DIRECTOR OF PROGRAM DEVELOPMENT.

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2011, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JULY 20, 2011 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS. 23-MAR-2012

DIRECTOR OF PROGRAM DEVELOPMENT
APPROVED _____ DATE 3/26/12
PROJECT MANAGER : CAROLYN CARLSON

PROJECT NAME : **WOODFORD**
PROJECT NUMBER : **ER BHF 010-1(44)**

SHEET 1 OF 58 SHEETS

Version 11.06.15

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (BRIDGE)

INDEX OF SHEETS

PLAN SHEETS

1	TITLE SHEET
2	PRELIMINARY INFORMATION SHEET
3	PROJECT NOTES
4 - 5	QUANTITY SHEETS
6	BRIDGE QUANTITY SHEET
7	PROJECT TYPICAL SECTIONS
8	EARTHWORK SECTIONS
9	TIE SHEET
10 - 12	PLAN SHEETS
13 - 15	PROFILE SHEETS
16	BANKING DIAGRAM & MATERIAL TRANSITION
17	BORING INFORMATION SHEET
18	BORING LOGS
19	DECK TYPICAL SECTION
20	DECK PLAN
21	DECK FRAMING PLAN
22	GIRDER DETAILS
23	GIRDER SPLICE DETAILS
24	BAY ONE CROSSFRAME DETAILS
25	TYPICAL CROSSFRAME DETAILS
26	ABUTMENT 1 BEARING DETAILS
27	BRIDGE EXPANSION JOINT DETAILS
28	BRIDGE EXPANSION JOINT PLAN
29	DOWNSPOUT DETAILS
30	APPROACH SLAB DETAILS
31	ABUTMENT 1 PLAN
32	ABUTMENT 1 ELEVATION
33	ABUTMENT 1 FOOTING REINFORCING
34	WINGWALL DETAILS
35	REINFORCING STEEL SCHEDULE
36 - 39	ROADWAY CROSS SECTIONS SHEETS
40 - 43	CHANNEL CROSS SECTIONS SHEETS
44 - 46	R.O.W. PLAN SHEETS
47	EPSC NARRATIVE
48 - 50	EPSC EXISTING CONDITION SHEETS
51 - 53	EPSC CONSTRUCTION CONDITION SHEETS
54 - 56	EPSC FINAL CONDITION SHEETS
57 - 58	EPSC DETAILS

WATERLINE UTILITY SHEETS

C-101	WATER MAIN ON BRIDGE
C-501	WATERLINE DETAILS

STRUCTURES DETAIL SHEETS

SD-501.000	CONCRETE DETAILS AND NOTES	05-07-2010
SD-502.00	CONCRETE DETAILS AND NOTES	06-04-2010
SD-601.00	STRUCTURAL STEEL DETAILS & NOTES	06-04-2010
SD-602.00	STRUCTURAL STEEL PLATE GIRDER DETAILS AND NOTES	05-02-2011

STANDARDS LIST

C-10	CURBING	02-11-2008
E-100	CONSTRUCTION APPROACH SIGNS	01-02-2004
E-101	CONSTRUCTION SIGN DETAILS	05-30-2003
E-102	CONSTRUCTION SIGN DETAILS	06-30-2003
E-102A	CONSTRUCTION SIGN DETAILS	05-01-2004
E-106	TRAFFIC CONTROL- MISCELLANEOUS DETAILS	03-01-2004
E-107	DELINEATION, BARRICADES AND DETOURS FOR CONSTRUCTION AREAS	06-30-2003
E-107A	BREAKAWAY BARRICADE DETAILS	06-08-2009
E-108	CONSTRUCTION ZONE LONGITUDINAL DROP OFFS	06-08-2009
E-121	STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD	08-08-1995
E-193	PAVEMENT MARKING DETAILS	08-18-1995
G-1	STEEL BEAM GUARDRAIL DETAILS (POST, DELINEATOR, TYPICALS)	01-03-2000
G-17A	MODIFIED ECCENTRIC LOADER TERMINAL (MELT)	09-27-2002
G-17B	MODIFIED ECCENTRIC LOADER TERMINAL (MELT)	09-27-2002
G-19	GENERIC GRADING PLANS FOR GUARDRAIL END TERMINALS	11-15-2002
S-360a	BRIDGE RAILING, GALVANIZED NETC 2 RAIL	12-14-2009
S-360b	GUARDRAIL APPROACH SECTION, GALVANIZED NETC 2 RAIL	12-14-2009
S-363	GUARDRAIL APPROACH SECTION, GALVANIZED NETC 2 & 4 RAIL	12-14-2009

TRAFFIC DATA

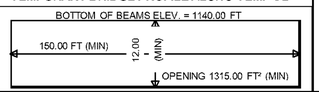
YEAR	ADT	DHV	% D	% T	ADTT
2012	4000	620	56	10.7	500
2032	4300	660	56	13.1	660

20 year ESAL for flexible pavement from 2012 to 2032 : 4789000

40 year ESAL for flexible pavement from 2012 to 2052 : 10386000

Design Speed : 50 mph

TEMPORARY BRIDGE PROFILE ALONG TEMP CL



FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: Dec 2011

DRAINAGE AREA : 37.7 SQ MI
CHARACTER OF TERRAIN : HILLY TO MOUNTAINOUS, MOSTLY FORESTED
STREAM CHARACTERISTICS :
NATURE OF STREAMBED : WELL ARMORED - MEDIUM TO LARGE COBBLES & BOULDE

PEAK FLOW DATA

Q 2.33 =	2400 CFS	Q 50 =	6000 CFS
Q 10 =	4000 CFS	Q 100 =	7000 CFS
Q 25 =	5000 CFS	Q 500 =	

DATE OF FLOOD OF RECORD: N/A
ESTIMATED DISCHARGE: N/A
WATER SURFACE ELEV.: N/A
NATURAL STREAM VELOCITY : @ Q50 = 12.9 fps
ICE CONDITIONS : LIGHT
DEBRIS: MODERATE
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? YES
IS ORDINARY RISE RAPID? YES
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? NO
IF YES, DESCRIBE:

WATERSHED STORAGE: <1%
HEADWATERS:
UNIFORM: X
IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: THREE SPAN CONTINOUS PLATE GIRDER BRIDGE
YEAR BUILT: 2005
CLEAR SPAN(NORMAL TO STREAM): 183 FT
VERTICAL CLEARANCE ABOVE STREAMBED: 10 FT
WATERWAY OF FULL OPENING: 2200 SQ FT
DISPOSITION OF STRUCTURE: REPAIR
TYPE OF MATERIAL UNDER SUBSTRUCTURE:

WATER SURFACE ELEVATIONS AT:

Q2.33 =	1132.4 FT	VELOCITY =	10.4 FPS
Q10 =	1133.7 FT	"	10.6 FPS
Q25 =	1134.1 FT	"	11.4 FPS
Q50 =	1134.5 FT	"	12.1 FPS
Q100 =	1134.9 FT	"	12.7 FPS

LONG TERM STREAMBED CHANGES: Channel is highly unstable and subject to lateral shifting

IS THE ROADWAY OVERTOPPED BELOW Q100: NO
FREQUENCY: N/A
RELIEF ELEVATION: N/A
DISCHARGE OVER ROAD @Q100: N/A

UPSTREAM STRUCTURE

TOWN: N/A
HIGHWAY # :
CLEAR SPAN:
YEAR BUILT:
STRUCTURE TYPE:
DISTANCE:
STRUCTURE #:
CLEAR HEIGHT:
FULL WATERWAY:

DOWNSTREAM STRUCTURE

TOWN: Bennington
HIGHWAY # : VT 9
CLEAR SPAN: 209 FT
YEAR BUILT:
STRUCTURE TYPE:
DISTANCE: 1.7 MI
STRUCTURE #: 9
CLEAR HEIGHT: 17'
FULL WATERWAY:

LFD LOAD RATING (TONS)

STRESS LEVELS	TRUCK						
	H	HS	3S2	6 AXLE	3A STR.	4A STR.	5A SEMI
INVENTORY	46	52					
POSTING	52	73	85		67	79	
OPERATING		87	101	116			
COMMENTS:							

PROPOSED STRUCTURE

STRUCTURE TYPE: THREE SPAN PLATE GIRDER BRIDGE

CLEAR SPAN(NORMAL TO STREAM): 53' + 77' + 53' = 183 FT TOTAL
VERTICAL CLEARANCE ABOVE STREAMBED: 10 FT
WATERWAY OF FULL OPENING: 2200 SQ FT

WATER SURFACE ELEVATIONS AT:

Q2.33 =	1132.4 FT	VELOCITY=	10.4 FPS
Q10 =	1133.7 FT	"	10.6 FPS
Q25 =	1134.1 FT	"	11.4 FPS
Q50 =	1134.5 FT	"	12.1 FPS
Q100 =	1134.9 FT	"	12.7 FPS

IS THE ROADWAY OVERTOPPED BELOW Q100: NO
FREQUENCY: N/A
RELIEF ELEVATION: N/A
DISCHARGE OVER ROAD @Q100: N/A

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 1139.1 FT
VERTICAL CLEARANCE: @ Q100 = 4.2 FT

SCOUR: 1 FT

REQUIRED CHANNEL PROTECTION: STONE FILL, TYPE IV

PERMIT INFORMATION

AVERAGE DAILY FLOW:	80 CFS	DEPTH OR ELEVATION:
ORDINARY LOW WATER:	40 CFS	DEPTH = 0.5 FT
ORDINARY HIGH WATER:	1150 CFS	DEPTH = 3.0 FT

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: Single span structure
CLEAR SPAN (NORMAL TO STREAM): 131' minimum clear span (normal to channel)
VERTICAL CLEARANCE ABOVE STREAMBED: Minimum low beam elev. 1140'
WATERWAY AREA OF FULL OPENING: 1315 SQ FT

ADDITIONAL INFORMATION

HYDROLOGIC AND HYDRAULIC INFORMATION TAKEN FROM 2005 PLANS.
2011 SURVEY SHOWED SOME CHANGES IN CHANNEL, BUT LITTLE EFFECT ON NET CROSS SECTIONAL AREA.
2011 SURVEY DOES NOT REPRESENT A LONG TERM CONDITION OF THE CHANNEL.

1. MAINTAIN TWO-WAY TRAFFIC ON A TEMPORARY BRIDGE.
2. TRAFFIC SIGNALS ARE NOT NECESSARY.
3. SIDEWALKS ARE NOT NECESSARY
4. THE APPROACHES FOR THE TEMPORARY BRIDGE SHALL BE PAVED.

DESIGN VALUES

1. DESIGN LIVE LOAD		HS-25
2. FUTURE PAVEMENT	d_p:	0.0 INCH
3. ABUTMENT BEARING TO BEARING LENGTH (THREE SPANS) (79.00 - 114.00 - 79.00) FT	L:	272.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ:	---
5. PRESTRESSING STRAND	f_y:	---
6. PRESTRESSED CONCRETE STRENGTH	f'_c:	---
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f'_{ci}:	---
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f'_c:	---
9. CONCRETE, HIGH PERFORMANCE CLASS A	f'_c:	4.0 KSI
10. CONCRETE, HIGH PERFORMANCE CLASS B	f'_c:	3.5 KSI
11. CONCRETE, CLASS C	f'_c:	---
12. REINFORCING STEEL	f_y:	60 KSI
13. STRUCTURAL STEEL AASHTO M270 (WEATHERING)	f_y:	50 KSI
14. SOIL UNIT WEIGHT	γ:	0.140 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	q_n:	4.0 KSF
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	---
17. NOMINAL BEARING RESISTANCE OF ROCK	q_n:	---
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	---
19. NOMINAL AXIAL PILE RESISTANCE	q_p:	---
20. PILE YIELD STRENGTH ASTM A572	f_y:	---
21. PILE SIZE		---
22. EST. PILE LENGTH	L_p:	
23. PILE RESISTANCE FACTOR	ϕ:	---
24. LATERAL PILE DEFLECTION	Δ:	---
25. BASIC WIND SPEED	V_{3s}:	---
26. MINIMUM GROUND SNOW LOAD	p_g:	---
27. SEISMIC DATA PGA: ---	S_s:	---
	S_1:	---

PROJECT NAME: **WOODFORD**
PROJECT NUMBER: **ER BHF 010-1(44)**

FILE NAME: **s11b214pi.dgn**
PROJECT LEADER: **C. CARLSON**
DESIGNED BY: **M. EVANS-MONGEON**
PRELIMINARY INFORMATION SHEET

PLOT DATE: 3/23/2012
DRAWN BY: **G. ROY**
CHECKED BY: **M. EVANS-MONG**

GENERAL

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

2. THE BRIDGE IS DESIGNED FOR HS 25 LIVE LOAD WITH NO ALLOWANCE FOR ADDITIONAL FUTURE PAVEMENT.

3. ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 68 DEGREES FAHRENHEIT UNLESS NOTED OTHERWISE.

4. THE CONTRACTOR SHALL USE EXTREME CARE WHILE WORKING AROUND THE EXISTING WATER LINE WHICH IS BURIED AT THE WEST END OF THE BRIDGE AND IN THE AREA UPSTREAM OF THE PORTION OF THE BRIDGE THAT IS TO BE REHABILITATED. ANY DAMAGE THAT IS INCURRED WILL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.

5. THE DETAILS AND DIMENSIONS ON THE PROJECT SPECIFIC PLAN AND DETAIL SHEETS SHALL TAKE PRECEDENCE OVER THE MORE GENERAL "STRUCTURES DETAIL SHEETS" PROVIDED IN THE PLAN SET.

6. TACK COAT: EMULSIFIED ASPHALT SHALL BE APPLIED AT A RATE OF 0.04 GAL/SY ON ALL COLD PLANED SURFACES AND BETWEEN SUCCESSIVE COURSES OF PAVEMENT, BOTH ON THE BRIDGE AND IN THE ROADWAY SECTION.

7. THE BRIDGE PLAQUE SHALL BE FURNISHED BY THE AGENCY OF TRANSPORTATION AND INSTALLED BY THE CONTRACTOR AS SHOWN ON SHEET SD-502.00. THE COST FOR THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 501.34, CONCRETE, HIGH PERFORMANCE CLASS B.

8. ITEM 529.20 PARTIAL REMOVAL OF STRUCTURE IS FOR THE REMOVAL AND DISPOSAL OF A PORTION OF THE DECK AS SHOWN ON THE DECK PLAN SHEET AND ON THE FRAMING PLAN. THE PRICE BID SHALL INCLUDE THE COST FOR SALVAGING 3'-0" OF THE DECK REINFORCING, ALONG WITH CLEANING AND REPAIRING OF THAT STEEL AS NEEDED, IN ORDER TO SPLICE THAT REINFORCING STEEL TO THE NEW DECK REINFORCING STEEL.

9. THE REMOVAL OF THE BITUMINOUS CONCRETE PAVEMENT ON THE BRIDGE, IN THE AREA WHERE THE DECK IS TO BE REMOVED, SHALL BE PAID FOR UNDER ITEM 529.10, REMOVAL OF BRIDGE PAVEMENT.

10. HEIGHT OF FILL BEHIND THE ABUTMENT WILL BE LIMITED TO THE BRIDGE SEAT ELEVATION UNTIL THE DECK HAS BEEN PLACED AND THE CURING PERIOD IS COMPLETE.

TRAFFIC MAINTENANCE DURING CONSTRUCTION

11. TRAFFIC WILL BE MAINTAINED ON A TWO-WAY TEMPORARY BRIDGE TO BE PLACED UPSTREAM IF THE EXISTING BRIDGE.

12. THE DETOUR ALIGNMENT SHALL BE DESIGNED FOR A MINIMUM DESIGN SPEED OF 25 MPH. THE TEMPORARY DETOUR SHALL BE PAVED. ALL WORK ASSOCIATED WITH THE INSTALLATION AND REMOVAL OF THE TEMPORARY BRIDGE AND ITS APPROACHES, INCLUDING TEMPORARY TRAFFIC BARRIER, PAVEMENT, PAVEMENT MARKINGS, AND REMOVING AND RESETTING THE EXISTING GUARDRAIL (SEE PLAN SHEET (2) AND PLAN SHEET (3)) WILL BE INCLUDED IN THE UNIT PRICE BID FOR CONTRACT ITEM 528.11, "TWO-WAY TEMPORARY BRIDGE".

13. SIX TREES NEED TO BE REMOVED IN ORDER TO INSTALL THE TEMPORARY DETOUR (SEE PLAN SHEET (1)). PAYMENT FOR THE REMOVAL OF THESE TREES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 201.10, CLEARING AND GRUBBING INCLUDING INDIVIDUAL TREES AND STUMPS.

14. ADVISORY SIGNS SHALL BE POSTED IN ACCORDANCE WITH VAOT STANDARD E-107. PAYMENT FOR ALL AND OFF PROJECT SIGNING AND TRAFFIC CONTROL DEVICES, INCLUDING DRUMS AND BARRICADES, WILL BE PAID FOR UNDER CONTRACT ITEM 900.645 SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE).

15. LIMITS OF THE TEMPORARY DETOUR MUST BE WITHIN THE RIGHT-OF-WAY. SEE ROW SHEETS.

16. THE AREA DISTURBED BY THE TEMPORARY DETOUR SHALL BE SEEDED AND MULCHED AFTER ALL THE FILL IS REMOVED TO THE FINAL GROUND ELEVATION. THE COST OF THE SEED, FERTILIZER AND MULCH WILL BE PAID FOR UNDER THEIR RESPECTIVE ITEMS. ANY DAMAGE TO THE EXISTING PAVEMENT AS A RESULT OF THE TEMPORARY DETOUR SHALL BE REPAIRED TO THE ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.

CONCRETE

17. DEWATERING OF THE EXCAVATED AREA FOR THE SUBSTRUCTURE IS ANTICIPATED, PAYMENT FOR DESIGNING, CONSTRUCTING AND MAINTAINING A DEWATERING AREA SHALL BE CONSIDERED INCIDENTAL TO CONTRACT ITEM 204.25, STRUCTURE EXCAVATION.

18. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1 INCH BY 1 INCH.

19. JOINTS AND SCORE MARKS IN CONCRETE SHALL BE CONSTRUCTED AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

20. REINFORCING PLACEMENT TOLERANCES SHALL BE:
    SPACING ± 1 INCH
    CLEARANCE ± ¼ INCH

21. THE DECK, CURBS ON THE BRIDGE, AND THE PORTIONS OF ABUTMENT # 1 ABOVE THE CONSTRUCTION JOINT IN THE BACKWALL (SEE EXPANSION JOINT DETAILS), SHALL BE CONCRETE, HIGH PERFORMANCE CLASS A. ALL OTHER CONCRETE SHALL BE CONCRETE, HIGH PERFORMANCE CLASS B.

22. FOR BRIDGE DECK PLACEMENT, THE MAXIMUM TIME LIMIT FOR ANY COMBINATION OF PLACEMENTS DONE IN ANY ONE DAY SHALL BE EIGHT HOURS. THERE SHALL BE A MINIMUM OF 96 HOURS BETWEEN THE COMPLETION OF ONE DAY'S PLACEMENT AND THE BEGINNING OF OTHER ADJACENT PLACEMENT. ALL INDIVIDUAL DECK PLACEMENTS SHALL START FROM THE LOW END OF THE SECTION BEING PLACED.

23. NO CONCRETE IN THE ABUTMENTS OR WINGWALLS SHALL BE PLACED ABOVE THE BRIDGE SEAT CONSTRUCTION JOINT UNTIL THE GIRDERS HAVE BEEN PROFILED AND THE FINISHED GRADE OF THE DECK HAS BEEN DETERMINED.

24. SURFACES OF BRIDGE SEATS UNDER BEARING DEVICES SHALL BE LEVEL. ALL OTHER AREAS OF THE BRIDGE SEATS SHALL BE SLOPED AWAY FROM THE BEARING DEVICES AT A RATE OF 0.04 FT/FT. THE ENTIRE BRIDGE SEAT SURFACE SHALL BE GIVEN A MAGNESIUM FLOAT FINISH.

25. WATER REPELLENT, SILANE SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES EXCEPT THE UNDERSIDE OF THE DECK BETWEEN THE DRIP NOTCHES.

26. FLEMING BRACKETS OR SIMILAR FALSE WORK SHALL BE PLACED AT A MAXIMUM SPACING OF 4'-0" ALONG THE FASCIA GIRDERS. THE BRACKETS SHALL BEAR NEAR THE BOTTOM FLANGE AND IN NO CASE SHALL THEY BEAR ABOVE THE BOTTOM QUARTER OF THE WEB DEPTH.

27. ALL REINFORCING IN THE DECK, BRIDGE CURBS AND IN THE BACKWALL SHALL BE EPOXY COATED. EPOXY COATED REINFORCING STEEL IS DENOTED IN THE REINFORCING STEEL SCHEDULE WITH A PREFIX OF "E". ALL OTHER REINFORCING SHALL BE PLAIN REINFORCING.

28. ALL REINFORCING STEEL SHALL BE DETAILED AND FABRICATED IN ACCORDANCE WITH THE PROCEDURES AND TOLERANCES IN APPLICABLE PUBLICATIONS OF THE "CONCRETE REINFORCING STEEL INSTITUTE".

29. ALL EPOXY REINFORCING STEEL TO BE CUT IN THE FIELD SHALL BE SAW CUT AND THE EXPOSED ENDS TREATED WITH AN APPROVED TWO-PART EPOXY REPAIR MATERIAL.

30. MINIMUM CLEAR COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

ALONG BACK FACES OF WALLS AGAINST EARTH:	2 INCHES
ALONG TOP SURFACE OF DECK SLAB:	2.5 INCHES
ALONG BOTTOM SURFACE OF DECK SLAB:	1.5 INCHES
ELSEWHERE UNLESS OTHERWISE INDICATED:	3 INCHES

STRUCTURAL STEEL

31. THE COST FOR CUTTING THE EXISTING STEEL AND FIELD DRILLING THE HOLES IN THE EXISTING STEEL, FOR THE NEW FIELD SPLICE WILL BE CONSIDERED INCIDENTAL TO THE UNIT PRICE BID FOR CONTRACT ITEM 506.55, STRUCTURAL STEEL PLATE GIRDER. THE COST FOR FIELD DRILLING THE HOLES NEEDED TO ATTACH THE WATER MAIN SUPPORTS TO INTERMEDIATE CROSS FRAMES AND TO THE INTERMEDIATE WATER LINE SUPPORTS SHALL BE CONSIDERED INCIDENTAL TO THE UNIT PRICE BID FOR ITEM 900.645 SPECIAL PROVISION (WATER MAIN ON BRIDGE) (16") (CL 52).

32. UNLESS OTHERWISE NOTED, ALL NEW STRUCTURAL STEEL SHALL CONFORM TO AASHTO M270M/M270 GRADE 50W AND SHALL BE PAID FOR UNDER ITEM 506.55, STRUCTURAL STEEL, PLATE GIRDER. THE STRUCTURAL STEEL FOR THE DOWNSPOUT AND HARDWARE SHALL BE AS SPECIFIED ON DOWNSPOUT DETAILS SHEET AND SHALL ALSO BE PAID FOR UNDER ITEM 506.55, STRUCTURAL STEEL, PLATE GIRDER.

33. CHARPY V-NOTCH TEST: TEST STRUCTURAL STEEL MEMBERS DESIGNATED "CVN" IN THE PLANS IN ACCORDANCE WITH SUBSECTION 714.01.

34. THE WESTERN ENDS OF ALL SIX GIRDERS SHALL BE PAINTED FOR A DISTANCE OF 10 FEET FROM THE CENTERLINE OF BEARING AT ABUTMENT 1. ALL CROSS-FRAMES, DIAPHRAGMS AND CONNECTION OR STIFFENER PLATES IN THIS AREA SHALL ALSO BE PAINTED. THE FINAL COLOR SHALL BE BROWN IN CONFORMANCE WITH SUBSECTION 708.03 OF THE STANDARD SPECIFICATIONS. BROWN GREASE, CONFORMING TO SUBSECTION 708.04 SHALL BE APPLIED TO ALL PAINTED AREAS. PAYMENT WILL BE MADE UNDER ITEM 900.645 SPECIAL PROVISION (QC/QA CLEANING AND PAINTING STRUCTURAL COMPONENTS).

35. THE ENDS OF THE GIRDERS SHALL BE VERTICAL UNDER FULL DEAD LOAD.

36. ANY CONNECTIONS THAT ARE NOT DETAILED ON THE PLANS SHALL BE DETAILED BY THE FABRICATOR AND SUBMITTED TO THE ENGINEER FOR APPROVAL.

37. ANY HOLES IN THE WEBS OF THE FASCIA GIRDERS THAT ARE NOT OTHERWISE FILLED WILL BE FILLED WITH EITHER BUTTON HEAD OR HEX HEAD BOLTS, WHICH SHALL BE TIGHTENED AS PER SUBSECTION 506.19.

38. ALL FIELD CONNECTIONS SHALL BE MADE USING 7/8" DIAMETER, AASHTO M164M/M164 BOLTS IN 15/16" HOLES UNLESS OTHERWISE NOTED.

39. AFTER THE GIRDERS HAVE BEEN ERECTED, ELEVATIONS SHALL BE TAKEN ALONG THE TOPS OF THE GIRDERS, AS DIRECTED BY THE ENGINEER, FOR USE IN DETERMINING THE FINAL GRADE.

STONE FILL

40. THE STONE FILL, TYPE IV SHALL BE PLACED IN FRONT OF THE ABUTMENT AND AROUND PIER 1 BEFORE THE STRUCTURAL STEEL HAS BEEN SET.

WATER LINE

41. ANY DAMAGE TO THE EXISTING ROADWAY INCURRED DURING THE RELOCATION OF THE EXISTING WATER MAIN SHALL BE REPAIRED TO THE ORIGINAL CONDITION. THIS WORK SHALL BE INCIDENTAL TO ITEM 900.645 SPECIAL PROVISION (WATER MAIN ON BRIDGE)(16") (CL52).

42. THE DESIGN AND INSTALLATION OF A TEMPORARY WATER MAIN SYSTEM WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE DONE IN ACCORDANCE TO THE PLANS AND TO SECTION 629. THE SYSTEM SHALL MAINTAIN THE SAME DESIGN FLOWS AS THE EXISTING SYSTEM. PAYMENT FOR THE TEMPORARY WATER MAIN AND ANY PIPES, FITTINGS, ATTACHMENTS, TESTING AND EXCAVATION REQUIRED TO BUILD A COMPLETE, FUNCTIONAL SYSTEM TO THE SATISFACTION OF THE ENGINEER SHALL BE INCLUDED IN THE COST FOR CONTRACT ITEM 900.645 SPECIAL PROVISION (MAINTENANCE OF EXISTING FLOWS).

43. THE WATER MAIN THAT IS CURRENTLY IN USE, WHICH CONNECTS TO THE WATER MAIN ON THE BRIDGE AT APPROXIMATELY STA. 66+24 AND IS BURIED BETWEEN STA. 64+65 AND 66+10, SHALL REMAIN IN PLACE UNTIL SOME OTHER METHOD OF MAINTAINING THE WATER FLOW HAS BEEN ESTABLISHED. WHEN THIS MAIN IS NO LONGER NECESSARY, IT SHALL BE REMOVED. THE REMOVED MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR. PAYMENT FOR THIS WORK WILL BE CONSIDERED INCIDENTAL TO ITEM 900.645 SPECIAL PROVISION (WATER MAIN ON BRIDGE) (16") (CL 52).

PROJECT NAME: WOODFORD
PROJECT NUMBER: ER BHF 010-1(44)

FILE NAME: sllb214gennote.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: M.EVANS-MONGEON
PROJECT NOTES

PLOT DATE: 23-MAR-2012
DRAWN BY: M.EVANS-MONGE
CHECKED BY: C.CARLSON
SHEET 3 OF 58

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES							TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
ROADWAY	EROSION CONTROL	UTIL. (NON-PARTIC.)	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
													EARTHWORKS SUMMARY
1					1		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10				
1170					1170		CY	COMMON EXCAVATION	203.15	6.26	0	CY	FILL REQUIRED
830			7730		8560		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27	9.95			FILL AVAILABLE:
1					1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22		1164	CY	COMMON EXCAVATION: 1164 X 1.0
			2020		2020		CY	STRUCTURE EXCAVATION	204.25	1.4	8850	CY	UNCLASSIFIED CHANNEL EXCAVATION: 8850 X 1.0
			1300		1300		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30	2.96	2019	CY	STRUCTURE EXCAVATION: 2019 X 1.0
476			121		597		SY	COLD PLANING, BITUMINOUS PAVEMENT	210.10	1.4	12033	CY	SUBTOTAL
830					830		CY	SUBBASE OF CRUSHED GRAVEL, COARSE GRADED	301.25	7.28	7	CY	ROUNDING
2.3			1.7		4		CWT	EMULSIFIED ASPHALT	404.65	0.14	12040	CY	TOTAL
1					1		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50				
			159		159		CY	CONCRETE, HIGH PERFORMANCE CLASS A	501.33	1.08	12040	CY	FILL AVAILABLE
			553		553		CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34	1.61	0	CY	FILL REQUIRED
			114010		114010		LB	STRUCTURAL STEEL, PLATE GIRDER	506.55	8.16	12040	CY	WASTE
			82170		82170		LB	REINFORCING STEEL, LEVEL I	507.11	1.64			
			1		1		LS	SHEAR CONNECTORS (1400 - 7/8" X 7")	508.15				
			20		20		GAL	WATER REPELLENT, SILANE	514.10	2.79			
			67		67		LF	BRIDGE EXPANSION JOINT, VERMONT	516.11				
			528		528		SY	SHEET MEMBRANE WATERPROOFING, TORCH APPLIED	519.20	0.34			
			240		240		LF	BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM	525.33				
1					1		LS	TWO-WAY TEMPORARY BRIDGE (3600 SF - EST.)	528.11				
			150		150		SY	REMOVAL OF BRIDGE PAVEMENT	529.10	7.34			
			1		1		EACH	PARTIAL REMOVAL OF STRUCTURE	529.20				
			6		6		EACH	BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD	531.17				
590			2660		3250		CY	STONE FILL, TYPE IV	613.13	0.23			
80					80		LF	CAST-IN-PLACE CONCRETE CURB, TYPE B	616.28				
75					75		LF	STEEL BEAM GUARDRAIL, GALVANIZED	621.20	1.8			
1					1		EACH	MANUFACTURED TERMINAL SECTION, FLARED	621.50				
2					2		EACH	GUARDRAIL APPROACH SECTION, GALVANIZED 2 RAIL BOX BEAM	621.72				
1600					1600		HR	FLAGGERS	630.15				
				1	1		LS	FIELD OFFICE, ENGINEERS	631.10				
				1	1		LS	TESTING EQUIPMENT, CONCRETE	631.16				
				1	1		LS	TESTING EQUIPMENT, BITUMINOUS	631.17				
				800	800		DL	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.26				
1					1		LS	MOBILIZATION/DEMOBILIZATION	635.11				
811					811		LF	4 INCH WHITE LINE	646.20				
811					811		LF	4 INCH YELLOW LINE	646.21				
530			2070		2600		SY	GEOTEXTILE UNDER STONE FILL	649.31	2.69			
	100				100		SY	GEOTEXTILE FOR SILT FENCE	649.51	9.9			
	210				210		SY	GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED	649.515	5.8			
	220				220		SY	GEOTEXTILE FOR FILTER CURTAIN	649.61	1			

PROJECT NAME: WOODFORD
PROJECT NUMBER: ER BHF 010 -1 (44)

FILE NAME: s11b214_qs.xls
PROJECT LEADER: C. CARLSON
DESIGNED BY: EVANS-MONGEON
QUANTITY SHEET #1

PLOT DATE: 03/23/2012
DRAWN BY: G. ROY
CHECKED BY: EVANS-MONGEO

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
						ROADWAY	EROSION CONTROL	UTIL. (NON-PARTIC.)	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
							50				50		LB	SEED	651.15	8			
							350				350		LB	FERTILIZER	651.18				
							1.4				1.4		TON	AGRICULTURAL LIMESTONE	651.20				
							1.4				1.4		TON	HAY MULCH	651.25				
							130				130		CY	TOPSOIL	651.35	2.3			
							1210				1210		SY	GRUBBING MATERIAL	651.40	9.31			
							1				1		LS	EPSC PLAN	652.10				
							70				70		HR	MONITORING EPSC PLAN	652.20				
							1				1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30				
							1190				1190		SY	TEMPORARY EROSION MATTING	653.20	6.11			
							30				30		CY	VEHICLE TRACKING PAD	653.35				
							400				400		LF	BARRIER FENCE	653.50	1.2			
							1130				1130		LF	PROJECT DEMARCATION FENCE	653.55	2.6			
						1					1		LU	PRICE ADJUSTMENT, FUEL (N.A.B.I.)	690.50				
								1			1		LS	SPECIAL PROVISION (MAINTENANCE OF EXISTING FLOWS)	900.645				
									1		1		LS	SPECIAL PROVISION (QC/QA CLEANING AND PAINTING STRUCTURAL COMPONENTS)	900.645				
						1					1		LS	SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE)	900.645				
								1			1		LS	SPECIAL PROVISION (WATER MAIN ON BRIDGE)(16")(CL 52)	900.645				
						1					1		LU	SPECIAL PROVISION (MAT DENSITY PAY ADJUSTMENT SMALL QUANTITY) (N.A.B.I.)	900.650				
						1					1		LU	SPECIAL PROVISION (MIXTURE PAY ADJUSTMENT) (N.A.B.I)	900.650				
						349			110		459		TON	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680	1.15			

PROJECT NAME: WOODFORD
PROJECT NUMBER: ER BHF 010 -1 (44)

FILE NAME: s11b214_qs.xls
PROJECT LEADER: C. CARLSON
DESIGNED BY: EVANS-MONGEON
QUANTITY SHEET #2

PLOT DATE: 03/30/2012
DRAWN BY: G. ROY
CHECKED BY: EVANS-MONGEO

STATE OF VERMONT
AGENCY OF TRANSPORTATION

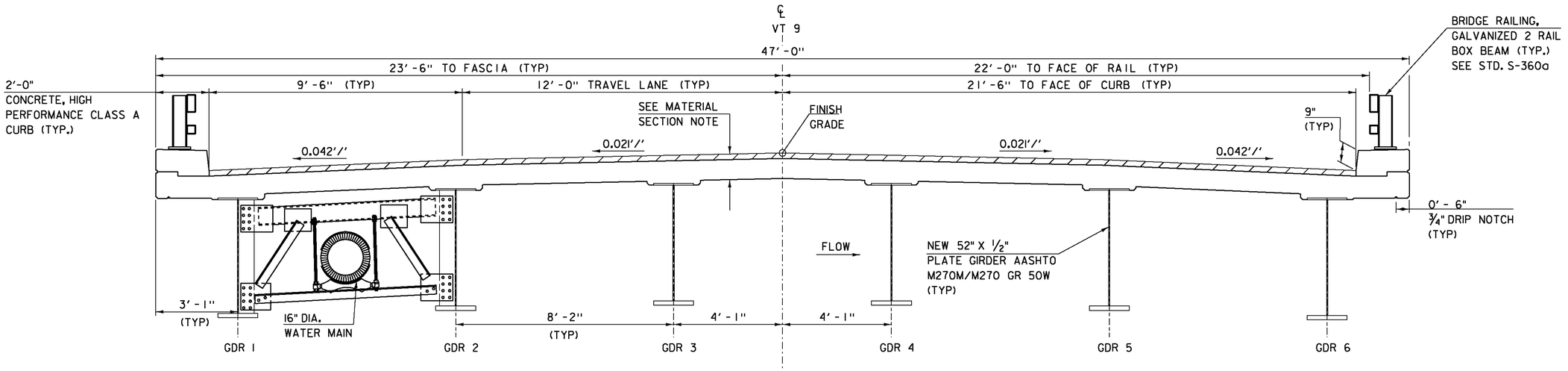
BRIDGE QUANTITY SHEET 1

SUMMARY OF BRIDGE QUANTITIES				TOTALS	DESCRIPTIONS			DETAILED SUMMARY OF QUANTITIES		
CHANNEL	SUPER-STRUCTURE	APPROACH SLAB	ABUTMENT 1	BRIDGE TOTAL	UNIT	ITEMS	ITEM NUMBER	QUANTITIES	UNIT	ITEMS
7730				7730	CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27			
			2020	2020	CY	STRUCTURE EXCAVATION	204.25			
			1300	1300	CY	GRANULAR BACKFILL FOR STRUCTURES	204.30			
	121			121	SY	COLD PLANING, BITUMINOUS PAVEMENT	210.10			
	1.4	0.3		1.7	CWT	EMULSIFIED ASPHALT	404.65			
	155		4	159	CY	CONCRETE, HIGH PERFORMANCE CLASS A	501.33			
		54	499	553	CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34			
	114010			114010	LB	STRUCTURAL STEEL, PLATE GIRDER	506.55			
	37810	7010	37350	82170	LB	REINFORCING STEEL, LEVEL I	507.11			
	1			1	LS	SHEAR CONNECTORS (1400 - 7/8" X 7")	508.15			
	10		10	20	GAL	WATER REPELLENT, SILANE	514.10			
	67			67	LF	BRIDGE EXPANSION JOINT, VERMONT	516.11			
	528			528	SY	SHEET MEMBRANE WATERPROOFING, TORCH APPLIED	519.20			
	240			240	LF	BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM	525.33			
	150			150	SY	REMOVAL OF BRIDGE PAVEMENT	529.10			
	1			1	EACH	PARTIAL REMOVAL OF STRUCTURE	529.20			
			6	6	EACH	BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD	531.17			
2660				2660	CY	STONE FILL, TYPE IV	613.13			
2070				2070	SY	GEOTEXTILE UNDER STONE FILL	649.31			
	1			1	LS	SPECIAL PROVISION (QC/QA CLEANING AND PAINTING STRUCTURAL COMPONENTS)	900.645			
	91	19		110	TON	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680			

PROJECT NAME: WOODFORD
PROJECT NUMBER: ER BHF 010 -1 (44)

FILE NAME: s11b214_qs.xls
PROJECT LEADER: C. CARLSON
DESIGNED BY: EVANS-MONGEON
BRIDGE QUANTITY SHEET #1

PLOT DATE: 03/23/2012
DRAWN BY: G. ROY
CHECKED BY: EVANS-MONGEO

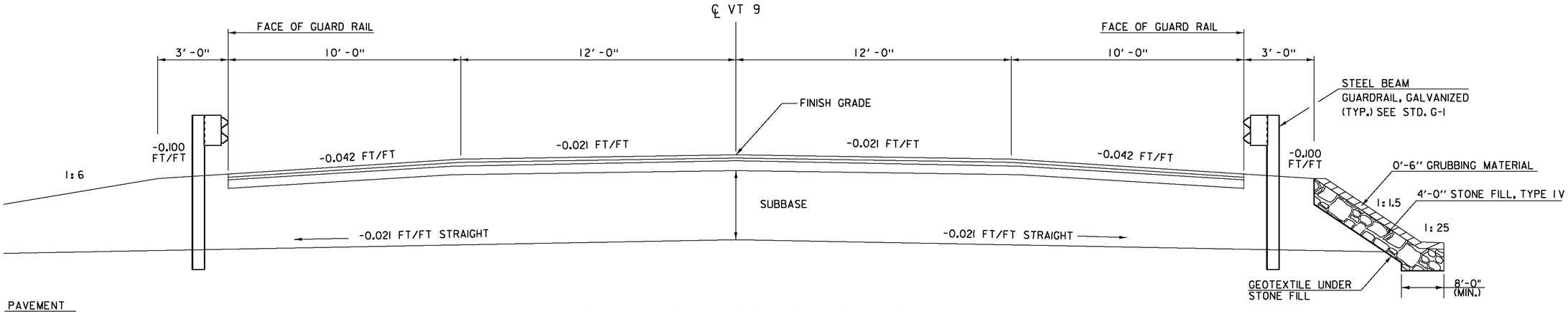


NEW BRIDGE TYPICAL SECTION

SCALE ½" = 1'=0"

MATERIAL SECTION
1½" TYPE IVS SPECIAL PROVISION, (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)
1¼" TYPE IVS SPECIAL PROVISION, (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)
SHEET MEMBRANE WATERPROOFING, TORCH APPLED
8½" DECK CONCRETE, HIGH PERFORMANCE CLASS A

TACK COAT: EMULSIFIED ASPHALT SHALL BE APPLIED AT THE RATE OF 0.040 GAL / SY BETWEEN SUCCESIVE COARSES OF PAVEMENT AS DIRECTED BY THE ENGINEER.

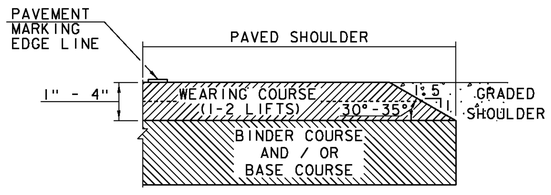


ROADWAY NORMAL SECTION WITH GUARD RAIL

NTS

1½" SPECIAL PROVISION, (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY), TYPE IVS
1¼" SPECIAL PROVISION, (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY), TYPE IVS
5" SPECIAL PROVISION, (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY), TYPE IIS (TWO LIFTS OF 2½")
36" SUBBASE OF CRUSHED GRAVEL, COARSE GRADED

TACK COAT: EMULSIFIED ASPHALT SHALL BE APPLIED AT THE RATE OF 0.040 GAL / SY BETWEEN SUCCESIVE COARSES OF PAVEMENT AS DIRECTED BY THE ENGINEER.



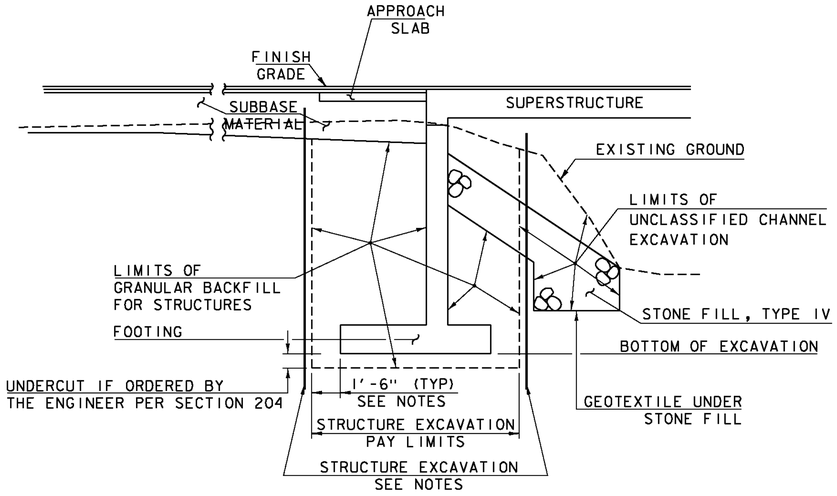
SAFETY EDGE DETAIL

NOT TO SCALE

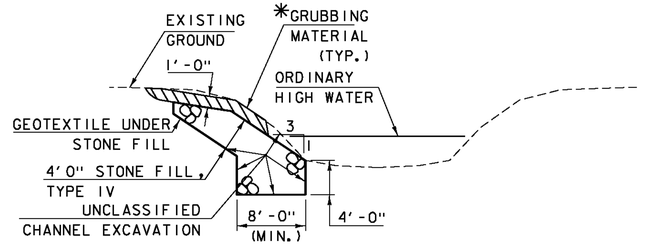
NOTE: LEVELING COURSE MAY INCLUDE THE "SAFETY EDGE" AT THE CONTRACTOR'S CHOICE.

MATERIAL ITEM	THICKNESS TOLERANCE
PAVEMENT (TOTAL DEPTH)	±¼"
SUBBASE	±1"

PROJECT NAME:	WOODFORD
PROJECT NUMBER:	ER BHF 010-1(44)
FILE NAME: s11b214typ.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: C. MOONEY
DESIGNED BY: M. EVANS-MONGEON	CHECKED BY: EVANS-MONGEON
PROJECT TYPICAL SECTIONS	SHEET 7 OF 58



EARTHWORK SECTION
(NOT TO SCALE)



TYPICAL CHANNEL SECTION
(NOT TO SCALE)

*GRUBBING MATERIAL SHALL NOT BE PLACED ON THE STONE FILL IN THE AREA UNDER THE BRIDGE. WHENEVER CHANNEL SLOPE INTERSECTS ROADWAY SUBBASE, GRUBBING MATERIAL SHALL BEGIN AT THE BOTTOM OF SUBBASE.

STRUCTURE EXCAVATION NOTES

1. THE PAY LIMITS OF "STRUCTURE EXCAVATION" SHALL BE 1'-6" OUTSIDE THE PERIMETER OF THE FOOTING AND FROM BOTTOM OF EXCAVATION UP TO THE EXISTING GROUND OR BOTTOM OF SUBBASE, WHICHEVER IS LOWER.

2. IF AN EXCAVATION IS CONSTRUCTED WHICH IS LARGER THAN THE INDICATED STRUCTURE EXCAVATION PAY LIMITS, PAYMENT FOR ALL UNCLASSIFIED CHANNEL EXCAVATION, INCLUDING THAT PORTION WHICH IS INSIDE THE EXCAVATION BUT OUTSIDE THE STRUCTURE EXCAVATION PAY LIMITS, WILL BE MADE AT THE CONTRACT UNIT PRICE FOR UNCLASSIFIED CHANNEL EXCAVATION. NO MEASUREMENT AND PAYMENT WILL BE MADE FOR STRUCTURE EXCAVATION AND GRANULAR BACKFILL FOR STRUCTURES OUTSIDE THE PAY LIMITS DEFINED IN NOTE 1.

PROJECT NAME:	WOODFORD
PROJECT NUMBER:	ER BHF 010-1(44)
FILE NAME: sllb214typ.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: C. MOONEY
DESIGNED BY: M. EVANS-MONGEON	CHECKED BY: EVANS-MONGEON
EARTHWORK SECTIONS	SHEET 8 OF 58

GPS CONTROL POINTS

HVCTRL #1

B95011

NORTH = 141197.186
EAST = 1467159.125
ELEV. = 1020.450

GENERAL LOCATION, WOODFORD, VT., ABOUT 2.5 MI (4.0 KM) EAST OF BENNINGTON, VT. TO REACH FROM THE INTERSECTION OF U.S. ROUTE 7 AND VT ROUTE 9 IN BENNINGTON GO EAST ALONG VT ROUTE 9 FOR 2.7 MI (4.3 KM) TO THE MOST NORTHEASTERLY GRAVEL DRIVE LEFT TO THE AVALON MOTEL AND MINI MART AND THE MARK ON THE LEFT. THE MARK IS SET 10 CM BELOW GROUND SURFACE IN THE TOP OF A 30 CM DIAMETER CONCRETE MONUMENT POURED TO A DEPTH OF 1.4 M (4.6 FT) . IT IS 9.3 M (30.5 FT) NORTHWEST OF AND ABOUT 0.3 M (1.0 FT) LOWER THAN THE CENTERLINE OF VT ROUTE 9, 4.9 M (16.1 FT) SOUTHWEST OF THE CENTERLINE OF THE GRAVEL DRIVE TO THE MOTEL, 7.3 M (24.0 FT) EAST OF THE SOUTHWEST END OF A METAL CULVERT, 18.4 M (60.4 FT) SOUTH OF A 20 CM PINE, AND 1.1 M (3.6 FT) SOUTHEAST OF A FIBERGLASS WITNESS POST. NOTE, THIS MARK IS INTERVISIBLE WITH B95012.

HVCTRL #2

B95012

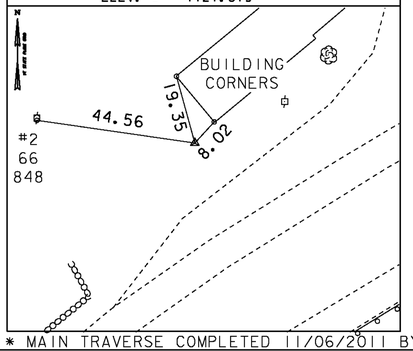
NORTH = 142071.296
EAST = 1468110.302
ELEV. = 1047.270

GENERAL LOCATION, WOODFORD, VT., ABOUT 3 MI (4.8 KM) EAST OF BENNINGTON, VT. TO REACH FROM THE INTERSECTION OF U.S. ROUTE 7 AND VT ROUTE 9 IN BENNINGTON GO EAST ALONG VT ROUTE 9 FOR 3.0 MI (4.8 KM) TO A POWERLINE CROSSING AND THE MARK ON THE RIGHT. THE MARK IS SET FLUSH WITH GROUND SURFACE IN THE TOP OF A 30 CM DIAMETER CONCRETE MONUMENT POURED TO A DEPTH OF 1.4 M (4.6 FT) . IT IS 10.6 M (34.8 FT) SOUTH OF AND ABOUT 0.5 M (1.6 FT) LOWER THAN THE CENTERLINE OF VT ROUTE 9, 8.4 M (27.6 FT) NORTHEAST OF POWER POLE NO. 18, 25.3 M (83.0 FT) SOUTH OF POLE NO. 52/864, 23.7 M (77.8 FT) WEST OF THE SOUTHWEST END OF A 70-CM DIAMETER METAL CULVERT, AND 0.7 M (2.3 FT) NORTH OF A FIBERGLASS WITNESS POST. NOTE, THIS MARK IS INTERVISIBLE WITH B95011.

TRAVERSE TIES

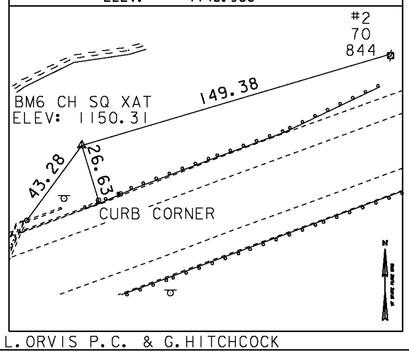
HVCTRL #5

NORTH = 144728.843
EAST = 1470294.263
ELEV. = 1127.679



HVCTRL 36

NORTH = 145028.487
EAST = 1471026.661
ELEV. = 1148.960



HVCTRL

NORTH =
EAST =
ELEV. =

HVCTRL

NORTH =
EAST =
ELEV. =

HVCTRL

NORTH =
EAST =
ELEV. =

* MAIN TRAVERSE COMPLETED 11/06/2011 BY L.ORVIS P.C. & G.HITCHCOCK

ALIGNMENT TIES

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

DATUM

VERTICAL NAVD 88
HORIZONTAL NAD 83 (07)
ADJUSTMENT COMPASS

PROJECT NAME: WOODFORD
PROJECT NUMBER: ER-BHF 010-1(44)

FILE NAME: survey\x11b214ti.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY:
TIE SHEET

PLOT DATE: 23-MAR-2012
DRAWN BY: R. BULLOCK
CHECKED BY:
SHEET 9 OF 58

N

VT STATE PLANE GRID

EXISTING EVERGREEN TREE (REMOVE)

EXISTING DECIDUOUS TREE (REMOVE)

67-1
847-1

GUY WIRE

2
67
847

AER E&T

GRAVEL DRIVE

R.O.W. LIMIT

DETOUR PI 2 BK STA. 204+89.27 AH STA. 204+88.90

S. BIRCH

S. PINE

S. MAPLE

SHRUB

S. PINE S. PINE S. PINE 205+00

S. MAPLE S. BIRCH

DETOUR PI 2 STA 203+47.69

STA. 63+00

MATCH LINE A-A

VT 9 PT 1 STA 62+61.66

2
66
848

AER E&T

WF HO

LP

YEW

TRAV PT 5

VT 9 PI 1 BK STA 60+38.88 AH STA 60+60.59

STONE WALL

N 50° 04' 31" M

204+00

203+00

202+00

201+00

200+00

62+00

61+00

60+00

59+00

58+00

57+38

DETOUR PI 1 BK STA 201+16.83 AH STA 201+16.83

DETOUR PC 2 STA 204+30.55

2
65
849

WOODS

66A
848A

GUY WIRE

VT 9
TO BENNINGTON

GV

GRAVEL DRIVE

MB

2
65A

N 43° 15' 38" E

DETOUR PC 1 STA 200+00.06

57+50.06

DETOUR PT 1 STA 201+40.56

DETOUR PC 1 STA 200+93.16

VT 9 PC 1 STA 58+01.81

BM NO. 5
CHISELED SQUARE
ON HEADWALL
EL. 123.744

VT 9 CURVE IDATA

△ = 26°32'04"
D = 5°50'47"
R = 980.00
T = 231.07
L = 453.85
E = 26.87
BANK = 0.077 FT / FT

DETOUR CURVE 2 DATA

△ = 11°10' 44"
D = 9°32' 57"
R = 600.00
T = 58.72
L = 116.88
E = 2.87

DETOUR CURVE 1DATA

△ = 6° 47' 25"
D = 14°19' 26"
R = 400.00
T = 23.73
L = 47.41
E = 0.70

62+25.00
BEGIN APPROACH

R.O.W. LIMIT

SCALE 1" = 20'-0
20 0 20

PROJECT NAME: WOODFORD	
PROJECT NUMBER: ER BHF 010-1(44)	
FILE NAME: s11b214bdr.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: EVANS-MONGEON
DESIGNED BY: M.EVANS-MONGEON	CHECKED BY: G. ROY
PLAN SHEET (1)	SHEET 10 OF 58

64+00.00
END APPROACH
BEGIN PROJECT
F.G. 1140.96

64+90.93
BEGIN BRIDGE
F.G. 1144.26

66+00.50
END BRIDGE WORK
BEGIN APPROACH
F.G. 1147.44

DETOUR CURVE 3 DATA
Δ = 19°24' 14"
D = 14° 19' 26"
R = 400.00
T = 68.39
L = 134.82
E = 5.80

EXISTING (BURIED) WATER MAIN TO BE REMOVED SEE PROJECT NOTES

TEMPORARY DETOUR CONSTRUCTION LIMITS

CAST-IN-PLACE CONCRETE CURB, TYPE B
64+29.6 - 64+69.4 RT
64+72.5 - 65+12.9 LT

STEEL BEAM GUARDRAIL, GALVANIZED
64+36.8 - 64+85.0 LT
64+14.8 - 64+39.8 RT

GUARDRAIL APPROACH SECTION, GALVANIZED 2 RAIL BOX BEAM
64+85.0 - 65+15.2 LT
64+39.8 - 64+70.0 RT

MANUFACTURED TERMINAL SECTION, FLARED
63+99.0 - 64+36.8 LT

BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM
64+70.0 - 66+00.50 RT
65+15.2 - 66+00.50 LT

4" YELLOW LINE
62+25.0 - 66+30.5 DBL SOLID

4" WHITE LINE
62+25.0 - 66+30.5 LT
62+25.0 - 66+30.5 RT

STA. 63+00

STA. 69+00

MATCH LINE A-A

MATCH LINE B-B

AER E&T

R.O.W. LIMIT

DETOUR PI 3 STA 207+96.70 BK
STA 207+95.39 AH

DETOUR PT 3 STA 208+63.78

DETOUR PC 3 STA 207+28.31

N 61° 15' 15" E

N 69° 47' 42" E

N 80° 39' 29" E

S. BIRCH
S. ASH
S. ASH
S. BIRCH
S. MAPLE
S. PINE
S. PINE

GP
HYD
GV
3-GV

9'
10'
W

APPROXIMATE LOCATION OF TEMPORARY STRUCTURE

EXISTING 12" WATER LINE

TRAV PT 6

WOODS

STONE FILL, TYPE IV

CONSTRUCTION LIMITS

ROARING BRANCH OF THE WALLOOMSAC RIVER

BM NO. 6
CHISELED SQUARE ON ABUTMENT
EL. 1150.309

66+30.50
END APPROACH

VT STATE PLANE GRID

FOB STA 0+02.59
20+0

SCALE 1" = 20'-0
20 0 20

PROJECT NAME:	WOODFORD
PROJECT NUMBER:	ER BHF 010-1(44)
FILE NAME: sllb214bdr.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: EVANS-MONGEON
DESIGNED BY: M.EVANS-MONGEON	CHECKED BY: G. ROY
PLAN SHEET (2)	SHEET 11 OF 58

STA. 69+00

MATCH LINE B-B

GUY WIRE

GUY WIRE

2 TO 844

AER E&T

AER E&T

AER E&T

AER E&T

DETOUR PC 4
STA 212+74.94

DETOUR PT 4
STA 213+18.55

DETOUR CURVE 4 DATA
△ = 10° 51' 47"
D = 24° 54' 40"
R = 230.00
T = 21.87
L = 43.61
E = 1.04

WOODS

212+00

70+00

213+00

71+00

72+00

73+00

74+00

75+00

VT 9 → TO WILMINGTON

R.O.W. LIMIT

R.O.W. LIMIT

VT 9 PI 2
STA 73+37.04 BK
STA 73+23.10 AH

TRAV PT 7

N

VT STATE PLANE GRID

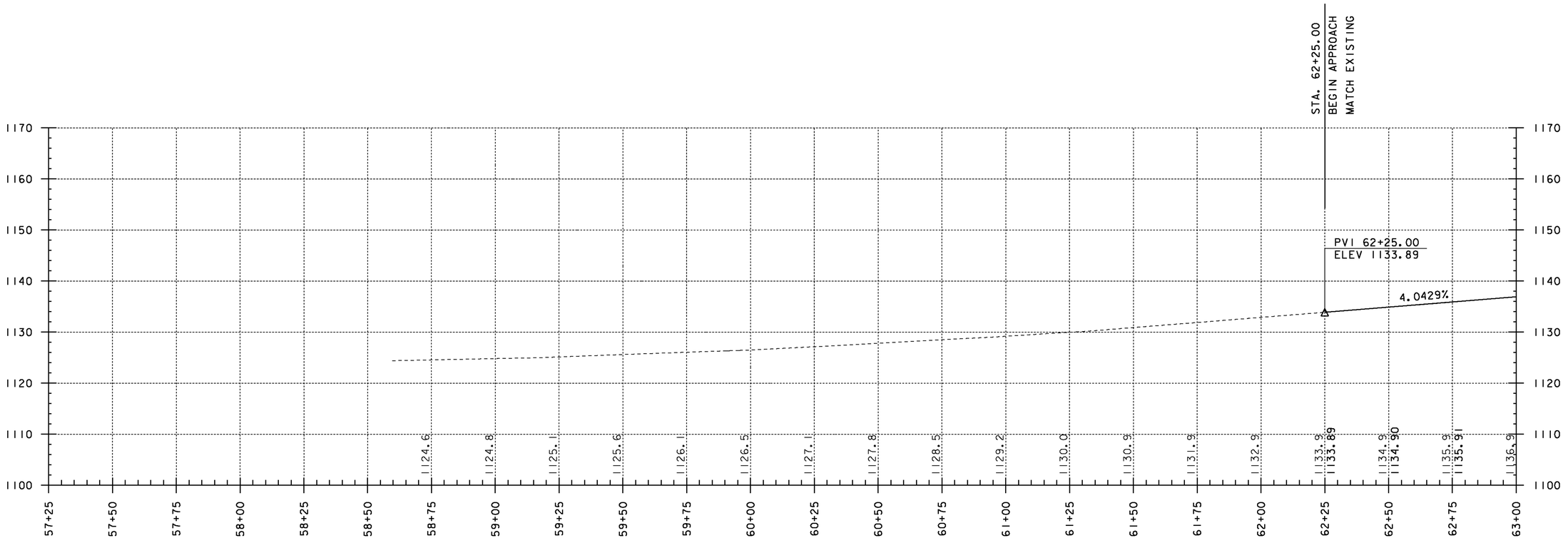
DETOUR PI 4
STA 212+96.81 BK
STA 212+96.68 AH

VT 9 PC 2
STA 70+46.43
= DETOUR PC 5
STA 213+18.95

VT 9 CURVE 2 DATA
△ = 30° 39' 47"
D = 5° 24' 19"
R = 1060.00
T = 290.61
L = 567.28
E = 39.12
BANK = 0.074 FT / FT

SCALE 1" = 20'-0
20 0 20

PROJECT NAME: WOODFORD	
PROJECT NUMBER: ER BHF 010-1(44)	
FILE NAME: s11b214bdr.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: EVANS-MONGEON
DESIGNED BY: M. EVANS-MONGEON	CHECKED BY: G. ROY
PLAN SHEET (3)	SHEET 12 OF 58



NOTE:

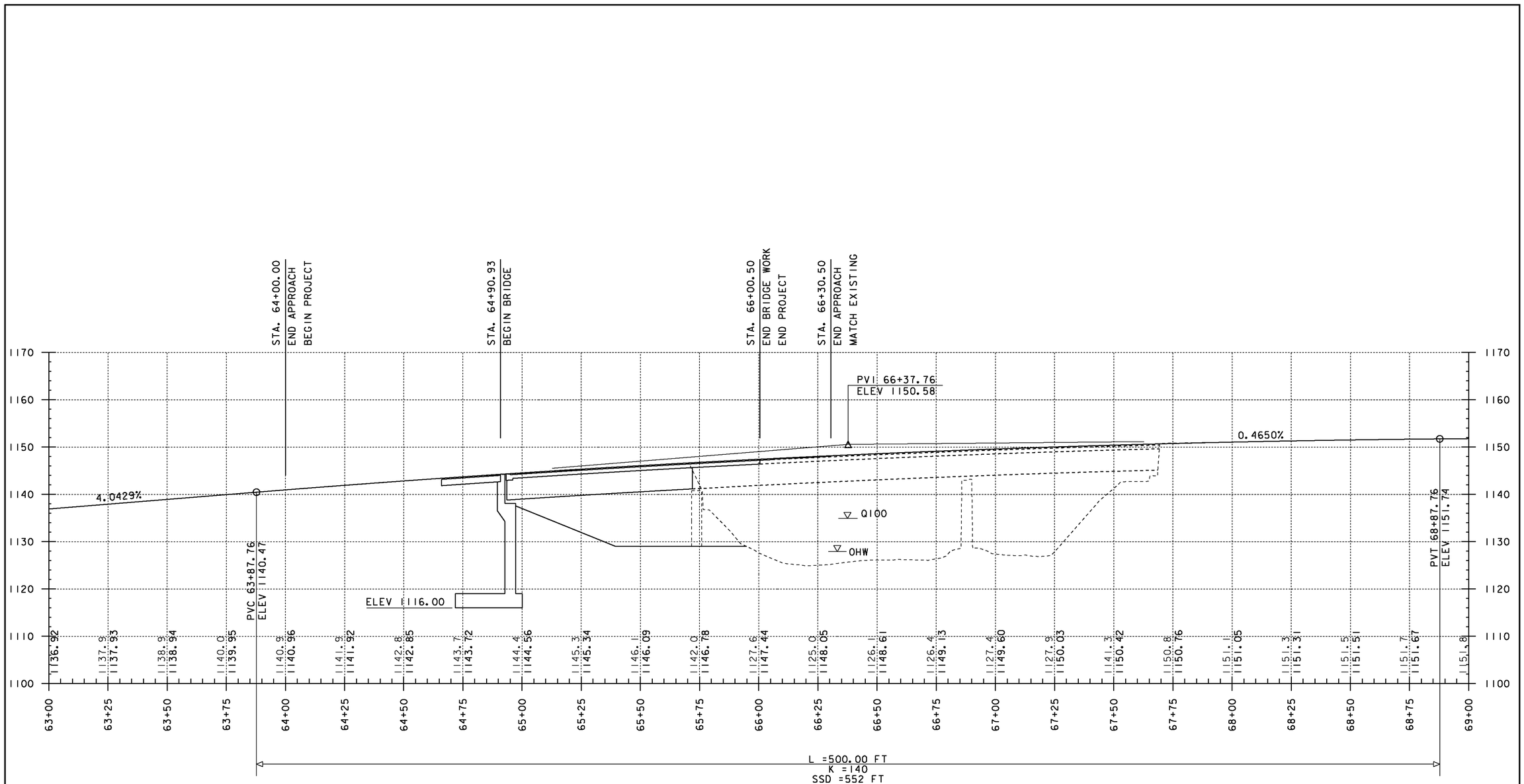
ELEVATIONS SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG PROPOSED CENTERLINE.

ELEVATIONS SHOWN TO THE NEAREST HUNDREDTH ARE FINISH GRADES ALONG PROPOSED CENTERLINE.

PROFILE ALONG VT 9

HORIZONTAL SCALE: 1" = 20'-0"
VERTICAL SCALE: 1" = 10'-0"

PROJECT NAME: WOODFORD	
PROJECT NUMBER: ER BHF 010-1(44)	
FILE NAME: s11b214xs.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: EVANS-MONGEON
DESIGNED BY: M.EVANS-MONGEON	CHECKED BY:
PROFILE SHEET (1)	SHEET 13 OF 58



NOTE:

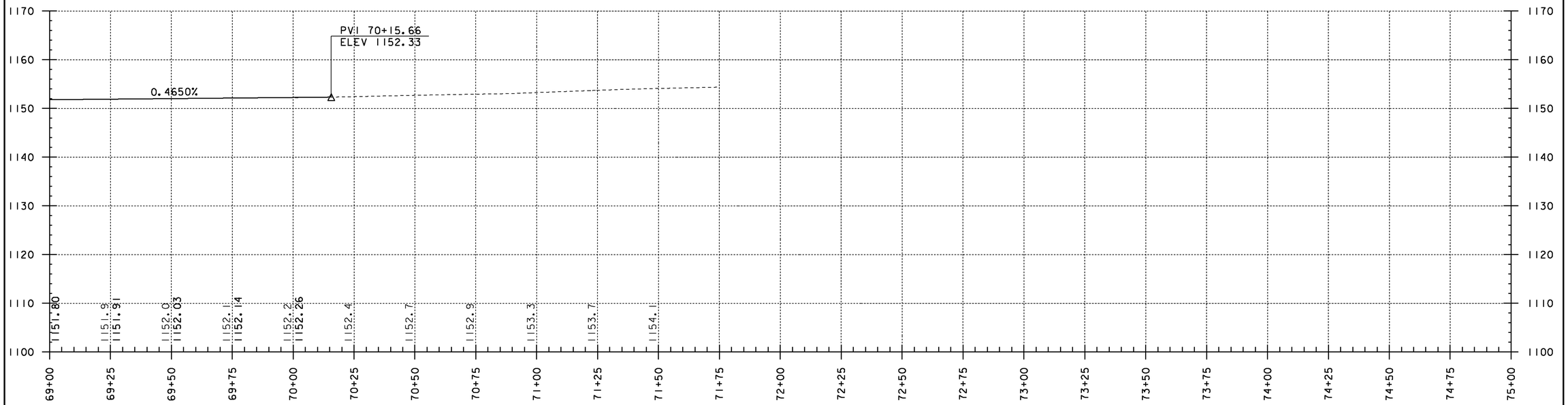
ELEVATIONS SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG PROPOSED CENTERLINE.

ELEVATIONS SHOWN TO THE NEAREST HUNDREDTH ARE FINISH GRADES ALONG PROPOSED CENTERLINE.

PROFILE ALONG VT 9

HORIZONTAL SCALE: 1" = 20'-0"
VERTICAL SCALE: 1" = 10'-0"

PROJECT NAME: WOODFORD	
PROJECT NUMBER: ER BHF 010-1(44)	
FILE NAME: sllb214xs.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: EVANS-MONGEON
DESIGNED BY: M.EVANS-MONGEON	CHECKED BY:
PROFILE SHEET (2)	SHEET 14 OF 58



NOTE:

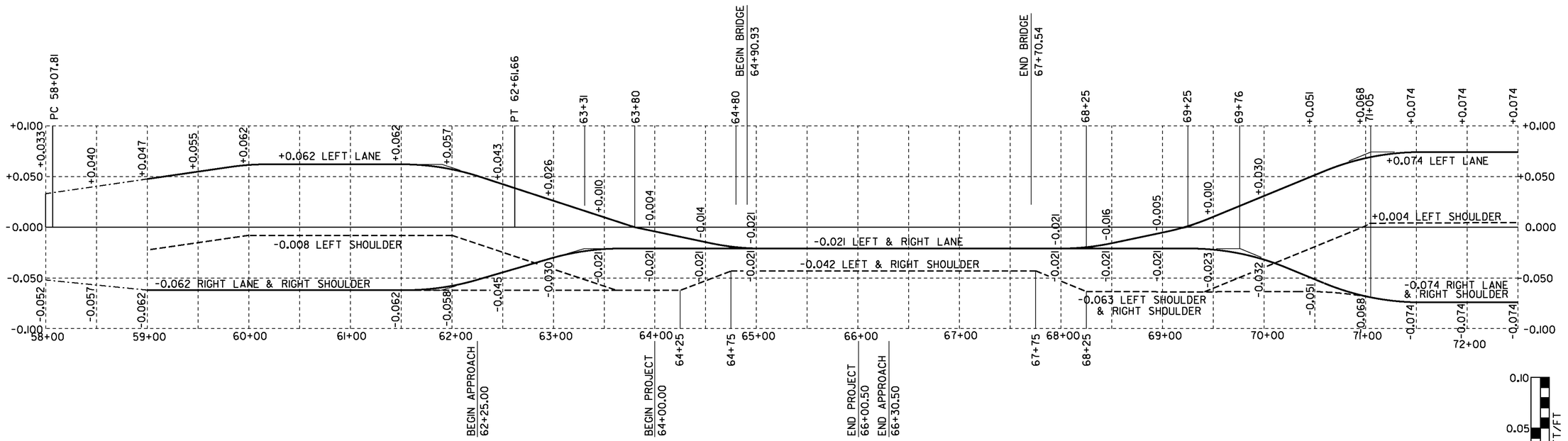
ELEVATIONS SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG PROPOSED CENTERLINE.

ELEVATIONS SHOWN TO THE NEAREST HUNDREDTH ARE FINISH GRADES ALONG PROPOSED CENTERLINE.

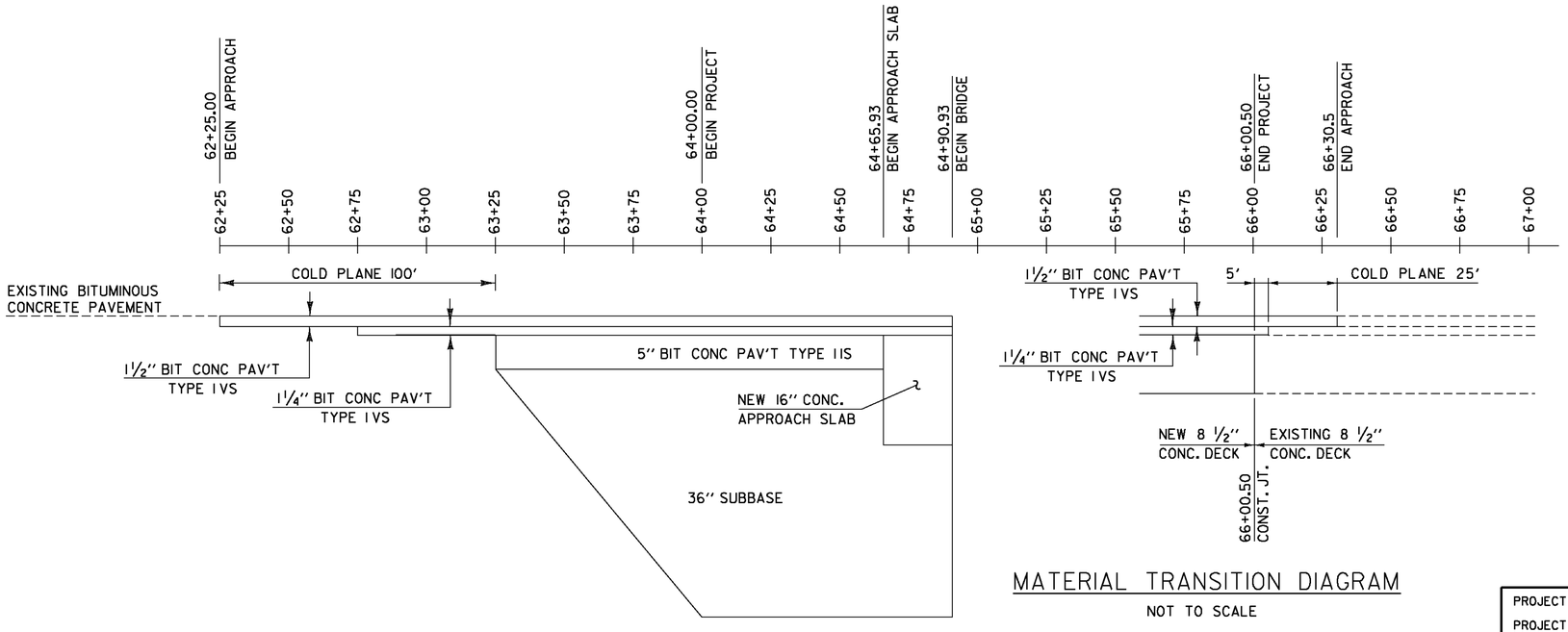
PROFILE ALONG VT 9

HORIZONTAL SCALE: 1" = 20'-0"
VERTICAL SCALE: 1" = 10'-0"

PROJECT NAME:	WOODFORD
PROJECT NUMBER:	ER BHF 010-1(44)
FILE NAME: sllb214xs.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: EVANS-MONGEON
DESIGNED BY: M.EVANS-MONGEON	CHECKED BY:
PROFILE SHEET (3)	SHEET 15 OF 58



BANKING DIAGRAM



MATERIAL TRANSITION DIAGRAM

NOT TO SCALE

PROJECT NAME:	WOODFORD
PROJECT NUMBER:	ER BHF 010-1(44)
FILE NAME: slib214banking.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: C. MOONEY
DESIGNED BY: M. EVANS-MONGEON	CHECKED BY: EVANS-MONGEON
BANKING DIAGRAM & MATERIAL TRANSITION	SHEET 16 OF 58

SOIL CLASSIFICATION

AASHTO	
A1	Gravel and Sand
A3	Fine Sand
A2	Silty or Clayey Gravel and Sand
A4	Silty Soil - Low Compressibility
A5	Silty Soil - Highly Compressible
A6	Clayey Soil - Low Compressibility
A7	Clayey Soil - Highly Compressible

ROCK QUALITY DESIGNATION

R.Q.D. (%)	ROCK DESCRIPTION
<25	Very Poor
25 to 50	Poor
51 to 75	Fair
76 to 90	Good
>90	Excellent

SHEAR STRENGTH

UNDRAINED SHEAR STRENGTH IN P.S.F.	CONSISTENCY
<250	Very Soft
250-500	Soft
500-1000	Med. Stiff
1000-2000	Stiff
2000-4000	Very Stiff
>4000	Hard

CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

DENSITY (GRANULAR SOILS)		CONSISTENCY (COHESIVE SOILS)	
N	DESCRIPTIVE TERM	N	DESCRIPTIVE TERM
<5	Very Loose	<2	Very Soft
5-10	Loose	2-4	Soft
11-24	Med. Dense	5-8	Med. Stiff
25-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very Stiff
		31-60	Hard
		>60	Very Hard

COMMONLY USED SYMBOLS

▼	Water Elevation
⊙	Standard Penetration Boring
⊕	Auger Boring
⊙	Rod Sounding
S	Sample
N	Standard Penetration Test Blow Count Per Foot For: 2" O.D. Sampler 1 3/8" I.D. Sampler Hammer Weight Of 140 Lbs. Hammer Fall Of 30"
VS	Field Vane Shear Test
US	Undisturbed Soil Sample
B	Blast
DC	Diamond Core
MD	Mud Drill
WA	Wash Ahead
HSA	Hollow Stem Auger
AX	Core Size 1 1/8"
BX	Core Size 1 5/8"
NX	Core Size 2 1/8"
M	Double Tube Core Barrel Used
LL	Liquid Limit
PL	Plastic Limit
PI	Plasticity Index
NP	Non Plastic
w	Moisture Content (Dry Wgt. Basis)
D	Dry
M	Moist
MTW	Moist To Wet
W	Wet
Sat	Saturated
Bo	Boulder
Gr	Gravel
Sa	Sand
Si	Silt
Cl	Clay
HP	Hardpan
Le	Ledge
NLTD	No Ledge To Depth
CNPF	Can Not Penetrate Further
TLOB	Top of Ledge Or Boulder
NR	No Recovery
Rec.	Recovery
%Rec.	Percent Recovery
RQD	Rock Quality Designation
CBR	California Bearing Ratio
<	Less Than
>	Greater Than
R	Refusal (N > 100)
VTSPG	NAD83 - See Note 7

COLOR			
blk	Black	pnk	Pink
bl	Blue	pu	Purple
brn	Brown	rd	Red
dk	Dark	tn	Tan
gry	Gray	wh	White
gn	Green	yel	Yellow
lt	Light	mltc	Multicolored
or	Orange		

DEFINITIONS (AASHTO)

BEDROCK (LEDGE) - Rock in its native location of indefinite thickness.

BOULDER - A rock fragment with an average dimension > 12 inches.

COBBLE - Rock fragments with an average dimension between 3 and 12 inches.

GRAVEL - Rounded particles of rock < 3" and > 0.0787" (#10 sieve).

SAND - Particles of rock < 0.0787" (#10 sieve) and > 0.0029" (#200 sieve).

SILT - Soil < 0.0029" (#200 sieve), non or slightly plastic and exhibits no strength when air-dried.

CLAY - Fine grained soil, exhibits plasticity when moist and considerable strength when air-dried.

VARVED - Alternate layers of silt and clay.

HARDPAN - Extremely dense soil, cemented layer, not softened when wet.

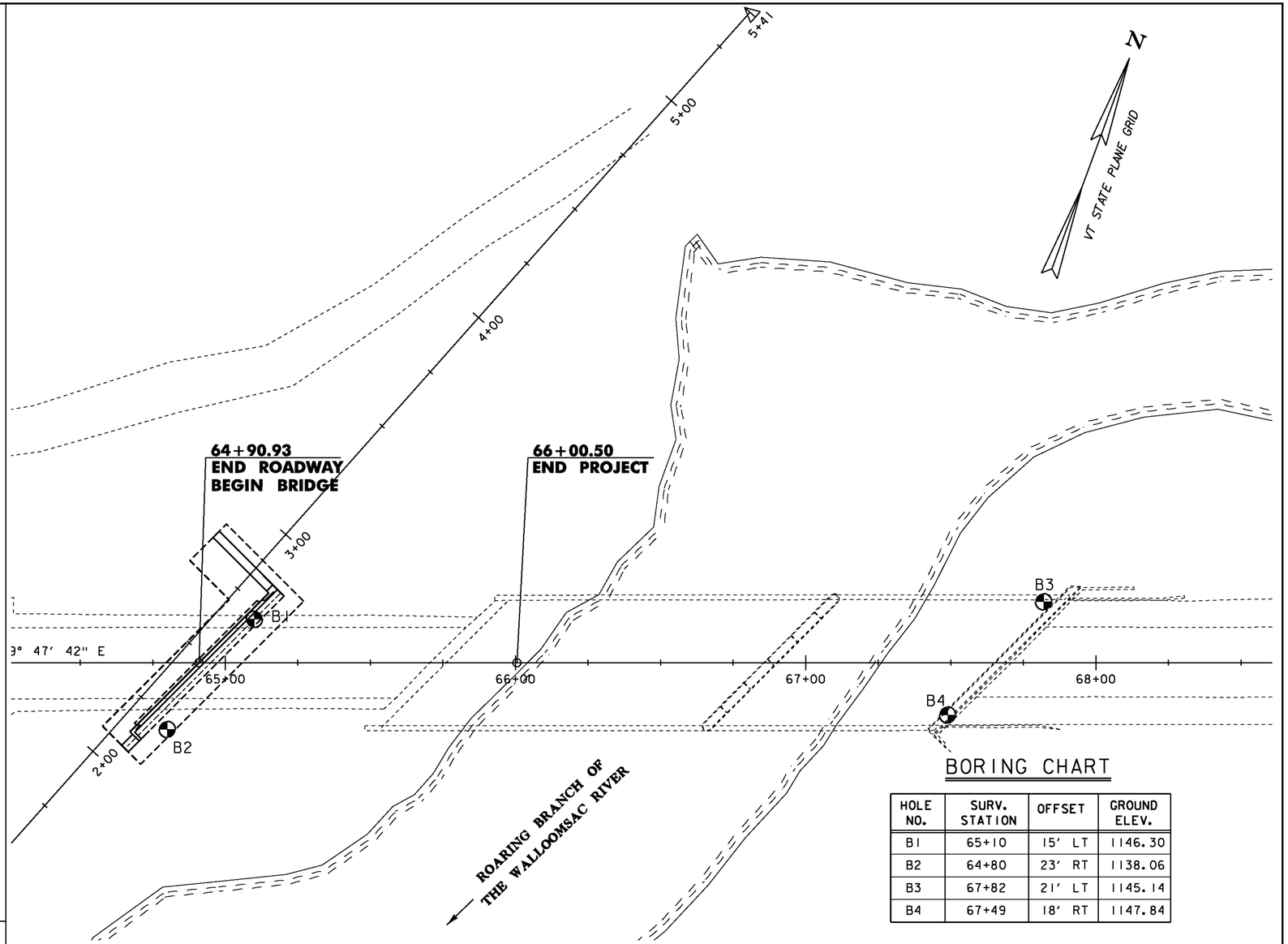
MUCK - Soft organic soil (containing > 10% organic material.

MOISTURE CONTENT - Weight of water divided by dry weight of soil.

FLOWING SAND - Granular soil so saturated (loose) that it flows into drill casing during extraction of wash rod.

STRIKE - Angle from magnetic north to line of intersection of bed with a horizontal plane.

DIP - Inclination of bed with a horizontal plane.



BORING CHART

HOLE NO.	SURV. STATION	OFFSET	GROUND ELEV.
B1	65+10	15' LT	1146.30
B2	64+80	23' RT	1138.06
B3	67+82	21' LT	1145.14
B4	67+49	18' RT	1147.84

GENERAL NOTES

1. The subsurface explorations shown herein were made between 10/29/1996 and 12/02/1996 by the Agency.
2. Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by the Agency and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
3. Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
4. Engineering judgment was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgment by the Contractor.
5. Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
6. Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.
7. Northing and Easting coordinates are shown in Vermont State Plane Grid North American Datum 1983 in meters and survey feet.

SCALE 1" = 20'-0
20 0 20

PROJECT NAME: WOODFORD

PROJECT NUMBER: ER BHF 010-1(44)

FILE NAME: sllB214boring.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C.CARLSON	DRAWN BY: EVANS-MONGEON
DESIGNED BY: M.EVANS-MONGEON	CHECKED BY: G.ROY
BORING INFORMATION SHEET	SHEET 17 OF 58

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH DIVISION
SUBSURFACE INFORMATION

HOLE NO.: B-1
SHEET 1 OF 1
DATE STARTED: 12/2/96
DATE COMPLETED: 0/0/0

PROJECT NAME: WOODFORD
SITE NAME: BRIDGE #11
STATION: 65+10.00
GROUND EL.: 1146.30

PROJECT NUMBER: BHF 010-1(29)
SITE NO.: ROUTE 9
OFFSET: -15.00
G.W. DEPTH:

BORING CREW
CREW CHIEF: MCGLYNN
DRILLER: CHABOT E J
LOGGER:

BORING RIG: TRUCK
BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL

DEPTH	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
5	No Rec., Boulders							
	BXDC, 7.0'-10.0', Rec. = 2.1'							
10	No Rec.	46						
	BXDC, 12.0'-15.0', Rec. = 1.6'							
15	No Rec.	46						
	BXDC, 17.0'-20.0', Rec. = 3.0', Boulders							
20	A-1-b, GrSa, br, MTW, Rec. = 0.4'	R	13.2	40.6	50	9.4		
	BXDC, 21.0'-25.0', Rec. = 1.5'							
25	A-1-b, GrSa, br, MTW, Rec. = 1.0'	R	11.3	35.8	56.8	7.4		
	BXDC, 26.5'-30.0', Rec. = 1.5'							
30	A-1-b, GrSa, br, MTW, Rec. = 0.9'	R	12.2	35.7	56.2	8.1		
	BXDC, 31.5'-35.0', Rec. = 1.6'							
35	A-1-b, GrSa, br, MTW, Rec. = 1.7'	R	12.4	45.8	46.6	7.6		
40	Hole stopped @ 37.0' in SaGr + Bo							
45								

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH DIVISION
SUBSURFACE INFORMATION

HOLE NO.: B-2
SHEET 1 OF 1
DATE STARTED: 11/14/96
DATE COMPLETED: 11/21/96

PROJECT NAME: WOODFORD
SITE NAME: BRIDGE #11
STATION: 64+80.00
GROUND EL.: 1138.06

PROJECT NUMBER: BHF 010-1(29)
SITE NO.: ROUTE 9
OFFSET: 23.00
G.W. DEPTH:

BORING CREW
CREW CHIEF: MCGLYNN
DRILLER: CHABOT E J
LOGGER:

BORING RIG: TRUCK
BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL

DEPTH	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
	BXDC, 0.0'-5.0', Rec. = 4.1'							
5	BXDC, 5.0'-10.0', Rec. = 3.2'							
10	No Rec., Boulders	R						
	BXDC, 11.5'-14.0', Rec. = 2.1'							
15	No Rec., Boulders	R						
	BXDC, 16.0'-20.0', Rec. = 1.6'							
20	A-1-a, SaGr, br, MTW, Rec. = 0.4'	R	11.6	51.7	39.8	8.5		
	BXDC, 21.5'-25.0', Rec. = 1.5'							
25	A-1-a, SaGr, br, MTW, Rec. = 0.5'	R	16.3	67.5	24.4	8.1		
	BXDC, 27.0'-30.0', Rec. = 3.0'							
30	A-1-a, SaGr, br, MTW, Rec. = 0.5'	R	12.5	60.8	29.8	9.4		
	BXDC, 31.0'-35.0', Rec. = 1.7'							
35	A-1-b, SaGr, br, MTW, Rec. = 0.5'	R	9.3	49.4	34.9	15.7		
40	Hole stopped @ 37.0' in Gr, HP+ Bo							
45								

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH DIVISION
SUBSURFACE INFORMATION

HOLE NO.: B-3
SHEET 1 OF 1
DATE STARTED: 0/0/0
DATE COMPLETED: 0/0/0

PROJECT NAME: WOODFORD
SITE NAME: BRIDGE #11
STATION: 67+82.00
GROUND EL.: 1145.14

PROJECT NUMBER: BHF 010-1(29)
SITE NO.: ROUTE 9
OFFSET: -21.00
G.W. DEPTH:

BORING CREW
CREW CHIEF: MCGLYNN
DRILLER: CHABOT E J
LOGGER:

BORING RIG: TRUCK
BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL

DEPTH	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
5	BXDC, 3.0'-6.0', No Rec., Boulders							
10	No Rec., Gravelly Material with Boulders	41						
	BXDC, 12.0'-14.0', Boulders							
15	A-1-a, SaGr, br, Wet, Rec. = 0.4'	39	15.9	71.7	23.7	4.6		
	BXDC, 18.0'-20.0', Rec. = 1.4', Boulders							
20	A-1-a, SaGr, br, MTW, Rec. = 1.1'	29	11.7	56.6	33.3	10.1		
	BXDC, 22.0'-24.0', Rec. = 1.5', Boulders							
25	A-1-a, SaGr, br, MTW, Rec. = 0.5'	R	10.8	55	37.1	7.9		
	BXDC, 27.0'-29.0', Rec. = 1.6', Boulders							
30	A-1-a, SaGr, br, MTW, Rec. = 0.5'	R	12.6	53.3	38.3	8.4		
	BXDC, 32.0'-33.5', Rec. = 1.1', Boulders							
35	A-1-a, SaGr, br, MTW, Rec. = 0.4'	R	14.7	59.3	33.3	7.4		
40	Hole stopped @ 37.0' in Sa. Gr +Bo							
45								

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH DIVISION
SUBSURFACE INFORMATION

HOLE NO.: B-4
SHEET 1 OF 1
DATE STARTED: 10/29/96
DATE COMPLETED: 11/1/96

PROJECT NAME: WOODFORD
SITE NAME: BRIDGE #11
STATION: 67+49.00
GROUND EL.: 1147.84

PROJECT NUMBER: BHF 010-1(29)
SITE NO.: ROUTE 9
OFFSET: 18.00
G.W. DEPTH:

BORING CREW
CREW CHIEF: MCGLYNN
DRILLER: CHABOT E J
LOGGER:

BORING RIG: TRUCK
BORING TYPE: WASH BORE
SAMPLE TYPE: SPLIT BARREL

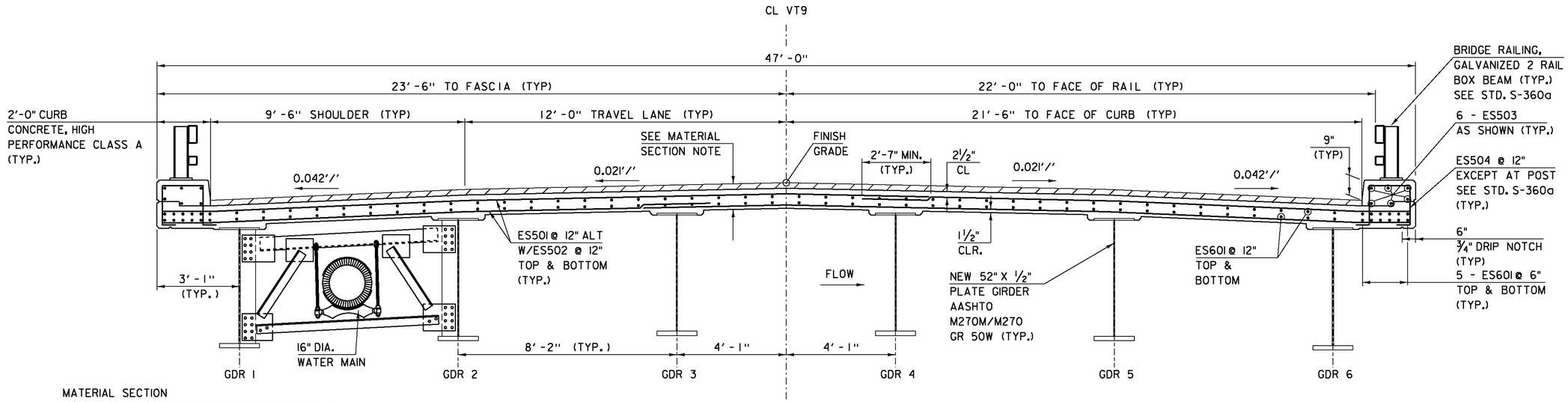
DEPTH	CLASSIFICATION OF MATERIALS (Description)	BLOWS PER FOOT	M.C. %	GRAVEL %	SAND %	FINES %	LL	PI
5	No Rec., On Boulder BXDC, 5.2'-7.4', Boulders	R						
10	A-1-a, SaGr, br, Moist, Rec. = 0.5'	22	16.7	73.1	20.4	6.5		
15	A-1-a, Gr, br, Moist, Rec. = 0.2' No Rec., Boulders	R	N/A	87.2	10.2	2.6		
20	A-1-b, SaGr, br, Wet, Rec. = 0.8'	49	12.8	46.9	37.2	15.9		
25	A-1-a, SaGr, br, MTW, Rec. = 1.2'	39	11.6	52	33.5	14.5		
30	A-1-a, SaGr, br, Moist, Rec. = 1.4'	72	10.4	53.9	31.6	14.5		
35	A-1-a, SaGr, br, Moist, Rec. = 0.6'	R	9.6	51.2	38	10.8		
40	No Rec., Boulders BXDC, 40.4'-43.0', Boulders	R						
45	Hole stopped @ 43.0'							

SURVEYED BY _____ DATE _____
DRAWN BY J. TOUCHETTE DATE 04/97
SQUAD LEADER C.C. BENDA

DESIGN FILE NO. /matres/84e039/me039bor.dgn
IPARM FILE BORING LOGS DATE PLOTTED 23-MAR-2012

PROJ. NAME WOODFORD
PROJ. NO. ER BHF 010-1(44)

SHEET 18 OF 58 SHEETS

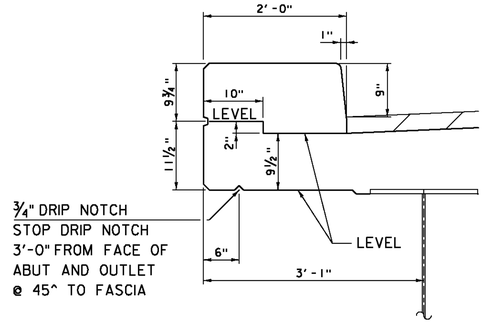


MATERIAL SECTION
1½" BITUMINOUS CONCRETE PAVEMENT TYPE IVS
1¼" BITUMINOUS CONCRETE PAVEMENT TYPE IVS
SHEET MEMBRANE WATERPROOFING, TORCH APPLIED
8½" DECK CONCRETE, HIGH PERFORMANCE CLASS A

BITUMINOUS CONCRETE PAVEMENT SHALL BE PAID FOR UNDER ITEM 900.680 SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY).

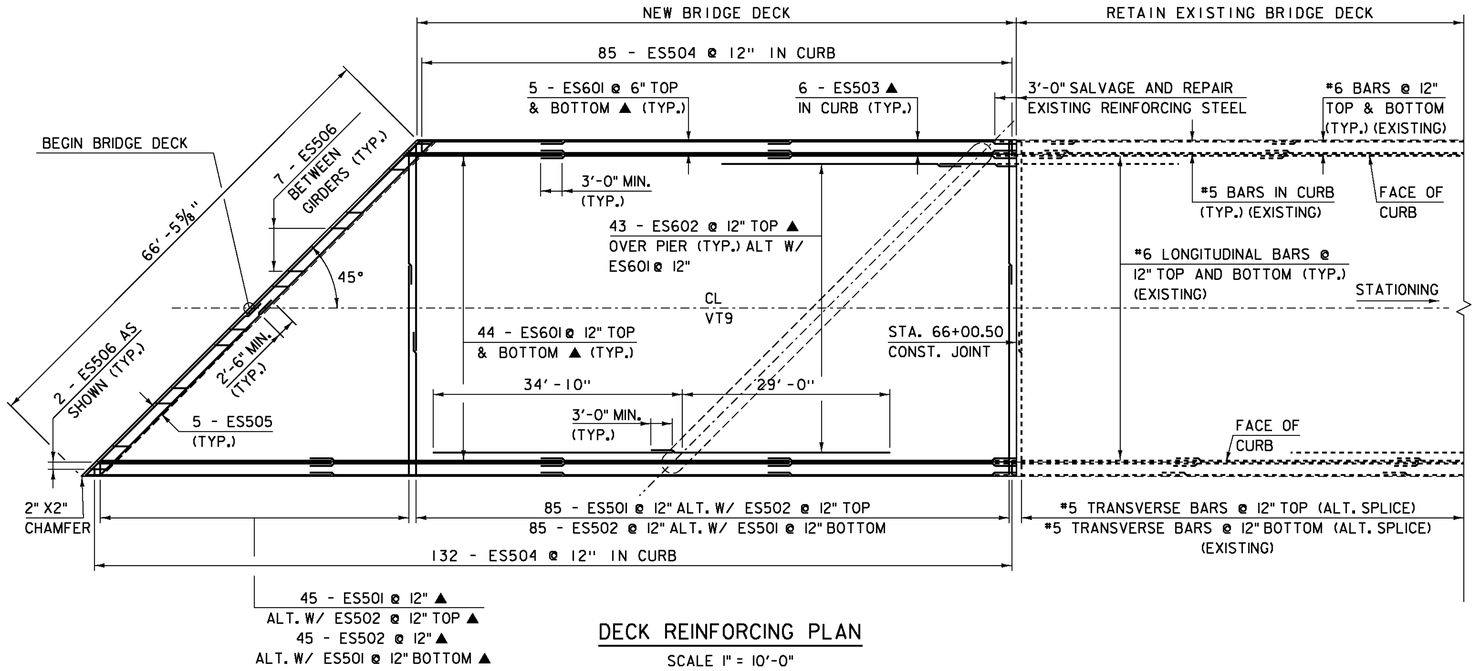
EMULSIFIED ASPHALT SHALL BE APPLIED AT A RATE OF 0.040 GAL / SY BETWEEN SUCCESSIVE COURSES OF PAVEMENT AS DIRECTED BY THE ENGINEER.

NEW BRIDGE TYPICAL SECTION
SCALE ½" = 1'-0"



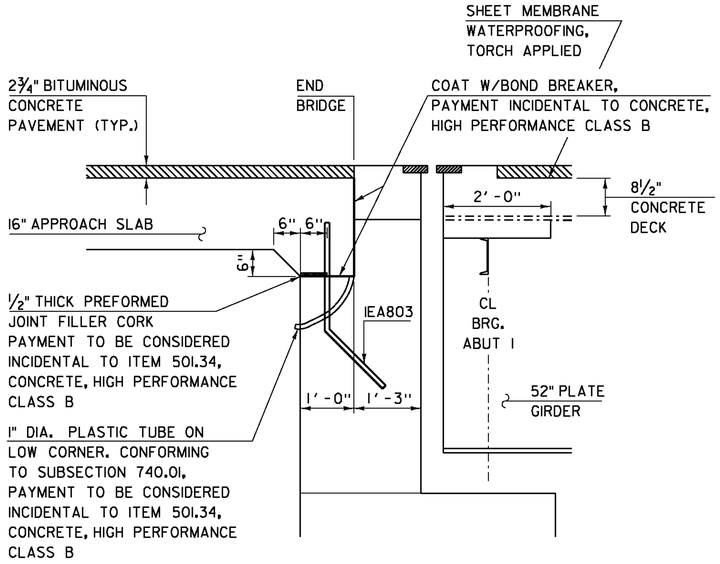
CURB TYPICAL SECTION
SCALE 1" = 1'-0"

PROJECT NAME: WOODFORD	
PROJECT NUMBER: ER BHF 010-1(44)	
FILE NAME: sllb214sup.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: C. MOONEY
DESIGNED BY: M. EVANS-MONGEON	CHECKED BY: M. EVANS-MONGEON
DECK TYPICAL SECTION	SHEET 19 OF 58



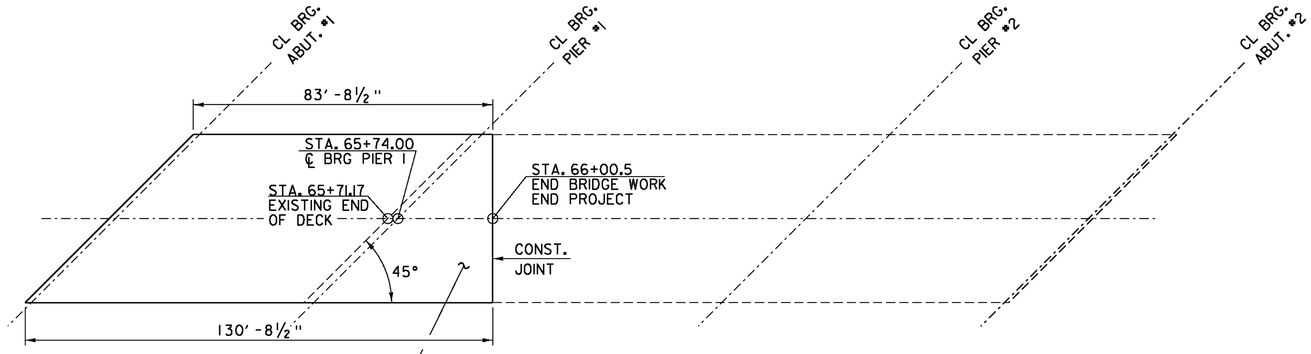
DECK REINFORCING PLAN

SCALE 1" = 10'-0"



ABUTMENT 1 - END DETAIL

(NORMAL TO CL)
SCALE ¾" = 1'-0"



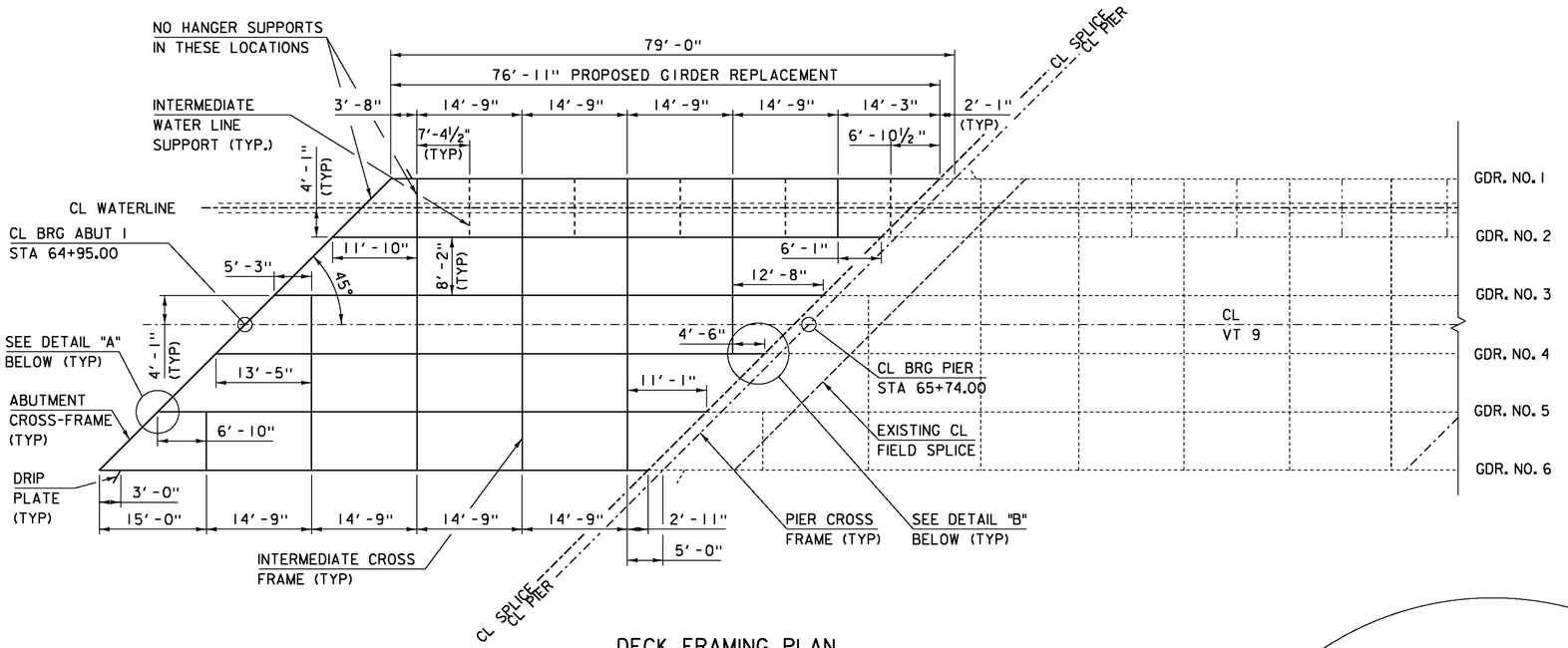
EXISTING DECK IN THIS AREA TO BE REMOVED. SALVAGE REINFORCING STEEL WITHIN 3'-0" OF CONSTRUCTION JOINT. SEE STRUCTURES DETAIL SD-501.00 FOR TRANSVERSE BRIDGE SLAB CONSTRUCTION JOINT DETAIL.

DECK POUR PLAN

SCALE 1" = 20'-0"

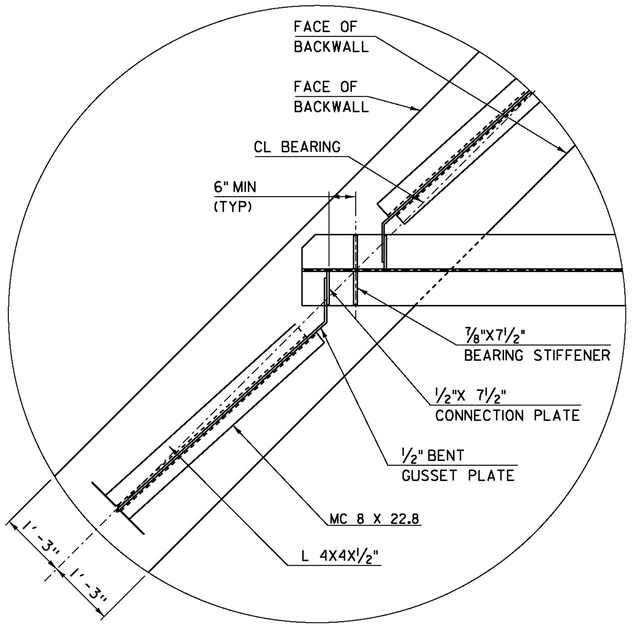
NOTE: DECK POUR SHALL START FROM THE ABUTMENT 1 END.

PROJECT NAME:	WOODFORD
PROJECT NUMBER:	ER BHF 010-1(44)
FILE NAME: slib214sup.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: C. MOONEY
DESIGNED BY: M. EVANS-MONGEON	CHECKED BY: M. EVANS-MONGEON
DECK PLAN	SHEET 20 OF 58



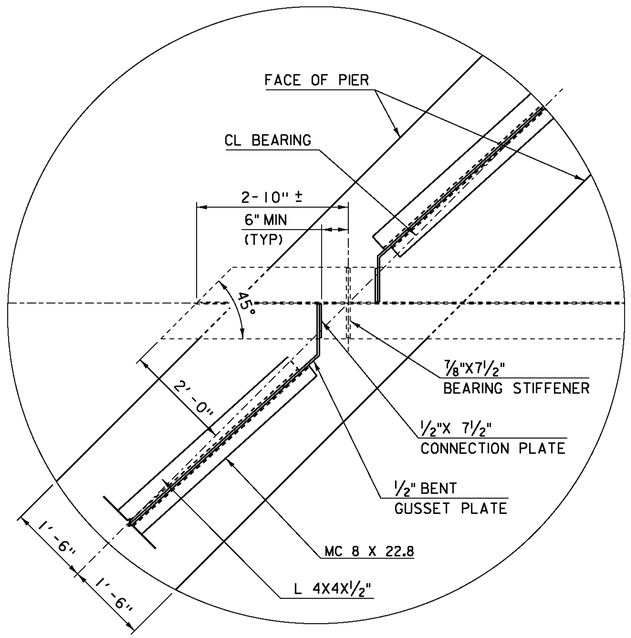
DECK FRAMING PLAN

SCALE 1" = 10'-0"



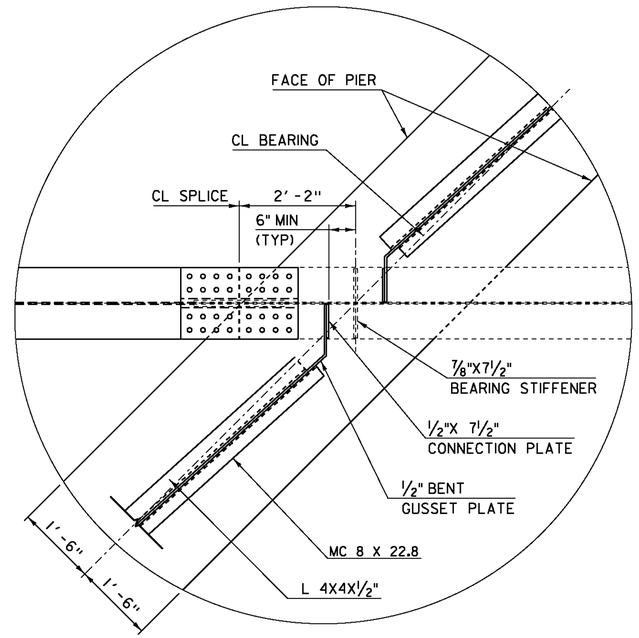
DETAIL "A"

SCALE ¾" = 1'-0"



DETAIL "B" EXISTING CONDITION

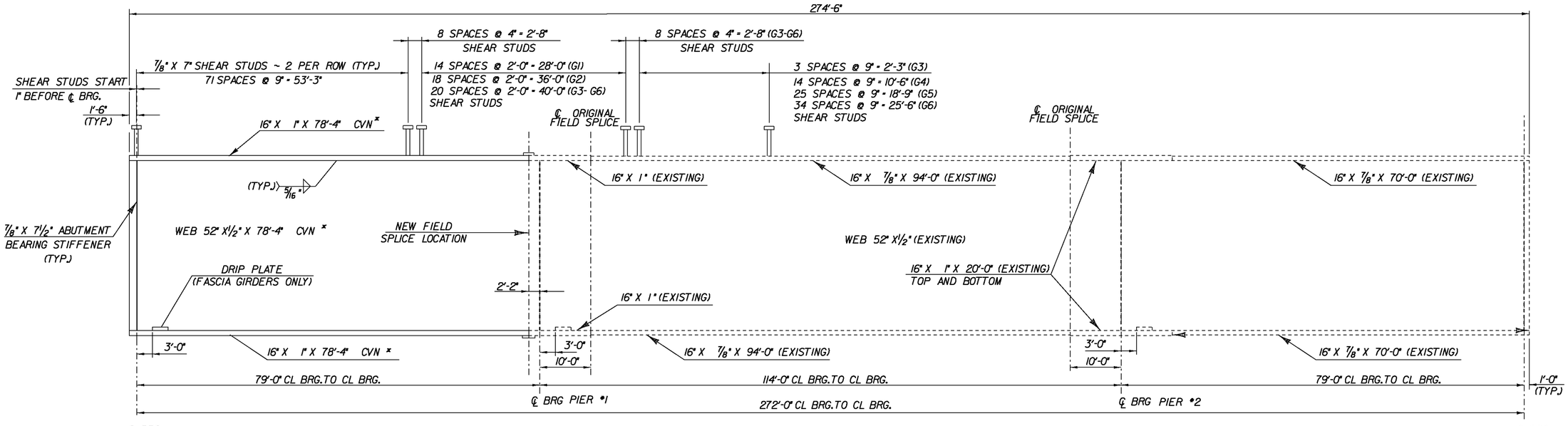
SCALE ¾" = 1'-0"



DETAIL "B" FINAL CONDITION

SCALE ¾" = 1'-0"

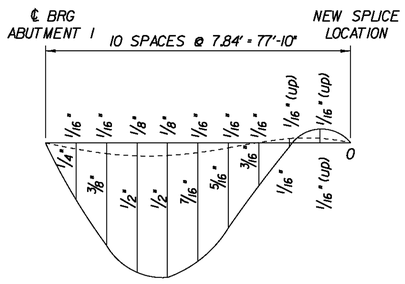
PROJECT NAME:	WOODFORD
PROJECT NUMBER:	ER BHF 010-1(44)
FILE NAME: sllb214sup.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: C. MOONEY
DESIGNED BY: M. EVANS-MONGEON	CHECKED BY: M. EVANS-MONGEON
DECK FRAMING PLAN	SHEET 21 OF 58



* DENOTES THAT CHARPY V-NOTCH (CVN) TEST IS REQUIRED

GIRDER ELEVATION

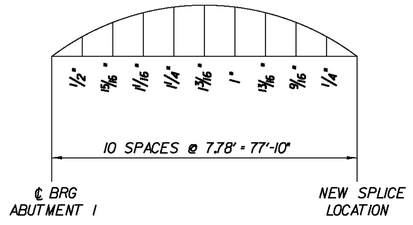
HORIZ. SCALE: SCALE 1" = 10'-0
VERT. SCALE: SCALE 1" = 1'-0



DEAD LOAD DEFLECTION

NTS

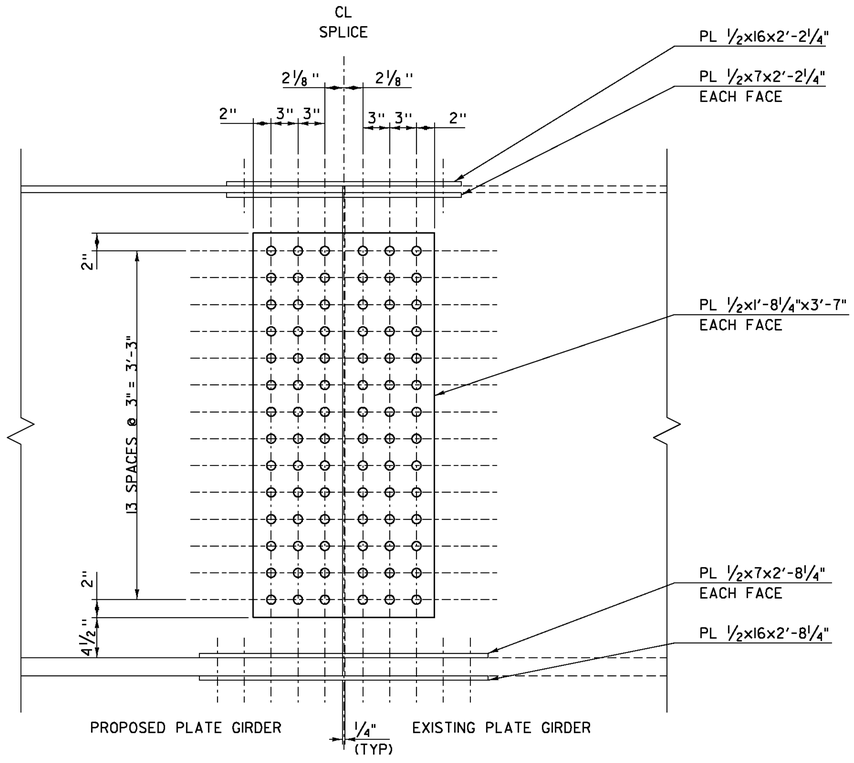
Numbers Above Line = Dead Load Deflection (Steel Only)
Numbers Below Line = Total Dead Load Deflection



CAMBER

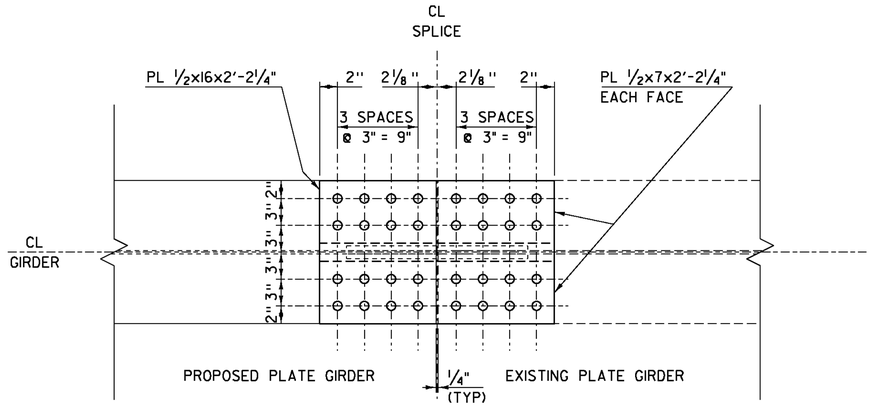
NTS

PROJECT NAME: WOODFORD	
PROJECT NUMBER: ER BHF 010 -1(44)	
FILE NAME: s11B214girder.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: M.EVANS-MONGE
DESIGNED BY: M.EVANS-MONGEON	CHECKED BY: H.SALLS
GIRDER DETAILS	SHEET 22 OF 58



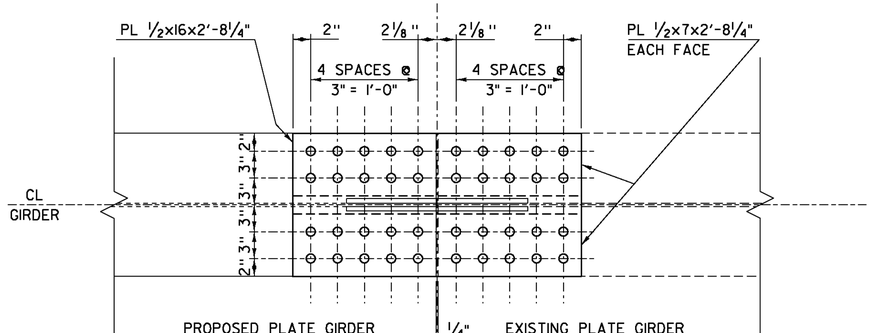
ELEVATION VIEW SPLICE PLATE

SCALE 1½" = 1'-0"



PLAN VIEW TOP SPLICE PLATE

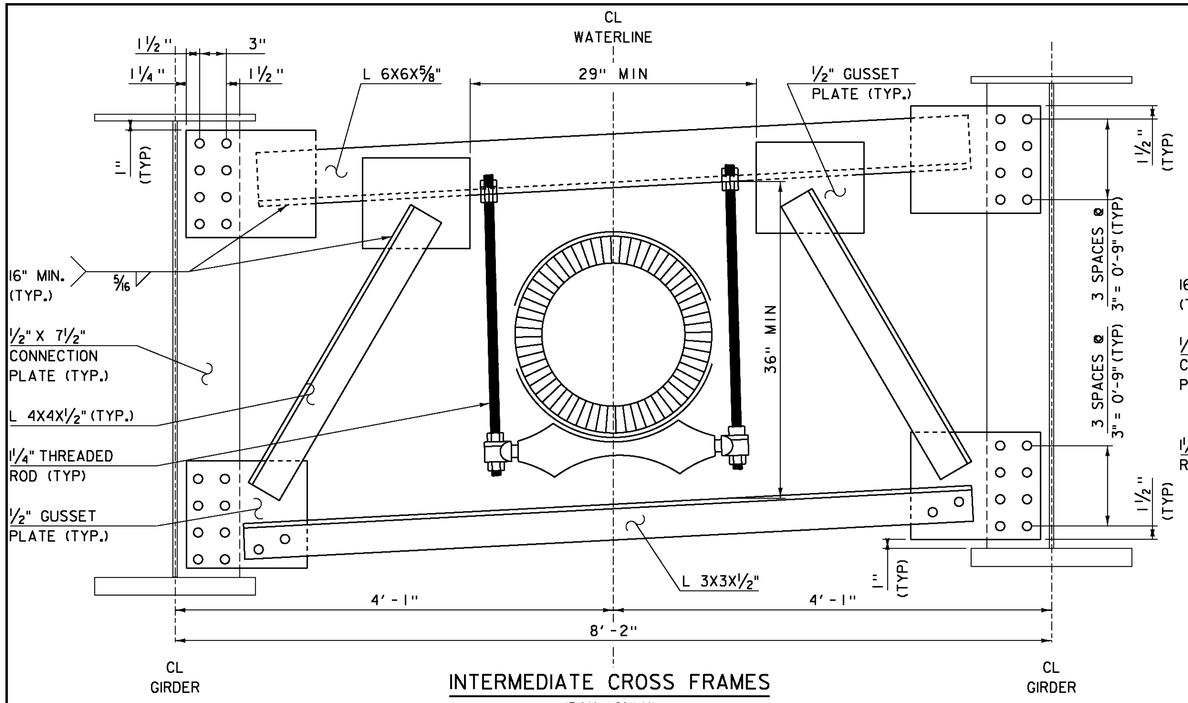
SCALE 1½" = 1'-0"



PLAN VIEW BOTTOM SPLICE PLATE

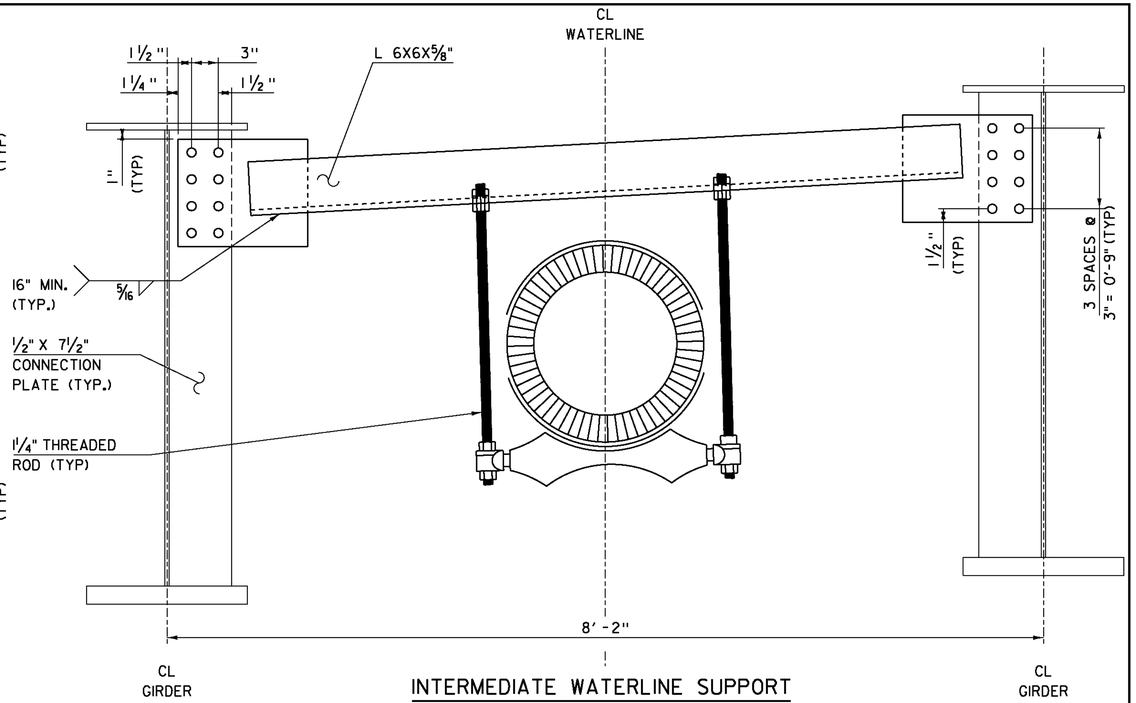
SCALE 1½" = 1'-0"

PROJECT NAME:	WOODFORD
PROJECT NUMBER:	ER BHF 010-1(44)
FILE NAME: sllb214sup.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: C. MOONEY
DESIGNED BY: M. EVANS-MONGEON	CHECKED BY: M. EVANS-MONGEON
GIRDER SPLICE DETAILS	SHEET 23 OF 58



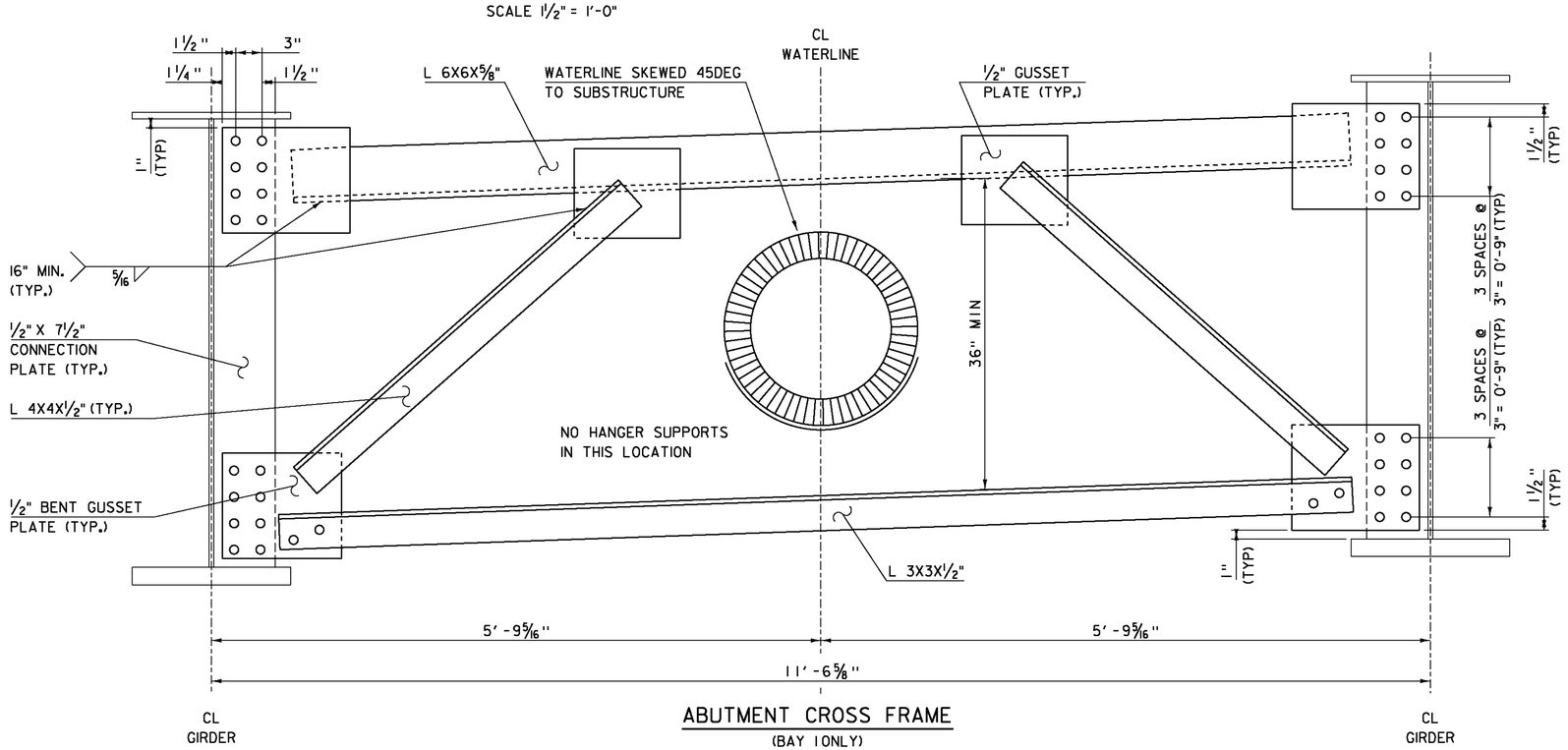
INTERMEDIATE CROSS FRAMES

(BAY 1 ONLY)
SCALE 1½" = 1'-0"



INTERMEDIATE WATERLINE SUPPORT

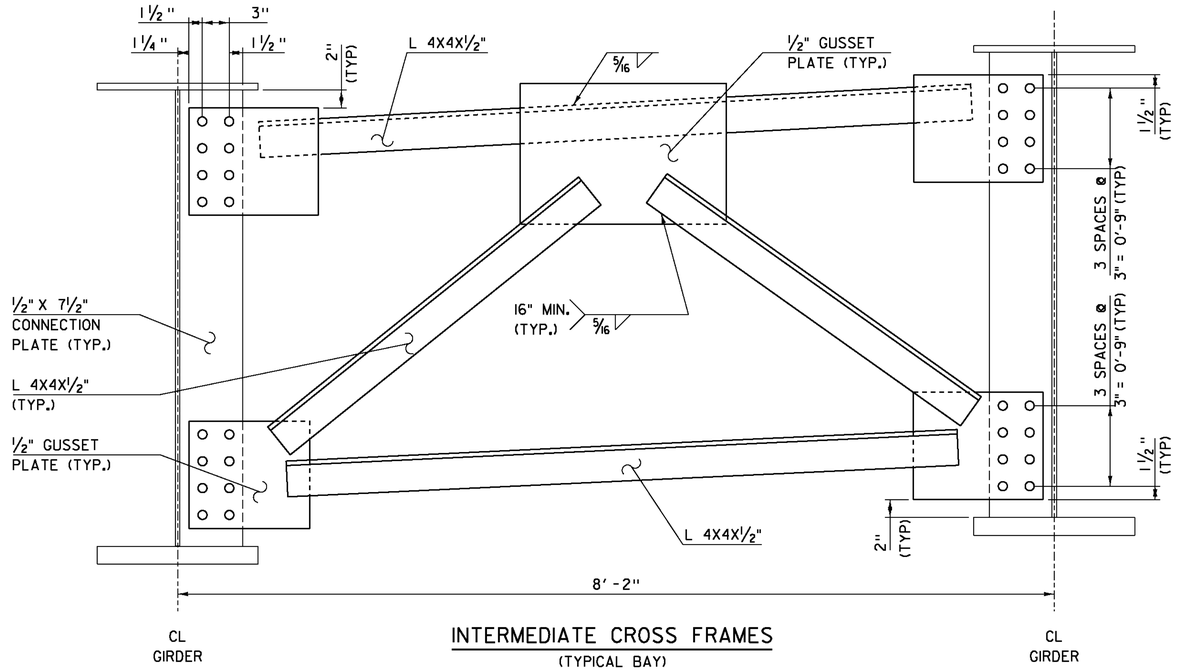
(BAY 1 ONLY)
SCALE 1½" = 1'-0"



ABUTMENT CROSS FRAME

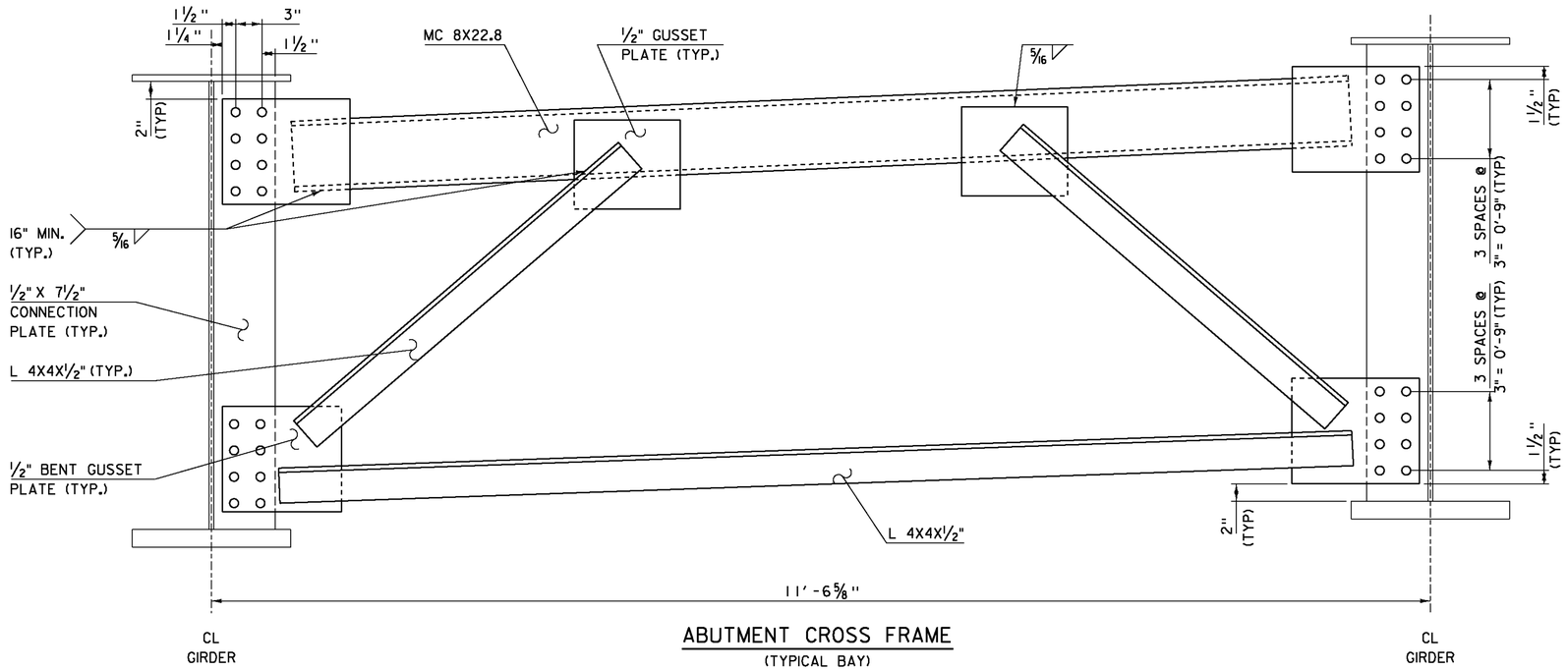
(BAY 1 ONLY)
SCALE 1½" = 1'-0"

PROJECT NAME:	WOODFORD
PROJECT NUMBER:	ER BHF 010-1(44)
FILE NAME: sllb214sup.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: C. MOONEY
DESIGNED BY: M. EVANS-MONGEON	CHECKED BY: M. EVANS-MONGEON
BAY ONE CROSSFRAME DETAILS	SHEET 24 OF 58



INTERMEDIATE CROSS FRAMES

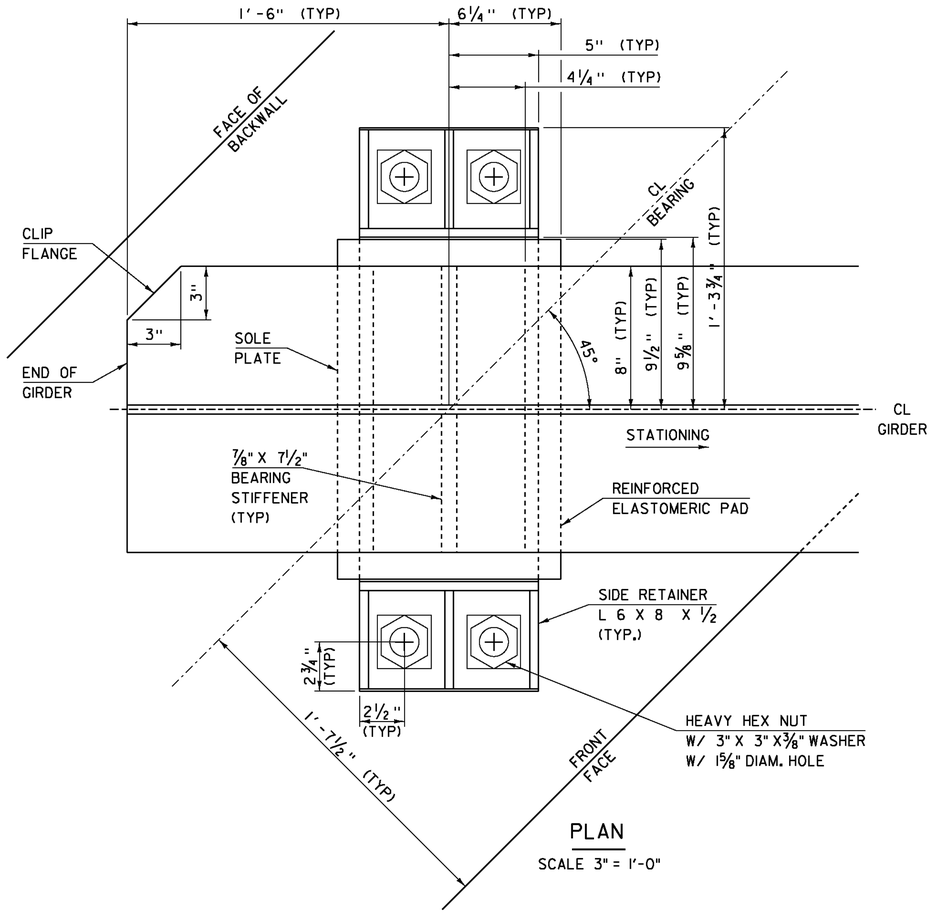
(TYPICAL BAY)
SCALE 1 1/2" = 1'-0"



ABUTMENT CROSS FRAME

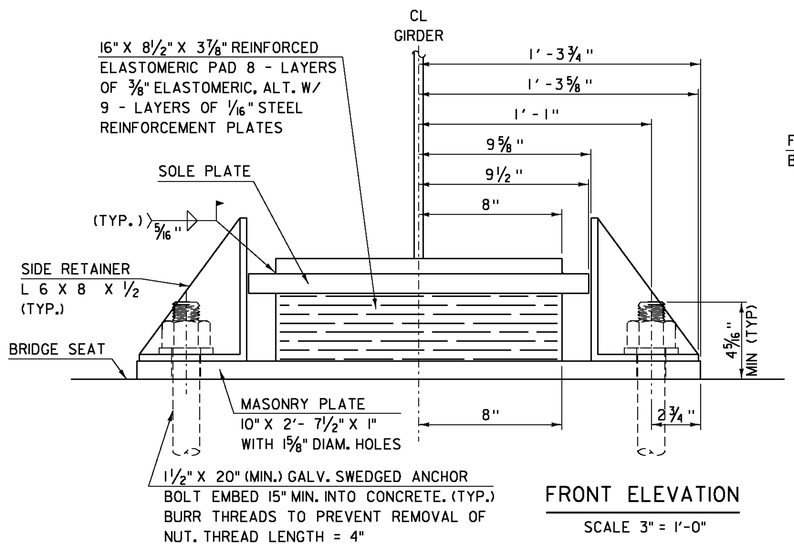
(TYPICAL BAY)
SCALE 1 1/2" = 1'-0"

PROJECT NAME:	WOODFORD
PROJECT NUMBER:	ER BHF 010-1(44)
FILE NAME: sllb214sup.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: C. MOONEY
DESIGNED BY: M. EVANS-MONGEON	CHECKED BY: M. EVANS-MONGEON
TYPICAL CROSSFRAME DETAILS	SHEET 25 OF 58



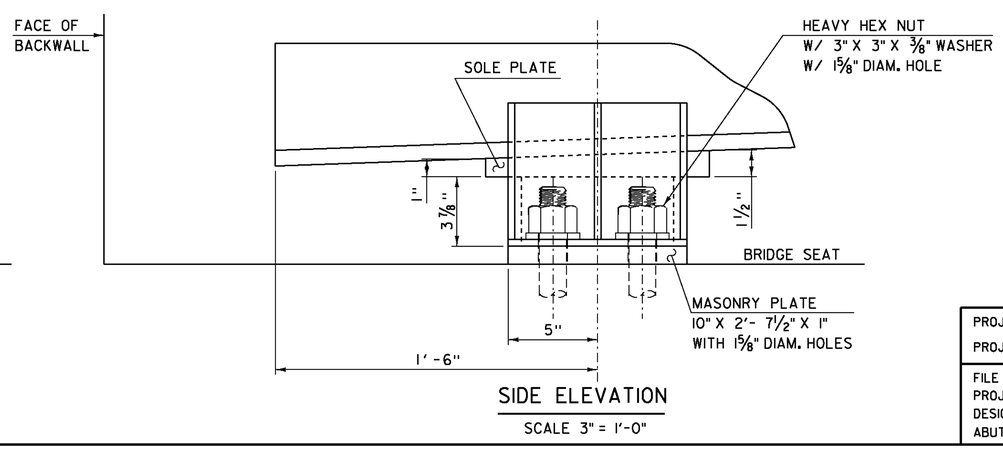
PLAN

SCALE 3" = 1'-0"



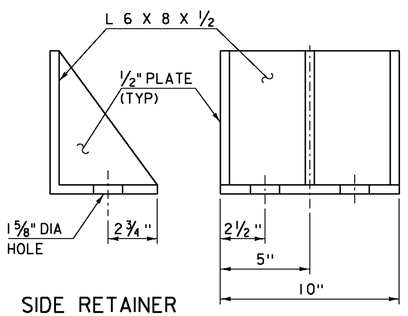
FRONT ELEVATION

SCALE 3" = 1'-0"



SIDE ELEVATION

SCALE 3" = 1'-0"



SIDE RETAINER

SCALE 3" = 1'-0"

BEARING DEVICE NOTES

1. BEARINGS SHALL BE PAID FOR UNDER THE ITEM 531.17 "BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD" AND SHALL CONFORM TO APPLICABLE SUBSECTIONS OF SECTION 531 AND 731.

2. THE FIELD WELD CONNECTING THE BOTTOM FLANGE WITH THE BEARING DEVICE SHALL BE MADE WITH E7018 RODS. AREAS OF METALIZING DAMAGED BY WELDING AND/OR HANDLING SHALL BE REPAIRED BY METALIZING IN ACCORDANCE WITH ASTM A 760/760M.

3. FABRICATION DRAWINGS CONFORMING TO SUBSECTION 531.03 SHALL BE SUBMITTED AND INCLUDE ANY NECESSARY WELDING OR BONDING PROCEDURES. THE FABRICATION DRAWINGS SUBMITTAL SHALL ALSO INCLUDE A TYPE D CERTIFICATION PER SUBSECTION 700.02 (C).

4. ALL STEEL COMPONENTS SHALL BE METALIZED AS PER SUBSECTION 531.04(b) AND 506.14. AFTER THE BEARINGS ARE METALIZED, THEY SHALL BE SEALED WITH AN APPROVED SEALANT AS SPECIFIED IN SUBSECTION 726.09(c). ALL WASHERS SHALL BE ⅜" PLATE MINIMUM. PAYMENT FOR ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE INCLUDED IN THE UNIT BID PRICE FOR "BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD". ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED PER AASHTO M 232/M 232M.

5. ALL STEEL IN BEARING DEVICES SHALL BE AASHTO M270M/M270 GRADE 36.

6. ALL REINFORCEMENT BETWEEN LAYERS OF ELASTOMERIC SHALL BE STEEL ASTM A36. ALL INTERNAL STEEL PLATES SHALL BE SAND BLASTED AND FREE OF COATINGS, RUST, AND MILL SCALE. THE PLATES SHALL BE FREE OF SHARP EDGES AND BURRS.

7. STEEL REINFORCED ELASTOMERIC PAD BEARINGS SHALL HAVE A MINIMUM OF 1/8" EDGE SEAL OF ELASTOMER INTEGRAL WITH THE BEARING OVER ALL INTERNAL PLATES.

8. FOR ELASTOMERIC BEARINGS, ALL MATERIALS SHALL CONFORM TO AASHTO M251M/M251.

9. ALTERNATE CONFIGURATIONS FOR BEARINGS MAY BE SUBMITTED FOR APPROVAL. ANY ALTERNATE SUBMITTED SHALL BE DESIGNED AND CERTIFIED TO MEET THE DESIGN LOADS AND CRITERIA SHOWN ON THIS SHEET. THE ALTERNATE SHALL MAINTAIN THE ANCHORAGE SYSTEM SHOWN AND SHALL BE DESIGNED PER AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES LATEST REVISIONS.

10. BRIDGE SEAT ELEVATIONS MAY BE REVISED TO ACCOMMODATE AN ALTERNATIVE CONFIGURATION.

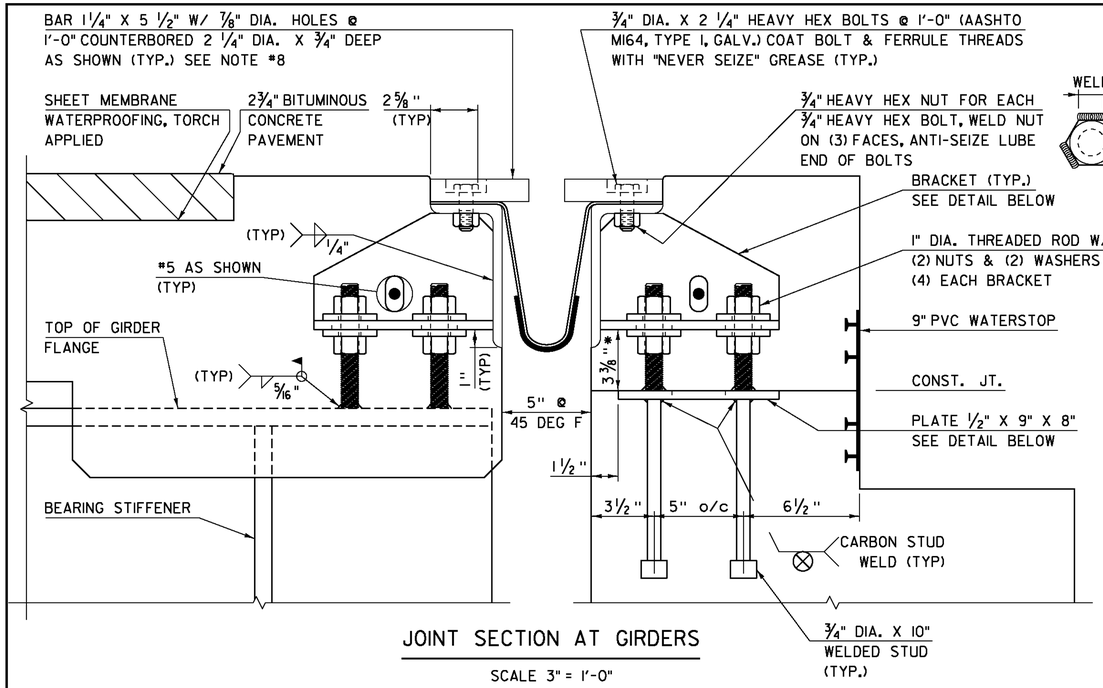
11. DESIGN CRITERIA:
    - A. DESIGN ROTATION = 0.01 RADIANS
    - B. HORIZONTAL CAPACITY SHALL BE MINIMUM OF 20% VERTICAL LOAD IN ANY RESTRAINED DIRECTION.
    - C. VERTICAL DESIGN LOAD PER BEARING :
      ABUTMENT BEARINGS
      RDL = 45.0 Kips
      RLL = 79.0 Kips
    - D. TEMPERATURE RANGE = -30^F TO 120^F
    - E. ELASTOMER SHALL HAVE NOMINAL HARDNESS OF 60 ON SHORE 'A' SCALE. ELASTOMER SHALL HAVE A SHEAR MODULUS BETWEEN 130 AND 175 psi. THE RAW ELASTOMER SHALL BE VIRGIN NEOPRENE CLASSIFIED AS LOW TEMPERATURE GRADE 4 AS DEFINED IN TABLE 18.4.5.1-1A OF AASHTO, DIVISION II, SECTION 18.
    - F. NO FABRIC REINFORCEMENT WILL BE ALLOWED IN ELASTOMERIC PADS

12. THE BEARING TOLERANCES SHALL MEET THOSE GIVEN IN AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION AND ITS LATEST REVISIONS, DIVISION II SECTION 18.

13. THE STEEL SOLE PLATES AND MASONRY PLATES SHALL BE HOT BONDED TO THE REINFORCED ELASTOMERIC PAD DURING THE VULCANIZATION PROCESS. THE STEEL SURFACES TO BE BONDED TO THE PAD SHALL NOT BE METALIZED.

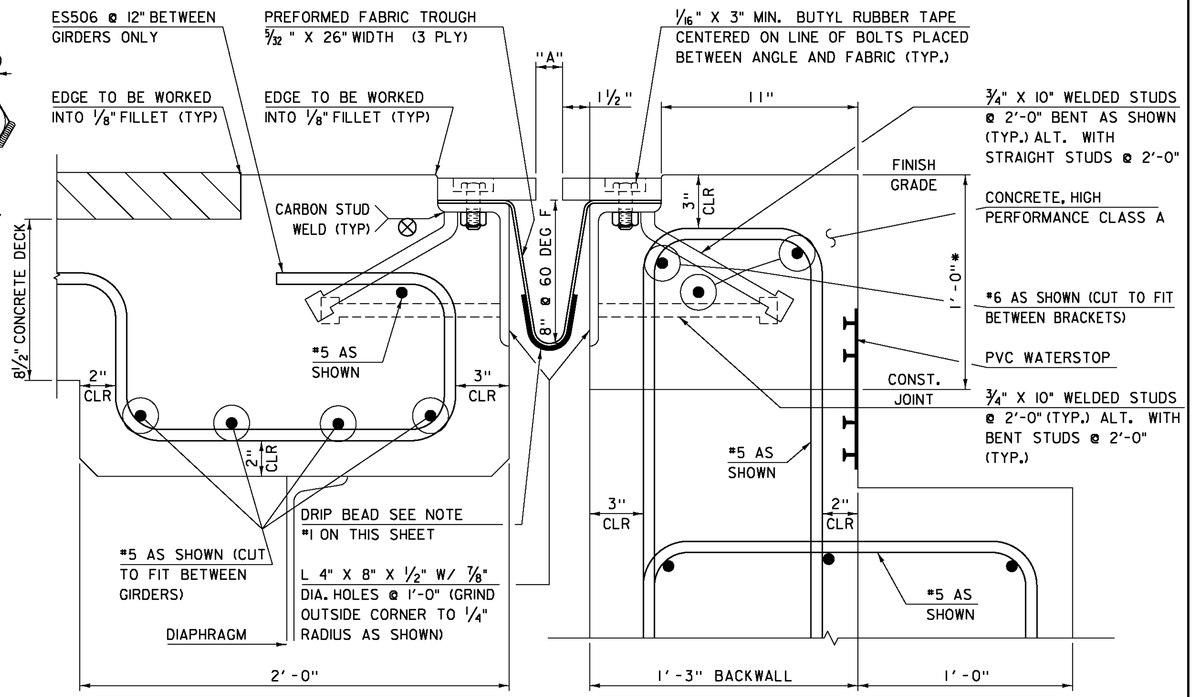
14. THE ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF A 307 GR. C.

PROJECT NAME:	WOODFORD
PROJECT NUMBER:	ER BHF 010-1(44)
FILE NAME: sllb214sup.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: C. MOONEY
DESIGNED BY: M. EVANS-MONGEON	CHECKED BY: M. EVANS-MONGEON
ABUTMENT 1 BEARING DETAILS	SHEET 26 OF 58



JOINT SECTION AT GIRDERS

SCALE 3" = 1'-0"

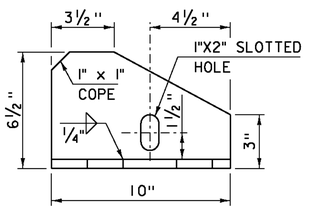


JOINT SECTION BETWEEN GIRDERS

SCALE 3" = 1'-0"

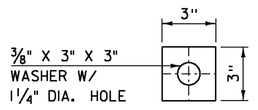
NOTES FOR ITEM 516.11 "BRIDGE EXPANSION JOINT, VERMONT"

1. FABRIC TROUGH SHALL BE THOROUGHLY CLEANED AND FLUSHED AFTER PAVING OPERATION. A DRIP BEAD OF 1/4"x1" STRIP OF PREFORMED FABRIC MATERIAL SHALL BE CEMENTED TO THE BOTTOM OF THE FABRIC TROUGH USING AN ADHESIVE APPROVED BY THE MANUFACTURER. THE DRIP BEAD SHALL BE APPLIED 1" FROM THE DOWNSPOUT END OF THE TROUGH. PREFORMED FABRIC MATERIAL SHALL BE CONTINUOUS FOR THE FULL LENGTH OF THE JOINT.
2. THE EXPANSION DEVICE SHALL BE COVERED TO PROTECT THE FINISH DURING PLACING OF BRIDGE DECK CONCRETE.
3. SEE "JOINT GAP DIMENSION TABLE" FOR DISTANCE "A" VALUES IN TEMPERATURE RANGE PROVIDED.
4. JOINT BRACKET LENGTH VARIES DEPENDENT ON THE BRIDGE SKEW ANGLE. THE BRACKET MUST BE LOCATED SUCH THAT THE THREADED RODS ARE NOT LESS THAN 1½" FROM GIRDERS END OR FLANGE SIDES.
5. ALL STEEL COMPONENTS SHALL BE GALVANIZED OR METALIZED AND MEET THE REQUIREMENTS OF SUBSECTION 726.08 OR 726.09. PRIOR TO GALVANIZING OR METALIZING, ALL CORNERS AND EDGES OF STEEL PLATES, SHAPES, ETC., SHALL BE GROUND TO A 1/16" INCH RADIUS. THREADED RODS SHALL CONFORM TO THE REQUIREMENTS OF 714.04. THE "WELDED STUD ANCHOR PLATE" AND WELDED STUDS MAY BE SUPPLIED WITHOUT GALVANIZING OR METALIZING.
6. THE 4"x8"x ½" ANGLES MAY BE FURNISHED AS ONE CONTINUOUS PIECE OR SPLICED AS SHOWN IN THE FIELD SPLICE DETAIL. THE 1¼"x5½" BARS EACH SIDE OF THE JOINT SHALL BE PROVIDED IN TWO EQUAL LENGTHS.
7. PROJECTING THREADS OF THE ¾" DIA. BOLTS IN THE JOINT SHALL BE GREASED BY THE CONTRACTOR PRIOR TO PLACING ADJACENT CONCRETE. THIS WILL FACILITATE BOLT REMOVAL IF REQUIRED IN THE FUTURE.
8. FILL COUNTERBORED HOLES WITH HOT POURED JOINT SEALER IN ACCORDANCE WITH SUBSECTION 707.04 AFTER BOLT INSTALLATION. PAYMENT FOR THE WORK SHALL BE INCIDENTAL TO ITEM 516.11 "BRIDGE EXPANSION JOINT, VERMONT".
9. THE FABRIC TROUGH SHALL BE ONE CONTINUOUS FABRIC PIECE. THE EXPANSION JOINT MAY BE SHOP ASSEMBLED AND SHIPPED AS ONE CONTINUOUS PIECE, OR IT MAY HAVE ONE FIELD SPLICE AS DETAILED ON THIS SHEET. IF THE EXPANSION JOINT HAS A FIELD SPLICE, THE FABRIC TROUGH SHALL BE SHIPPED WITH ONE UNIT AND ASSEMBLED WITH THE SECOND UNIT PRIOR TO CONCRETE PLACEMENT.
10. TEMPORARY SHIPPING ATTACHMENTS SHALL BE ATTACHED BY BOLTING; WELDING WILL NOT BE PERMITTED.



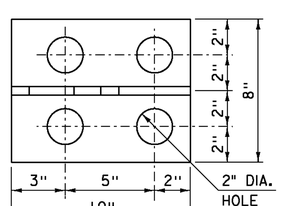
BRACKET ELEVATION

SCALE 3" = 1'-0"



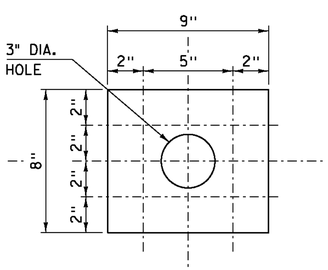
WASHER FOR BRACKET

SCALE 3" = 1'-0"



BRACKET PLAN

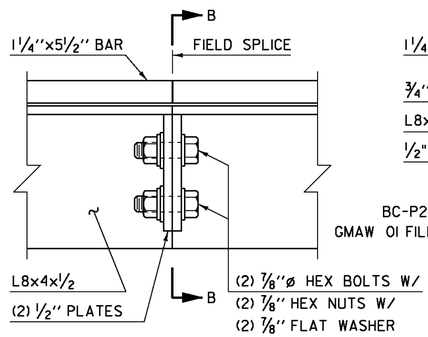
SCALE 3" = 1'-0"



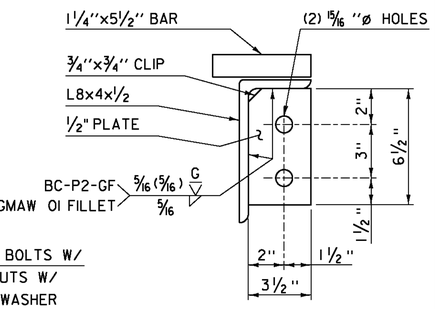
NOTE: ALL PLATES ½"

PLATE PLAN

SCALE 3" = 1'-0"



OPTIONAL FIELD SPLICE DETAIL



SECTION "B-B"

• THESE DIMENSIONS ARE THEORETICAL AND MAY CHANGE DEPENDING UPON THE OUTCOME OF THE BEAM PROFILES.

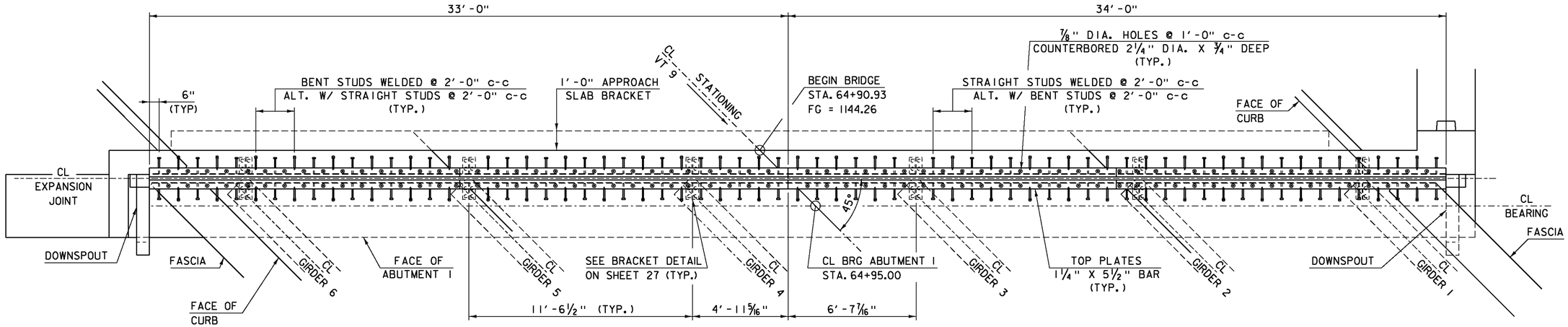
JOINT GAP DIMENSION TABLE

TEMP	"A" DIST
0 DEG F	2⅜"
15 DEG F	2¼"
30 DEG F	2⅛"
45 DEG F	2"
60 DEG F	1⅞"
75 DEG F	1¾"
90 DEG F	1⅝"
105 DEG F	1½"

PROJECT NAME: WOODFORD
PROJECT NUMBER: ER BHF 010-1(44)

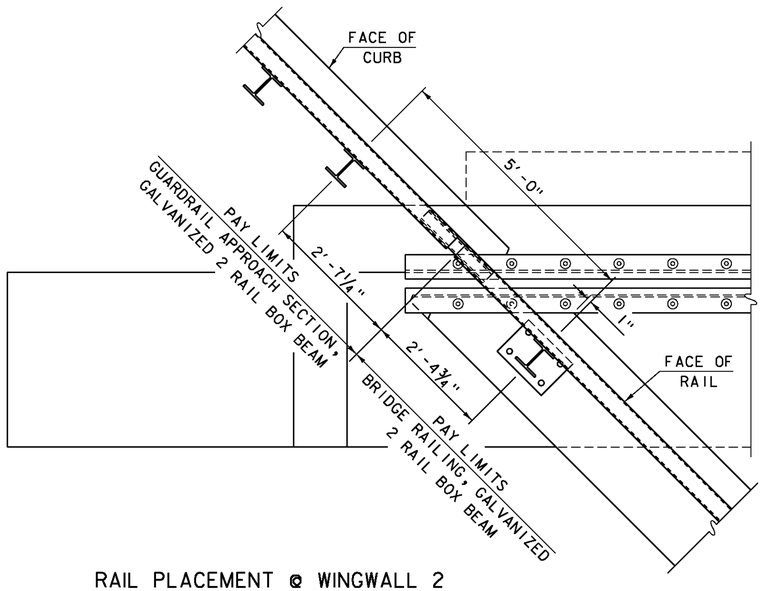
FILE NAME: sllb214sup.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: M. EVANS-MONGEON
BRIDGE EXPANSION JOINT DETAILS

PLOT DATE: 23-MAR-2012
DRAWN BY: C. MOONEY
CHECKED BY: M. EVANS-MONGEON
SHEET 27 OF 58



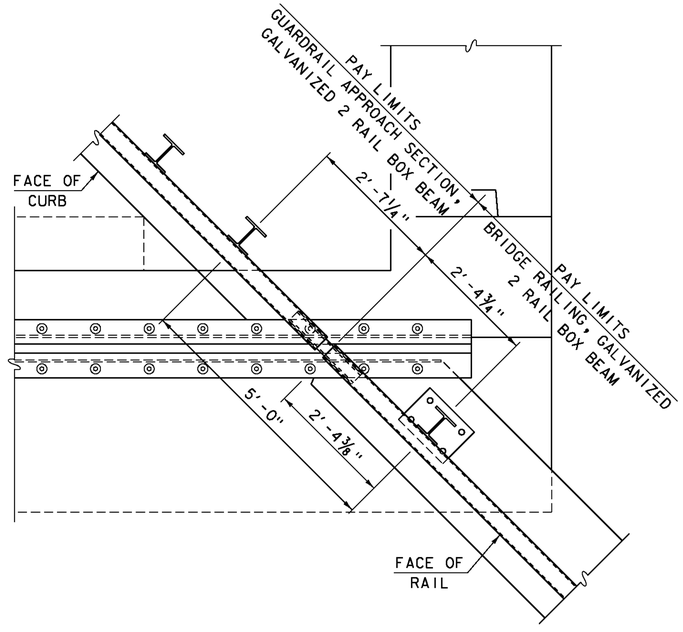
ABUTMENT 1 VT JOINT PLAN VIEW

SCALE 3/8" = 1'-0"



RAIL PLACEMENT @ WINGWALL 2

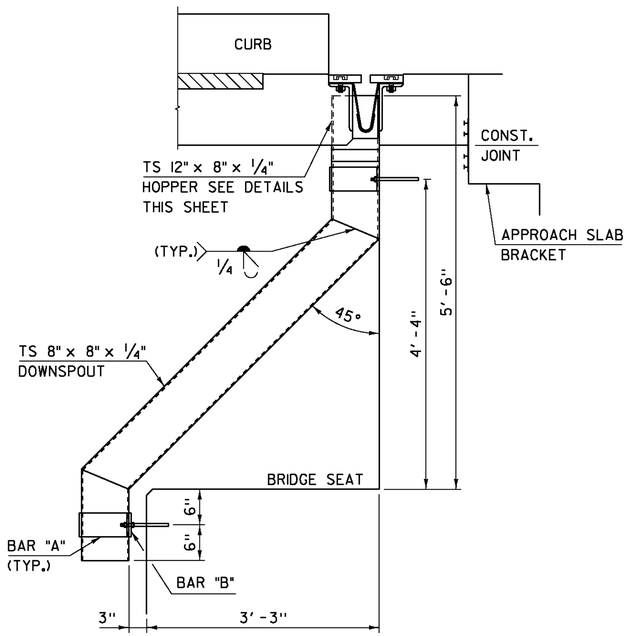
SCALE 3/4" = 1'-0"



RAIL PLACEMENT @ WINGWALL 1

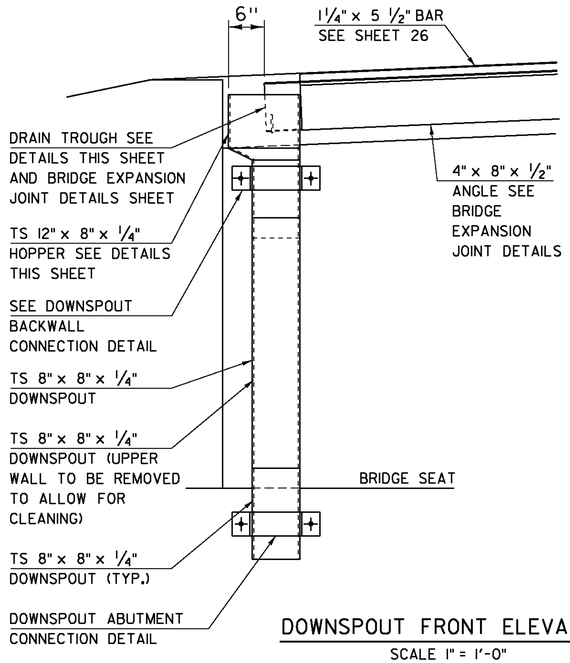
SCALE 3/4" = 1'-0"

PROJECT NAME:	WOODFORD
PROJECT NUMBER:	ER BHF 010-1(44)
FILE NAME: sllb214sup.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: C. MOONEY
DESIGNED BY: M. EVANS-MONGEON	CHECKED BY: M. EVANS-MONGEON
BRIDGE EXPANSION JOINT PLAN	SHEET 28 OF 58



DOWNSPOUT SIDE ELEVATION

SCALE 1" = 1'-0"

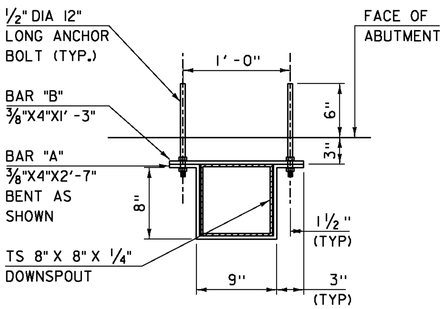


DOWNSPOUT FRONT ELEVATION

SCALE 1" = 1'-0"

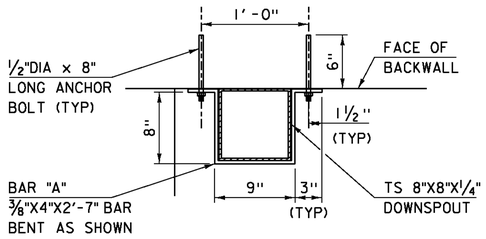
DOWNSPOUT NOTES

1. ALL HOLLOW STRUCTURAL STEEL TUBING SHALL CONFORM TO ASTM A-500 GR. B.
2. ALL PLATES, BARS, AND ANGLES SHALL CONFORM TO AASHTO M270M/M270 GR. 36.
3. DOWNSPOUT SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111M /M111 AFTER FABRICATION.
4. ALL BOLTS AND RELATED HARDWARE SHALL BE ASTM A-307 AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A-153 AASHTO M232).
5. ANY PLACE WHERE THE GALVANIZED HAS BEEN REMOVED FROM THE DOWNSPOUT EITHER BY CUTTING, BURNING, WELDING, PLACING, OR ANY OTHER MEANS, IT SHALL BE REPAIRED IN ACCORDANCE WITH SUBSECTION 726.08.
6. THE DOWNSPOUT AND RELATED HARDWARE FOR EACH SHALL BE PAID FOR UNDER THE ITEM 506.55 "STRUCTURAL STEEL, PLATE GIRDER".
7. ALL REQUIRED WELDS FOR DOWNSPOUT SHALL BE DETAILED ON FABRICATION DRAWINGS WHICH SHALL ALSO INCLUDE ALL APPLICABLE WELDING PROCEDURES.
8. AFTER ALL PAVING AND CONCRETE OPERATIONS THE DOWNSPOUT SHALL BE CLEANED OF ALL CONTAMINATION BY FLUSHING.
9. DETAILS SHOWN ARE TYPICAL BOTH SIDES OF BRIDGE AT ABUTMENT #1.



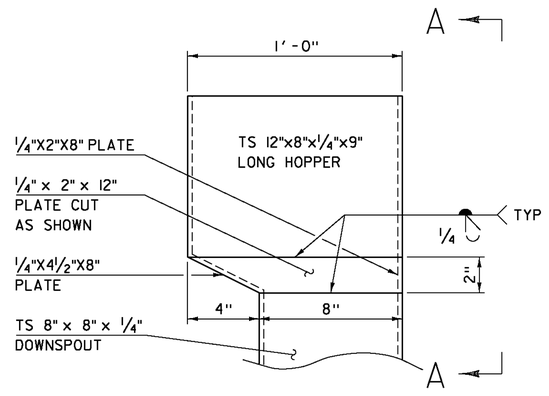
DOWNSPOUT ABUTMENT CONNECTION

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



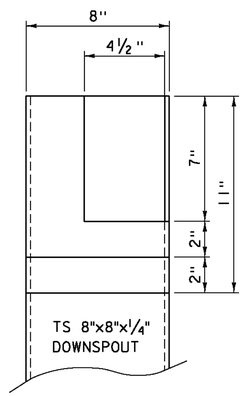
DOWNSPOUT BACKWALL CONNECTION

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



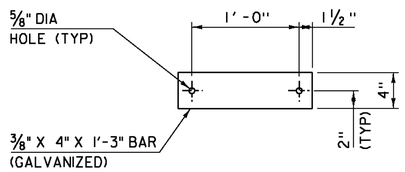
HOPPER DETAIL

SCALE 3" = 1'-0"



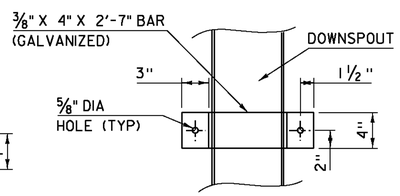
VIEW A-A

SCALE 3" = 1'-0"



ELEVATION VIEW OF BAR "B"

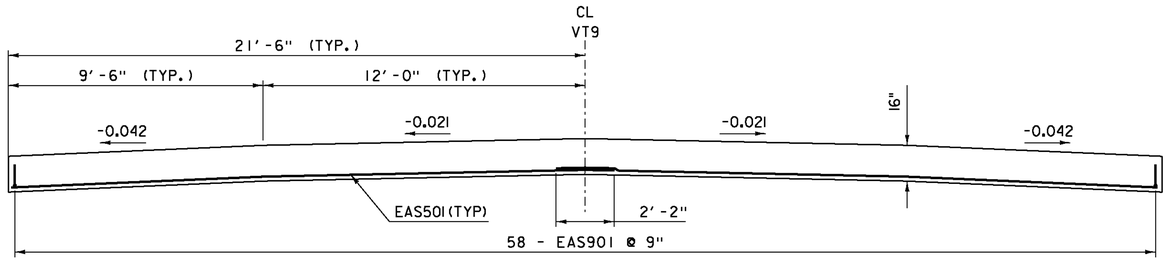
SCALE 1 1/2" = 1'-0"



ELEVATION VIEW OF BAR "A"

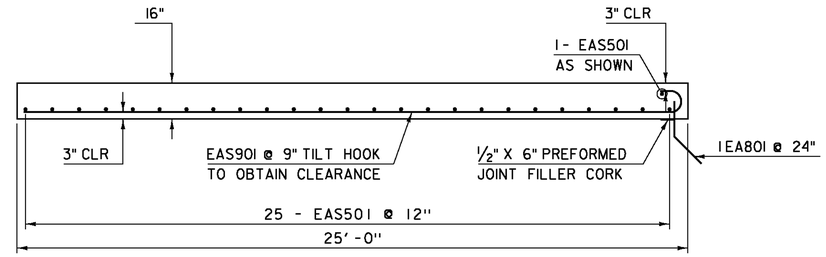
SCALE 1 1/2" = 1'-0"

PROJECT NAME: WOODFORD	
PROJECT NUMBER: ER BHF 010-1(44)	
FILE NAME: sllb214sup.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: C. MOONEY
DESIGNED BY: M. EVANS-MONGEON	CHECKED BY: M. EVANS-MONGEON
DOWNSPOUT DETAILS	SHEET 29 OF 58



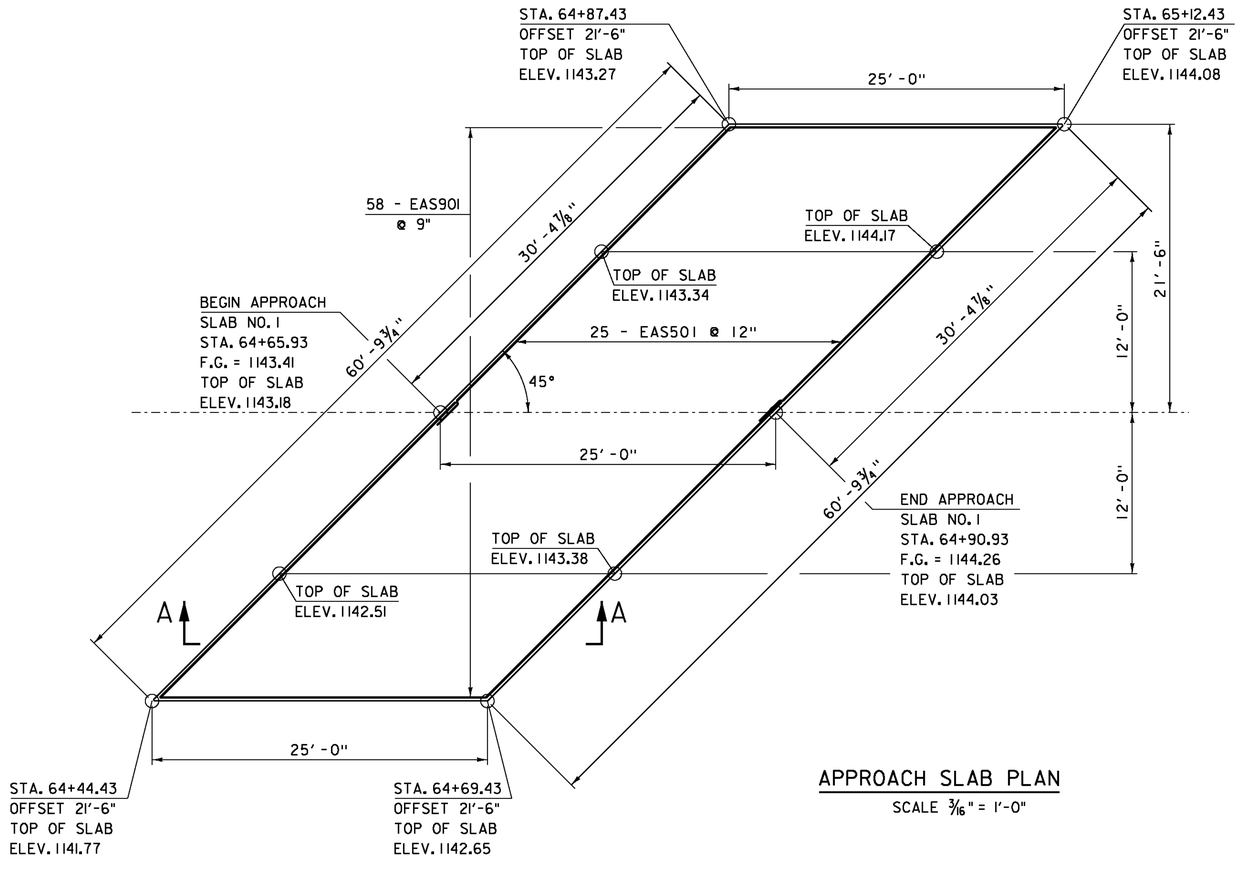
APPROACH SLAB SECTION

SCALE 3/8" = 1'-0"



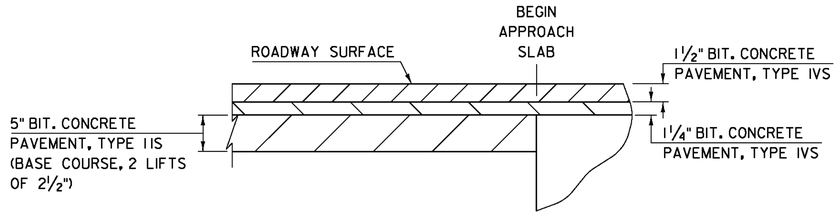
SECTION A-A

SCALE 3/8" = 1'-0"



APPROACH SLAB PLAN

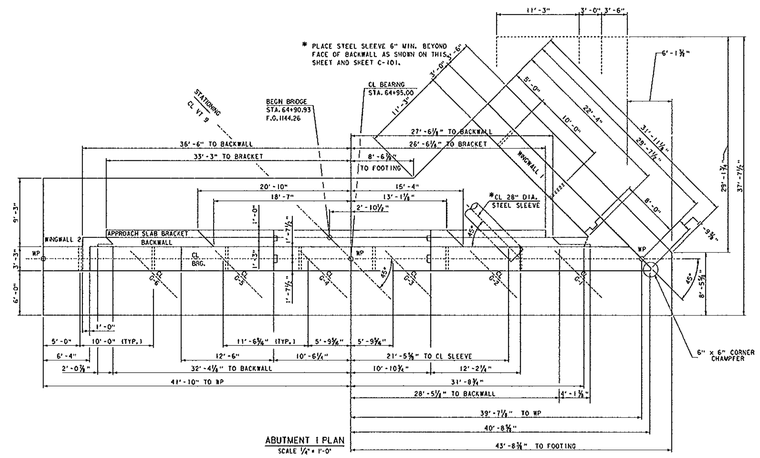
SCALE 3/16" = 1'-0"



DETAIL AT APPROACH SLAB END

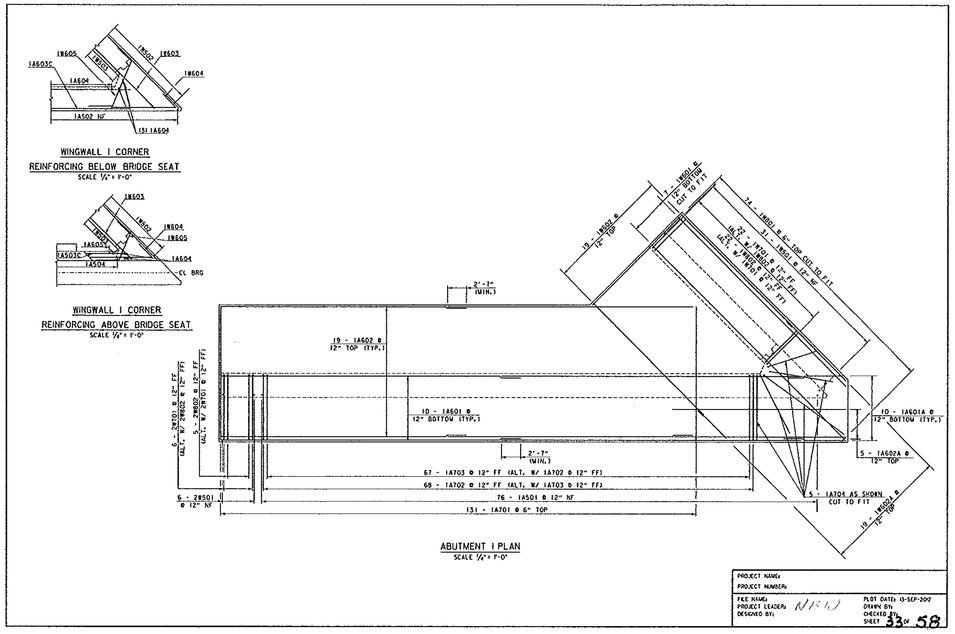
NTS

PROJECT NAME:	WOODFORD
PROJECT NUMBER:	ER BHF 010-1(44)
FILE NAME: sllb214sup.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: C. MOONEY
DESIGNED BY: M. EVANS-MONGEON	CHECKED BY: M. EVANS-MONGEON
APPROACH SLAB DETAILS	SHEET 30 OF 58



ABUTMENT 1 PLAN
SCALE 1/4" = 1'-0"

PROJECT NAME:	
PROJECT NUMBER:	
FILE NAME:	PLOT DATE: 13-SEP-2012
PROJECT LEADER:	DRAWN BY:
DESIGNED BY:	CHECKED BY:
	SHEET 31 OF 58


1#605
1#603
1#602
1A603C
1#601
1#604
1A604
1A502 NF
131 1A605
WINGWALL 1 CORNER
REINFORCING BELOW BRIDGE SEAT
SCALE 1/4" = 1'-0"
1#603
1#602
1#604
1#605
1A603C
1A604
CL BRG
WINGWALL 1 CORNER
REINFORCING ABOVE BRIDGE SEAT
SCALE 1/4" = 1'-0"
2'-3" (MIN.)
19 - 1A602 @ 12" TOP (TYP.)
10 - 1A601 @ 12" BOTTOM (TYP.)
2'-3" (MIN.)
67 - 1A703 @ 12" FF (ALT. W/ 1A702 @ 12" FF)
68 - 1A702 @ 12" FF (ALT. W/ 1A703 @ 12" FF)
76 - 1A501 @ 12" NF
131 - 1A701 @ 6" TOP
6 - 2#501 @ 12" NF
6 - 2#703 @ 12" FF (ALT. W/ 2#701 @ 12" FF)
5 - 2#802 @ 12" FF (ALT. W/ 2#701 @ 12" FF)
19 - 1#602 @ 12" TOP
1 - 1#601 @ 12" BOTTOM CUT TO FIT
34 - 1#601 @ 6" TOP CUT TO FIT
31 - 1#601 @ 12" NF
(ALT. W/ 1#701 @ 12" FF)
(ALT. W/ 1#701 @ 12" FF)
10 - 1A601A @ 12" BOTTOM (TYP.)
5 - 1A602A @ 12" TOP
5 - 1A704 AS SHOWN CUT TO FIT
19 - 1#602 @ 12" TOP
ABUTMENT 1 PLAN
SCALE 1/4" = 1'-0"
PROJECT NAME:
PROJECT NUMBER:
FILE NAME:
PROJECT LEADER:
DESIGNED BY:
PLOT DATE: 13-SEP-2012
DRAWN BY:
CHECKED BY:
SHEET 33 OF 58

RECORD PLANS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

REINFORCING STEEL SCHEDULE

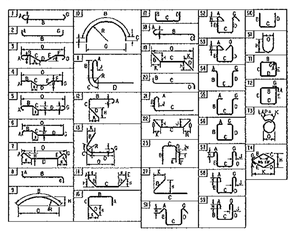
ITEM	EACH	SUB	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
DECK																	
* A 171	5	20'-7"	EA5501	STR													
* A 172	5	20'-6"	EA5502	STR													
A 42	5	20'-7"	EA5503	STR													
10	3	34'-7"	EA5505	STR													
301	5	6'-9"	EB504	BS		6'-9"	1'-4"	1'-3"	1'-4"			6'-9"					
39	5	8'-7"	EB506	BS		6'-10"	0'-3"	2'-8"	0'-3"			9'-10"					
* A 397	5	20'-7"	EB501	STR													
* A 87	5	20'-7"	EB502	STR													
APPROACH SLAB																	
Δ 54	5	20'-7"	EA5501	STR													
Δ 60	5	20'-9"	EA5501	1	1'-3"	20'-6"								1'-0"			
ABUTMENT NO.1																	
76	5	6'-11"	1A550	STR													
78	5	19'-2"	1A550	STR													
A 15	5	20'-11"	1A550A	STR													
14	5	20'-11"	1A550B	STR													
A 137	5	20'-9"	1A550C	STR													
68	5	6'-11"	1A504	STR													
50	5	19'-2"	1A505	16	2'-2"	5'-1"	0'-3"	2'-8"						2'-8"		2'-8"	
7	5	19'-2"	1A507	16		5'-1"	0'-3"	2'-8"	0'-3"	1'-0"	2'-8"			2'-8"		2'-8"	
7	5	19'-2"	1A507	16	2'-2"	5'-1"	0'-3"	2'-8"						2'-8"		2'-8"	
5	5	8'-0"	1A509	17		3'-7"	0'-3"	3'-1"									
3	5	6'-8"	1A508	14	1'-3"	5'-5"	0'-3"	1'-3"		1'-3"				0'-3"		1'-3"	
20	5	20'-9"	1A601	STR													
58	6	20'-9"	1A603	STR													
20	6	20'-9"	1A605A	STR													
20	6	20'-9"	1A606B	STR													
71	6	19'-2"	1A606	STR													
7	6	20'-10"	1A606A	STR													
7	6	20'-10"	1A606B	STR													
3	6	20'-9"	1A606C	STR													
60	6	8'-4"	1A606	18		2'-2"	5'-2"	...						1'-8"		1'-8"	
131 180	7	18'-0"	1A701	STR													
62	7	19'-4"	1A702	17			12'-8"	0'-3"	...								
69	7	12'-5"	1A703	17			8'-6"	0'-3"	...								
31	6	3'-0"	1A4501	18			1'-8"	0'-3"	...					1'-3"		1'-1"	
WINGWALL NO.1																	
31	5	6'-11"	1W601	STR													
A 31	5	20'-11"	1W602	STR													
A 30	5	19'-8"	1W603	STR													
23 20	5	2'-2"	1W604	17		2'-2"	2'-1"	2'-2"									
22	5	6'-9"	1W605	17		2'-2"	2'-1"	...									
7	5	20'-2"	1W607	18			2'-8"	0'-3"	2'-8"					0'-3"		1'-1"	
7	6	20'-2"	1W601	STR													
34	6	20'-2"	1W602	STR													
34	6	20'-2"	1W603	STR													
22 29	7	20'-11"	1W701	17			15'-9"	0'-1"	...								
75 77	8	12'-3"	1W801	STR													
23 29	8	19'-10"	1W802	17			12'-6"	0'-1"	...								
WINGWALL NO.2																	
6	5	6'-11"	2W601	STR													
A 5	5	20'-11"	2W602	STR													
A 5	5	19'-8"	2W603	STR													
6	5	7'-2"	2W604	17		2'-2"	2'-1"	2'-2"									
5	5	6'-4"	2W605	19		0'-3"	5'-1"	...						0'-3"		0'-8"	
A 51	6	8'-6"	2W601	STR													
7	7	20'-10"	2W701	17													
			2W501	NOTUSED													
8	8	19'-7"	2W801	17			12'-6"	0'-1"	...								

New bars:
1A602A NEED (6) STR, 23'-5"
1A601A NEED (10) STR, 6'-8"
1W602A NEED (10) STR, 10'-0"
1W604 NEED (25) type 22, B=2'-7" C= 8'-8" H=1'-10" K= 1'-10"
1W605 NEED (25) type 22, B=2'-7" C=2'-2" D=2'-7" H=1-2'-5" K=R=1'-0"
1A704 NEED (6) type17, B=10'-6" C= 13'-6" D=0 LENGTH 24'-0"
existing bars we need more of:
9 ADDITIONAL 1A501 BARS
5 ADDITIONAL 1A502 BARS
2 ADDITIONAL 1A604 BARS

NONE NEEDED

~ NOTES ~

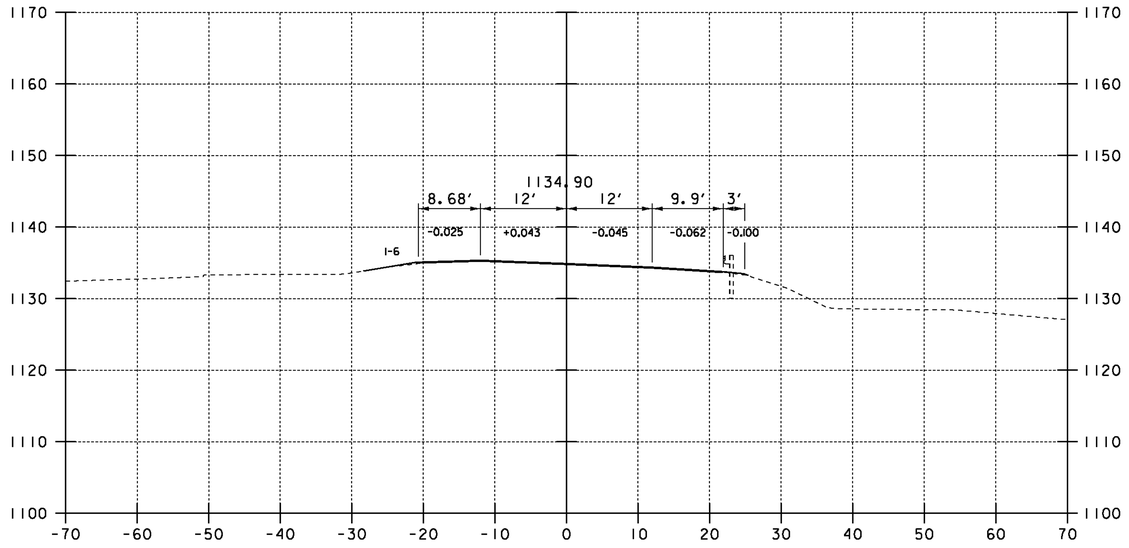
1. UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING NO. 18 SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT, AASHTO M 31 (ASTM A 615/A 615M). ALL BARS SHALL BE GRADE 60, UNLESS OTHERWISE DESIGNATED.
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 "B" 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. R IN BAR MARK PREFIX DENOTES EPOXY COATED REINFORCING STEEL.



ASTM STANDARD REINFORCING BARS

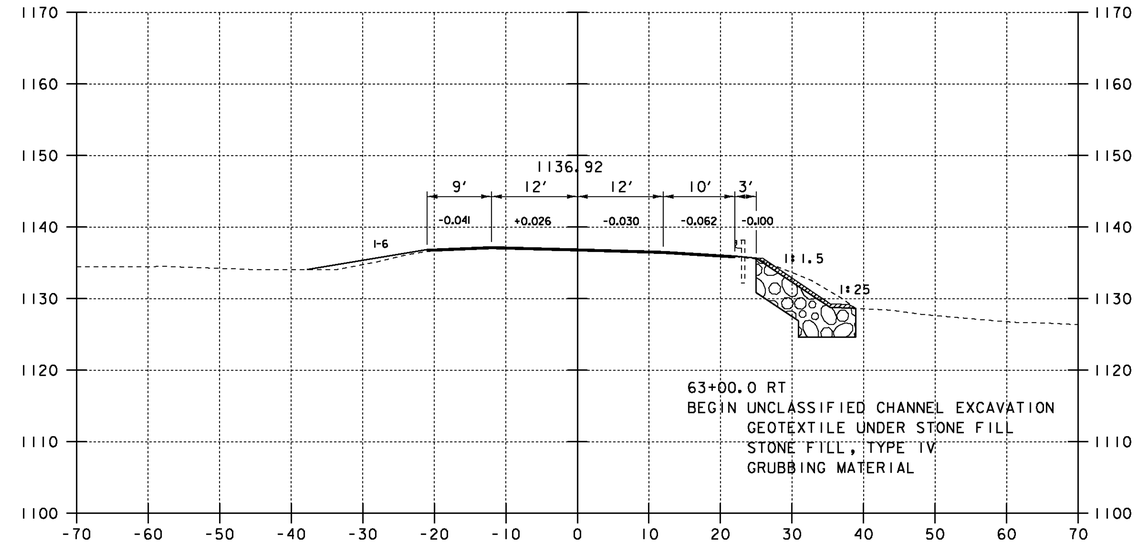
BAR SIZE NO.	NOMINAL WEIGHT POUNDS PER FOOT	NOMINAL DIAMETER INCHES	CROSS-SECTIONAL AREA SQUARE INCHES	PERIMETER INCHES
#3	0.376	0.375	0.11	1.178
#4	0.668	0.500	0.20	1.571
#5	1.043	0.625	0.31	1.963
#6	1.502	0.750	0.44	2.356
#7	2.044	0.875	0.60	2.749
#8	2.670	1.000	0.79	3.142
#9	3.400	1.128	1.00	3.544
#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

PROJECT NAME:	WOODFORD
PROJECT NUMBER:	ER BHF 010-1(44)
FILE NAME: s1151bhf44sh	PLOT DATE: 3/23/2018
PROJECT MANAGER: G. CARLSON	DRAWN BY: G.ROY
DESIGNED BY: M. EVANS MONDOR	CHECKED BY: EVANS MONDOR
REINFORCING STEEL SCHEDULE	SHEET 35 OF 58

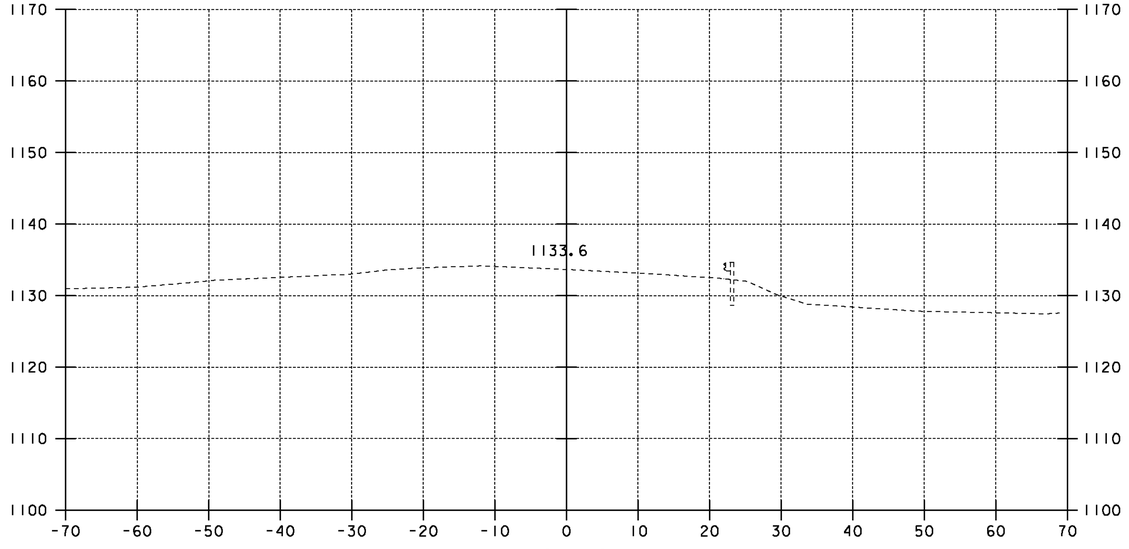


62+50

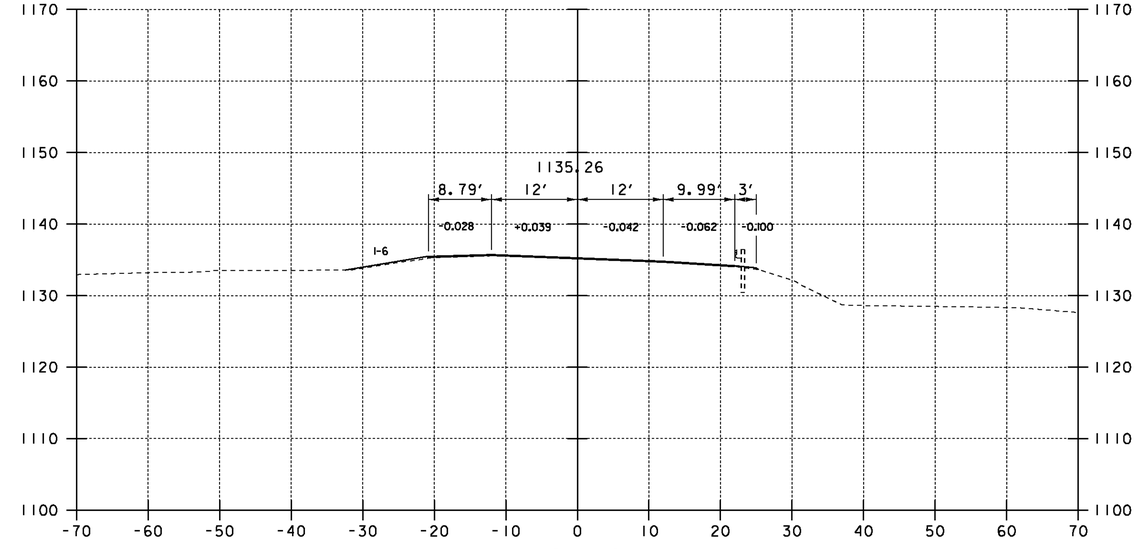
62+25.00
BEGIN APPROACH
MATCH EXISTING



63+00

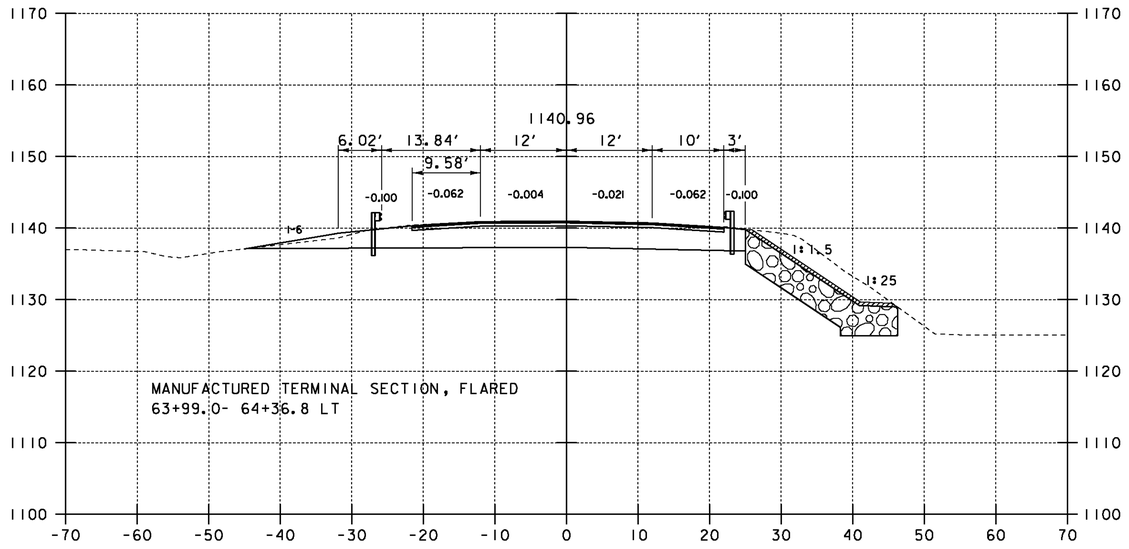


62+19



62+59

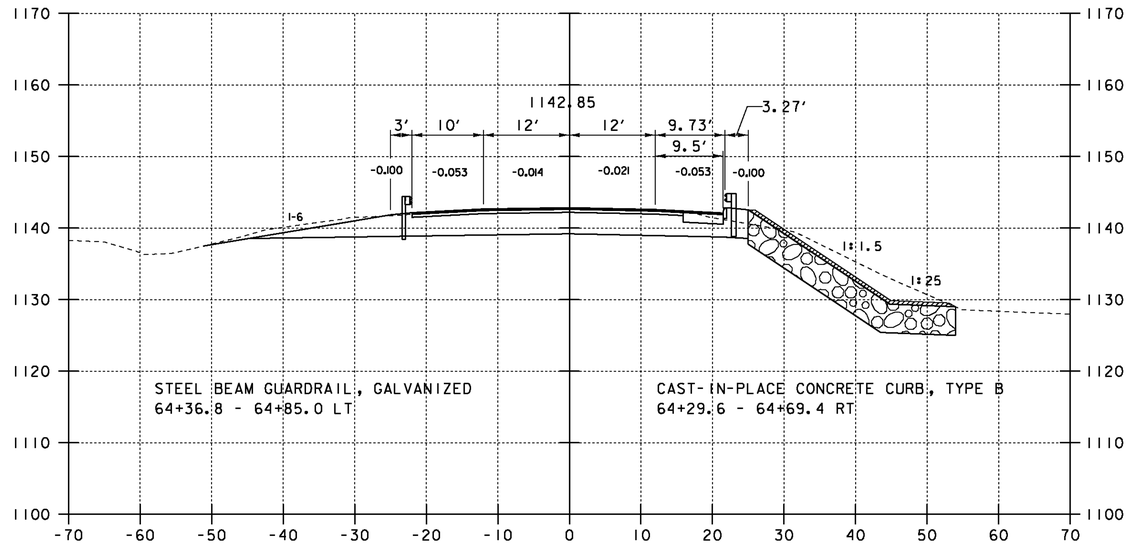
PROJECT NAME:	WOODFORD
PROJECT NUMBER:	ER BHF 010-1(44)
FILE NAME: sllb214xs.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: EVANS-MONGEON
DESIGNED BY: M.EVANS-MONGEON	CHECKED BY:
ROADWAY CROSS SECTIONS SHEET (1)	SHEET 36 OF 58



MANUFACTURED TERMINAL SECTION, FLARED
63+99.0- 64+36.8 LT

64+00

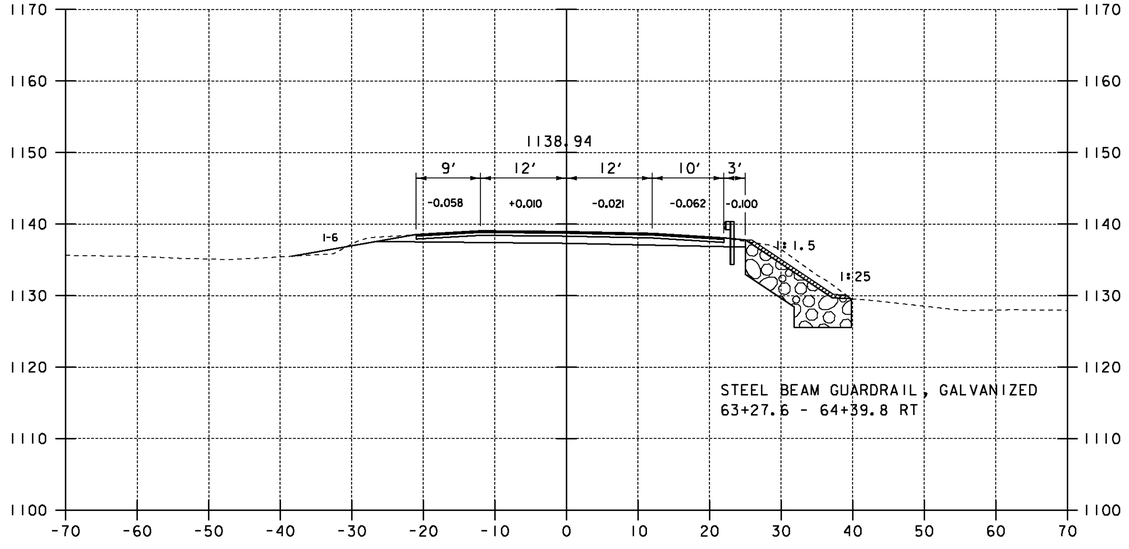
64+00.00
END APPROACH
BEGIN PROJECT



STEEL BEAM GUARDRAIL, GALVANIZED
64+36.8 - 64+85.0 LT

CAST-IN-PLACE CONCRETE CURB, TYPE B
64+29.6 - 64+69.4 RT

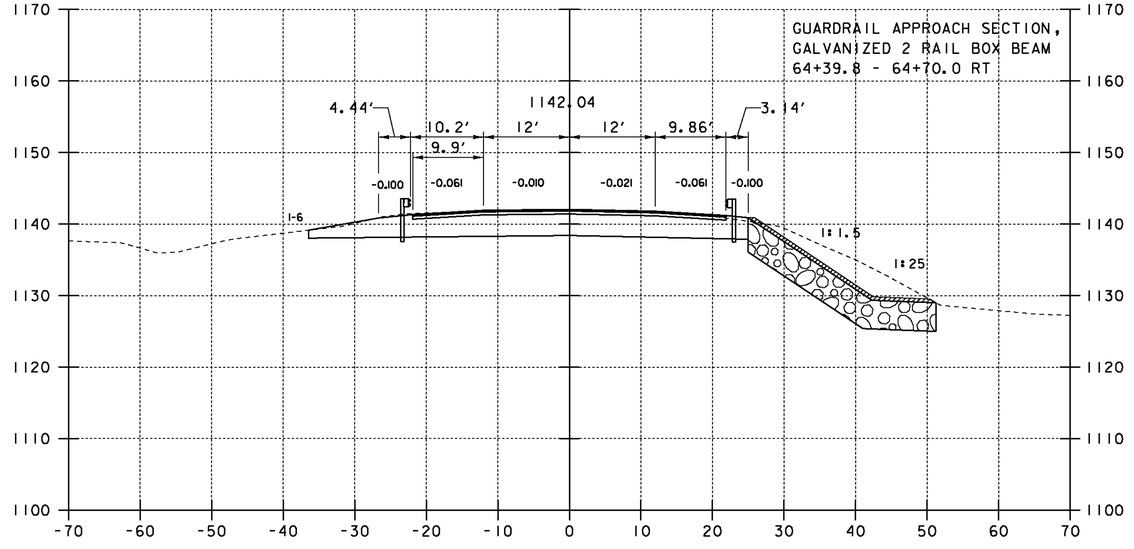
64+50



STEEL BEAM GUARDRAIL, GALVANIZED
63+27.6 - 64+39.8 RT

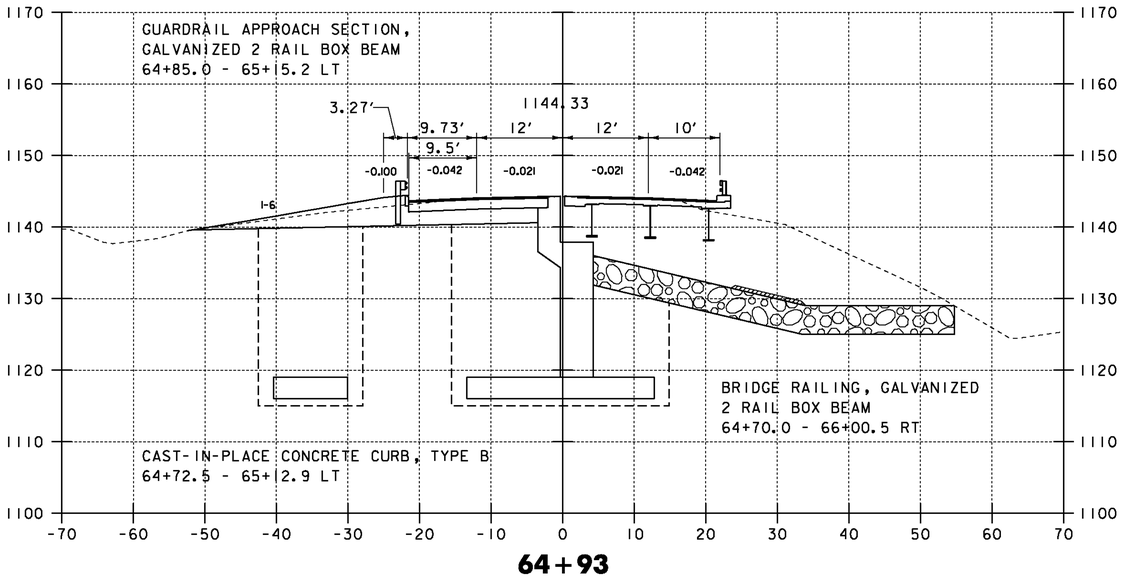
63+50

GUARDRAIL APPROACH SECTION,
GALVANIZED 2 RAIL BOX BEAM
64+39.8 - 64+70.0 RT

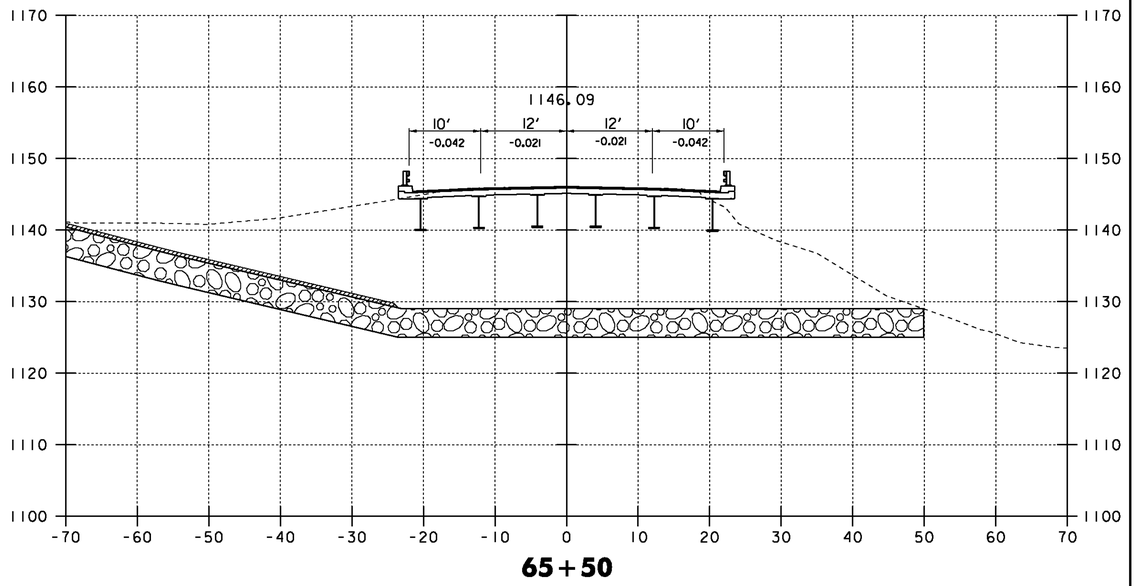


64+28

PROJECT NAME:	WOODFORD
PROJECT NUMBER:	ER BHF 010-1(44)
FILE NAME: sllb214xs.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: EVANS-MONGEON
DESIGNED BY: M.EVANS-MONGEON	CHECKED BY:
ROADWAY CROSS SECTIONS SHEET (2)	SHEET 37 OF 58

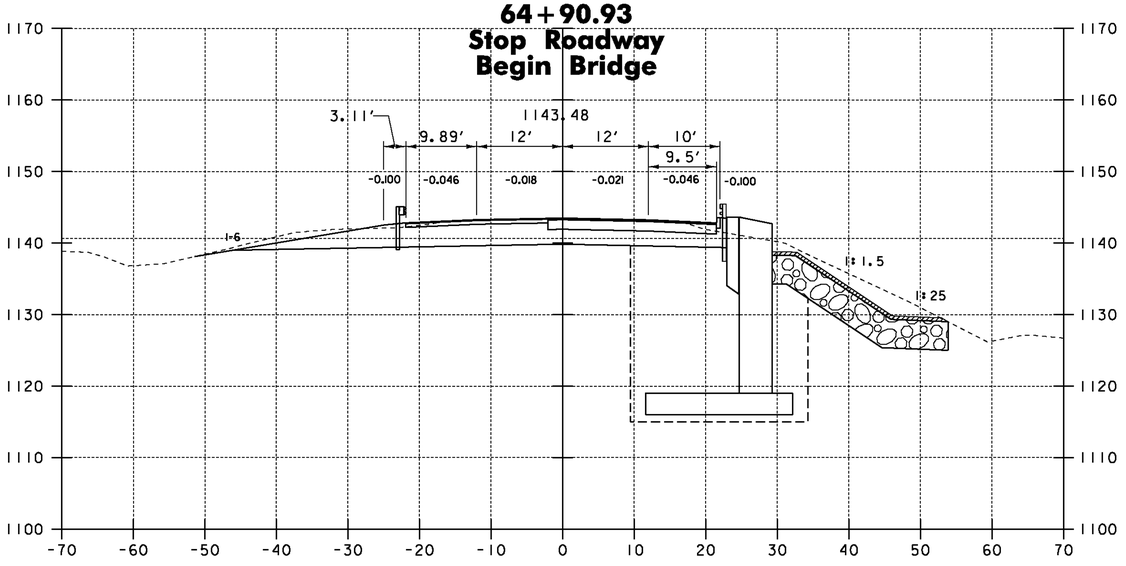


64+93

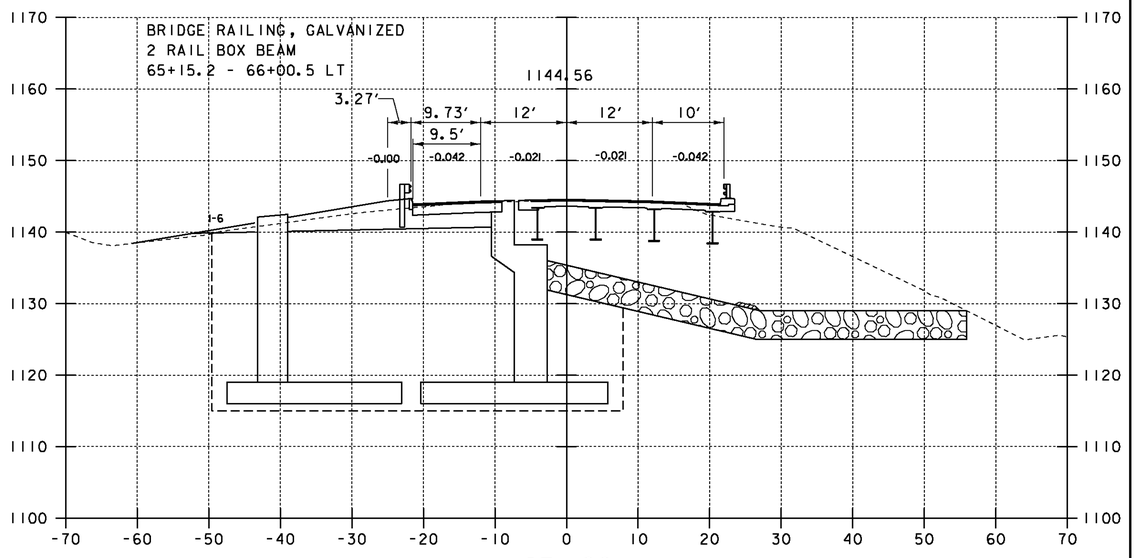


65+50

64+90.93
Stop Roadway
Begin Bridge

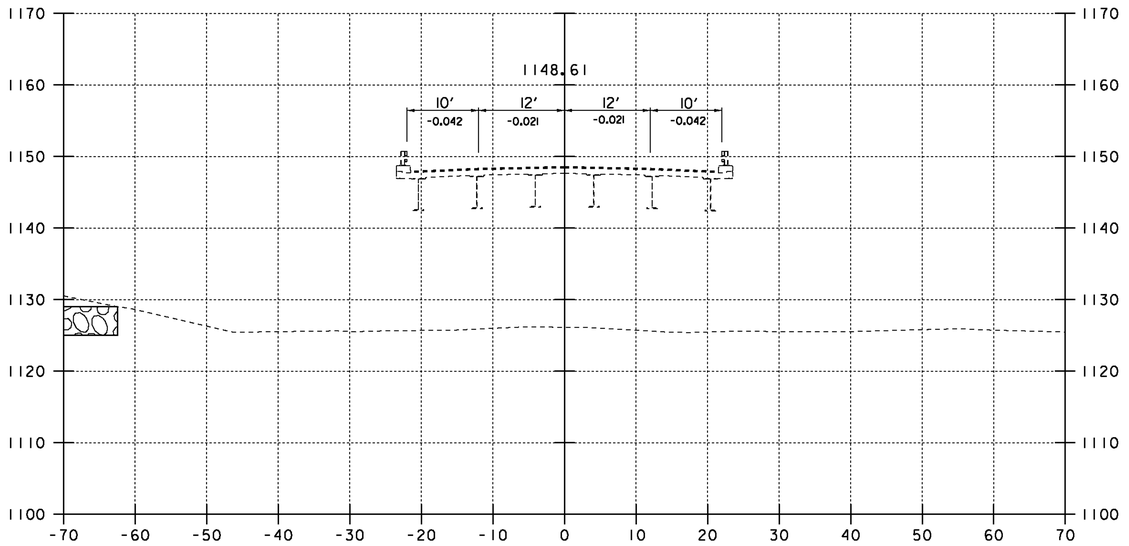


64+68



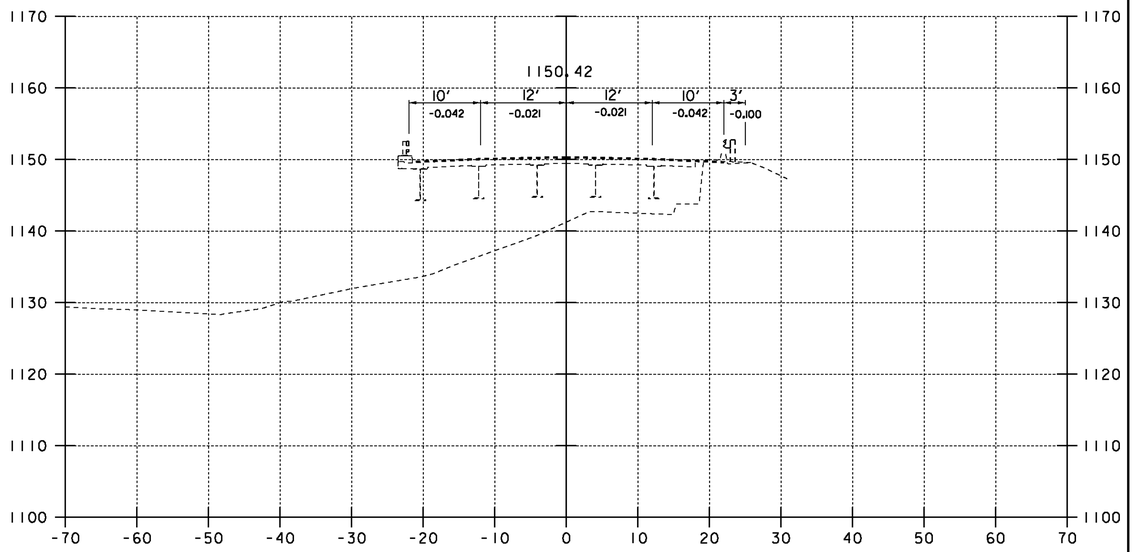
65+00

PROJECT NAME: WOODFORD	
PROJECT NUMBER: ER BHF 010-1(44)	
FILE NAME: s11b214xs.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: EVANS-MONGEON
DESIGNED BY: M.EVANS-MONGEON	CHECKED BY:
ROADWAY CROSS SECTIONS SHEET (3)	SHEET 38 OF 58

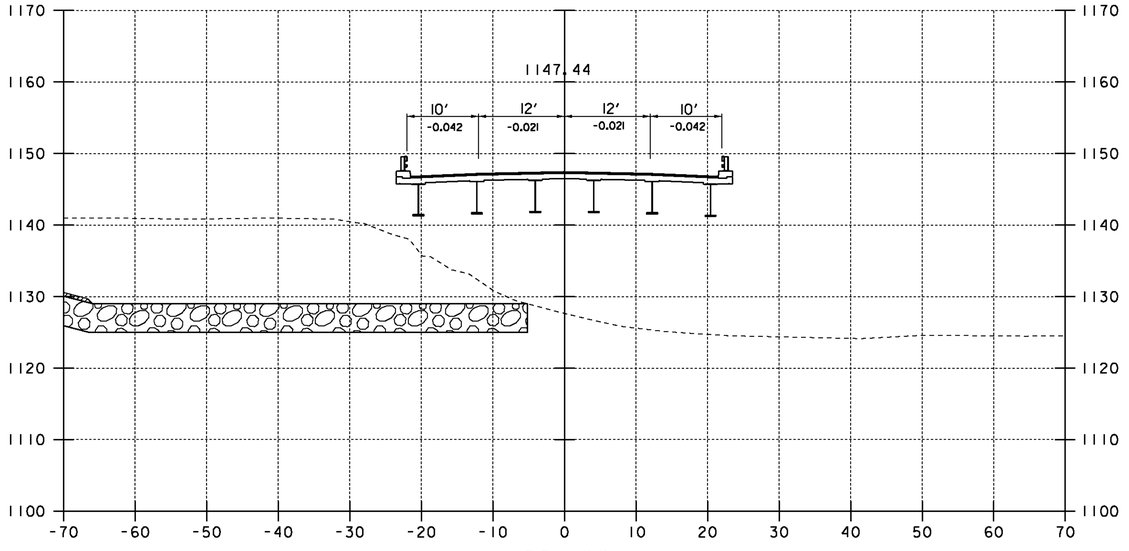


66+25.00
END APPROACH
MATCH EXISTING

66+50

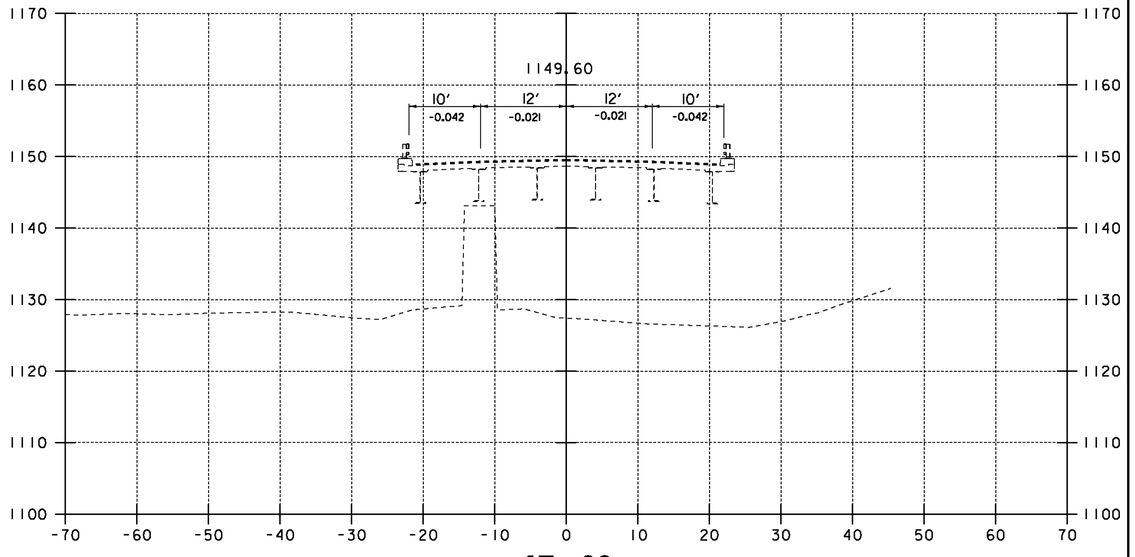


67+50



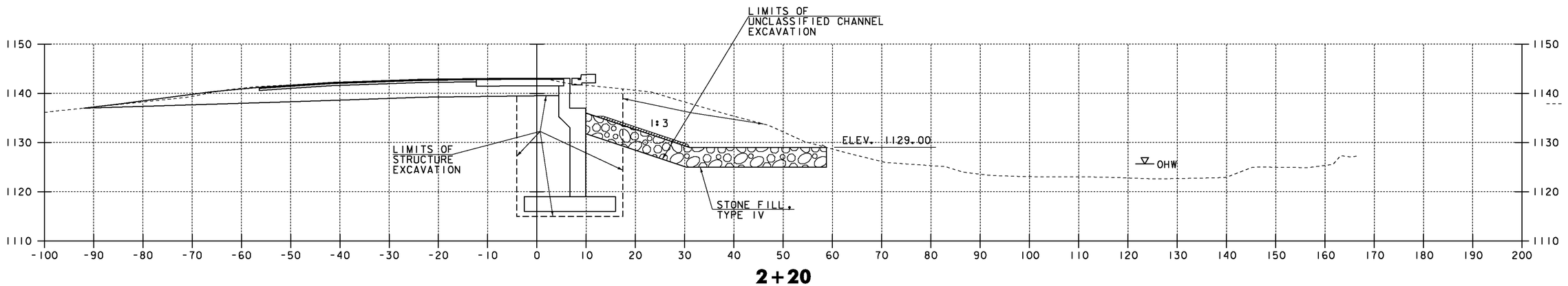
66+00

66+00.50
END BRIDGE WORK
END PROJECT
BEGIN APPROACH

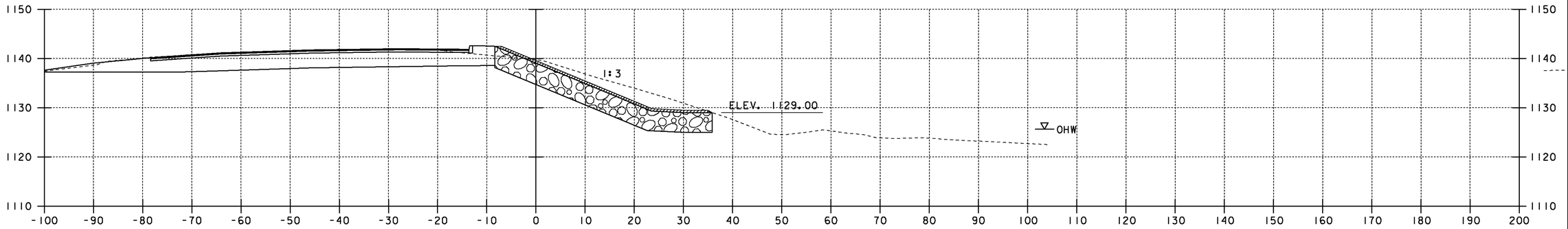


67+00

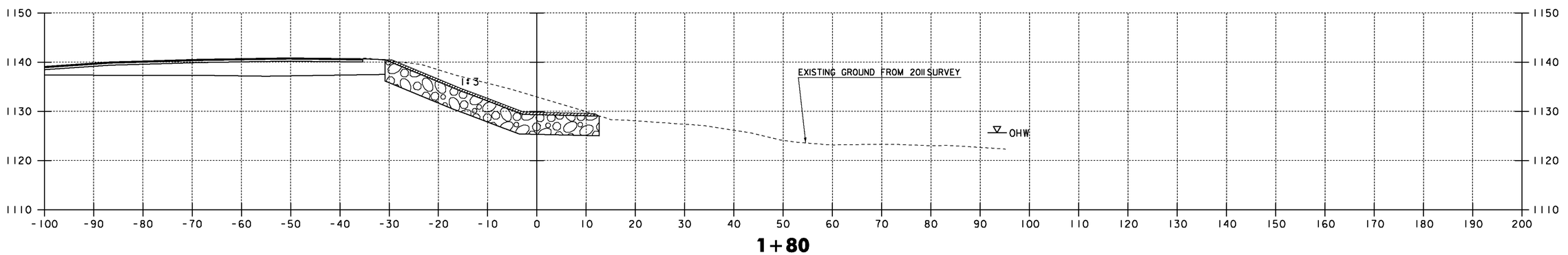
PROJECT NAME:	WOODFORD
PROJECT NUMBER:	ER BHF 010-1(44)
FILE NAME: slib214xs.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: EVANS-MONGEON
DESIGNED BY: M.EVANS-MONGEON	CHECKED BY:
ROADWAY CROSS SECTIONS SHEET (4)	SHEET 39 OF 58



2+20

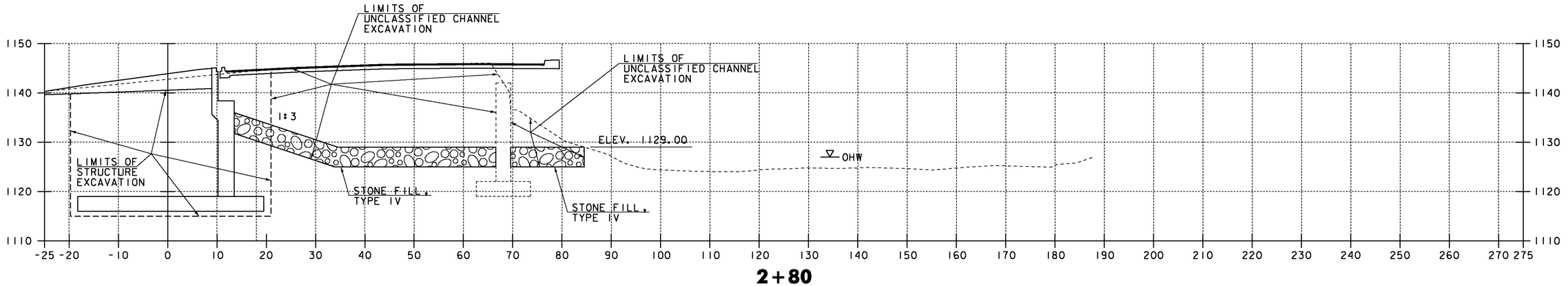


2+00

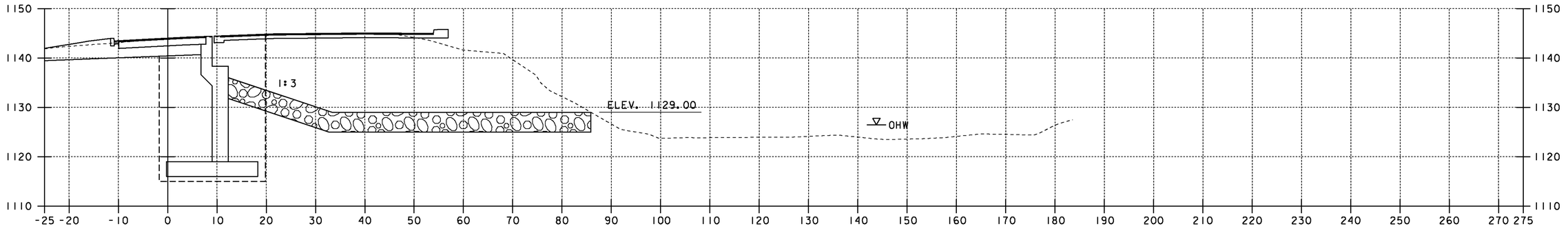


1+80

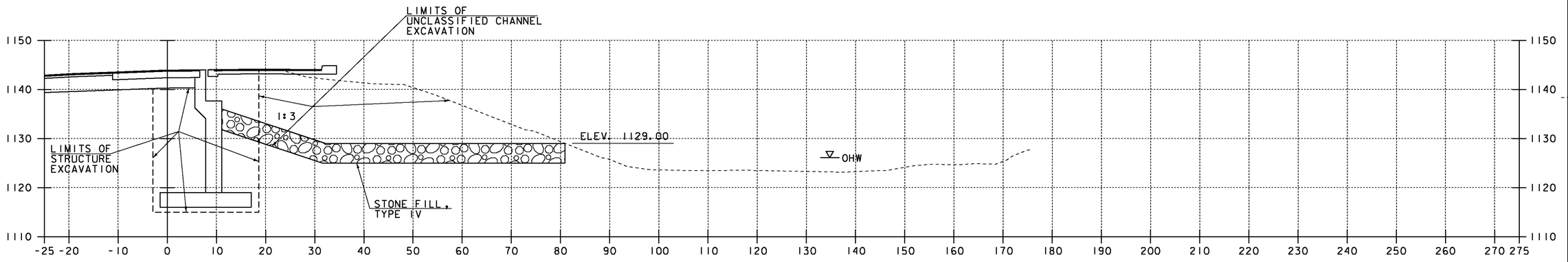
PROJECT NAME: WOODFORD	
PROJECT NUMBER: ER BHF 010-1(44)	
FILE NAME: s11b214ch xs.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROY
DESIGNED BY: M. EVANS-MONGEON	CHECKED BY: EVANS-MONGEON
CHANNEL CROSS SECTIONS SHEET (1)	SHEET 40 OF 58



2+80

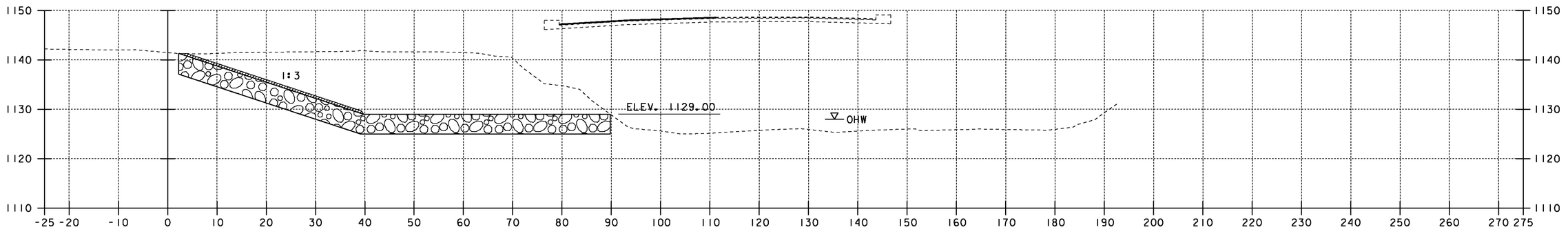


2+60

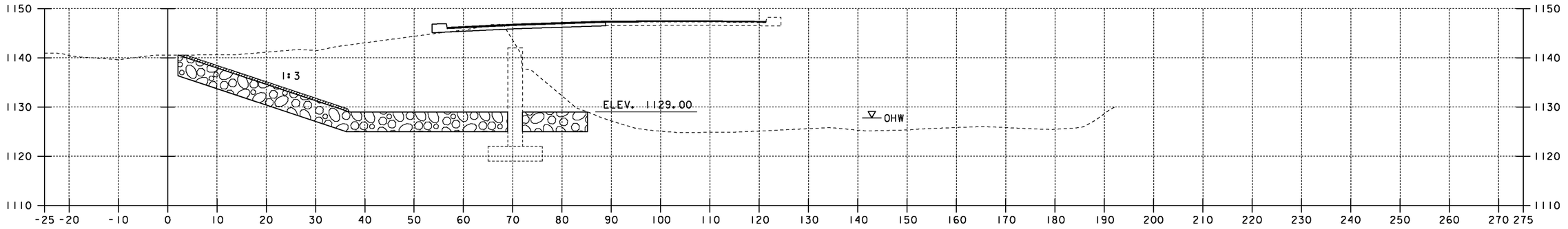


2+40

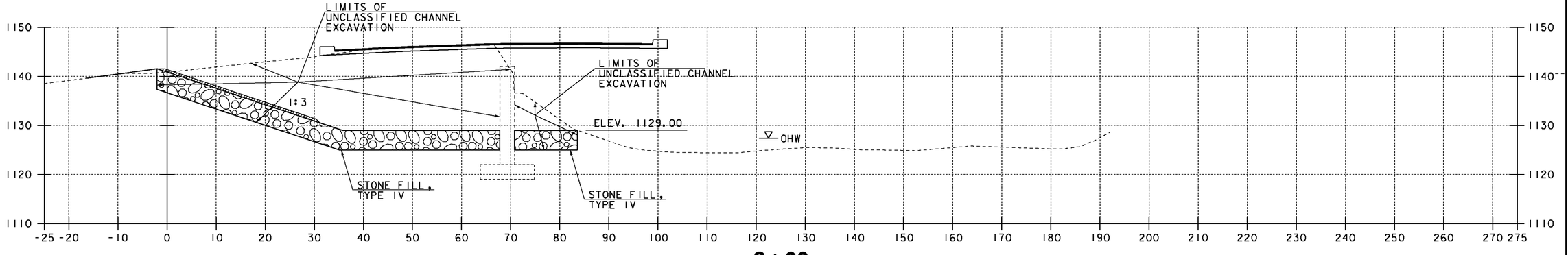
PROJECT NAME:	WOODFORD
PROJECT NUMBER:	ER BHF 010-1(44)
FILE NAME: s11b214ch xs.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROY
DESIGNED BY: M. EVANS-MONGEON	CHECKED BY: EVANS-MONGEON
CHANNEL CROSS SECTIONS SHEET (2)	SHEET 41 OF 58



3+40



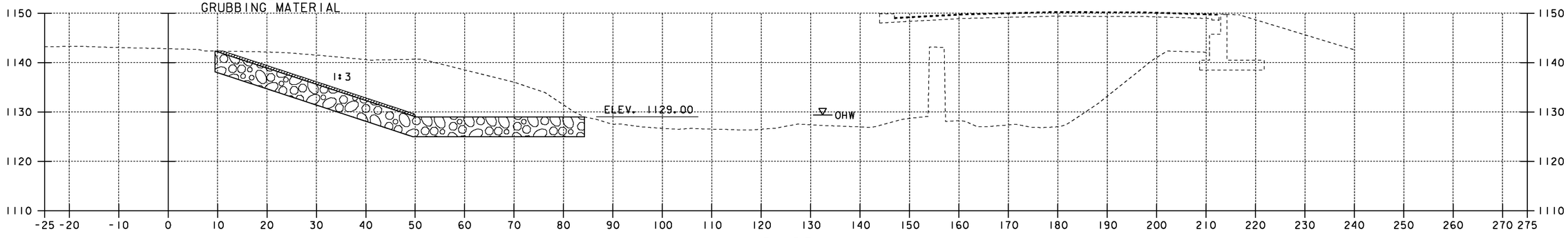
3+20



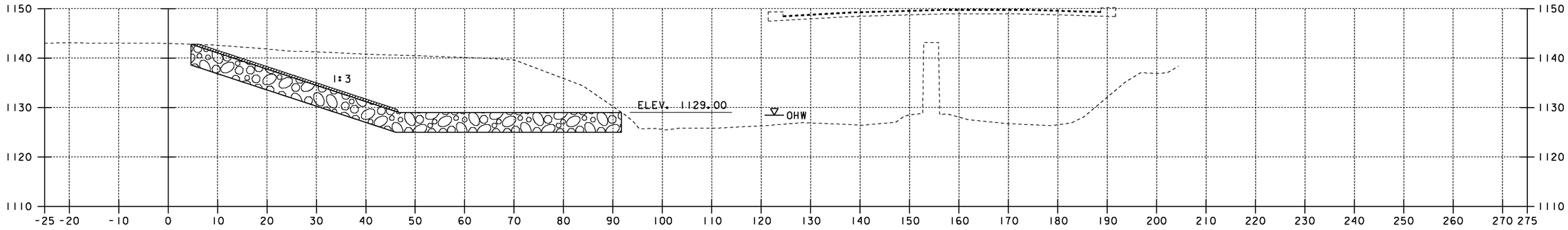
3+00

PROJECT NAME: WOODFORD	
PROJECT NUMBER: ER BHF 010-1(44)	
FILE NAME: s11b214ch xs.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROY
DESIGNED BY: M. EVANS-MONGEON	CHECKED BY: EVANS-MONGEON
CHANNEL CROSS SECTIONS SHEET (3)	SHEET 42 OF 58

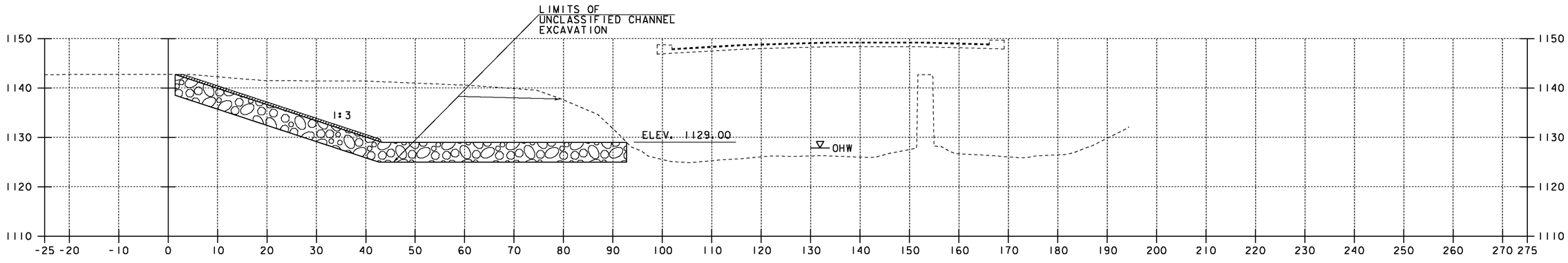
STA. 4+44.4 RT.
END UNCLASSIFIED CHANNEL EXCAVATION
GEOTEXTILE UNDER STONE FILL
STONE FILL TYPE IV
GRUBBING MATERIAL



4+00



3+80



3+60

PROJECT NAME: WOODFORD	
PROJECT NUMBER: ER BHF 010-1(44)	
FILE NAME: s11b214ch xs.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROY
DESIGNED BY: M. EVANS-MONGEON	CHECKED BY: EVANS-MONGEON
CHANNEL CROSS SECTIONS SHEET (4)	SHEET 43 OF 58

N

VT STATE PLANE GRID

EXISTING EVERGREEN TREE (REMOVE)

SMITH, PHYLLIS L.

EXISTING DECIDUOUS TREE (REMOVE)

SMITH, PHYLLIS L.

67-1
847-1
GUY WIRE
2
67
847
AER E&T
GRAVEL DRIVE
R.O.W. LIMIT
DETOUR PI 2 BK 204+89.27 AH
STA. 204+88.90
STA. 204+88.90
S. BIRCH
S. PINE
S. MAPLE
S. PINE
S. PINE
S. PINE
205+00
S. MAPLE
S. BIRCH
SHRUB
204+00
DETOUR PI 2 STA 203+47.69
63+
STA. 63+00
MATCH LINE A-A
VT 9 PT 1 STA 62+61.66
62+00
61+00
60+00
59+00
58+00
57+38
200+00
201+00
202+00
203+00
N 50° 04' 31" M
N 43° 15' 38" E
2
66
848
AER E&T
STONE WALL
2
65
849
2
66
848A
GUY WIRE
WOODS
2
65A
GRAVEL DRIVE
MB
GV
W
S
WF HO
LP
YEW
TRAV
PT 5
VT 9 PI 1 BK 80+38.88 AH STA 80+60.59
DETOUR PI 1 BK 89 AH STA 201+16.83
DETOUR PI 1 STA 200+00.06
57+50.06
VT 9 TO BENNINGTON
DETOUR PC 1 STA 202+93.16
VT 9 PC 1 STA 58+01.81
DETOUR PT 1 STA 201+40.56
DETOUR PC 2 STA 204+30.55

BM NO. 5
CHISELED SQUARE
ON HEADWALL
EL. 123.744

VT 9 CURVE IDATA
△ = 26°32'04"
D = 5°50'47"
R = 980.00
T = 231.07
L = 453.85
E = 26.87
BANK = 0.077 FT / FT

WRIGHT, RONALD F.

DETOUR CURVE 2 DATA
△ = 11°10' 44"
D = 9°32' 57"
R = 600.00
T = 58.72
L = 116.88
E = 2.87

DETOUR CURVE 1DATA
△ = 6° 47' 25"
D = 14°19' 26"
R = 400.00
T = 23.73
L = 47.41
E = 0.70

62+25.00
BEGIN APPROACH

R.O.W. LIMIT

STATE OF

FOR R.O.W. USE ONLY

LINE SHOWN ON THIS PLAN AS EXISTING PROPERTY LINES P/L ARE BELIEVED TO BE ACCURATE BUT SHOULD NOT BE RELIED UPON FOR PURPOSES UNRELATED TO THE STATE OF VERMONT'S AQUISITION OF LAND AND RIGHTS FOR THIS PROJECT.

SCALE 1" = 20'-0
20 0 20

PROJECT NAME: WOODFORD
PROJECT NUMBER: ER BHF 010-1(44)

FILE NAME: sllb214bdr.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: M.EVANS-MONGEON
R.O.W. PLAN SHEET (1)

PLOT DATE: 23-MAR-2012
DRAWN BY: EVANS-MONGEON
CHECKED BY:
SHEET 44 OF 58

64+00.00
END APPROACH
BEGIN PROJECT
F.G. 1140.96

64+90.93
BEGIN BRIDGE
F.G. 1144.26

66+00.50
END BRIDGE WORK
BEGIN APPROACH
F.G. 1147.44

SMITH, PHYLLIS L.

DETOUR CURVE 3 DATA
△ = 19°24' 14"
D = 14° 19' 26"
R = 400.00
T = 68.39
L = 134.82
E = 5.80

TEMPORARY DETOUR
CONSTRUCTION LIMITS

EXISTING (BURIED) WATER
MAIN TO BE REMOVED
SEE PROJECT NOTES

DETOUR PI 3
STA 207+96.70 BK
STA 207+95.39 AH
STATE OF VERMONT
AOT

DETOUR PT 3
STA 208+63.78
AER E&T

DETOUR PC 3
STA 207+28.31

STA. 63+00

STA. 69+00

MATCH LINE A-A

MATCH LINE B-B

AER E&T

R.O.W. LIMIT

N 61° 15' 15" E

N 69° 47' 42" E

N 80° 39' 29" E

S. BIRCH
S. ASH
S. ASH
S. BIRCH
S. MAPLE
S. PINE
S. PINE

GP
HYD
GV
3-GV

9'
10'

206+00
207+00
208+00
209+00
210+00
211+00
64+00
65+00
66+00
67+00
68+00
1+00
2+00
3+00
4+00
5+00
5+41

WOODS

WRIGHT, RONALD F.
STONE FILL, TYPE IV

CONSTRUCTION
LIMITS

ROARING BRANCH OF
THE WALLOOMSAC RIVER

STATE OF VERMONT
AOT

APPROXIMATE LOCATION
OF TEMPORARY STRUCTURE

EXISTING
12" WATER LINE

TRAV
PT 6

R.O.W. LIMIT
SR (P)
CONST. (T)

BM NO. 6
CHISELED SQUARE
ON ABUTMENT
EL. 1150.309

STA 0+02.39
POB LT
20+0

VT STATE PLANE GRID

N

CAST-IN-PLACE CONCRETE CURB, TYPE B
64+29.6 - 64+69.4 RT
64+72.5 - 65+12.9 LT

STEEL BEAM GUARDRAIL, GALVANIZED
64+36.8 - 64+85.0 LT
64+14.8 - 64+39.8 RT

GUARDRAIL APPROACH SECTION,
GALVANIZED 2 RAIL BOX BEAM
64+85.0 - 65+15.2 LT
64+39.8 - 64+70.0 RT

MANUFACTURED TERMINAL SECTION, FLARED
63+99.0 - 64+36.8 LT

BRIDGE RAILING, GALVANIZED
2 RAIL BOX BEAM
64+70.0 - 66+00.50 RT
65+15.2 - 66+00.50 LT

4" YELLOW LINE
62+25.0 - 66+30.5 DBL SOLID

4" WHITE LINE
62+25.0 - 66+30.5 LT
62+25.0 - 66+30.5 RT

BEGIN R.O.W PROJECT
ER BHF 010-1(29) STA. 67+28
58' RT.

UNITED STATE
U.S. FOREST
(DEPT. OF AG

66+30.50
END APPROACH
FOR R.O.W.
ONLY

LINE SHOWN ON THIS PLAN AS EXISTING PROPERTY LINES P/L ARE BELIEVED TO BE ACCURATE BUT SHOULD NOT BE RELIED UPON FOR PURPOSES UNRELATED TO THE STATE OF VERMONT'S AQUISITION OF LAND AND RIGHTS FOR THIS PROJECT.

SCALE 1" = 20'-0
20 0 20

PROJECT NAME: WOODFORD
PROJECT NUMBER: ER BHF 010-1(44)

FILE NAME: sllb214bdr.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: M.EVANS-MONGEON
ROW PLAN SHEET (2)

PLOT DATE: 23-MAR-2012
DRAWN BY: EVANS-MONGEON
CHECKED BY:
SHEET 45 OF 58

END R.O.W PROJECT

BHF 010-1(29) STA. 72+39 27' LT.

ADVENT CHRISTIAN CHURCH OF WOODFORD
(LESSOR)
TOWN OF WOODFORD
(LESSEE)

N

VT STATE PLANE GRID

STA. 69+00

MATCH LINE B-B

STATE OF VERMONT
AOT

STATE OF VERMONT
AOT
DETOUR CURVE 4 DATA
△ = 10°51'47"
D = 24°54'40"
R = 230.00
T = 21.87
L = 43.61
E = 1.04

GUY WIRE
GUY WIRE
2 TO 844

DETOUR PC 4
STA 212+74.94

DETOUR PT 4
STA 213+18.55

AER E&T
AER E&T
AER E&T
AER E&T

WOODS

212+00
213+00

70+00

70+96
2.7' LT.

VT 9 PI 2
STA 73+37.04 BK
STA 73+23.10 AH

VT 9
TO WILMINGTON

R.O.W. LIMIT

TRAV PT 7

71+70
14' RT.

72+00

73+00

74+00

75+00

R.O.W. LIMIT

STATE OF VERMONT

70+76
42' RT.

DETOUR PI 4
STA 212+96.81 BK
STA 212+96.68 AH

VT 9 PC 2
STA 70+46.43

DETOUR PC 5
STA 213+18.95

71+67
39' RT.

TOWN OF BENNINGTON

UNITED STATES OF AMERICA
U.S. FOREST SERVICE
(DEPT. OF AGRICULTURE)

UNITED STATES OF AMERICA
U.S. FOREST SERVICE
(DEPT. OF AGRICULTURE)

VT 9 CURVE 2 DATA
△ = 30°39'47"
D = 5°24'19"
R = 1060.00
T = 290.61
L = 567.28
E = 39.12
BANK = 0.074 FT / FT

FOR R.O.W. USE ONLY

LINE SHOWN ON THIS PLAN AS EXISTING PROPERTY LINES P/L ARE BELIEVED TO BE ACCURATE BUT SHOULD NOT BE RELIED UPON FOR PURPOSES UNRELATED TO THE STATE OF VERMONT'S AQUISITION OF LAND AND RIGHTS FOR THIS PROJECT.

SCALE 1" = 20'-0
20 0 20

PROJECT NAME: WOODFORD
PROJECT NUMBER: ER BHF 010-1(44)

FILE NAME: sllb214bdr.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: M. EVANS-MONGEON
ROW PLAN SHEET (3)

PLOT DATE: 23-MAR-2012
DRAWN BY: EVANS-MONGEON
CHECKED BY:
SHEET 46 OF 58

EPSC PLAN NARRATIVE

1.1 PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE RECONSTRUCTION OF BRIDGE 11 ON VT 9 IN WOODFORD. A NEW ABUTMENT WILL BE CONSTRUCTED ON THE WESTERN END OF BRIDGE 11 AND THE WESTERNMOST SPAN WILL BE REPLACED WITH NEW STEEL GIRDERS AND A NEW CONCRETE DECK. A TEMPORARY BRIDGE WILL BE CONSTRUCTED UPSTREAM OF THE EXISTING BRIDGE AND WILL BE REMOVED AT THE COMPLETION OF THE PROJECT. THE BRIDGE IS LOCATED IN THE TOWN OF WOODFORD, ON VT ROUTE 9, APPROXIMATELY 1.2 MILES EAST OF THE BENNINGTON-WOODFORD TOWN LINE, OVER THE ROARING BRANCH OF THE WALLOOMSAC RIVER.

NOTE: AREA OF DISTURBANCE INCLUDES LIMITS OF EARTH DISTURBANCE WITHIN THE PROJECT AREA AS WELL AS WASTE, BORROW, AND STAGING AREAS, AND OTHER EARTH DISTURBING ACTIVITIES WITHIN OR DIRECTLY ADJACENT TO THE PROJECT LIMITS AS SHOWN ON THE ATTACHED EPSC PLAN.

TOTAL AREA OF DISTURBANCE AS SHOWN ON THE ATTACHED EPSC PLAN IS APPROXIMATELY 1.64 ACRES.

IT IS ANTICIPATED THAT THIS PROJECT WILL LAST ONE CONSTRUCTION SEASON.

1.2 SITE INVENTORY

1.2.1 TOPOGRAPHY

THE TERRAIN HAS MODERATE TO STEEP SLOPES IN THE VICINITY OF THE PROJECT SITE. VT ROUTE 9 IS A PAVED STATE HIGHWAY. DEVELOPMENT ALONG VT ROUTE 9 CONSISTS OF A MIX OF PERMANENT RESIDENCES AND MUNICIPAL BUILDINGS LYING ON THE OUTSKIRTS OF THE PROJECT LIMITS. THE EXISTING CABLE, TELEPHONE, AND ELECTRICAL UTILITIES EXIST WITHIN THE PROJECT SITE AND WILL NOT BE RELOCATED. A MUNICIPAL WATER MAIN CURRENTLY TRAVELS ACROSS THE NORTH SIDE OF THE EXISTING BRIDGE AND WILL BE RELOCATED TO THE TEMPORARY BRIDGE DURING CONSTRUCTION AND THEN FINALLY ONTO THE NEW BRIDGE.

1.2.2 DRAINAGE, WATERWAYS, BODIES OF WATER, AND PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES

THE ROARING BROOK OF THE WALLOOMSAC RIVER IS THE ONLY WATER SOURCE ON THE PROJECT SITE. THERE ARE SEVERAL DRAINAGE WAYS IN THE PROJECT AREA THAT CARRY RUNOFF FROM THE ROAD TO THE RIVER, BUT THERE ARE NO KNOWN EPHEMERAL STREAMS OR PONDS WITHIN THE PROJECT SITE.

THERE EXIST UNLINED DRAINAGE DITCHES ALONG THE SIDES OF VT ROUTE 9. THE BANKS SLOPE STEEPLY IN THE VICINITY OF THE BRIDGE AND SOUTH WEST OF THE BRIDGE. THE DRAINAGE AREA AT THE CROSSING IS 37.7 MILES^2.

1.2.3 VEGETATION

THE PROJECT SITE CONTAINS A MIXTURE OF RESIDENTIAL AND FORESTED LANDS. IN THE RESIDENTIAL AREAS THERE ARE SCATTERED TREES CONSISTING OF SOME ASH, CHERRY, MAPLE, POPLAR, APPLE BIRCH AND PINE. THERE ARE ALSO SOME SHRUBS AND GRASSY LAWNS IN THE RESIDENTIAL AREA. IN ORDER TO PLACE THE TEMPORARY BRIDGE APPROXIMATELY 6 OF THE TREES THAT WERE PLACED IN 2006, AS PART OF PROJECT WOODFORD BHF 010-1 (29), WILL HAVE TO BE REMOVED. UPON PROJECT COMPLETION, THE CHANNEL WILL BE ARMORED WITH STONE FILL TYPE IV AS SPECIFIED ON THE PLANS.DISTURBED VEGETATION WILL BE REESTABLISHED WITH STANDARD SEED AND MULCH PRACTICES.

1.2.4 SOILS

ALL SOIL DATA CAME FROM THE U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE FOR THE COUNTY OF BENNINGTON, VERMONT. THE SOIL TYPE IDENTIFIED FOR THIS PROJECT SITE IS COLTON GRAVELLY LOAMY SAND, 8% TO 15% SLOPES, THE SOIL IS CONSIDERED HIGHLY ERODIBLE WITH A K VALUE OF 0.17. IT BELONGS TO HYDROLOGICAL GROUP A AND THE PERMEABILITY OF THIS SOIL IS MODERATELY RAPID TO VERY RAPID.

1.2.5 SENSITIVE RESOURCE AREAS

CRITICAL HABITATS: NO
HISTORICAL OR ARCHEOLOGICAL AREAS: NO
PRIME AGRICULTURAL LAND: NO
THREATENED AND ENDANGERED SPECIES: NO
WATER RESOURCE: ROARING BRANCH
WETLANDS: NO

1.3 RISK EVALUATION

THIS PROJECT FALLS UNDER THE JURISDICTION OF GENERAL PERMIT 3-9020 FOR STORMWATER RUNOFF FROM CONSTRUCTION SITES FOR LOW RISK PROJECTS. ANY MODIFICATIONS TO THE PROJECT THAT INCREASE THE RISK TO ENVIRONMENTAL RESOURCES SHALL BE EVALUATED IN ACCORDANCE WITH THE PERMIT REQUIREMENTS. THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY ADDITIONAL PERMITTING.

1.4 EROSION PREVENTION AND SEDIMENT CONTROL

THE EROSION CONTROL PLANS ARE MEANT AS A GUIDELINE FOR PREVENTING EROSION AND CONTROLLING SEDIMENT TRANSPORT. THE PRINCIPLES OUTLINED IN THIS NARRATIVE CONSIST OF APPLYING MEASURES THROUGHOUT CONSTRUCTION OF THE PROJECT IN ORDER TO MINIMIZE SEDIMENT TRANSPORT TO THE RECEIVING WATERS. THE MEASURES INCLUDE STABILIZATION AND STRUCTURAL PRACTICES, STORM WATER CONTROLS AND OTHER POLLUTION PREVENTION PRACTICES. THEY HAVE BEEN PROPOSED BY THE DESIGNER AS A BASIS FOR PROTECTING RESOURCES AND WILL NEED TO BE BUILT UPON BASED ON THE SPECIFIC MEANS AND METHODS OF THE CONTRACTOR. REFER TO THE LOW RISK SITE HANDBOOK AND APPROPRIATE DETAIL SHEETS FOR SPECIFIC GUIDANCE AND CONSTRUCTION DETAILING.

ALL MEASURES SHALL BE REGULARLY MAINTAINED AND SHALL BE CHECKED FOR SEDIMENT BUILD-UP. SEDIMENT SHALL BE DISPOSED OF AT AN APPROVED SITE WHERE IT WILL NOT BE SUBJECT TO EROSION.

1.4.1 MARK SITE BOUNDARIES

SITE BOUNDARIES AND AREAS CONSTRUCTION EQUIPMENT CAN ACCESS SHALL BE DELINEATED.

PROJECT DEMARCATION FENCING (PDF) SHALL BE USED TO PHYSICALLY MARK SITE BOUNDARIES. BECAUSE THIS PROJECT FALLS UNDER THE CGP 3-9020, BARRIER FENCE SHALL BE USED INSTEAD OF PROJECT DEMARCATION FENCE WITHIN 100 FEET OF A WATER RESOURCE (STREAM, BROOK, LAKE, POND, WETLAND, ETC).

1.4.2 LIMIT DISTURBANCE AREA

PREVENTING INITIAL SOIL EROSION BY MINIMIZING THE EXPOSED AREA IS MUCH MORE EFFECTIVE THAN TREATING ERODED SEDIMENT. EARTH DISTURBANCE CAN BE MINIMIZED THROUGH CONSTRUCTION PHASING BY ONLY OPENING UP EARTH AS NECESSARY. THIS CAN LIMIT THE AREA THAT WILL BE DISTURBED AND EXPOSED TO EROSION. EMPLOY TEMPORARY CONSTRUCTION STABILIZATION PRACTICES IN INCREMENTAL STAGES AS PHASES CHANGE. FOR PROJECTS WHICH FALL UNDER THE CONSTRUCTION GENERAL PERMIT, ONLY THE ACREAGE LISTED ON THE PERMIT AUTHORIZATION MAY BE EXPOSED AT ANY GIVEN TIME.

MAINTAINING VEGETATED BUFFERS ALONG STREAM BANKS, WETLANDS OR OTHER SENSITIVE AREAS IS A CRUCIAL EROSION AND SEDIMENT CONTROL MEASURE THAT SHOULD BE ESTABLISHED WHEREVER POSSIBLE.

1.4.3 SITE ENTRANCE/EXIT STABILIZATION

TRACKING OF SEDIMENT ONTO PUBLIC HIGHWAYS SHALL BE MINIMIZED TO REDUCE THE POTENTIAL FOR RUNOFF ENTERING RECEIVING WATERS. INSTALLATION SHALL COINCIDE WITH THE CONTRACTOR'S PROGRESS SCHEDULE.

STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AS PROPOSED ON THE EPSC PLAN AND ANYWHERE EQUIPMENT WILL BE GOING FROM AREAS OF EXPOSED SOILS TO PAVED SURFACES.

1.4.4 INSTALL SEDIMENT BARRIERS

SEDIMENT BARRIERS SHALL BE UTILIZED TO INTERCEPT RUNOFF AND ALLOW SUSPENDED SEDIMENT TO SETTLE OUT. THEY SHALL BE INSTALLED PRIOR TO ANY UP SLOPE WORK.

SILT FENCE WILL BE INSTALLED AS PROPOSED ON THE EPSC PLAN. BECAUSE THIS PROJECT FALLS UNDER THE CGP 3-9020, WOVEN WIRE REINFORCED SILT FENCE SHALL BE USED INSTEAD OF SILT FENCE WITHIN 100 FEET UPSLOPE OF RECEIVING WATERS.

FILTER CURTAIN WILL BE INSTALLED AS PROPOSED ON THE EPSC PLAN SURROUNDING THE STONE FILL AT ABUTMENT 1 IN ORDER TO KEEP SEDIMENT FROM ENTERING THE ROARING BRANCH WHILE THE STONE FILL IS BEING PLACED.

1.4.5 DIVERT UPLAND RUNOFF

DIVERSIONARY MEASURES SHALL BE USED TO INTERCEPT RUNOFF FROM ABOVE THE CONSTRUCTION AND DIRECT IT AROUND THE DISTURBED AREA SO THAT CLEAN WATER DOES NOT BECOME MUDDIED WHILE TRAVELING OVER EXPOSED SOILS ON THE CONSTRUCITON SITE.

THE PROJECT AREA IS REALTIVELY FLAT. THERFORE IT IS NOT ANTICPIATED THAT DIVERSION MEASURES WILL BE NECESSARY.

1.4.6 SLOW DOWN CHANNELIZED RUNOFF

CHECK STRUCTURES SHALL BE UTILIZED TO REDUCE THE VELOCITY, AND THUS THE EROSIVE POTENTIAL, OF CONCENTRATED FLOW IN CHANNELS.

NO STONE CHECK DAMS WILL BE NECESSARY FOR THIS PROJECT.

1.4.7 CONSTRUCT PERMANENT CONTROLS

PERMANENT STORMWATER TREATMENT DEVICES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH PERMIT CONDITIONS. STONE FILL TYPE IV WILL BE INSTALLED ALONG THE CHANNEL TO PREVENT EROSION FROM STORMWATER RUNOFF. A SHALLOW DITCH WILL CONTROL STORMWATER RUNOFF ON THE LEFT SIDE OF THE ROAD FROM BEGIN PROJECT TO BEGIN BRIDGE.

1.4.8 STABILIZE EXPOSED SOILS DURING CONSTRUCTION

ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY STABILIZATION IN PLACE WITHIN 48 HOURS OF DISTURBANCE OR IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT 3-9020 AUTHORIZATION.

SURFACE ROUGHENING OF ALL EXPOSED SLOPES, COMBINED WITH TEMPORARY MULCHING, SHALL BE UTILIZED ON A REGULAR BASIS. BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED TO STABILIZE ALL SLOPES STEEPER THAN 1:3.

THE FORECAST OF RAINFALL EVENTS SHALL TRIGGER IMMEDIATE PROTECTION OF EXPOSED SOILS.

1.4.9 WINTER STABILIZATION

VARIOUS MEASURES SPECIFIC TO WINTER MAY BE NECESSARY SHOULD THE PROJECT EXTEND INTO WINTER (OCTOBER 15 THROUGH APRIL 15). REFER TO THE LOW RISK SITE HANDBOOK FOR GUIDANCE.

1.4.10 STABILIZE SOIL AT FINAL GRADE

EXPOSED SOIL MUST BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE.

SEED, MULCH, FERTILIZER AND LIME SHALL BE USED TO ESTABLISH PERMANENT VEGETATION. FOR SLOPES STEEPER THAN 1:3, BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED INSTEAD OF MULCH.

1.4.11 DE-WATERING ACTIVITIES

DISCHARGE FROM DEWATERING ACTIVITIES THAT FLOWS OFF OF THE CONSTRUCTION SITE MUST NOT CAUSE OR CONTRIBUTE TO A VIOLATION OF THE VERMONT WATER QUALITY STANDARDS.

TREATMENT OF DEWATERING THE ABUTMENT EXCAVATION IS ANTICIPATED. A LOCATION FOR TREATMENT HAS BEEN PROPOSED AND IS SHOWN ON THE PLANS. HOWEVER THE SPECIFIC MEANS FOR TREATMENT OF DISCHARGE SHALL BE PROVIDED BY THE CONTRACTOR.

1.4.12 INSPECT YOUR SITE

INSPECT THE PROJECT SITE BASED ON SPECIAL PROVISION REQUIREMENTS OR CONSTRUCTION GENERAL PERMIT AUTHORIZATION STIPULATIONS.

1.5 SEQUENCE AND STAGING

THIS SECTION WILL BE DEVELOPED BY THE CONTRACTOR USING THE GUIDANCE OUTLINED IN THE VTRANS EPSC PLAN CONTRACTOR CHECKLIST.

1.5.1 CONSTRUCTION SEQUENCE

1.5.2 OFF-SITE ACTIVITIES

IN ADDITION TO THE CONTRACTOR CHECKLIST ANY ACTIVITIES OUTSIDE THE CONSTRUCTION LIMITS SHALL FOLLOW SUBSECTIONS 105.25 - 105.29 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.

1.5.3 UPDATES

PROJECT NAME: WOODFORD	
PROJECT NUMBER: ER BRF 010-1(44)	
FILE NAME: s11b214epsc narrative.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: EVANS-MONGEON
DESIGNED BY: M.EVANS-MONGEON	CHECKED BY: G. ROY
EPSC NARRATIVE	SHEET 47 OF 58

SOIL INFORMATION
BERKSHIRE FINE LOAMY SAND
HYDRO GROUP B
HIGHLY ERODIBLE

N

VT STATE PLANE GRID

AER E&T

1130

M

57+38

N 43° 15' 38" E

58+00

59+00

60+00

61+00

62+00

63

VT 9
TO BENNINGTON

STA. 63+00

MATCH LINE A-A

SOIL INFORMATION

UDIPSAMMENTS AND UDORTHENTS
HYDRO GROUP NOT RATED

SOIL BOUNDARY

SCALE 1" = 20'-0
20 0 20

PROJECT NAME: WOODFORD	
PROJECT NUMBER: ER BHF 010-1(44)	
FILE NAME: s11b214EPSC bdr.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: EVANS-MONGEON
DESIGNED BY: M.EVANS-MONGEON	CHECKED BY: G. ROY
EPSC EXISTING CONDITION (1)	SHEET 48 OF 58

SOIL INFORMATION

UDIPSAMMENTS AND UDORTHENTS
HYDRO GROUP NOT RATED

SOIL INFORMATION
COLTON GRAVELLY LOAMY SAND
HYDRO GROUP A
WELL DRAINED
POTENTIALLY HIGHLY ERODIBLE

N

VT STATE PLANE GRID

STA. 63+00

STA. 69+00

AER E&T

1140

1130

N 69° 47' 42" E

64+00

65+00

66+00

67+00

68+00

69+

DSH

MATCH LINE A-A

MATCH LINE B-B

RIPARIAN BUFFER

SOIL INFORMATION
COLTON GRAVELLY LOAMY SAND
HYDRO GROUP A
WELL DRAINED
POTENTIALLY HIGHLY ERODIBLE

SOIL INFORMATION
COLTON GRAVELLY LOAMY SAND
HYDRO GROUP A
WELL DRAINED
POTENTIALLY HIGHLY ERODIBLE

SOIL BOUNDARY

SCALE 1" = 20'-0
20 0 20

PROJECT NAME: WOODFORD

PROJECT NUMBER: ER BHF 010-1(44)

FILE NAME: s11b214EPSC bdr.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: M.EVANS-MONGEON
EPSC EXISTING CONDITION (2)

PLOT DATE: 23-MAR-2012
DRAWN BY: EVANS-MONGEON
CHECKED BY: G. ROY
SHEET 49 OF 58

STA. 69+00

MATCH LINE B-B

1140

1150

RIPARIAN BUFFER

AER EXT

70+00

71+00

72+00

73+00

74+00

75+00

N

VT STATE PLANE GRID

SOIL INFORMATION
COLTON GRAVELLY LOAMY SAND
HYDRO GROUP A
WELL DRAINED
POTENTIALLY HIGHLY ERODIBLE

SOIL INFORMATION
BERKSHIRE FINE LOAMY SAND
HYDRO GROUP B
HIGHLY ERODIBLE

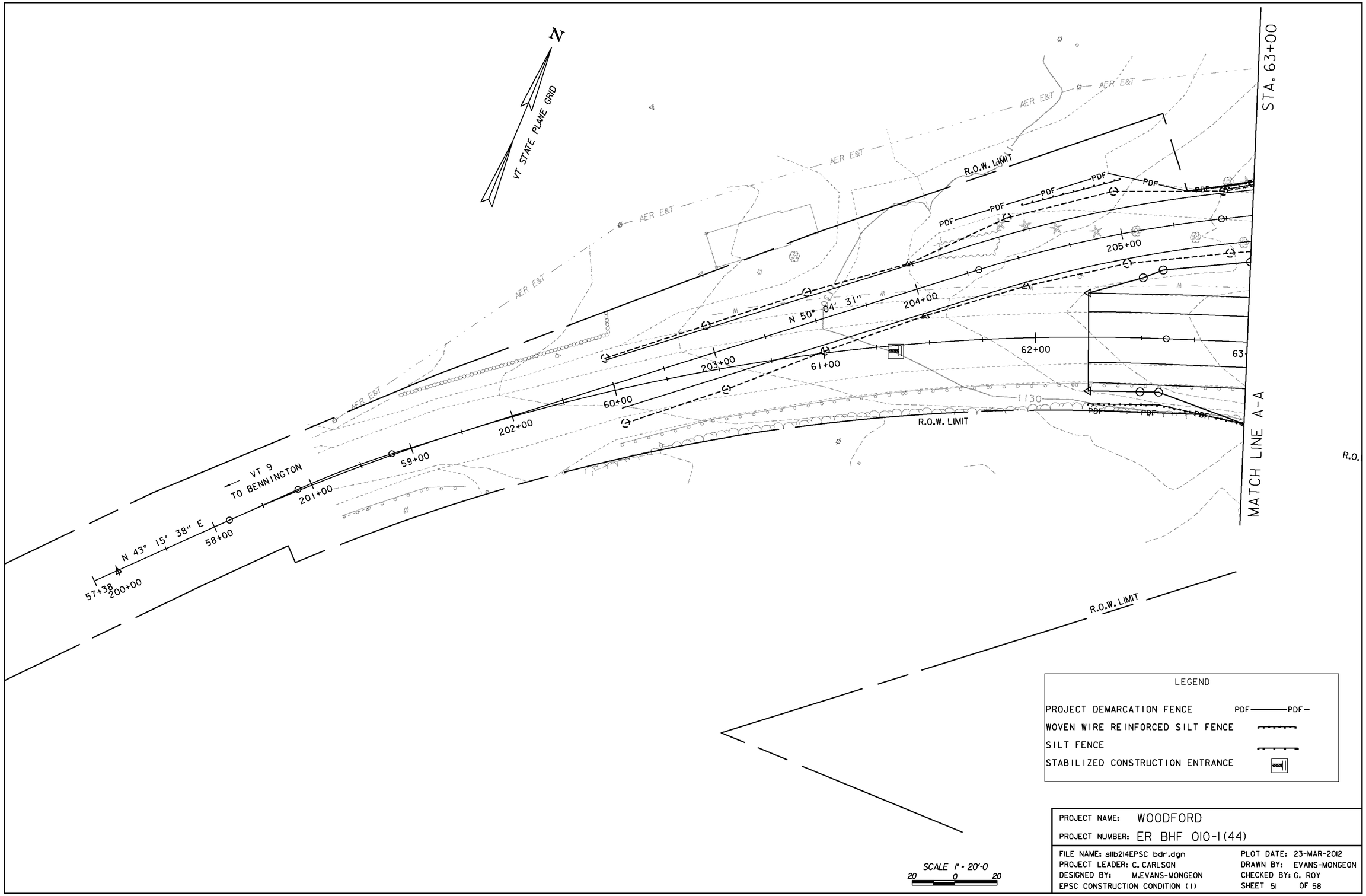
SOIL BOUNDARY

SCALE 1" = 20'-0
20 0 20

PROJECT NAME: WOODFORD
PROJECT NUMBER: ER BHF 010-1(44)

FILE NAME: s11b214EPSC bdr.dgn
PROJECT LEADER: CAROLYN CARLSON
DESIGNED BY: M.EVANS-MONGEON
EPSC EXISTING CONDITION (3)

PLOT DATE: 23-MAR-2012
DRAWN BY: EVANS-MONGEON
CHECKED BY: G. ROY
SHEET 50 OF 58



LEGEND

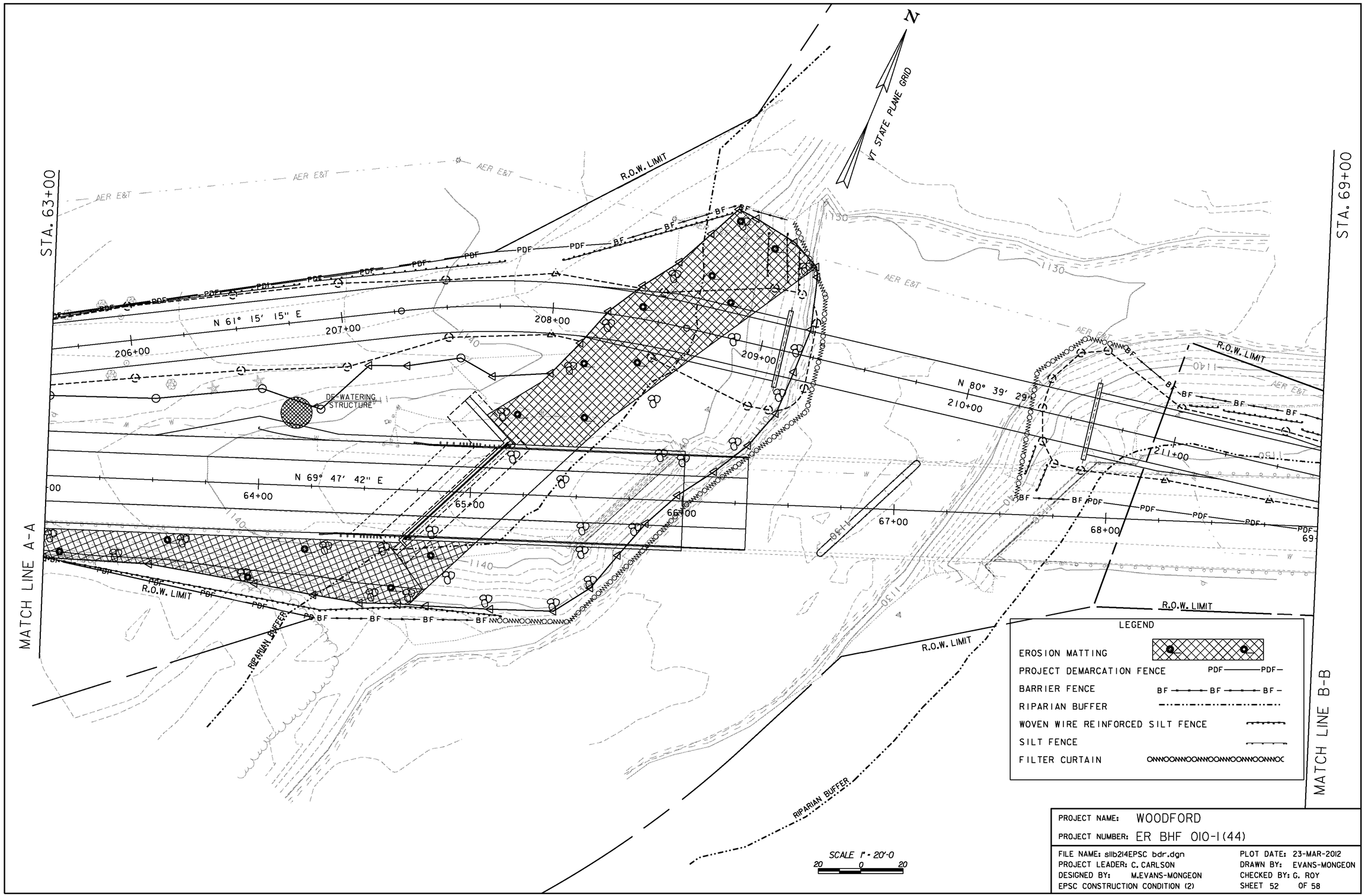
PROJECT DEMARCATION FENCE	PDF——PDF—
WOVEN WIRE REINFORCED SILT FENCE	
SILT FENCE	
STABILIZED CONSTRUCTION ENTRANCE	

SCALE 1" = 20'-0
20 0 20

PROJECT NAME: WOODFORD
PROJECT NUMBER: ER BHF 010-1(44)

FILE NAME: s11b214EPSC bdr.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: M.EVANS-MONGEON
EPSC CONSTRUCTION CONDITION (1)

PLOT DATE: 23-MAR-2012
DRAWN BY: EVANS-MONGEON
CHECKED BY: G. ROY
SHEET 51 OF 58

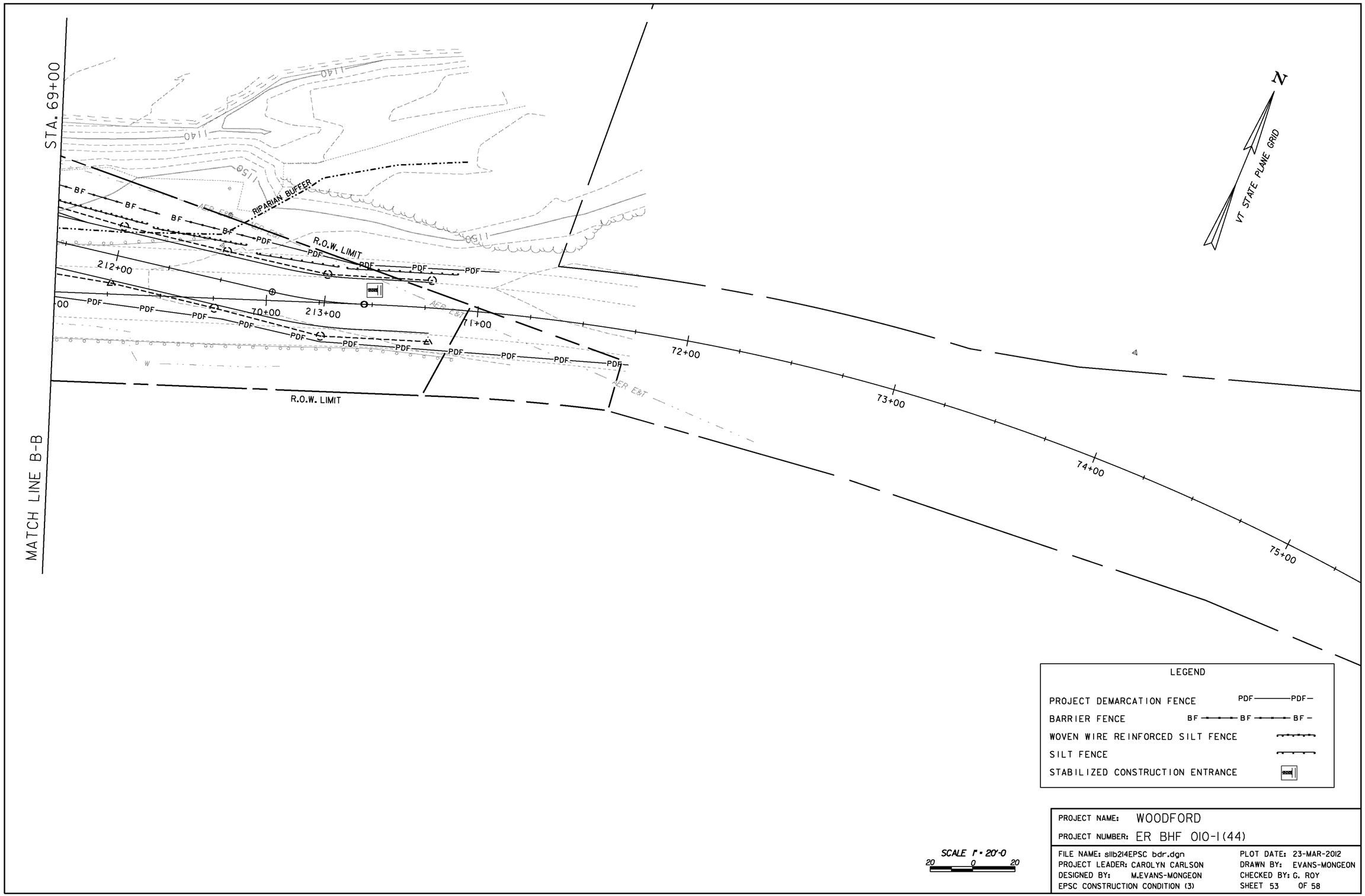


PROJECT NAME: WOODFORD

PROJECT NUMBER: ER BHF 010-1(44)

FILE NAME: sllb214EPSC bdr.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: M.EVANS-MONGEON
EPSC CONSTRUCTION CONDITION (2)

PLOT DATE: 23-MAR-2012
DRAWN BY: EVANS-MONGEON
CHECKED BY: G. ROY
SHEET 52 OF 58

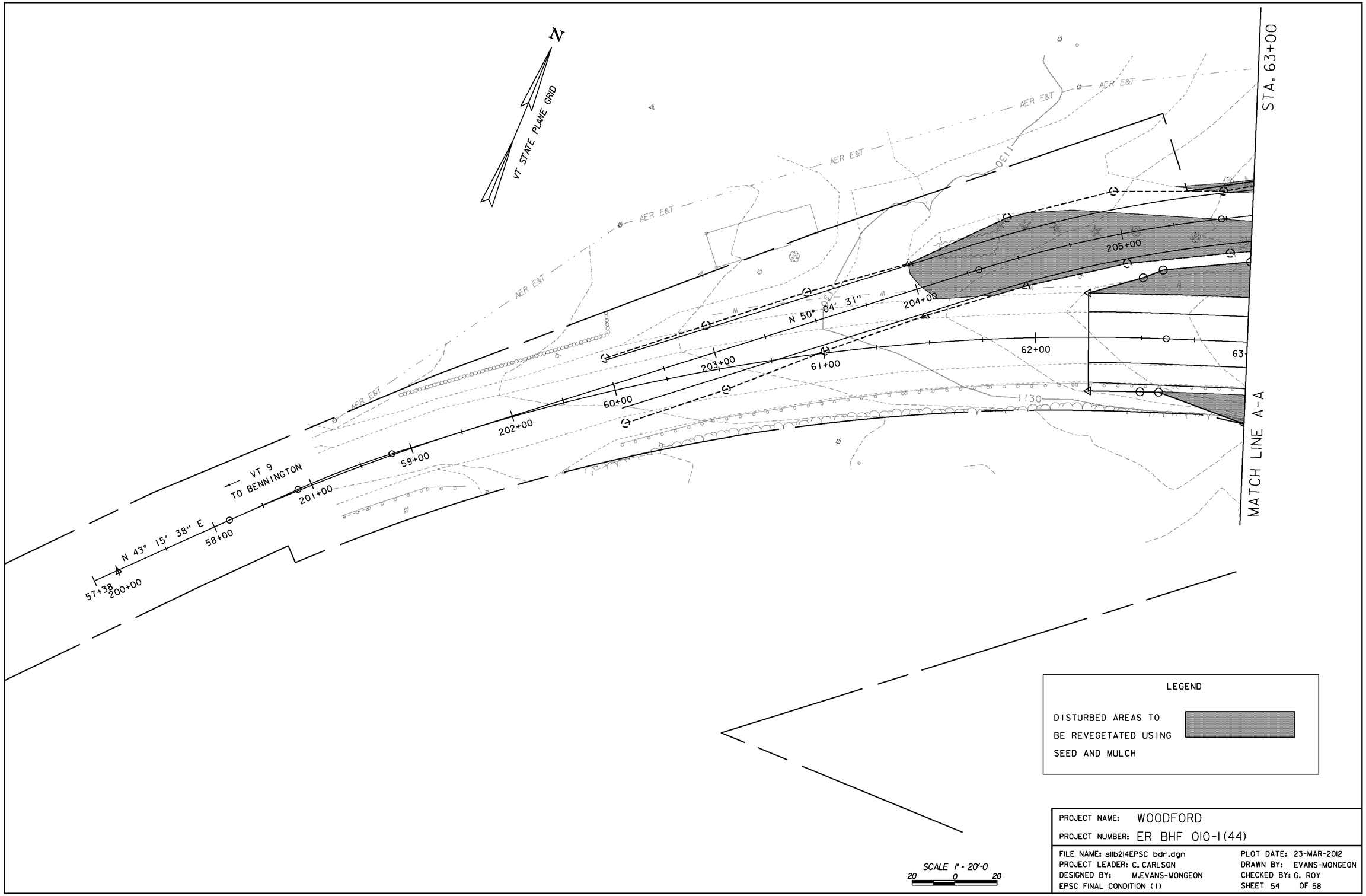


PROJECT NAME: WOODFORD

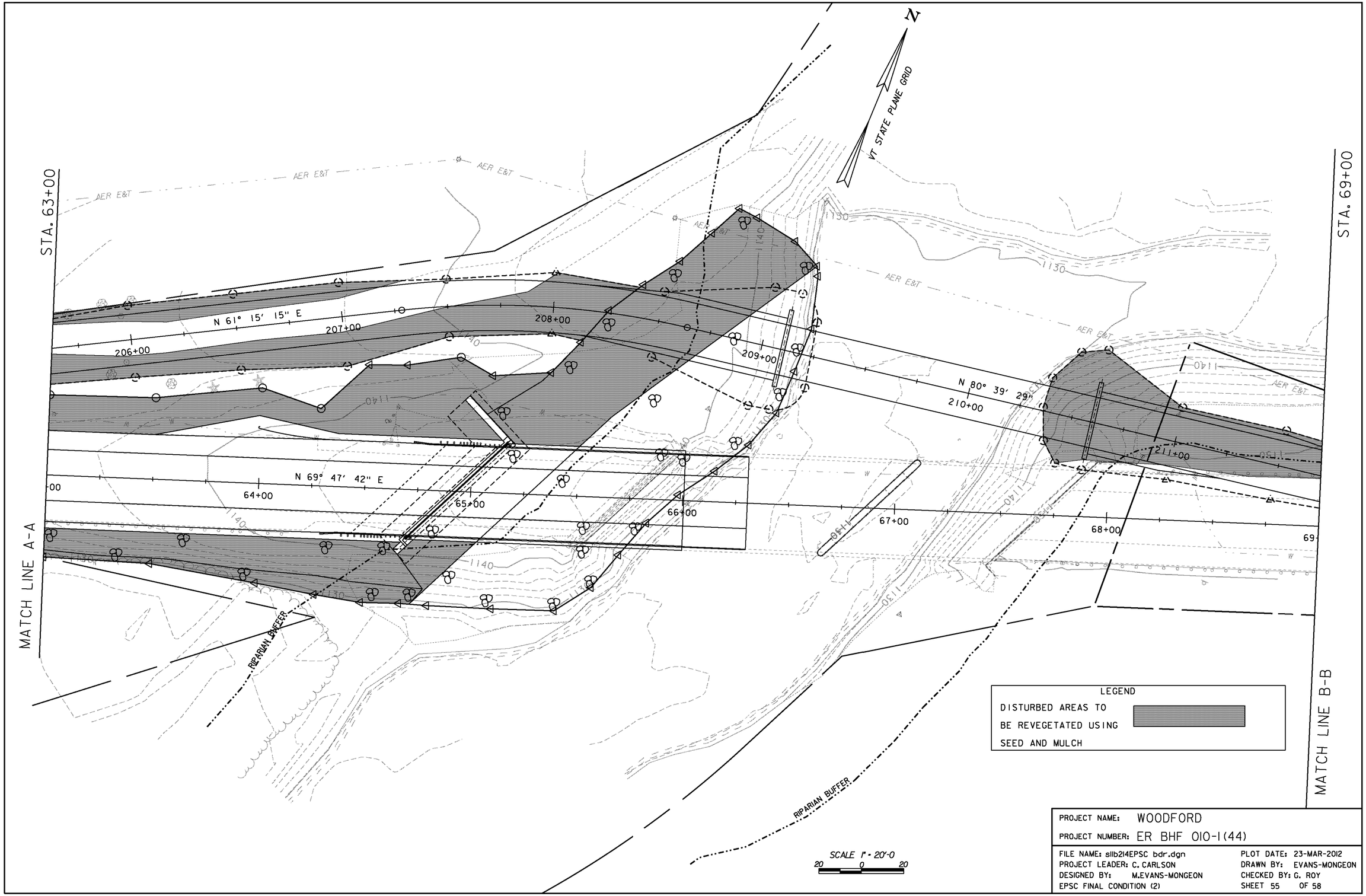
PROJECT NUMBER: ER BHF 010-1(44)

FILE NAME: s11b214EPSC bdr.dgn
PROJECT LEADER: CAROLYN CARLSON
DESIGNED BY: M.EVANS-MONGEON
EPSC CONSTRUCTION CONDITION (3)

PLOT DATE: 23-MAR-2012
DRAWN BY: EVANS-MONGEON
CHECKED BY: G. ROY
SHEET 53 OF 58



PROJECT NAME:	WOODFORD
PROJECT NUMBER:	ER BHF 010-1(44)
FILE NAME: s11b214EPSC bdr.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: EVANS-MONGEON
DESIGNED BY: M.EVANS-MONGEON	CHECKED BY: G. ROY
EPSC FINAL CONDITION (1)	SHEET 54 OF 58



PROJECT NAME:	WOODFORD
PROJECT NUMBER:	ER BHF 010-1(44)
FILE NAME: slib214EPSC bdr.dgn	PLOT DATE: 23-MAR-2012
PROJECT LEADER: C. CARLSON	DRAWN BY: EVANS-MONGEON
DESIGNED BY: M.EVANS-MONGEON	CHECKED BY: G. ROY
EPSC FINAL CONDITION (2)	SHEET 55 OF 58

STA. 69+00

MATCH LINE B-B

1140

1140

1150

1150

RIPARIAN BUFFER

AER E&T

AER E&T

AER E&T

212+00

70+00

213+00

71+00

72+00

73+00

74+00

75+00

W

N

VT STATE PLANE GRID

LEGEND

DISTURBED AREAS TO BE REVEGETATED USING SEED AND MULCH

SCALE 1" = 20'-0

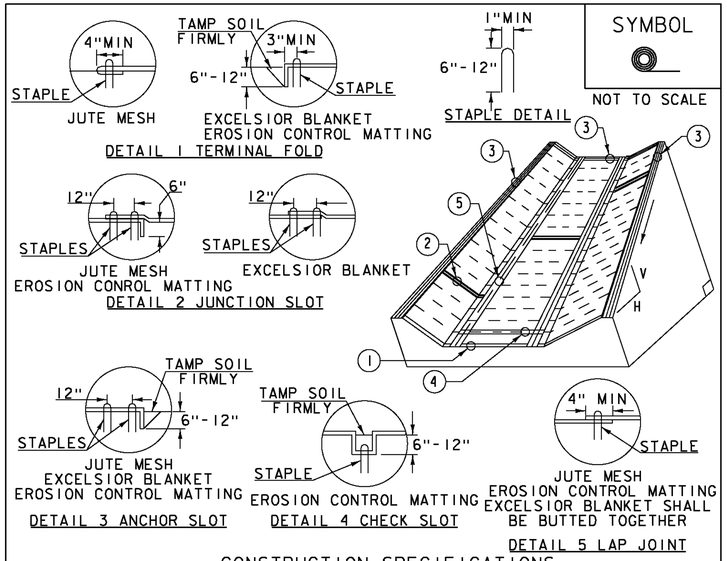
20 0 20

PROJECT NAME: WOODFORD

PROJECT NUMBER: ER BHF 010-1(44)

FILE NAME: s11b214EPSC bdr.dgn
PROJECT LEADER: CAROLYN CARLSON
DESIGNED BY: M.EVANS-MONGEON
EPSC FINAL CONDITION (3)

PLOT DATE: 23-MAR-2012
DRAWN BY: EVANS-MONGEON
CHECKED BY: G. ROY
SHEET 56 OF 58



SYMBOL

NOT TO SCALE

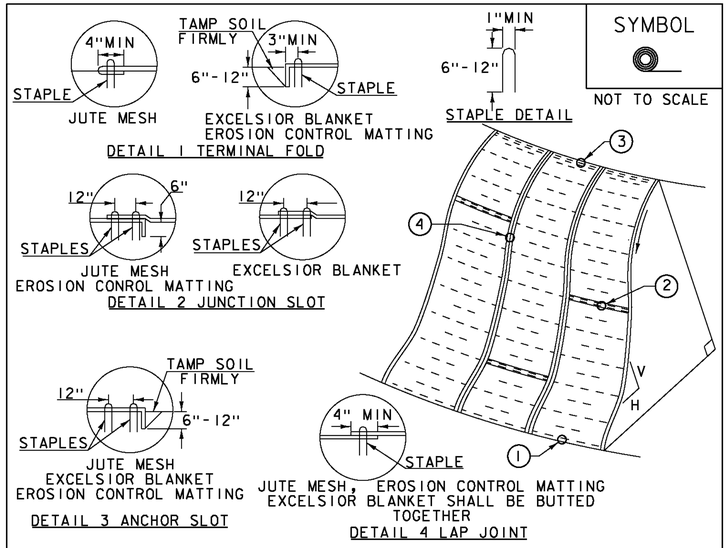
CONSTRUCTION SPECIFICATIONS

1. EROSION MATTING, CHECK SLOTS, SHALL BE SPACED IN DITCH CHANNEL SO THAT ONE OCCURS WITHIN EACH 50' ON SLOPES OF MORE THAN 4% AND LESS THAN 6%. ON SLOPES OF 6% OR MORE, THEY SHALL BE SPACED SO THAT ONE OCCURS WITHIN EACH 25'.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4'X225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4'X150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC ORIGINALLY DEVELOPED BY USDA-NRCS VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION	ROLLED EROSION CONTROL PRODUCT (RECP) DITCH

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 AND AS SHOWN IN THE PLANS FOR TEMPORARY EROSION MATTING (PAY ITEM 653.20) ~~OR PERMANENT EROSION MATTING (PAY ITEM 653.21).~~

REVISIONS	
MARCH 8, 2007	JMF
APRIL 16, 2007	WHF
JANUARY 13, 2009	WHF



SYMBOL

NOT TO SCALE

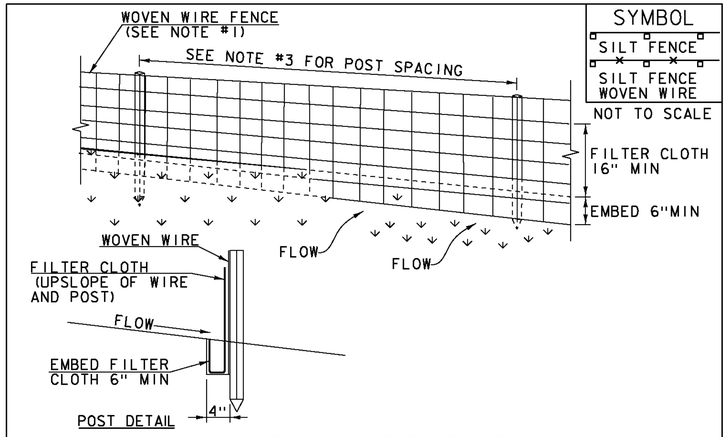
CONSTRUCTION SPECIFICATIONS

1. APPLY TO SLOPES GREATER THAN 3H:1V OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4'X225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4'X150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC ORIGINALLY DEVELOPED BY USDA-NRCS VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION	ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 AND AS SHOWN IN THE PLANS FOR TEMPORARY EROSION MATTING (PAY ITEM 653.20) ~~OR PERMANENT EROSION MATTING (PAY ITEM 653.21).~~

REVISIONS	
APRIL 16, 2007	JMF
JANUARY 13, 2009	WHF



SYMBOL
SILT FENCE
SILT FENCE WOVEN WIRE

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE REINFORCED FENCE IS REQUIRED WITHIN 100' UPSLOPE OF RECEIVING WATERS WHEN THE PROJECT FALLS UNDER A CONSTRUCTION STORMWATER PERMIT. WOVEN WIRE SHALL BE A MIN. 14 GAUGE WITH A 6" MAX. MESH OPENING.
2. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI100X, STABILINKA T140N OR APPROVED EQUIVALENT.
3. POST SPACING FOR WIRE-BACKED FENCE SHALL BE 10' MAXIMUM. FOR FILTER-CLOTH FENCE, WHEN ELONGATION IS >50%, POST SPACING SHALL NOT EXCEED 4' AND WHEN ELONGATION IS <50%, POST SPACING SHALL NOT EXCEED 6'.
4. WOVEN WIRE FENCE IS TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY 6" AND FOLDED.
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SEDIMENT REACHES HALF OF FABRIC HEIGHT.

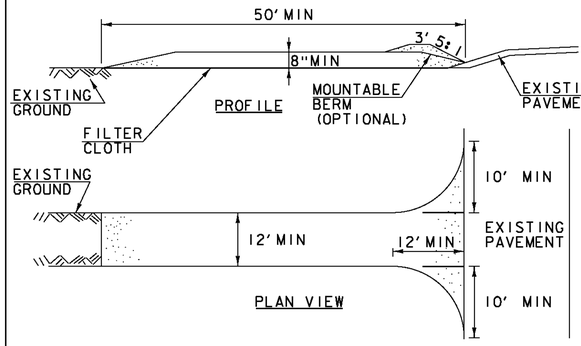
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC ORIGINALLY DEVELOPED BY USDA-NRCS VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION	SILT FENCE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 AND AS SHOWN IN THE PLANS FOR GEOTEXTILE FOR SILT FENCE (PAY ITEM 649.51) OR GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED (PAY ITEM 649.515).

REVISIONS	
MARCH 21, 2008	WHF
DECEMBER 11, 2008	WHF
JANUARY 13, 2009	WHF

PROJECT NAME: WOODFORD
PROJECT NUMBER: ER BHF 010-1(44)

FILE NAME: slib214epsc details.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: M.EVANS-MONGEON
EPSC DETAILS (1)
PLOT DATE: 23-MAR-2012
DRAWN BY: EVANS-MONGEON
CHECKED BY:
SHEET 57 OF 58



SYMBOL

NOT TO SCALE

CONSTRUCTION SPECIFICATIONS

1. STONE SIZE- USE 1-4" STONE, RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH- NOT LESS THAN 50' (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30' MINIMUM LENGTH APPLIES).
3. THICKNESS- NOT LESS THAN 8".
4. WIDTH- 12' MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. 24' IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE MUST BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.
6. SURFACE WATER- ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED ACCORDING TO PERMIT REQUIREMENTS.

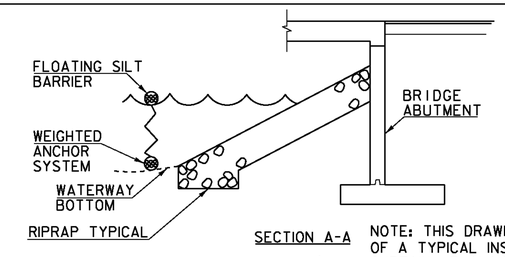
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC ORIGINALLY DEVELOPED BY USDA-NRCS VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

STABILIZED CONSTRUCTION ENTRANCE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR VEHICLE TRACKING PAD (PAY ITEM 653.35) OR AS SPECIFIED IN THE CONTRACT.

REVISIONS	
MARCH 24, 2008	WHF
JANUARY 13, 2009	WHF

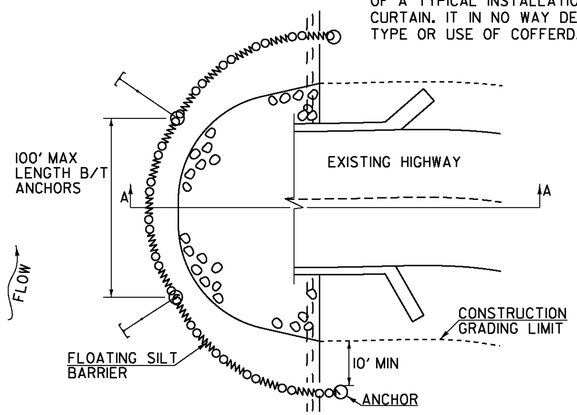


SYMBOL

NOT TO SCALE

SECTION A-A

NOTE: THIS DRAWING IS A DEPICTION OF A TYPICAL INSTALLATION OF FILTER CURTAIN. IT IN NO WAY DEFINES THE TYPE OR USE OF COFFERDAM IF USED.



CONSTRUCTION SPECIFICATIONS

1. FILTER CURTAIN SHALL NOT BE PLACED ACROSS A FLOWING WATERWAY, OR IN A WATERWAY WITH STREAM VELOCITIES GREATER THAN 1.5 FEET/SECOND.
2. MAXIMUM 100' LENGTH BETWEEN ANCHORS.
3. LAST SECTION SHALL TERMINATE A MINIMUM OF 10' BEYOND LIMIT OF DISTURBANCE.
4. THE WEIGHTED ANCHOR SYSTEM SHALL BE A TYPE WHICH ALLOWS THE CURTAIN TO CONFORM TO THE BOTTOM OF THE WATERWAY.
5. THE CURTAIN SHALL BE REMOVED BY SLOWLY PULLING TOWARD THE SHORE MINIMIZING THE ESCAPE OF SEDIMENTS INTO WATERWAY.

FILTER CURTAIN

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 FOR GEOTEXTILE FOR FILTER CURTAIN (PAY ITEM 649.61).

REVISIONS	
APRIL 1, 2008	WHF
JANUARY 13, 2009	WHF
SEPTEMBER 4, 2009	WHF

VAOT RURAL AREA MIX

	LBS/AC				
% WEIGHT	BROADCAST	HYDROSEED	NAME	GERM %	PURITY %
37.5%	22.5	45	CREEPING RED FESCUE	85%	98%
37.5%	22.5	45	TALL FESCUE	90%	95%
5.0%	3	6	RED TOP	90%	95%
15.0%	9	18	BIRDSFOOT TREFOIL	85%	98%
5.0%	3	6	ANNUAL RYE GRASS	85%	95%
100%	60	120			

VAOT URBAN AREA MIX

	LBS/AC				
% WEIGHT	BROADCAST	HYDROSEED	NAME	GERM %	PURITY %
42.5%	34	68	CREEPING RED FESCUE	85%	98%
10.0%	8	16	PERENNIAL RYE GRASS	90%	95%
42.5%	34	68	KENTUCKY BLUE GRASS	85%	85%
5.0%	4	8	ANNUAL RYE GRASS	85%	95%
100%	80	160			

SOIL AMENDMENT GUIDANCE

FERTILIZER		LIME	
BROADCAST	HYDROSEED	BROADCAST	HYDROSEED
10-20-10	*FOLLOW*	PELLETIZED	*FOLLOW*
500 LBS/AC	*MANUFACTURER*	2 TONS/AC	*MANUFACTURER*

CONSTRUCTION GUIDANCE

1. RURAL SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED UPLAND (NON WETLAND) AREAS DISTURBED BY THE CONTRACTOR.
2. URBAN SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED LAWN AREAS DISTURBED BY THE CONTRACTOR.
3. ALL SEED MIXTURES: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.
4. FERTILIZER AND LIMESTONE: SHALL FOLLOW RATES SHOWN ON PLAN OR AS DIRECTED BY THE ENGINEER
5. HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2 TONS/ACRE, ACHIEVE 90% GROUND COVER OR AS DIRECTED BY THE ENGINEER.
6. TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.
7. HYDROSEEDING: ALTHOUGH GUIDANCE IS GIVEN ABOVE THE SITE CONDITIONS AND THE TYPE OF HYDROSEED WILL ULTIMATELY DICTATE THE AMOUNTS AND TYPES OF SOIL AMENDMENTS TO BE APPLIED
8. TURF ESTABLISHMENT: PLACING SEED, FERTILIZER, LIME AND MULCH PRIOR TO SEPTEMBER 15 AND AFTER APRIL 15 CAN BETTER ENSURE A VIGOROUS GROWTH OF GRASS.

ADAPTED FROM VTRANS TECHNICAL LANDSCAPE MANUAL FOR ROADWAYS AND TRANSPORTATION FACILITIES

TURF ESTABLISHMENT

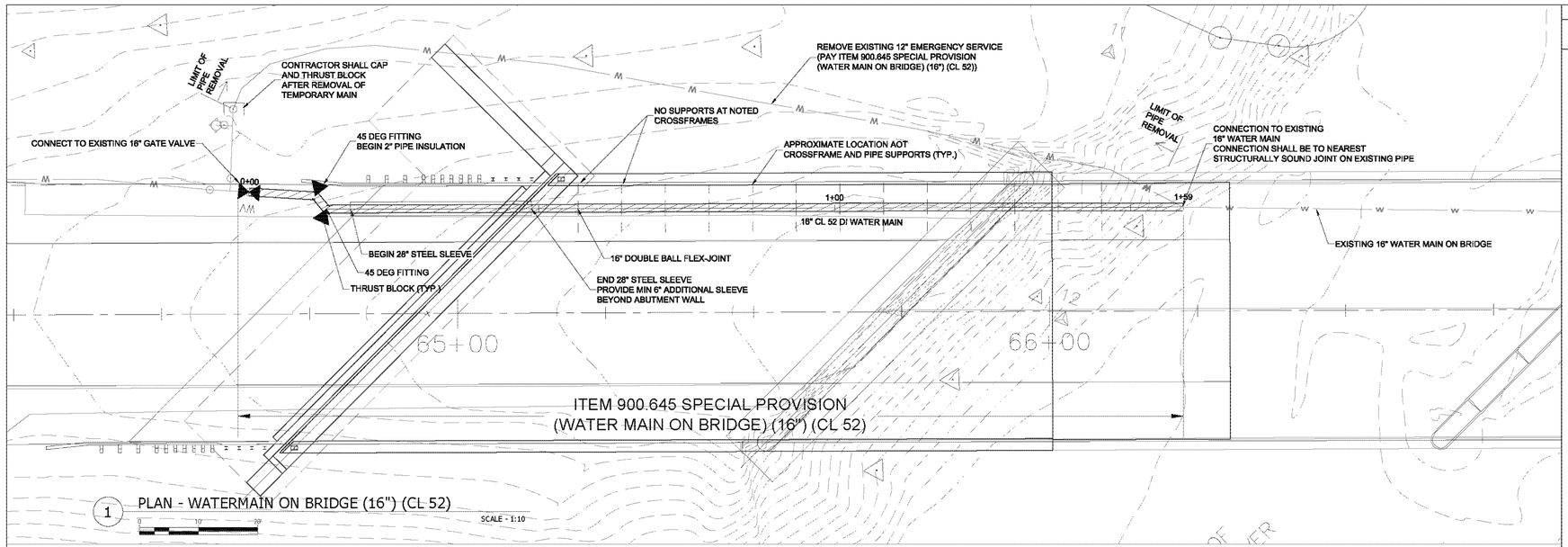
REVISIONS	
JUNE 23, 2009	WHF
JANUARY 15, 2010	WHF
FEBRUARY 16, 2011	WHF

PROJECT NAME: WOODFORD

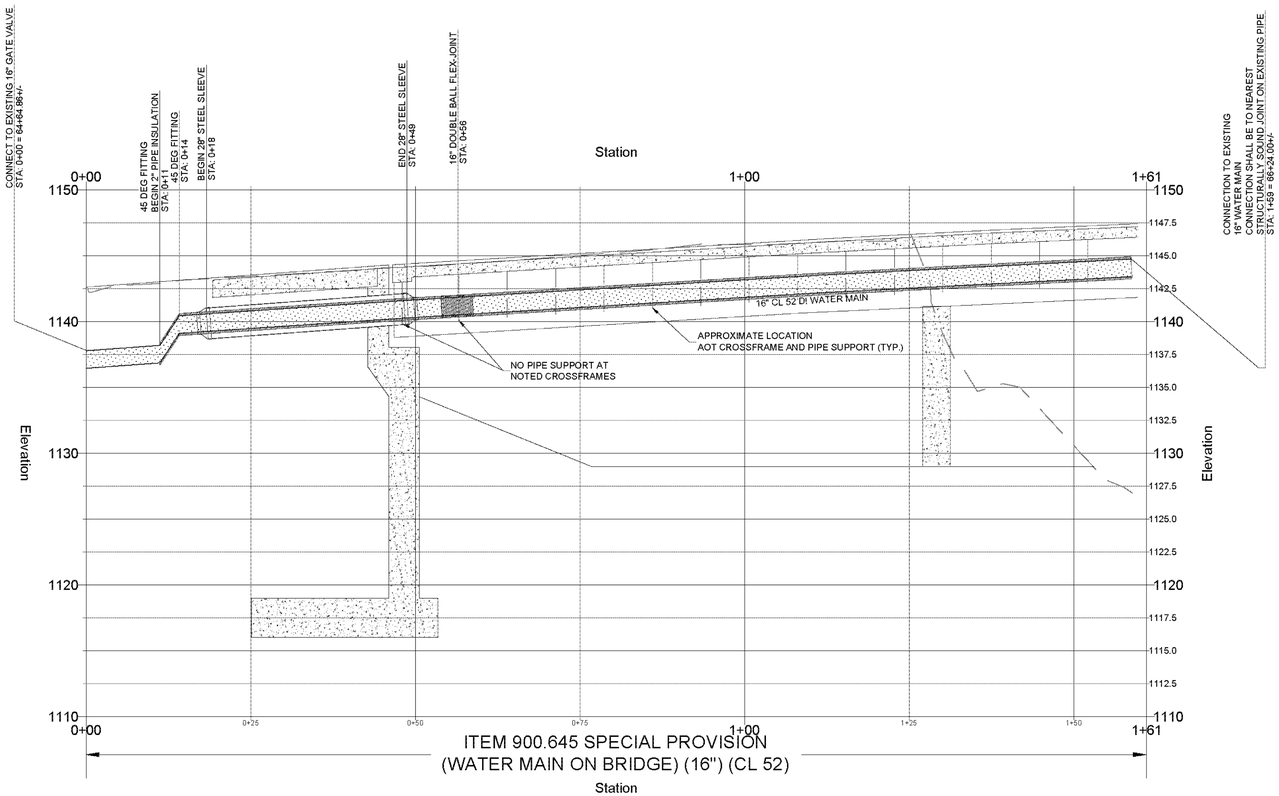
PROJECT NUMBER: ER BHF 010-1(44)

FILE NAME: sllb214epsc details.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: M.EVANS-MONGEON
EPSC DETAILS (2)

PLOT DATE: 23-MAR-2012
DRAWN BY: EVANS-MONGEON
CHECKED BY:
SHEET 58 OF 58



1 PLAN - WATERMAIN ON BRIDGE (16") (CL 52)



2 PROFILE - WATERMAIN ON BRIDGE (16") (CL 52)

HORIZONTAL SCALE - 1:10 VERTICAL SCALE: 1:5

GENERAL NOTES

CONSTRUCTION NOTES:

1. ALL WORK SHALL BE COMPLETED AND TESTED IN ACCORDANCE WITH THE TOWN OF BENNINGTON CONSTRUCTION ORDINANCE, STATE AGENCY OF NATURAL RESOURCES REGULATIONS, STATE AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, 2011 EDITION AND AWWA WATERLINE CONSTRUCTION STANDARDS C600 AND C652.

2. INSTALL EXPANSION JOINT NEAR BRIDGE WEST END ABUTMENT TO ALLOW FOR MAINTENANCE ACCESS. JOINT TO BE ROMAC INDUSTRIES DOUBLE BALL TYPE OR APPROVED EQUAL WITH MIN 9" OFFSET DEFLECTION OR ENGINEER APPROVED EQUAL. SUPPORT JOINT TO MANUFACTURES INSTALLATION RECOMMENDATIONS. PIPING MATERIALS TO BE ATLANTIC STATES OR APPROVED EQUAL, CLASS 52 . MIN 4 BRASS WEDGES SHALL BE INSTALLED PER JOINT

3. BRIDGE PIPE SHALL BE MECHANICAL JOINT DUCTILE IRON PIPE WITH MEGALUG RESTRAINTS. ALL PIPE TO BE MECHANICALLY RESTRAINED AT JOINTS.

4. IF THERE ARE ANY CONFLICTS OR INCONSISTENCIES WITH THE PLANS OR SPECIFICATIONS, THE CONTRACTOR SHALL CONTACT THE ENGINEER FOR VERIFICATION BEFORE WORK CONTINUES ON THE ITEM IN QUESTION.

5. CONTRACTOR SHALL CHLORINATE, (2) NEGATIVE BACTERIA TESTS AND PRESSURE TEST NEW SEGMENT OF WATER PIPE PRIOR TO FINAL CONNECTION OF SYSTEM. TESTING SHALL BE IN ACCORDANCE WITH AWWA STANDARDS C600 AND C652, TOWN OF BENNINGTON AND STATE OF VERMONT STANDARDS. CONTRACTOR SHALL COORDINATE WITH ENGINEER AND TOWN OF BENNINGTON PRIOR TO TESTING. TEST SHALL ENCOMPASS ENTIRE BRIDGE FROM VALVE TO VALVE.

MSK ENGINEERING AND DESIGN, INC.
P.O. BOX 396, 46 CHURCH STREET
SHAFTSBURY, VT 05262
PH: (802) 447-1462 FAX: (802) 445-1291

REVISIONS		
NO.	DATE	DESCRIPTION

ER BHF 010-1 (44)
VT ROUTE 9
WOODFORD, VT

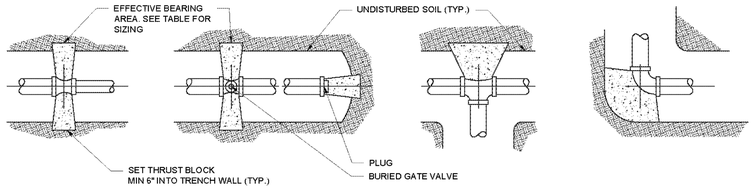
DRAWINGS THIS SHEET

WATERMAIN ON BRIDGE - PERMANENT

NUMBER	DATE
	03-01-12
DRAWN	CHECKED
JMD	JRS

SHEET NUMBER

C-101



REDUCER NTS | VALVE/DEAD END NTS | TEE NTS | 90°, 45°, OR 22.5° BEND NTS

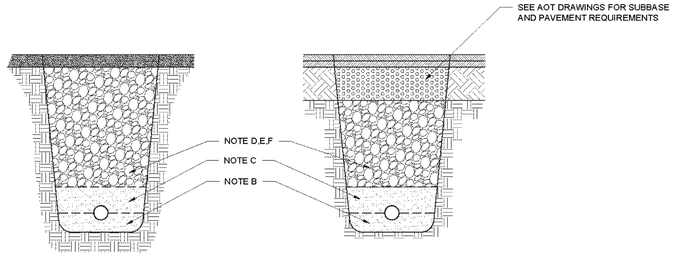
MINIMUM BEARING SURFACE AREA OF CONCRETE THRUST BLOCKS (IN SQUARE FEET)

REDUCERS			4-8"				10"				12"				SOIL CONDITION	SAFE BEARING LOAD (PSF)
8X6	10X8	12X8	ENDS & TEES	90° ELB	45° ELB	22.5° OR LESS	ENDS & TEES	90° ELB	45° ELB	22.5° ELB	ENDS & TEES	90° ELB	45° ELB	22.5° OR LESS		
3.0	5.0	6.0	4.0	6.0	3.0	2.0	6.0	8.0	5.0	2.0	8.0	12.0	6.0	3.0	SOUND SHALE	10000
3.0	5.0	6.0	4.5	6.5	3.5	2.0	8.0	11.0	6.0	3.0	10.0	14.0	7.5	4.0	CEMENTED GRAVEL AND SAND	4000
7.0	7.0	11.0	7.0	9.0	5.0	3.0	10.0	14.0	7.0	4.0	14.0	19.0	11.0	5.0	COARSE AND FINE COMPACT SAND	3000
8.0	9.0	14.0	15.0	20.0	10.0	5.0	21.0	31.0	15.0	8.0	30.0	40.0	20.0	10.0	MEDIUM CLAY (CAN BE SPADED)	2000
8.0	11.0	16.0	20.0	28.0	15.0	8.0	29.0	41.0	22.0	11.0	41.0	58.0	31.0	16.0	SOFT CLAY	1000
MAX WATER PRESSURE 300 PSI																

C1 TYPICAL CONCRETE THRUST BLOCK DETAIL

NTS

NOTES:
1. PLACE 3 MIL MINIMUM POLYETHYLENE SHEETING BETWEEN ALL CONCRETE THRUST BLOCKS AND PIPE AND/OR FITTINGS TO PREVENT BONDING



C2 TYPICAL TRENCH DETAIL

Scale: NTS

INSTALLATION SPECIFICATIONS

A. MINIMUM BURIAL DEPTH 5'-6" (4'-0" FOR SEWER). IF CONDITIONS PREVENT MINIMUM BURIAL DEPTH, ALL SECTIONS OF LINE LESS THAN MIN. DEPTH SHALL BE INSULATED WITH 1" THICKNESS RIGID FOAM INSULATION PER FOOT LESS THAN MINIMUM.(MIN. 2" thickness 250 psi)

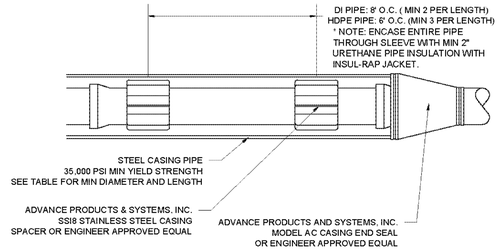
B. BED PIPE IN 6" OF CRUSHED STONE (PASSING 1/2" BUT RETAINED ON #4 SIEVE PIPE SHALL NOT BE LAID IN UNCOMPACTED SOIL OR IN WATER. IF IN LEDGE CONDITIONS, BED PIPE IN A MINIMUM OF 6" OF CLEAN SAND. DO NOT REST PIPE ON LEDGE ROCK.

C. BACKFILL OVER PIPE W/ 12" MINIMUM SAND, COMPACTED ENTIRE WIDTH OF TRENCH. BACKFILL WITH BEDDING STONE TO 12" DEPTH IF IN WATER.

D. REMAINDER OF BACKFILL TO BE SELECT EARTH OR BANK RUN GRAVEL NOT GREATER THAN 6" IN LARGEST DIMENSION. BACKFILL TO BE COMPACTED IN 6" LIFTS UNDER ROADS AND PAVED AREAS.

E. BACKFILL SHALL CONSIST OF SUITABLE MATERIAL REMOVED FROM EXCAVATION, AND SHALL BE FREE OF CLODS, DEBRIS, FROZEN CHUNKS, PAVEMENT PIECES, LARGE STONES, ORGANIC MATERIAL OR ANY OTHER MATERIAL DEEMED UNSUITABLE BY THE ENGINEER.

F. BACKFILL SHALL BE COMPACTED TO 95% OF MAXIMUM DRY DENSITY IN ALL TRENCH EXCAVATIONS. (85% OF LAWN/GRASS AREA)



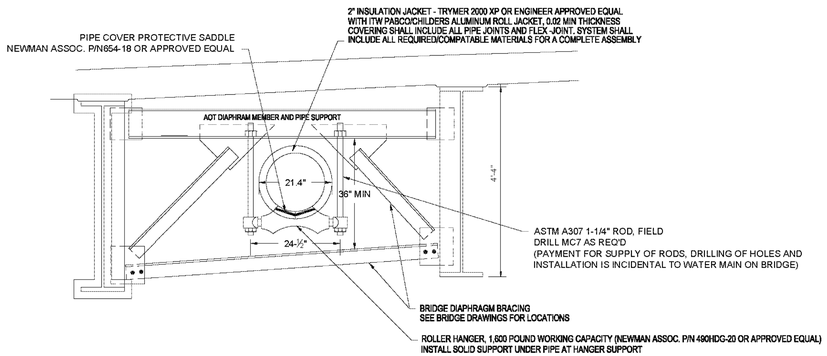
C3 SLEEVE PIPE DETAIL

Scale: NTS

SLEEVE PIPE SIZE AND THICKNESS		
CARRIER DIA	CASING DIA/MATL	MIN THICKNESS
3/4"-2" "K" CU	4" HDPE	N/A
4" DI	14" STEEL	0.312 inch
6" DI	16" STEEL	0.312 inch
8" DI	18" STEEL	0.312 inch
10" DI	20" STEEL	0.312 inch
12" DI	22" STEEL	0.312 inch
16" DI	28" STEEL	0.375 inch

NOTES:

1. D17 HDPE PIPE MAY BE SUBSTITUTED FOR STEEL CASING WITH ENGINEER APPROVAL.



C4 HANGER SUPPORT DETAIL

NOTES: Scale: NTS

1. ENGINEER WILL PROVIDE BRIDGE FABRICATION DRAWINGS TO MSK ENGINEERING FOR FINAL COORDINATION OF PIPE SUPPORTS
2. THE BRIDGE DIAPHRAGM BRACING WILL ALLOW CLEARANCE FOR A 24"Ø OVERALL PIPE AND JACKET DIMENSION. COORDINATE THE FINAL LOCATION OF THE PIPE WITH THE BRIDGE DIAPHRAGM BRACING. REMOVE AND RE-INSTALL THE BOTTOM DIAPHRAGM MEMBER AS REQUIRED TO INSTALL THE PIPE.

MSK ENGINEERING AND DESIGN, INC.
P.O. BOX 396,46 CHURCH STREET
SHAFTSBURY, VT 05262
PH: (802) 447-1402 FAX: (802) 445-1291

REVISIONS

NO.	DATE	DESCRIPTION

ER BHF 010-1 (44)
VT ROUTE 9
WOODFORD, VT

DRAWINGS THIS SHEET
WATERLINE DETAILS

NUMBER	DATE
	03-01-12
DRAWN	CHECKED
JMD	JRS

SHEET NUMBER
C-501

VERMONT

State of Vermont
Southwest Regional Construction Office
1635 US Rte 4
Rutland, VT 05701
www.aot.state.vt.us

Agency of Transportation

[phone] SW 802-786-0023
[fax] SW 802-786-3810

WRITTEN ORDER No. 21

The following Written Order is hereby issued to, Project Manager Brian Emmons representing the Contractor, T. Buck Construction, Inc on the Woodford ER BHF 010-1(44) project.

You are hereby directed to add plantings to the project to replace those lost during Hurricane Irene and the subsequent recovery and reconstruction projects. A portion of the Woodford Bridge (BHF 010-1(29) sheets 31-32 and 37-39) are attached to use as a guide for placement. You are directed to plant the individual planting shown on the plans North West of the bridge as close to the locations shown as practical, final locations to be determined in the field. Plants to be installed as detailed on sheets 37-39. In addition to the individual plants, approximated quantities of 6-8 CY of item 651.27 Cedar Mulch and 9-12 CY of 651.35 Topsoil Mod. (Compost) will be needed. The anti-desiccant spray referenced on sheet 38 note 2 under Evergreen Tree Planting Detail shall be submitted for approval by the engineer and is considered subsidiary to the individual plantings.
The full list of plants includes;

7 Evergreen Trees (Pinus Strobus aka White Pine) Min Ht 5-6' Item 656.20

16 Evergreen Seedlings (Pinus Strobus aka White Pine) Min Ht 1-2' Item 656.15

2 Deciduous Trees (Betula Papyrifera aka Paper Birch-clump of 3) Min Ht 8-10' Item 656.30

3 Deciduous Treed (Acer Saccharum aka Sugar Maple) 1.5-2.0" Cal Item 656.30

11 Deciduous Trees (Betula Populifolia aka Gray Birch) Min Ht 4-5' Item 656.30

10 Deciduous Trees (Fraxinus Americana aka White Ash) Min Ht 4-5' Item 656.30

Date:February 27, 2013

Signed,

Ronald Lemaire, Resident Engineer

Electronic Distribution:

Headquarters via Finals Engineer
Regional Construction Engineer
Regional Construction Technician
Regional Program Services Clerk
project file

N

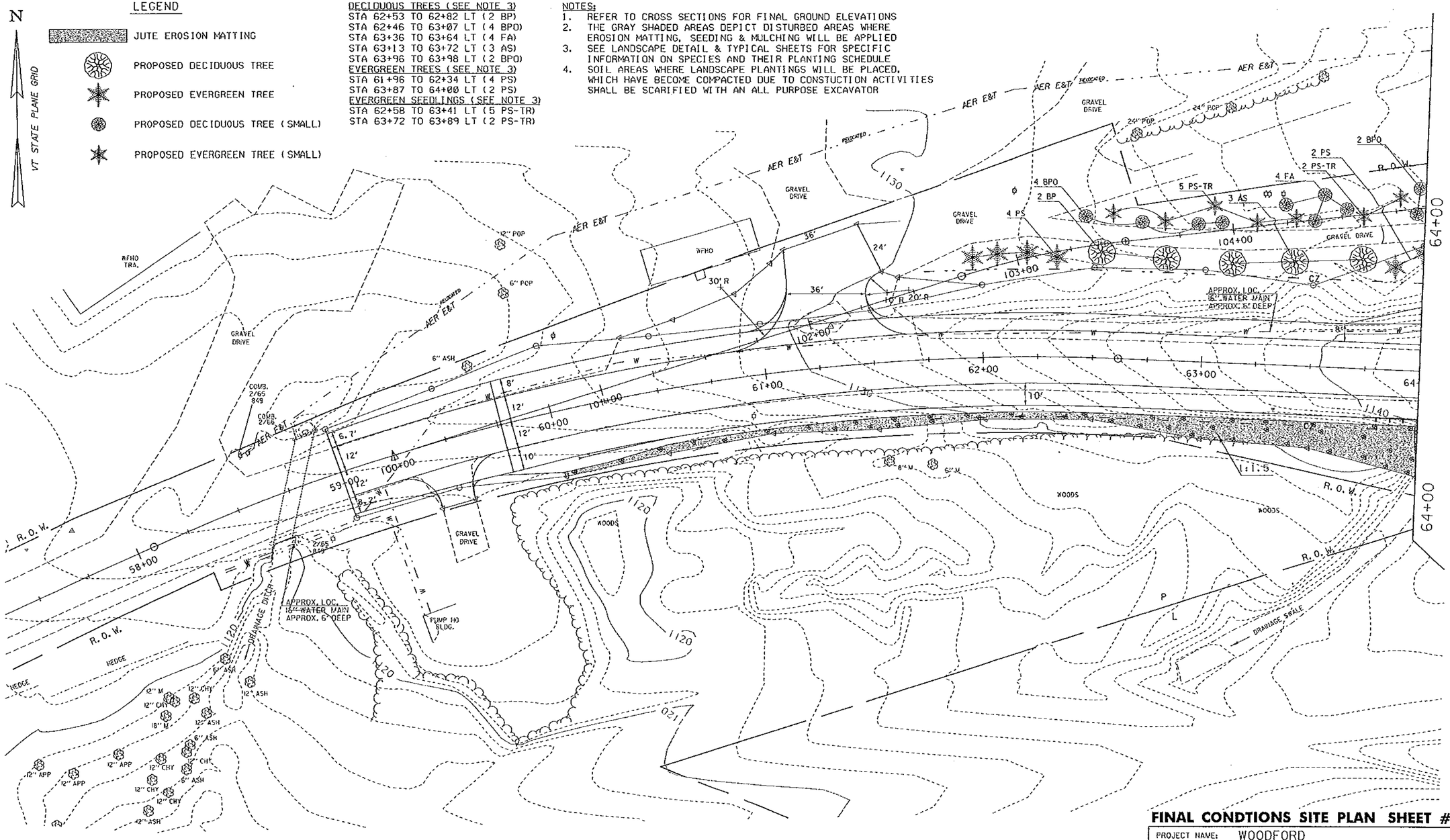
VT STATE PLANE GRID

LEGEND

- JUTE EROSION MATTING
- PROPOSED DECIDUOUS TREE
- PROPOSED EVERGREEN TREE
- PROPOSED DECIDUOUS TREE (SMALL)
- PROPOSED EVERGREEN TREE (SMALL)

DECIDUOUS TREES (SEE NOTE 3)
STA 62+53 TO 62+82 LT (2 BP)
STA 62+46 TO 63+07 LT (4 BPO)
STA 63+36 TO 63+64 LT (4 FA)
STA 63+13 TO 63+72 LT (3 AS)
STA 63+96 TO 63+98 LT (2 BPO)
EVERGREEN TREES (SEE NOTE 3)
STA 61+96 TO 62+34 LT (4 PS)
STA 63+87 TO 64+00 LT (2 PS)
EVERGREEN SEEDLINGS (SEE NOTE 3)
STA 62+58 TO 63+41 LT (5 PS-TR)
STA 63+72 TO 63+89 LT (2 PS-TR)

NOTES:
1. REFER TO CROSS SECTIONS FOR FINAL GROUND ELEVATIONS
2. THE GRAY SHADED AREAS DEPICT DISTURBED AREAS WHERE EROSION MATTING, SEEDING & MULCHING WILL BE APPLIED
3. SEE LANDSCAPE DETAIL & TYPICAL SHEETS FOR SPECIFIC INFORMATION ON SPECIES AND THEIR PLANTING SCHEDULE
4. SOIL AREAS WHERE LANDSCAPE PLANTINGS WILL BE PLACED, WHICH HAVE BECOME COMPACTED DUE TO CONSTUCTION ACTIVITIES SHALL BE SCARIFIED WITH AN ALL PURPOSE EXCAVATOR



DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

SCALE 1" = 20'-0
20 0 20

FINAL CONDTIONS SITE PLAN SHEET #1

PROJECT NAME: WOODFORD
PROJECT NUMBER: BHF 010-1(29)

FILE NAME: 84e039/structures/84e039erobdr.dgn PLOT DATE: 03-OCT-2005
PROJECT LEADER: M EVANS-MONGEON DRAWN BY: W FARLEY
DESIGNED BY: W FARLEY CHECKED BY:
IPARM: epscfinal1.1 SHEET 31 OF 106

DECIDUOUS TREES (SEE NOTE 3)
STA 64+23 TO 64+73 LT (5 BPO)
STA 64+92 TO 65+44 LT (6 FA)
STA 70+49 LT (1 FA)
EVERGREEN TREES (SEE NOTE 3)
STA 64+14 LT (1 PS)
EVERGREEN SEEDLINGS (SEE NOTE 3)
STA 64+06 TO 65+32 LT (9 PS-TR)

EMBANKMENT GROUPINGS (SEE NOTE 3)
STA 64+02 TO 64+67 RT (2 GROUPS)
STA 65+09 TO 65+40 LT (1 GROUP)
STA 67+65 TO 69+59 RT (6 GROUPS)
STA 68+15 TO 69+13 LT (3 GROUPS) (SEE NOTE 4)
FLAT GROUND GROUPINGS (SEE NOTE 3)
STA 65+36 TO 66+09 LT (6 GROUPS)
STA 68+36 TO 69+06 LT (2 GROUPS)
STA 68+83 TO 70+42 LT (5 GROUPS)

NOTES:
1. REFER TO CROSS SECTIONS FOR FINAL GROUND ELEVATIONS
2. THE GRAY SHADED AREAS DEPICT DISTURBED AREAS WHERE EROSION MATTING, SEEDING & MULCHING WILL BE APPLIED
3. SEE LANDSCAPE DETAIL & TYPICAL SHEETS FOR SPECIFIC INFORMATION ON SPECIES AND THEIR PLANTING SCHEDULE
4. THESE GROUPS WILL UTILIZE THE UPPER PORTION OF THE GROUPING AS SHOWN ON THE LANDSCAPE DETAIL SHEETS
5. SOIL AREAS WHERE LANDSCAPE PLANTINGS WILL BE PLACED, WHICH HAVE BECOME COMPACTED DUE TO CONSTUCTION ACTIVITIES SHALL BE SCARIFIED WITH AN ALL PURPOSE EXCAVATOR

LEGEND
- JUTE EROSION MATTING
- WETLANDS
- SHRUBS AND SEEDLING TREES (SLOPE)
- SHRUBS AND SEEDLING TREES (FLAT)
- SHRUBS (SLOPE)
- SHRUBS (FLAT)
- PROPOSED DECIDUOUS TREE
- PROPOSED EVERGREEN TREE
- PROPOSED DECIDUOUS TREE (SMALL)
- PROPOSED EVERGREEN TREE (SMALL)

N
VT STATE PLANE GRID

64+00
70+50
R.O.W.
RIPARIAN BUFFER
AER E&T
REDUCED AER E&T
5 BPO
9' PS-TR
6 FA
1 PS
1 FA
1:2
1:3
1:4
1:5
DETOUR ALIGNMENT
APPROX. LOC. 16" WATER MAIN
APPROX. LOC. 16" WATER MAIN APPROX. 6' DEEP
ROADS
CLASS III WETLAND
ROARING BRANCH OF THE WALLOOMSAC RIVER
DRAINAGE SWALE
SLOPE BREAK LINE
6" POP
18" POP
36" P
105+00
106+00
108+00
109+00
65+00
66+00
67+00
68+00
69+00
70+00
111+00
1140
1130
1150

DATUM
VERTICAL NGVD 1929
HORIZONTAL N/A

SCALE 1" = 20'-0
20 0 20

FINAL CONDITIONS SITE PLAN SHEET #2

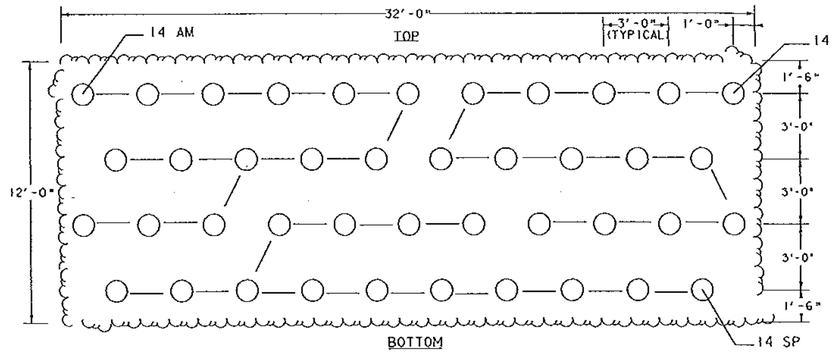
PROJECT NAME: WOODFORD
PROJECT NUMBER: BHF 010-1(29)

FILE NAME: 84e039/structures/84e039erobdr.dgn
PROJECT LEADER: M EVANS-MONGEON
DESIGNED BY: W FARLEY
IPARM: epsofino12.1
PLOT DATE: 03-OCT-2005
DRAWN BY: W FARLEY
CHECKED BY:
SHEET 32 OF 106

PLANT AND TREE LIST

QUANTITY	UNIT	KEY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS	ITEM #
			EVERGREEN SEEDLING					
~~21~~ 10	EA	PS-TR	PINUS STROBUS	WHITE PINE	1-2' MINIMUM HT	6' OC	1 GALLON CONTAINER	656.15
			EVERGREEN TREES					
7	EA	PS	PINUS STROBUS	WHITE PINE	5-6' MINIMUM HT	12' OC	CONTAINER/ B&B	656.20
			DECIDUOUS TREES					
3	EA	AS	ACER SACCHARUM	SUGAR MAPLE	1.5-2.0" CAL	30' OC	CONTAINER/ B&B	656.30
2	EA	BP	BETULA PAPYRIFERA	PAPER BIRCH (CLUMP OF 3)	8-10' MINIMUM HT	30' OC	CONTAINER/ B&B	656.30
~~10~~ 11	EA	BPO	BETULA POPULIFOLIA	GRAY BIRCH	4-5' MINIMUM HT	6' OC	2 GALLON CONTAINER	656.30
~~12~~ 10	EA	FA	FRAXINUS AMERICANA	WHITE ASH	4-5' MINIMUM HT	35' OC	2 GALLON CONTAINER	656.30
~~34~~	~~EA~~	~~PRS~~	PRUNUS SEROTINA	BLACK CHERRY	4-5' MINIMUM HT	6' OC	2 GALLON CONTAINER	656.30
~~28~~	~~EA~~	~~PV~~	PRUNUS VIRGINIANA	CHOKE CHERRY	4-5' MINIMUM HT	6' OC	2 GALLON CONTAINER	656.30
			DECIDUOUS SHRUBS					
~~350~~	~~EA~~	~~AM~~	ARONIA MELANOCARPA	BLACK CHOKEBERRY	18" MINIMUM HT	3' OC	1 GALLON CONTAINER	656.35
~~196~~	~~EA~~	~~CR~~	CORNUS RACEMOSA	GRAY DOGWOOD	18" MINIMUM HT	3' OC	1 GALLON CONTAINER	656.35
~~112~~	~~EA~~	~~SP~~	SALIX PURPUREA	STREAMCO WILLOW	18" MINIMUM HT	3' OC	1 GALLON CONTAINER	656.35
~~112~~	~~EA~~	~~VL~~	VIBURNUM LENTAGO	NANNYBERRY	18" MINIMUM HT	3' OC	1 GALLON CONTAINER	656.35

WOODY SHRUBS GROUPINGS



TYPICAL PLANT LIST FOR ONE WOODY SHRUBS DETAIL

QTY	KEY	COMMON NAME	BOTANICAL NAME
14	VL	NANNY BERRY	VIBURNUM LENTAGO
14	AM	BLACK CHOKEBERRY	ARONIA MELANOCARPA
14	SP	STREAMCO WILLOW	SALIX PURPUREA

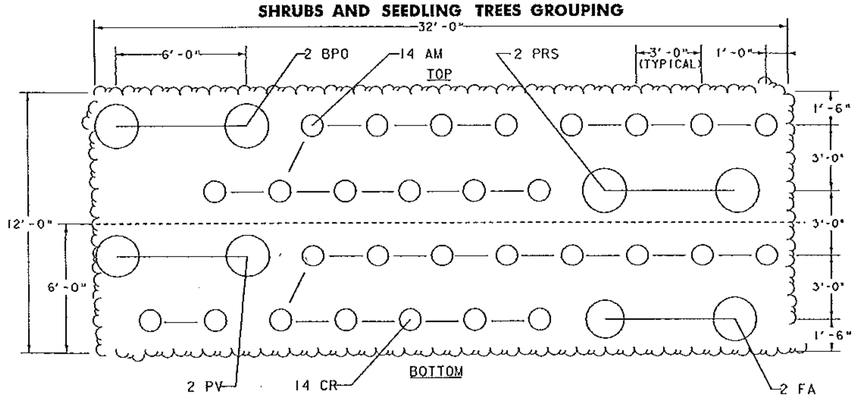
LOCATION OF WOODY SHRUBS PLANTING LAYOUTS AND LENGTHS

STA 64+02 TO STA 64+67 RT (64' X 12')	REPEAT 2 X ON SLOPED GROUND
STA 65+09 TO STA 65+40 LT (32' X 12')	REPEAT 1 X ON SLOPED GROUND
STA 68+83 TO STA 70+42 LT (160' X 12')	REPEAT 5 X ON FLAT GROUND

NOTES:

1. LOCATIONS AND BED SHAPES ARE APPROXIMATE AND MAY VARY DUE TO SLOPE. FINAL LOCATION AND ELEVATIONS TO BE DETERMINED BY THE ENGINEER BASED ON ACTUAL SLOPE CONDITIONS.
2. SEE EPSC PLAN SHEETS FOR ACTUAL GROUPING LOCATIONS.
3. GROUPING SHAPES ARE TO BE STAKED AND LAID OUT TO GIVE A NATURAL APPEARANCE.
4. TYPICAL GROUPING LAYOUTS SHOWN ARE FOR FLAT AND STEEP SLOPES OF PROJECT WHERE THERE IS NO STONE FILL.
5. WATER ALL SHRUBS AND SEEDLING TREES AT TIME OF PLANTING. EACH SHRUB AND SEEDLING TREE SHALL RECEIVE A MINIMUM OF 5 GALLONS OF WATER TWICE A WEEK.
6. SEE SPECIAL PROVISIONS FOR 651.18 FERTILIZER (*MOD*), THE APPLICATION OF MYCORRHIZAL FUNGI PER MANUFACTURER'S RECOMMENDATIONS AND 651.35 TOPSOIL *MOD*, THE APPLICATION OF COMPOST.

SHRUBS AND SEEDLING TREES GROUPING



TYPICAL PLANT LIST FOR ONE SHRUBS AND SEEDLING TREES DETAIL

QTY	KEY	COMMON NAME	BOTANICAL NAME
2	BPO	GRAY BIRCH	BETULA POPULIFOLIA
2	PRS	BLACK CHERRY	PRUNUS SEROTINA
2	FA	WHITE ASH	FRAXINUS AMERICANA
2	PV	CHOKE CHERRY	PRUNUS VIRGINIANA
14	AM	BLACK CHOKEBERRY	ARONIA MELANOCARPA
14	CR	GRAY DOGWOOD	CORNUS RACEMOSA

PART A / PART B

LOCATION OF SHRUBS AND SEEDLING TREES PLANTING LAYOUTS AND LENGTHS

STA 67+65 TO STA 69+59 RT (192' X 12')	REPEAT 6 X ON SLOPED GROUND
STA 65+36 TO STA 66+09 LT (96' X 24')	REPEAT 6 X ON FLAT GROUND
STA 68+36 TO STA 69+06 LT (64' X 12')	REPEAT 2 X ON FLAT GROUND

UTILIZE PART A FOR THE FOLLOWING STATIONS:

STA 68+15 TO STA 69+13 LT (96' X 6')	REPEAT 3 X ON SLOPED GROUND

UTILIZE PART B FOR THE FOLLOWING STATIONS:

NOT USED

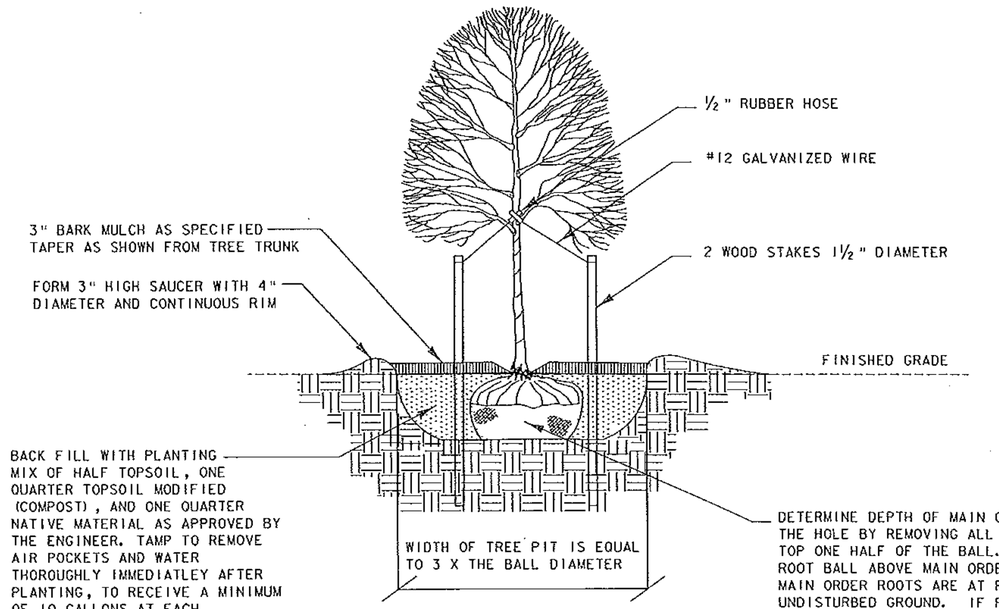
NOT TO SCALE

LANDSCAPE GROUPING DETAIL & PLANT LIST

PROJECT NAME: WOODFORD
PROJECT NUMBER: BHF 010-1(29)

FILE NAME: 84e039/structures/84e039erobdr.dgn PLOT DATE: 03-OCT-2005
PROJECT LEADER: M EVANS-MONGEON DRAWN BY: L GOLDSTEIN
DESIGNED BY: J BROWN CHECKED BY:
IPARM: epsclspde11.1 SHEET 37 OF 106

NOT TO SCALE

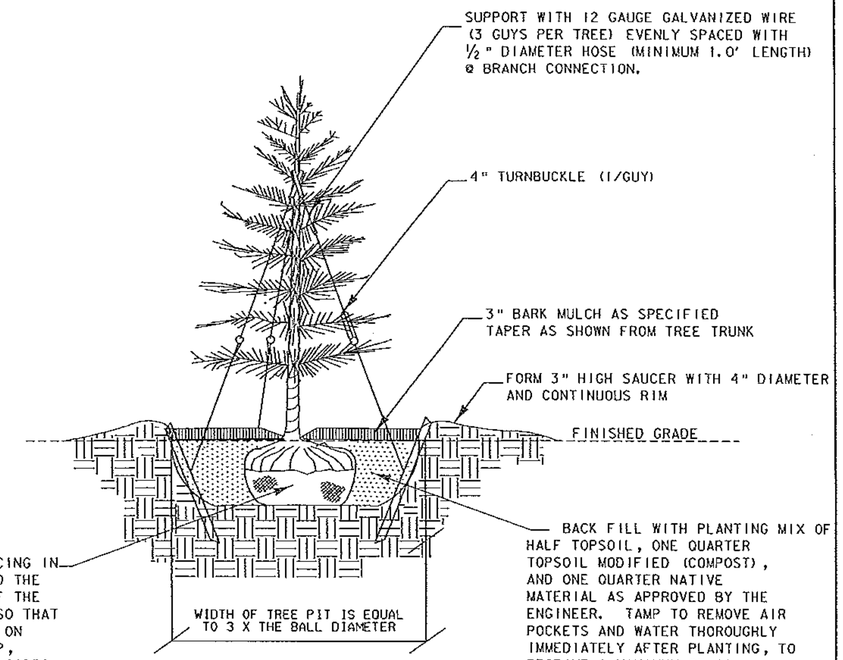


DECIDUOUS TREE PLANTING DETAIL

NOTES:

1. STAKE ONLY THOSE TREES PLANTED IN WINDY, EXPOSED LOCATIONS, WHERE THEY MIGHT BE BLOWN OVER OR VANDALIZED.

2. COMPLETELY REMOVE ALL GUY WIRES, RUBBER HOSE, AND STAKES ONE YEAR AFTER PLANTING.



EVERGREEN TREE PLANTING DETAIL

NOTES:

1. ANTI-DESICCANT SPRAY IS TO BE APPLIED TO ALL EVERGREENS PER MANUFACTURER SPECIFICATIONS.

2. COMPLETELY REMOVE ALL GUY-WIRES AND TURNBUCKEL ONE YEAR AFTER PLANTING.

SEEDING FORMULA RURAL AREAS

% WT.	LBS./A.	NAME	PUR %	GERM %
37.5	22.5	CREEPING RED FESCUE	98	85
37.5	22.5	TALL FESCUE	95	90
5.0	3.0	RED TOP	95	90
15.0	9.0	BIRDSFOOT TREFOIL	98	85
5.0	3.0	ANNUAL RYEGRASS	95	85
100.0	60.0			

GENERAL NOTES

1. SEED MIXTURE: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.
2. SEED: TO BE APPLIED PER SEEDING FORMULAS OR AS DIRECTED BY THE ENGINEER.FERTILIZER: FORMULA 10-20-10, TO BE USED WITH SEED, APPLIED AT THE RATE OF 500 LBS./ACRE. (HYDRO SEEDERS MAY USE 19-19-19 FORMULA).
3. AGRICULTURAL LIMESTONE: TO BE APPLIED AT THE RATE OF 2 TONS/ACRE, OR AS DIRECTED BY THE ENGINEER. HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2 TONS/ACRE, OR AS DIRECTED BY THE ENGINEER.

GENERAL LANDSCAPE NOTES:

1. FOLLOW STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, SECTION 656.

2. SEE SPECIAL PROVISIONS FOR 651.18 FERTILIZER (MOD), THE APPLICATION OF MYCORRHIZAL FUNGI PER MANUFACTURER'S RECOMMENDATIONS AND 651.35 TOPSOIL (MOD), THE APPLICATION OF COMPOST.

3. TREE AND SHRUB SEEDLINGS FOR EROSION CONTROL AND RIPARIAN ZONE PLANTINGS ARE SPECIAL ORDER ITEMS. THE FOLLOWING ARE AMONG THE SOURCES FOR THIS SPECIFIC PLANT MATERIAL.

NEW ENGLAND WETLAND PLANTS, INC.
800 MAIN ST.
AMHERST, MA 01002
820 WEST ST. NURSERY
AMHERST, MA 01002
TEL: (413) 256-1752

HIGH REACH FARM
2847 TAMPICO ROAD
DANVILLE, VT 05828
TEL: (802) 748-3512

COBBLE CREEK NURSERY
991 TYLER BRIDGE ROAD
BRISTOL, VT 05443
TEL: (802) 453-3889
COBCREEK@MADRIVER.COM

HORSFORD GARDENS & NURSERY
2111 GREENBUSH ROAD
CHARLOTTE, VT 05445
TEL: (802) 425-2811
FAX: (802) 425-2797

NORTHERN NURSERIES, INC.
WHOLESALE DISTRIBUTER (OUT OF CT)
P.O. BOX 1048
WHITE RIVER JCT. VT 05001
TEL: (802) 295-2117
FAX: (802) 295-4889

HOP RIVER NURSERY
251 HOP RIVER ROAD
ROUTE 6
BOLTON, CT 06043
TEL. & FAX: (860) 646-7099

BIGELOW NURSERIES
P.O. BOX 718
NORTHBOROUGH, MA 01532
TEL: (508) 845-2143
FAX: (508) 842-9245

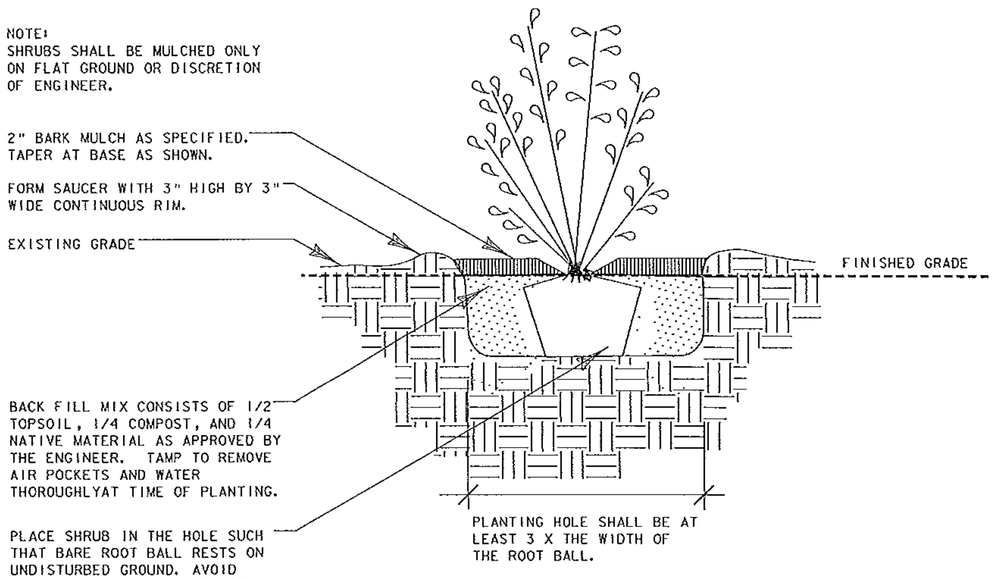
PIERSON NURSERIES, INC.
24 BUZZELL ROAD
BIDDEFORD, MAINE 04005
TEL: (207) 499-2994
FAX: (207) 499-2912

NOT TO SCALE

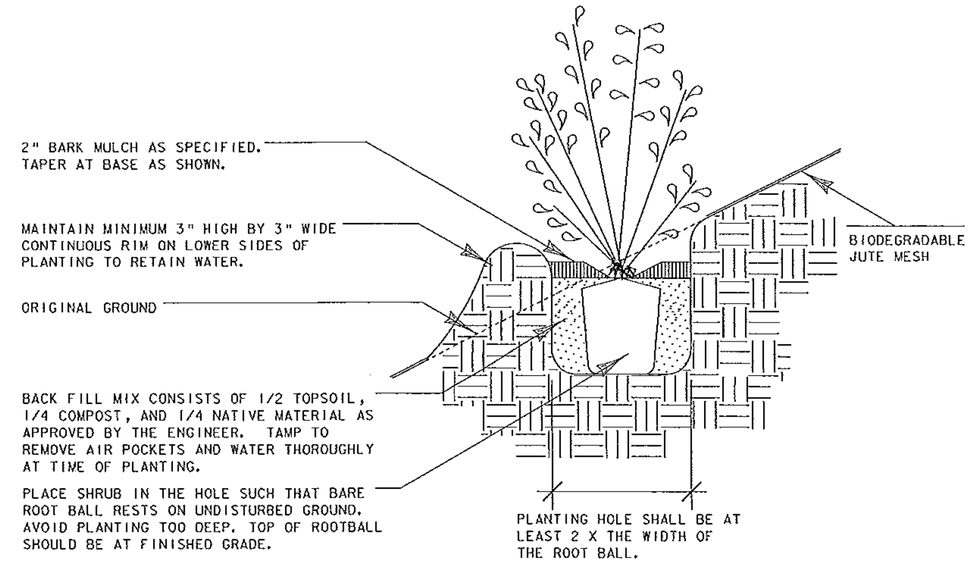
LANDSCAPE TREE PLANTING DETAIL

PROJECT NAME: WOODFORD
PROJECT NUMBER: BHF 010-I(29)

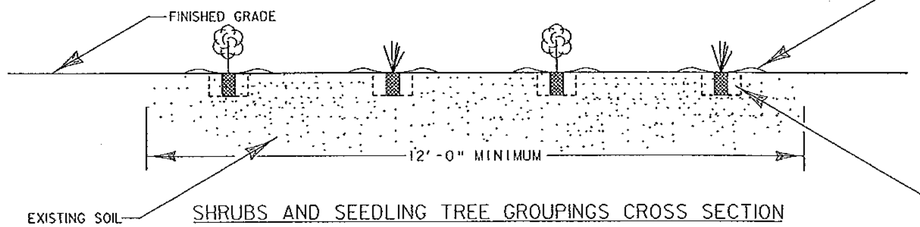
FILE NAME: 48e039/structures/84e039erobdr.dgn PLOT DATE: 03-OCT-2005
PROJECT LEADER: M EVENS-MONGEON DRAWN BY: SQUAD B
DESIGNED BY: J BROWN CHECKED BY:
tPARM: epsclspde12.i SHEET 38 OF 106



SHRUB AND SEEDLING TREE PLANTING DETAIL



SHRUB AND SEEDLING TREE PLANTING ON SLOPES DETAIL



SHRUBS AND SEEDLING TREE GROUPINGS CROSS SECTION

(FOR FLAT GROUND)

FORM 3" HIGH BY 3" WIDE LIP SAUCER WITH CONTINUOUS RIM OF 2" BARK MULCH TAPERING AT BASE AS SPECIFIED.

BACK FILL MIX CONSISTS OF 1/2 TOPSOIL, 1/4 COMPOST, AND 1/4 NATIVE MATERIAL AS APPROVED BY THE ENGINEER.

TAMP TO REMOVE AIR POCKETS AND WATER THOROUGHLY AT TIME OF PLANTING.

NOTE:
SEE SHRUB AND SEEDLING TREE PLANTING DETAIL.
SHRUBS SHALL BE MULCHED ON FLAT GROUND ONLY OR AT DISCRETION OF ENGINEER.

NOT TO SCALE

LANDSCAPE GROUP AND SHRUB CROSS-SECTION

PROJECT NAME: WOODFORD	
PROJECT NUMBER: BHF 010-1(29)	
FILE NAME: 84e039/structures/84e039erobdr.dgn	PLOT DATE: 03-OCT-2005
PROJECT LEADER: M EVANS-MONGEON	DRAWN BY: L GOLDSTEIN
DESIGNED BY: J BROWN	CHECKED BY:
!PARM: epsclspdet3.i	SHEET 39 OF 106

LEIGH

T. BUCK CONSTRUCTION
ER BHF 010-1(44)
WOODFORD, VT
DELAUNCH AND DISASSEMBLY PROCEDURES
NOVEMBER 2012

PROJECT:

The bridge to be delaunched and disassembled is a 700XS Acrow Panel Bridge in Woodford, VT with one clear span of 200 ft. The truss construction is Triple Double Reinforced Three Heavy (TDR3H). The roadway width curb to curb is 24 ft. The deck is an orthotropic steel deck with an epoxy aggregate anti-skid surface.

OVERVIEW OF REMOVAL:

The bridge will be pulled back onto rollers behind the West Abutment. Based on input from the customer, the area behind the centerline of rocking rollers is to be a minimum of 240ft for the bridge disassembly. The bridge will be delaunched using a crane assisted delaunch utilizing a 40 ft Triple Single (TS) Nose and a 10 ft DS Tail. This method requires attaching a crane to the East End of the nose to provide support during the initial pull back until the bridge is safely pulled back onto the rollers behind the West Abutment. Roadway decks will be added to the tail as counterweight (See Launch Sequence Diagram). The deck and guardrail are to be removed prior the delaunching of the bridge.

BRIDGE WEIGHTS:

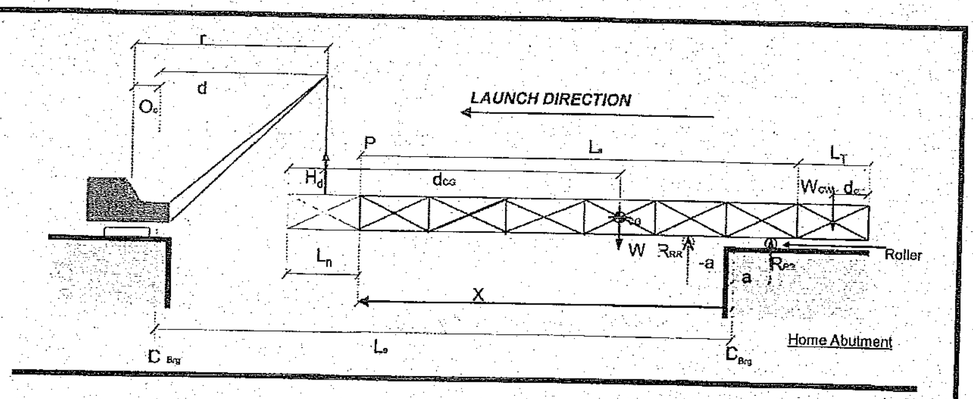
200 ft TDR3H span without deck	**300 kips**
200 ft TDR3H span with deck	**425 kips**
40 ft TS Nose	**32 kips**
10 ft DS Tail	**7 kips**

BASIC EQUIPMENT:

A small rough terrain crane (25 to 35 ton) will be needed for general disassembly. The heaviest component pick will be 7,000 lbs. **NOTE: A crane of adequate capacity will be required for the delaunching of the bridge.** Basic steel worker hand tools, including pinch bars, 3 LB sledge hammers, pry bars, 1 5/8", 2" and 1 1/16" thin walled, deep welled sockets with a 3/4" drive, 6" drive extension, ¾" universal (swivel), two 4-ton come-alongs or two chain falls, 4-way chain with 3/8" chain slip hooks for picking deck panels (1,500 lbs each), three to four 25-ton jacks, high quality 6 * 6 and 12 * 12 timber dunage, nylon straps or cable for lifting the parts during disassembly, drift pins etc. A compressor and impact wrenches capable of relieving the 650 ft-lbs of bolt torque will be required.

DRAFT

CRANE REACTION FOR CRANE ASSISTED LAUNCH [@ F.S. = 1.05]



L_a =	200 ft	d_{cw} =	5.0 ft	H_d =	0 ft
d_{cg} =	140.0 ft	W_{cw} =	30 k	Total Weight =	363.4 k (incl. W_{CW})
L_N =	40 ft	L_T =	10 ft	a =	0 ft
W_N =	31.8 k	W_T =	6.43 k	O_c =	20 ft

x (ft)	Radius of Crane (r) (ft.)	Hookload,P (Kips)	Reaction at R_{RR} (Kips)
90	90	1	362
95	85	3	360
100	80	5	358
105	75	14	349
110	70	26	337
115	65	37	326
120	60	48	315
125	55	58	305
130	50	68	295
135	45	77	286
140	40	85	278
145	35	93	270
150	30	101	262
155	25	108	255
160	20	115	248

*O_C = Offset of Crane Pin to CenterLine of Bearing at far Abutment

Project: T Buck - Woodford, VT **By:** MJP **Date:** 11/21/2012

Legend:

r = Radius of Crane
O_c = Offset of Crane from CenterLine of Bearing
d = distance from hook to CenterLine of Bearing
L_n = Length of Nose
L_a = Length of Main Bridge
d_{CW} = distance from end of bridge to Center of Gravity of the Counter Weight
R_{RR} = Reaction at Roller
a = distance from Roller to CenterLine of Bearing
d_{cg} = Distance from crane hook to Center of Gravity
X = Distance from End of Abutment to End of Crane
H_d = Distance from CenterLine of Bearing to Crane Hook

STAGE 8: Ensure that the crane boom is in line with the bridge and the cable is vertical. The crane will experience the maximum load at this point but reduce with subsequent movements.

Pull bridge back 75ft. (130 ft Max in cantilever) **STOP.**

STAGE 9: Disconnect the crane. **STOP.**

STAGE 10: Continue to pull bridge back 130ft. **STOP.**

STAGE 11: Remove the counterweight from the tail and disassemble the 10 ft DS Tail, the 200 ft TDR3H Bridge and the 40 ft TS Nose.

NOTE: - When pushing/pulling the bridge, always connect the pushing machine to the floorbeam.

- Between movements, always tie off the bridge from additional movement.

Prepared By: Mike Lee Date: 11/20/12

Checked By: Zachy Wilkes Date: 11/21/12

PRIOR TO DISASSEMBLY

The backwall, guardrail and deck units are to be removed from the bridge prior to the Acrow Representative being on site.

Set up the build area as laid out in the Roller Layout Drawing. Position and secure the balance beams on concrete pads or timber blocking directly on the West Abutment. The balance beams will be placed as close to the center line of bearing as possible, being sure to avoid any rebar that may be present on the abutment for backwall support. The plain roller stations behind the West Abutment will be placed on top of concrete pads or timber blocking, and kept in place by keeper angles, as shown in the Roller Layout Drawing.

DELAUNCHING 200FT TDR3H SPAN:

STAGE 1: Remove the backwalls, deck units and guardrail from the bridge and install the taper chords under each truss line.

Grade the build area behind the West Abutment and install the plain rollers as shown in the Roller Layout drawing. **STOP.**

STAGE 2: Jack/Lift the bridge at both abutments high enough to install the rocking rollers and balance beam assemblies at each abutment.

Temporarily lower the bridge onto blocking to allow for assembly of the nose and tail. **STOP.**

STAGE 3: Build 40ft TS nose, 10 ft DS Tail. **STOP.**

STAGE 4: Install the rocking rollers and balance beams at each abutment.

Lower bridge down onto rocking rollers at the each Abutment. **STOP.**

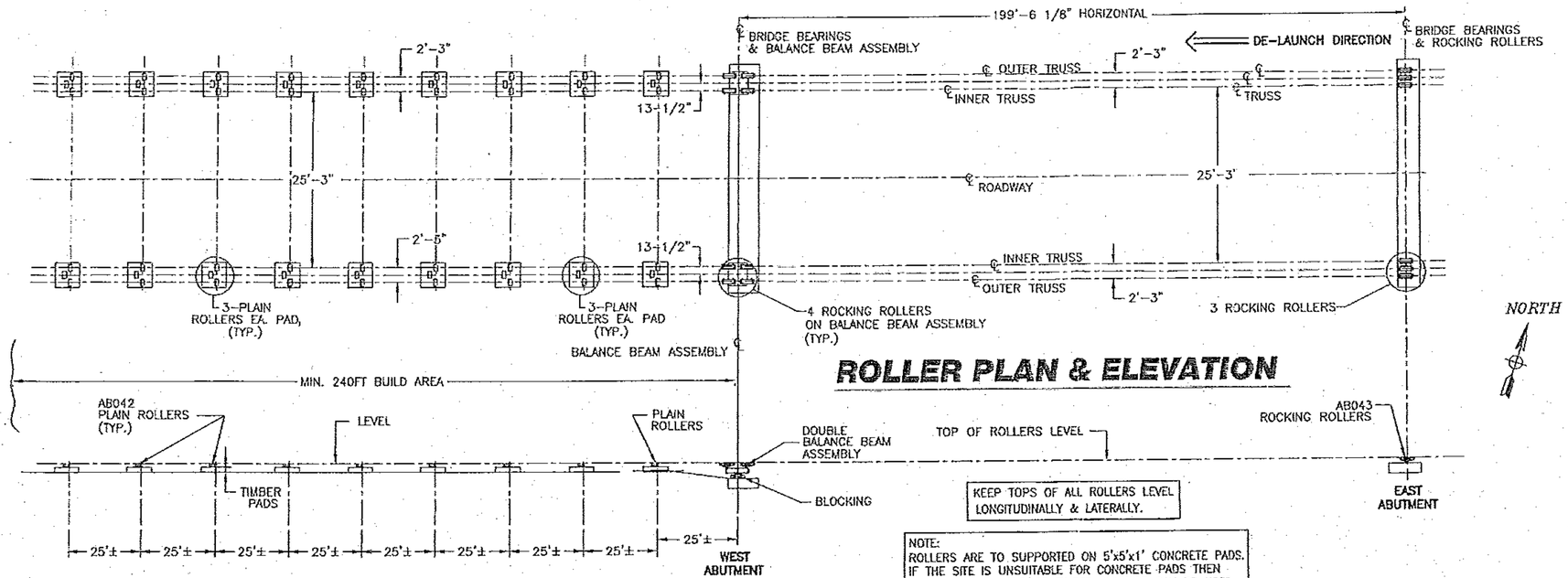
STAGE 5: Install the temporary bracing in the tail and Bay 20 of the bridge as shown in the Blocking/Pulling detail.

Add 20 Decks to the tail. **STOP.**

STAGE 6: Attach the pulling machine to the West End of the bridge.

Pull the bridge back 35 ft. **STOP.**

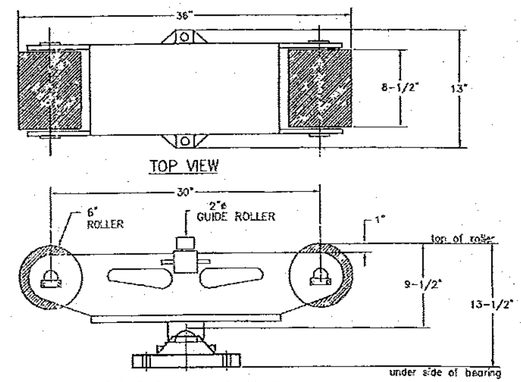
STAGE 7: Rig a crane to the East End of the nose as shown in the attached Rigging Diagram Drawing. **STOP.**



ROLLER PLAN & ELEVATION

KEEP TOPS OF ALL ROLLERS LEVEL LONGITUDINALLY & LATERALLY.

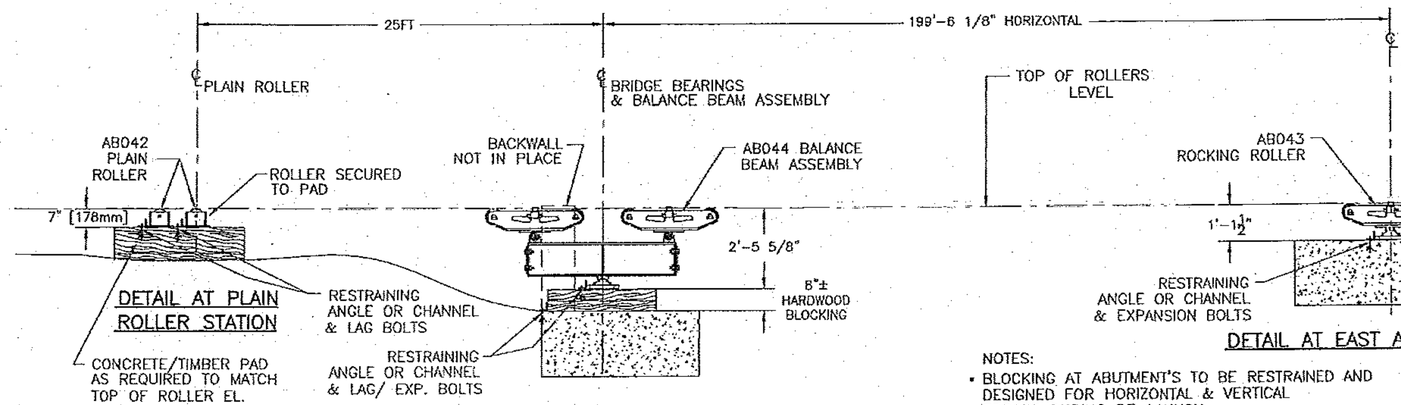
NOTE:
ROLLERS ARE TO SUPPORTED ON 5'x5'x1' CONCRETE PADS. IF THE SITE IS UNSUITABLE FOR CONCRETE PADS THEN TIMBER SWAMP PADS OR TIMBER DUNNAGE CAN BE USED. ALL PADS ARE BY CONTRACTOR.



TOP VIEW

AB043 ROCKING ROLLER

AB042 PLAIN ROLLER

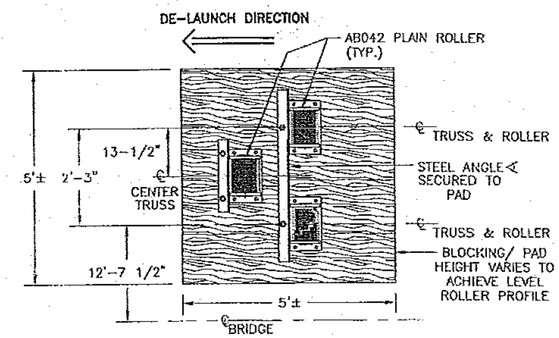


DETAIL AT PLAIN ROLLER STATION

DETAIL AT WEST ABUTMENT

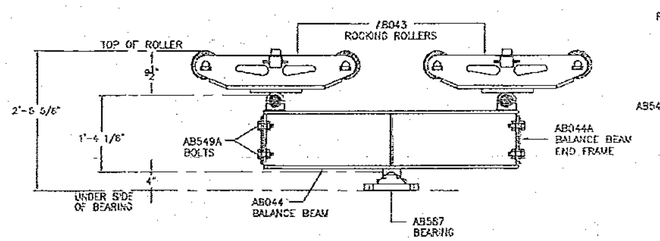
DETAIL AT EAST ABUTMENT

NOTES:
- BLOCKING AT ABUTMENT'S TO BE RESTRAINED AND DESIGNED FOR HORIZONTAL & VERTICAL FORCES DURING DE-LAUNCH. (DESIGN AND DETAILS BY OTHERS)
- CONTRACTOR TO VERIFY ELEVATION OF ROLLERS AND PROVIDE STABLE BLOCKING & SHIMS AS NECESSARY TO ASSURE LEVEL TOP OF ROLLERS IN ENTIRE SYSTEM.

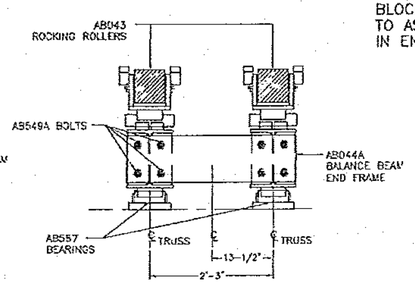


PLAN VIEW
TYPICAL ROLLER STATION PAD

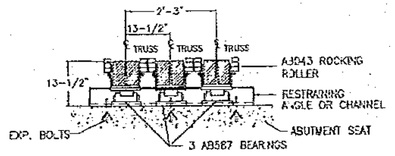
PAD DIMENSIONS TO BE INCREASED AS REQUIRED FOR UNSTABLE GROUND



BALANCE BEAM ASSEMBLY
ELEVATION VIEW



END VIEW



AB043 ROCKING ROLLER LAYOUT
SECTION A-A

APPR. | BY | DESCRIPTION | REV. DATE

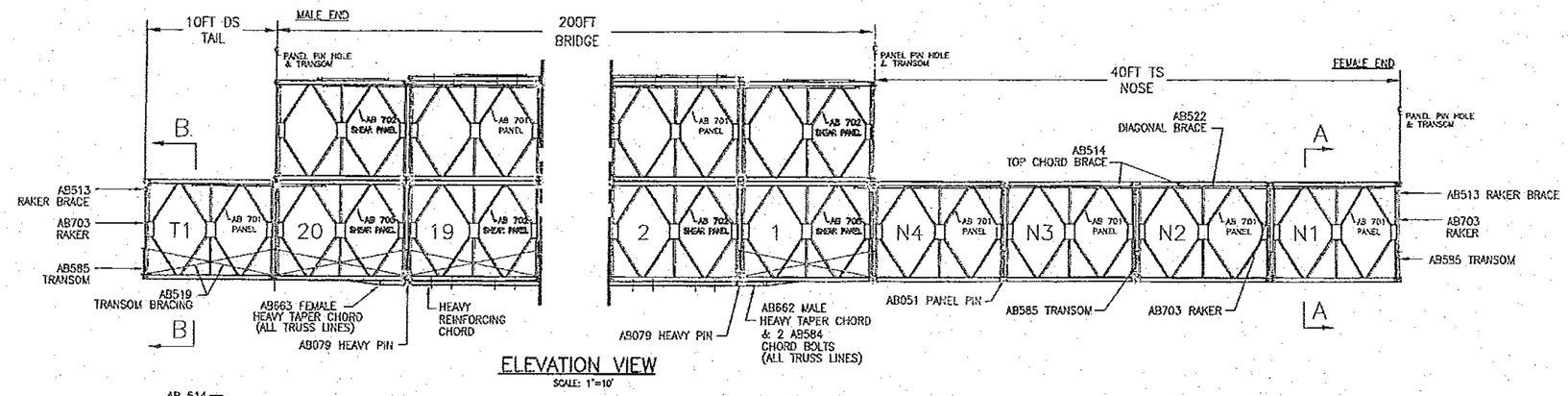
ACROW® CREATING ENGINEERED SOLUTIONS WORLDWIDE®
CORPORATION OF AMERICA
181 NEW ROAD, PARSIPPANY, NJ 07054

ACROW 700XS PANEL BRIDGE
DE-LAUNCH ROLLER LAYOUT
200FT x 2 LANE 24FT TDR3H BRIDGE
WOODFORD, VT
ER BHF 010-1(44)

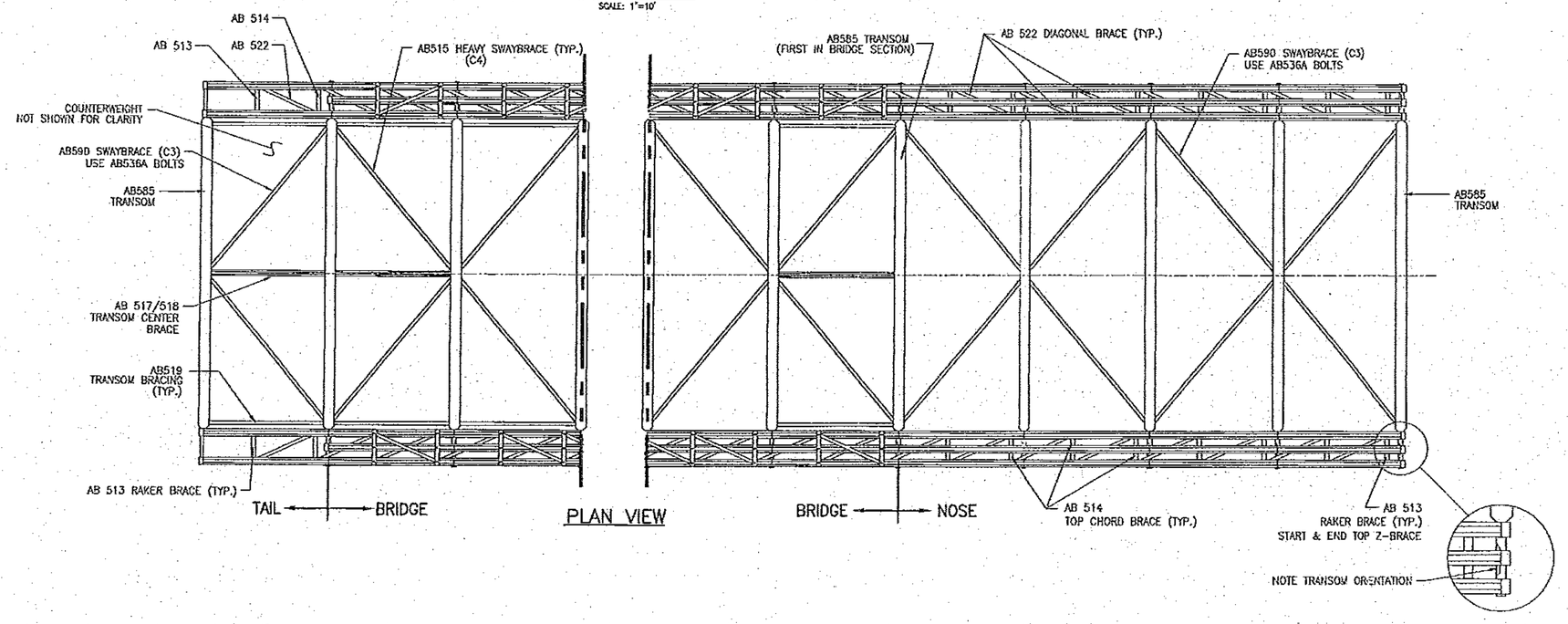
DRAWN BY RJ	DATE NOVEMBER 21, 2012	CONTRACT NO.	
CHECKED BY MP	SCALE: AS SHOWN		
APPROVED BY SP			

T. BUCK CONSTRUCTION
AUBURN, ME

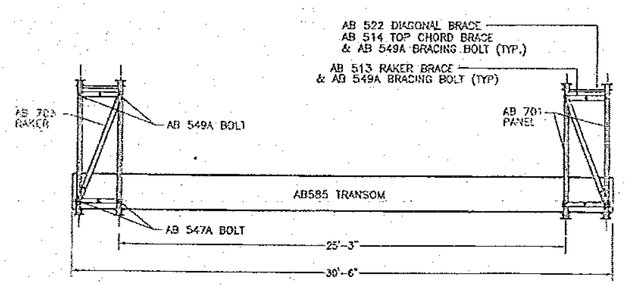
DRAWING NO. AB1543-DL | REV.
SHT 1 OF 4



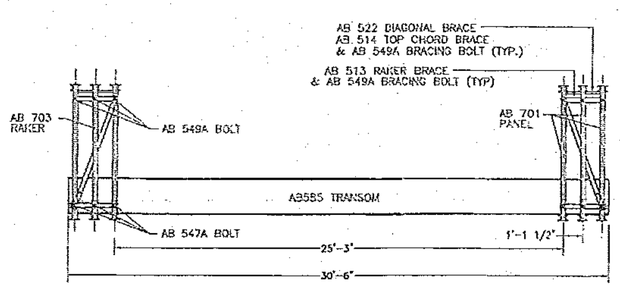
ELEVATION VIEW
SCALE: 1"=10'



PLAN VIEW



SECTION B-B (TAIL)
DS TRUSS CONSTRUCTION



SECTION A-A (NOSE)
TS TRUSS CONSTRUCTION

REV. | DATE | DESCRIPTION | BY | APPR.

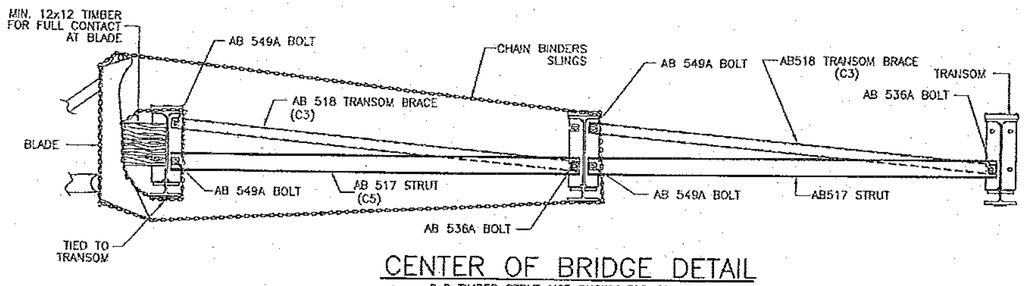
ACROW® CREATING ENGINEERED SOLUTIONS WORLDWIDE®
CORPORATION OF AMERICA
181 NEW ROAD, PARSIPPANY, NJ 07054

ACROW 700XS PANEL BRIDGE
DE-LAUNCH NOSE & TAIL
200FT x 2 LANE 24FT TDR3H BRIDGE
WOODFORD, VT
ER BHF 010-1(44)

DRAWN BY RJ | DATE NOVEMBER 21, 2012 | CONTRACT NO.
CHECKED BY MP | SCALE: AS SHOWN
APPROVED BY SP

T. BUCK CONSTRUCTION
AUBURN, ME

DRAWING NO. AB1543-DL | REV.
SHT 2 OF 4

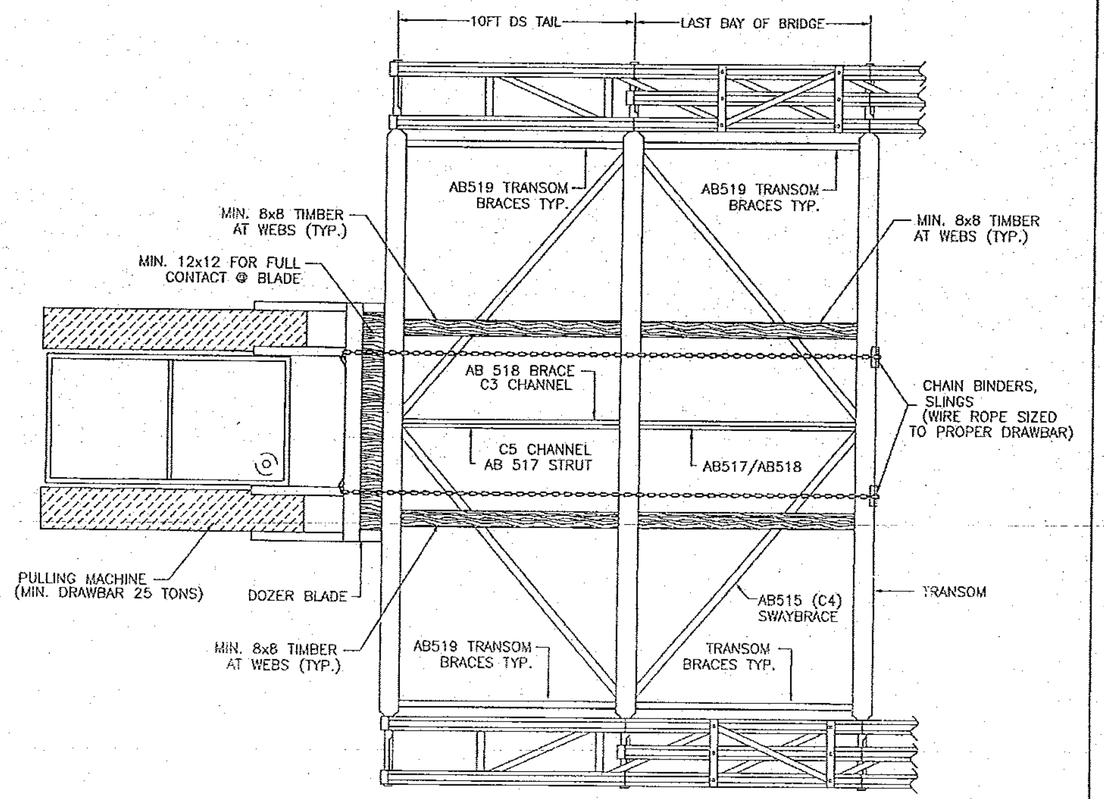


CENTER OF BRIDGE DETAIL

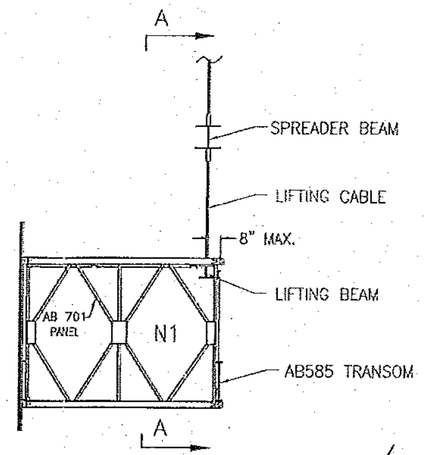
8x8 TIMBER STRUT NOT SHOWN FOR CLARITY

NOTE:

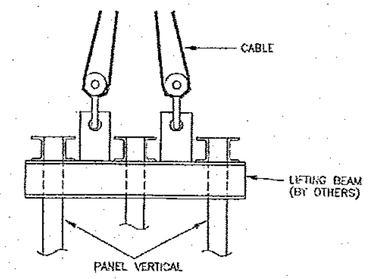
THIS BRACING DETAIL APPLIES TO LAST 2 BAYS FOR EVERY PUSH (SWAYBRACING, TIMBER, CENTER & TRANSOM BRACING)



PLAN

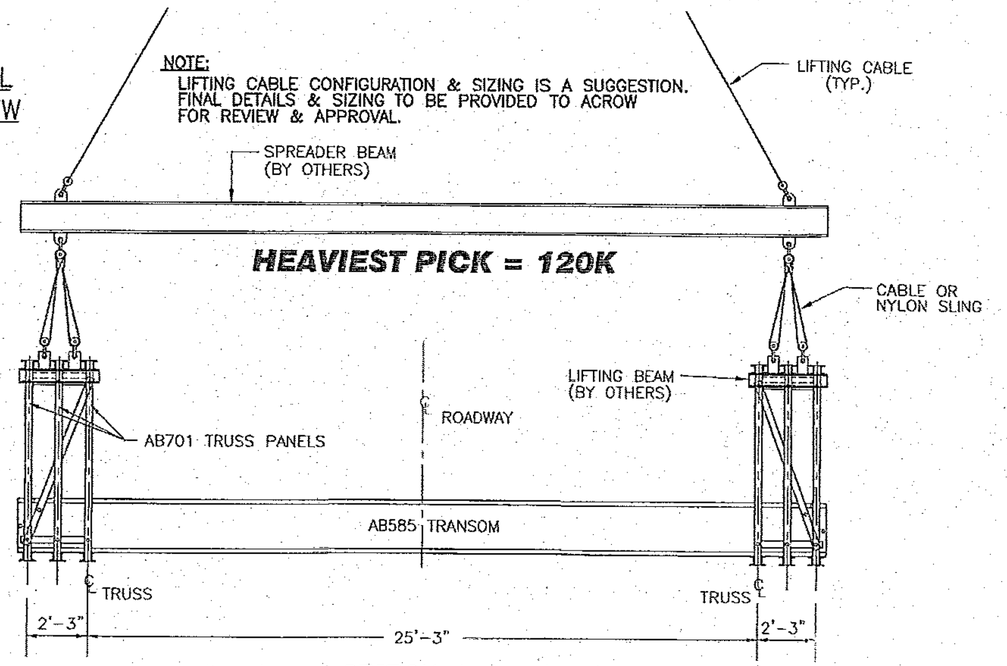


TS NOSE LIFTING DETAIL ELEVATION VIEW



TYPICAL DETAIL @ TOP CHORD

NOTE:
LIFTING CABLE CONFIGURATION & SIZING IS A SUGGESTION. FINAL DETAILS & SIZING TO BE PROVIDED TO ACROW FOR REVIEW & APPROVAL.



SECTION A-A LIFTING DETAIL

NOTES:

1. ALL RIGGING PROVIDED & SIZED BY ERECTOR
2. CRANE SIZING & SET-UP BY OTHERS

APPR.	BY	DESCRIPTION	DATE	REV.

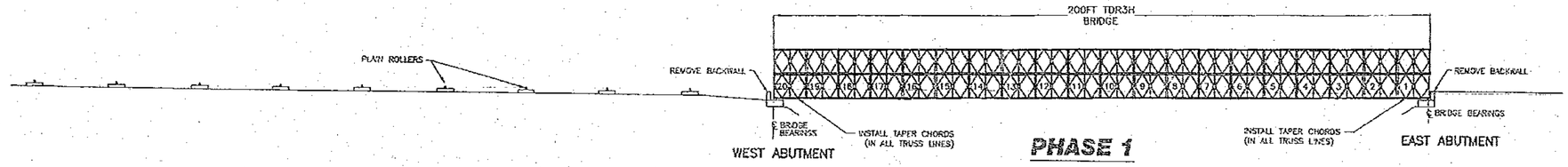
ACROW®
CREATING ENGINEERED SOLUTIONS WORLDWIDE®
CORPORATION OF AVERICA
181 NEW ROAD, PARSIPPANY, NJ 07054

ACROW 700XS PANEL BRIDGE
PULLING-BLOCKING/ RIGGING DETAIL
200FT x 2 LANE 24FT TDR3H BRIDGE
WOODFORD, VT
ER BHF 010-1(44)

DRAWN BY RJ	DATE NOVEMBER 21, 2012	CONTRACT NO.	
CHECKED BY MP	SCALE: AS SHOWN		
APPROVED BY SP			

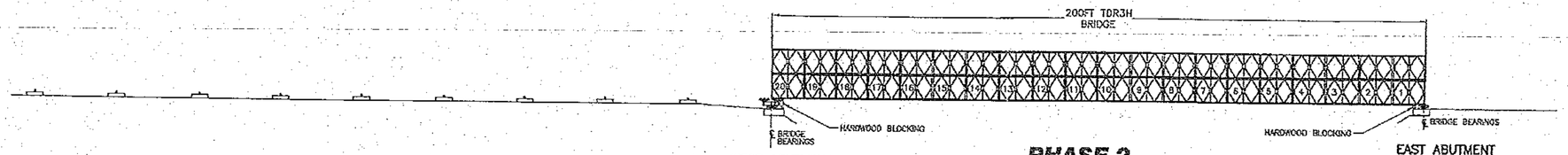
T. BUCK CONSTRUCTION
AUBURN, ME

DRAWING NO. AB1543-DL REV.
SHT 3 OF 4



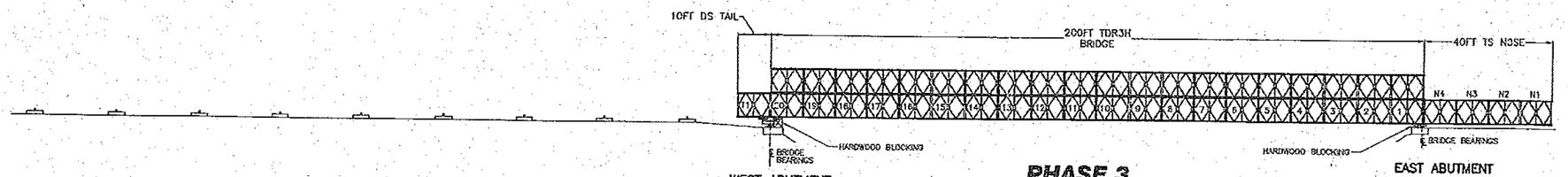
PHASE 1

- REMOVE ALL DECK PANELS & GUARDRAIL
- INSTALL TAPER CHORDS
- REMOVE THE BACKWALLS AND GRADE BUILD AREA BEHIND THE WEST ABUTMENT AND INSTALL PLAIN ROLLERS AS SHOWN IN THE DE-LAUNCH ROLLER LAYOUT.



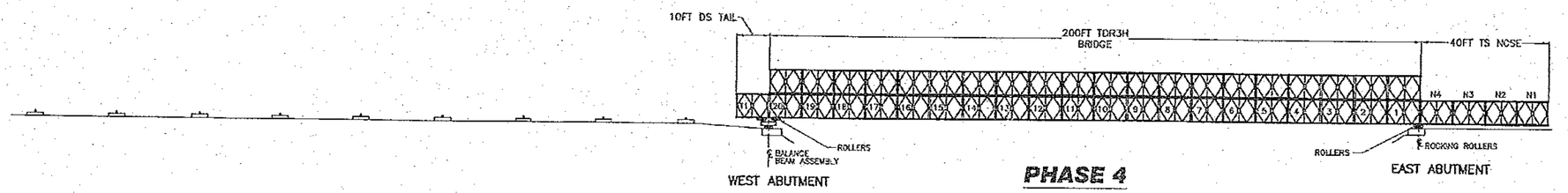
PHASE 2

- JACK UP BRIDGE AT EACH ABUTMENT HIGH ENOUGH TO INSTALL ROCKING ROLLERS
- LOWER BRIDGE ONTO TEMPORARY BLOCKING



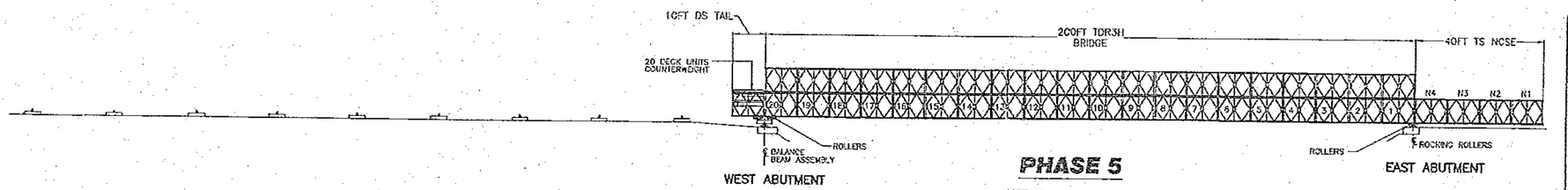
PHASE 3

- BUILD 40FT OF TS NOSE & 10FT OF DS TAIL



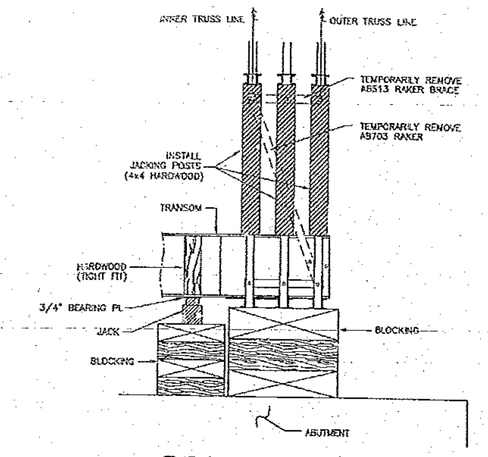
PHASE 4

- LOWER BRIDGE ONTO ROLLERS AT EACH ABUTMENT

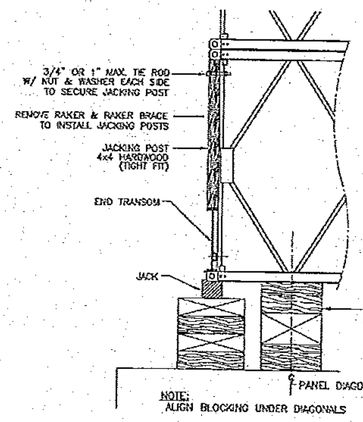


PHASE 5

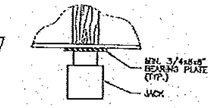
- INSTALL TEMPORARY BRACING IN BAY T1 & 20 AS SHOWN IN THE PULLBACK/ BLOCKING DETAIL
- ADD 20 DECKS COUNTERWEIGHT TO THE TAIL BAY



TYPICAL JACKING DETAIL



TYPICAL BLOCKING DETAIL
ELEVATION VIEW



TYP. JACK DETAIL

ACROW® CREATING ENGINEERED SOLUTIONS WORLDWIDE®
CORPORATION OF AMERICA
181 NEW ROAD, PARSIPPANY, NJ 07054

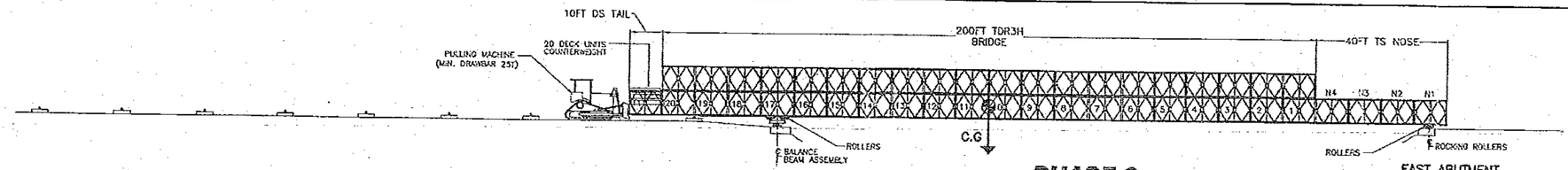
ACROW 700XS PANEL BRIDGE
DE-LAUNCHING SEQUENCE
200FT x 2 LANE 24FT TDR3H BRIDGE
WOODFORD, VT
ER BHF 010-1(44)

DRAWN BY	RJ
CHECKED BY	MP
APPROVED BY	SP
DATE	NOVEMBER 21, 2012
SCALE: AS SHOWN	
CONTRACT NO.	

T. BUCK CONSTRUCTION
AUBURN, ME

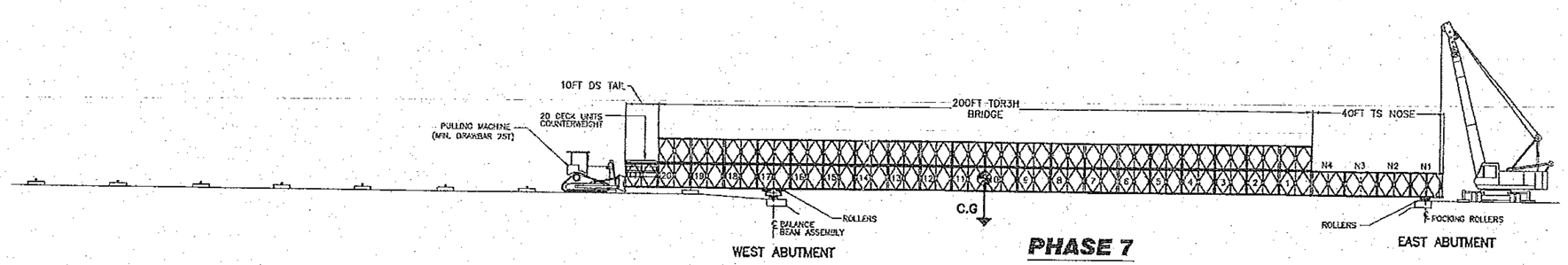
DRAWING NO. AB1543-DL
SHT 4A OF 4
REV.

APPR. | BY | DESCRIPTION | DATE | REV.



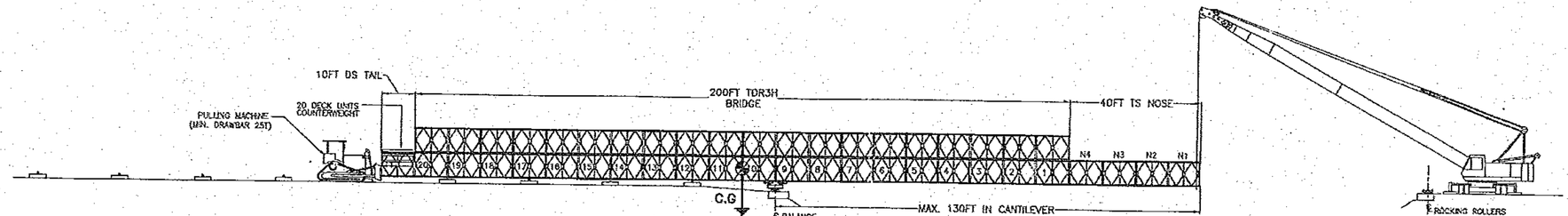
PHASE 6

- ATTACH PUSHING MACHINE
- PULL BACK BRIDGE 35FT



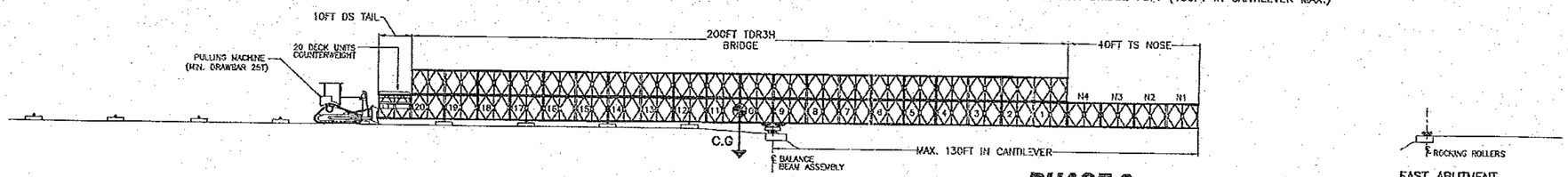
PHASE 7

- ATTACH CRANE TO THE NOSE OF THE BRIDGE



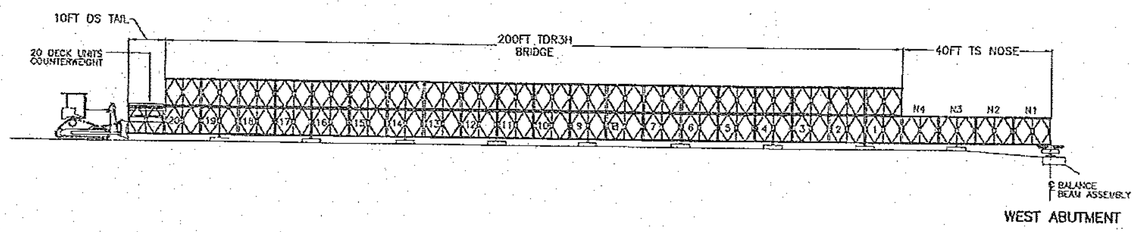
PHASE 8

- PULL BACK BRIDGE 75FT (130FT IN CANTILEVER MAX.)



PHASE 9

- DETACH CRANE



PHASE 10

- PULL BACK BRIDGE 130FT

PHASE 11

- REMOVE ALL COUNTERWEIGHT
- DISMANTLE TAIL, BRIDGE AND NOSE

REV.	DATE	DESCRIPTION	BY	APPR.

ACROW® CREATING ENGINEERED SOLUTIONS WORLDWIDE®
CORPORATION OF AMERICA
181 NEW ROAD, PARSIPPANY, NJ 07054

ACROW 700XS PANEL BRIDGE
DE-LAUNCHING SEQUENCE
200FT x 2 LANE 24FT TDR3H BRIDGE
WOODFORD, VT
ER BHF 010-1(44)

DRAWN BY RJ	DATE NOVEMBER 21, 2012	CONTRACT NO.	
CHECKED BY MP	SCALE: AS SHOWN		
APPROVED BY SP			
T. BUCK CONSTRUCTION AUBURN, ME	DRAWING NO. AB1543-DL	REV.	
	SHT 4B OF 4		

VERMONT

State of Vermont
Program Development
One National Life Drive
Montpelier, VT 05633-5001
www.aot.state.vt.us

Agency of Transportation

[phone] 802-828-2621
[fax] 802-828-3566
[ttd] 800-253-0191

July 16, 2012

Highway Safety Corp
Glastonbury, CT

Project Name: Woodford Project #: ER BHF 010-1(44)

Structure Identification: VT 9 Over the Roaring Branch of the Walloomsac River

The following **bridge railing details item 525.33, "Bridge Railing, Galvanized 2 Rail Box Beam"** for the above project (Vendor's Job #1881, transmitted by T. Buck Construction, Inc. and received by our office on Friday, July 13, 2012, have been reviewed and are being returned herewith.

Sheet 1 and 4 and the welding procedures are approved.

Sheet 2 and 3 are approved "as noted". (Please make appropriate changes as indicated on the "as noted" drawing and submit a new "*.pdf" for our use in the record plans for this project.)

You must provide notice to our fabrication inspector Jeff Clark as to the date fabrication represented by these drawings will begin. Jeff may be contacted by phone at (802)828-0044 or email at jeff.clark@state.vt.us. That notice must be received at least seven days prior to that date, as per Specification 506.03. Any material fabricated prior to the notification date is subject to rejection without further cause.

Sincerely,

Carolyn W. Carlson, PE
Project Manager

Attachments
cc: [X] Resident Engineer Ron Lemaire -w/prints
[X] T. Buck Construction, Inc. – w/prints
[X] Shop Inspector - Jeff Clark w/prints
[X] Materials & Research Section (C&IA Unit) – Letter only
[X] F.R. Lafayette – w/prints
[X] Construction Division - Letter only
[X] CWC

VTrans Working to Get You There
Vermont Agency of Transportation

Highway Safety Corporation

Glastonbury, CT

Welding Procedure Specification

Material specification: A572 gr 50, A709 Gr 50

Welding process: Gas Metal Arc Welding (GMAW) Spray Transfer

Manual, semi-automatic, or automatic: Semi-Automatic

Position of welding: Flat (1F) or Horizontal (2F)

Filler metal specification: AWS A5.18

Filler metal classification: ER70S-6

Electrode and manufacturer: Lincoln Electric Lincoln Weld L-56

Flux and manufacturer: N/A

Shielding gas: 86% Argon / 14% CO2 Flow rate: 35-45 CFM

Single or multiple pass: Single or Multiple

Single or multiple arc: Single

Welding current: DCEP

Polarity: Reverse - electrode positive

Welding progression: Stringers

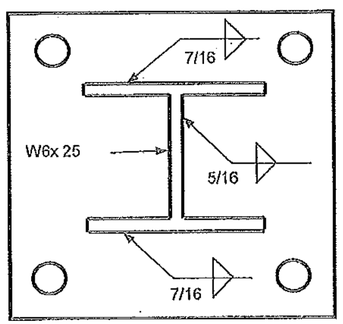
Root treatment: clean base metal

Preheat and interpass temperature: base metal up to 3/4" (50°F) ; over 3/4 thru 1-1/2" (150°F) : over 1-1/2" thru 2-1/2" (225°F)

Postheat treatment: None

Electrode extension: 3/4" ± 1/4"

WELDING PROCEDURE

Weld size	Pass no.	Electrode size	Welding parameters Amperes	Welding parameters Volts	Travel speed	Joint detail
5/16"	1	0.062"	300 A ± 30	29 V ± 2	15 ipm ± 2	
7/16"	1 & 2	0.062"	↓	↓	15 Ipm ± 2	

VTrans Received JWC
CK'D OK'd BY
JUN 27 2012
Resubmit APPROVED
BY DATE 7/2/12

This procedure may vary due to fabrication sequence, fit-up, pass size, etc. within the limitation of variables given in section 5 of latest edition AWS D1.5

WPS no. W-VTPEDPOST1

Revision no. 0

Supporting PQR no. Pre-Qualified

Project Name Woodford, VT

Fabricator Highway Safety Corporation

Prepared By: Paul Radice

Date 5/31/12

Project Number ER BHF 010-1(44)

Paul A Radice
CWI 98070221
QC1 EXP. 7/1/2013

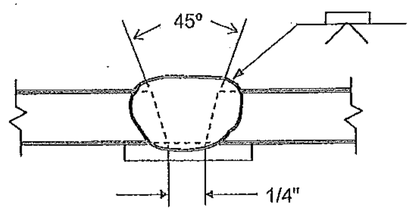
Highway Safety Corporation

Glastonbury, CT

Welding Procedure Specification

Material specification: **ASTM A500 gr B**
Welding process: **Gas Metal Arc Welding (GMAW)**
Manual, semi-automatic, or automatic: **Semi-Automatic**
Position of welding: **Flat (1F) or Horizontal (2F)**
Filler metal specification: **AWS A5.18**
Filler metal classification: **ER70S-6**
Electrode and manufacturer: **Lincoln Electric Lincoln Weld L-56**
Flux and manufacturer: **N/A**
Shielding gas: **86% Argon / 14% CO2** Flow rate: **35-45 CFM**
Single or multiple pass: **Single**
Single or multiple arc: **Single**
Welding current: **DCEP**
Polarity: **Reverse - electrode positive**
Welding progression: **Stringers**
Root treatment: **clean base metal**
Preheat and interpass temperature: **base metal up to 3/4" (50°F)**
Postheat treatment: **None**
Electrode extension: **3/4" ± 1/4"**

WELDING PROCEDURE

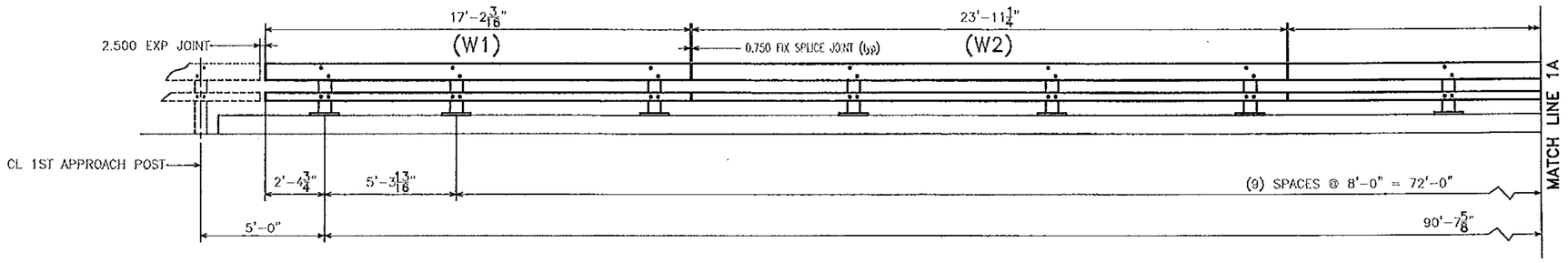
Weld size	Pass no.	Electrode size	Welding parameters Amperes	Welding parameters Volts	Travel speed	Joint detail
	1	0.063"	300 A ± 30	29 V ± 2	15 Ipm ± 2	B-U2a-GF 

VTrans Received JUN 27 2012
CK'D ____ OK'd BY JCC
Resubmit ____ APPROVED ✓
BY ____ DATE 7/27/12

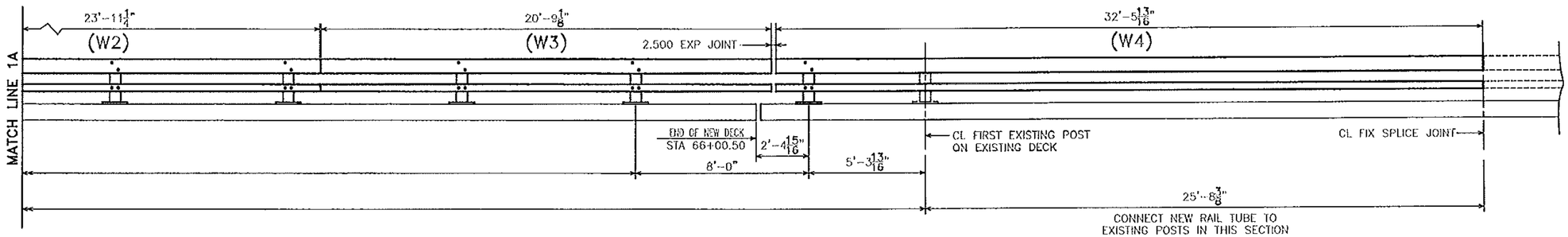
This procedure may vary due to fabrication sequence, fit-up, pass size, etc. within the limitation of variables given in section 5 of latest edition AWS D1.1

WPS no. **W-VGwBCK**
Revision no. **0**
Supporting PQR no. **Pre-Qualified**
Project Name **Woodford, VT**

Fabricator **Highway Safety Corporation**
Prepared By: **Paul Radice** ~~Paul A Radice~~ CWI 98070221 QC1 EXP 7/1/201
Date **5/31/12**
Project Number **ER BHF 010-1(44)**



NORTH RAIL ELEVATION
facing north from center of road



BILL OF MATERIAL (NORTH RAIL)

Mk#	Qty.	Description	Size/Shape	Length/Qty. per end	Material
		POST			
	12	BRIDGE RAIL PED POST 2'-0 3/8" OAH W/ BASE PLATE			
	12	POST UPRIGHT	W6 x 25	1'-11 3/8"	A709 Gr. 50
	12	POST BASE PLATE	10" x 1"	1'-2"	A709 Gr. 50
		SPLICE			
	5	UPPER SPLICE TUBE FOR 8 x 4 RAIL			
	5	TUBE	TS 7x3x3/8	1'-8"	A500 Gr. B
	10	WELDED LOCK NUT (OUTER HOLES ONLY)	5/8"	---	A563
	5	LOWER SPLICE TUBE FOR 4 x4 RAIL			
	5	TUBE	TS 3x3x5/16	1'-8"	A500 Gr. B
	10	WELDED LOCK NUT (OUTER HOLES ONLY)	5/8"	---	A563
		RAIL			
W1	1	UPPER RAIL 1 END FIX, 1 END EXP	TS 8x4x5/16	17'-2 3/16"	A500 Gr. B
	1	LOWER RAIL 1 END FIX, 1 END EXP	TS 4x4x1/4	17'-2 3/16"	A500 Gr. B
W2	2	UPPER RAIL FIX SPLICE BOTH ENDS	TS 8x4x5/16	23'-11 1/4"	A500 Gr. B
	2	LOWER RAIL FIX SPLICE BOTH ENDS	TS 4x4x1/4	23'-11 1/4"	A500 Gr. B
W3	1	UPPER RAIL 1 END FIX, 1 END EXP	TS 8x4x5/16	20'-9 1/8"	A500 Gr. B
	1	LOWER RAIL 1 END FIX, 1 END EXP	TS 4x4x1/4	20'-9 1/8"	A500 Gr. B
W4	1	UPPER RAIL 1 END FIX, 1 END EXP	TS 8x4x5/16	32'-5 13/16"	A500 Gr. B
	1	LOWER RAIL 1 END FIX, 1 END EXP	TS 4x4x1/4	32'-5 13/16"	A500 Gr. B
		HARDWARE			
	11	ANCHOR PLATE	9 3/8" x 3/8"	1'-1"	A36
	48	ANCHOR STUD	1" DIA.	12"	A449
	44	JAMB NUT	1" DIA.	---	A563
	92	HEAVY HEX NUT	1" DIA.	---	A563DH
	48	WASHER	1" DIA.	---	F436
	48	ROUND HEAD BOLT	3/4" DIA.	6"	M164 type 1
	48	LOCK NUT	3/4" DIA.	---	A563DH
	48	WASHER	3/4" DIA.	---	F436
	40	CAP SCREW	5/8" DIA.	1 3/4"	A325
	40	WASHER	5/8" DIA.	---	F436
	8	PIPE SPACER (SCH. 40)	3/4" DIA.	1/2"	A53
	12	BEARING PAD	10" x 1/8"	1'-2"	M251

PAY LENGTH ITEM 525.33 NETC 2 RAIL BRIDGE RAIL = 118.7 LF

No.	Remarks	Date
A	CORRECTED SUBMITTAL	
0	Initial submittal	05-31-12

REVISIONS

Vermont Agency of Transportation
RECEIVED
CK'D BY GFR OK'D BY CAM
07/13/2012
RESUBMIT APPROVED X
BY C. CARLSON DATE 07/16/2012

HIGHWAY SAFETY CORP
GLASTONBURY, CT
860-633-9445

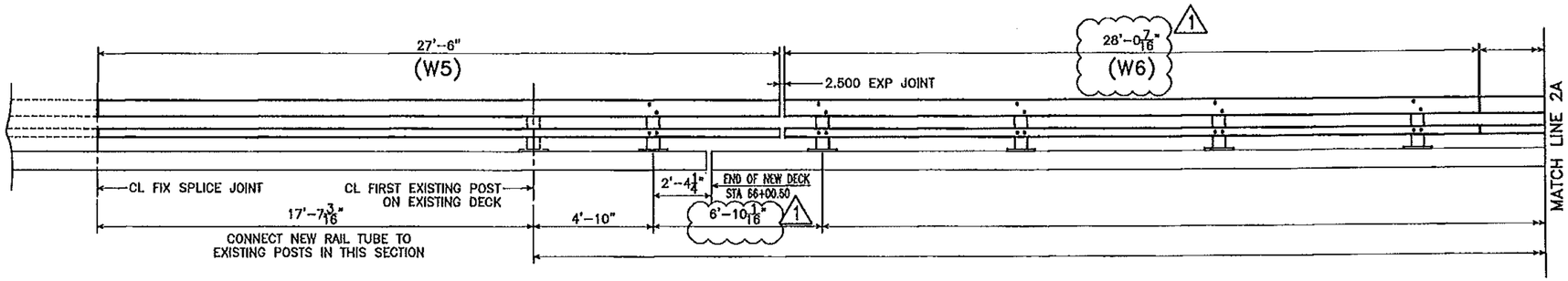
ITEM 525.33 NETC 2 RAIL BRIDGE RAIL
VT RT 9 BRIDGE NO. 11
TOWN OF WOODFORD
COUNTY OF BENNINGTON, VERMONT
PROJECT NO. ER BHF 010-1(44)

AISC CERTIFIED FABRICATOR

HSC JOB NO. 1881
SHEET NO. 1 of 4

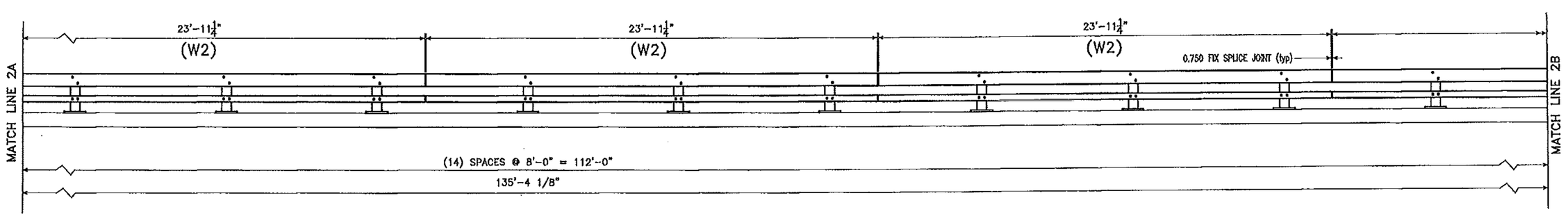
GENERAL CONTRACTOR
SUB CONTRACTOR T BUCK CONSTRUCTION

DRAWN MHM CHECKED PAR DATE 05-31-12 SCALE NONE SIZE D

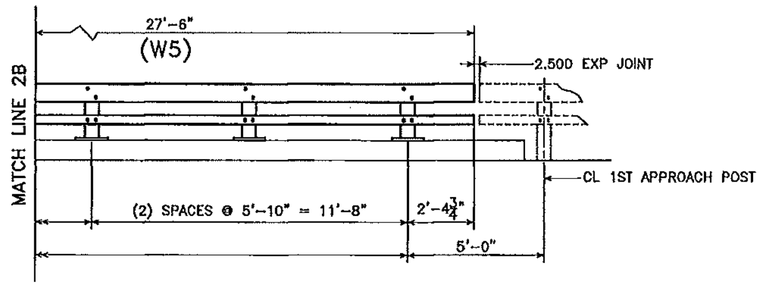


BILL OF MATERIAL (SOUTH RAIL)

Mk#	Qty.	Description	Size/Shape	Length	Material
		POST			
	18	BRIDGE RAIL PED POST 2'-0 3/8" OAH W/ BASE PLATE			
	18	POST UPRIGHT	W6 x 25	1'-11 3/8"	A709 Gr. 50
	18	POST BASE PLATE	10" x 1"	1'-2"	A709 Gr. 50
		SPLICE			
	6	UPPER SPLICE TUBE FOR 8 x 4 RAIL			
	6	TUBE	TS 7x3x3/8	1'-8"	A500 Gr. B
	12	WELDED LOCK NUT (OUTER HOLES ONLY)	5/8"	----	A563
	6	LOWER SPLICE TUBE FOR 4 x4 RAIL			
	6	TUBE	TS 3x3x5/16	1'-8"	A500 Gr. B
	12	WELDED LOCK NUT (OUTER HOLES ONLY)	5/8"	----	A563
		RAIL			
W2	3	UPPER RAIL FIX SPLICE BOTH ENDS	TS 8x4x5/16	23'-11 1/4"	A500 Gr. B
	3	LOWER RAIL FIX SPLICE BOTH ENDS	TS 4x4x1/4	23'-11 1/4"	A500 Gr. B
W5	2	UPPER RAIL 1 END FIX, 1 END EXP	TS 8x4x5/16	27'-6"	A500 Gr. B
	2	LOWER RAIL 1 END FIX, 1 END EXP	TS 4x4x1/4	27'-6"	A500 Gr. B
W6	1	UPPER RAIL 1 END FIX, 1 END EXP	TS 8x4x5/16	28'-0 7/16"	A500 Gr. B
	1	LOWER RAIL 1 END FIX, 1 END EXP	TS 4x4x1/4	28'-0 7/16"	A500 Gr. B
		HARDWARE			
	17	ANCHOR PLATE	9 3/8" x 3/8"	1'-1"	A36
	72	ANCHOR STUD	1" DIA.	12"	A449
	68	JAMB NUT	1" DIA.	- - -	A563
	140	HEAVY HEX NUT	1" DIA.	- - -	A563DH
	72	WASHER	1" DIA.	- - -	F436
	72	ROUND HEAD BOLT	3/4" DIA.	6"	M164 type 1
	72	LOCK NUT	3/4" DIA.	- - -	A563DH
	72	WASHER	3/4" DIA.	- - -	F436
	48	CAP SCREW	5/8" DIA.	1 3/4"	A325
	48	WASHER	5/8" DIA.	- - -	F436
	8	PIPE SPACER (SCH. 40)	3/4" DIA.	1/2"	A53
	18	BEARING PAD	10" x 1/8"	1'-2"	M251



SOUTH RAIL ELEVATION
facing south from center of road



PAY LENGTH ITEM 525.33 NETC 2 RAIL BRIDGE RAIL = 155.3 LF

No.	Remarks	Date
1	APPROVED-AS-NOTED CORRECTIONS	07-16-12
A	CORRECTED SUBMITTAL	07-10-12
0	Initial submittal	05-31-12

REVISIONS

HIGHWAY SAFETY CORP
GLASTONBURY, CT
860-633-9445

ITEM 525.33 NETC 2 RAIL BRIDGE RAIL
VT RT 9 BRIDGE NO. 11
TOWN OF WOODFORD
COUNTY OF BENNINGTON, VERMONT
PROJECT NO. ER BHF 010-1(44)

CERTIFIED FABRICATOR

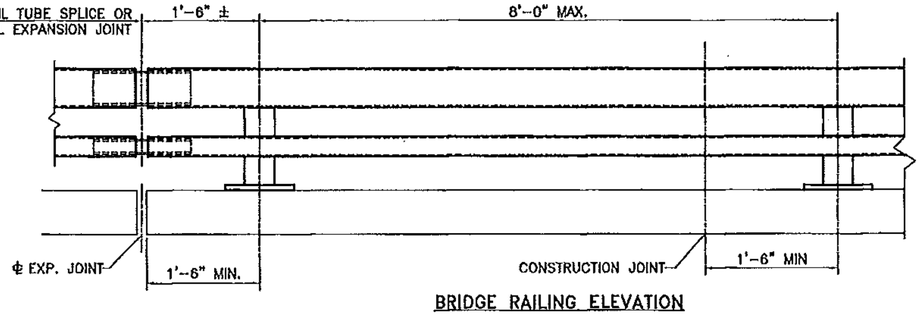
HSC JOB NO. 1881

GENERAL CONTRACTOR

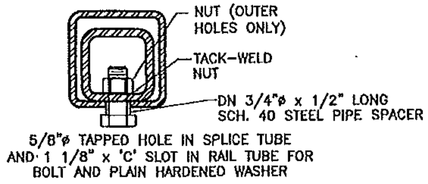
SUB CONTRACTOR T BUCK CONSTRUCTION

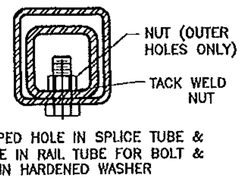
SHEET NO. 2 of 4

DRAWN	CHECKED	DATE	SCALE	SIZE
MHM	PAR	05-31-12	NONE	D



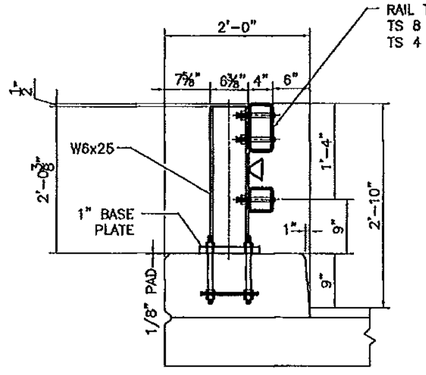
BRIDGE RAILING ELEVATION



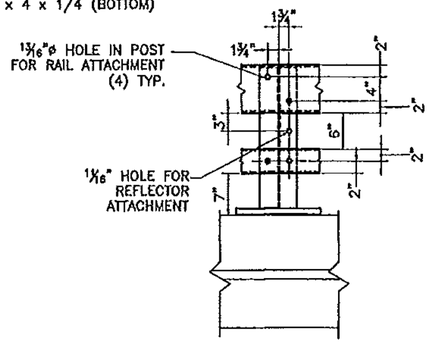


EXPANSION JOINT SECTION

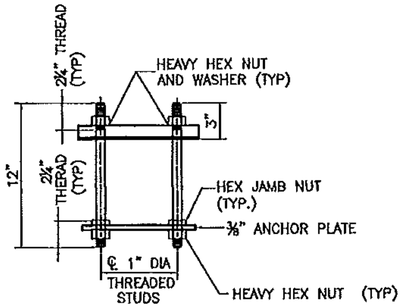
FOR DETAILS NOT SHOWN, SEE "RAIL TUBE SPLICE SECTION."



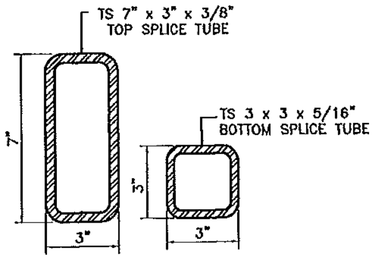
TYPICAL SECTION



ELEVATION



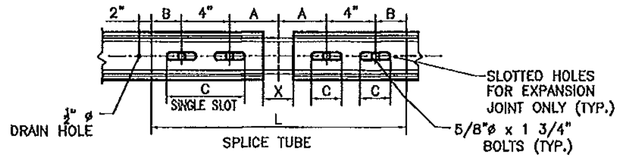
RAIL POST ANCHORAGE



RAIL TUBE SPLICE SECTION

NOTES:

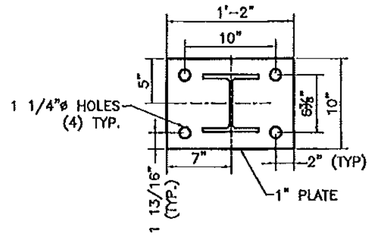
1. ALL RAILINGS AND MATERIALS SHALL CONFORM TO THE STANDARD SPECIFICATION FOR CONSTRUCTION SECTION 525, BRIDGE RAILINGS.
2. PRIOR TO GALVANIZING, ALL EXPOSED CUT OR SHEARED EDGES SHALL BE ROUNDED TO A 1/16" RADIUS AND BE FREE OF BURRS.
3. RAIL POSTS SHALL BE SET NORMAL TO GRADE.
4. SECTIONS OF RAIL TUBE SHALL BE ATTACHED TO A MINIMUM OF TWO (2) RAIL POSTS AND PREFERABLY TO AT LEAST FOUR (4) POSTS.
5. RAIL TUBE EXPANSION JOINT SHALL BE PROVIDED IN ANY RAIL BAY SPANNING A SUPERSTRUCTURE EXPANSION JOINT. EXPANSION JOINT WIDTH SHALL BE "X" AT 45°F AND WILL BE ADJUSTED IN THE FIELD BY THE ENGINEER FOR OTHER TEMPERATURES.
6. ALL PARTS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111, EXCEPT HARDWARE, WHICH SHALL MEET THE REQUIREMENTS OF AASHTO M232.
7. RAIL POST ANCHORING NUTS SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL ONE-EIGHTH TURN.
8. RAIL TUBES SHALL BE ATTACHED USING 3/4" FULL DIAMETER BODY AASHTO M164 (TYPE 1) ROUND HEAD BOLT INSERTED THROUGH THE FACE OF THE TUBE. HOLES IN POSTS SHALL BE 1/16" LARGER THAN THE BOLT SIZE.
9. HOLES IN RAILS FOR RAIL TUBE ATTACHMENT SHALL BE FIELD-DRILLED. HOLES SHALL BE COATED WITH AN APPROVED ZINC-RICH PAINT PRIOR TO ERECTION.
10. IF THERE IS A CONFLICT BETWEEN THE DETAILS SHOWN ON THIS SHEET AND THE DESIGN, THE REQUIREMENTS OF THE DESIGN DRAWINGS SHALL BE FOLLOWED.
11. ANY BENDING OF RAIL SHALL BE BY SHOP PROCEDURE ONLY, AND SHALL BE DONE AT THE FABRICATION PLANT.
12. THE FABICATOR SHALL SUBMIT SHOP DRAWINGS, INCLUDING WELDING PROCEDURES TO THE STRUCTURES SECTION FOR APPROVAL IN ACCORDANCE WITH SUBSECTION 506.04 OF THE STANDARD SPECIFICATIONS. ALL WELDING SHALL CONFORM WITH SUBSECTION 506.10.
13. RAIL POSTS AND BASE PLATES SHALL BE TESTED FOR IMPACT PROPERTIES IN ACCORDANCE WITH ASTM A-370 CHARPY IMPACT TESTING USING TYPE A SPECIMEN
14. EXPANSION JOINT HARDWARE, REFLECTORS AND REFLECTOR HARDWARE PROVIDED BY OTHERS.



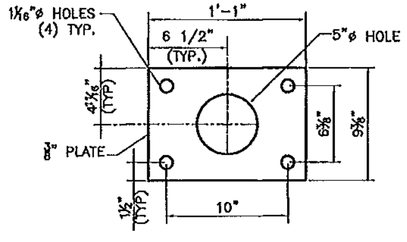
RAIL TUBE SPLICE AND RAIL EXPANSION JOINT DETAIL

SPLICE TABLE					
T	A	B	C	L	X
N/A	4"	2"	--	20"	3/4"
EXPANSION JOINT TABLE					
<4"	4"	2"	2 1/2"	20"	2 1/2"

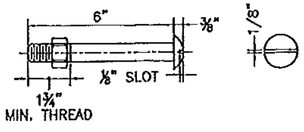
T = TOTAL MOVEMENT BETWEEN BRIDGE EXPANSION JOINTS. SEE NOTE 5



POST AND BASE PLATE



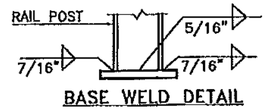
ANCHOR PLATE



3/4" DIA. M164 (TYPE 1) ROUND HEAD BOLT

(WITH WASHER AND PREVAILING TORQUE TYPE LOCK NUT) (SEE NOTE #8)

ONLY FULL DIAMETER BODY BOLTS WILL BE ALLOWED.



BASE WELD DETAIL

MATERIALS

RAIL TUBES	ASTM A500, GRADE B OR ASTM A501
RAIL POSTS AND BASE PLATES	ASTM A709/A709M, GRADE 50
ALL OTHER SHAPES AND PLATES	ASTM A709/A709M, GRADE 36
ANCHOR STUDS	ASTM A449
ALL OTHER BOLTS (UNLESS NOTED)	AASHTO M164, TYPE1

NUTS FOR AASHTO M164 BOLTS AND FOR ANCHOR STUDS SHALL COMPLY WITH AASTHO M291 (ASTM A563).

WASHERS SHALL COMPLY WITH AASHTO M293 (ASTM F436) SPECIFCATIONS.

1/8" PAD SHALL COMPLY WITH STANDARD SPECIFICATION SUBSECTION 731.01 OR 731.02.

No.	Remarks	Date
	REVISIONS	
1	APPROVED-AS-NOTED CORRECTIONS	07-16-12
0	Initial submittal	05-31-12

HIGHWAY SAFETY CORP
GLASTONBURY, CT
860-833-9445

ITEM 525.33 NETC 2 RAIL BRIDGE RAIL
VT RT 9 BRIDGE NO. 11
TOWN OF WOODFORD
COUNTY OF BENNINGTON, VERMONT
PROJECT NO. ER BHF 010-1(44)

CERTIFIED FABRICATOR

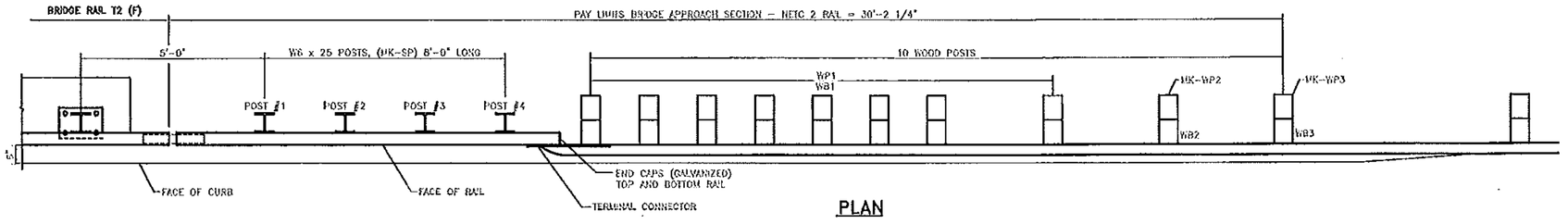
HSC JOB NO. 1881

SHEET NO. 3 of 4

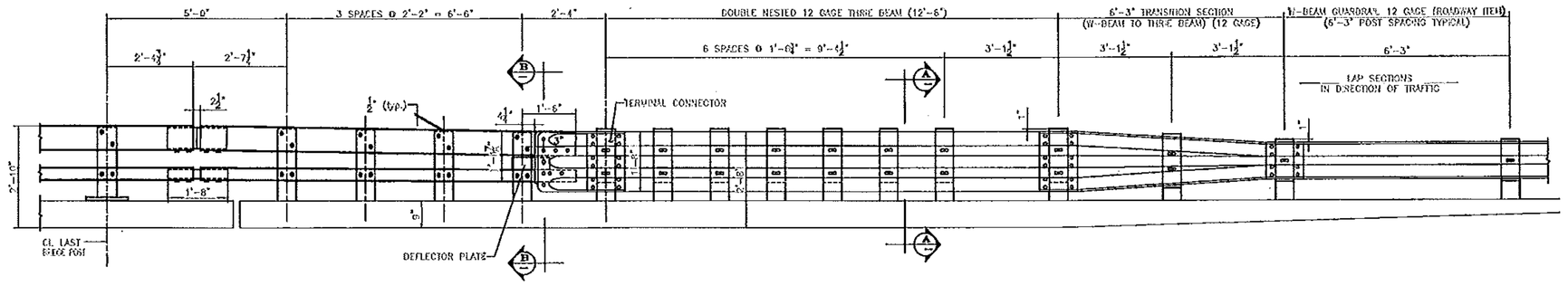
NOMINAL CONTRACTOR

SUB CONTRACTOR T BUCK CONSTRUCTION

DRAWN	CHECKED	DATE	SCALE	BOX
MHM	PAR	05-31-12	NONE	D



PLAN



APPROACH RAIL ELEVATION

BILL OF MATERIAL (2 APPROACHES)					
MK.	Qty.	Description	Size/Shape	Length	Material
	2	UPPER APPROACH RAIL	TS 8x4x0.313"	10'-4.750"	A500 Gr. B
	2	LOWER APPROACH RAIL	TS 4x4x0.25"	10'-4.750"	A500 Gr. B
SP	8	STEEL POST	W6 x 25	8'-0"	A992 Gr. 50
WP1	16	WOOD POST	6" x 8"	7'-0"	TIMBER
WP2	2	WOOD POST	6" x 8"	7'-0"	TIMBER
WP3	2	WOOD POST	6" x 8"	7'-0"	TIMBER
WB1	16	WOOD BLOCK	6" x 8"	1'-6"	TIMBER
WB2	2	WOOD BLOCK	6" x 8"	1'-6"	TIMBER
WB3	2	WOOD BLOCK	6" x 8"	1'-2"	TIMBER
	2	ANGLED SPLICE TUBE FOR TS 8x4x0.313"			
	2	TUBE	TS 7x3.5x0.313"	1'-8"	A500 Gr. B
	4	WELDED LOCK NUTS	0.625"ø	----	A563 Gr. A
	2	SPLICE TUBE FOR TS 4x4x0.250"			
	2	TUBE	TS 3.5x3.5x0.313"	1'-8"	A500 Gr. B
	4	WELDED LOCK NUTS	0.625"ø	----	A563 Gr. A
	2	TERMINAL CONNECTOR	10 Ga.	2'-6"	M180
	2	CONNECTION PLATE	0.375" x 1'-3"	2'-3"	A709 Gr. 36
	2	END CAP FOR TS 8x4 RAIL TUBE			
	2	PLATE	0.188" x 4"	6"	A709 Gr. 36
	8	PLATE	0.125" x 1"	1"	A709 Gr. 36
	2	END CAP FOR TS 4x4 RAIL TUBE			
	2	PLATE	0.188" x 4"	4"	A709 Gr. 36
	8	PLATE	0.125" x 1"	1"	A709 Gr. 36
	1	DEFLECTOR PLATE (LEFT)	0.3125"ø	125"	A709 Gr. 36
	1	DEFLECTOR PLATE (RIGHT)	0.3125"ø	125"	A709 Gr. 36
	2	0.75"ø x 2" LG. ROUND HEAD BOLT W/NUT			A307
	2	THRIE TRANSITION PANEL	12 Ga.	7'-3.50"	M180 A2
	4	THRIE BEAM	12 Ga.	12'-6"	M180 A2
	16	0.75"ø x 6" ROUND HEAD BOLT W/NUT & ROUND WASHER			A307
	4	0.625"ø x 10" LG. POST BOLT W/CSL RECESSED NUT, PLATE & ROUND WASHER			A307
	34	0.625"ø x 18" LG. POST BOLT W/CSL RECESSED NUT, PLATE & ROUND WASHER			A307
	16	0.625"ø x 1.75" LG. CAP SCREW W/WASHER			A325
	64	0.625"ø x 1.25" LG. PANEL SPLICE BOLT W/DSL RECESSED NUT			A307
	16	0.75" x 0.5" LG. (SCH 40) SPACER PIPE			A53

NOTES:

1. PAYMENT FOR GUARDRAIL APPROACH SECTION – GALVANIZED NETC 2 RAIL SHALL INCLUDE THE TERMINAL CONNECTOR, THE CONNECTION PLATE, THE DEFLECTOR PLATE, RAIL, POSTS, BLOCKS AND ATTACHMENT HARDWARE.

2. REFLECTIVE MATERIAL SHALL MEET REQUIREMENTS OF SUBSECTION 759.03 AND SHALL BE A 0.063" ALUMINUM BACKING WHITE OR YELLOW REFLECTOR. WHITE IS TO BE INSTALLED ON THE DRIVER'S RIGHT. FOR ONE-WAY BRIDGES, YELLOW IS TO BE INSTALLED ON THE DRIVER'S LEFT.

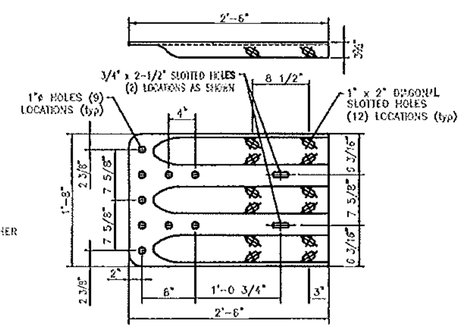
3. ALL APPROACH RAIL SPLICES SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC FLOW.

4. ALL APPROACH RAIL MATERIALS, DIMENSION SIZES AND NOTES SHALL BE THE SAME AS THOSE OF THE BRIDGE RAIL, UNLESS OTHERWISE NOTED.

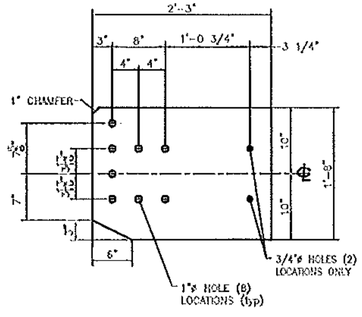
5. APPROACH RAIL BOLTS SHALL BE ASTM A307 GRADE A AND NUTS SHALL BE AASHTO M291 (ASTM 563 GRADE A OR BETTER (GALVANIZED). WASHERS SHALL BE ASTM F844.

6. WELD TOP SPLICE BAR TO FIT BEND. USE COMPLETE PENETRATION WELD (B-U2).

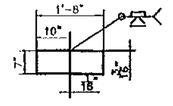
SECTION A–A



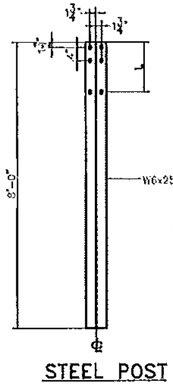
TERMINAL CONNECTOR
10 GAUGE (AASHTO M180 B2)



CONNECTION PLATE
3/8" x 1'-8" x 2'-3" (A709 gr 36)



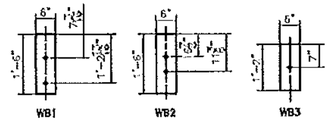
ANGLED RAIL TUBE SPLICE DETAIL



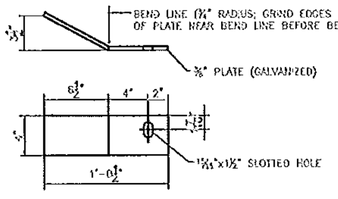
STEEL POST

STEEL POST CHART

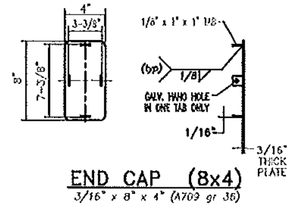
No.	L
#1	1'-3.125"
#2	1'-2.875"
#3	1'-2.625"
#4	1'-2.437"



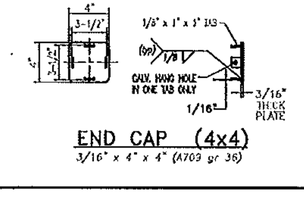
WOOD BLOCK DETAILS



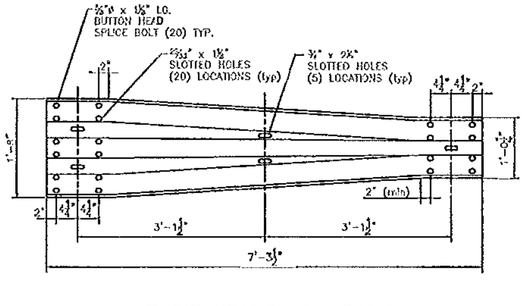
DEFLECTOR PLATE



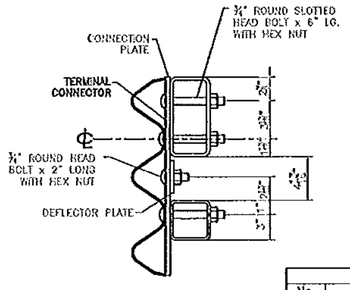
END CAP (8x4)
3/16" x 8" x 4" (A709 gr 36)



END CAP (4x4)
3/16" x 4" x 4" (A709 gr 36)



THRIE TRANSITION PANEL
12 GAUGE (AASHTO M180 A2)



SECTION B–B

REVISIONS		
No.	Remarks	Date
0	Initial submittal	

Vermont Agency of Transportation

RECEIVED

CK'D BY GFR OK'D BY CAM

05/31/2012

RESUBMIT APPROVED X

BY C. CARLSON DATE 07/02/2012

HIGHWAY SAFETY CORP
GLASTONBURY, CT
860-633-9445

ITEM 621.72 NETC 2 RAIL BRIDGE APPROACH
VT RT 9 BRIDGE NO. 11
TOWN OF WOODFORD
COUNTY OF BENNINGTON, VERMONT
PROJECT NO. ER BHF 010-1(44)

CERTIFIED FABRICATOR

ISO JOB NO. 1881

SHEET NO. 4 of 4

GENERAL CONTRACTOR

SUB CONTRACTOR T BUCK CONSTRUCTION

DRAWN	CHECKED	DATE	SCALE	SIZE
MHM	PAR	05-31-12	NONE	D

Roy, Gaston

From: Abel, Leigh [label@gpinet.com]
Sent: Monday, July 02, 2012 11:03 AM
To: Roy, Gaston; Carlson, Carolyn
Cc: Lemaire, Ron
Subject: Woodford Bridge Bridge Rail Post measurements

Gaston and Carolyn

Ron and I re-measured the bridge rail posts based on stationing. Hopefully this improves the accuracy for their locations. In addition I counted the posts from the first post on the East end of the bridge to the last post we are keeping to make sure the posts in question can be identified going forward.

North side of bridge (station left)

Post # 25 location is Sta. ~~66+08.77~~ 66+08.23 lt (91 ft 9-1/4" west of sta 67+00)

South side of bridge (station right)

Post # 19 location is Sta. ~~66+07.31~~ 66+07.69 rt (92 ft 3-3/4" west of sta 67+00)

Hope this helps.

PS Carolyn do you know the status of the Traffic Control Plan in for review. I haven't seen anything more on it. It was submitted on June 21st.

Thanks
Leigh Abel
Senior Inspector
GPI / Greenman-Pedersen, Inc.
Engineering and Construction Services
Woodford ER BHF 010-1(44) Field Office
c: (518) 466-6130
p: (802) 681-7181
f: (802) 681-7242
Email: label@gpinet.com
Web Address: www.gpinet.com

An Equal Opportunity Employer

Roy, Gaston

From: Abel, Leigh [label@gpinet.com]
Sent: Friday, June 29, 2012 7:37 AM
To: Roy, Gaston; Carlson, Carolyn
Cc: Lemaire, Ron; Gilmore, Judy
Subject: Woodford ER BHF 010 - 1(44) Bridge Rail Field Measurements

Mr. Roy

Carolyn asked that we make some field measurements regarding the existing bridge rail and contact you directly with the results.

here is what we found.

South side of bridge

Distance from cl first post left after demo to cl bearing pier #1 = 55.4 ft
Distance from cl first post left after demo to first up station splice in rail = 17.6 ft

North side of bridge

Distance from cl first post left after demo to cl bearing pier #1 = 11.6 ft
Distance from cl first post left after demo to first up station splice in rail = 25.7 ft

Please let us know if there are any other questions you might have that we can help you with.

PS...for Carolyn ..visual inspection under the bridge found no cracking.

Leigh Abel
Senior Inspector
GPI / Greenman-Pedersen, Inc.
Engineering and Construction Services
Woodford ER BHF 010-1(44) Field Office
c: (518) 466-6130
p: (802) 681-7181
f: (802) 681-7242
Email: label@gpinet.com
Web Address: www.gpinet.com

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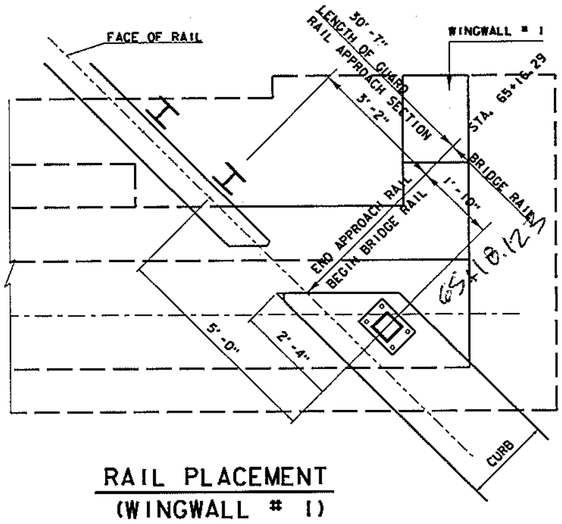
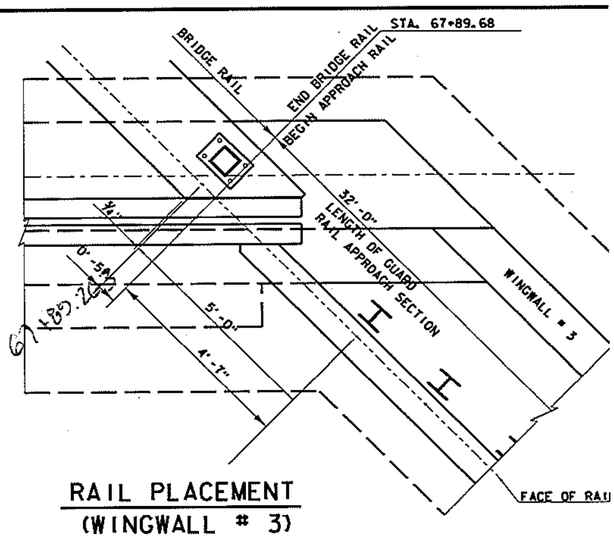
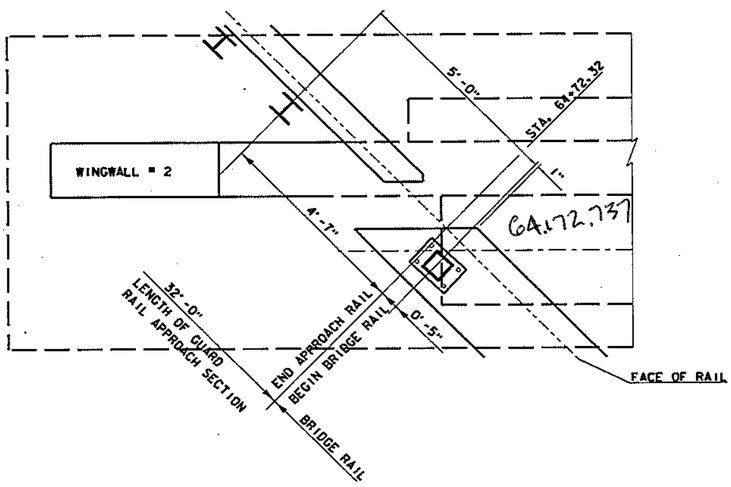


RAIL PLACEMENT
(WINGWALL # 1)
SCALE ¾"=1'-0"

271.14

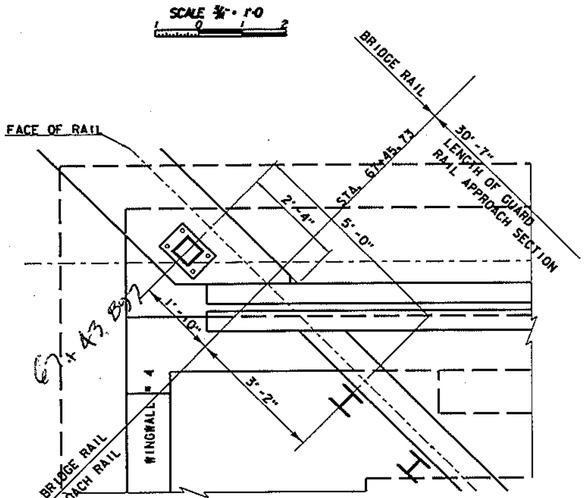


RAIL PLACEMENT
(WINGWALL # 3)
SCALE ¾"=1'-0"



RAIL PLACEMENT
(WINGWALL # 2)
SCALE ¾"=1'-0"

271.16

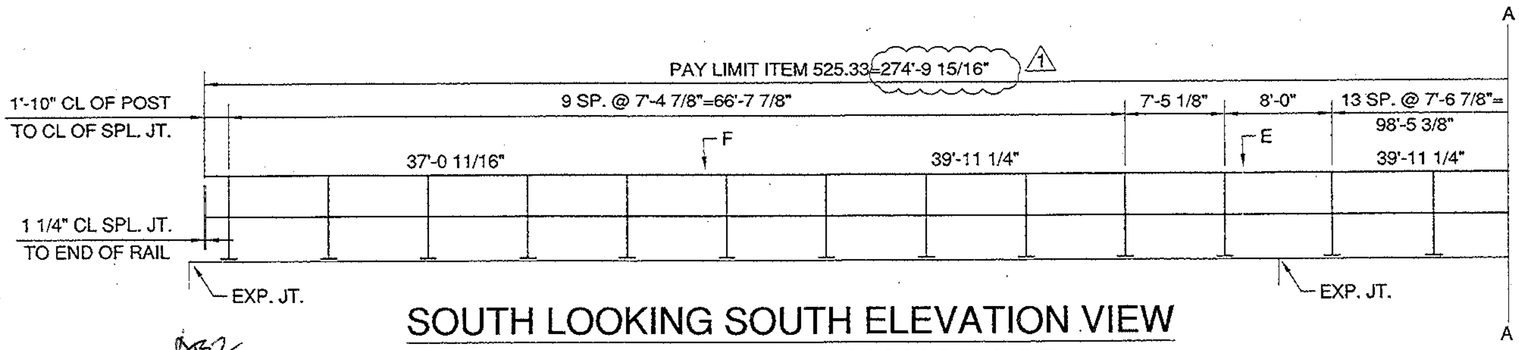


RAIL PLACEMENT
(WINGWALL # 4)
SCALE ¾"=1'-0"

2006

BRIDG
– NETC 2 R

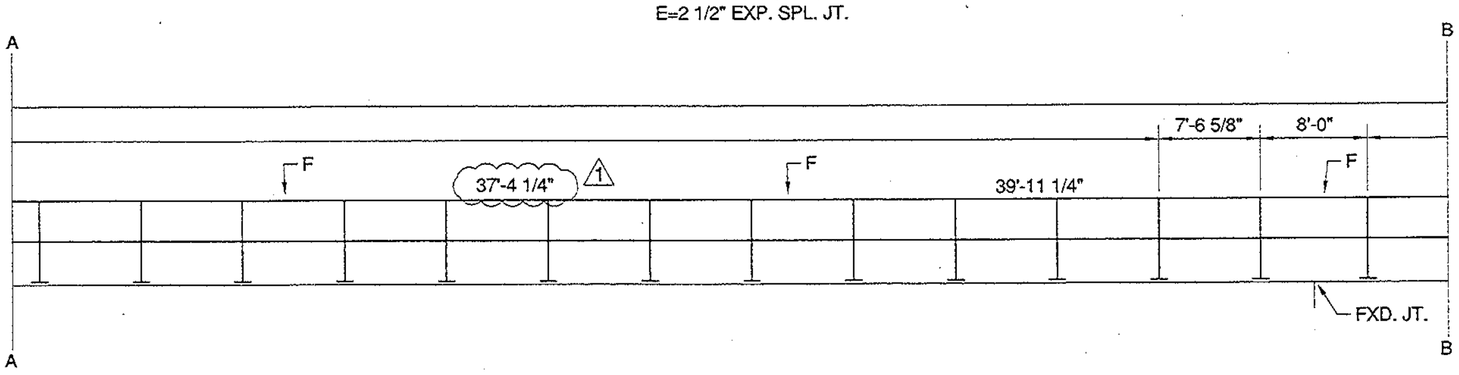
PROJECT NAME:	W
PROJECT NUMBER:	B
FILE NAME:	/84e039/a
PROJECT LEADER:	A.P
DESIGNED BY:	M.EV

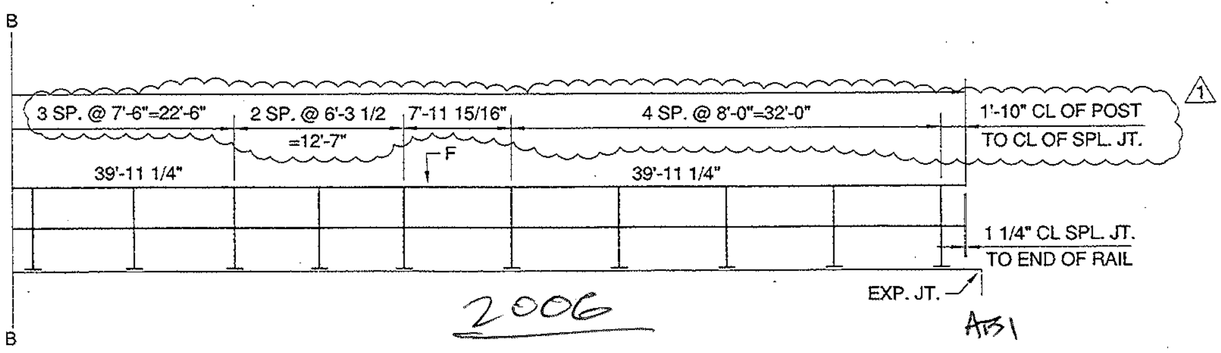


A32

SOUTH LOOKING SOUTH ELEVATION VIEW
(2 RAIL POSTS W/ANCHORAGE)

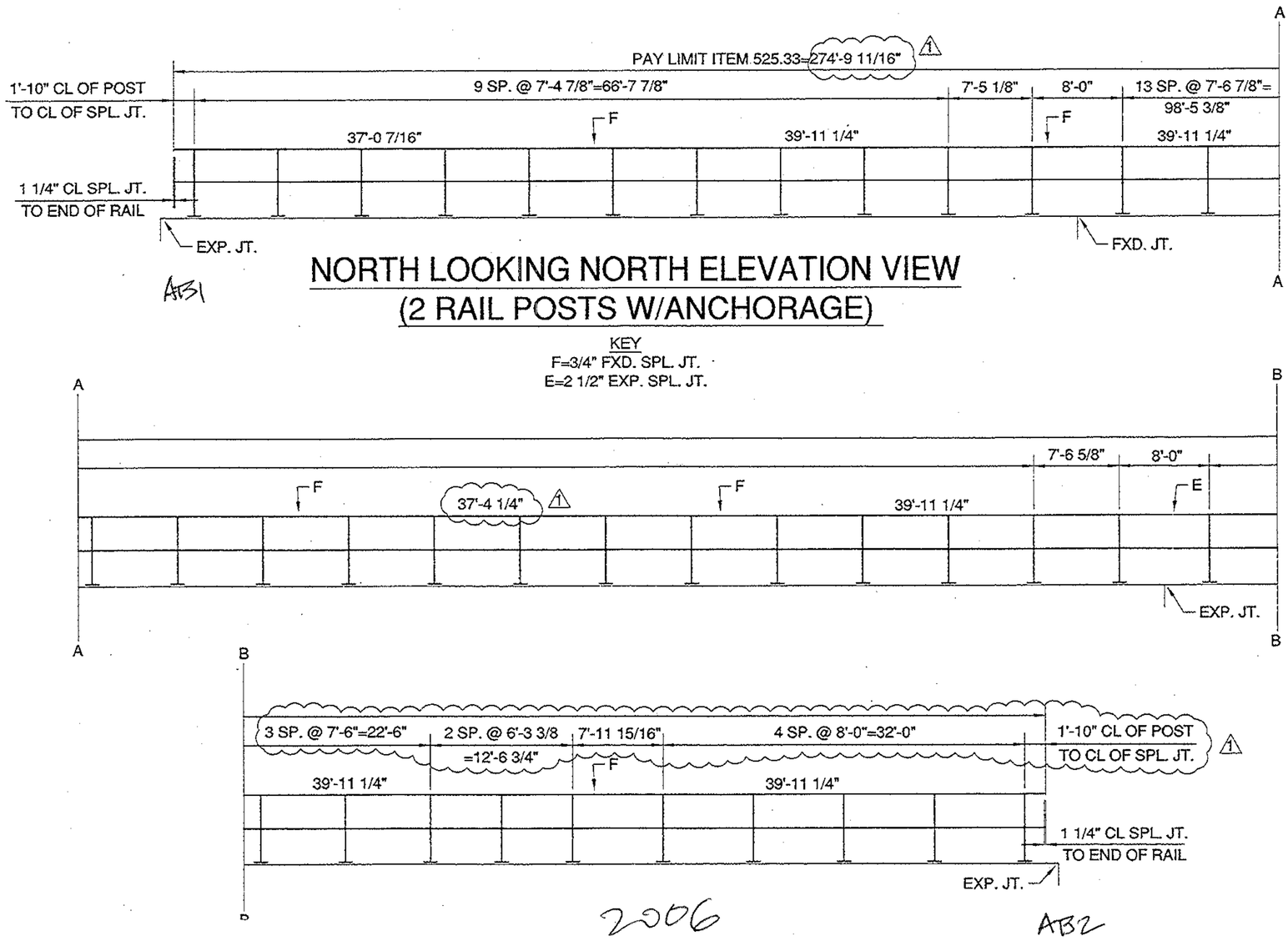
KEY
F=3/4" FXD. SPL. JT.
E=2 1/2" EXP. SPL. JT.





2006

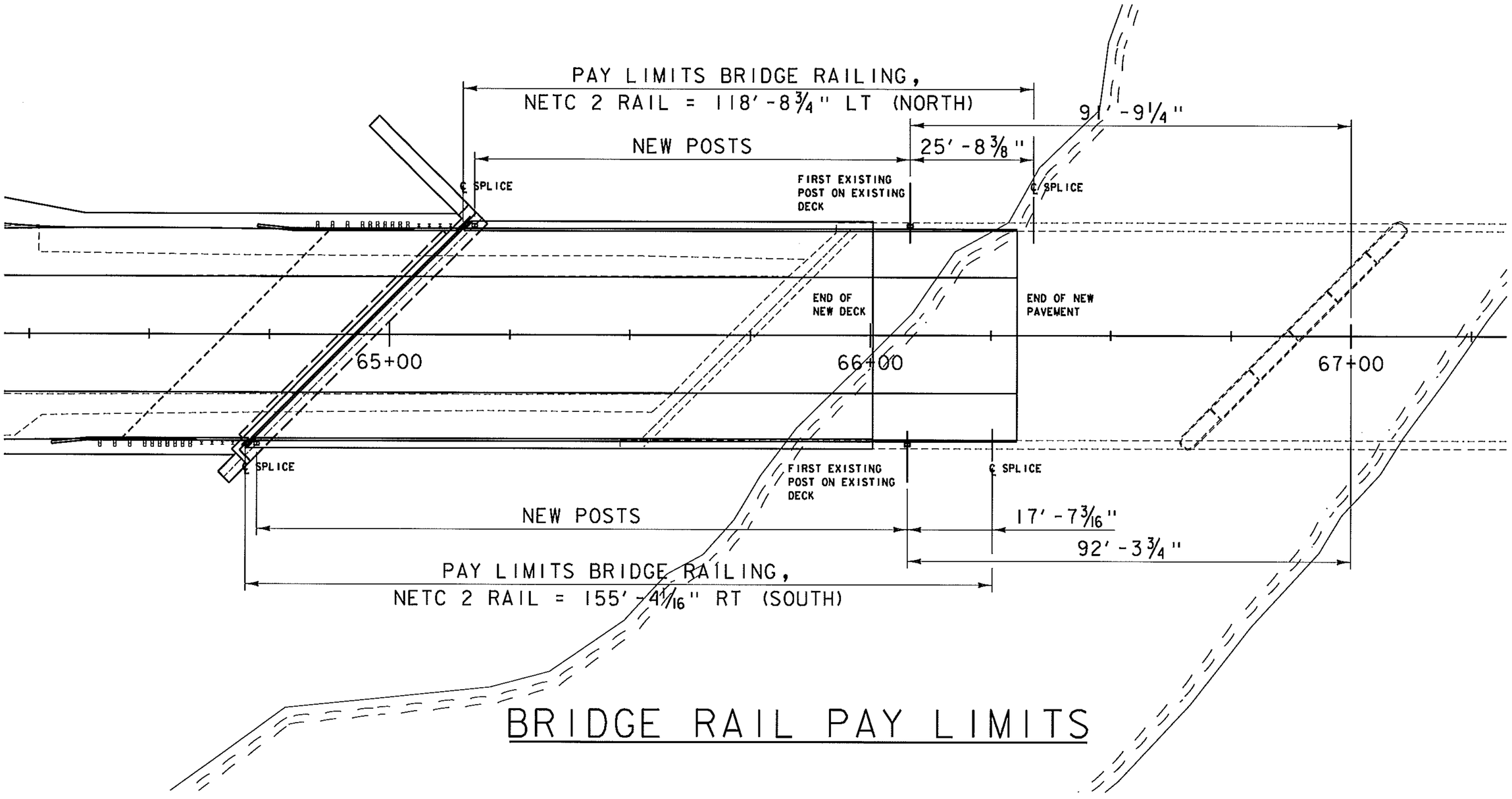
A31



ATB1

2006

ATB2



BRIDGE RAIL PAY LIMITS

VERMONT

State of Vermont
Program Development
One National Life Drive
Montpelier, VT 05633-5001
www.aot.state.vt.us

Agency of Transportation

[phone] 802-828-2621
[fax] 802-828-3566
[ttd] 800-253-0191

January 30, 2013

Structal Bridges
386 River Road
Claremont, NH 03743

Project Name: Woodford Project #: ER BHF 010-1(44)

Structure Identification: VT 9 Over the Roaring Branch of the Walloomsac River

The following **structural steel details for the revised cross frames at Abutment No. 1** for the above project (Vendor's Job #UN04260), have been reviewed.

Sheets E104, 115, 116, 117 and 118 are approved "as noted". (Please make appropriate changes as indicated on the "as noted" drawing and submit a new "*.pdf" for our use in the record plans for this project.)

You must provide notice to our fabrication inspector Jeff Clark as to the date fabrication represented by these drawings will begin. Jeff may be contacted by phone at (802)828-0044 or email at jeff.clark@state.vt.us.

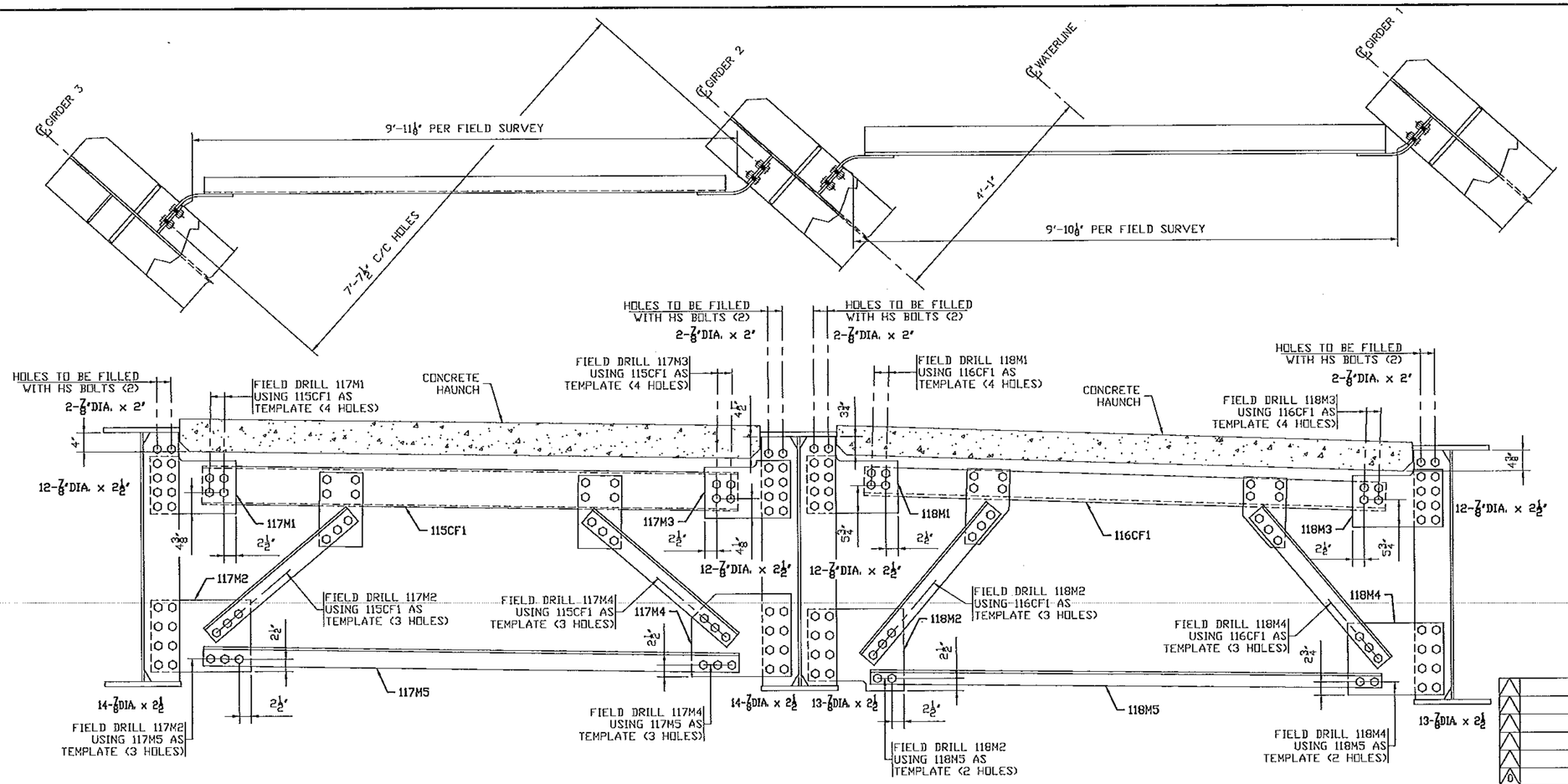
Sincerely,

Carolyn W. Carlson

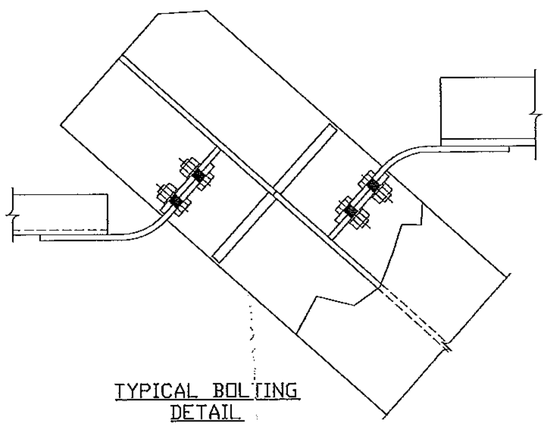
Carolyn W. Carlson, PE
Project Manager

Attachments
cc: [X] Resident Engineer Ron Lemaire -w/prints
[X] T. Buck Construction, Inc. – w/prints
[X] Shop Inspector - Jeff Clark w/prints
[X] Materials & Research Section (C&IA Unit) – Letter only
[X] Construction Division - Letter only
[X] CWC

VTrans Working to Get You There
Vermont Agency of Transportation



ABUTMENT CROSS FRAME
(LOOKING WEST)



TYPICAL BOLTING DETAIL

ALL FIELD DRILLED HOLES SHALL HAVE A MINIMUM OF 1 1/2" BETWEEN THE CENTER OF THE HOLE AND THE EDGE OF ANY MATERIAL THROUGH WHICH THEY PASS.

*** THIS DRAWING IS TO BE USED FOR MARKS AND BOLTS ONLY AND MUST BE READ IN CONJUNCTION WITH THE CONTRACT DRAWINGS SPECIFICATIONS AND SPECIAL PROVISIONS. THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION SEQUENCING OR AS AN ERECTION PROCEDURE.

No	REVISION	DATE	PAR	VER.
0	CROSSFRAME MODIFIED	01/16/13	BR	GG

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
1 WASHER UNDER HEAD U.N.

Vermont Agency of Transportation
RECEIVED
CK'D BY M.E.M OK'D BY C.W.M.
Jan. 29, 2013
RESUBMIT APPROVED AS NOTED ✓
BY C. CARLSON DATE 01-29-2013

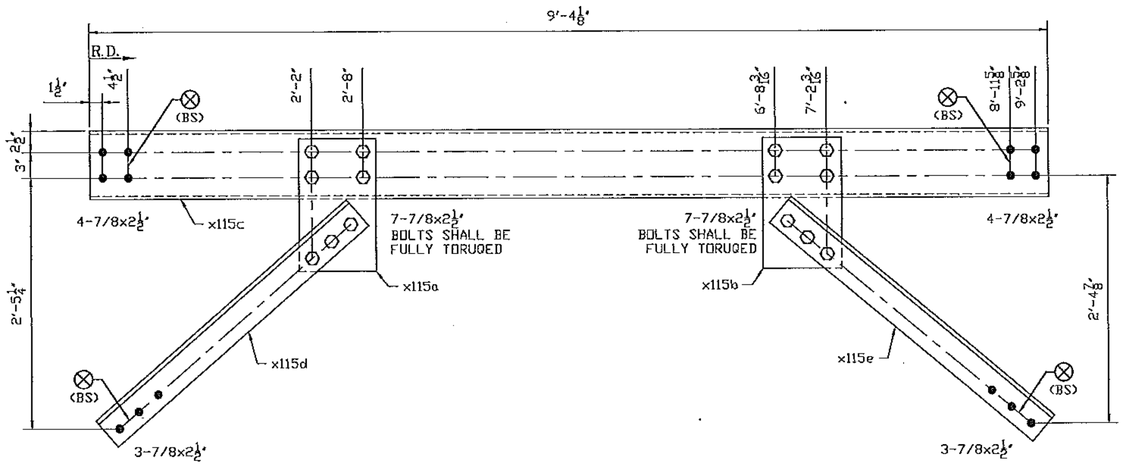
STRUCTAL Bridges
a division of CANAM BRIDGES Inc.
386 River Road, Claremont, NH 03743
Tel:(603) 542-5202 Fax:(603) 542-5312

PROJECT: VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

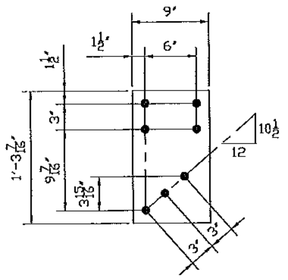
TITLE: ERECTION PLAN ABUTMENT

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

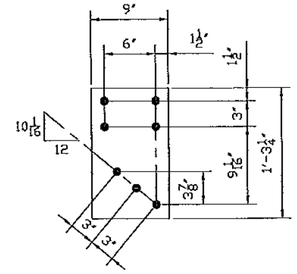
DRAWN BY	DATE	CONTRACT ID
BR	JAN 2013	UN04260
CHECKED BY	DATE	DRAWING NO
GG	JAN 2013	E104 0



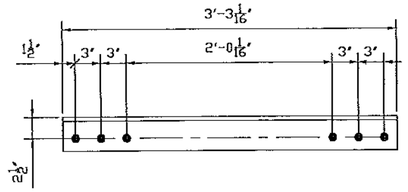
ONE -- CROSS FRAME 115CF1
PAINTED



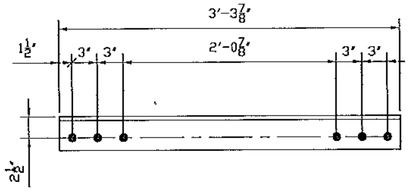
PL1/2x9x1-3 7/16 - x115a



PL1/2x9x1-3 1/4 - x115b



L4x4x1/2x3-3 1/16 - x115d



L4x4x1/2x3-3 7/8 - x115e

GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING AND PAINTING: SEE SHEET P100 AND P101

PRIMER ONLY, NO PAINT
BOTH SIDES 75 mm DIA AROUND HOLE
WHERE NOTED WITH THIS SYMBOL
(BS)

337

BILL OF MATERIAL

Mark	Qty.	Description	SU Grd	Length	Remark	ABM	Total (lbs) Weight	Seq	Qty /Seq
115CF1	ONE	CROSS FRAME					~~289~~	1	1
115CF1	1	.CROSS FRAME		9-4 1/8	PAINT				
x115a	1	PL1/2x9	A709 50W	1- 3 7/16		104-5	20		
x115b	1	PL1/2x9	A709 50W	1- 3 1/4		104-5	19		
x115c	1	MC8x22.8	A709 50W	9-4 1/8		104-1	213		
x115d	1	L4x4x1/2	A709 50W	3-3 1/16		104-3	42		
x115e	1	L4x4x1/2	A709 50W	3-3 7/8		104-3	43		
78S212	14	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		~~28~~		
FB		FIELD BOLTS							
78F212	14	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		~~28~~		

Vermont Agency of Transportation
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Jan. 29, 2013
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BY C. CARLSON DATE 01-29-2013

No	REVISION	DATE	PAR	VER.
2	CROSSFRAME MODIFIED	01/16/13	BR	GG
1	CROSSFRAME MODIFIED	09/17/12	BR	GG
0	FOR SHOP	08/03/12	SM	GG
A	FOR APPROVAL	07/06/12	BR	EG

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
1 WASHER UNDER HEAD U.N.

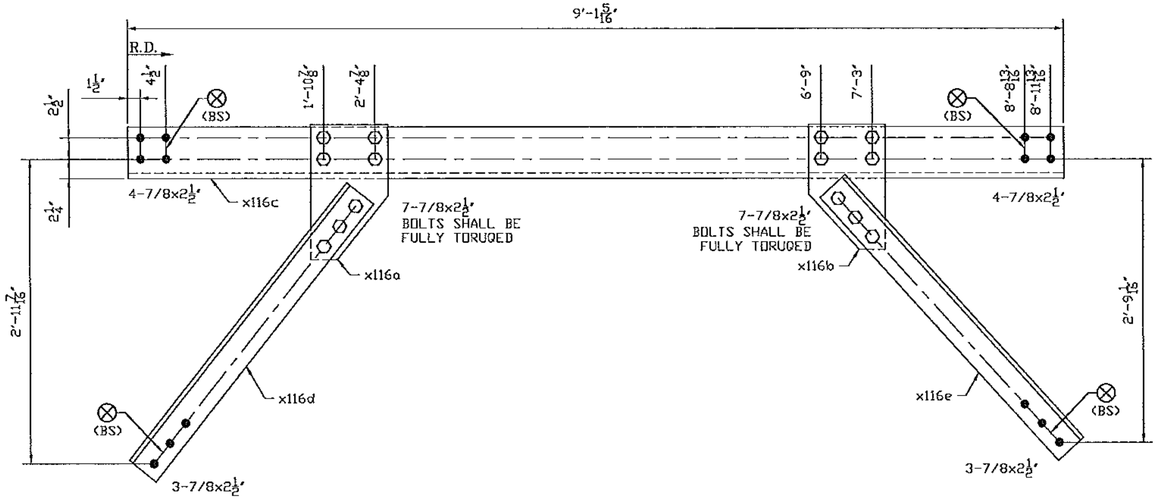
STRUCTAL Bridges
a division of CANAM GROUP Inc.
286 River Road, Claremont, NH 03743
Tel:(603) 542-5202 Fax:(603) 542-5312

PROJECT: VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

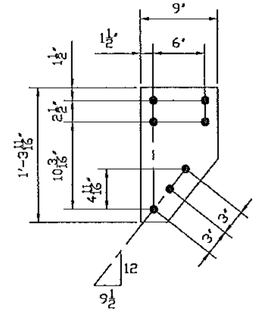
TITLE: ABUTMENT CROSS FRAME

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

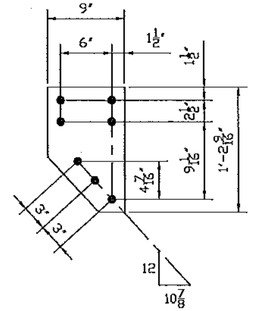
DRAWN BY	DATE	CONTRACT NO
BR	JULY 2012	UN04260
CHECKED BY	DATE	DRAWING NO
GG	JULY 2012	115 2



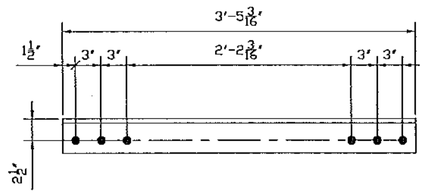
ONE - CROSS FRAME 116CF1
PAINTED



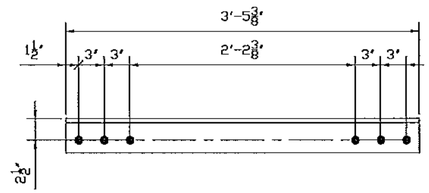
PL1/2x9x1-3 11/16 - x116a



PL1/2x9x1-2 9/16 - x116b



L4x4x1/2x3-5 3/16 - x116d



L4x4x1/2x3-5 3/8 - x116e

GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING AND PAINTING: SEE SHEET P100 AND P101

PRIMER ONLY, NO PAINT
BOTH SIDES 75 mm DIA AROUND HOLE
WHERE NOTED WITH THIS SYMBOL
(BS)

347

BILL OF MATERIAL

Mark	Qty.	Description	SU Grd	Length	Remark	ABM	Total (lbs) Weight	Seq	Qty /Seq
116CF1	ONE	CROSS FRAME					~~XX~~	1	1
116CF1	1	.CROSS FRAME		9-1 5/16	PAINT				
x116a	1	PL1/2x9	A709 50W	1-3 11/16		103-5	20		
x116b	1	PL1/2x9	A709 50W	1-2 9/16		103-5	19		
x116c	1	L6x6x5/8	A709 50W	9-1 5/16		103-1	220		
x116d	1	L4x4x1/2	A709 50W	3-5 3/16		103-3	44		
x116e	1	L4x4x1/2	A709 50W	3-5 3/8		103-3	44		
78S212	14	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		~~XX~~		
FB		FIELD BOLTS							
78F212	14	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		~~XX~~		

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Jan. 29, 2013
RESUBMIT APPROVED AS NOTED ✓
BY C. CARLSON DATE 01-29-2013

No	REVISION	DATE	PAR	VER.
2	CROSSFRAME MODIFIED	01/16/13	BR	GG
1	CROSSFRAME MODIFIED	09/17/12	BR	GG
0	FOR SHOP	08/03/12	SM	GG
A	FOR APPROVAL	07/06/12	BR	EG

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
1 WASHER UNDER HEAD U.N.

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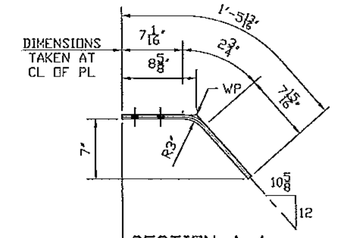
386 River Road, Claremont, NH 03743
Tel:(603) 542-5202 Fax:(603) 542-5312

PROJECT:
VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

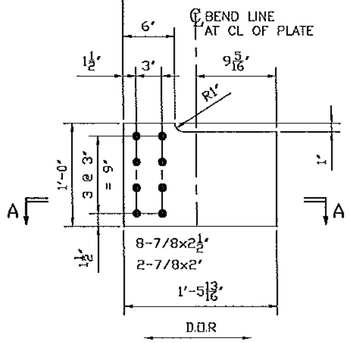
TITLE: ABUTMENT CROSS FRAME

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

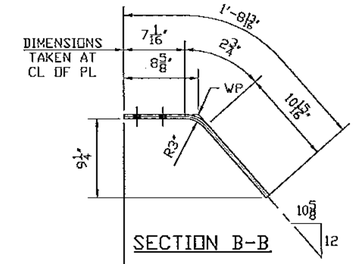
DRAWN BY	DATE	CONTRACT NO
BR	JULY 2012	UN04260
CHECKED BY	DATE	DRAWING NO
GG	JULY 2012	116 2



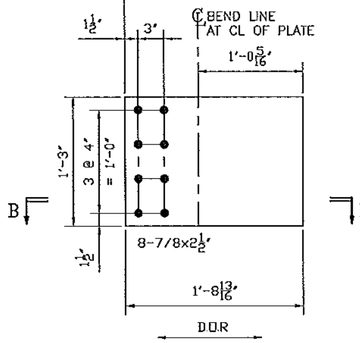
SECTION A-A



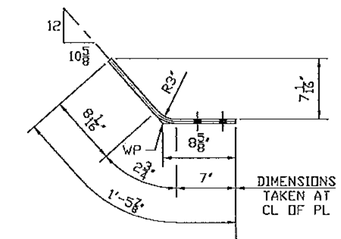
ONE - GUSSET 117M1
PRIMED
(DEVELOPED)



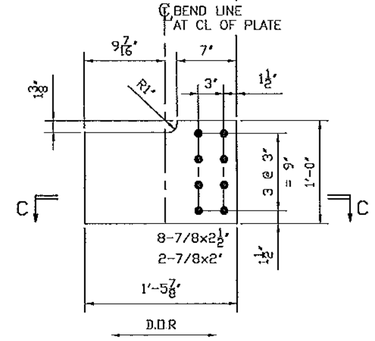
SECTION B-B



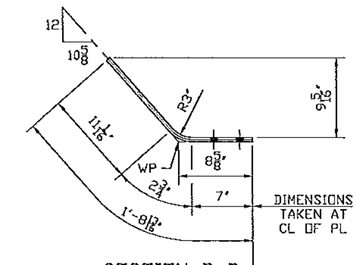
ONE - GUSSET 117M2
PRIMED
(DEVELOPED)



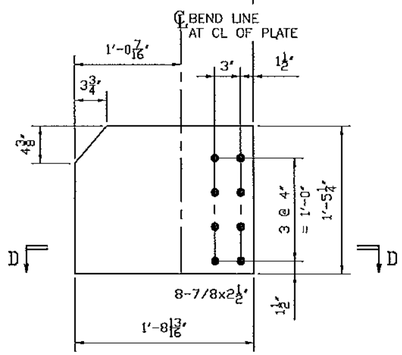
SECTION C-C



ONE - GUSSET 117M3
PRIMED
(DEVELOPED)



SECTION D-D



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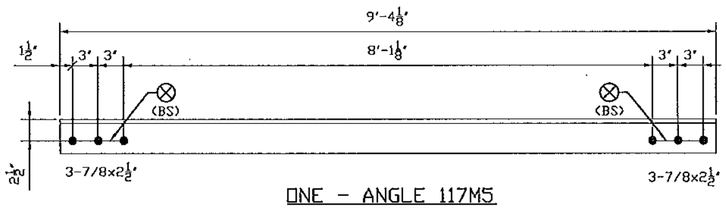
PRIMED
(DEVELOPED)



ONE - ANGLE 117M5
PAINTED

PRIMER ONLY, NO PAINT
BOTH SIDES 75 mm DIA AROUND HOLE
WHERE NOTED WITH THIS SYMBOL
(BS)

GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING AND PAINTING: SEE SHEET P100 AND P101

No	REVISION	DATE	PAR	VER.
0	CROSSFRAME MODIFIED	01/16/13	BR	GG

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
1 WASHER UNDER HEAD U.N.

BILL OF MATERIAL

Mark	Qty.	Description	Stl Grd	Length	Remark	ABM	Total (lbs) Weight	Seq	Qty /Seq
117M1	ONE	GUSSET				30	~~30~~	1	1
117M1	1	PL1/2x12	A709 50W	1-5 13/16	PRIMER	104-4	30		
FB		FIELD_BOLTS							
78F2	2	.7/8 Dia A325 TYP3		2	1FL WASH		~~X~~		
78F212	8	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		~~X~~		
						44			
117M2	ONE	GUSSET					50	1	1
117M2	1	PL1/2x15	A709 50W	1-8 13/16	PRIMER	104-4	44		
FB		FIELD_BOLTS							
78F212	8	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		~~X~~		
						30			
117M3	ONE	GUSSET					~~30~~	1	1
117M3	1	PL1/2x12	A709 50W	1-5 7/8	PRIMER	104-4	30		
FB		FIELD_BOLTS							
78F2	2	.7/8 Dia A325 TYP3		2	1FL WASH		~~X~~		
78F212	8	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		~~X~~		

BILL OF MATERIAL

Mark	Qty.	Description	Stl Grd	Length	Remark	ABM	Total (lbs) Weight	Seq	Qty /Seq
117M4	ONE	GUSSET				44	~~44~~	1	1
117M4	1	PL1/2x15	A709 50W	1-8 13/16	PRIMER	104-4	44		
FB		FIELD_BOLTS							
78F212	8	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		~~X~~		
						120			
117M5	1	ANGLE					~~120~~	1	1
117M5	1	L4x4x1/2	A709 50W	9-4 1/8	PAINT	104-2	120		
FB		FIELD_BOLTS							
78F212	6	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		~~X~~		

Vermont Agency of Transportation

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CK'D BY M.E.M OK'D BY C.W.M.

Jan. 29, 2013

RESUBMIT APPROVED AS NOTED ✓

BY C. CARLSON DATE 01-29-2013

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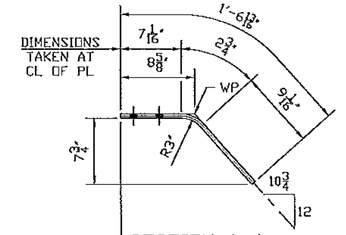
Tel (603) 542-5202 Fax (603) 542-5312

PROJECT: VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

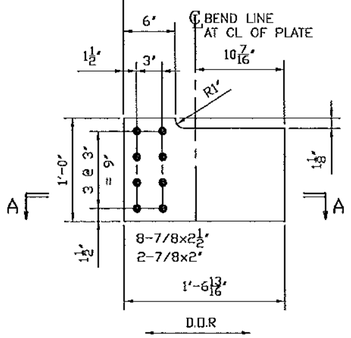
TITLE: ABUTMENT CROSS FRAME

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

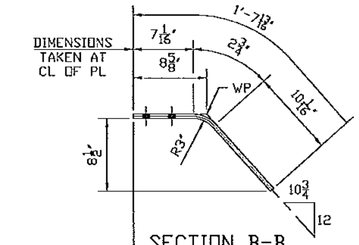
DRAWN BY	DATE	CONTRACT NO	DRAWING NO
BR	JAN 2013	UN04260	117 /0
CHECKED BY GG	DATE JAN 2013		



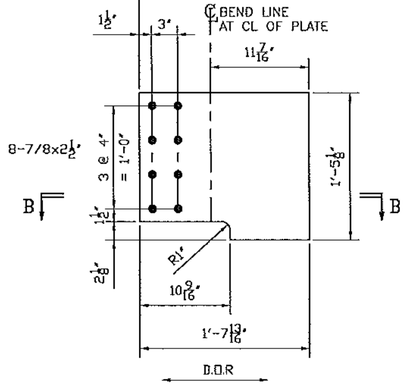
SECTION A-A



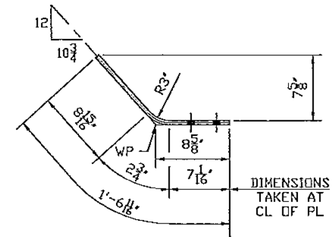
ONE - GUSSET 118M1
PRIMED
(DEVELOPED)



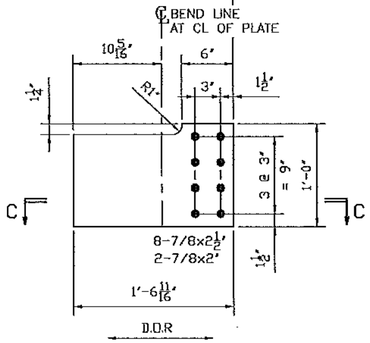
SECTION B-B



ONE - GUSSET 118M2
PRIMED
(DEVELOPED)



SECTION C-C



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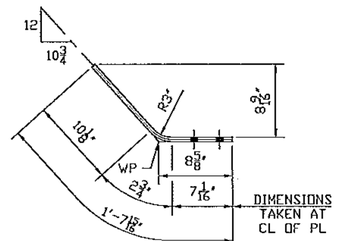
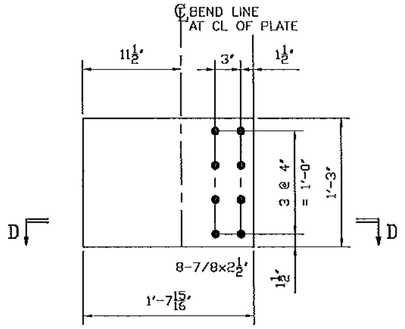
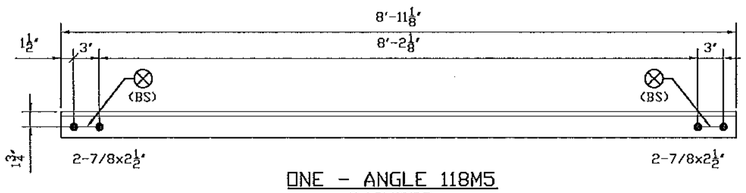
PRIMED
(DEVELOPED)



SECTION D-D



ONE - GUSSET 118M4
PRIMED
(DEVELOPED)



ONE - ANGLE 118M5
PAINTED

GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING AND PAINTING: SEE SHEET P100 AND P101

No	REVISION	DATE	PAR	VER.
/0	CROSSFRAME MODIFIED	01/16/13	BR	GG

BILL OF MATERIAL

Mark	Qty.	Description	Stl Grd	Length	Remark	ABM	Total (lbs) Weight	Seq	Qty /Seq
						32			
117M1	ONE	GUSSET					~~48~~	1	1
117M1	1	PL1/2x12	A709 50W	1-6 13/16	PRIMER	103-4	32		
FB		FIELD_BOLTS							
78F2	2	.7/8 Dia A325 TYP3		2	1FL WASH		~~4~~		
78F212	8	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		~~8~~		
						48			
117M2	ONE	GUSSET					~~54~~	1	1
117M2	1	PL1/2x17 1/8	A709 50W	1-7 13/16	PRIMER	103-4	48		
FB		FIELD_BOLTS							
78F212	8	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		~~8~~		
						32			
117M3	ONE	GUSSET					~~46~~	1	1
117M3	1	PL1/2x12	A709 50W	1-6 11/16	PRIMER	103-4	32		
FB		FIELD_BOLTS							
78F2	2	.7/8 Dia A325 TYP3		2	1FL WASH		~~4~~		
78F212	8	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		~~8~~		

BILL OF MATERIAL

Mark	Qty.	Description	Stl Grd	Length	Remark	ABM	Total (lbs) Weight	Seq	Qty /Seq
117M4	ONE	GUSSET				42	~~46~~	1	1
117M4	1	PL1/2x15	A709 50W	1-7 15/16	PRIMER	103-4	42		
FB		FIELD_BOLTS							
78F212	8	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		~~8~~		
						84			
118M5	1	CROSS FRAME					~~87~~	1	1
118M5	1	L3x3x1/2	A709 50W	8-11 1/8	PAINT	103-2	84		
FB		FIELD_BOLTS							
78F212	4	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		~~4~~		

Vermont Agency of Transportation

RECEIVED

CK'D BY M.E.M OK'D BY C.W.M.

Jan. 29, 2013

RESUBMIT APPROVED AS NOTED ✓

BY C. CARLSON DATE 01-29-2013

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
1 WASHER UNDER HEAD U.N.

STRUCTAL Bridges
a division of CANAM GROUP Inc.
386 River Road, Claremont, NH. 03743
Tel:(603) 542-5202 Fax:(603) 542-5312

PROJECT:
VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

TITLE: ABUTMENT CROSS FRAME

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

DRAWN BY	DATE	CONTRACT NO	DRAWING NO
BR	JAN 2013	UN04260	118 /0
CHECKED BY: GG	JAN 2013		

VERMONT

State of Vermont
Program Development
One National Life Drive
Montpelier, VT 05633-5001
www.aot.state.vt.us

Agency of Transportation

[phone] 802-828-2621
[fax] 802-828-3566
[ttd] 800-253-0191

July 27, 2012

Structal Bridges
386 River Road
Claremont, NH 03743

Project Name: Woodford Project #: ER BHF 010-1(44)

Structure Identification: VT 9 Over the Roaring Branch of the Walloomsac River

The following **structural steel details item 506.13, "Structural Steel, Plate Girder"** for the above project (Vendor's Job #UN042601), transmitted by T. Buck Construction, Inc. and received by our office on Monday, July 9, 2012, have been reviewed and are being returned herewith.

Sheets101-1, 102-1, 103-1, 104-1, 105-1, 106-1, E100-E103, GN100, P100, P101, X102 and the welding procedures are approved.

Sheet 101-2, 101-3, 102-2, 102-3, 103-2, 103-3, 104-2, 104-3, 105-2, 105-3, 106-2, 106-3, 107-116, and X101 are approved "as noted". (Please make appropriate changes as indicated on the "as noted" drawing and submit a new "*.pdf" for our use in the record plans for this project.)

You must provide notice to our fabrication inspector Jeff Clark as to the date fabrication represented by these drawings will begin. Jeff may be contacted by phone at (802)828-0044 or email at jeff.clark@state.vt.us. That notice must be received at least seven days prior to that date, as per Specification 506.03. Any material fabricated prior to the notification date is subject to rejection without further cause.

Sincerely,

Carolyn W. Carlson, PE
Project Manager

Attachments
cc: [X] Resident Engineer Ron Lemaire -w/prints
[X] T. Buck Construction, Inc. – w/prints
[X] Shop Inspector - Jeff Clark w/prints
[X] Materials & Research Section (C&IA Unit) – Letter only
[X] F.R. Lafayette – w/prints
[X] Construction Division - Letter only
[X] CWC

VTrans Working to Get You There
Vermont Agency of Transportation

STRUCTAL
Building Better Bridges
a division of Canam Steel corporation
336 River Road, Claremont, NH, 03743
T: 603-542-5202 F: 603-542-5317
www.structalbridges.ws

✓

Contract Number : TBD
Project name : Woodford, VT
VT Route 9, Bridge 11

WPS : FC-1001
Revision: 0 Date: 06/25/2012 By: Tyler Gaunt
Authorized by: Tyler Gaunt Date: 06/25/2012
Supporting PQR: PQR-FC-50W-50W-3G-WM23

Contractor/Organization: STRUCTAL, Div. Canam
Welding process(es): FCAW
Type: Semi Auto or Auto

JOINT DESIGN USED

Backing: N/A Mat'l: N/A
Root Opening: N/A Rf Dim.: N/A
Groove Angle: N/A Radius (J, U): N/A
Backgouging: N/A Method: N/A
Root Treatment: Grind or Blast to Bare Metal

BASE METALS

Material Spec: A709 Type or Grade: Gr.36, 50, 50W
Size of Groove: N/A Size of fillet: 5/16"

FILLER METALS

AWS Spec.: A5.20 AWS Class.: 81T1-Ni1C H8
Manufacturer Trade Name: ESAB 810X-Ni1

SHIELDING

Flux: N/A Mfg Trade Name: N/A
Dew Point: -40° F Cup size: N/A
Gas composition: 100% CO_2 Flow Rate: 40 CFH minimum

POSTWELD HEAT TREATMENT

Temperature: N/A Holding Time: N/A
Heating/Cooling rate: N/A

HEAT INPUT

Min. Heat Input: 26.4 kJ/in Max. Heat input: 45.9 kJ/in

POSITION

Position of Groove: N/A Fillet: 3F
Vertical progression : Vertical UP

ELECTRICAL CHARACTERISTICS

Transfer mode: N/A Current: DCEP
ESO: 3/4" +/- ¼" Other: N/A

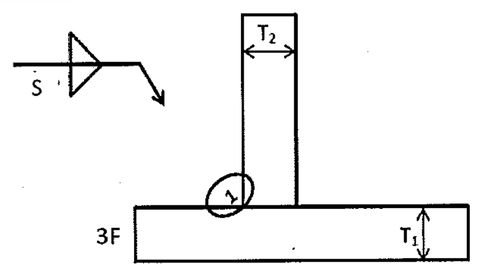
TECHNIQUE

Stringer or Weave Bead: STRINGER
Single or multiple pass: Single
Nb of Electrodes: 1
Electrode spacing :
Longitudinal: N/A, Lateral: N/A, Angle: varies
Interpass Cleaning: REMOVE ALL CONTAMINANTS

PREHEAT – Maximum interpass : N/A

MINIMUM PREHEAT & INTERPASS TEMPERATURE		
Thickness of thickest part at point of welding	FCM Application	Non FCM Application
t ≤ ¾ (in.)	150 °F	50 °F
¾ < t ≤ 1-½ (in.)	250 °F	70 °F
1-½ < t ≤ 2-½ (in.)	325 °F	150 °F
2-½ > t (in.)	350 °F	225 °F

Note1: For Fillet Welding on Secondary members
Note2: For Stiffener to Flange fillet welds on Main Members
Note3: For Fillet Welding of Drip Bars

(S)	PASS	ELECT. SIZE	WELDING CURRENT		TRAVEL SPEED (IN/MIN)	JOINT DETAIL 3F
			AMPS	VOLTS		
5/16"	1	1/16"	200-239	24-25	5 - 7	
1/4"	1	1/16"	200-239	24-25	5-7	

THIS PROCEDURE MAY VARY DUE TO FABRICATION SEQUENCE, FIT-UP, PASS SIZE, ETC. WITHIN THE LIMITATION OF VARIABLES GIVEN IN SECTION 5 OF AWS D1.5:2010.

Vtrans Received JW
CK'D QK'd BY

JUL 11 2012

Structal Form Rev.1 / 2011-05-23

Resubmit BY APPROVED DATE 7/11/12 ✓

STRUCTAL
Building Better Bridges
a division of Canam Steel corporation
396 River Road, Claremont, NH, 03743
T: 603-542-5202 F: 603-542-5317
www.structalbridges.ws

✓

Contract Number : TBD
Project name : Woodford, VT
VT Route 9, Bridge 11

Contractor/Organization: STRUCTAL, Div. Canam
Welding process(es): FCAW
Type: Semi Auto or Auto

WPS : FC-1002
Revision: 0 Date: 06/25/2012 By: Tyler Gaunt
Authorized by: Tyler Gaunt Date: 06/25/2012
Supporting PQR: PQR-FC-50W-50W-1G-WM23

JOINT DESIGN USED

Backing: N/A Mat'l: N/A
Root Opening: N/A Rf Dim.: N/A
Groove Angle: N/A Radius (J, U): N/A
Backgouging: N/A Method: N/A
Root Treatment: Grind or Blast to Bare Metal

BASE METALS

Material Spec: A709 Type or Grade: Gr.36, 50, 50W
Size of Groove: N/A Size of fillet: 5/16"

FILLER METALS

AWS Spec.: A5.20 AWS Class.: 81T1-Ni1C H8
Manufacturer Trade Name: ESAB 810X-Ni1

SHIELDING

Flux: N/A Mfg Trade Name: N/A
Dew Point: -40° F Cup size: N/A
Gas composition: 100% CO_2 Flow Rate: 40 CFH minimum

POSTWELD HEAT TREATMENT

Temperature: N/A Holding Time: N/A
Heating/Cooling rate: N/A

HEAT INPUT

Min. Heat Input: 27.3 kJ/in Max. Heat input: 45.4 kJ/in

POSITION

Position of Groove: N/A Fillet: 1F or 2F
Vertical progression : Vertical UP

ELECTRICAL CHARACTERISTICS

Transfer mode: N/A Current: DCEP
ESO: 3/4" +/- ¼" Other: N/A

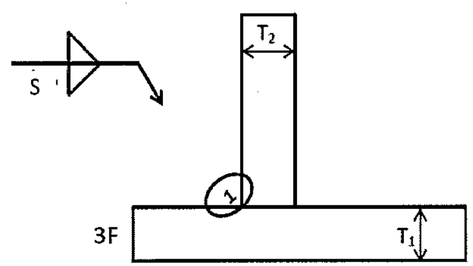
TECHNIQUE

Stringer or Weave Bead: STRINGER
Single or multiple pass: Single
Nb of Electrodes: 1
Electrode spacing :
Longitudinal: N/A, Lateral: N/A, Angle: varies
Interpass Cleaning: REMOVE ALL CONTAMINANTS

PREHEAT – Maximum interpass : N/A

MINIMUM PREHEAT & INTERPASS TEMPERATURE		
Thickness of thickest part at point of welding	FCM Application	Non FCM Application
t ≤ ¾ (in.)	150 °F	50 °F
¾ < t ≤ 1-½ (in.)	250 °F	70 °F
1-½ < t ≤ 2-½ (in.)	325 °F	150 °F
2-½ > t (in.)	350 °F	225 °F

Note1: For Fillet Welding on Secondary members
Note2: For Stiffener to Flange fillet welds on Main Members
Note3: For Fillet Welding of Drip Bars

(S)	PASS	ELECT. SIZE	WELDING CURRENT AMPS	WELDING CURRENT VOLTS	TRAVEL SPEED (IN/MIN)	JOINT DETAIL 2F
5/16"	1	1/16"	300-325	28-30	13 -14	
1/4"	1	1/16"	200-239	28-30	13-14	

THIS PROCEDURE MAY VARY DUE TO FABRICATION SEQUENCE, FIT-UP, PASS SIZE; ETC. WITHIN THE LIMITATION OF VARIABLES GIVEN IN SECTION 5 OF AWS D1.5:2010.

VTrans
Received
CK'D OK'd BY JWC

JUL 11 2012

Structal Form Rev.1 / 2011-05-23

Resubmit APPROVED ✓
BY DATE 7/24/12

STRUCTAL
Building Better Bridges
a division of Canam Steel corporation
396 River Road, Claremont, NH, 03743
T: 603-542-5202 F: 603-542-5317
www.structalbridges.ws

Contract Number : TBD
Project name : Woodford, VT
VT route 9, Bride 11

Contractor/Organization: STRUCTAL, Div. Canam
Welding process(es): SAW
Type: Semi Auto or Auto

WPS : S-1001
Revision: 0 Date: 06/25/2012 By: Tyler Gaunt
Authorized by: Tyler Gaunt Date: 06/25/2012
Supporting PQR: PQR Ortho 1G DCEN

JOINT DESIGN USED
Backing: N/A Mat'l: N/A
Root Opening: N/A Rf Dim.: N/A
Groove Angle: N/A Radius (J, U): N/A
Backgouging: N/A Method: N/A
Root Treatment: Grind or Blast to Bare Metal

POSITION
Position of Groove: N/A Fillet: 1F or 2F
Vertical progression : N/A

ELECTRICAL CHARACTERISTICS
Transfer mode: N/A Current: DCEN
ESO: 1-1/4" +/- ¼" Other: N/A

BASE METALS
Material Spec: A709 Type or Grade: Gr.36, 50, Gr.50W
Size of Groove: N/A Size of fillet: 5/16"

TECHNIQUE
Stringer or Weave Bead: STRINGER
Single or multiple pass: Single
Nb of Electrodes: 1
Electrode spacing :
Longitudinal: N/A, Lateral: N/A, Angle: varies
Interpass Cleaning: REMOVE ALL CONTAMINANTS

FILLER METALS
AWS Spec.: A5.17 AWS Class.: EM12K-H8
Manufacturer Trade Name: ESAB Spoolarc 81

PREHEAT – Maximum interpass : N/A

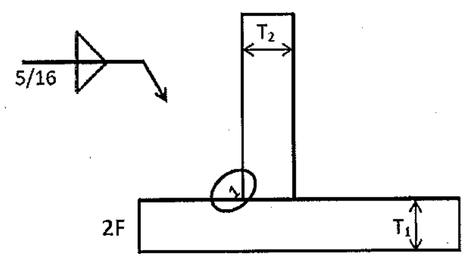
MINIMUM PREHEAT & INTERPASS TEMPERATURE		
Thickness of thickest part at point of welding	FCM Application	Non FCM Application
t ≤ ¾ (in.)	150 °F	50 °F
¾ < t ≤ 1-½ (in.)	250 °F	70 °F
1-½ < t ≤ 2-½ (in.)	325 °F	150 °F
2-½ > t (in.)	350 °F	225 °F

SHIELDING
Flux: ESAB Mfg Trade Name: OK 10.71
Electrode Flux (Class): F7A5 Cup size: N/A
Gas composition: N/A Flow Rate: N/A

POSTWELD HEAT TREATMENT
Temperature: N/A Holding Time: N/A
Heating/Cooling rate: N/A

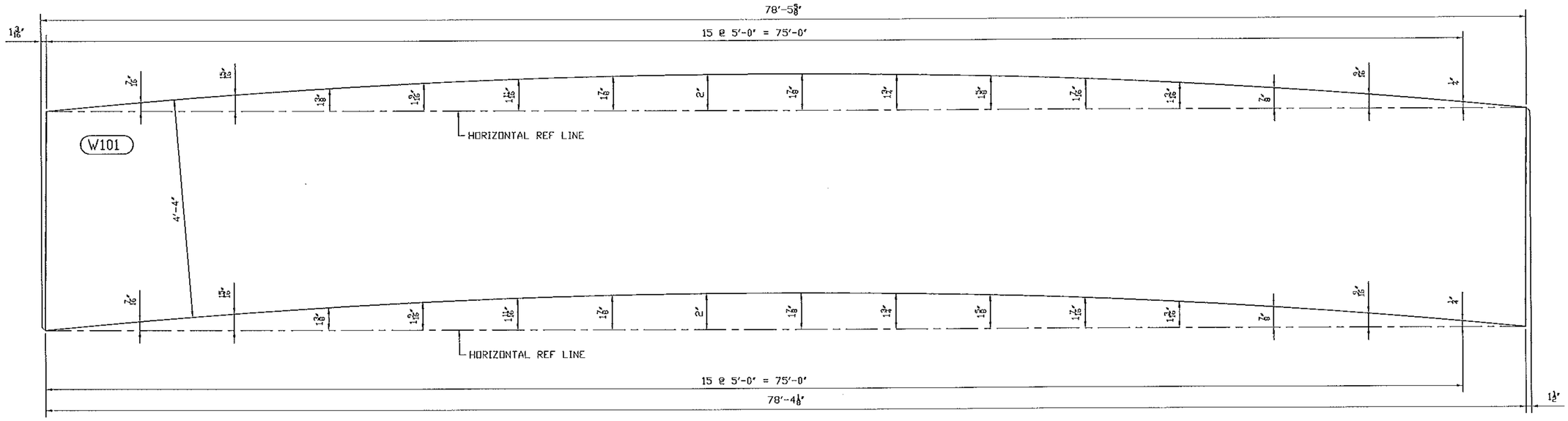
HEAT INPUT
Min. Heat Input: 36.7 kJ/in Max. Heat input: 56.9 kJ/in

Note1: For Fillet Welding on Main members
Note2: For Fillet Welding on Secondary members
Note3: Web to Flange fillet welds and stiffener to web fillet welds on main members shall be an automatic process

(S)	PASS	ELECT. SIZE	WELDING CURRENT AMPS	WELDING CURRENT VOLTS	TRAVEL SPEED (IN/MIN)	JOINT DETAIL 1F or 2F (2F shown)
5/16"	1	1/8"	590-630	32-34	24 - 25	
5/16"	1	3/32"	590-630	32-34	24 - 25	

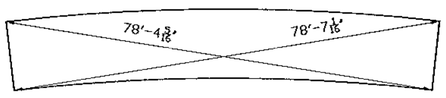
Visuals received CKD JWC
CKD
JUL 11 2012
Resubmit BY
APPROVED DATE 7/11/12

THIS PROCEDURE MAY VARY DUE TO FABRICATION SEQUENCE, FIT-UP, PASS SIZE, ETC. WITHIN THE LIMITATION OF VARIABLES GIVEN IN SECTION 5 OF AWS D1.5:2010.



ONE WEB PLATE W101

W101 = PL½"



GENERAL NOTES: SEE GN100

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL.	07/06/12	BR	EG

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
1 WASHER UNDER HEAD U.N.

Vermont Agency of Transportation
RECEIVED
CK'D BY M.E.M OK'D BY C.W.M.
July 09, 2012
RESUBMIT APPROVED ✓
BY C. CARLSON DATE 07-27-2012

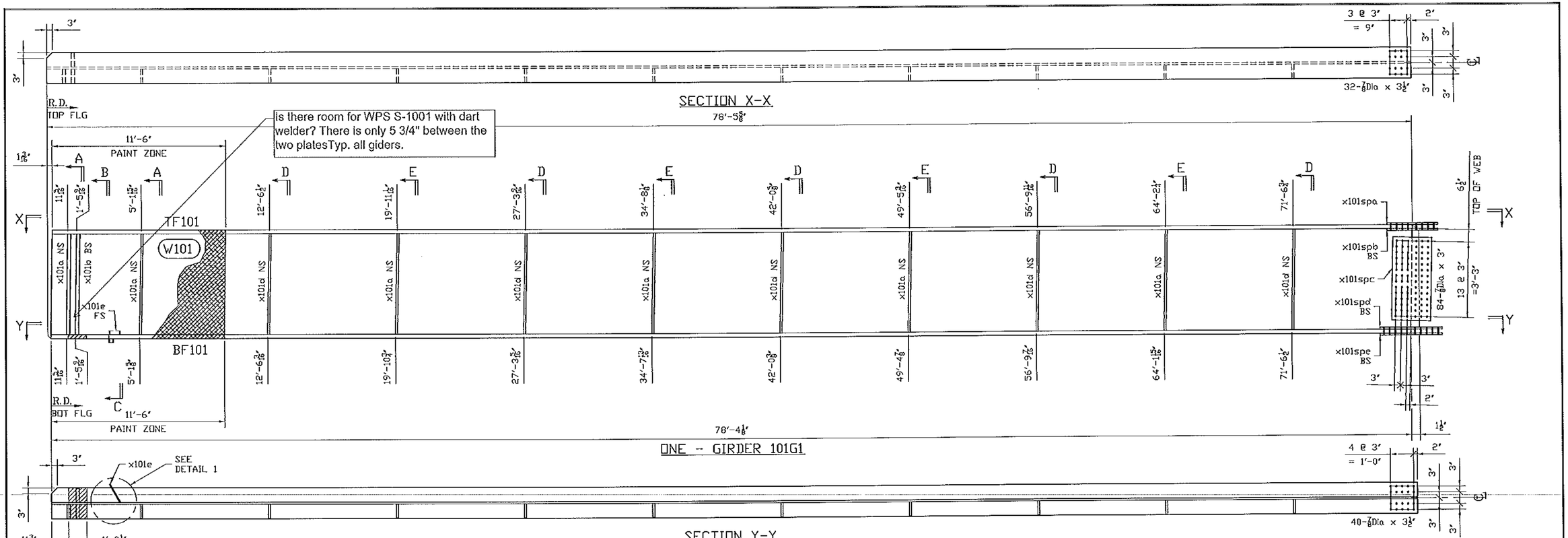
STRUCTAL Bridges
a division of CANAM STEEL Inc.
386 River Road, Claremont, NH 03743
Tel(603) 542-5202 Fax(603) 542-5312

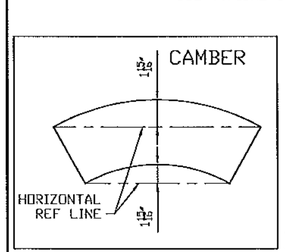
PROJECT: VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

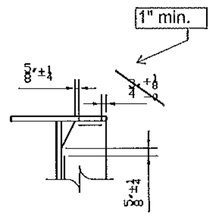
TITLE: GIRDER 101G1

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

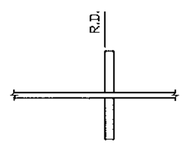
DRAWN BY	DATE	CONTRACT NO
BR	JULY 2012	UN04260
CHECKED BY	DATE	DRAWING NO
GG	JULY 2012	101-1 A





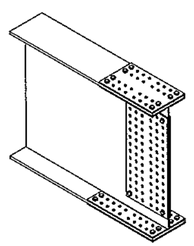


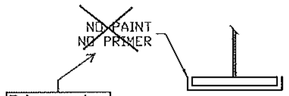
WELD TERMINATION DETAIL



TYPICAL DETAIL FOR STIFFENER

THE FIELD SPLICE PLATES MUST NOT EXCEED THE END OF GIRDER





TYPICAL SECTION FOR MASKING ZONE AT SOLE PLATE

GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING AND PAINTING: SEE SHEET P100 AND P101

BILL OF MATERIAL

Mark	Qty.	Description	Std Grd	Length	Remark	ABM	Total Weight	Seq	Qty /Seq
						16628	16753 K		1
101G1	ONE	GIRDER							
101G1	1	.GIRDER		78-5 5/8					
TF101	1	PL1x16	A70950W12	78-4 7/16		100-1	4267		
W101	1	PL1/2x52	A70950W12	78-5 5/8		100-2	6942		
BF101	1	PL1x16	A70950W12	78-4 1/8		100-1	4265		
x101a	6	PL1/2x7 1/2	A70950W12	4--4		101-2/3	332		
x101b	2	PL7/8x7 1/2	A709050W12	4--4	MB	101-1	194		
x101d	5	PL1/2x7 1/2	A709050W12	4--4		101-3	276		
x101e	1	PL1/4x3 1/8	A709050W12	11		101-4	2		
x101spa	1	PL1/2x16	A709050W12	2-2 1/4		102-1	60		
x101spb	2	PL1/2x7	A709050W12	2-2 1/4		102-2	52		
x101spc	2	PL1/2x43	A709050W12	8 1/4		102-3	101		
x101spd	2	PL1/2x7	A709050W12	2-8 1/4		102-4	64		
x101spe	1	PL1/2x16	A709050W12	2-8 1/4		102-5	73		
FB		FIELD_BOLTS							
78F3	84	.7/8 Dia A325 TYP3		3	1FL WASH		67		
78F312	72	.7/8 Dia A325 TYP3		3 1/2	1FL WASH		68		

See standard specification 506.24(a)(9), no payment will be made for bolts, nuts, washers, they are considered to be incidental

Vermont Agency of Transportation

RECEIVED

CK'D BY M.E.M OK'D BY C.W.M.

July 09, 2012

RESUBMIT APPROVED AS NOTED

BY C. CARLSON DATE 07-27-2012

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
1 WASHER UNDER HEAD U.N.

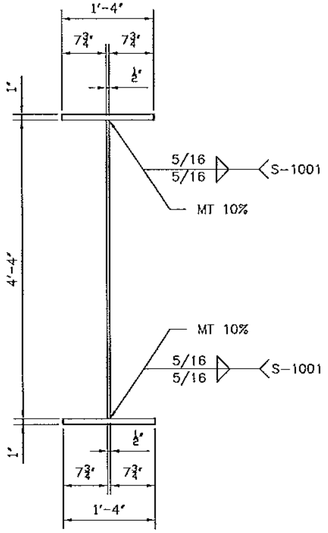
STRUCTAL Bridges
a division of CANAM BRIDGES Inc.
286 River Road, Clarenont, NH 03743
Tel:(603) 542-5202 Fax:(603) 542-5312

PROJECT: VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

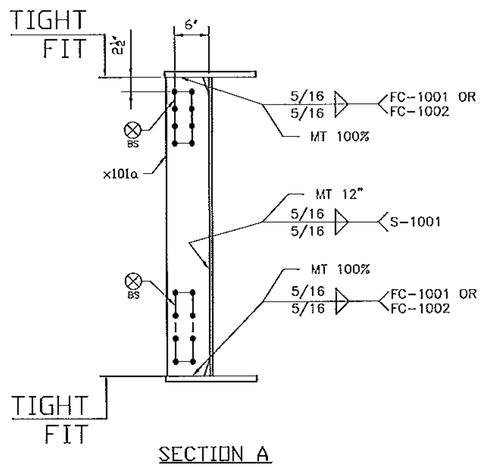
TITLE: GIRDER 101G1

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

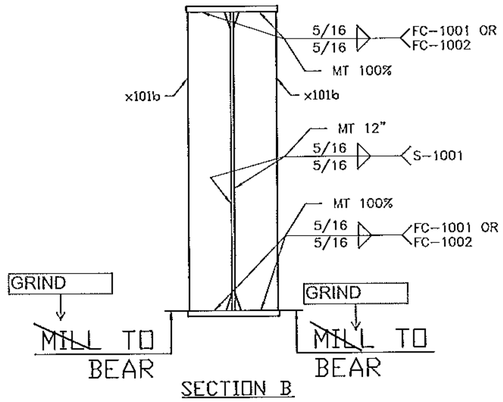
DRAWN BY	DATE	CONTRACT NO
BR	JULY 2012	UN04260
CHECKED BY	DATE	DRAWING NO
GG	JULY 2012	101-2 (A)



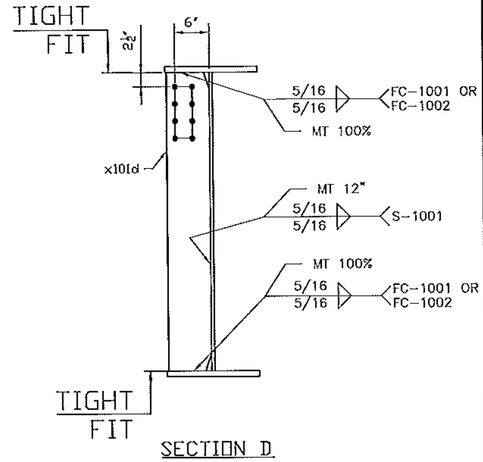
TYPICAL SECTION



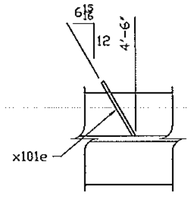
SECTION A



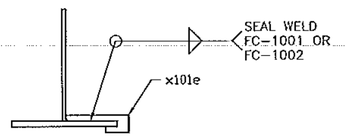
SECTION B



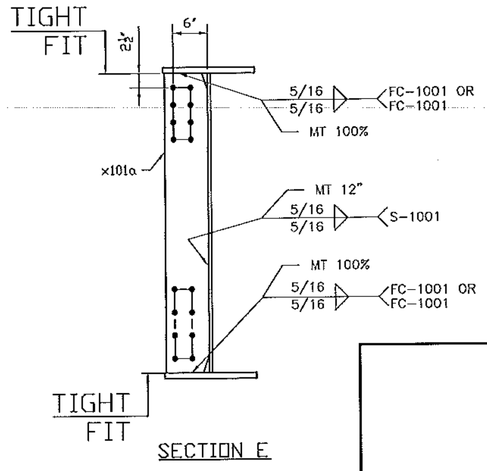
SECTION D



DETAIL 1



SECTION C



SECTION E

PRIMER ONLY, NO PAINT
BOTH SIDES 75 mm DIA AROUND HOLE
WHERE NOTED WITH THIS SYMBOL

(BS)

GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING AND PAINTING: SEE SHEET P100 AND P101

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
1 WASHER UNDER HEAD U.N.

Vermont Agency of Transportation

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CK'D BY M.E.M OK'D BY C.W.M.

July 09, 2012

RESUBMIT _____ APPROVED AS NOTED

BY C. CARLSON DATE 07-27-2012

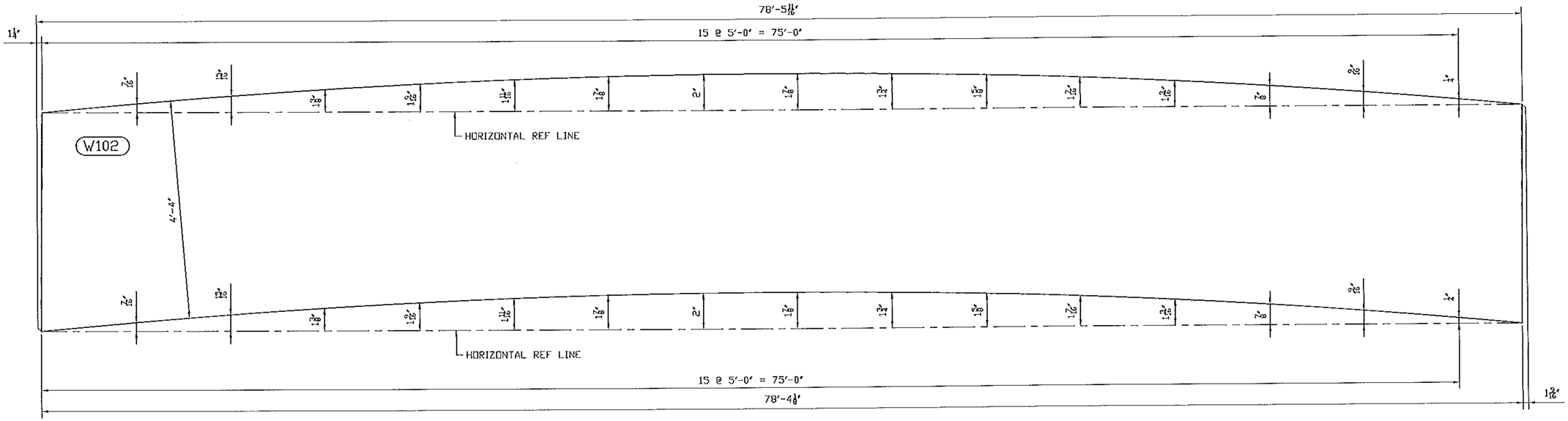
STRUCTAL Bridges
a division of CANAM STEEL Inc.
386 River Road, Claremont, NH, 03743
Tel:(603) 542-5202 Fax:(603) 542-5312

PROJECT:
VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

TITLE: GIRDER 101G1

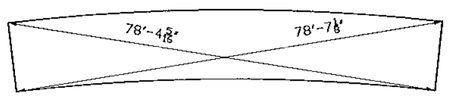
REFERENCE: PROJECT NO. ER BHF 010-1 (44)

DRAWN BY	DATE	CONTRACT NO
BR	JULY 2012	UN04260
CHECKED BY	DATE	DRAWING NO
GG	JULY 2012	101-3 A



ONE WEB PLATE W102

W102 = PL 1/2"



GENERAL NOTES: SEE GN100

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
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TITLE: GIRDER 102G1

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

DRAWN BY	DATE	CONTRACT NO.
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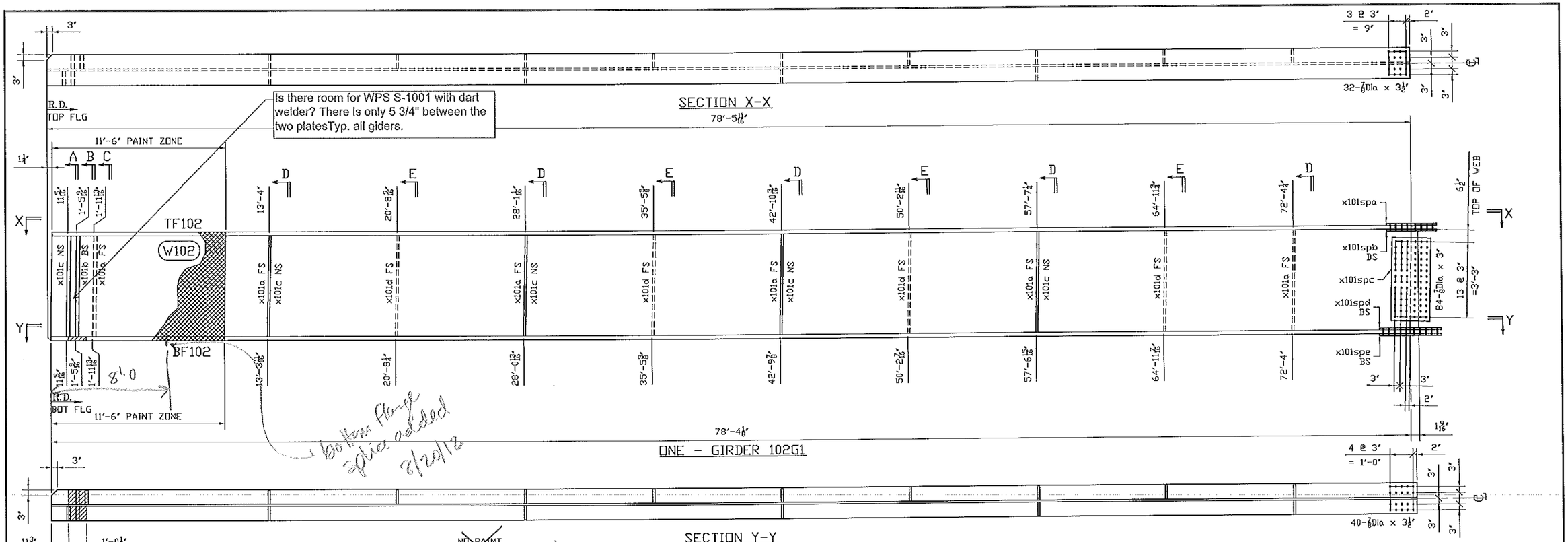
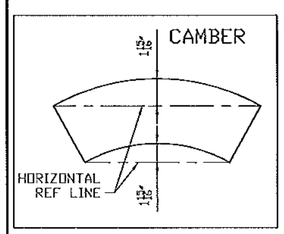
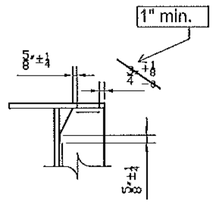
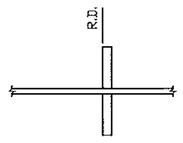
CHECKED BY	DATE	DRAWING NO.
GG	JULY 2012	102-1 A





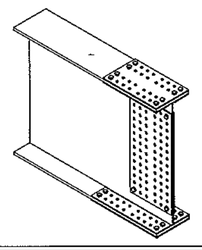


WELD TERMINATION DETAIL



TYPICAL DETAIL FOR STIFFENER

THE FIELD SPLICE PLATES MUST NOT EXCEED THE END OF GIRDER



BILL OF MATERIAL

Mark	Qty.	Description	Stl Grd	Length	Remark	ABM	Total Weight	Seq	Qty /Seq
						16848	16973 K		
102G1	ONE	GIRDER							1
102G1	1	.GIRDER		78-5 11/16					
TF102	1	PL1x16	A709 50W T2	78-4 7/16		100-1	4267		
W102	1	PL1/2x52	A709 50W T2	78-5 11/16		100-2	6943		
BF102	1	PL1x16	A709 50W T2	78-4 1/8		100-1	4265		
x101a	6	PL1/2x7 1/2	A709 50W T2	4-4		101-2	332		
x101b	2	PL7/8x7 1/2	A709 50W T2	4-4	MB	101-1	194		
x101c	5	PL1/2x7 1/2	A709 50W T2	4-4		101-2/3	276		
x101d	4	PL1/2x7 1/2	A709 50W T2	4-4		101-3	221		
x101spa	1	PL1/2x16	A709 50W T2	2-2 1/4		102-1	60		
x101spb	2	PL1/2x7	A709 50W T2	2-2 1/4		102-2	52		
x101spc	2	PL1/2x43	A709 50W T2	8 1/4		102-3	101		
x101spd	2	PL1/2x7	A709 50W T2	2-8 1/4		102-4	64		
x101spe	1	PL1/2x16	A709 50W T2	2-8 1/4		102-5	73		
FB		FIELD_BOLTS							
78F3	84	.7/8 Dia A325 TYP3		3	1FL WASH		67		
78F312	72	.7/8 Dia A325 TYP3		3 1/2	1FL WASH		58		

GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING AND PAINTING: SEE SHEET P100 AND P101

See standard specification 506.24(a)(9), no payment will be made for bolts, nuts, washers, they are considered to be incidental

Vermont Agency of Transportation

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CK'D BY M.E.M OK'D BY C.W.M.

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BY C. CARLSON DATE 07-27-2012

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
1 WASHER UNDER HEAD U.N.

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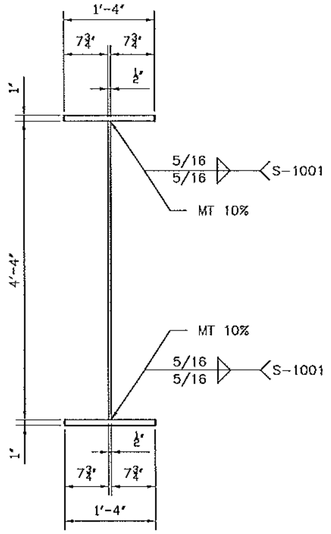
PROJECT: VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

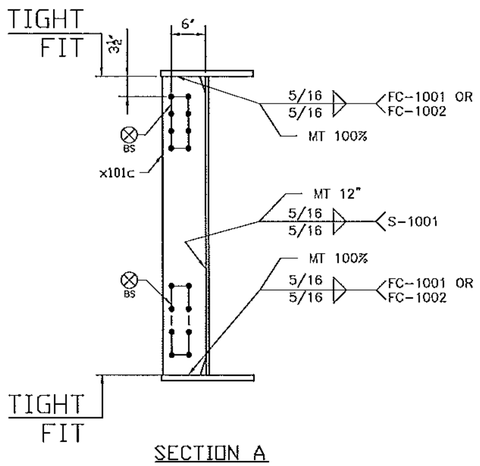
TITLE: GIRDER 102G1

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

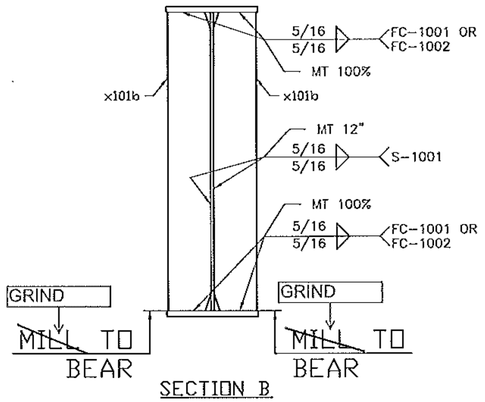
DRAWN BY	DATE	CONTRACT NO
BR	JULY 2012	UN04260
CHECKED BY	DATE	DRAWING NO
GG	JULY 2012	102-2 A



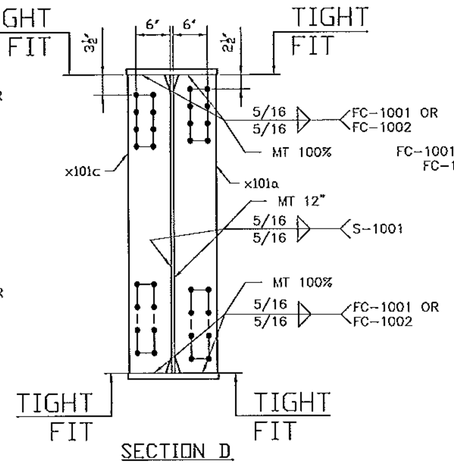
TYPICAL SECTION



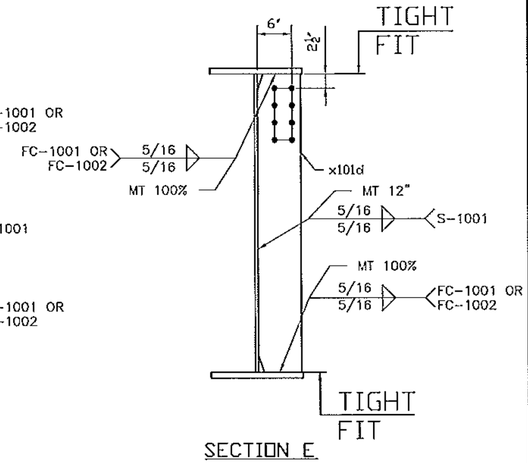
SECTION A



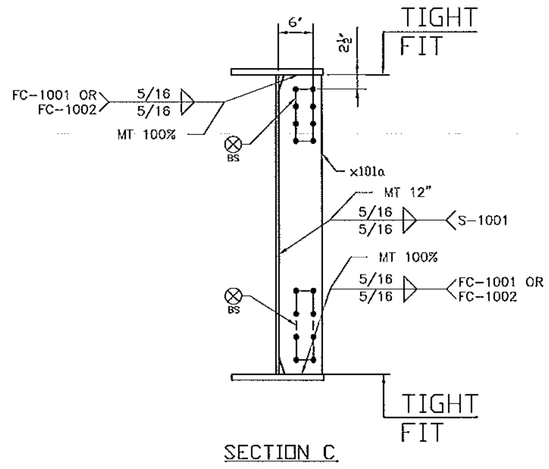
SECTION B



SECTION D



SECTION E



SECTION C

PRIMER ONLY, NO PAINT
BOTH SIDES 75 mm DIA AROUND HOLE
WHERE NOTED WITH THIS SYMBOL
(BS)

GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING
AND PAINTING: SEE SHEET P100 AND P101

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
1 WASHER UNDER HEAD U.N.

Vermont Agency of Transportation
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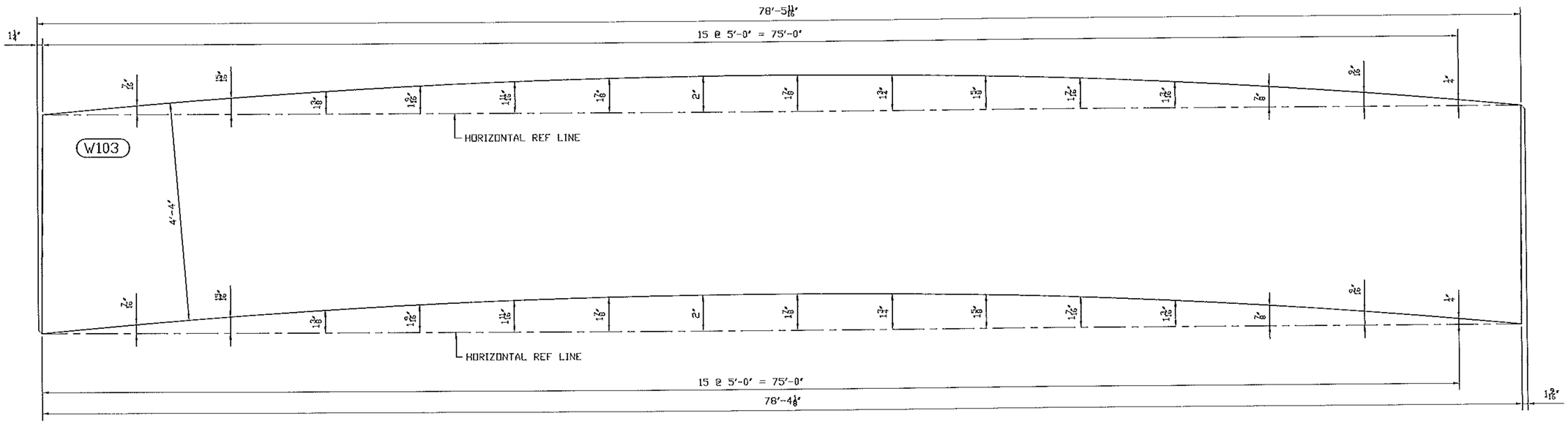
Tel(603) 542-5202 Fax(603) 542-5312

PROJECT:
VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

TITLE:
GIRDER 102G1

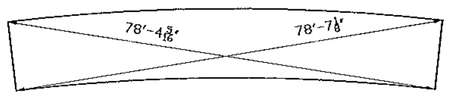
REFERENCE:
PROJECT NO. ER BHF 010-1 (44)

DRAWN BY	DATE	CONTRACT NO	DRAWING NO
BR	JULY 2012	UN04260	102-3 (A)
CHECKED BY	DATE		
GG	JULY 2012		



ONE WEB PLATE W103

W103 = PL 1/2"



GENERAL NOTES: SEE GN100

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
1 WASHER UNDER HEAD U.N.

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a division of CANAM
385 River Road, Clarenont, NH 03743
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Vermont Agency of Transportation
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PROJECT: VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

TITLE: GIRDER 103G1

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

DRAWN BY	DATE	CONTRACT NO.
BR	JULY 2012	UN04260
CHECKED BY	DATE	DRAWING NO.
GG	JULY 2012	103-1 A

Is there room for WPS S-1001 with dart welder? There is only 5 3/4" between the two platesTyp. all giders.

SECTION X-X

ONE - GIRDER 103G1

SECTION Y-Y

TYPICAL SECTION FOR MASKING ZONE AT SOLE PLATE

CAMBER

WELD TERMINATION DETAIL

TYPICAL DETAIL FOR STIFFENER

THE FIELD SPLICE PLATES MUST NOT EXCEED THE END OF GIRDER

GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING AND PAINTING: SEE SHEET P100 AND P101

See standard specification 506.24(a)(9), no payment will be made for bolts, nuts, washers, they are considered to be incidental

BILL OF MATERIAL

Mark	Qty.	Description	Stl Grd	Length	Remark	ABM	Total Weight	Seq	Qty /Seq
103G1	ONE	GIRDER				16629	16809	1	1
103G1	1	.GIRDER		78-5 11/16					
TF103	1	PL1x16	A70950W12	78-4 7/16		100-1	4267		
W103	1	PL1/2x52	A70950W12	78-5 11/16		100-2	6943		
BF103	1	PL1x16	A70950W12	78-4 3/16		100-1	4266		
x101b	2	PL7/8x7 1/2	A70950W12	4-4	WB	101-1	194		
x101c	12	PL1/2x7 1/2	A70950W12	4-4		101-2/3	664		
x101spa	1	PL1/2x16	A709050W12	2-2 1/4		102-1	60		
x101spb	2	PL1/2x7	A709050W12	2-2 1/4		102-2	52		
x101spc	2	PL1/2x43	A709050W12	8 1/4		102-3	101		
x101spd	2	PL1/2x7	A709050W12	2-8 1/4		102-4	64		
x101spe	1	PL1/2x16	A709050W12	2-8 1/4		102-5	73		
FB		FIELD_BOLTS							
78F3	84	.7/8 Dia A325 TYP3		3	1FL WASH		67		
78F312	72	.7/8 Dia A325 TYP3		3 1/2	1FL WASH		58		

11

609

Vermont Agency of Transportation

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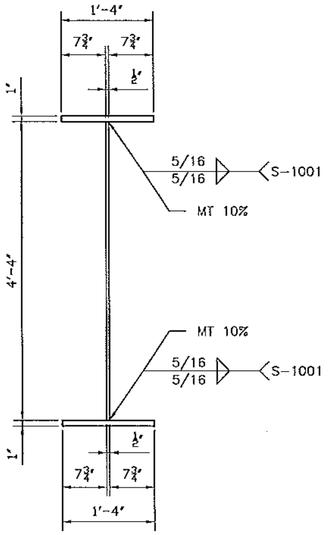
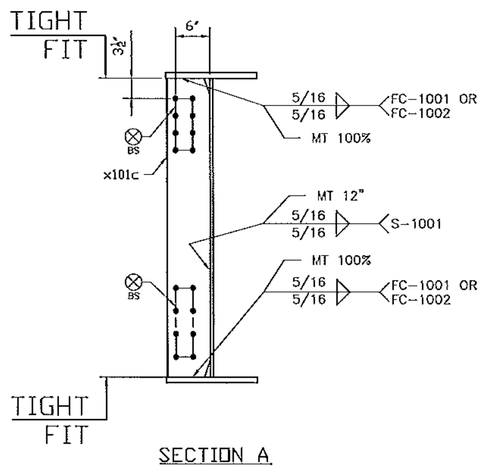
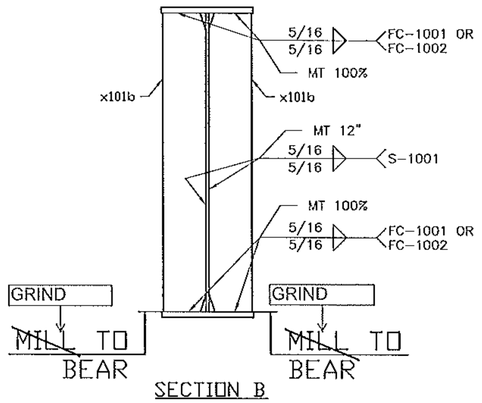
BF 103 8'
BF 102 8'
Web 9'



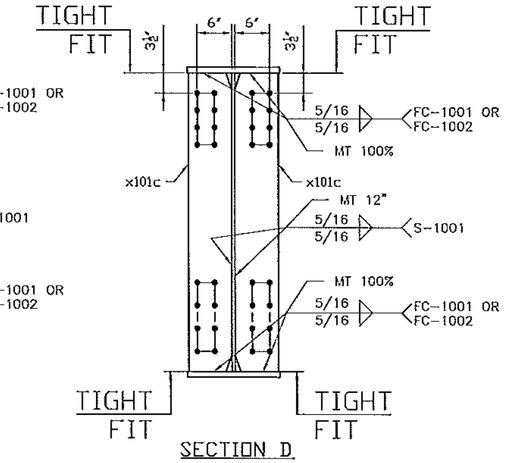
TYPICAL SECTION



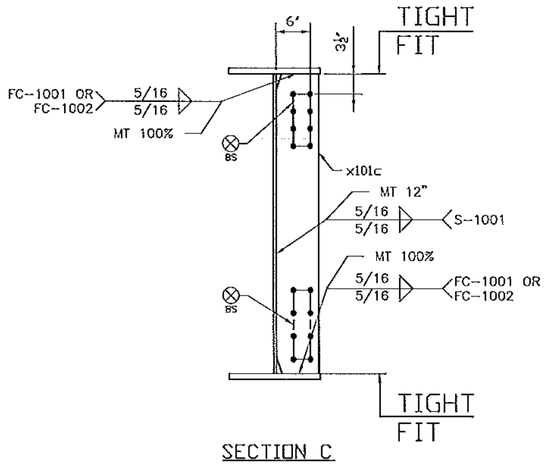
SECTION A



SECTION B



SECTION D



SECTION C

PRIMER ONLY, NO PAINT
BOTH SIDES 75 mm DIA AROUND HOLE
WHERE NOTED WITH THIS SYMBOL
(BS)

GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING AND PAINTING: SEE SHEET P100 AND P101

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

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1 WASHER UNDER HEAD U.N.

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OVER WALOOMSAC RIVER

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CHECKED BY	DATE	DRAWING NO
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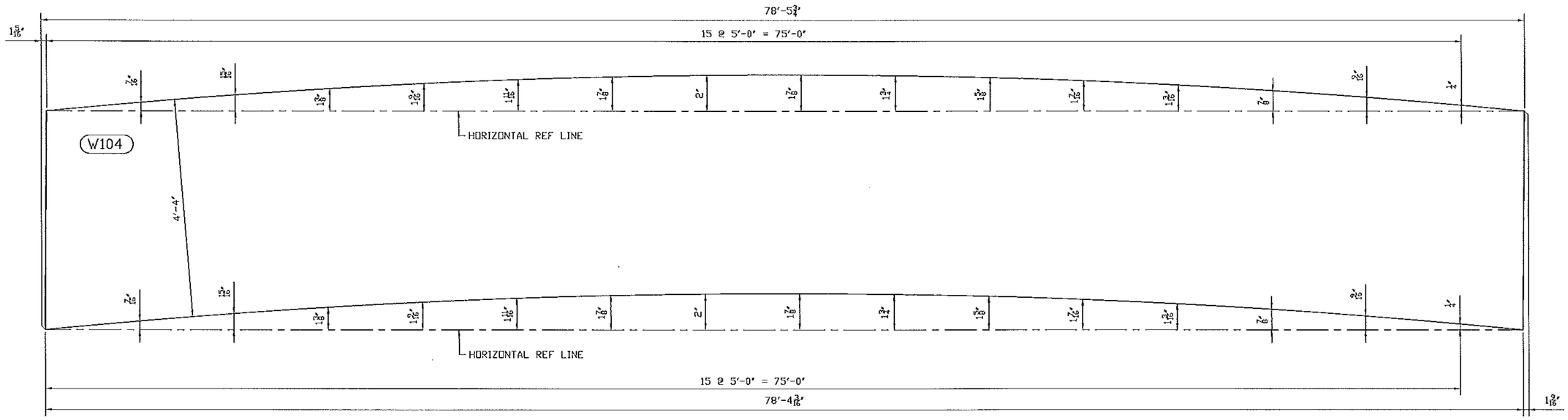
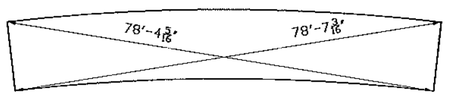


ONE WEB PLATE W104

W104 = PL 1/2"



GENERAL NOTES: SEE GN100

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
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STRUCTAL
Bridges
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a division of CANAM STEEL Corp.

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TITLE: GIRDER 104G1

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DRAWN BY	DATE	CONTRACT NO
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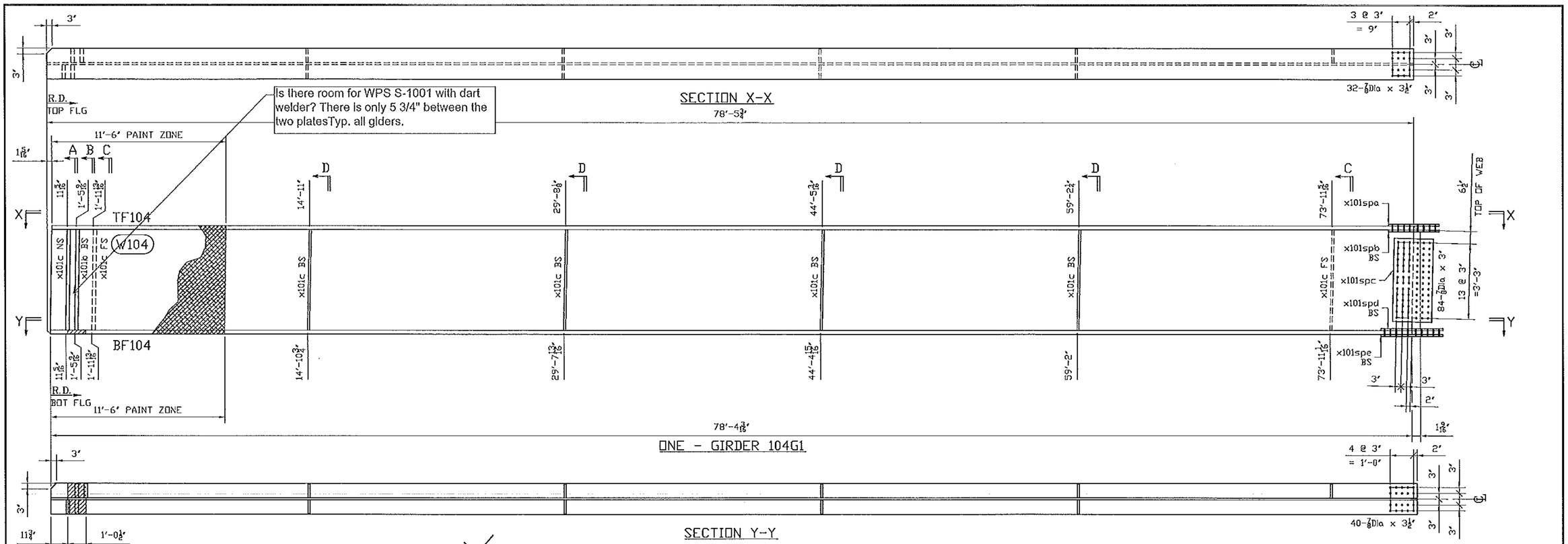
CHECKED BY	DATE	DRAWING NO
GG	JULY 2012	104-1 A



GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING AND PAINTING: SEE SHEET P100 AND P101

BILL OF MATERIAL

Mark	Qty.	Description	Stl Grd	Length	Remark	ABM	Total Weight	Seq	Qty /Seq
104G1	ONE	GIRDER				16628	16753	1	1
104G1	1	.GIRDER		78-5 3/4					
TF104	1	PL1x16	A70950W12	78-4 7/16		100-1	4267		
W104	1	PL1/2x52	A70950W12	78-5 3/4		100-2	6943		
BF104	1	PL1x16	A70950W12	78-4 3/16		100-1	4266		
x101b	2	PL7/8x7 1/2	A709050W12	4-4	MB	101-1	194		
x101g	11	PL1/2x7 1/2	A709050W12	4-4		101-2/3	608		
x101spa	1	PL1/2x16	A709050W12	2-2 1/4		102-1	60		
x101spb	2	PL1/2x7	A709050W12	2-2 1/4		102-2	52		
x101spc	2	PL1/2x43	A709050W12	8 1/4		102-3	101		
x101spd	2	PL1/2x7	A709050W12	2-8 1/4		102-4	64		
x101spe	1	PL1/2x16	A709050W12	2-8 1/4		102-5	73		
FB		FIELD_BOLTS							
78F3	84	.7/8 Dia A325 TYP3		3	1FL WASH		~~67~~		
78F312	72	.7/8 Dia A325 TYP3		3 1/2	1FL WASH		~~58~~		

See standard specification 506.24(a)(9), no payment will be made for bolts, nuts, washers, they are considered to be incidental

Vermont Agency of Transportation

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July 09, 2012

RESUBMIT APPROVED AS NOTED

BY C. CARLSON DATE 07-27-2012

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
1 WASHER UNDER HEAD U.N.

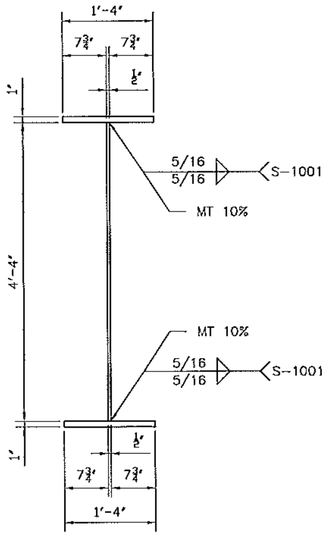
STRUCTAL Bridges
386 River Road, Claremont, NH 03743
Tel(603) 542-5202 Fax(603) 542-5312
a division of CANAM Bridges Inc.

PROJECT: VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

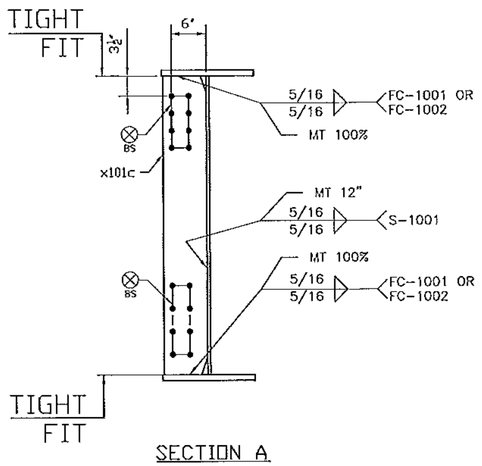
TITLE: GIRDER 104G1

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

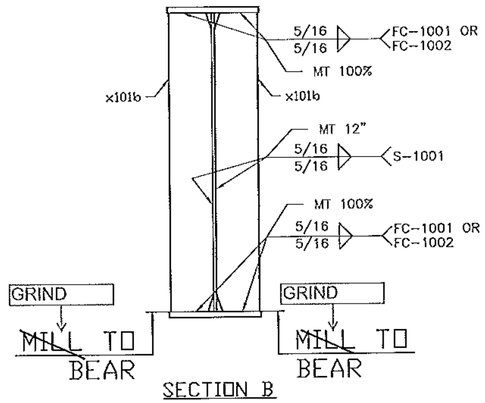
DRAWN BY	DATE	CONTRACT NO
BR	JULY 2012	UN04260
CHECKED BY	DATE	DRAWING NO
GG	JULY 2012	104-2 A



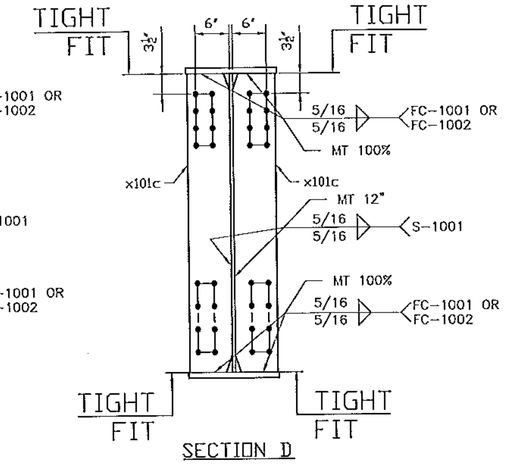
TYPICAL SECTION



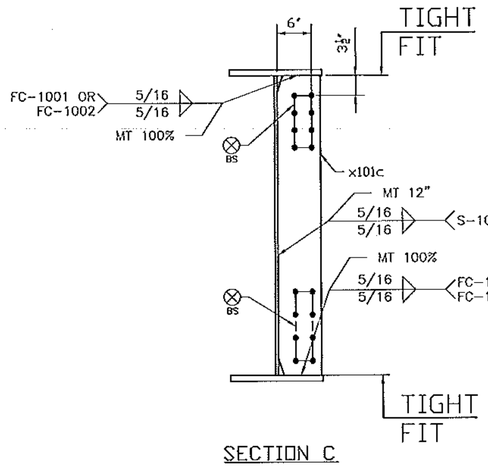
SECTION A



SECTION B



SECTION D



SECTION C

PRIMER ONLY, NO PAINT
BOTH SIDES 75 mm DIA AROUND HOLE
WHERE NOTED WITH THIS SYMBOL
(BS)

GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING AND PAINTING: SEE SHEET P100 AND P101

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
1 WASHER UNDER HEAD U.N.

Vermont Agency of Transportation
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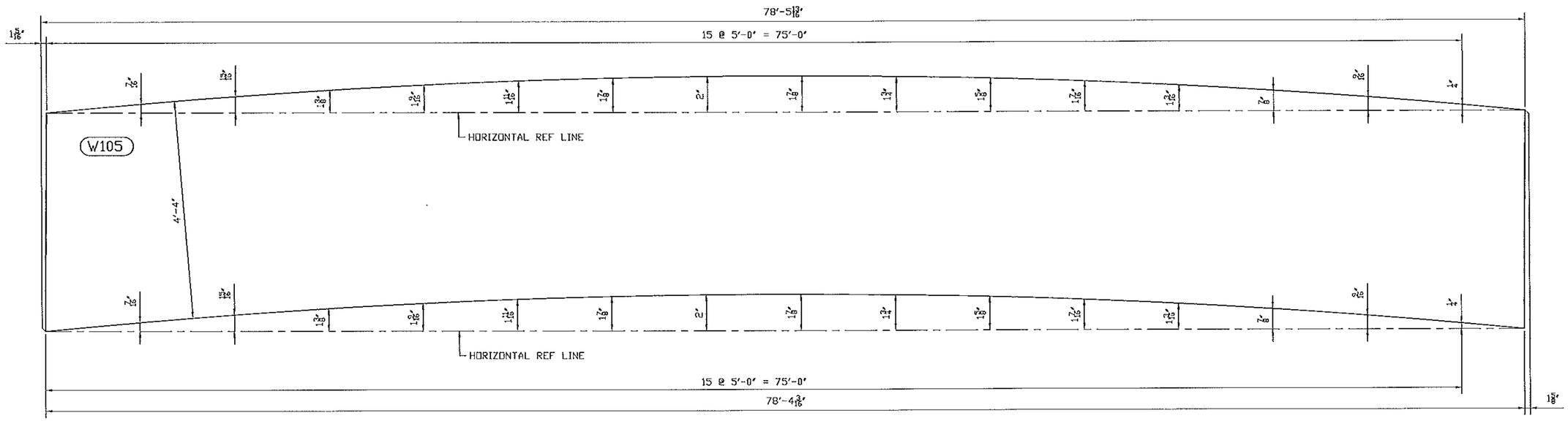
STRUCTAL Bridges
a division of CANAM
386 River Road, Clarenont, NH 03743
Tel(603) 542-5202 Fax(603) 542-5312

PROJECT: VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

TITLE: GIRDER 104G1

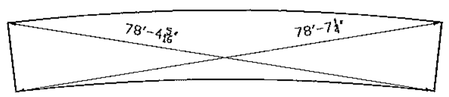
REFERENCE: PROJECT NO. ER BHF 010-1 (44)

DRAWN BY	DATE	CONTRACT ID
BR	JULY 2012	UN04260
CHECKED BY	DATE	DRAWING NO
GG	JULY 2012	104-3 A



ONE WEB PLATE W105

W105 = PL 1/2"



GENERAL NOTES: SEE GN100

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
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1 WASHER UNDER HEAD U.N.

STRUCTAL Bridges
386 River Road, Claremont, NH 03743
Tel:(603) 542-5202 Fax:(603) 542-5312
a division of CANAM STEEL Corp.

PROJECT:
VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

TITLE: GIRDER 105G1

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

DRAWN BY	DATE	CONTRACT NO
BR	JULY 2012	UN04260
CHECKED BY	DATE	DRAWING NO
GG	JULY 2012	105-1 A

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RESUBMIT ____ APPROVED ✓
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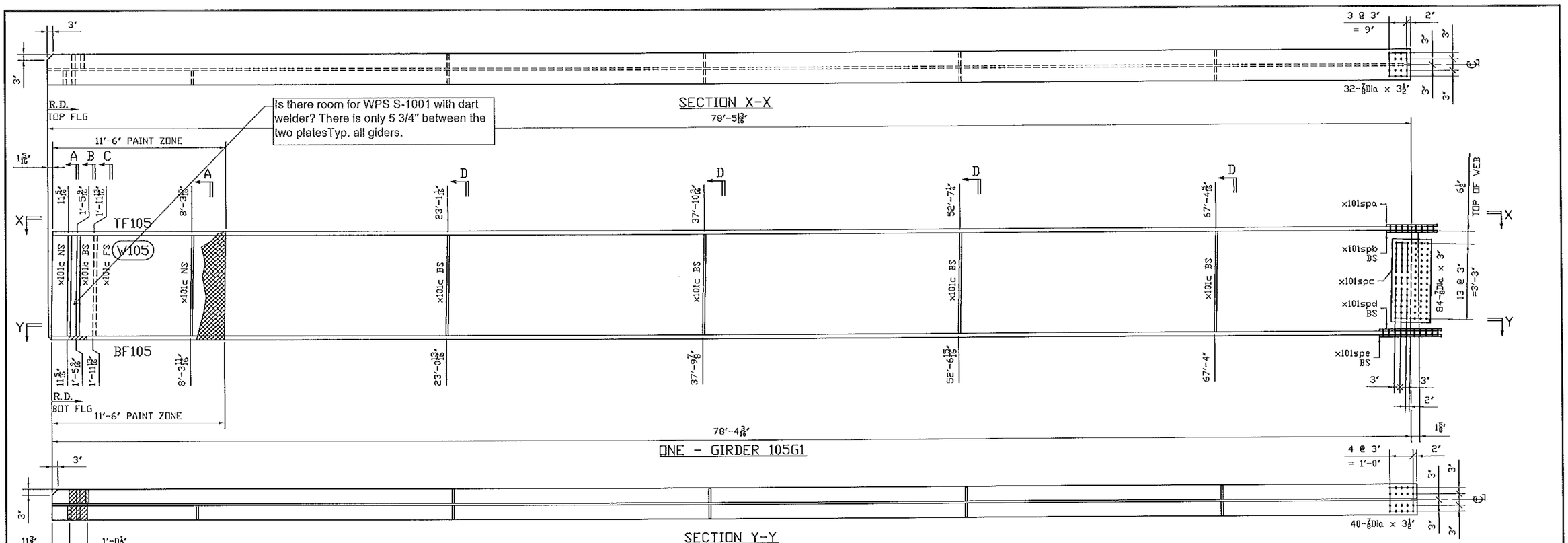

GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING AND PAINTING: SEE SHEET P100 AND P101

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

See standard specification 506.24(a)(9), no payment will be made for bolts, nuts, washers, they are considered to be incidental

BILL OF MATERIAL

Mark	Qty.	Description	Stl Grd	Length	Remark	ABM	Total Weight	Seq	Qty /Seq
105G1	ONE	GIRDER				16629	16599	1	1
105G1	1	.GIRDER		78-5 13/16					
TF105	1	PL1x16	A70950WT2	78-4 1/2		100-1	4267		
W105	1	PL1/2x52	A70950WT2	78-5 13/16		100-2	6944		
BF105	1	PL1x16	A70950WT2	78-4 3/16		100-1	4266		
x101b	2	PL7/8x7 1/2	A70950WT2	4-4	VB	101-1	194		
x101c	10	PL1/2x7 1/2	A70950WT2	4-4		101-2/3	553		
x101spa	1	PL1/2x16	A70950WT2	2-2 1/4		102-1	69		
x101spb	2	PL1/2x7	A70950WT2	2-2 1/4		102-2	52		
x101spc	2	PL1/2x43	A70950WT2	8 1/4		102-3	101		
x101spd	2	PL1/2x7	A70950WT2	2-8 1/4		102-4	64		
x101spe	1	PL1/2x16	A70950WT2	2-8 1/4		102-5	73		
FB		FIELD_BOLTS							
78F3	84	.7/8 Dia A325 TYP3		3	1FL WASH		67		
78F312	72	.7/8 Dia A325 TYP3		3 1/2	1FL WASH		58		

11

608

Vermont Agency of Transportation

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July 09, 2012

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BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
1 WASHER UNDER HEAD U.N.

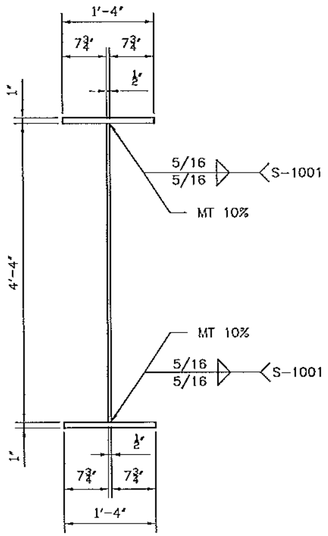
STRUCTAL Bridges
a division of CANAM GROUP INC.
386 River Road, Claremont, NH 03743
Tel(603) 542-5202 Fax(603) 542-5312

PROJECT: VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

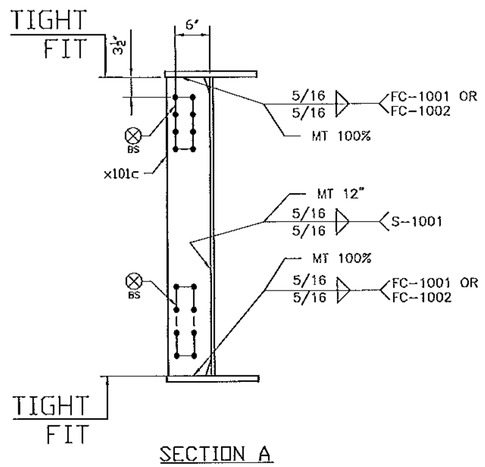
TITLE: GIRDER 105G1

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

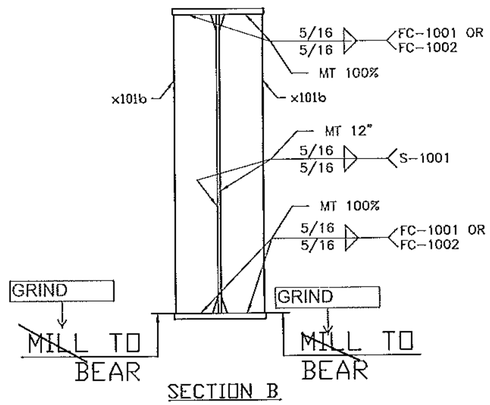
DRAWN BY	DATE	CONTRACT NO
BR	JULY 2012	UN04260
CHECKED BY	DATE	DRAWING NO
GG	JULY 2012	105-2 A



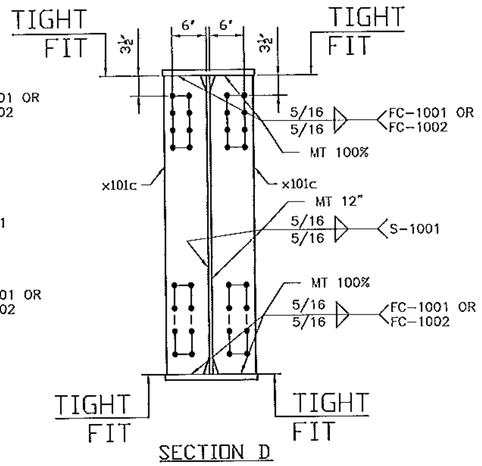
TYPICAL SECTION



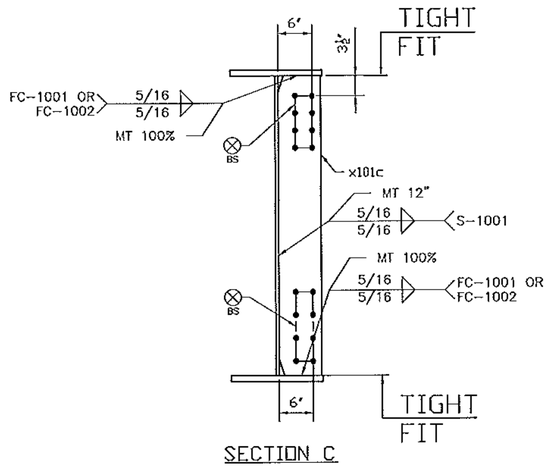
SECTION A



SECTION B



SECTION D



SECTION C

PRIMER ONLY, NO PAINT
BOTH SIDES 75 mm DIA AROUND HOLE
WHERE NOTED WITH THIS SYMBOL

(BS)

GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING
AND PAINTING: SEE SHEET P100 AND P101

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
1 WASHER UNDER HEAD U.N.

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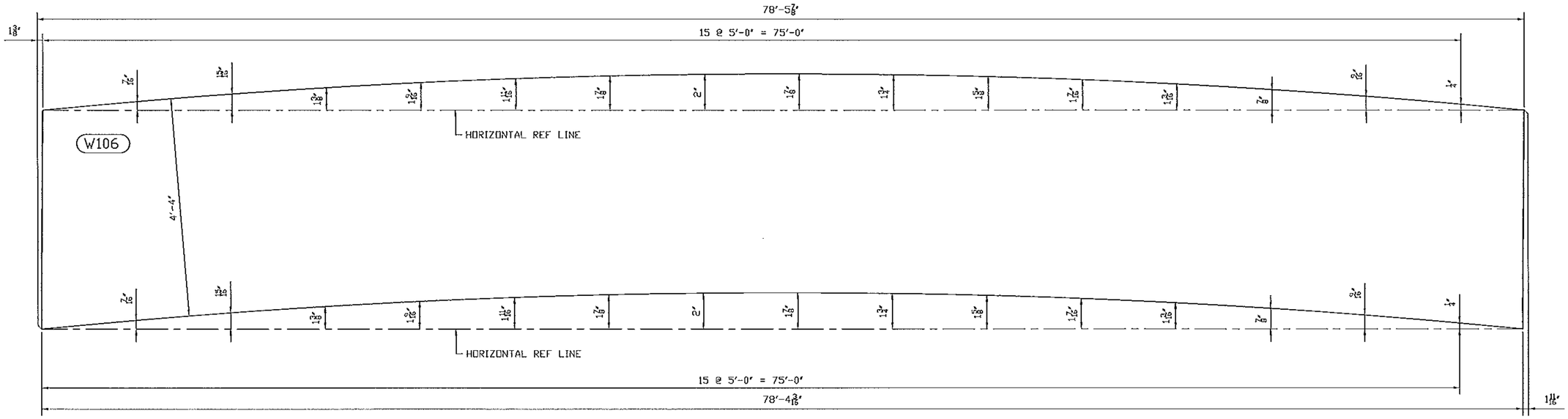
STRUCTAL
Bridges
a division of CANAM
386 River Road, Claremont, NH 03743
Tel(603) 542-5202 Fax(603) 542-5312

PROJECT:
VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

TITLE:
GIRDER 105G1

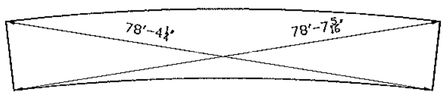
REFERENCE:
PROJECT NO. ER BHF 010-1 (44)

DRAWN BY	DATE	CONTRACT NO
BR	JULY 2012	UN04260
CHECKED BY	DATE	DRAWING NO
GG	JULY 2012	105-3 A



ONE WEB PLATE W106

W106 = PL 1/2"



GENERAL NOTES: SEE GN100

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
1 WASHER UNDER HEAD U.N.

Vermont Agency of Transportation
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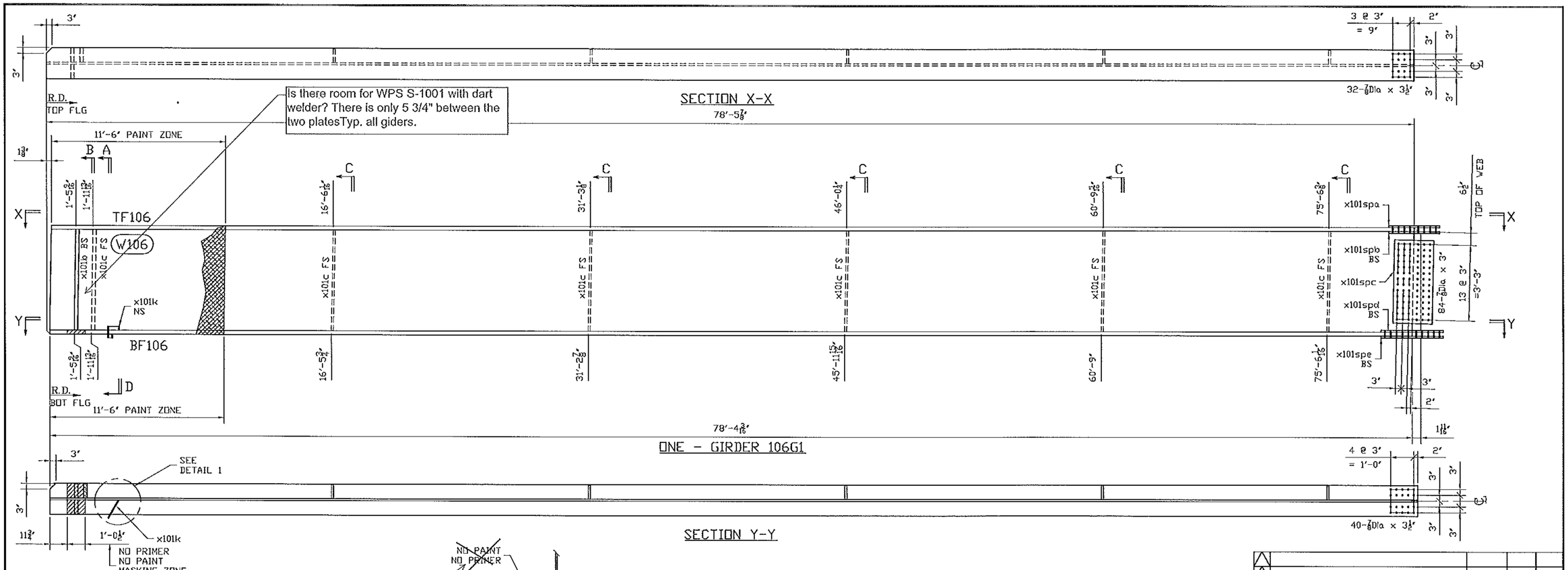
STRUCTAL Bridges
a division of CANAM STEEL Corp.
386 River Road, Claremont, NH. 03743
Tel:(603) 542-3202 Fax:(603) 542-5312

PROJECT:
VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

TITLE:
GIRDER 106G1

REFERENCE:
PROJECT NO. ER BHF 010-1 (44)

DRAWN BY:	DATE	CONTRACT NO.
BR	JULY 2012	UN04260
CHECKED BY:	DATE	DRAWING NO.
GG	JULY 2012	106-1 A



BILL OF MATERIAL

Mark	Qty.	Description	Std Grd	Length	Remark	ABM	Total Weight	Seq	Qty /Seq
106G1	ONE	GIRDER				16355	16480	1	1
106G1	1	.GIRDER		78-5 7/8					
TF106	1	PL1x16	A709 50WT2	78-4 1/2		100-1	4267		
W106	1	PL1/2x52	A709 50WT2	78-5 7/8		100-2	6944		
BF106	1	PL1x16	A709 50WT2	78-4 3/16		100-1	4266		
x101b	2	PL7/8x7 1/2	A709 50WT2	4-4	WB	101-1	194		
x101c	6	PL1/2x7 1/2	A709 50WT2	4-4		101-2/3	332		
x101k	1	PL1/4x3 1/8	A709 50WT2	11		101-4	2		
x101spa	1	PL1/2x16	A709 50WT2	2-2 1/4		102-1	60		
x101spb	2	PL1/2x7	A709 50WT2	2-2 1/4		102-2	52		
x101spc	2	PL1/2x43	A709 50WT2	8 1/4		102-3	101		
x101spd	2	PL1/2x7	A709 50WT2	2-8 1/4		102-4	64		
x101spe	1	PL1/2x16	A709 50WT2	2-8 1/4		102-5	73		
FB		FIELD_BOLTS							
78F3	84	.7/8 Dia A325 TYP3		3	1FL WASH		67		
78F312	72	.7/8 Dia A325 TYP3		3 1/2	1FL WASH		58		

GENERAL NOTES: SEE GN100

HOLES: 15/16" (U.N.)

CLEANING AND PAINTING: SEE SHEET P100 AND P101

See standard specification 506.24(a)(9), no payment will be made for bolts, nuts, washers, they are considered to be incidental

Vermont Agency of Transportation

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STRUCTAL Bridges
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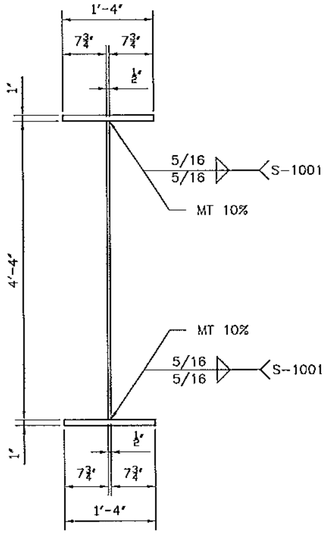
386 River Road, Claremont, NH 03743
Tel:(603) 542-5202 Fax:(603) 542-5312

PROJECT:
VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

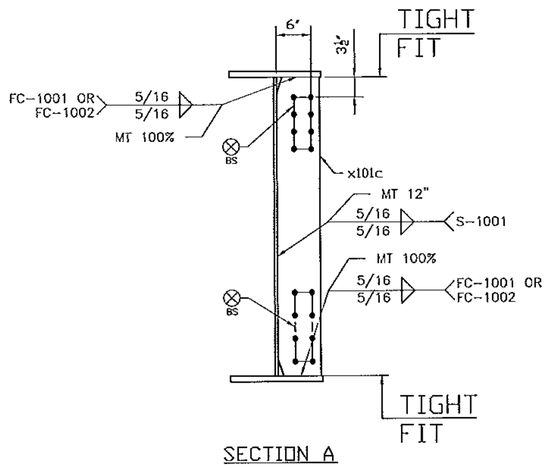
TITLE: GIRDER 106G1

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

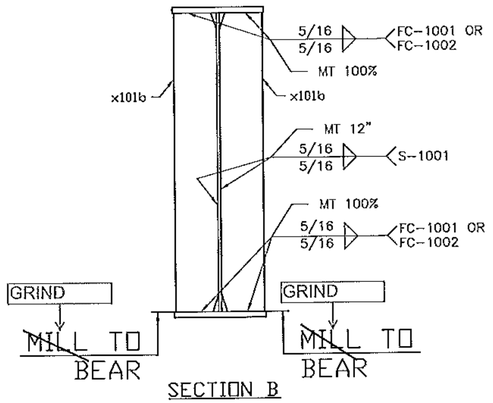
DRAWN BY	DATE	CONTRACT NO	DRAWING NO
BR	JULY 2012	UN04260	106-2 A
CHECKED BY GG	JULY 2012		



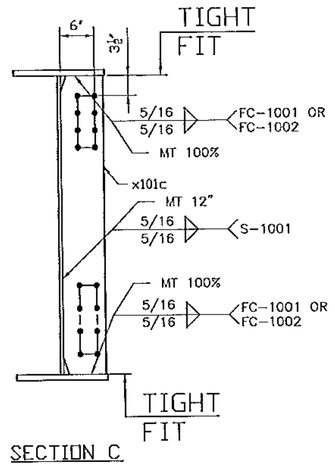
TYPICAL SECTION



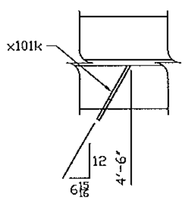
SECTION A



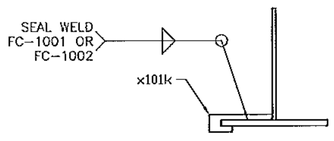
SECTION B



SECTION C



DETAIL 1



SECTION D

PRIMER ONLY, NO PAINT
BOTH SIDES 75 mm DIA AROUND HOLE
WHERE NOTED WITH THIS SYMBOL
(BS)

GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING AND PAINTING: SEE SHEET P100 AND P101

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
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PROJECT: VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

TITLE: GIRDER 106G1

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

DRAWN BY	DATE	CONTRACT NO
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CHECKED BY	DATE	DRAWING NO
GG	JULY 2012	106-3 A

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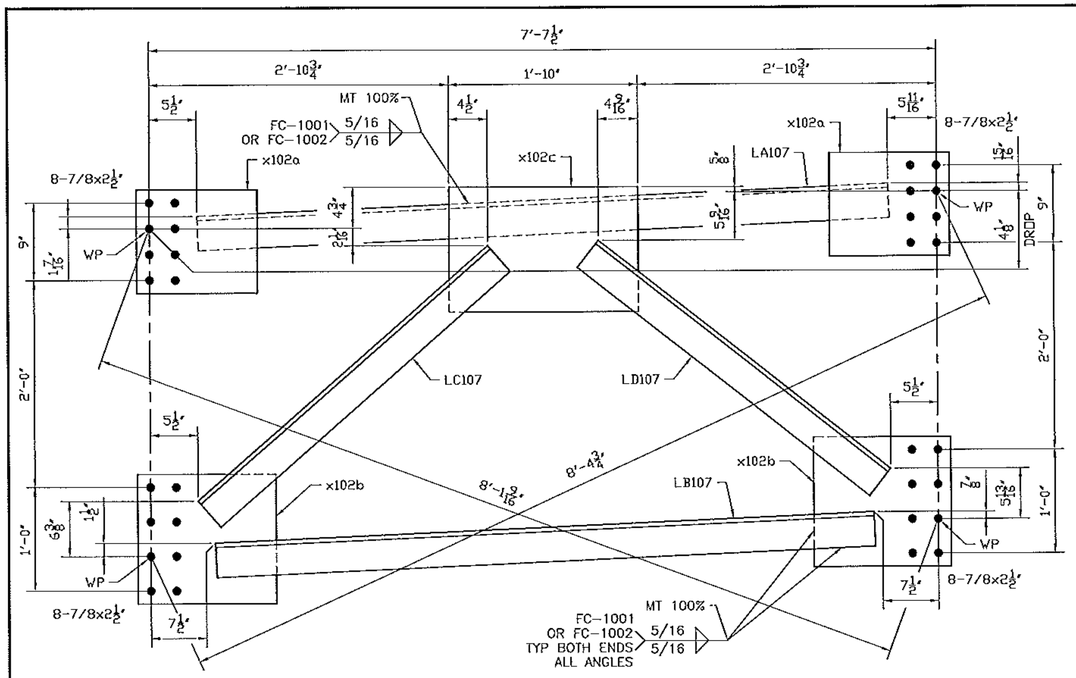
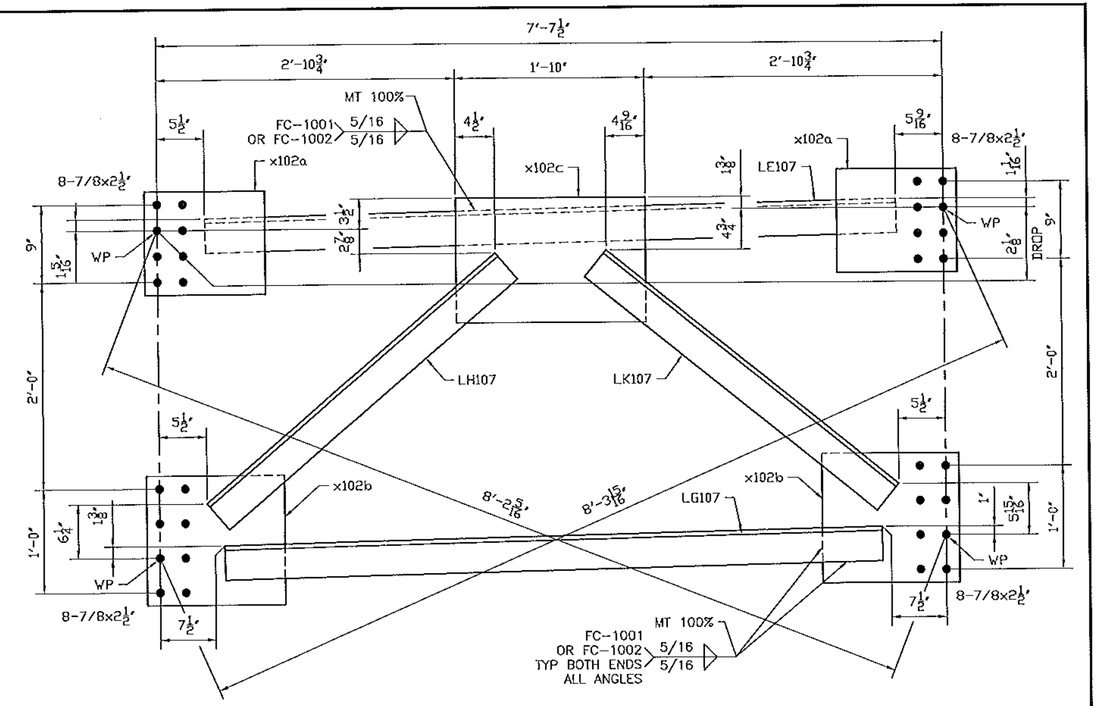
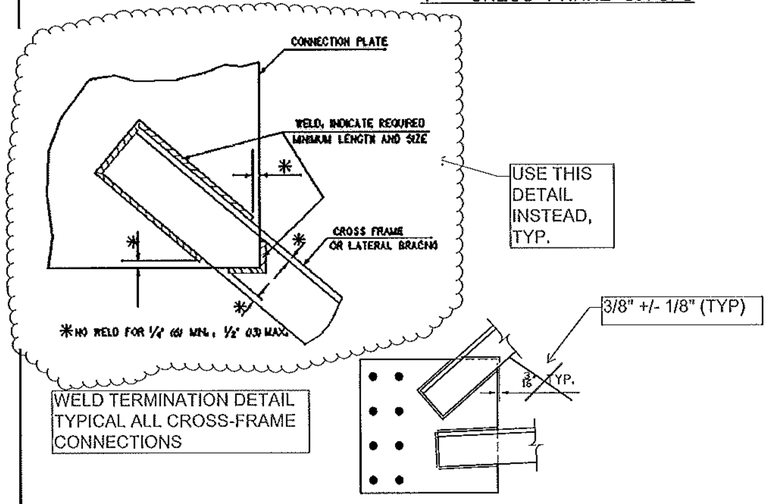


4 - CROSS FRAME 107CF1



4 - CROSS FRAME 107CF2



WELD TERMINATION DETAIL
TYPICAL ALL CROSS-FRAME CONNECTIONS

WELD TERMINATION DETAIL

BILL OF MATERIAL

Mark	Qty.	Description	Stl Grd	Length	Remark	ABM	Total Weight	Seq	Qty /Seq
107CF1	4	CROSS FRAME				1688	1790		4
107CF1	4	.CROSS FRAME		7-10 1/2					
LA107	4	L4x4x1/2	A709 50W	6-8 3/8		106-2	343		
LB107	4	L4x4x1/2	A709 50W	6-4 9/16		106-2	327		
LC107	4	L4x4x1/2	A709 50W	3-8 7/8		106-4	191		
LD107	4	L4x4x1/2	A709 50W	3-7		106-4	183		
x102a	8	PL1/2x12	A709 50W	1-2		106-6	191		
x102b	8	PL1/2x15	A709 50W	1-4		106-6	272		
x102c	4	PL1/2x14 1/2	A709 50W	1-10		106-8	181		
FB		FIELD_BOLTS							
78F212	128	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		192		
107CF2	4	CROSS FRAME				1688	1790		4
107CF2	4	.CROSS FRAME		7-10 1/2					
LE107	4	L4x4x1/2	A709 50W	6-8 7/16		106-2	343		
LG107	4	L4x4x1/2	A709 50W	6-4 1/2		106-2	326		
LH107	4	L4x4x1/2	A709 50W	3-8 7/16		106-4	190		
LK107	4	L4x4x1/2	A709 50W	3-7 7/16		106-4	185		
x102a	8	PL1/2x12	A709 50W	1-2		106-6	191		
x102b	8	PL1/2x15	A709 50W	1-4		106-6	272		
x102c	4	PL1/2x14 1/2	A709 50W	1-10		106-8	181		
FB		FIELD_BOLTS							
78F212	128	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		192		

GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING AND PAINTING: SEE SHEET P100

See standard specification 506.24(a)(9), no payment will be made for bolts, nuts, washers, they are considered to be incidental

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
1 WASHER UNDER HEAD U.N.

Vermont Agency of Transportation
RECEIVED
CK'D BY M.E.M OK'D BY C.W.M.
July 09, 2012
RESUBMIT APPROVED AS NOTED
BY C. CARLSON DATE 07-27-2012

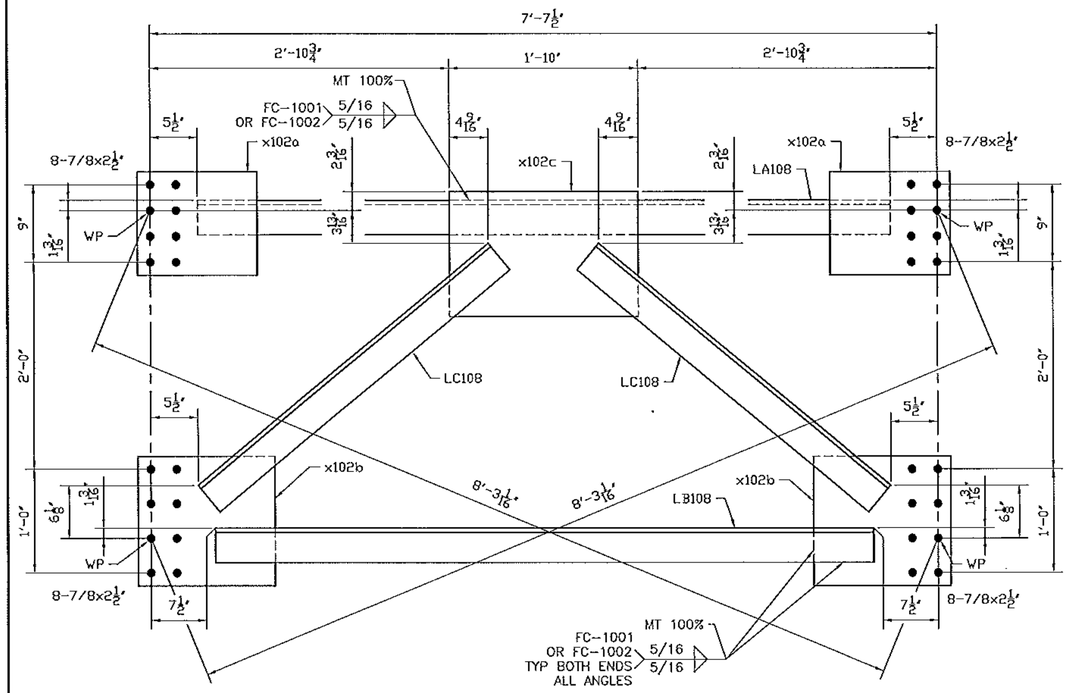
STRUCTAL Bridges
386 River Road, Claremont, NH 03743
Tel:(603) 542-5202 Fax:(603) 542-5312
a division of CANAM GROUP Inc.

PROJECT: VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

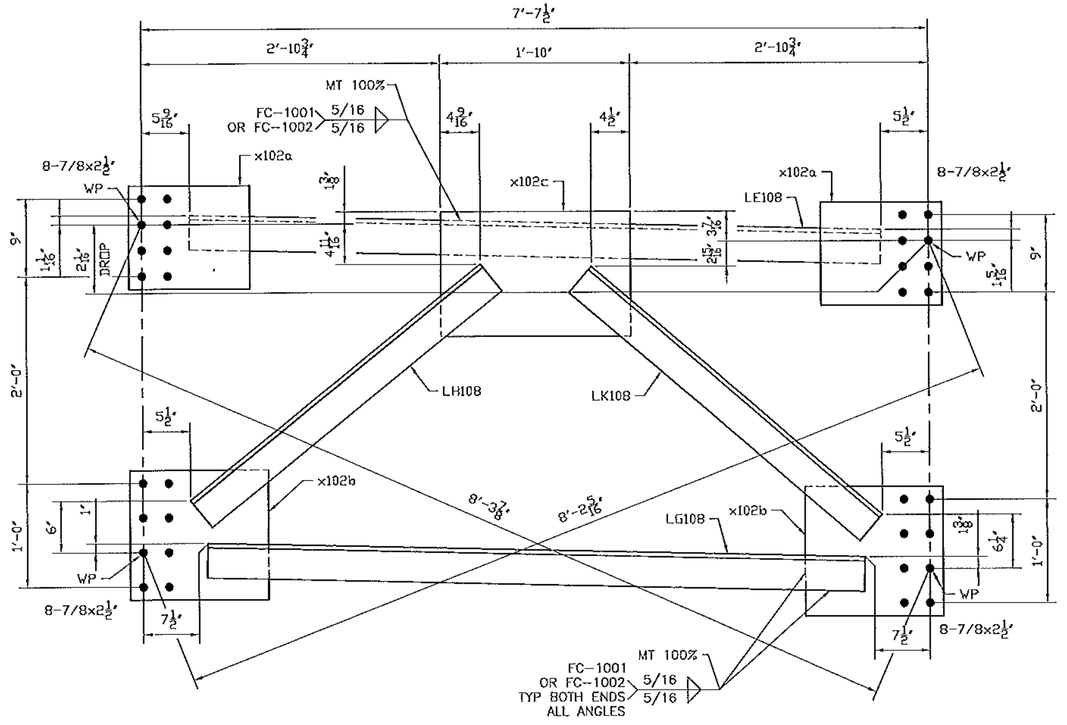
TITLE: CROSS FRAME

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

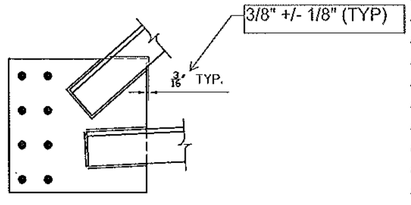
DRAWN BY	DATE	CONTRACT NO	DRAWING NO
BR	JULY 2012	UN04260	107 A
CHECKED BY GG	JULY 2012		



4 - CROSS FRAME 108CF1



4 - CROSS FRAME 108CF2



WELD TERMINATION DETAIL

BILL OF MATERIAL

Mark	Qty.	Description	Stl Grd	Length	Remark	ABM	Total Weight	Seq	Qty /Seq
108CF1	4	CROSS FRAME				1688	1789	1	4
108CF1	4	.CROSS FRAME		7-10 1/2					
LA108	4	L4x4x1/2	A70950W	6-8 1/2		106-2	343		
LB108	4	L4x4x1/2	A70950W	6-4 1/2		106-2	326		
LC108	8	L4x4x1/2	A70950W	3-7 15/16		106-4	375		
x102a	8	PL1/2x12	A70950W	1-2		106-6	191		
x102b	8	PL1/2x15	A70950W	1-4		106-6	272		
x102c	4	PL1/2x14 1/2	A70950W	1-10		106-8	181		
FB		FIELD_BOLTS							
78F212	128	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		~~192~~		
108CF2	4	CROSS FRAME				1688	1790	1	4
108CF2	4	.CROSS FRAME		7-10 1/2					
LE108	4	L4x4x1/2	A70950W	6-8 7/16		106-2	343		
LG108	4	L4x4x1/2	A70950W	6-4 1/2		106-2	326		
LH108	4	L4x4x1/2	A70950W	3-7 1/2		106-4	186		
LK108	4	L4x4x1/2	A70950W	3-8 3/8		106-4	189		
x102a	8	PL1/2x12	A70950W	1-2		106-6	191		
x102b	8	PL1/2x15	A70950W	1-4		106-6	272		
x102c	4	PL1/2x14 1/2	A70950W	1-10		106-8	181		
FB		FIELD_BOLTS							
78F212	128	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		~~192~~		

GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING AND PAINTING: SEE SHEET P100

See standard specification 506.24(a)(9), no payment will be made for bolts, nuts, washers, they are considered to be incidental

Vermont Agency of Transportation

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CK'D BY M.E.M OK'D BY C.W.M.

July 09, 2012

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BY C. CARLSON DATE 07-27-2012

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

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BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
1 WASHER UNDER HEAD U.N.

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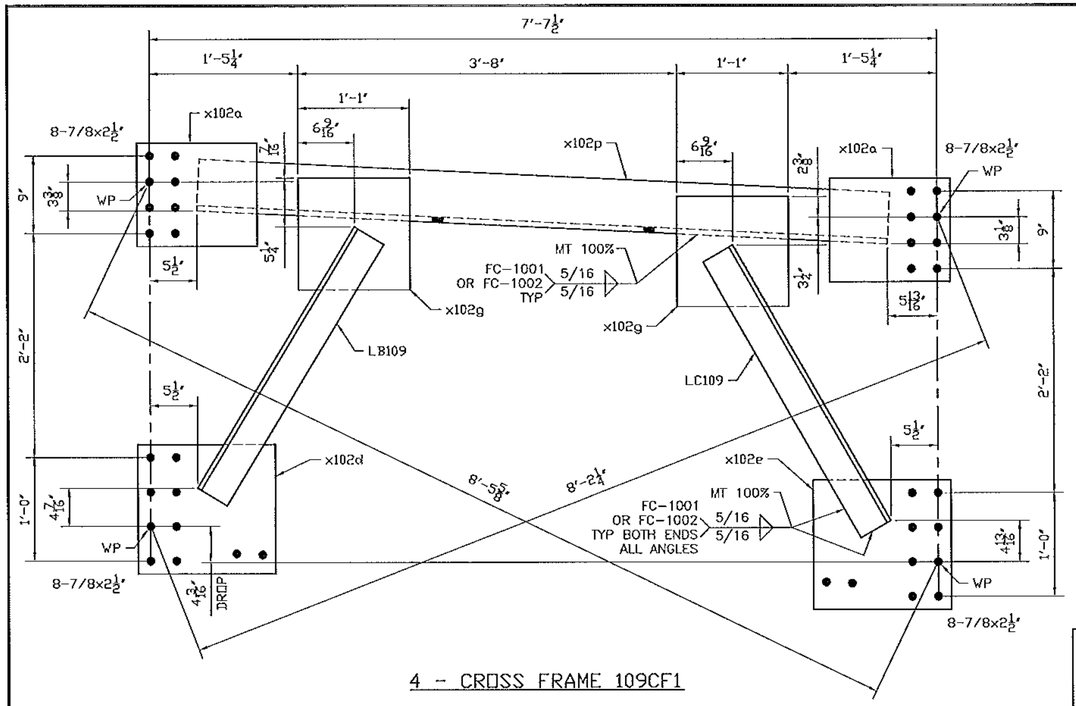
a division of CANAM Group Inc.

PROJECT
VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

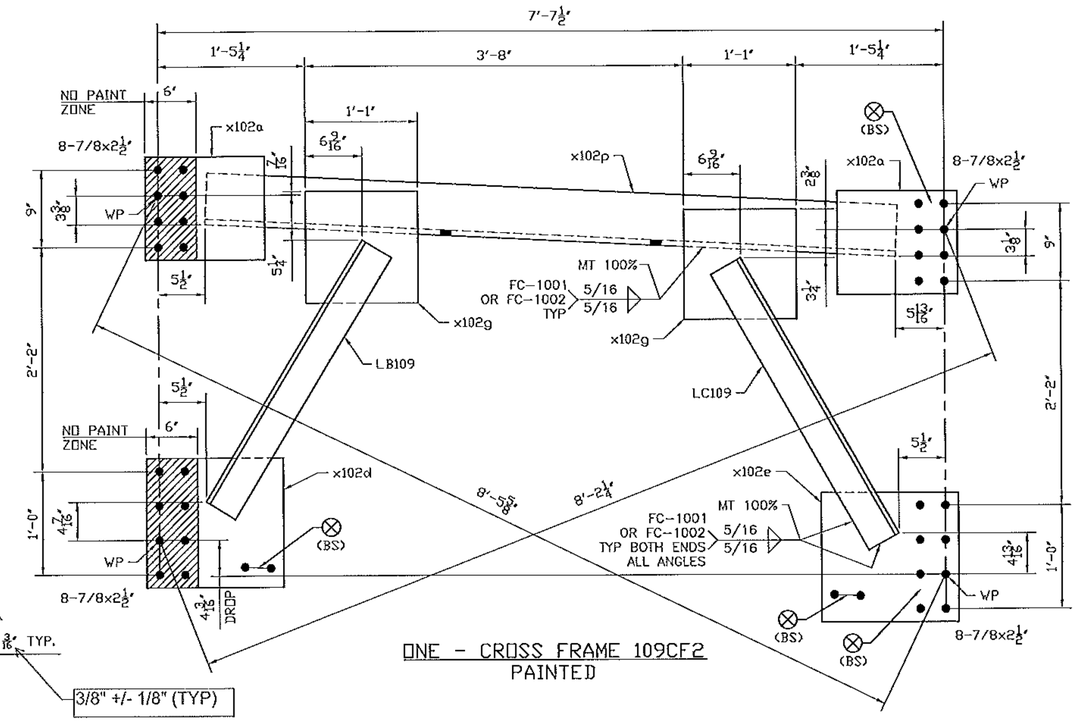
TITLE
CROSS FRAME

REFERENCE
PROJECT NO. ER BHF 010-1 (44)

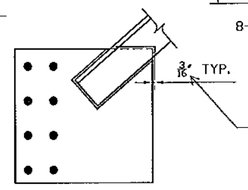
DRAWN BY	DATE	CONTRACT NO.
BR	JULY 2012	UN04260
CHECKED BY	DATE	DRAWING NO.
GG	JULY 2012	108 A



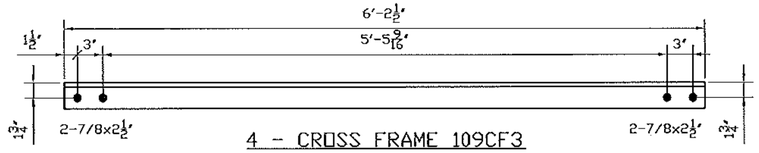
4 - CROSS FRAME 109CF1



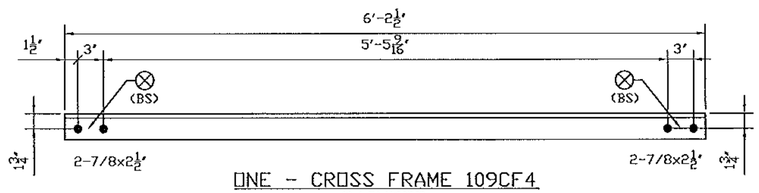
ONE - CROSS FRAME 109CF2
PAINTED



WELD TERMINATION DETAIL



4 - CROSS FRAME 109CF3



ONE - CROSS FRAME 109CF4
PAINTED

BILL OF MATERIAL

Mark	Qty.	Description	Stl Grd	Length	Remark	ABM	Total Weight	Seq	Qty /Seq
109CF3	4	CROSS FRAME					246	1	4
109CF3	4	L3x3x1/2	A709 50W	6-2 1/2		105-4	233		
FB		FIELD_BOLTS							
78F212	16	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		13		
109CF4	ONE	CROSS FRAME					61	1	1
109CF4	1	L3x3x1/2	A709 50W	6-2 1/2	PAINT	105-3	58		
FB		FIELD_BOLTS							
78F212	4	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		3		

1

BILL OF MATERIAL

Mark	Qty.	Description	Stl Grd	Length	Remark	ABM	Total Weight	Seq	Qty /Seq
109CF1	4	CROSS FRAME				1611	1713	1	4
109CF1	4	.CROSS FRAME		7-10 1/2					
LB109	4	L4x4x1/2	A709 50W	2-11 3/8		105-6	151		
LC109	4	L4x4x1/2	A709 50W	3-0 13/16		105-6	157		
x102a	8	PL1/2x12	A709 50W	1-2		105-8	191		
x102d	4	PL1/2x15	A709 50W	1-4		105-8	136		
x102e	4	PL1/2x15	A709 50W	1-4		105-8	136		
x102g	8	PL1/2x13	A709 50W	1-1		105-10	192		
x102p	4	L6x6x5/8	A709 50W	6-8 5/16		105-2	648		
FB		FIELD_BOLTS							
78F212	128	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		100		
109CF1	ONE	CROSS FRAME				403	429	1	1
109CF1	1	.CROSS FRAME		7-10 1/2	PAINT				
LB109	1	L4x4x1/2	A709 50W	2-11 3/8		105-5	38		
LC109	1	L4x4x1/2	A709 50W	3-0 13/16		105-5	39		
x102a	2	PL1/2x12	A709 50W	1-2		105-7	48		
x102d	1	PL1/2x15	A709 50W	1-4		105-7	34		
x102e	1	PL1/2x15	A709 50W	1-4		105-7	34		
x102g	2	PL1/2x13	A709 50W	1-1		105-9	48		
x102p	4	L6x6x5/8	A709 50W	6-8 5/16	162	105-2	648		
FB		FIELD_BOLTS							
78F212	32	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		26		

GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING AND PAINTING: SEE SHEET P100 AND P101

See standard specification 506.24(a)(9), no payment will be made for bolts, nuts, washers, they are considered to be incidental

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
1 WASHER UNDER HEAD U.N.

STRUCTAL Bridges
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386 River Road, Claremont, NH 03743
Tel(603) 542-5202 Fax(603) 542-5312

Vermont Agency of Transportation
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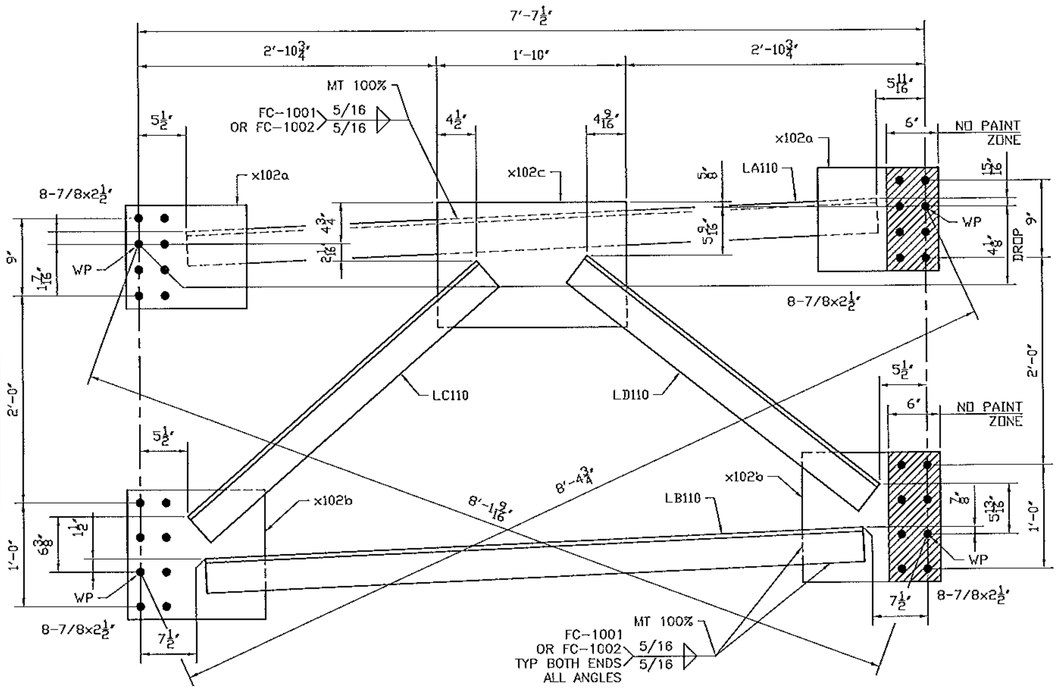
CK'D BY M.E.M OK'D BY C.W.M.
July 09, 2012
RESUBMIT APPROVED AS NOTED
BY C. CARLSON DATE 07-27-2012

PROJECT: VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

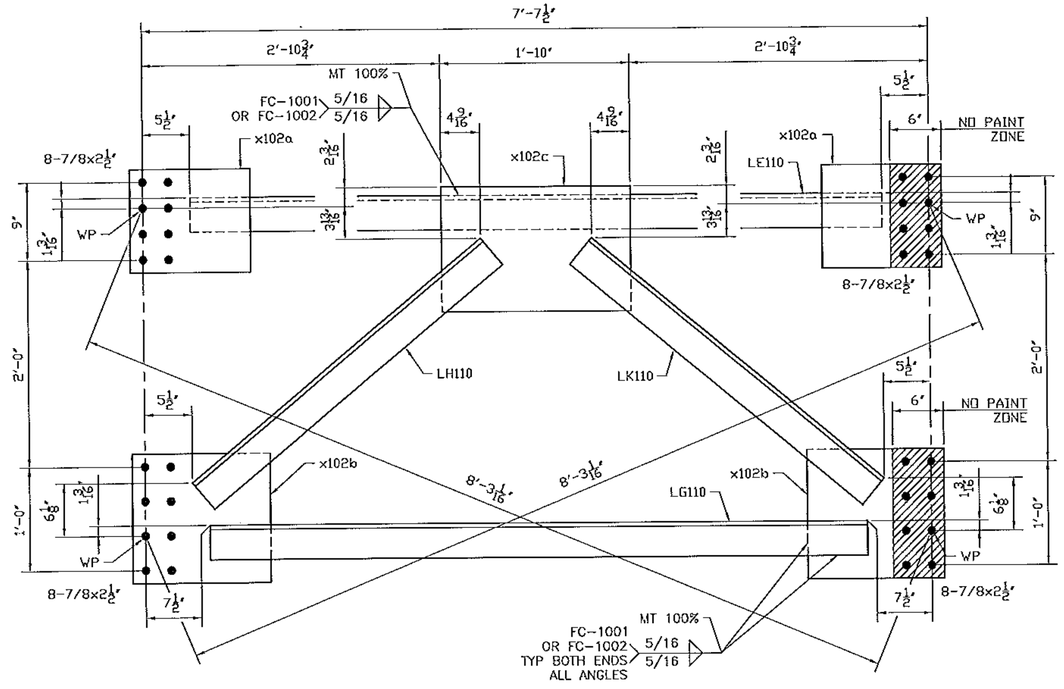
TITLE: CROSS FRAME AT WATERLINE

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

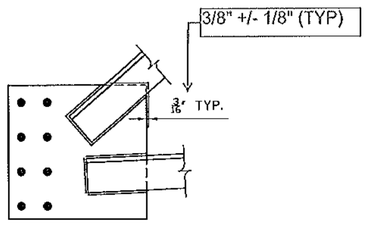
DRAWN BY	DATE	CONTRACT NO.
BR	JULY 2012	UN04260
CHECKED BY	DATE	DRAWING NO.
GG	JULY 2012	109 A



ONE - CROSS FRAME 110CF1
PAINTED



ONE - CROSS FRAME 110CF2
PAINTED



WELD TERMINATION DETAIL

BILL OF MATERIAL

Mark	Qty.	Description	Stl Grd	Length	Remark	ABM	Total Weight	Seq	Qty /Seq
110CF1	ONE	CROSS FRAME				423	449	1	1
110CF1	1	.CROSS FRAME		7-10 1/2	PAINT				
LA110	1	L4x4x1/2	A709 50W	6-8 3/8		105-1	86		
LB110	1	L4x4x1/2	A709 50W	6-4 9/16		105-5	82		
LC110	1	L4x4x1/2	A709 50W	3-8 7/8		105-5	48		
LD110	1	L4x4x1/2	A709 50W	3-7		105-7	46		
x102a	2	PL1/2x12	A709 50W	1-2		105-7	48		
x102b	2	PL1/2x15	A709 50W	1-4		105-7	68		
x102c	1	PL1/2x14 1/2	A709 50W	1-10		105-9	45		
FB		FIELD_BOLTS							
78F212	32	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		26		
110CF2	ONE	CROSS FRAME				423	449	1	1
110CF2	1	.CROSS FRAME		7-10 1/2	PAINT				
LE110	1	L4x4x1/2	A709 50W	6-8 1/2		105-1	86		
LG110	1	L4x4x1/2	A709 50W	6-4 1/2		105-5	82		
LH110	1	L4x4x1/2	A709 50W	3-7 15/16		105-5	47		
LK110	1	L4x4x1/2	A709 50W	3-7 15/16		105-7	47		
x102a	2	PL1/2x12	A709 50W	1-2		105-7	48		
x102b	2	PL1/2x15	A709 50W	1-4		105-7	68		
x102c	1	PL1/2x14 1/2	A709 50W	1-10		105-9	45		
FB		FIELD_BOLTS							
78F212	32	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		26		

GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING AND PAINTING: SEE SHEET P100 AND P101

See standard specification 506.24(a)(9), no payment will be made for bolts, nuts, washers, they are considered to be incidental

Vermont Agency of Transportation
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BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
1 WASHER UNDER HEAD U.N.

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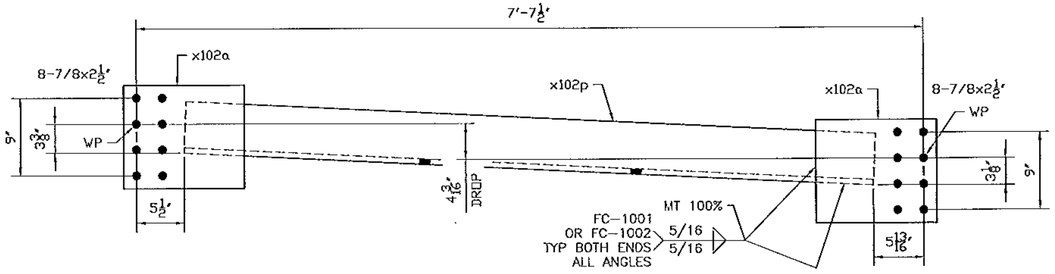
PROJECT:
VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

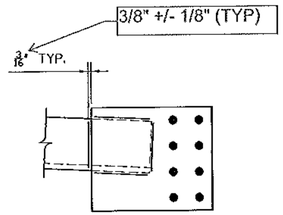
TITLE: CROSS FRAME

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

DRAWN BY	DATE	CONTRACT NO
BR	JULY 2012	UN04260
CHECKED BY	DATE	DRAWING NO
GG	JULY 2012	110 A



5 - INTERMEDIATE SUPPORT 111CF1



WELD TERMINATION DETAIL

GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING AND PAINTING: SEE SHEET P100 AND P101

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

BILL OF MATERIAL

Mark	Qty.	Description	SU Grd	Length	Remark	ABM	Total Weight	Seq	Qty /Seq
111CF1	5	INTERMEDATE SUPPORT				1048	1112	1	5
111CF1	5	INTERMEDATE SUPPORT		7-10 1/2					
x102a	10	PL1/2x12	A709 50W	1-2		107-2	238		
x102p	5	L6x6x5/8	A709 50W	6-8 5/16		107-1	810		
FB		FIELD BOLTS							
78F212	80	7/8 Dia A325 TYP3		2 1/2	1FL WASH				

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Vermont Agency of Transportation

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1 WASHER UNDER HEAD U.N.

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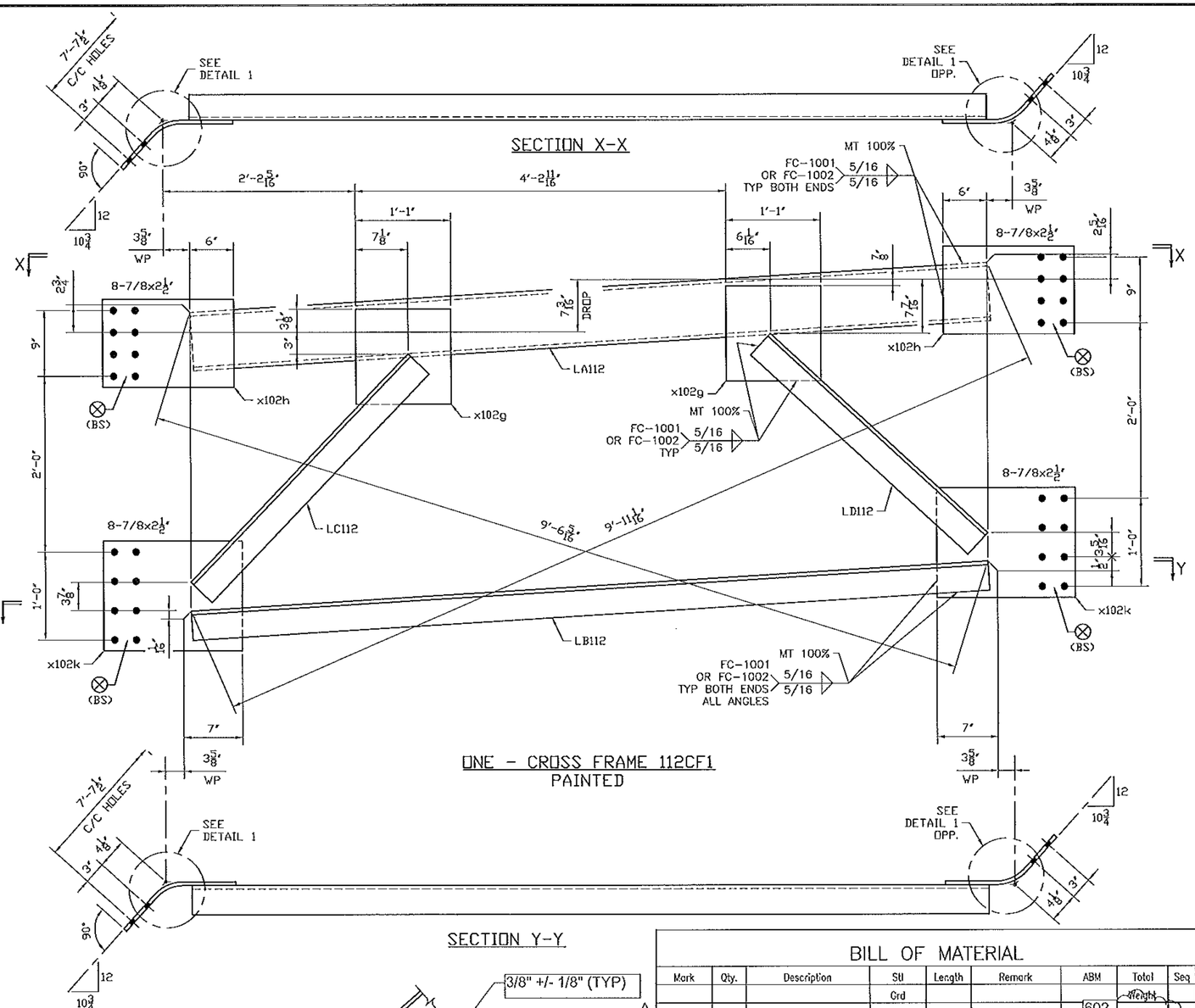
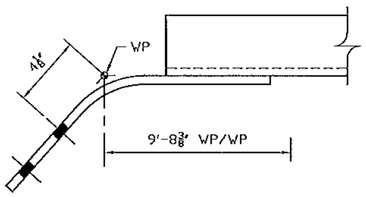
PROJECT: VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

TITLE: INTERMEDATE SUPPORT AT WATERLINE

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

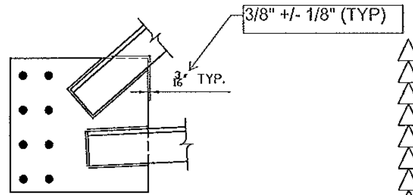
DRAWN BY	DATE	CONTRACT ID
BR	JULY 2012	UN04260
CHECKED BY	DATE	DRAWING ID
GG	JULY 2012	111 A





DETAIL 1

SECTION Y-Y



WELD TERMINATION DETAIL

BILL OF MATERIAL

Mark	Qty.	Description	Std Grd	Length	Remark	ABM	Total Weight	Seq	Qty /Seq
112CF1	ONE	CROSS FRAME				602	628	1	1
112CF1	1	.CROSS FRAME		10-7 7/8	PAINT				
LA112	1	MC8x22.8	A70950W	9-1 3/8		104-1	208		
LB112	1	L4x4x1/2	A70950W	9-1 3/8		104-2	117		
LC112	1	L4x4x1/2	A70950W	3-7 3/16		104-3	46		
LD112	1	L4x4x1/2	A70950W	3-4 1/4		104-3	43		
x102g	2	PL1/2x13	A70950W	1-1		104-5	48		
x102h	2	PL1/2x12	A70950W	1-5 3/4	BENT	104-4	60		
x102k	2	PL1/2x15	A70950W	1-6 3/4	BENT	104-4	80		
FB		FIELD_BOLTS							
78F212	32	.7/8 Dia A325 TYP3		2 1/2	FL WASH		36		

GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING AND PAINTING: SEE SHEET P100 AND P101

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Vermont Agency of Transportation

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CK'D BY M.E.M OK'D BY C.W.M.

July 09, 2012

RESUBMIT APPROVED AS NOTED

BY C. CARLSON DATE 07-27-2012

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
1 WASHER UNDER HEAD U.N.

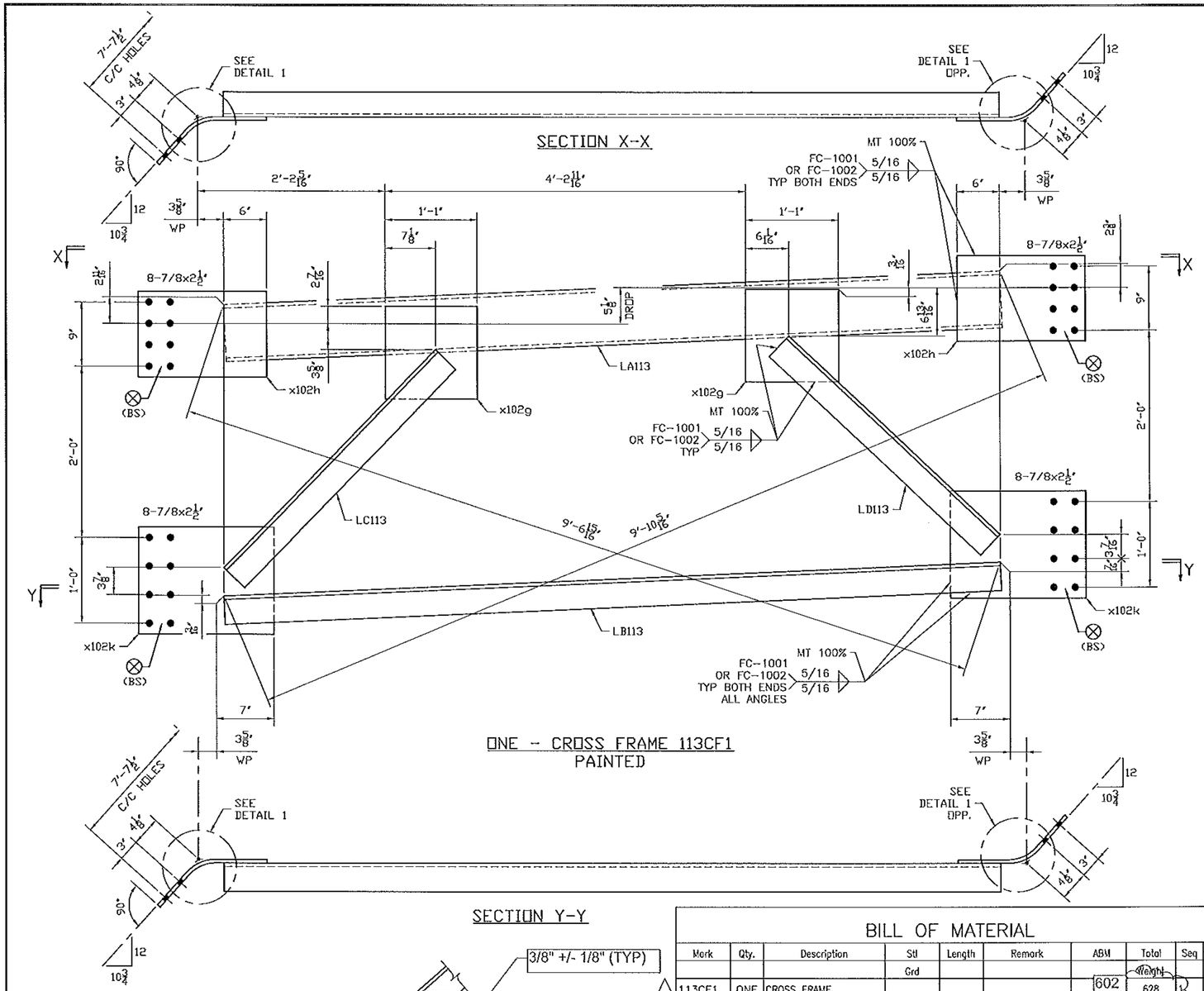
STRUCTAL Bridges
a division of CANAM GROUP Inc.
386 River Road, Claremont, NH. 03743
Tel(603) 542-5202 Fax(603) 542-5312

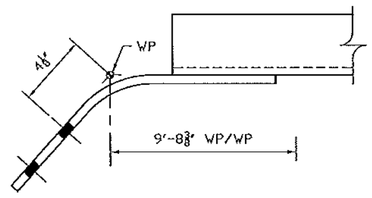
PROJECT:
VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

TITLE: ABUTMENT CROSS FRAME

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

DRAWN BY	DATE	CONTRACT NO
BR	JULY 2012	UN04260
CHECKED BY	DATE	DRAWING NO
GG	JULY 2012	112 A





DETAIL 1

GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING AND PAINTING: SEE SHEET P100 AND P101

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

See standard specification 506.24(a)(9), no payment will be made for bolts, nuts, washers, they are considered to be incidental

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
1 WASHER UNDER HEAD U.N.

BILL OF MATERIAL

Mark	Qty.	Description	Stl Grd	Length	Remark	ABM	Total Weight	Seq	Qty /Seq
						602	628	1	1
113CF1	ONE	CROSS FRAME							
113CF1	1	.CROSS FRAME		10-7 7/8	PAINT				
LA113	1	MC8x22.8	A709 50W	9-1 1/4		104-1	208		
LB113	1	L4x4x1/2	A709 50W	9-1 1/4		104-2	117		
LC113	1	L4x4x1/2	A709 50W	3-6 3/4		104-3	46		
LD113	1	L4x4x1/2	A709 50W	3-4 5/8		104-3	43		
x102g	2	PL1/2x13	A709 50W	1-1		104-5	48		
x102h	2	PL1/2x12	A709 50W	1-5 3/4	BENT	104-4	60		
x102k	2	PL1/2x15	A709 50W	1-6 3/4	BENT	104-4	80		
FB		FIELD_BOLTS							
78F212	32	.7/8 Dia A325 TYP3		2 1/2	FL WASH		~~32~~		

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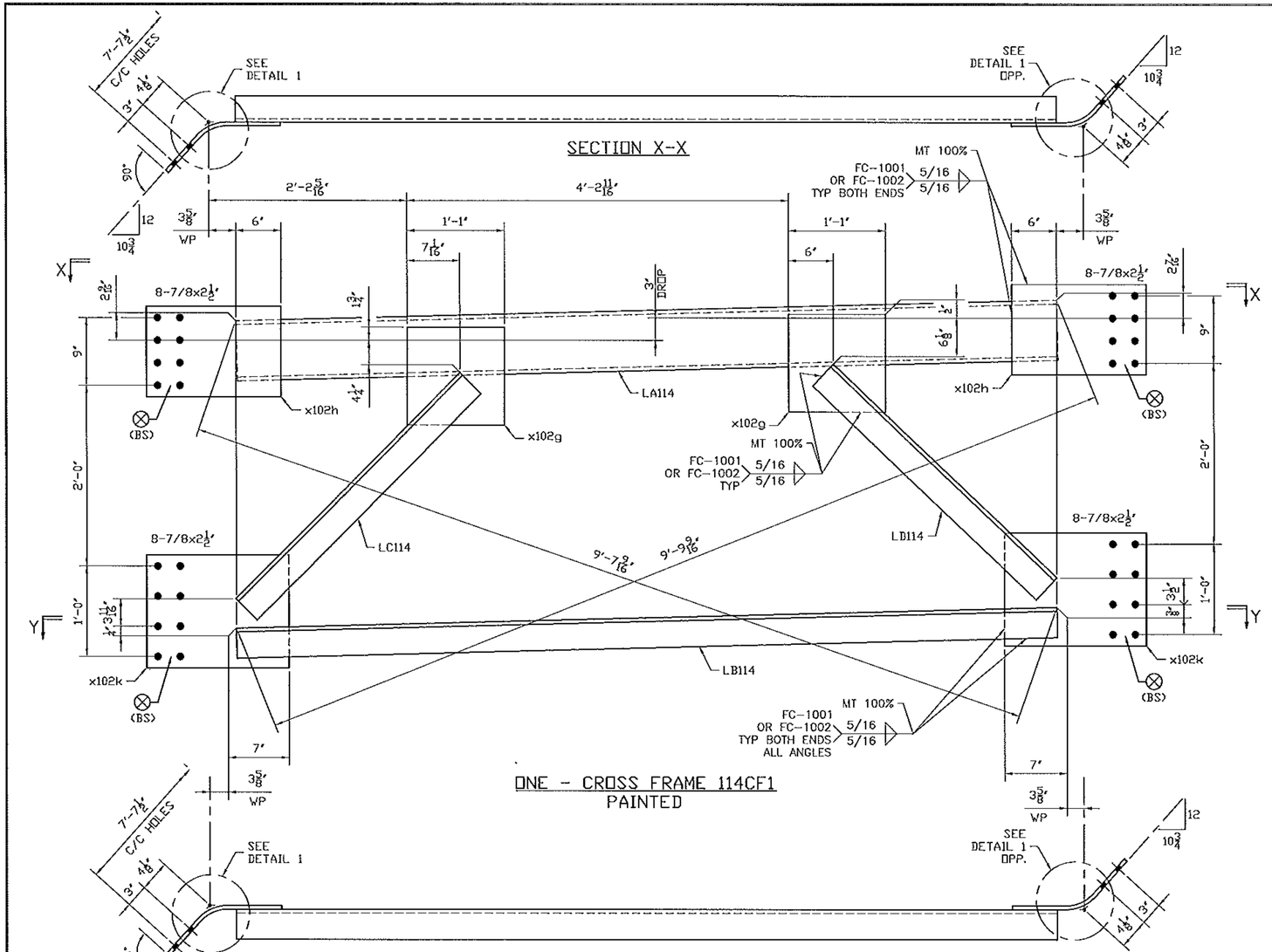
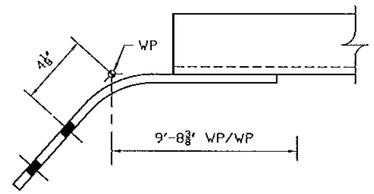
PROJECT:
VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

TITLE:
ABUTMENT CROSS FRAME

REFERENCE:
PROJECT NO. ER BHF 010-1 (44)

DRAWN BY	DATE	CONTRACT NO	DRAWING NO
BR	JULY 2012	UN04260	113 A
CHECKED BY	DATE		
GG	JULY 2012		





DETAIL 1

GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING AND PAINTING: SEE SHEET P100 AND P101

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

See standard specification 506.24(a)(9), no payment will be made for bolts, nuts, washers, they are considered to be incidental

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
1 WASHER UNDER HEAD U.N.

BILL OF MATERIAL

Mark	Qty.	Description	Std Grd	Length	Remark	ABM	Total Weight	Seq	Qty /Seq
114CF1	ONE	CROSS FRAME					626 lb (600)		1
114CF1	1	.CROSS FRAME		10-7 7/8	PAINT				
LA114	1	MC8x22.8	A70950W	9-1 3/16		104-1	207		
LB114	1	L4x4x1/2	A70950W	9-1 3/16		104-2	116		
LC114	1	L4x4x1/2	A70950W	3-6 3/8		104-3	45		
LD114	1	L4x4x1/2	A70950W	3-5 1/16		104-3	44		
x102g	2	PL1/2x13	A70950W	1-1		104-5	48		
x102h	2	PL1/2x12	A70950W	1-5 3/4	BENT	104-4	60		
x102k	2	PL1/2x15	A70950W	1-6 3/4	BENT	104-4	80		
FB		FIELD_BOLTS							
78F212	32	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		28		

Vermont Agency of Transportation

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a division of CANAM
386 River Road, Claremont, NH 03743
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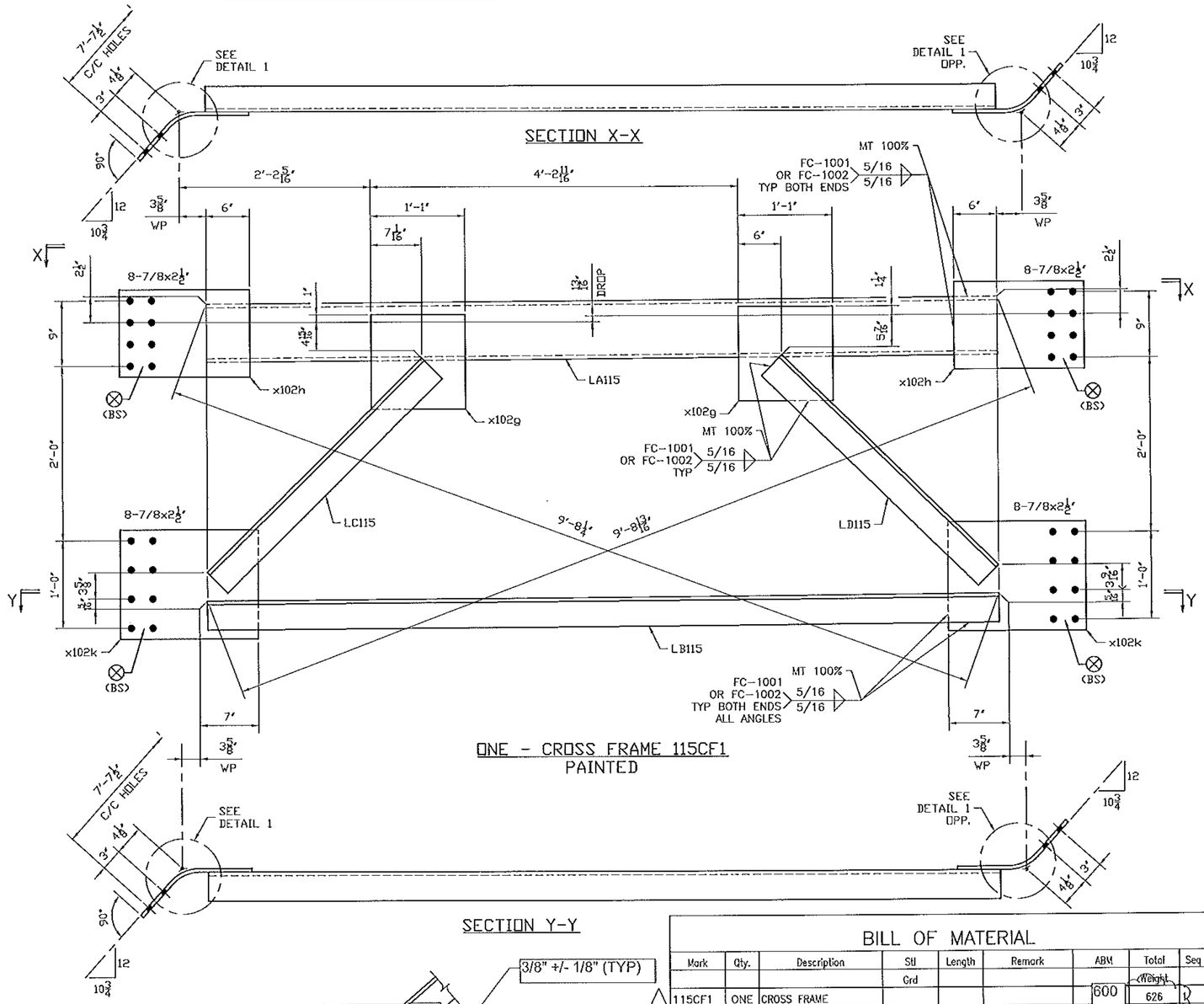
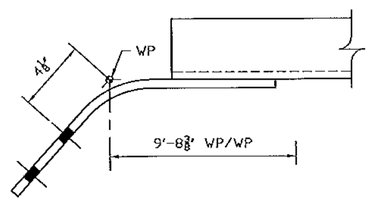
PROJECT:
VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

TITLE:
ABUTMENT CROSS FRAME

REFERENCE:
PROJECT NO. ER BHF 010-1 (44)

DRAWN BY	DATE	CONTRACT NO
BR	JULY 2012	UN04260
CHECKED BY	DATE	DRAWING NO
GG	JULY 2012	114 A





DETAIL 1

GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING AND PAINTING: SEE SHEET P100 AND P101

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

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BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
1 WASHER UNDER HEAD U.N.

BILL OF MATERIAL

Mark	Qty.	Description	Std Grd	Length	Remark	ABM	Total Weight	Seq	Qty /Seq
115CF1	ONE	CROSS FRAME				600	626 lb		1
115CF1	1	CROSS FRAME		10-7 7/8	PAINT				
LA115	1	MC8x22.8	A70950W	9-1 1/8		104-1	207		
LB115	1	L4x4x1/2	A70950W	9-1 1/8		104-2	116		
LC115	1	L4x4x1/2	A70950W	3-5 13/16		104-3	45		
LD115	1	L4x4x1/2	A70950W	3-5 1/2		104-3	44		
x102g	2	PL1/2x13	A70950W	1-1		104-5	48		
x102h	2	PL1/2x12	A70950W	1-5 3/4	BENT	104-4	60		
x102k	2	PL1/2x15	A70950W	1-6 3/4	BENT	104-4	80		
FB		FIELD_BOLTS							
78F212	32	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		XX		

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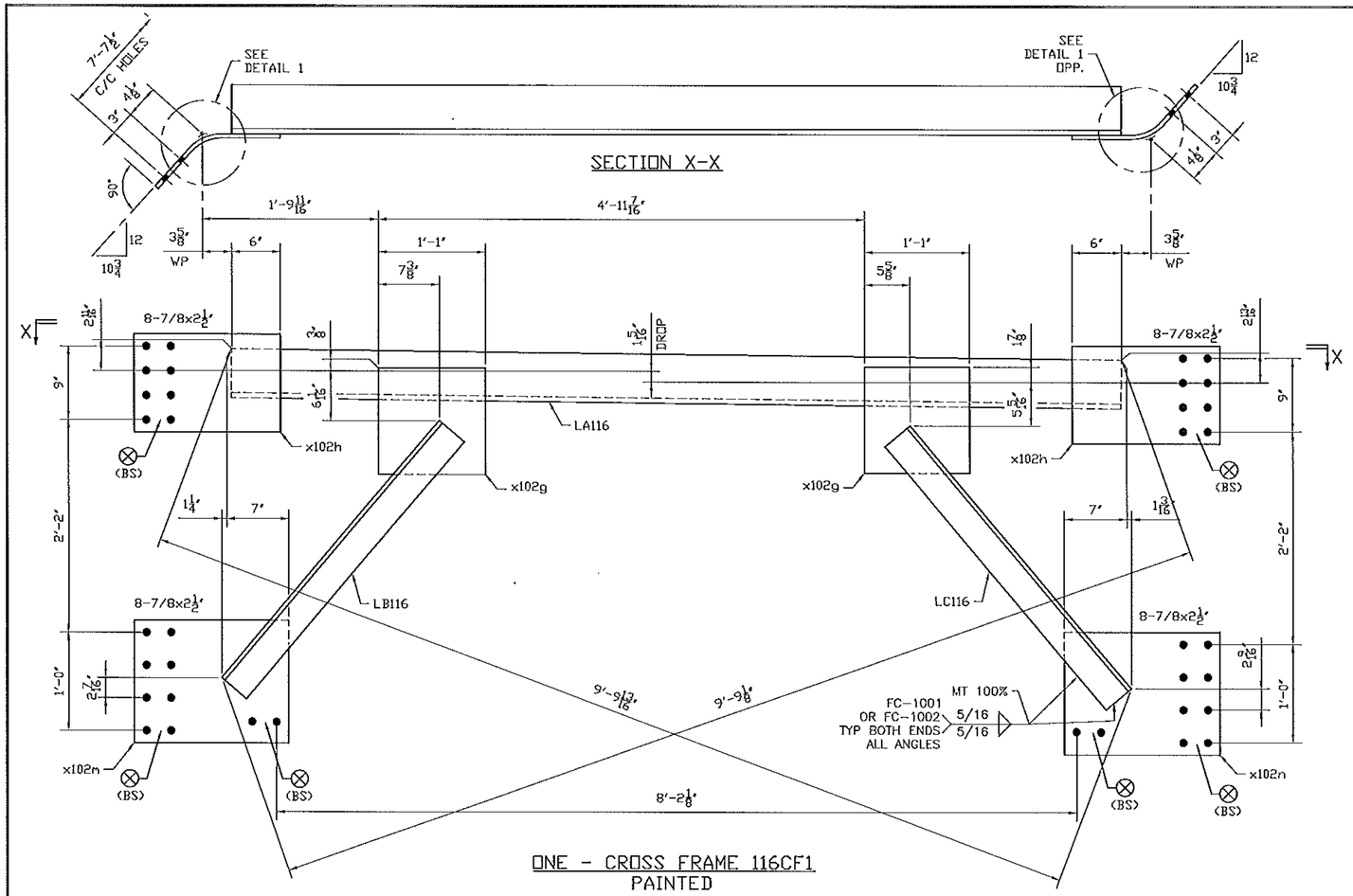
386 River Road, Claremont, NH 03743
Tel(603) 542-5202 Fax(603) 542-5312

PROJECT: VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

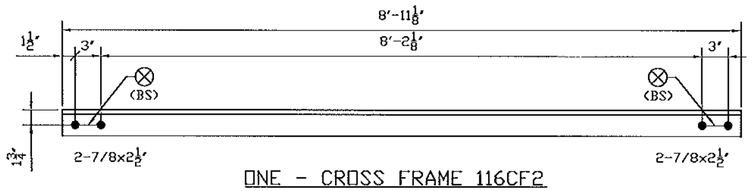
TITLE: ABUTMENT CROSS FRAME

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

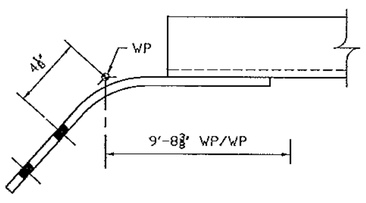
DRAWN BY	DATE	CONTRACT NO
BR	JULY 2012	UN04260
CHECKED BY	DATE	DRAWING NO
GG	JULY 2012	115 A



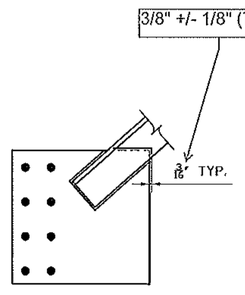
ONE - CROSS FRAME 116CF1
PAINTED



ONE - CROSS FRAME 116CF2
PAINTED



DETAIL 1



WELD TERMINATION DETAIL

BILL OF MATERIAL

Mark	Qty.	Description	SU Grd	Length	Remark	ABM	Total Weight	Seq	Qty /Seq
116CF1	ONE	CROSS FRAME				497	523	1	1
116CF1	1	.CROSS FRAME		10-7 7/8	PAINT				
LA116	1	L6x6x5/8	A70950W	9-1 1/8		103-1	220		
LB116	1	L4x4x1/2	A709050W	3-5 1/4		103-3	44		
LC116	1	L4x4x1/2	A709050W	3-6 1/16		103-3	45		
x102g	2	PL1/2x13	A709050W	1-1		103-5	48		
x102h	2	PL1/2x12	A709050W	1-5 3/4	BENT	103-4	60		
x102m	1	PL1/2x15	A709050W	1-6 3/4	BENT	103-4	40		
x102n	1	PL1/2x15	A709050W	1-6 3/4	BENT	103-4	40		
FB		FIELD_BOLTS							
78F212	32	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		X		
116CF2	1	CROSS FRAME				84	87	1	1
116CF2	1	L3x3x1/2	A709050W	8-11 1/8	PAINT	103-2	84		
FB		FIELD_BOLTS							
78F212	4	.7/8 Dia A325 TYP3		2 1/2	1FL WASH		X		

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GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING AND PAINTING: SEE SHEET P100 AND P101

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

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Tel(603) 542-5202 Fax(603) 542-5312

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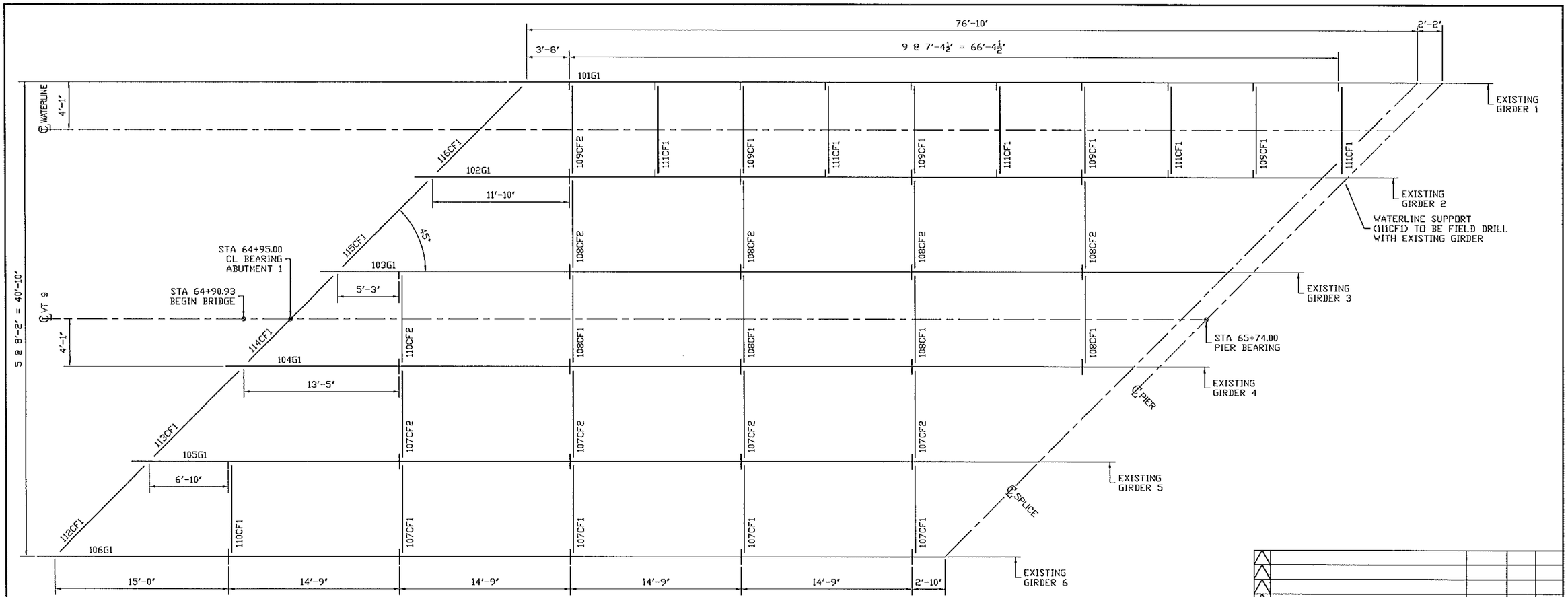
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

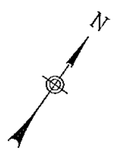
TITLE: ABUTMENT CROSS FRAME

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

DRAWN BY	DATE	CONTRACT NO
BR	JULY 2012	UN04260
CHECKED BY	DATE	DRAWING NO
GG	JULY 2012	116 A



ERECTION PLAN



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1 WASHER UNDER HEAD U.N.

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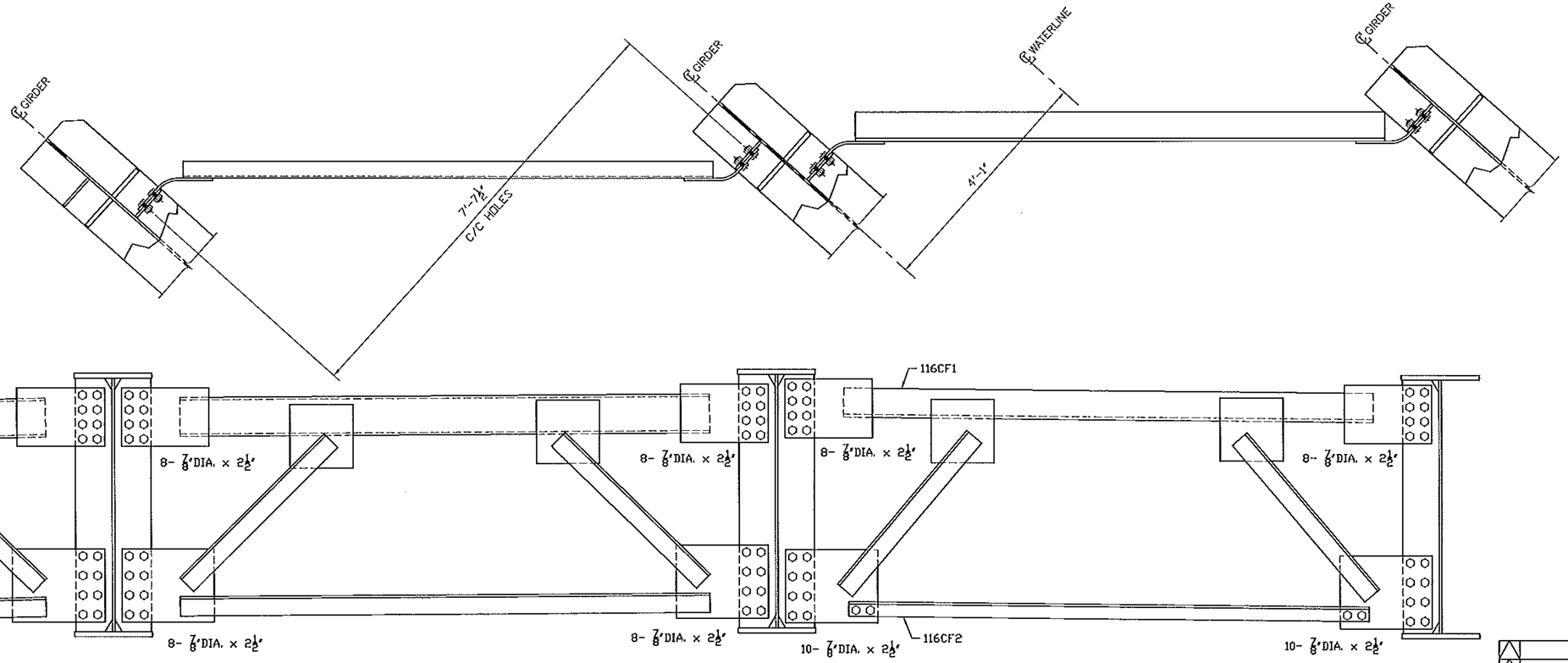
Bridges
386 River Road, Claremont, NH 03743
Tel(603) 542-5202 Fax(603) 542-5312
a division of CANAM BRIDGES INC

PROJECT:
VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

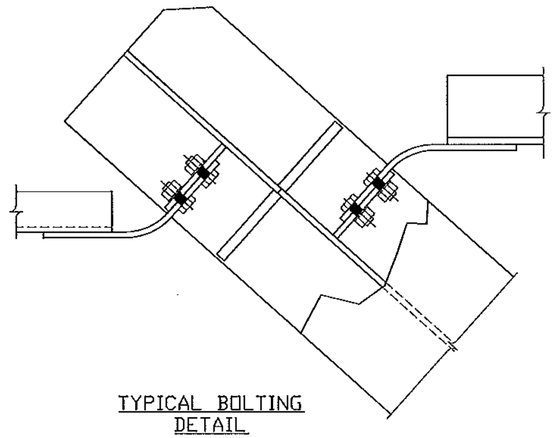
TITLE: ERECTION PLAN

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

DRAWN BY	DATE	CONTRACT NO
BR	JULY 2012	UN04260
CHECKED BY	DATE	DRAWING NO
GG	JULY 2012	E100 A



ABUTMENT CROSS FRAME
(LOOKING WEST)



TYPICAL BOLTING
DETAIL

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STRUCTAL
Bridges
386 River Road, Claremont, NH 03743
Tel(603) 542-5202 Fax(603) 542-5312
a division of CANAM STEEL Inc.

PROJECT:
VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

TITLE: ERECTION PLAN ABUTMENT

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

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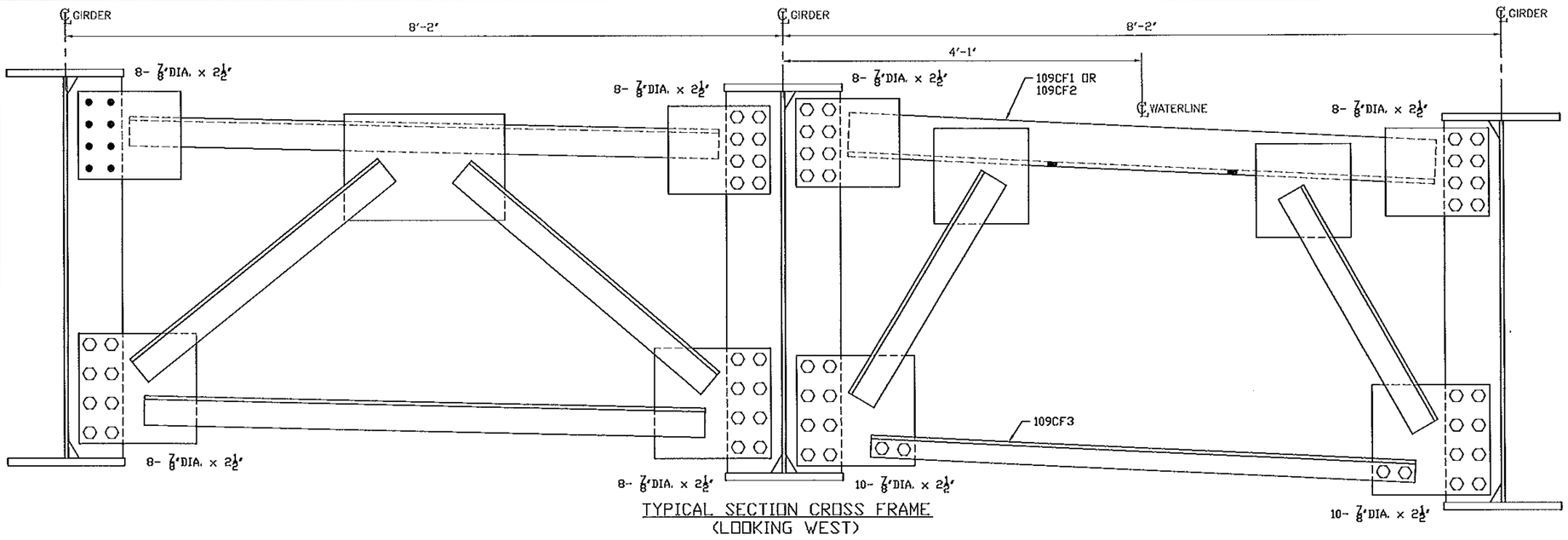
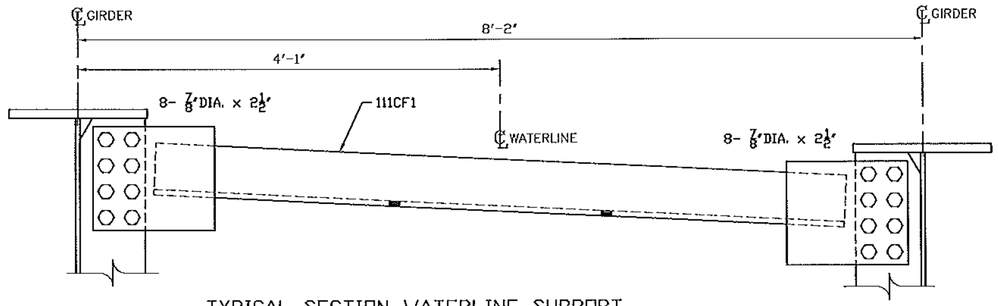
BR	JULY 2012	UN04260	E101 A
CHECKED BY GG	JULY 2012		



TYPICAL SECTION CROSS FRAME
(LOOKING WEST)



TYPICAL SECTION WATERLINE SUPPORT
(LOOKING WEST)

No	REVISION	DATE	PAR	VER.
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PROJECT:
VT RT 9, BRIDGE NO. 11
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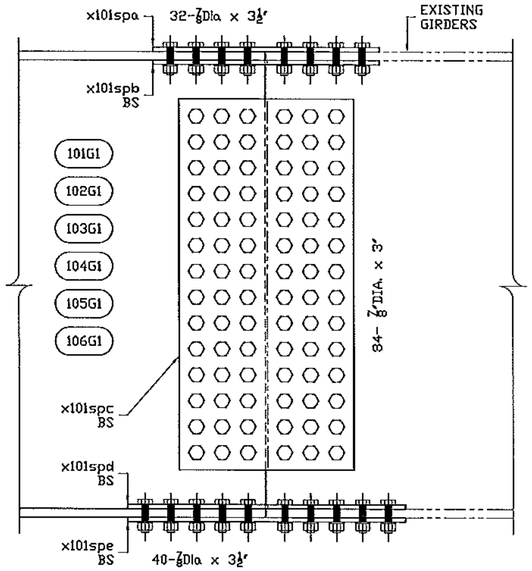
OVER WALOOMSAC RIVER

TITLE:
ERECTION PLAN CROSS FRAME

REFERENCE:
PROJECT NO. ER BHF 010-1 (44)

DRAWN BY	DATE	CONTRACT NO
BR	JULY 2012	UN04260
CHECKED BY	DATE	DRAWING NO
GG	JULY 2012	E102 A



NOTE: FOR BOLTS ORIENTATION SEE GN100

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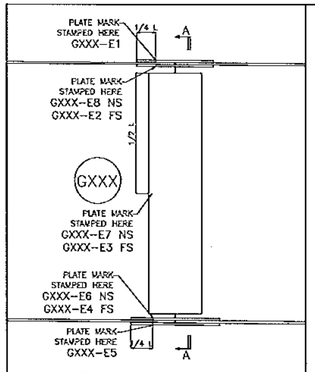
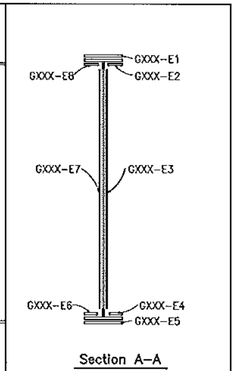


MARKS FOR SPLICE PLATES LOCATED AT RIGHT END (END)



Section A-A

Vermont Agency of Transportation

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July 09, 2012

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PROJECT:
VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

TITLE: ERECTION PLAN FIELD SPLICE

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

DRAWN BY	DATE	CONTRACT NO
BR	JULY 2012	UN04260
CHECKED BY	DATE	DRAWING NO
GG	JULY 2012	E103 A

GENERAL NOTES

1 CONSTRUCTION SPECIFICATIONS:

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 AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (A.A.S.H.T.O.) STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SIXTEENTH EDITION, AND ITS LATEST REVISIONS.

2 MATERIAL SPECIFICATIONS:

UNLESS NOTED, ALL NEW STRUCTURAL STEEL CONFORM TO AASHTO M270 GRADE 50W (ASTM A709--50W).

MATERIAL NOTED "CVN" ON DETAIL DRAWINGS SHALL BE CHARPY V-NOTCH TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF VERMONT STANDARD SPECIFICATIONS (SUBSECTION 714.01).

HIGH STRENGTH BOLTS: AASHTO M164 (ASTM A325) 7/8" DIA. IN 15/16" DIAMETER HOLES (U.N).

TYPE 3 SHALL BE USED FOR UNPAINTED CONNECTIONS.
TYPE 1 (GALV.) SHALL BE USED FOR PAINTED CONNECTIONS.

3. FABRICATION:

BOLT HOLES SHALL BE FABRICATED TO THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS, SECTION 11.4.8, EXCEPT THAT HOLES SHALL NOT BE PUNCHED FULL SIZE.

STUDS ARE FURNISHED AND FIELD APPLIED BY OTHERS.

IDENTIFICATION MARKS ON UNPAINTED STEEL SHALL BE IMPRESSED INTO THE MEMBER (WITH A LOW-STRESS STAMP) IN A NON-STRESSED OR LOW STRESSED AREA OF THE MEMBER.

TIGHT FIT (WELDED ENDS ONLY). 50% OF THE PROJECTED BEARING AREA SHALL BE IN CONTACT WITHIN 0.5mm(0.02") WITH A PERMISSIBLE VARIATION OF 1.6mm($\frac{1}{16}$") FOR THE REMAINING 50% OF THE PROJECTED AREA.

GRIND TO BEAR. 75% OF THE PROJECTED AREA SHALL BE IN CONTACT WITHIN 0.25mm(0.01") WITH A PERMISSIBLE VARIATION OF 0.8mm($\frac{1}{32}$") FOR THE PROJECTED AREA.

MILL TO BEAR. 100% OF THE PROJECTED BEARING AREA SHALL BE IN FULL CONTACT.

4 WELDING:

THE CONFIGURATION OF THE WELD JOINTS AND ALL WELDING PROCEDURES SHALL BE IN ACCORDANCE WITH AASHTO/AWS D.1.5-02 BRIDGE WELDING CODE AND WITH THE SPECIFICATIONS SHOWN BESIDE. ALL WELDING WILL BE DETAILED TO PRE-QUALIFIED JOINTS, UNLESS PROHIBITED BY THE DESIGNER.

WELDING OF MAIN LOAD CARRYING MEMBERS AND ATTACHMENTS SHALL BE PERFORMED USING THE AUTOMATIC SUBMERGED ARC & SHIELDED METAL ARC PROCESS. ALL WELDS ARE CONTINUOUS U.N.

NON DESTRUCTIVE TESTING OF WELDS SHALL BE IN ACCORDANCE WITH THE REFERENCED SPECIFICATION.

5 CLEANING:

ALL STEEL THAT WILL REMAIN UNPAINTED SHALL BE BLAST CLEANED AS PER SSPC SP--10 PER SPEC. 506.14(a)

ALL STEEL THAT WILL BE PAINTED SHALL BE BLAST CLEANED AS PER SSPC SP--6 PER SPEC. 513.04(a)

6 PAINT:

ALL STEEL COMPONENTS WITHIN A DISTANCE OF 10'-0" (DIAPHRAGMS AND CROSS--FRAMES INCLUDED) FROM THE CENTER LINE OF BEARING (ABUTMENT #1) SHALL BE COATED WITH THE PROTECTIVE SYSTEM ACCORDING TO SECTION 513 OF THE SPECIFICATION. PAINT SYSTEM MUST BE LISTED ON THE QUALIFIED PRODUCT LIST. THE PAINT SHALL BE BROWN COLOR CHIP NO.20059 PER SECTION 513.02. PROTECTIVE GREASE SHALL BE APPLIED IN THE FIELD BY OTHERS PER SUPPLEMENTAL SPECIFICATION 513.

PAINT MANUFACTURER:
SHERWIN WILLIAMS

PRODUCT SYSTEM:
PRIMER COAT: ZINC CLAD III HS 100, ORGANIC ZINC RICH EPOXY PRIMER, 3--5 MILS DFT
INTERMEDIATE COAT: MACROPOXY 646--100, FAST CURE EPOXY, 5--10 MILS DFT
TOP COAT: ACROLON 218 HS, ACRYLIC POLYURETHANE, 3--6 MILS DFT
TOP COAT COLOR: FEDERAL STANDARD 595 COLOR NO. 20059 BROWN.

FAYING SURFACES OF BOLTED CONNECTIONS SHALL MEET THE CLASS "B" SLIP COEFFICIENT VALUE OF NOT LESS THAN 0.50 AS SPECIFIED BY AASHTO.

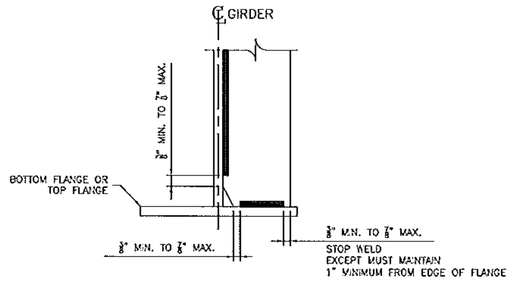
7 FIELD CONNECTIONS:

ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8" DIAMETER HIGH STRENGTH BOLTS AASHTO M164 (ASTM A325) TYPE 3 OR 1 AS NOTED, IN 15/16" DIAMETER HOLES UNLESS OTHERWISE NOTED. INSTALLED PER 506.19(c) AND SPECIAL PROVISIONS.

BOLTS SHALL HAVE HEAVY HEX. NUT, HEX. HEAD & ONE FLAT WASHER EACH (WASHER TO BE PLACED UNDER TURNED ELEMENT).

PIECE MARKS WILL BE LOCATED AS SHOWN ON ERECTION DRAWING.

BOLTS INSTALLED WITH THE STEM VERTICAL SHALL HAVE THE HEADS UP.
BOLTS INSTALLED WITH THE STEM HORIZONTAL SHALL HAVE THE HEADS TOWARDS THE WEATHER UNLESS CLEARANCE RESTRICTIONS DICTATE OTHERWISE.



TYPICAL WELD DETAIL

No	REVISION	DATE	PAR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
BOLT 2 WASHER: 1 WASHER UNDER HEAD U.N.
1 WASHER UNDER HEAD U.N.

STRUCTAL Bridges
A division of CANAM
386 River Road, Claremont, NH 03743
Tel:(603) 542-5202 Fax:(603) 542-5312

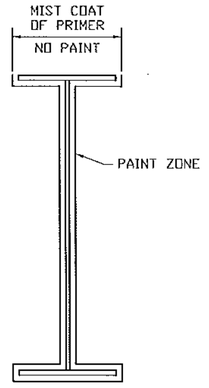
PROJECT:
VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

TITLE: GENERAL NOTES

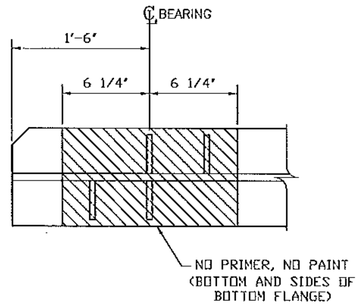
REFERENCE: PROJECT NO. ER BHF 010-1 (44)

DRAWN BY	DATE	CONTRACT NO
EG	JULY 2012	UN04260
CHECKED BY	DATE	DRAWING NO
BR	JULY 2012	GN100 A

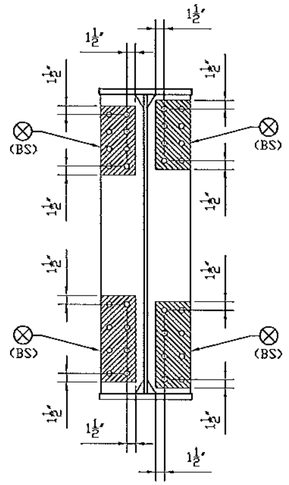
Vermont Agency of Transportation
RECEIVED
CK'D BY M.E.M OK'D BY C.W.M.
July 09, 2012
RESUBMIT _____ APPROVED ✓
BY C. CARLSON DATE 07-27-2012



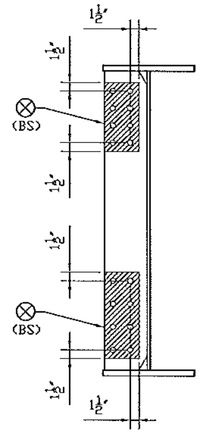
PAINT ZONE FOR GIRDERS
11'-6" FROM THE END OF GIRDER
SEE ASSEMBLY DRAWING



TYPICAL MASKING ZONE
OF GIRDER BOTTOM FLANGE AT BEARING
SEE ASSEMBLY DRAWING



TYPICAL MASKING ZONE
OF GIRDER FOR THE
DIAPHRAGM AT ABUTMENT
SEE ASSEMBLY DRAWING



TYPICAL MASKING ZONE
OF GIRDER IN THE 11'-6" PAINTED ZONE
FOR INTERMEDIATE CROSS FRAME
SEE ASSEMBLY DRAWING

PRIMER ONLY, NO PAINT
BOTH SIDES 75 mm DIA AROUND HOLE
WHERE NOTED WITH THIS SYMBOL
(BS)

GENERAL NOTES: SEE GN100
HOLES: 15/16 (U.N.)
COATING SYSTEM: SEE P100 AND P101

PAINT MANUFACTURER:
SHERWIN WILLIAMS

PRODUCT SYSTEM:

--PRIMER COAT: ZINC CLAD III HS 100, ORGANIC ZINC RICH EPOXY PRIMER, 3--5 MILS DFT

--INTERMEDIATE COAT: MACROPOXY 646--100, FAST CURE EPOXY, 5--10 MILS DFT

--TOP COAT: ACROLON 218 HS, ACRYLIC POLYURETHANE, 3--6 MILS DFT

--TOP COAT COLOR: FEDERAL STANDARD 595 COLOR NO. 20059 BROWN.

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STRUCTAL Bridges
a division of CANAM BRIDGES Inc.
386 River Road, Claremont, NH 03743
Tel:(603) 542-5202 Fax:(603) 542-5312

PROJECT:
VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

TITLE: PAINT NOTES

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

DRAWN BY	DATE	CONTRACT NO
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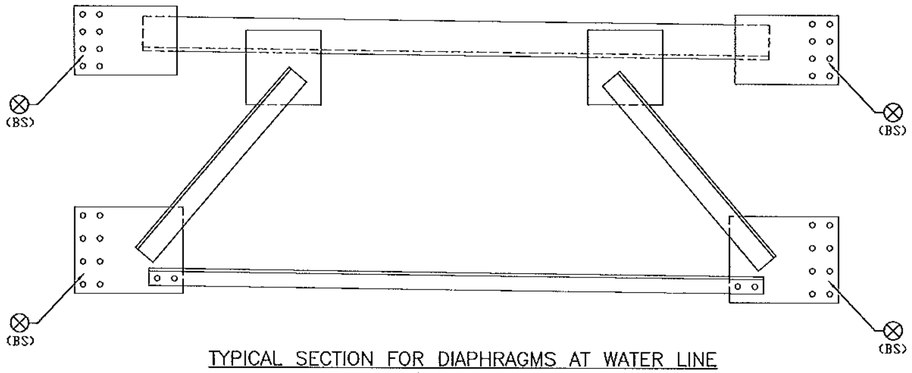
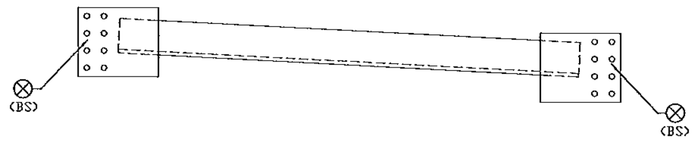
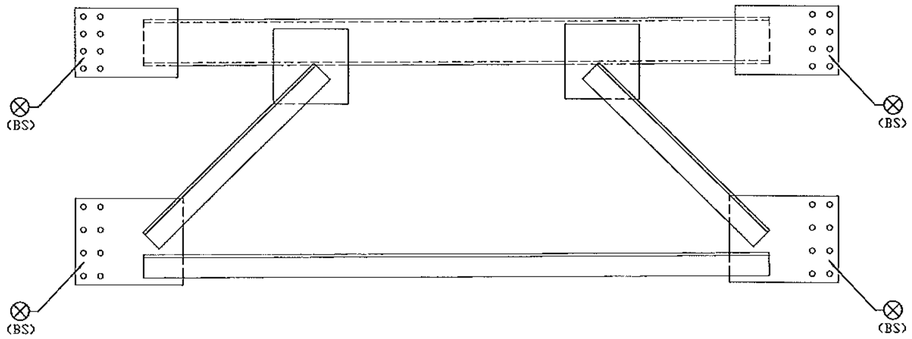


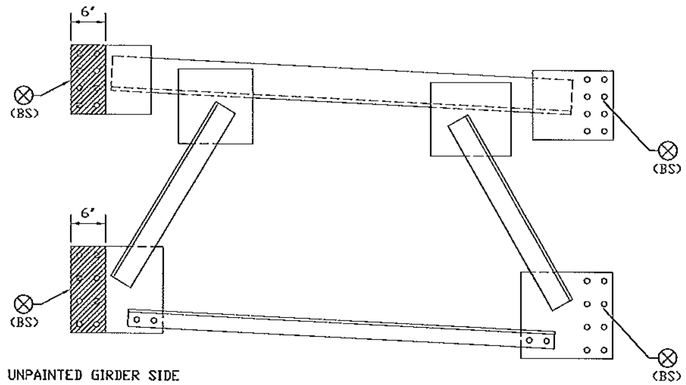
TYPICAL SECTION FOR DIAPHRAGMS AT WATER LINE
SEE ASSEMBLY DRAWING



TYPICAL SECTION AT WATER LINE SUPPORTS
SEE ASSEMBLY DRAWING



TYPICAL SECTION FOR DIAPHRAGMS
SEE ASSEMBLY DRAWING



UNPAINTED GIRDER SIDE

TYPICAL SECTION FOR INTERMEDIATE CROSS FRAMES
IN 11'-6" GIRDER PAINTED ZONE
SEE ASSEMBLY DRAWING

PRIMER ONLY, NO PAINT
BOTH SIDES 75 mm DIA AROUND HOLE
WHERE NOTED WITH THIS SYMBOL

(BS)

GENERAL NOTES: SEE GN100
HOLES: 15/16 (U.N.)
COATING SYSTEM: SEE P100 AND P101

No	REVISION	DATE	PAR	VER.
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Tel(603) 542-5202 Fax(603) 542-5312

PROJECT:
VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

TITLE: PAINT NOTES

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

DRAWN BY	DATE	CONTRACT NO	SHEET NO
EG	JULY 2012	UN04260	P101 A
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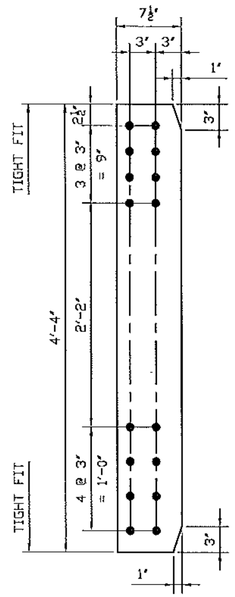
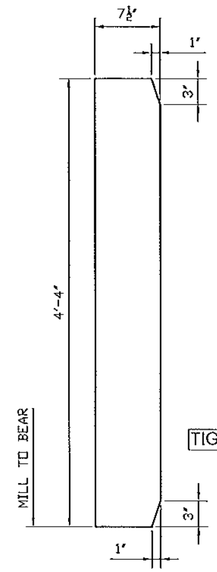
GG	JULY 2012		



PL1/2x7 1/2x4-4 - x101a



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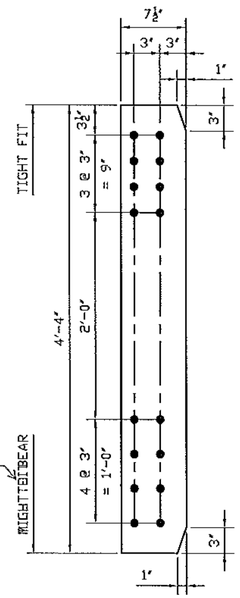

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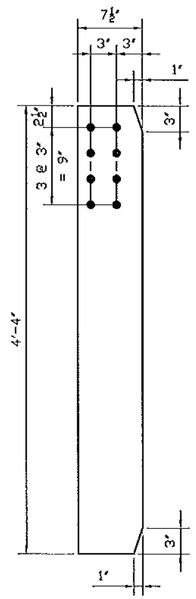

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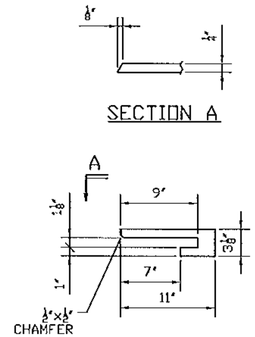
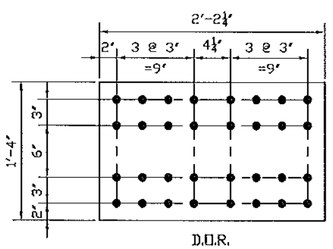
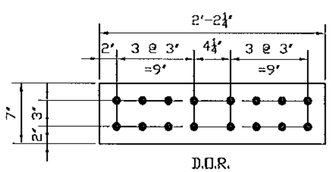


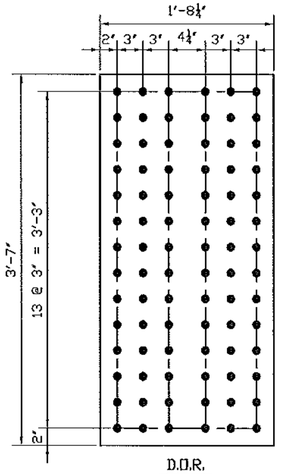
PL1/4x3 1/8x11 - x101e



PL1/2x16x2-2 1/4 - x101spa



PL1/2x7x2-2 1/4 - x101spb



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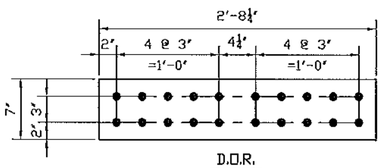

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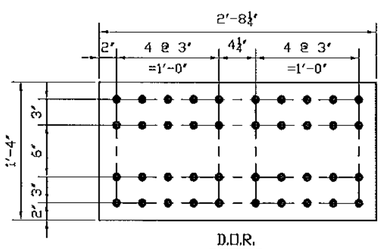
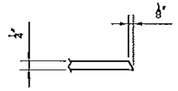
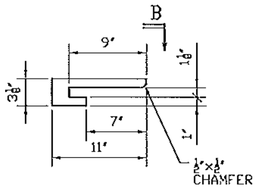


PL1/2x16x2-8 1/4 - x101spe





PL1/4x3 1/8x11 - x101k

GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING AND PAINTING: SEE SHEET P100 AND P101

No	REVISION	DATE	BR	VER.
A	FOR APPROVAL	07/06/12	BR	EG

NOTE: BOLT 1 WASHER: 1 WASHER UNDER NUT U.N.
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Vermont Agency of Transportation

RECEIVED

CK'D BY M.E.M OK'D BY C.W.M.

July 09, 2012

RESUBMIT APPROVED AS NOTED

BY C. CARLSON DATE 07-27-2012

STRUCTAL Bridges
a division of CANAM Group Inc.
386 River Road, Claremont, NH 03743
Tel(603) 542-5200 Fax(603) 542-5312

PROJECT:
VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

TITLE: GIRDER DETAILS

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

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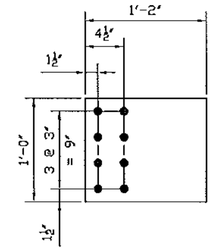
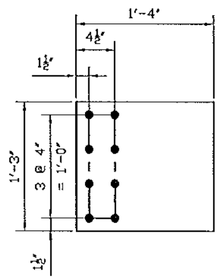
CHECKED BY	DATE	DRAWING NO.
GG	JULY 2012	X101 A



PL1/2x12x1-2 - x102a



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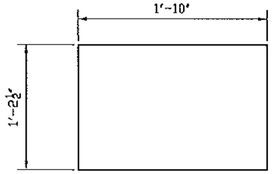
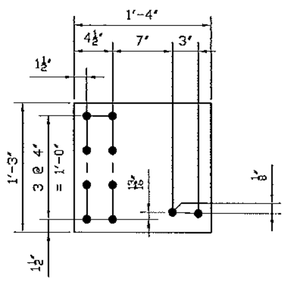
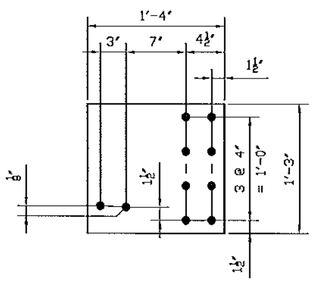


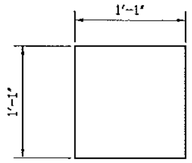
PL1/2x14 1/2x1-10 - x102c



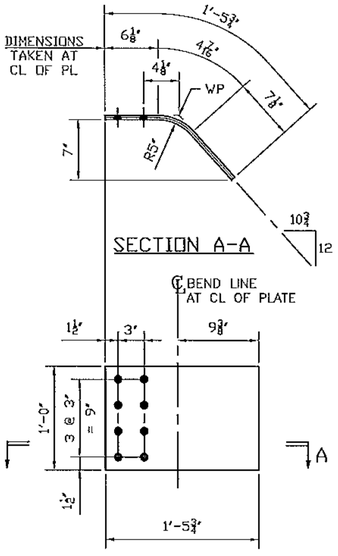
PL1/2x15x1-4 - x102d



PL1/2x15x1-4 - x102e

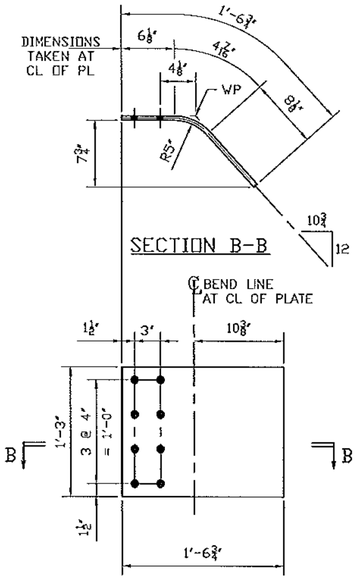


PL1/2x13x1-1 - x102g



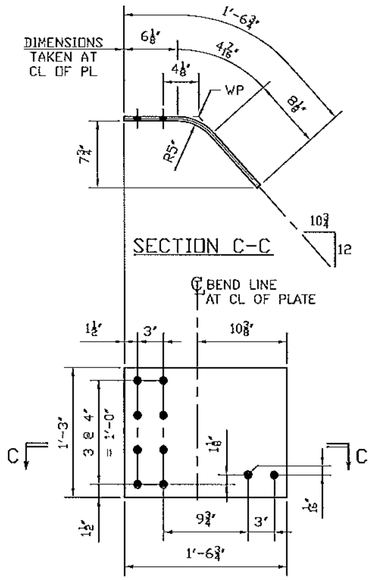
PL1/2x12x1-5 3/4 - x102h
(DEVELOPED)

D.O.R



PL1/2x15x1-6 3/4 - x102k
(DEVELOPED)

D.O.R



PL1/2x15x1-6 3/4 - x102m
(DEVELOPED)

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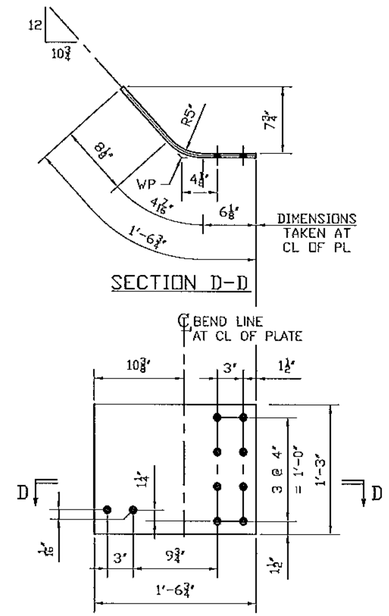

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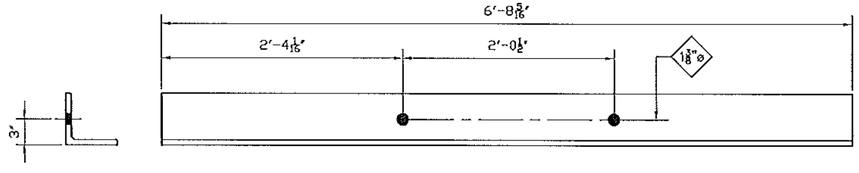
(DEVELOPED)

D.O.R



L6x6x5/8x6-8 15/16 - x102p

GENERAL NOTES: SEE GN100

HOLES: 15/16 (U.N.)

CLEANING AND PAINTING: SEE SHEET P100 AND P101

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1 WASHER UNDER HEAD U.N.

STRUCTAL
Bridges
386 River Road, Claremont, NH 03743
Tel(603) 542-5202 Fax(603) 542-5312
a division of CANAM GROUP Inc.

PROJECT:
VT RT 9, BRIDGE NO. 11
TOWN OF WOODFORD, VT
OVER WALOOMSAC RIVER

TITLE: CROSSFRAME DETAILS

REFERENCE: PROJECT NO. ER BHF 010-1 (44)

DRAWN BY	DATE	CONTRACT NO
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CHECKED BY	DATE	DRAWING NO
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VERMONT

State of Vermont
PDD/Structures Design Section
National Life Building – Drawer 33
Montpelier, VT 05633-5001
www.aot.state.vt.us

Agency of Transportation

[phone] 802-828-2621
[fax] 802-828-3566
[ttd] 800-253-0191

August 13, 2012

ARC Enterprises, INC.
P.O. Box 120
Kingfield, Maine 04947

Project Name: Woodford Project #: ER BHF 010-1(44)

Structure Identification: VT 9 Over the Roaring Branch of the Walloomsac River

The following Downspout details [**Paid for under Item # 506.55, "Structural Steel, Plate Girder"**] for the above project (Vendor's Job # 12-324) transmitted via Brian Emmons of T. Buck Construction, Inc. on August 22, 2012 have been reviewed and are being returned herewith.

Sheet: 1 of 2 is **approved [X]**

Sheets: 2 of 2 and the Welding Procedures **are approved "as noted".**

Please make appropriate changes as indicated on these "as noted" or "approved" drawings and submit white prints for our use in the record plans for this project.

You must provide notice to our fabrication inspector, Jeff Clark, as to the date fabrication represented by these drawings will begin. Jeff must receive and acknowledge your notice at least seven days prior to that date, as per Specification 506.03. You may contact Jeff by phone at (802)828-0044 or email at jeff.clark@state.vt.us. Any material fabricated prior to the notification date is subject to rejection without further cause.

Sincerely,

Carolyn W. Carlson, PE
Structures Project Manager

Attachments
cc: [X] Resident Engineer Ron Lemaire – w/prints
[X] T. Buck Construction, Inc. – w/prints
[X] Shop Inspector - Jeff Clark – w/prints
[X] Materials and Research (C&IA) – letter only
[X] Construction – letter only
[X] CWC

VTrans Working to Get You There
Vermont Agency of Transportation

WELDING PROCEDURE SPECIFICATION (WPS) YES (X)
PREQUALIFIED __x___ QUALIFIED BY TESTING _____
or PROCEDURE QUALIFICATION RECORD (PQR) YES ( )

Company Name ARC Ent. Inc.
Welding Process(es) GMAW
Supporting PQR No.(s) _____

Identification # ARC WPS 7M2
Revision 5 Date 8/3/2012 By SVH
Authorized by STEVE HOWARD Date 8/3/2012
Type - Manual Semi - Automatic (X)
Machine ( ) Automatic ( )

D 1.1

JOINT DESIGN USED
Type B - U4b - GF
Single (X) Double Weld ( )
Backing ( ) NO
Backing Material _____
Root Opening 0 - 1/8" Root Face Dimension 0 - 1/8"
Groove Angle 45 Degrees Radius (J-U) _____
Back Gouging Method _____

BASE METALS
Material Spec A709 A500
Type or Grade 36 50
Thickness Groove U Fillet _____
Diameter (Pipe) _____

FILLER METALS
Lincoln L-56
AWS Specification A5.18
AWS Classification ER70S - 6

SHIELDING
Flux _____ Gas AR-2
Composition argon 98 oxygen 2
Electrode - Flux (Class) Flow Rate 25 - 40
_____ Gas Cup Size 5/8

POSITION
Position of Groove 1G 2G Fillet _____
Vertical Progression ( )

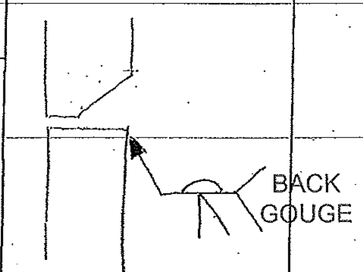
ELECTRICAL CHARACTERISTICS
Transfer Mode (FCAW) Short Circuiting ( )
Globular ( ) Spray (X)
Current : AC ( ) DCEP (X) DCEN ( )
Pulsed ( )
OTHER : _____

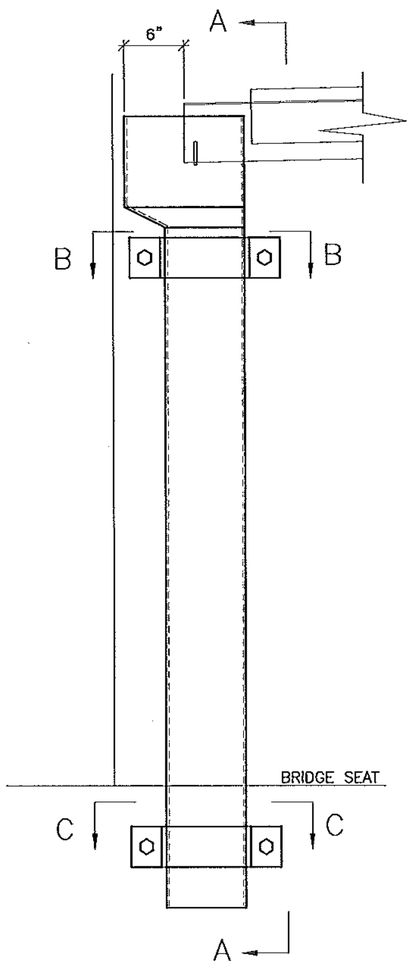
TECHNIQUE
Stringer or Weave Bead stringer
Multi-pass or Single Pass (per side) multi
Number of Electrodes one
Electrode Spacing Longitudinal _____
Lateral _____
Angle _____
Contact Tube to Work Distance 5/8 - 3/4"
Peening _____
Interpass Cleaning : brush or grond

POSTWELD HEAT TREATMENT
Temp _____
Time _____

WELDING PROCEDURE

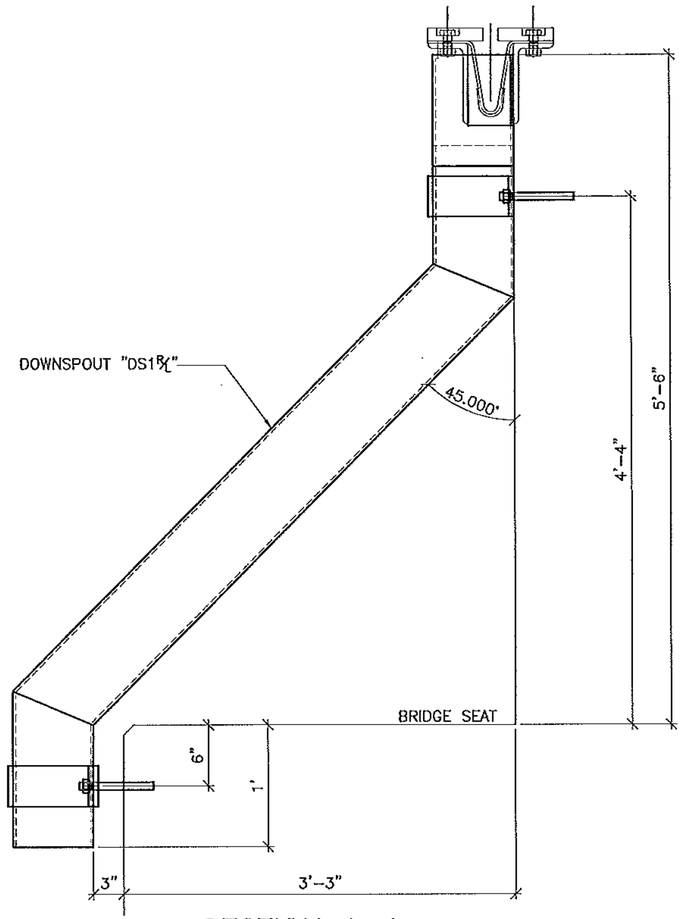
Pass or Weld Layer(s)	S	Filler Metals Class	Filler Metals Diameter	Current Type & Polarity	Current Amps or Wire Feed Speed	Volts	Travel Speed	Joint Details
1 - 3		ER70S-6	.035"	DCEP	180-220	25-27	6 - 7 ipm	



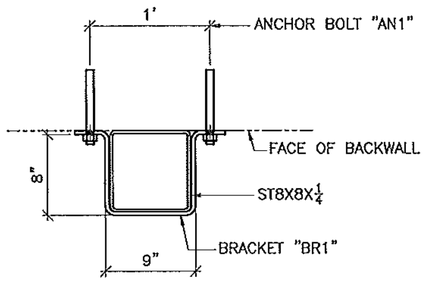


DOWNSPOUT SIDE ELEVATION

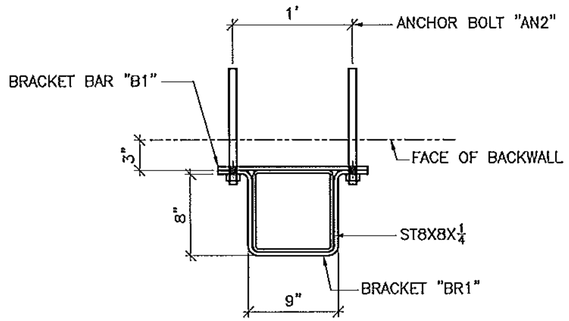
(ONE LOCATION AS SHOWN, ONE LOCATION OPP. HAND)



SECTION A–A



SECTION B–B



SECTION C–C

SEE DWG. 2 FOR DETAILS & B.O.M.

Vermont Agency of Transportation

RECEIVED

CK'D BY MEM OK'D BY GFR

08/21/2012

RESUBMIT APPROVED X

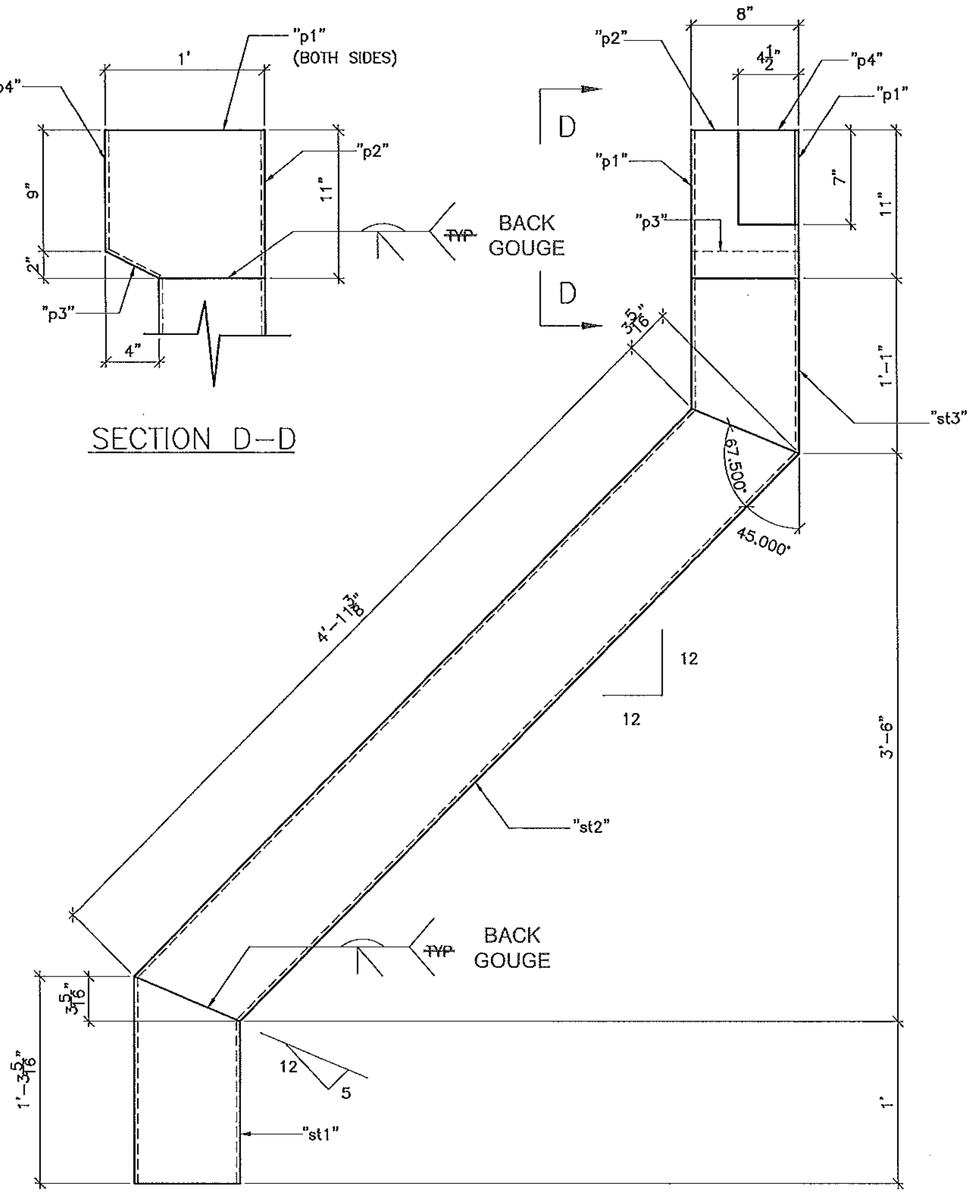
BY C. CARLSON DATE 08/29/2012

FINISH	HOT DIPPED GALVANIZED				
MATERIAL	AASHTO M270 GR. 36/ASTM A500 GR.B				
HOLES	AS NOTED				
ELECTRODES	PER W.P.S.				
WELDS	AS NOTED				
SURFACE PREP	SSPC-SP6				
		NO	DATE	DESCRIPTION	BY
		REVISIONS			

ARC ENTERPRISES, INC.
ADVANCED RESOURCES & CONST. ENTERPRISES, INCORPORATED
P.O. BOX 120 KINGFIELD, ME. 04947
PHONE: (207) 265-2846 – FAX: (207) 265-4054

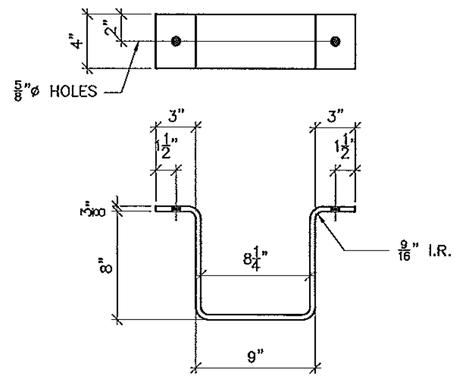
DRAFTER	JAC	DOWNSPOUT ERECTION DETAILS	PROJECT NO.
DATE	7/29/12	VERMONT AGENCY OF TRANSPORTATION, TOWN OF WOODFORD	BR BHF 010-1(14)
CHECKED	MTD	ABUTMENT #1 VT JOINT	DWG. NO.
JOB	12-324	G.C. T BUCK CONSTRUCTION, INC.	1

SECTION D–D

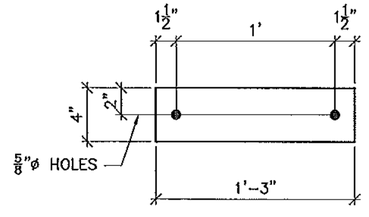


ONE REQ'D, DOWNSPOUT "DS1^{R}", AS SHOWN

ONE REQ'D, DOWNSPOUT "DS1^{L}", OPP. HAND



4 REQ'D, $\frac{3}{8}$" BRACKET MARK "BR1"



2 REQ'D, $\frac{3}{8}$" BRACKET BAR MARK "B1"

BILL OF MATERIAL

SHIP	SHIP MARK	NO. PCS.	PIECE MARK	DESCRIPTION	LENGTH	REMARKS	WT.
2	DS1R/L			DOWNSPOUT			
		2	st1	TS 8X6X¼	1'–3⅝	ASTM A500	59
		2	st2	TS 8X6X¼	5'–2⅛	ASTM A500	257
		2	st3	TS 8X6X¼	1'–1	ASTM A500	49
		4	p1	PL ¼X11	1'–0		36
		2	p2	PL ¼X7½	0'–11		8
		2	p3	PL ¼X7½	0'–4⅝		5
		2	p4	PL ¼X7½	0'–8⅝		9
4	BR1			PL ⅜X4	2'–8		51
2	B1			PL ⅜X4	1'–3		13
4	AN1			¾"ø ANCHOR BOLT	0'–8	W/N&W	
4	AN2			¾"ø ANCHOR BOLT	1'–0	W/N&W	

Vermont Agency of Transportation

RECEIVED

CK'D BY MEM **OK'D BY** GFR

08/21/2012

RESUBMIT **APPROVED** AS NOTED

BY C. CARLSON **DATE** 08/29/2012

FINISH	HOT DIPPED GALVANIZED				
MATERIAL	AASHTO M270 GR. 36/ASTM A500 GR.B				
HOLES	AS NOTED				
ELECTRODES	PER W.P.S.				
WELDS	AS NOTED				
SURFACE PREP	SSPC–SP8	1	8/21/12	PER APPROVAL	JAC
		NO	DATE	DESCRIPTION	BY
		REVISIONS			

ARC ENTERPRISES, INC.

ADVANCED RESOURCES & CONST. ENTERPRISES, INCORPORATED
P.O. BOX 120 KINGFIELD, ME. 04947
PHONE: (207) 265–2648 – FAX: (207) 265–4054

DRAFTER	JAC	DOWNSPOUT DETAILS	PROJECT NO. BR BHF 010-1(41)
DATE	7/28/12	VERMONT AGENCY OF TRANSPORTATION, TOWN OF WOODFORD ABUTMENT #1 VT JOINT	
CHECKED	MTD	G.C. T BUCK CONSTRUCTION, INC.	DWG. NO. 2
JOB	12–324		

VERMONT

State of Vermont
Program Development
One National Life Drive
Montpelier, VT 05633-5001
www.aot.state.vt.us

Agency of Transportation

[phone] 802-828-2621
[fax] 802-828-3566
[ttd] 800-253-0191

July 2, 2012

The D.S. Brown Company
300 E. Cherry Street
North Baltimore, Ohio 45872

Project Name: Woodford Project #: ER BHF 010-1(44)

Structure Identification: VT 9 Over the Roaring Branch of the Walloomsac River

The following **bearing devices details** for the above project (Vendor's Job #36775, transmitted by T. Buck Construction, Inc. and received by our office on Monday, June 25, 2012, have been reviewed and are being returned herewith.

Sheet 1 of 2 and the welding procedures are approved.

Sheet 2 of 2 is approved "as noted". (Please make appropriate changes as indicated on the "as noted" drawing and submit a new "*.pdf" for our use in the record plans for this project.)

Also, the following is our response to the RFI that was submitted:

1. The natural rubber and the shear modulus range are fine.
2. The 16 GA internal shims are fine for the 1/16" thick internal shims shown on our plans.
3. The AASHTO M251-06 testing is required for this project.

You must provide notice to our fabrication inspector Jeff Clark as to the date fabrication represented by these drawings will begin. Jeff may be contacted by phone at (802)828-0044 or email at jeff.clark@state.vt.us. That notice must be received at least seven days prior to that date, as per Specification 506.03. Any material fabricated prior to the notification date is subject to rejection without further cause.

Sincerely,

Carolyn W. Carlson

Carolyn W. Carlson, PE
Project Manager

Attachments
cc: [X] Resident Engineer Ron Lemaire -w/prints
[X] T. Buck Construction, Inc. – w/prints
[X] Shop Inspector - Jeff Clark w/prints
[X] Materials & Research Section (C&IA Unit) – Letter only
[X] Construction Division - Letter only
[X] CWC

VTrans Working to Get You There
Vermont Agency of Transportation

DS Brown Company
300 East Cherry Street
North Baltimore, OH 45872
(419) 257-3561
(419) 257-0332 [Engineering Fax #]

D.S. BROWN
A GIBRALTAR INDUSTRIES COMPANY

Request for Information

Date Sent: 06-22-12 Response Requested by: ASAP

DS Brown RFI #: 36775-1104-RFI1
(File name format: DS Brown Project # - Product Code – RFI# or ######-#####-RFI#)

Contractor:	**T Buck Construction**
To:	**Brian Emmons**
Project Description:	**Vt. Rt. 9, Principal Arterial**
Project #:	**ER-BHF 010-1(44)**
Fax #:	
DS Brown Project #:	**36775-1104**
Reply to:	**Erica Kelley**
E-mail Address:	**ekelley@dsbrown.com**
Subject:	**Elastomeric bearings**

Shop Drawing Status:

- ☒ Able to Proceed
- ☐ Able to Proceed BUT requested information needed prior to drawing submittal
- ☐ **ON HOLD** until receipt of requested information

Please provide the following items:

- ☐ Special Provisions
- ☐ Field Measurements (sketch provided—please complete)
- ☐ Structural Steel Drawings
- ☐ "As Built" Shop Drawings
- ☐ Finish Details
  - ☐ Federal Color Number
  - ☐ Paint System
- ☐ Contract Document Clarification (explanation provided below)
- ☐ Other (explanation provided below)

Explanation: **1)** The contract plans specify the elastomer to be Grade 4 Neoprene. DS Brown does not have a compound for a neoprene grade 4 material. If a grade 4 material is needed, then the bearing will need to be supplied as natural rubber. Also, note our 60 durometer Grade 4 natural rubber has a shear modulus range of 136-184 PSI. Please verify that natural rubber and this shear modulus are acceptable.

OK

OK

2) Please note that thin steel is only available in gauge thickness. We will use 16 GA internal shims for the 1/16" shown 16 GA is 0.60" thick. If you require this to be increased the next available GA is 14 GA which is 0.075" thick.

0.06 OK

3) Please verify that Testing to AASHTO M251-06 is required.

Production Joint Welding Procedure Specification (D1.5-08)

Procedure No: A-(MC)GF-01 Date Issued: 9-28-04 Revision No: 02 Rev. Date: 9-15-09

Contractor (Fabricator) D. S. Brown Company Prepared by: Brad Streeter, Quality Assurance Manager

1. Non-Fracture Critical [X] Fracture Critical [ ] WPS Expiration Date: 8-11-14
2. Qualified in accordance with: AWS D1.5- 2008 (5.13)
   Referenced PQR No(s). PQR-(MC)GMAW-03(09) __ , __ , ____
   Referenced FWST No(s). PQR-(MC)GMAW-FWST-01A(09) , PQR-(MC)GMAW-FWST-01B(09) , __ , __
3. Material specification(s) ASTM A709 Gr. 36, 50, 50W
4. Material Thickness (es) Unlimited
5. Welding process GMAW
6. Manual [ ] , machine [X] , or semiautomatic [X]
7. Position(s) of welding 1F, 2F
8. Filler metal specification AWS A5.18
9. Filler metal class and brand name E70C-6M Corex Metal-Core Maxim
10. Flux class & brand N/A , Type N/A
11. Shielding gas 75% Ar / 25% CO2 Flow rate 45 CFH
12. Single pass [X] Or multiple pass [X]
13. Single arc [X] Or multiple arc [ ]
14. Welding Current DCEP
15. Polarity Reverse
16. Welding progression stringers
17. Root treatment Clean to bright sound metal or per AWS D1.5 (3.2.1 & 3.11)
18. Postheat treatment N/A
19. Calculated Heat Input (KJ/In) Min 34.77 Kj/in Max 49.65 Kj/in
20. Electrode extension (electrical stickout) 3/4"

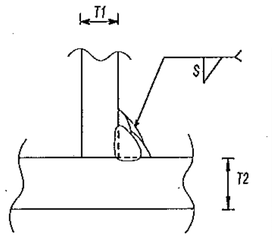
For DOT Approval

VTrans Received: JUN 26 2012 CKD By JWC

Resubmit ____ APPROVED ✓ BY ____ DATE 7/9/12

Weld size (In)	Pass No(s).	Electrode Size (In)	Welding Process Variables		Travel Speed (IPM)
			AMPS/WFS*	VOLTS	
**1/4"	1	.052"	270-307	27.9-31	11.5-13
5/16"	1	.052"	270-307	27.9-31	11.5-13
3/8"	1-3	.052"	270-307	27.9-31	11.5-13
7/16"	2-4	.052"	270-307	27.9-31	11.5-13
1/2"	4-6	.052"	270-307	27.9-31	11.5-13
5/8"	5-7	.052"	270-307	27.9-31	11.5-13
3/4"	6-8	.052"	270-307	27.9-31	11.5-13

Joint Detail (Fillet)
Show all dimensions, weld sizes, passes, and AWS symbols



T1 = Varies
T2 = Varies
S = Weld Size

**** T1 & T2 equal to or less than 3/4" for 1/4" welds.**

* Wire feed speed may be used along with amperage (include chart)

Prepared By: _____ DSB QA Manager

Project: _____

DSB Job: 36775-1104-VT

Preheat and Interpass Temperature Chart

Base Metal Thickness range	Minimum Preheat (°F)	Max Preheat & Interpass (°F)
≤ 3/4"	50°F	450 °F
>3/4" to ≤1.5"	70°F	450 °F
>1.5" to ≤2.5"	150°F	450 °F
>2.5"	225°F	450 °F

Note: When this procedure is used for A709Gr50W materials, it shall be limited to 5/16" single pass or material be coated.

Production Joint Welding Procedure Specification (D1.5-08)

DSBROWN

Procedure No: B-FF-01 Date Issued: 3-28-08 Revision No: 01 Rev. Date: 11-11-09

Contractor (Fabricator) D. S. Brown Company Prepared by: Brad Streeter, Quality Assurance Manager

1. Non-Fracture Critical [X] Fracture Critical [ ] WPS Expiration Date: 3-6-13
2. Qualified in accordance with: AWS D1.5- 2008 (5.13)
   Referenced PQR No(s). PQR-FCAW-01-(08) __ , __ , ____
   Referenced FWST No(s). PQR-FCAW-FWST-01A(08) , PQR-FCAW-FWST-01B(08) , __ , ____
3. Material specification(s) ASTM A709 Gr. 36, 50, 50W
4. Material Thickness (es) Unlimited
5. Welding process FCAW
6. Manual [ ] , machine [ ] , or semiautomatic [X]
7. Position(s) of welding 1F, 2F
8. Filler metal specification AWS A5.20
9. Filler metal class and brand name E71T-1CH8 (UltraCore71C)
10. Flux class & brand N/A , Type N/A
11. Shielding gas 100% CO2 Flow rate 45 CFH
12. Single pass [X] Or multiple pass [X]
13. Single arc [X] Or multiple arc [ ]
14. Welding Current DCEP
15. Polarity Reverse
16. Welding progression stringers
17. Root treatment Clean to bright sound metal or per AWS D1.5 (3.2.1 & 3.11)
18. Postheat treatment N/A
19. Calculated Heat Input (KJ/In) Min 32.2 Kj/in Max 45.8 Kj/in
20. Electrode extension (electrical stickout) 3/4"

For DOT Approval

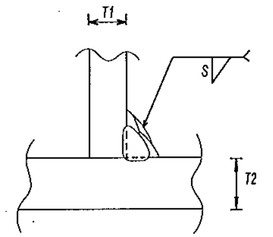
VTrans Received CK'd By JUC CK'D

JUN 26 2012

Resubmit BY APPROVED DATE

Weld size (In)	Pass No(s).	Electrode Size (In)	Welding Process Variables AMPS/WFS*	VOLTS	Travel Speed (IPM)
**1/4"	1	1/16"	257-295	26.1-29.5	11.4-12.5
5/16"	1	1/16"	257-295	26.1-29.5	11.4-12.5
3/8"	2-3	1/16"	257-295	26.1-29.5	11.4-12.5
7/16"	3-5	1/16"	257-295	26.1-29.5	11.4-12.5
1/2"	4-6	1/16"	257-295	26.1-29.5	11.4-12.5
5/8"	5-7	1/16"	257-295	26.1-29.5	11.4-12.5
3/4"	6-8	1/16"	257-295	26.1-29.5	11.4-12.5

Joint Detail (Fillet)
Show all dimensions, weld sizes, passes, and AWS symbols



T1 = Varies
T2 = Varies
S = Weld Size

**** T1 & T2 equal to or less than 3/4" for 1/4" welds.**

* Wire feed speed may be used along with amperage (include chart)

Prepared By: _____ DSB QA Manager

Project: _____

DSB Job: 36775-1104-VT

Preheat and Interpass Temperature Chart

Base Metal Thickness range	Minimum Preheat (°F)	Max Preheat & Interpass (°F)
≤ 3/4"	50°F	450 °F
>3/4" to ≤1.5"	70°F	450 °F
>1.5" to ≤2.5"	150°F	450 °F
>2.5"	225°F	450 °F

Note: When this procedure is used for A709Gr50W materials, it shall be limited to 5/16" single pass or material be coated.

GENERAL NOTES:

1. PAD AND MATERIALS SHALL CONFORM TO STATE OF VERMONT, AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2006 AND THE LATEST REVISIONS, AND THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, FOURTH EDITION, DATED 2007, AND ITS LATEST REVISIONS, CONTRACT PLANS, AND THE SPECIAL PROVISIONS. GENERAL SHOP PRACTICES, STRUCTURAL FABRICATION, WELDING AND ASSEMBLY SHALL BE GOVERNED BY ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

2. THESE SHOP DRAWINGS ARE PREPARED IN ACCORDANCE WITH THE CONTRACT PLANS AND SPECIFICATIONS. THE D.S. BROWN COMPANY DOES NOT ACCEPT LIABILITY FOR THE DESIGN OF THE PRODUCTS DETAILED IN THESE SHOP DRAWINGS.

3. THE D.S. BROWN COMPANY TO SUPPLY ONLY THE PARTS SHOWN ON THESE DRAWINGS.

4. ALL STEEL SHALL BE PRODUCED IN THE UNITED STATES OF AMERICA.

5. THE BEARING SHALL BE SUBJECT TO RANDOM IN-HOUSE ELASTOMER TESTING AND IN-HOUSE PROOF LOAD TESTING IN ACCORDANCE WITH AASHTO DIVISION I, SECTION 14 (METHOD "A") AND AASHTO DIVISION II, SECTION 18.

6. THE TEMPERATURE OF THE STEEL ADJACENT TO THE ELASTOMER SHALL NOT EXCEED 93°C (200°F). TEMPERATURE SHALL BE CONTROLLED BY THE USE OF A TEMPERATURE INDICATING CRAYON OR OTHER DEVICES APPROVED BY THE ENGINEERS.

7. ALL CORNERS AND EDGES OF STEEL PLATES SHALL BE GROUND TO A 0.063" RADIUS.

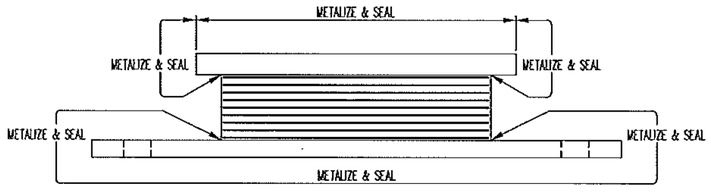
8. ALL STRUCTURAL STEEL SURFACES TO BE METALIZED SHALL BE CLEANED IN ACCORDANCE WITH SSPC-SP5.

9. ALL SPECIFIED STEEL TO BE ZINC METALIZED IN ACCORDANCE WITH AWS C 2.18 SPECIFICATIONS TO A MINIMUM THICKNESS OF 6 MILS. THE COATING SHALL CONSIST OF 99.9% PURE ZINC (MINIMUM PURITY). THE METALIZATION SHALL OCCUR AFTER THE VULCANIZATION PROCESS. THE FIRST COATING SHALL BE APPLIED WITHIN ONE HOUR OF BLAST CLEANING AND THE SURFACE MUST BE COMPLETELY COATED TO THE SPECIFIC THICKNESS WITHIN TWO HOURS OF BLASTING. EXTERIOR SURFACES SHALL BE SEALED WITH CARBOLINE SEALER "RUSTABOND" WITH A MINIMUM DRY FILM THICKNESS 2 MILS. SEE COATING LIMITS FOR LOCATIONS. REPAIR DAMAGED METALIZATION PER ASTM A780.

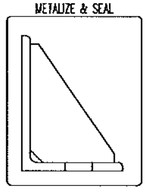
10. TESTING SHALL BE IN ACCORDANCE WITH AASHTO M251.

TOLERANCE TABLE	
DESCRIPTION	**TOLERANCE**
OVERALL VERTICAL DIMENSION	+ 1/8", -0
ELASTOMERIC BEARING DESIGN THICKNESS > 1.250"	+ 1/4", -0
ELASTOMERIC BEARING PLAN ≤ 36"	+ 1/4", -0
ELASTOMERIC COVER TOP & BOTTOM	+ 1/8", -0
ELASTOMERIC COVER SIDES	+ 1/8", -0
THICKNESS OF INDIVIDUAL LAYERS OF ELASTOMER (LAMINATED BEARINGS	
ONLY) AT ANY POINT WITHIN THE BEARING	± 1/8"
VARIATION FROM A PLANE PARALLEL TO THE THEORETICAL SURFACE	
(AS DETERMINED BY MEASUREMENTS AT THE EDGE OF THE BEARINGS)	
TOP	0.005 RAD
SIDES	± 1/4"
POSITION OF EXPOSED CONNECTION MEMBERS	± 1/8"
EDGE COVER OF EMBEDDED LAMINATES OF CONNECTION MEMBERS	+ 1/8", -0
SIZE OF HOLES, SLOTS, OR INSERTS	± 1/8"
POSITION OF HOLES, SLOTS, OR INSERTS	± 1/8"
MASONRY PL. PLAN DIMENSIONS	±1/4"
MASONRY PL. UNDERSIDE SURFACE FLATNESS	CLASS C
MASONRY PL. UPPERSIDE SURFACE FLATNESS	CLASS A
MASONRY PL. THICKNESS	±1/16"
HOLE & SLOT LOCATION	±1/16"
SOLE PL. PLAN DIMENSIONS	±1/16"
SOLE PL. UNDERSIDE SURFACE FLATNESS	CLASS A
SOLE PL. UPPERSIDE SURFACE FLATNESS	CLASS C
SOLE PL. BEVEL SLOPE	± 0.002 RAD
SOLE PL THICKNESS	±1/16"
MASONRY & SOLE PLATE SURFACE FINISH (BEARING SIDE)	125 RMS

FLATNESS TOLERANCE	
CLASS	X NOM. DIM.
A	0.001
B	0.002
C	0.005



ELASTOMERIC BEARING COATING LIMITS



RESTRAINT COATING LIMITS

Vermont Agency of Transportation

RECEIVED

CK'D BY CAM OK'D BY GFR

06/22/2012

RESUBMIT ____ APPROVED X

BY C. CARLSON DATE 06/29/2012

D.S. BROWN

THE D.S. BROWN COMPANY
300 E. CHERRY STREET
NORTH BALTIMORE, OHIO 45872
419.257.3561
FAX: 419.257.0332
WWW.DSBROWN.COM

REV.	DESCRIPTION	DATE	DET.	CKD.

LOCATION — VT RT 9, PRINCIPAL ARTERIAL
BRIDGE — 11
PROJECT — ER BHF 010-1(44)
—
—
DESIGNER — VT AGENCY OF TRANSPORTATION
CUSTOMER — T BUCK CONSTRUCTION, INC.

ITEM	QUANTITY
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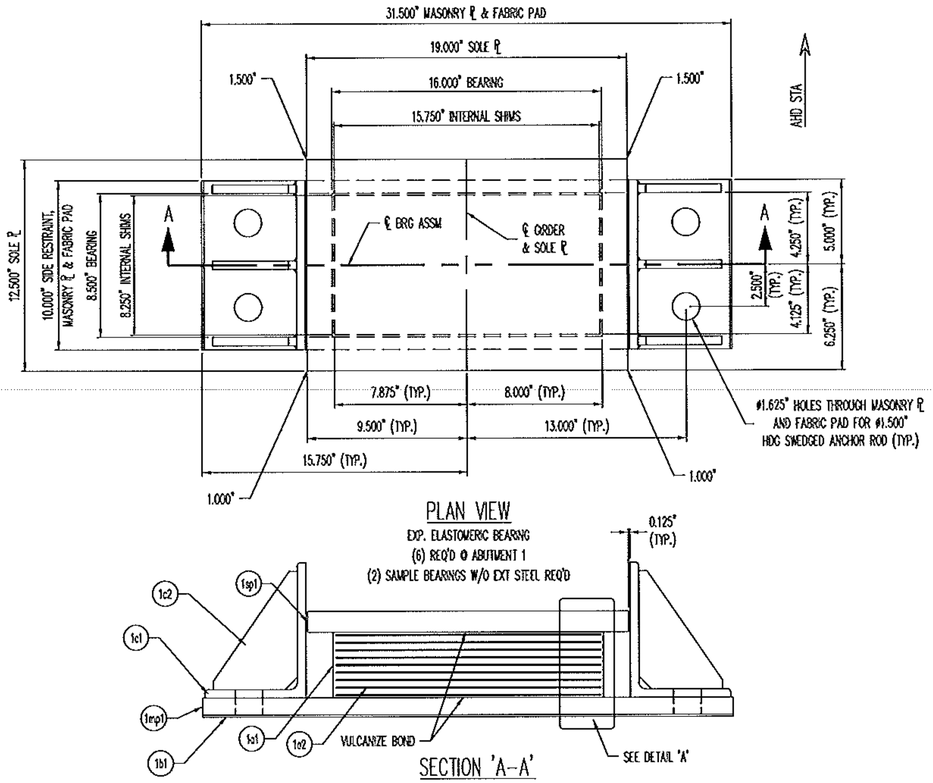
DESCRIPTION: GENERAL NOTES AND COATING LIMITS
BENNINGTON CO., VT

SCALE:	DRAWN BY:	CHECKED BY:	DATE:	
N.T.S.	SP	EAK	6/12	-
PROJECT NUMBER:		PRODUCT CODE:	RELEASE:	SHEET:
36775		1104	1	GN1

MK	QTY	DESCRIPTION	MATERIAL	LENGTH	REMARKS	REV
1A	6	ELASTOMERIC BEARING				-
1a1	6	3.875" X 16.000"	NATURAL RUBBER	8.500"	60+/-5 DURO GR.5; SHEAR MODULUS 136-184 PSI	-
1a2	54	16 GA. X 15.750"	A1011 GR 36	8.250"	PLAIN	-
1mp1	6	1.000" X 31.500"	A709 GR 36	10.000"	METALIZE, SEAL	-
1sp1	6	1.500" X 19.000"	A709 GR 36	12.500"	METALIZE, SEAL	-
1B	6	FABRIC PAD				-
1b1	6	0.125" X 31.500"	VT 707.07	10.000"	HOLES	-
1C	12	SIDE RESTRAINT				-
1c1	12	L8 X 6 X 1/2	A36	10.000"	METALIZE, SEAL	-
1c2	36	0.500" X 5.000"	A36	7.000"	CHAMFER; METALIZE, SEAL	-
1D	24	SMEDGED ROD				-
1d1	24	Ø1.500" X 20.000" SMEDGED ROD	F1554 GR 36		14" SMEDGE, 4" THRD; A153-HDG	-
1F	24	HEAVY HEX NUT				-
1f1	24	Ø1.500" HEX NUT	A563-DH OR A194-2H		A153-HDG, DRY LUBE & DYE	-
1G	24	PLATE WASHER				-
1g1	24	0.375" X 3.000"	A36	3.000"	1 9/16"Ø HOLE CENTERED; A123-HDG	-
1H	2	SAMPLE BEARINGS				-
1s1	2	3.875" X 16.000"	NATURAL RUBBER	8.500"	60+/-5 DURO GR.5; SHEAR MODULUS 136-184 PSI	-
1s2	18	16 GA. X 15.750"	A1011 GR 36	8.250"	PLAIN	-
					6/22/2012 9:04:32 AM	

PLEASE SEE ATTACHED RFI

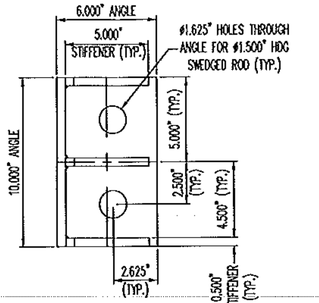
PLEASE SEE ATTACHED RFI



PLAN VIEW

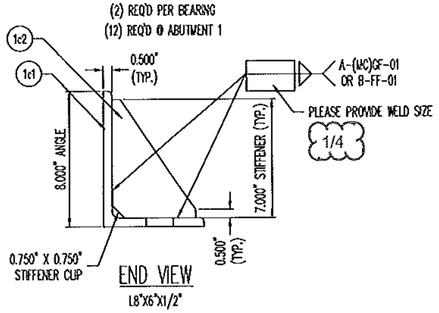
EXP. ELASTOMERIC BEARING
(6) REQ'D @ ABUTMENT 1
(2) SAMPLE BEARINGS W/O EXT STEEL REQ'D

SECTION 'A-A'



PLAN VIEW

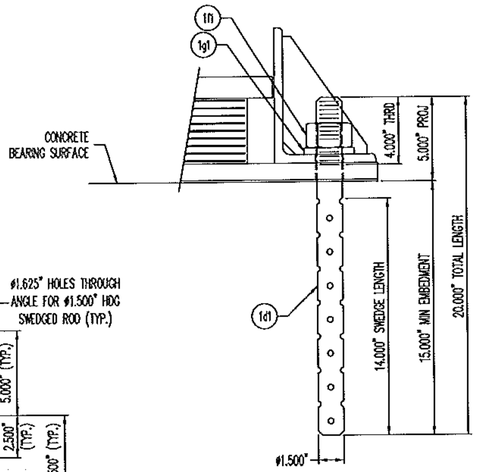
SIDE RESTRAINT
(2) REQ'D PER BEARING
(12) REQ'D @ ABUTMENT 1



END VIEW

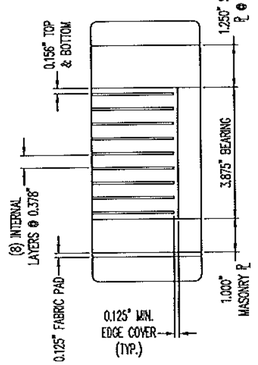
L8"X6"X1/2"

NOTE: THE OUTSIDE 0.500" STIFFENERS CURRENT POSITION PREVENTS A FILLET WELD ON THE OUTSIDE SURFACE. PLEASE DEFINE THE REQUIRED WELD, IF REQUIRED. NOTE THAT MOVING THE STIFFENER MAY IMPINGE THE PLATE WASHER.



ANCHOR ROD ASSEMBLY

(24) REQ'D @ ABUTMENT 1



DETAIL 'A'

LOAD DATA	
MAX DL REACTION (KIPS)	45.0
MAX LL REACTION (KIPS)	79.0
MAX DL+LL REACTION (KIPS)	124.0

SEE SHEET 36775-1104-GN1 FOR GENERAL NOTES AND COATING LIMITS

REV.	DESCRIPTION	DATE	DET.	CKD.

Vermont Agency of Transportation

RECEIVED

CK'D BY CAM OK'D BY GFR

06/22/2012

RESUBMIT APPROVED AS NOTED

BY C. CARLSON DATE 06/29/2012

D.S. BROWN

THE D.S. BROWN COMPANY
300 E. CHERRY STREET
NORTH BALTIMORE, OHIO 45872
419.257.3561
FAX: 419.257.0332
WWW.DSBROWN.COM

LOCATION — VT RT 9, PRINCIPAL ARTERIAL
BRIDGE — 11
PROJECT — ER BHF 010-1(44)
—
—
DESIGNER — VT AGENCY OF TRANSPORTATION
CUSTOMER — T BUCK CONSTRUCTION, INC.

ITEM	QUANTITY
36775-1104-1	6 OF 6
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DESCRIPTION: VERSIFLEX ELASTOMERIC BEARING BENNINGTON CO., VT

SCALE	DRAWN BY	CHECKED BY	DATE	
N.T.S.	SP	EAK	6/12	--
PROJECT NUMBER	PRODUCT CODE	REVISION	SHEET	
36775	1104	1	1	

VERMONT

State of Vermont
Program Development
One National Life Drive
Montpelier, VT 05633-5001
www.aot.state.vt.us

Agency of Transportation

[phone] 802-828-2621
[fax] 802-828-3566
[ttd] 800-253-0191

September 11, 2012

Watson Bowman Acme Corporation
95 Pineview Drive
Amherst, NY 14228

Project Name: Woodford Project #: ER BHF 010-1(44)

Structure Identification: VT 9 Over the Roaring Branch of the Walloomsac River

This letter is an update to the letter provided to you dated September 5, 2012. The following **bridge expansion joint details item 516.11, "Bridge Expansion Joint, Vermont"** for the above project (Vendor's Job #143833), transmitted by T. Buck Construction, Inc. and received by our office on Tuesday, August 21, 2012, have been updated with some additional changes needed.

Sheets 5 and the welding procedures are approved.

Sheets 1, 2, 3 and 4 of are approved "as noted". (Please make appropriate changes as indicated on the "as noted" drawing and submit a new "*.pdf" for our use in the record plans for this project.)

The updated drawings were emailed to you via the contractor. As a reminder, you must provide notice to our fabrication inspector Jeff Clark as to the date fabrication represented by these drawings will begin. Jeff may be contacted by phone at (802)828-0044 or email at jeff.clark@state.vt.us. That notice must be received at least seven days prior to that date, as per Specification 506.03. Any material fabricated prior to the notification date is subject to rejection without further cause.

Sincerely,

Carolyn W. Carlson, PE
Project Manager

Attachments
cc: [X] Resident Engineer Ron Lemaire -w/updated prints
[X] T. Buck Construction, Inc. – w/updated prints
[X] Shop Inspector - Jeff Clark w/updated prints
[X] Materials & Research Section (C&IA Unit) – Letter only
[X] Construction Division - Letter only
[X] CWC

VTrans Working to Get You There
Vermont Agency of Transportation

VERMONT

Structures

State of Vermont
Program Development
One National Life Drive
Montpelier, VT 05633-5001
www.aot.state.vt.us

Agency of Transportation

[phone] 802-828-2621
[fax] 802-828-3566
[ttd] 800-253-0191

September 5, 2012

Watson Bowman Acme Corporation
95 Pineview Drive
Amherst, NY 14228

Project Name: Woodford Project #: ER BHF 010-1(44)

Structure Identification: VT 9 Over the Roaring Branch of the Walloomsac River

The following **bridge expansion joint details item 516.11, "Bridge Expansion Joint, Vermont"** for the above project (Vendor's Job #143833), transmitted by T. Buck Construction, Inc. and received by our office on Tuesday, August 21, 2012, have been reviewed and are being returned herewith.

Sheets 4, 5 and the welding procedures are approved.

Sheets 1, 2, 3 of are approved "as noted". (Please make appropriate changes as indicated on the "as noted" drawing and submit a new "*.pdf" for our use in the record plans for this project.)

You must provide notice to our fabrication inspector Jeff Clark as to the date fabrication represented by these drawings will begin. Jeff may be contacted by phone at (802)828-0044 or email at jeff.clark@state.vt.us. That notice must be received at least seven days prior to that date, as per Specification 506.03. Any material fabricated prior to the notification date is subject to rejection without further cause.

Sincerely,

Carolyn W. Carlson

Carolyn W. Carlson, PE
Project Manager

Attachments
cc: [X] Resident Engineer Ron Lemaire -w/prints
[X] T. Buck Construction, Inc. – w/prints
[X] Shop Inspector - Jeff Clark w/prints
[X] Materials & Research Section (C&IA Unit) – Letter only
[X] Construction Division - Letter only
[X] CWC

VTrans Working to Get You There
Vermont Agency of Transportation

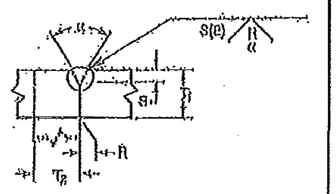
BASF
The Chemical Company

AWS D1.5
WELDING PROCEDURE SPECIFICATION

MATERIAL SPECIFICATION:	ASTM: A709 Gr. 250, 345, & 345W (painted); A36, A572, A588 (painted) (ref. AWS D1.5:2002, sect. 1.2 & 5.4)
WELDING PROCESS:	GMAW
MANUAL OR MACHINE:	Semi-Automatic
POSITION OF WELDING:	Flat, Horizontal
FILLER METAL SPECIFICATION:	A5.18
FILLER METAL CLASSIFICATION:	ER70S-6
FILLER METAL MANUFACTURER:	HOBART ER-6
SHIELDING GAS: Ar - 98%; O_2 - 2%	DEW POINT: -40°F min. FLOW RATE: 37 - 49 CFH
SINGLE OR MULTIPLE PASS:	Single
SINGLE OR MULTIPLE ARC:	Single ELECTRODE STICKOUT: 3/4" ±1/8"
WELDING CURRENT:	DCEP
WELDING PROGRESSION:	Forward
ROOT TREATMENT:	Surfaces shall be smooth and uniform, and free of discontinuities, loose or thick scale, slag, rust, moisture, grease/oil, and other foreign material. (ref. AWS D1.5:2002, 3.2.1)
PREHEAT AND INTERPASS TEMP.	Minimum: ≤ 3/4" = 50°F; over 3/4" to 1-1/2" = 70°F; over 1-1/2" to 2-1/2" = 150°F; over 2-1/2" = 225°F. Maximum: 450°F
POSTHEAT TREATMENT:	N/A

WELDING PROCEDURE

Weld Size (E)	Electrode Size	Welding Current: Amps	Welding Current: Volts	Travel Speed "/Min	Depth of Prep. (S)	Joint Detail C-P2-G
3/16"	.045	265-280	27.5-30	10.0 - 11.0	265-280	
1/4"	.045	265-280	27.5-30	10.0 - 11.0	265-280	
5/16"	.045	265-280	27.5-30	10.0 - 11.0	265-280	
R = 0	α = 60°	T_1 = 1/4" min	T_2 = Unlimited	f = 1/8" min, S = 1/3 T_1		



*** This procedure may vary within the limitations identified in AWS D1.5:2008 "Bridge Welding Code". ***

PROCEDURE NO: GMAW-06 REVISION NO.: 0-2010

QUALIFYING PQR: WBA - GMAW 2010-A PQR REQUAL DATE: 11/09/16

MANUFACTURER: Watson Bowman Acme Corp. AUTHORIZED BY: Gregory D. Ross - Quality Control Manager

Visual Received ENG ORIG BY JWC

APR 17 2012

RESUBMIT APPROVED DATE 4/25/12

GREGORY D ROSS
CWI 03011211
QCI EXP 07/01/11

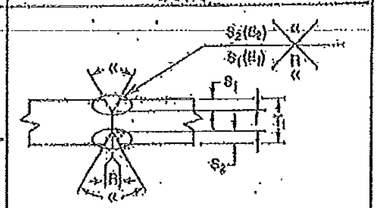
BASF
The Chemical Company

AWD D1.5
WELDING PROCEDURE SPECIFICATION

MATERIAL SPECIFICATION:	ASTM; A709 Gr. 250; 345, & 345W (painted); A36, A572, A588 (painted) (ref. AWS D1.5:2002, sect. 1.2 & 5.4)
WELDING PROCESS:	GMAW
MANUAL OR MACHINE:	Semi-Automatic
POSITION OF WELDING:	Flat, Horizontal
FILLER METAL SPECIFICATION:	A5.18
FILLER METAL CLASSIFICATION:	ER70S-6
FILLER METAL MANUFACTURER:	HOBART ER-6
SHIELDING GAS: Ar – 98%; O_2 - 2%	DEW POINT: -40°F min. FLOW RATE: 37 - 49 CFH
SINGLE OR MULTIPLE PASS:	Multiple
SINGLE OR MULTIPLE ARC:	Single ELECTRODE STICKOUT: 3/4" ± 1/4"
WELDING CURRENT:	DCEP
WELDING PROGRESSION:	Forward
ROOT TREATMENT:	Surfaces shall be smooth and uniform, and free of: discontinuities, loose or thick scale, slag, rust, moisture, grease/oil, and other foreign material. (ref. AWS D1.5:2002, 3.2.1)
PREHEAT AND INTERPASS TEMP:	Minimum: ≤ 3/4"= 50°F; over 3/4" to 1-1/2"= 70°F; over 1-1/2" to 2-1/2"= 150°F; over 2-1/2"= 225°F Maximum: 450°F
POSTHEAT TREATMENT:	N/A

WELDING PROCEDURE

Weld Size - # of Passes	Electrode Size	Welding Current Amps	Welding Current Volts	Travel Speed "/Min	Joint Detail D-P3-Q
All	.045	265-280	27.5-30	10.0 – 11.0	T_1 = 1/2" min F = 1/8" min α = 60° R = 0 S 1 + S2 = 1/3 T



**** This procedure may vary within the limitations identified in AWS D1.5:2008 "Bridge Welding Code". ****

PROCEDURE NO: GMAW-07 REVISION NO.: 0-2010

QUALIFYING PQR: WBA – GMAW 2010 -A PQR REQUAL DATE: 11/09/15

MANUFACTURER: Watson Bowman Acme Corp. AUTHORIZED BY: Gregory Ross – Quality Control Manager

Visual
Received
GFD ORD BY JWC

APR 17 2012

GREGORY B ROSS
CWI 08070211
QCI EXP 07/01/11

Watson Bowman Acme

Response APPROVED ✓
BY DATE 4/25/12

BASF
The Chemical Company

AWS D1.5
WELDING PROCEDURE SPECIFICATION

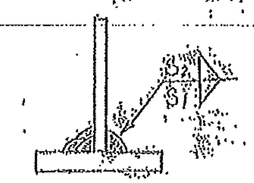
MATERIAL SPECIFICATION: ASTM: A709 Gr. 250, 345 & 345W (painted); A36, A572, A588(painted) (ref. AWS D1.5:2002 sect. 1.2 & 5.4)

WELDING PROCESS: GMAW
MANUAL OR MACHINE: Semi-Automatic
POSITION OF WELDING: Flat & Horizontal
FILLER METAL SPECIFICATION: A5.18
FILLER METAL CLASSIFICATION: ER70S-6
FILLER METAL MANUFACTURER: HOBART BR-6
SHIELDING GAS: Ar – 98% O_2 - 2% DEW POINT: -40°F min. FLOW RATE: 37 – 49 CFH
SINGLE OR MULTIPLE PASS: Single (S_1) or Multiple (S_2)
SINGLE OR MULTIPLE ARC: Single ELECTRODE STICKOUT: 3/4" ±1/4"
WELDING CURRENT: DCEP
WELDING PROGRESSION: Forward
ROOT TREATMENT: Surfaces shall be smooth and uniform, and free of discontinuities, loose or thick scale, slag, rust, moisture, grease/oil, and other foreign material. (ref. AWS D1.5:2002 , 3.2.1)

PREHEAT AND INTERPASS TEMP: Minimum: ≤ 3/4" = 50°F; over 3/4" to 1-1/2" = 70°F; over 1-1/2" to 2-1/2" = 150°F; over 2-1/2" = 225°F Maximum: 450°F

POSTHEAT TREATMENT: N/A

WELDING PROCEDURE

Weld Size	Electrode Size	Welding Current		Travel Speed "/Min	Joint Detail Fillet
		Amps	Volts		
≤ 5/16 (S_1)	.045	265-280	27.5-30	10.0 – 11.0	
≥ 5/16 (S_1)	.045	265-280	27.5-30	10.0 – 11.0	

**** This procedure may vary within the limitations identified in AWS D1.5:2008 "Bridge Welding Code". ****

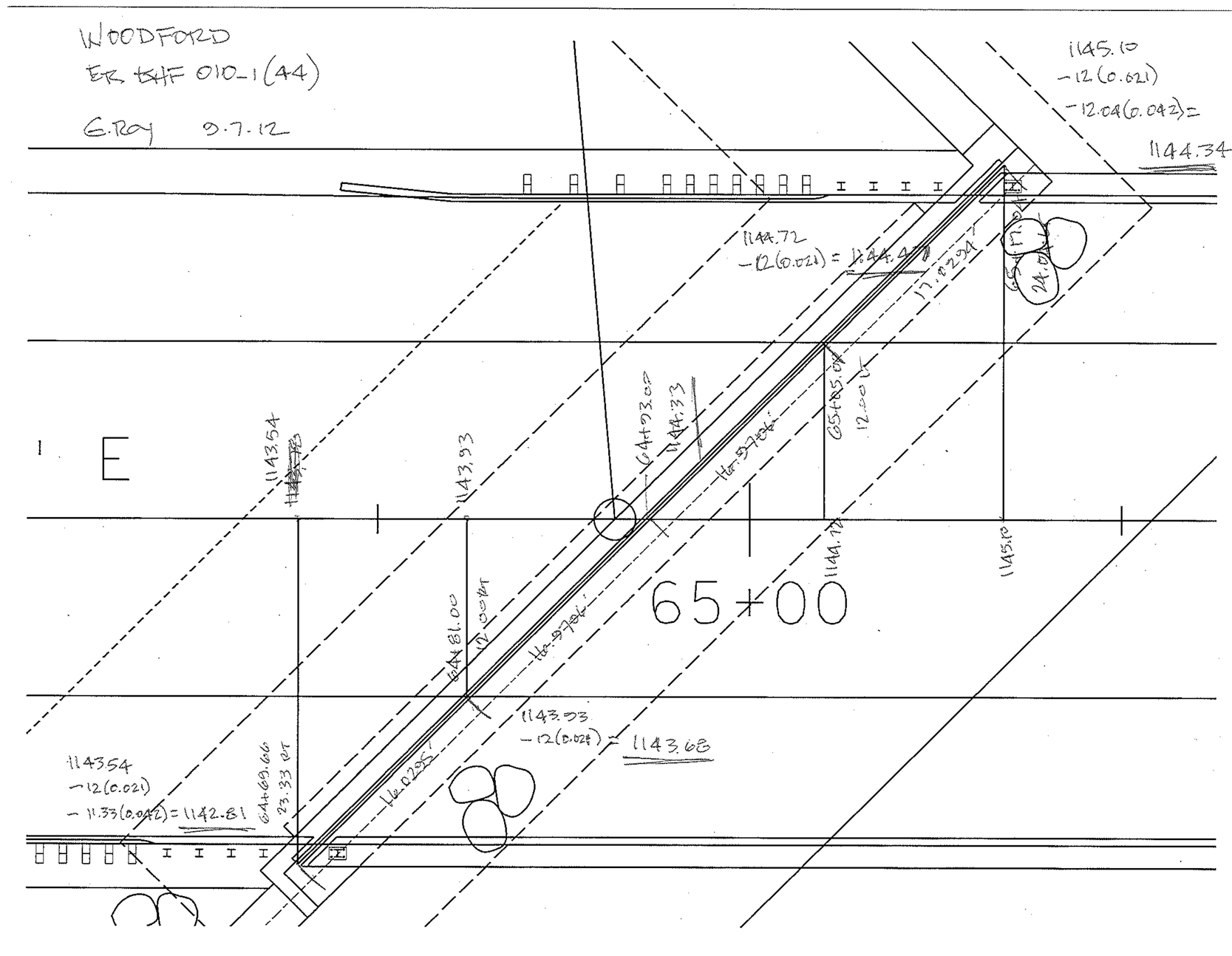
PROCEDURE NO: GMAW-11 REVISION NO.: 0-2010
QUALIFYING PQR: WBA-GMAW-2010 & GMAW-CS-2007 Fillet PQR REQUAL DATE: 11/09/15
MANUFACTURER: Watson Bowman Acme Corp. AUTHORIZED BY: Gregory D. Ross – Quality Control Manager

Visions
Received
CK'D OK'd BY JLC

GREGORY D ROSS
CWI 08070211
QCI EXP 07/01/11

APR 17 2012

Resubmit APPROVED
BY DATE 4/25/12


WOODFORD
ER-XHF-010-1(44)
G.Roy 9.7.12
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-12(0.021)
-12.04(0.042)=
1144.34
1144.72
-12(0.021) = 1144.47
65+45.04
12.00 Lt
24.04
65+45.04
12.00 Lt
1144.33
1144.77
1145.19
65+00
1143.93
1143.54
1144.81.00
12.00 Lt
1143.03
-12(0.021) = 1143.68
1143.54
-12(0.021)
-11.33(0.042)=1142.81
@4469.66
23.33 RT

GENERAL NOTES

1.0 GENERAL

1.1 THE CONTRACTOR MUST VERIFY ALL DIMENSIONS PRIOR TO FABRICATION TO ENSURE ACCURACY OF THE EXPANSION JOINT.

DIMENSIONS VERIFIED:_____

1.2 ALL WORK SHALL COMPLY WITH THE VERMONT AGENCY OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2011, AND ITS LATEST REVISIONSAND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SIXTEENTH EDITION AND ITS LATEST REVISIONS, EXCEPT AS NOTED HEREIN.

1.3 ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED.

1.4 IN CASE OF DIFFERENCE ON THE CONTRACT PLANS BETWEEN SCALE DIMENSIONS AND FIGURES, THE FIGURES SHALL BE FOLLOWED.

2.0 STANDARD SPECIFICATION CRITERIA

3.0 SPECIAL PROVISION CRITERIA

4.0 MATERIALS

4.1 ALL STRUCTURAL AND PERMANENT MATERIALS SHALL BE OF DOMESTIC ORIGIN, AND MATERIAL CERTIFICATION STATING ALL SUCH MATERIALS ARE "MELTED AND MANUFACTURED" IN THE UNITED STATES OF AMERICA SHALL BE SUBMITTED.

4.2 STEEL BARS, PLATES AND SHAPES SHALL CONFORM TO ASTM A 36.

4.3 STRUCTURAL USE AND GENERAL USE BOLTS, NUTS AND WASHERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-325. BOLTS, NUTS AND WASHERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-325, A-563 AND F-436 RESPECTIVELY. SCREWS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F-835.

4.4 THE FABRIC TROUGH SHALL BE ONE CONTINUOUS FABRIC PIECE FOR THE FULL LENGTH OF THE EXPANSION JOINT.

4.5 THE CONCRETE ANCHOR STUDS SHALL BE IN ACCORDANCE WITH ASTM A-108.

5.0 INSPECTION REQUIREMENTS

5.1 IN HOUSE SHOP INSPECTION BY A REPRESENTATIVE OF VERMONT AGENCY OF TRANSPORTATION INDEPENDENT OF WATSON BOWMAN ACME CORP.'S QUALITY CONTROL INSPECTOR IS REQUIRED.

5.2 QUALITY CONTROL INSPECTION

5.2.1 DURING FABRICATION OF THE EXPANSION JOINT, WATSON BOWMAN ACME SHALL PROVIDE FULL TIME QUALITY CONTROL INSPECTION TO INSURE THAT THE MATERIALS AND WORKMANSHIP MEET OR EXCEED THE MINIMUM REQUIREMENTS OF THE CONTRACT.

6.0 FABRICATION

6.1 FABRICATION SHALL BE IN ACCORDANCE WITH WATSON BOWMAN ACME'S QUALITY CONTROL MANUAL AND MANUFACTURING TOLERANCE.

6.2 ALL WELDING SHALL BE IN ACCORDANCE WITH AWS D1.5 WELDING SPECIFICATIONS.

6.3 ALL WELDING SHALL BE EXECUTED USING GMAW PROCESSES. SEAL WELD ALL CONNECTIONS WHERE POSSIBLE PRIOR TO GALVANIZING.

6.4 STUDS SHALL BE INSPECTED VISUALLY AND SHALL BE GIVEN A LIGHT BLOW WITH A HAMMER. ANY STUD WHICH DOES NOT HAVE A COMPLETE END WELD OR DOES NOT EMIT A RINGING SOUND WHEN STRUCK WITH A LIGHT BLOW WITH A HAMMER SHALL BE REPLACED.

6.5 STUDS SHALL NOT BE LOCATED MORE THAN 1" FROM THE LOCATION SHOWN ON THESE SHOP DRAWINGS.

6.6 THE FABRIC TROUGH SHALL BE THOROUGHLY CLEANED AND FLUSHED AFTER PAVING OPERATION. A DRIP BEAD OD 1/4" x 7" PREFORMED FABRIC MATERIAL SHALL BE CEMENTED TO THE BOTTOM OF THE FABRIC TROUGH USING AN ADHESIVE APPROVED BY THE MANUFACTURER. THE DRIP BEAD SHALL BE APPLIED 1" FROM THE DOWNSPOUT END OF THE TROUGH.

6.7 THE EXPANSION JOINT OPENING SHALL BE PRESET BY THE MANUFACTURER, TO THE DIMENSION SHOWN AT 45°F. FINAL ADJUSTMENTS SHALL BE MADE IN THE FIELD BY THE CONTRACTOR AT THE DIRECTION OF THE ENGINEER IN CHARGE, PRIOR TO FINAL CONCRETE PLACEMENT.

6.8 STUDS MAY BE BENT TO AN ANGLE OF 30° TO AVOID INTERFERENCE WITH DECK REINFORCEMENT, OR TO PROVIDE PROPER CONCRETE COVER.

6.9 AFTER FABRICATION, BUT BEFORE SHIPPING, STRAIGHTEN STEEL SHAPES SO THAT THEY ARE FREE FROM WARP, TWIST AND SWEEP.

6.10 FOR PAYMENT PURPOSES THE LENGTH OF THE JOINT PAID FOR WILL BE THE NUMBER OF LINEAR METERS OF JOINT SYSTEM INSTALLED, MEASURED HORIZONTALLY AND VERTICALLY ALONG THE CENTERLINE OF THE JOINT SYSTEM BETWEEN THE OUTER LIMITS OF THE BRIDGE FASCIA UNLESS OTHERWISE SHOWN ON THE PLANS.

7.0 COATINGS

7.1 THE EXPANSION JOINT ASSEMBLY, INCLUDING THE SUPPORT ANGLES, SHALL BE GALVANIZED. IN ACCORDANCE WITH ASTM A-123. THE WELDED EMBEDMENT PLATE WITH STUDS AND FIELD WELDED 1" DIA THREADED STUDS SHALL NOT BE GALVANIZED.

7.2 REPAIR DAMAGED HOT-DIP GALVANIZING ACCORDING TO AASHTO M-111. REPAIRED AREAS TO BE "COLD GALVANIZED". PRODUCT SHALL BE 92% ZINC DUST AND HAVE A DRY FILM THICKNESS EQUAL TO OR GREATER THAN THE ORIGINAL GALVANIZING. AEROSOL CANS SHALL NOT BE USED.

7.3 PRIOR TO GALVANIZING, ALL CORNERS AND EDGES OF STEEL PLATES, SHAPES, ETC., SHALL BE GROUND TO A 1.6mm (1/16") RADIUS.

The 1 1/4" x 5 1/2" bars shall be furnished in eight pieces, four pieces per side. The maximum length of any one piece shall not exceed 17'-1 3/8"

Either the 33 foot or the 34 foot section of joint shall be assembled prior to shipping, with the fabric trough included.

Vermont Agency of Transportation

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CK'D BY M.E.M OK'D BY C.W.M.

Aug. 21, 2012

RESUBMIT _____ APPROVED AS NOTED

BY C. CARLSON DATE 09-05-2012

STATE: VERMONT
COUNTY: BENNINGTON
PROJECT NO.: ER BHF 010-1(44)
REFERENCE NO.: XXXXXXXXX
DISTRICT: XXX ROUTE: XXX
WBA PRODUCT NO.: EMB143833AA

SHEET NUMBER
ITEM DESIGNATION
ITEM NUMBER
2e1
MARK SYSTEM

DRAWING ACTION:

NO	DESCRIPTION	MDR	DATE
3			
2			
1			

Watson Bowman Acme
WATSON BOWMAN ACME CORPORATION
95 PRINCE DRIVE AMHERST, NY. 14228 TEL: (716) 691-2555 FAX (716) 691-2559

BASF The Chemical Company

PROJECT: WOODFORD
VT RT 9 BRIDGE NO. 11 OVER ROARING BRANCH OF THE WALLOOMSAC RIVER
WABO PLATE JOINT W/NEOPRENE TROUGH DETAILS

DRAWN BY: KF	DATE: 8-14-12
CHECKED BY: JFW	DATE: 8-14-12
SCALE: NTS	WBA JOB NO.: 143833
SHEET NO.: 1 OF 5	DRAWING NO.: B-30085

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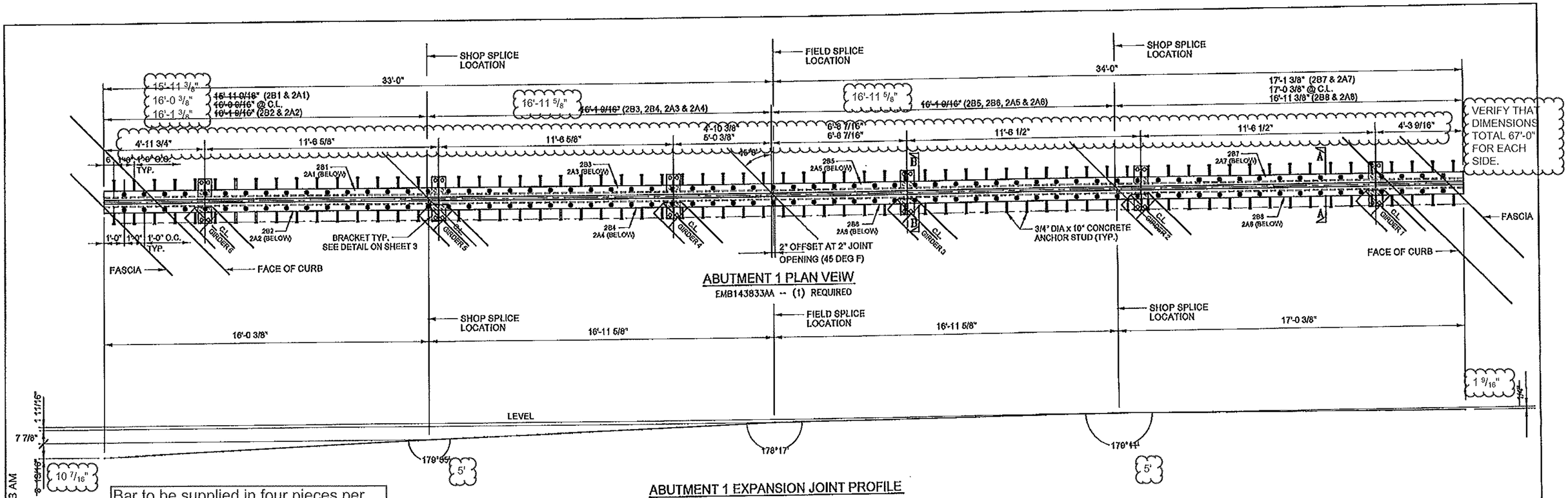


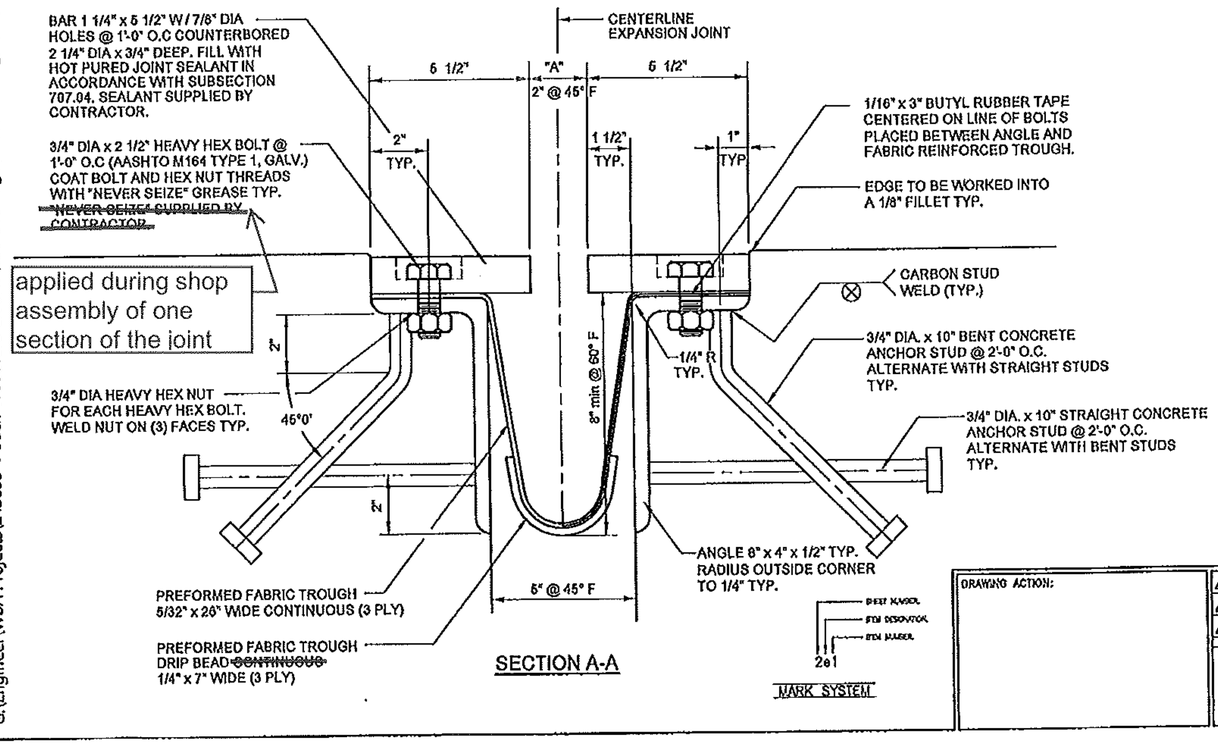
ABUTMENT 1 PLAN VEIW

EMB143833AA -- (1) REQUIRED

ABUTMENT 1 EXPANSION JOINT PROFILE

ALL DIMENSIONS SHOWN ARE TAKEN ALONG THE CENTERLINE OF THE EXPANSION JOINT

Bar to be supplied in four pieces per side of joint. Maximum length of each piece of bar 17'-1 3/8".



applied during shop assembly of one section of the joint

SECTION A-A

TEMP.	"A" DIST.
0 DEG F	2 3/8"
15 DEG F	2 1/4"
30 DEG F	2 1/8"
45 DEG F	2"
60 DEG F	1 7/8"
75 DEG F	1 3/4"
90 DEG F	1 5/8"
105 DEG F	1 1/2"

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08/21/2012
RESUBMIT APPROVED AS NOTED
BY C. CARLSON DATE 09/07/2012

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~~RECEIVED~~
~~CK'D BY M.E.M. OK'D BY C.W.M.~~
~~Aug. 21, 2012~~
~~RESUBMIT APPROVED AS NOTED~~
~~BY C. CARLSON DATE 09-05-2012~~

STATE: VERMONT
COUNTY: BENNINGTON
PROJECT NO.: ER BHF 010-1(44)
REFERENCE NO.: XXXXXXXXX
DISTRICT: XXX ROUTE: XXX
WBA PRODUCT NO.: EMB143833AA

DRAWING ACTION:

NO.	DESCRIPTION	BY	DATE
1			
2			
3			

Watson Bowman Acme
WATSON BOWMAN ACME CORPORATION
50 PANORAMA DRIVE AMHERST, N.Y. 14228 TEL: (716) 691-2566 FAX: (716) 691-9229

BASF The Chemical Company

PROJECT: WOODFORD
VT RT 9 BRIDGE NO. 11 OVER ROARING BRANCH OF THE WALLOOMSAC RIVER
WABO PLATE JOINT W/NEOPRENE TROUGH DETAILS

DETAILED BY	JFW	DATE	8-14-12
CHECKED BY	KF	DATE	8-14-12
SCALE	NTS	WBA JOB NO.	143833
SHEET NO.	2 OF 5	DRAWING NO.	B-30085

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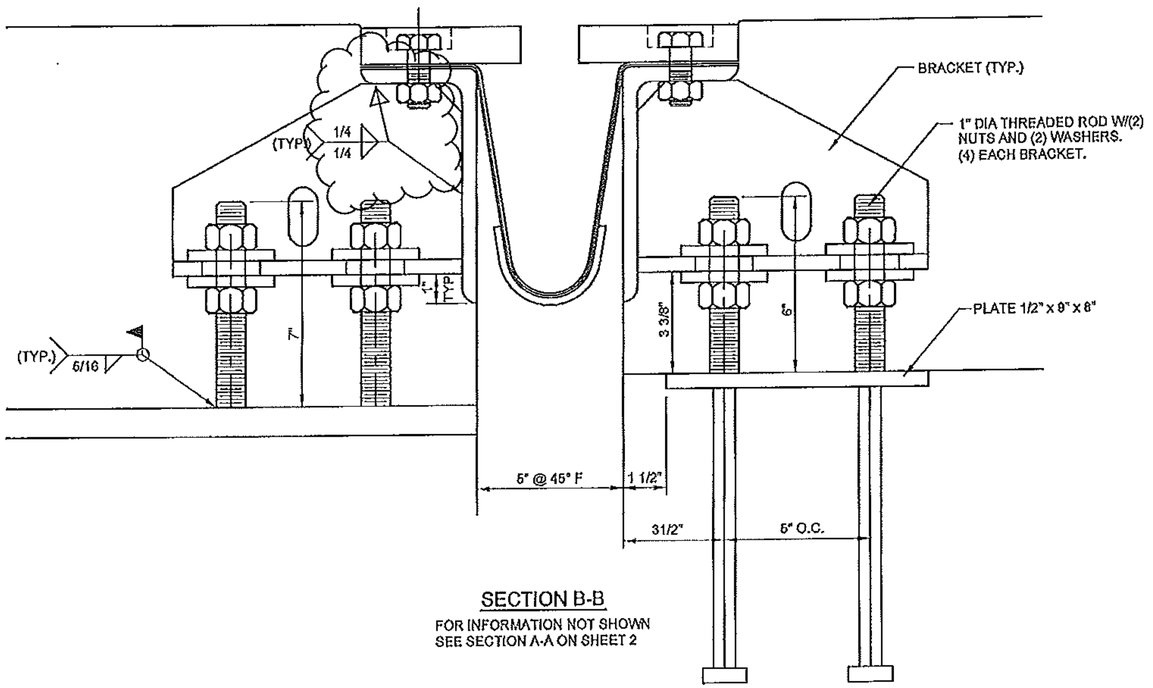
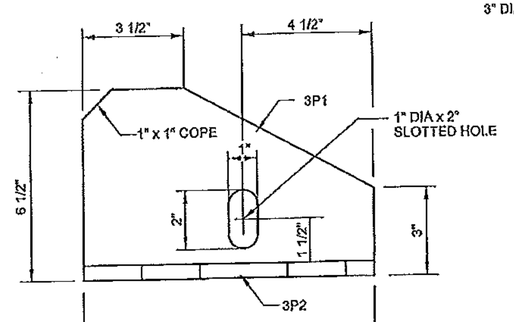
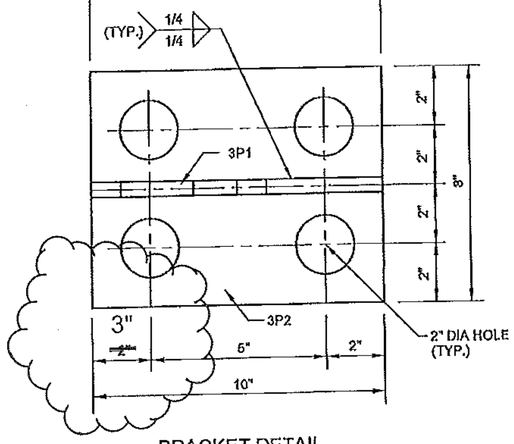


SECTION B-B

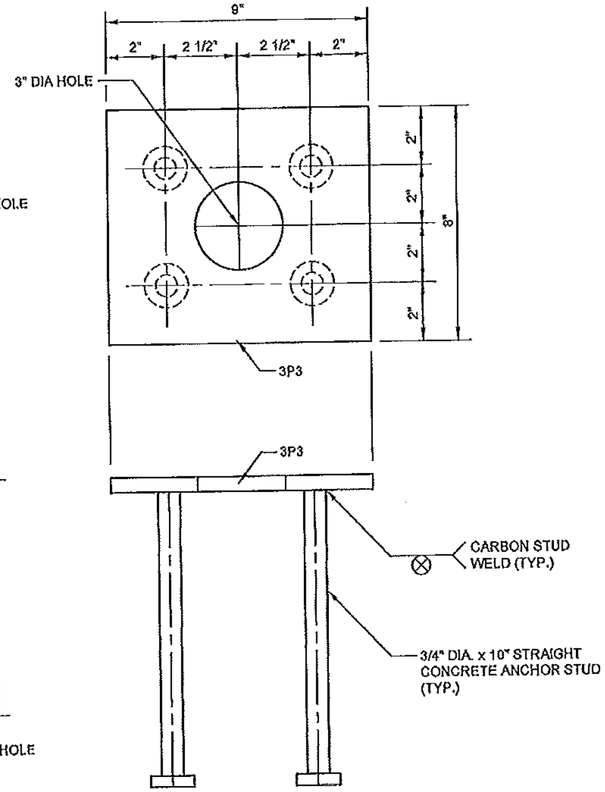
FOR INFORMATION NOT SHOWN SEE SECTION A-A ON SHEET 2





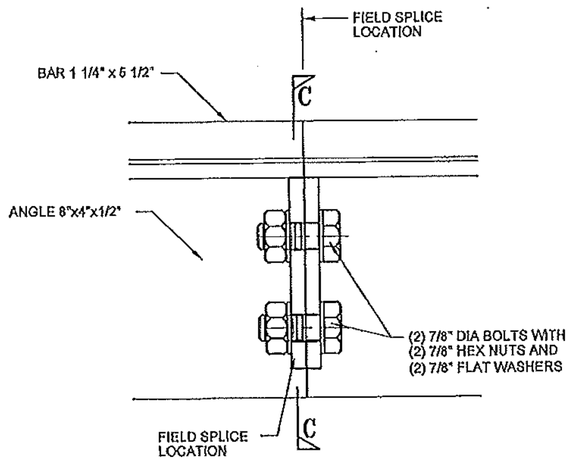
BRACKET DETAIL

1/2" PLATE

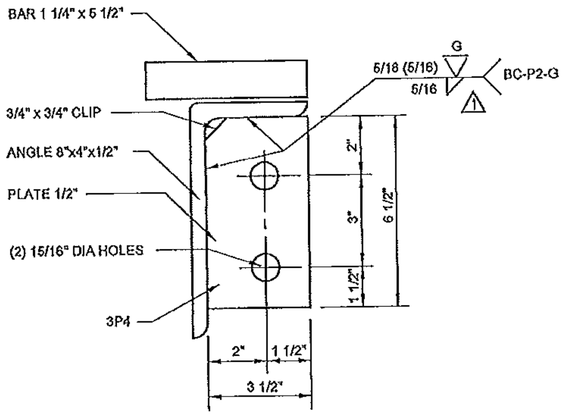


EMBEDMENT PLATE WITH STUDS DETAIL

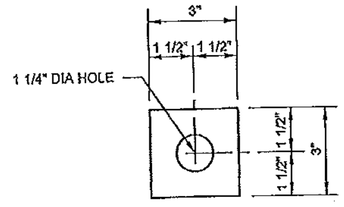
1/2" PLATE



FEILD SPLICE DETAIL

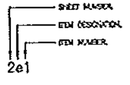


SECTION B-B



WASHER FOR BRACKET

3/8" FLAT BAR



MARK SYSTEM

DRAWING ACTION:

NO	REVISION	BY	DATE
3			
2			
1	REVISED WELD DETAIL	JFW	8-31-2012

Watson Bowman Acme
WATSON BOWMAN ACME CORPORATION
95 PINEVIEW DRIVE AMHERST, N.Y. 14228 TEL. (716) 691-3563 FAX (716) 691-9339
BASF The Chemical Company

PROJECT:
WOODFORD
VT RT 9 BRIDGE NO. 11 OVER ROARING BRANCH OF THE WALLOOMSAC RIVER
WABO PLATE JOINT W/NEOPRENE TROUGH DETAILS

DETAILED BY: JFW	DATE: 8-14-12
CHECKED BY: KF	DATE: 8-14-12
SCALE: NTS	WBA JOB NO.: 143833
SHEET NO.: 3 OF 5	DRAWING NO.: B-30085

Vermont Agency of Transportation

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CK'D BY M.E.M OK'D BY C.W.M.

Aug. 21, 2012

RESUBMIT APPROVED AS NOTED

BY C. CARLSON DATE 09-05-2012

STATE: VERMONT
COUNTY: BENNINGTON
PROJECT NO.: ER BHF 010-1(44)
REFERENCE NO.: XXXXXXXXX
DISTRICT: XXX ROUTE: XXX
WBA PRODUCT NO.: EMB143833AA

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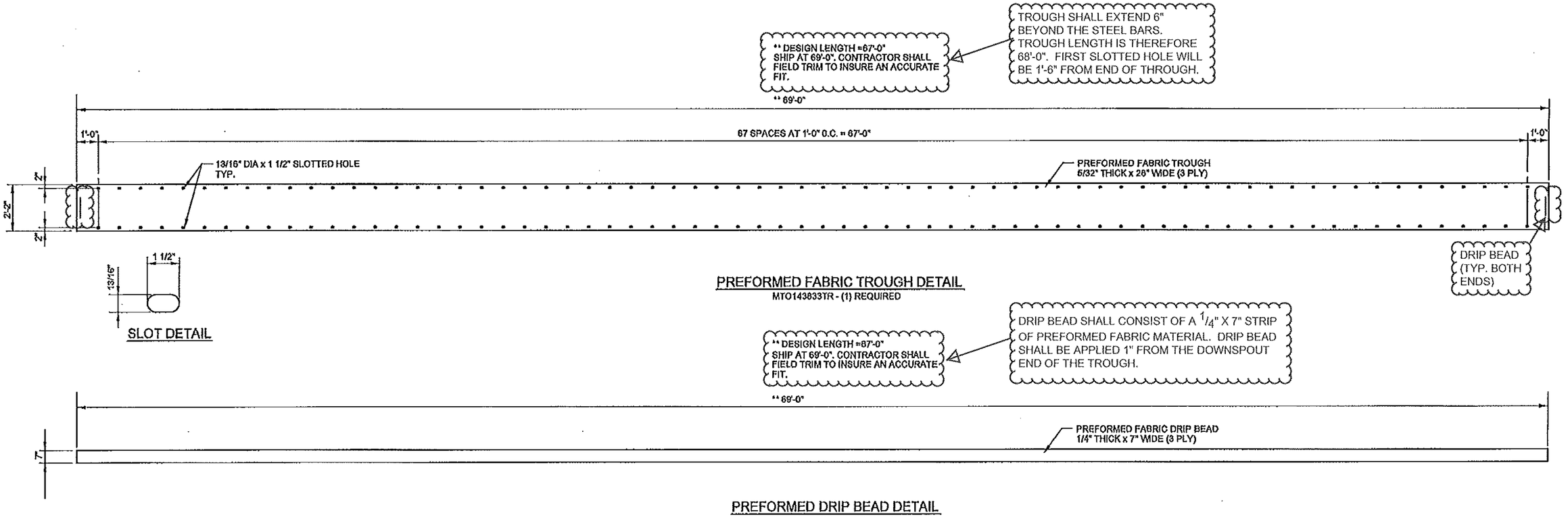
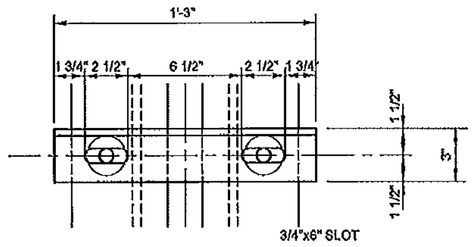
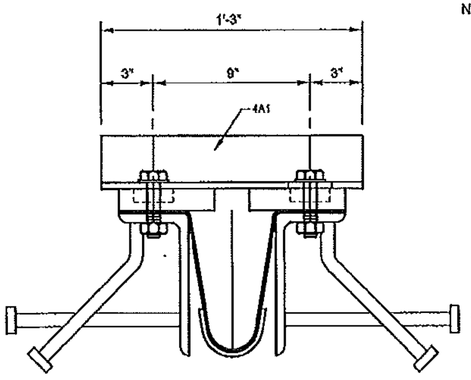




DETAIL - ANGLE (4A1)

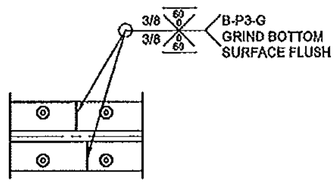


SHIPPING CLAMP ASSEMLBY
THIS IS A TEMPORARY DEVICE

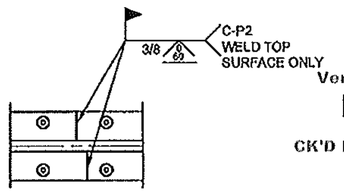
NOTE: 1. SHIPPING CLAMPS SHALL BE SPACED 1'-0" FROM END OF JOINT AND 4'-0" O.C. THEREAFTER.

2. THE CONTRACTOR IS TO REMOVE THE SHIPPING CLAMPS WHEN THE JOINT IS SET. CONTRACTOR SHALL TOUCH UP ANY DAMAGED GALVANIZING.

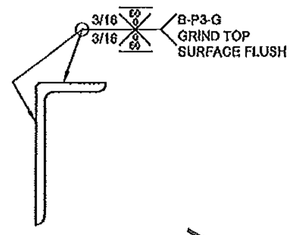
3. EACH SHIPPING CLAMP ASSEMBLY SHALL INCLUDED,
1 - ANGLE (4A1) 3" x 3" x 1/2"
2 - 3/4"Ø x 3 1/2"LG FULLY THREADED BOLT
2 - 3/4" WASHER



SHOP WELD ⚠
1 1/4" x 5" BAR



FIELD WELD ⚠
1 1/4" x 5" BAR



SHOP WELD ⚠
8" x 4" x 1/2" ANGLE

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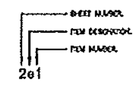
CK'D BY M.E.M. OK'D BY C.W.M.
Aug. 21, 2012
RESUBMIT ..... APPROVED ✓
BY C. CARLSON DATE Sept. 05, 2012

STATE: VERMONT
COUNTY: BENNINGTON
PROJECT NO.: ER BHF 010-1(44)
REFERENCE NO.: XXXXXXXXX
DISTRICT: XXX ROUTE: XXX
WBA PRODUCT NO.: EMB143833AA



MARK SYSTEM

DRAWING ACTION:

NO	DESCRIPTION	INIT	DATE
⚠			
⚠			
⚠	ADDED WELD DETAILS	JFW	8-21-2012

Watson Bowman Acme
WATSON BOWMAN ACME CORPORATION
95 PRESTON DRIVE AMHERST, N.Y. 14228 TEL. (716) 691-7566 FAX (716) 691-2329
BASF The Chemical Company

PROJECT:
WOODFORD
VT RT 9 BRIDGE NO. 11 OVER ROARING BRANCH OF THE WALLOOMSAC RIVER
WABO PLATE JOINT W/NEOPRENE TROUGH DETAILS

DETAILED BY: JFW	DATE: 8-14-12
CHECKED BY: KF	DATE: 8-14-12
SCALE: NTS	WBA JOB NO.: 143833
SHEET NO.: 4 OF 5	DRAWING NO.: B-30085

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EMB143833AA QTY: 1 REQ'D. STRUCTURED BILL OF MATERIALS DWG. NO.: B-30085

LV	PART NO.	QTY	UM	DESCRIPTION	MATERIAL	REV.
0	EMB143833AA	1.00	EA	WABO PLATE EXP. JOINT; ABUTMENT 1; 67.0 LF (X	JOINT IS GALVANIZED	
					SHIPPING LENGTH = 34 LF +/--	
1	NTS143833FB	135.00	FT	FLAT BAR 1 1/4" x 5 1/2"	A-36	
1	4170	135.00	FT	ANGLE 8" x 4" x 1/2"	A-36	
1	4782	68.00	EA	CONC ANC STUDS 3/4" DIA x 10" STRAIGHT	A-108	
1	4840	66.00	EA	CONC ANC STUDS 3/4" DIA x 10" BENT	A-108	
1	NTS143833BT	88.00	EA	3/4" DIA x 2 1/2" HEAVY HEX BOLT	AASHTO M164, TYPE 1 GALVANIZED	
1	NTS143833NT	132.00	EA	3/4" DIA HEAVY HEX NUT	ASTM A-563 GALVANIZED	
1	2830	150.00	EA	BEDDING TAPE	BUTYL RUBBER TAPE	
1	5308	34.00	EA	3/4" DIA x 3 1/2" HEX BOLT FULLY THREADED	FOR SHIPPING CLAMP	
1	7602	34.00	EA	3/4" DIA FLAT WASHER	FOR SHIPPING CLAMP	
1	EMB143833AA01	17.00	EA	SHIPPING CLAMP 3" x 3" x 3/8" x 1'-3" (4A1)		
2	3891	1.26	FT	ANGLE 3" x 3" x 3/8"	A-36	
1	EMB143833AA02	12.00	EA	SUPPORT BRACKET		
2	4640	20.00	LB	PLATE 1/2"	A-36	
1	EMB143833AA02	4.00	EA	FIELD SPLICE PLATE		
2	6021	0.55	FT	FLAT BAR 1/2" x 3 1/2"	A-36	

NTS143833AA QTY: 1 REQ'D. STRUCTURED BILL OF MATERIALS DWG. NO.: B-30085

LV	PART NO.	QTY	UM	DESCRIPTION	MATERIAL	REV.
0	NTS143833AA	1.00	EA	PREFORMED FABRIC TROUGH 5/32" x 2'-2" x 69'-0" (THREE PLY) NEOPRENE		

NTS143833AB QTY: 1 REQ'D. STRUCTURED BILL OF MATERIALS DWG. NO.: B-30085

LV	PART NO.	QTY	UM	DESCRIPTION	MATERIAL	REV.
0	NTS143833AB	2 1.00	EA	PREFORMED FABRIC DRIP EDGE 1/4" x 7" x 69'-0"	(THREE PLY) NEOPRENE	

EMB143833PS QTY: 1 REQ'D. STRUCTURED BILL OF MATERIALS DWG. NO.: B-30085

LV	PART NO.	QTY	UM	DESCRIPTION	MATERIAL	REV.
0	EMB143833PS	1.00	EA	PARTS FOR SHIPPING (V		
1	NTS143833BT	34.00	EA	3/4" DIA x 2 1/2" HEAVY HEX BOLT	AASHTO M164, TYPE 1 GALVANIZED	
1	NTS143833BL	4.00	EA	7/8" DIA x 2" HEAVY HEX BOLT	AASHTO M164, TYPE 1 GALVANIZED	
1	NTS143833NL	4.00	EA	7/8" DIA HEAVY HEX NUT	ASTM A-563 GALVANIZED	
1	7591	8.00	EA	7/8" DIA FLAT WASHER	ASTM F-436 GALVANIZED	
1	7967	96.00	EA	1" DIA HEAVY HEX NUT (A)	ASTM A-563 GALVANIZED	
1	XXXX			ADHESIVE FOR DRIP EDGE		

EMB143833EB QTY: 6 REQ'D. STRUCTURED BILL OF MATERIALS DWG. NO.: B-30085

LV	PART NO.	QTY	UM	DESCRIPTION	MATERIAL	REV.
0	EMB143833EB	1.00	EA	EMBEDMENT PLATE WITH STUDS (X	UNCOATED	
1	3560	10.25	LB	PLATE 1/2" (3P3)	A-36	
1	4782	4.00	EA	CONC ANC STUDS 3/4" DIA x 10" STRAIGHT	A-108	

EMB143833SW QTY: 96 REQ'D. STRUCTURED BILL OF MATERIALS DWG. NO.: B-30085

LV	PART NO.	QTY	UM	DESCRIPTION	MATERIAL	REV.
0	EMB143833SW	1.00	EA	SQUARE WASHER FOR SUPPORT BRACKET	GALVANIZED	
1	6011	0.34	FT	FLAT BAR 1/2" x 3"	A-36	

EMB143833TR1 QTY: 24 REQ'D. STRUCTURED BILL OF MATERIALS DWG. NO.: B-30085

LV	PART NO.	QTY	UM	DESCRIPTION	MATERIAL	REV.
0	EMB143833TR1	1.00	EA	THREADED ROD 1" DIA x 6" LONG	UNCOATED	
1	7170	0.51	FT	1" DIA THREADED ROD		

EMB143833TR2 QTY: 24 REQ'D. STRUCTURED BILL OF MATERIALS DWG. NO.: B-30085

LV	PART NO.	QTY	UM	DESCRIPTION	MATERIAL	REV.
0	EMB143833TR2	1.00	EA	THREADED ROD 1" DIA x 7" LONG	UNCOATED	
1	7170	0.59	FT	1" DIA THREADED ROD		

Vermont Agency of Transportation

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CK'D BY M.E.M OK'D BY C.W.M.

Aug. 21, 2012

RESUBMIT APPROVED ✓

BY C. CARLSON DATE Sept. 05, 2012

STATE: VERMONT
COUNTY: BENNINGTON
PROJECT NO.: ER BHF 010-1(44)
REFERENCE NO.: XXXXXXXXX
DISTRICT: XXX ROUTE: XXX
WBA PRODUCT NO.: EMB143833AA

SHEET NUMBER
ITEM DESIGNATION
ITEM NUMBER
2 of 1
MARK SYSTEM

DRAWING ACTION:

NO.	DESCRIPTION	BY	DATE
1			
2			
3			

Watson Bowman Acme Corporation
95 Pineview Drive Amherst, NY. 14228 TEL. (716) 691-7555 FAX (716) 691-9239

BASF The Chemical Company

PROJECT:
WOODFORD
VT RT 9 BRIDGE NO. 11 OVER ROARING BRANCH OF THE WALLOOMSAC RIVER
WABO PLATE JOINT W/NEOPRENE TROUGH DETAILS

DESIGNED BY	DATE
JFW	8-14-12
CHECKED BY	DATE
KF	8-14-12
SCALE:	WBA JOB NO.:
NTS	143833
SHEET NO.:	DRAWING NO.:
5 OF 5	B-30085

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TOUCH UP PAINT ON BEAMS

(INCIDENTAL TO ITEM 900.645-SPECIAL PROVISION-QC/QA CLEANING AND PAINTING STRUCTURAL COMPONENTS)

Surface Preparation

- Surfaces not to be coated shall be identified and protected for the duration of cleaning and coating operations. We will be using tape/plastic as needed to protect areas not to be painted.
- Inspect surfaces for residual chlorides and sulfates which might impair service life of coatings due to osmotic blistering
- Decontaminate if indicated according to NACE 6G186 guidelines. Decontamination is not anticipated.
- Staging of work area as required for coating work.
- Surface preparation per SSPC SP1.
    1. **Solvent Cleaning SSPC-SP1 Definition:**
       Solvents such as water, mineral spirits, xylol, toluol etc., are used to remove solvent-soluble foreign matter from the surface of ferrous metals. Rags and solvents must be replenished frequently to avoid spreading the contaminant rather than removing it. Low-pressure (1500 - 4000 psi) high volume (3 - 5 gal/min.) water washing with appropriate cleaning chemicals is a recognized "solvent cleaning" method. All surfaces should be should be cleaned per this specification prior to using hand tools or blast equipment.
- Identify flaws (chips), with indelible ink pen surface preparation per SSPC SP3 power tool clean grind “holidays” to feather out 1” from flaw. Apply repair product.
    1. **Power Tool Cleaning SSPC-SP3 (SSI-St3) Definition:**
       A mechanical method of surface preparation widely used in industry and involving the use of power sanders or wire brushes, power chipping hammers, abrasive grinding wheels, needle guns etc. Although usually more effective than hand tool cleaning, it is not considered adequate for use under severe exposure conditions or for immersion applications.

Coating Application

- Apply Sherwin Williams paint as originally specified to areas as required by manufacturer or as directed by the resident.
- Connections that are noted on the approved shop drawings as "primer only" will receive mid coat and top coat only.
- See attached cut sheets for Sherwin Williams material data sheets.

PAINT MANUFACTURER:
SHERWIN WILLIAMS

PRODUCT SYSTEM:

–PRIMER COAT: ZINC CLAD III HS 100, ORGANIC ZINC RICH EPOXY PRIMER, 3–5 MILS DFT

–INTERMEDIATE COAT: MACROPOXY 646–100, FAST CURE EPOXY, 5–10 MILS DFT

–TOP COAT: ACROLON 218 HS, ACRYLIC POLYURETHANE, 3–6 MILS DFT

–TOP COAT COLOR: FEDERAL STANDARD 595 COLOR NO. 20059 BROWN.

IMAGE OF NOTE ON APPROVED SHOP DRAWINGS

Coating Quality Control

- Log in lot numbers of all products to be used in coating application
- Record critical environmental conditions as required at least one time per shift
    a. Relative humidity (as needed)
    b. Surface temperature
    c. Dew Point (as needed)
    d. Ambient air temperature
- Record coating start time and stop time for each phase of work. This is to assure the proper overcoat windows are maintained.

Protective & Marine Coatings

ZINC CLAD® III HS 100
ORGANIC ZINC-RICH EPOXY PRIMER

PART A	B69A110	BASE
PART B	B69V110	HARDENER
PART F	B69D11	ZINC DUST

Revised 2/12

PRODUCT INFORMATION

6.10

PRODUCT DESCRIPTION

ZINC CLAD III HS 100 is a three-component, polyamide epoxy, zinc-rich coating. It has a low VOC level and contains 90.3% by weight of zinc dust pigment in its dried film.

- Meets Class B requirements for Slip Coefficient and Creep Resistance
- Provides cathodic protection
- Damaged film exhibits "self-healing" properties
- Fast Recoat Time
- HAPS Free
- Outstanding application properties

PRODUCT CHARACTERISTICS

Finish:	Flat
Color:	Gray-green
Volume Solids:	60% ± 2%, mixed
Weight Solids:	88% ± 2%, mixed
VOC (EPA Method 24):	Unreduced: <100 g/L; 0.71 lb/gal mixed
Zinc Content in Dry Film:	90.3% by weight
Mix Ratio:	3 components, premeasured 3.25 gallons (12.3L) total

Recommended Spreading Rate per coat:

	Minimum	Maximum
Wet mils (microns)	**5.0** (125)	**8.0** (200)
Dry mils (microns)	**3.0** (75)	**5.0** (125)
~Coverage sq ft/gal (m^2/L)	**190** (4.6)	**320** (7.8)
Theoretical coverage **sq ft/gal** (m^2/L) @ 1 mil / 25 microns dft	**960** (23.5)	

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

Drying Schedule @ 5.0 mils wet (125 microns):

	@ 40°F/4.5°C	@ 77°F/25°C *50% RH*	@ 120°F/49°C
To touch:	45 minutes	30 minutes	10 minutes
To handle:	2 hours	1 hour	30 minutes
To recoat*:			
minimum:	4 hours	2 hours	1 hour
maximum:	1 year	1 year	1 year
To cure:	10 days	7 days	5 days

Drying time is temperature, humidity, and film thickness dependent.

*NOTE: Film must be free of solvent, hard and firm. When rubbed with the face of a coin or knife the film should polish but not flake or chip.

Pot Life:	6 hours	4 hours	2 hours
Sweat-in-Time:	1 hour	30 minutes	15 minutes

Shelf Life:	Parts A, B, & F: 24 months, unopened Store indoors at 40°F (4.5°C) to 100°F (38°C)
Flash Point:	60°F (16°C), PMCC, mixed
Reducer/Clean Up:	R7K111 or R6K10

RECOMMENDED USES

For use over properly prepared blasted steel.

- Fabrication Shops
- Bridge and Highway Structures
- Stadiums and Sports Complexes
- Drilling Rigs
- Piping
- Refineries
- Barges and Ships
- Wind Towers - onshore and offshore
- Shop or Field Applications
- Not recommended for immersion service.

PERFORMANCE CHARACTERISTICS

Substrate*: Steel

Surface Preparation*: SSPC-SP10/NACE 2

System Tested*:

1 ct. Zinc Clad III HS @ 5.0 mils (125 microns) dft
1 ct. Macropoxy 646 @ 5.0-10.0 mils (125-250 microns) dft
1 ct. Acrolon 218 HS @ 5.0 mils (125 microns) dft

*unless otherwise noted below

Test Name	Test Method	Results
Adhesion	ASTM D4541	975 psi
Corrosion Weathering	ASTM D5894, 13 cycles, 2016 hours	Rating 10 per ASTM D610 for rusting; Rating 10 per ASTM D714 for blistering
Dry Heat Resistance (zinc only)	ASTM D2485	300°F (149°C)
Moisture Condensation Resistance	ASTM D4585, 100°F, 4000 hours	Rating 10 per ASTM D610 for rusting; Rating 10 per ASTM D714 for blistering
Pencil Hardness (zinc only)	ASTM D3363	2H
Salt Fog Resistance	ASTM B117, 4500 hours	Rating 10 per ASTM D610 for rusting; Rating 10 per ASTM D714 for blistering
Slip Coefficient* (zinc only)	AISC Specifications for Structural Joints using ASTM A325 or ASTM A490 Bolts	Class B, 0.51

Complies with ISO 12944-5 C5I and C5M requirements.

*Refer to Slip Certification document

Protective & Marine Coatings

ZINC CLAD® III HS 100
ORGANIC ZINC-RICH EPOXY PRIMER

PART A	B69A110	BASE
PART B	B69V110	HARDENER
PART F	B69D11	ZINC DUST

PRODUCT INFORMATION

6.10

RECOMMENDED SYSTEMS

		Dry Film Thickness / ct. Mils	(Microns)
Steel, polyurethane topcoat:			
1 ct.	Zinc Clad III HS 100	3.0-5.0	(75-125)
1-2 cts.	Acrolon 218 HS	3.0-6.0	(75-150)
Steel, catalyzed epoxy topcoat:			
1 ct.	Zinc Clad III HS 100	3.0-5.0	(75-125)
1-2 cts.	Macropoxy 646	5.0-10.0	(125-250)
Steel, catalyzed epoxy topcoat:			
1 ct.	Zinc Clad III HS 100	3.0-5.0	(75-125)
1-2 cts.	Tile-Clad HS	2.5-4.0	(63-100)
Steel, acrylic topcoat:			
1 ct.	Zinc Clad III HS 100	3.0-5.0	(75-125)
2 cts.	DTM Acrylic Coating	2.5-4.0	(63-100)
or			
1 ct.	Fast Clad HB Acrylic	5.0-8.0	(125-200)
Steel, water based epoxy topcoat:			
1 ct.	Zinc Clad III HS 100	3.0-5.0	(75-125)
2 cts.	Waterbased Tile-Clad Epoxy	2.0-4.0	(50-100)
Steel, water-based urethane topcoat:			
1 ct.	Zinc Clad III HS 100	3.0-5.0	(75-125)
1 ct.	Waterbased Tile-Clad Epoxy	2.0-4.0	(50-100)
1-2 cts.	Hydrogloss	2.0-4.0	(50-100)

The systems listed above are representative of the product's use, other systems may be appropriate.

DISCLAIMER

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SURFACE PREPARATION

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Refer to product Application Bulletin for detailed surface preparation information.

Minimum recommended surface preparation:

Iron & Steel:	SSPC-SP6/NACE 3, 2 mil (50 micron) profile
Galvanizing:	SSPC-SP7
Weathered Zinc Rich Primer:	Clean, dry, sound

Surface Preparation Standards

	Condition of Surface	ISO 8501-1 BS7079:A1	Swedish Std. SIS055900	SSPC	NACE
White Metal		Sa 3	Sa 3	SP 5	1
Near White Metal		Sa 2.5	Sa 2.5	SP 10	2
Commercial Blast		Sa 2	Sa 2	SP 6	3
Brush-Off Blast		Sa 1	Sa 1	SP 7	4
Hand Tool Cleaning	Rusted	C St 2	C St 2	SP 2	-
	Pitted & Rusted	D St 2	D St 2	SP 2	-
Power Tool Cleaning	Rusted	C St 3	C St 3	SP 3	-
	Pitted & Rusted	D St 3	D St 3	SP 3	-

TINTING

Do not tint.

APPLICATION CONDITIONS

Temperature:	40°F (4.5°C) minimum, 120°F (49°C) maximum (air, surface, and material) At least 5°F (2.8°C) above dew point
Relative humidity:	85% maximum

Refer to product Application Bulletin for detailed application information.

ORDERING INFORMATION

Packaging:	3.25 gallons (12.3L) mixed
Part A	1 gallon (3.78L)
Part B	1 gallon (3.78L)
Part F	73 lb (33.1 Kg) Zinc Dust
Weight:	28.65 ± 0.2 lb/gal ; 3.44 Kg/L, mixed

SAFETY PRECAUTIONS

Refer to the MSDS sheet before use.

Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.

WARRANTY

The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accord with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Protective & Marine Coatings

ZINC CLAD® III HS 100
ORGANIC ZINC-RICH EPOXY PRIMER

PART A	B69A110	BASE
PART B	B69V110	HARDENER
PART F	B69D11	ZINC DUST

Revised 2/12

APPLICATION BULLETIN

6.10

SURFACE PREPARATIONS

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Zinc rich coatings require direct contact between the zinc pigment in the coating and the metal substrate for optimum performance.

Iron & Steel (atmospheric service)
Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. Minimum surface preparation is Commercial Blast Cleaning per SSPC-SP6/NACE 3. For better performance, use Near White Metal Blast Cleaning per SSPC-SP10/NACE 2. Blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (2 mils / 50 microns). Coat any bare steel the same day as it is cleaned or before flash rusting occurs.

Galvanized Steel
Allow to weather a minimum of six months prior to coating. Solvent Clean per SSPC-SP1 (recommended solvent is VM&P Naphtha). When weathering is not possible, or the surface has been treated with chromates or silicates, first Solvent Clean per SSPC-SP1 and apply a test patch. Allow paint to dry at least one week before testing adhesion. If adhesion is poor, brush blasting per SSPC-SP7 is necessary to remove these treatments. Rusty galvanizing requires a minimum of Hand Tool Cleaning per SSPC-SP2, prime the area the same day as cleaned or before flash rusting occurs.

Weathered Zinc-Rich Primer
Remove zinc salts by either high pressure water washing and scrubbing with stiff bristle brush or sweep blast followed by water flush. Allow to dry.

Note: If blast cleaning with steel media is used, an appropriate amount of steel grit blast media may be incorporated into the work mix to render a dense, angular 1.5-3.0 mil (38-75 micron) surface profile, per Keane-Tator Surface Profile Comparator. A profile up to 4 mils (100 microns) is acceptable, however, coating must be applied to achieve a minimum of 3 mils (75 microns) dft. This method may result in improved adhesion and performance.

Surface Preparation Standards

	Condition of Surface	ISO 8501-1 BS7079:A1	Swedish Std. SIS055900	SSPC	NACE
White Metal		Sa 3	Sa 3	SP 5	1
Near White Metal		Sa 2.5	Sa 2.5	SP 10	2
Commercial Blast		Sa 2	Sa 2	SP 6	3
Brush-Off Blast		Sa 1	Sa 1	SP 7	4
Hand Tool Cleaning	Rusted	C St 2	C St 2	SP 2	-
	Pitted & Rusted	D St 2	D St 2	SP 2	-
Power Tool Cleaning	Rusted	C St 3	C St 3	SP 3	-
	Pitted & Rusted	D St 3	D St 3	SP 3	-

APPLICATION CONDITIONS

Temperature:	40°F (4.5°C) minimum, 120°F (49°C) maximum (air, surface, and material) At least 5°F (2.8°C) above dew point
Relative humidity:	85% maximum

APPLICATION EQUIPMENT

The following is a guide. Changes in pressures and tip sizes may be needed for proper spray characteristics. Always purge spray equipment before use with listed reducer. Any reduction must be compliant with existing VOC regulations and compatible with the existing environmental and application conditions.

Reducer/Clean Up.....R7K111 or R6K10

Airless Spray
(use Teflon packings and continuous agitation)
Pressure.....2000 - 2300 psi
Hose.....3/8" ID
Tip.....019"
Filter.....none
Reduction.....As needed up to 10% by volume

Conventional Spray
(continuous agitation required)
Gun.....Binks 95
Fluid Nozzle.....68
Air Nozzle.....68P
Atomization Pressure.....50 psi
Fluid Pressure.....10 - 20 psi
Reduction.....As needed up to 10% by volume

Keep pressure pot at level of applicator to avoid blocking of fluid line due to weight of material. Blow back coating in fluid line at intermittent shutdowns, but continue agitation at pressure pot.

Brush
Brush.....Small areas only; natural bristle
Reduction.....Not recommended

If specific application equipment is not listed above, equivalent equipment may be substituted.

Protective & Marine Coatings

ZINC CLAD® III HS 100
ORGANIC ZINC-RICH EPOXY PRIMER

PART A	B69A110	BASE
PART B	B69V110	HARDENER
PART F	B69D11	ZINC DUST

APPLICATION BULLETIN 6.10

APPLICATION PROCEDURES

Surface preparation must be completed as indicated.

Zinc Clad III HS 100 comes in 3 premeasured containers which when mixed provides 3.25 gallons (12.3L) of ready-to-apply material.

Mixing Instructions:
Mix contents of component A and B thoroughly with a low speed power agitator. Make certain no pigment remains on the bottom of the can. Then combine 1 part by volume of Part A with 1 part by volume of Part B, then add Part F (73 lb zinc dust). Thoroughly agitate the mixture with power agitation. After mixing, pour through a 30-60 mesh screen. Allow the material to sweat-in as indicated. Re-stir before using.
If reducer solvent is used, add only after components have been thoroughly mixed, after sweat-in.
Continuous agitation of mixture during application is required, otherwise zinc dust will quickly settle out.

Apply paint at the recommended film thickness and spreading rate as indicated below:

Recommended Spreading Rate per coat:

	Minimum	Maximum
Wet mils (microns)	**5.0** (125)	**8.0** (200)
Dry mils (microns)	**3.0** (75)	**5.0** (125)
~Coverage sq ft/gal (m^2/L)	**190** (4.6)	**320** (7.8)
Theoretical coverage **sq ft/gal** (m^2/L) @ 1 mil / 25 microns dft	**960** (23.5)	

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

Drying Schedule @ 5.0 mils wet (125 microns):

	@ 40°F/4.5°C	@ 77°F/25°C *50% RH*	@ 120°F/49°C
To touch:	45 minutes	30 minutes	10 minutes
To handle:	2 hours	1 hour	30 minutes
To recoat*:			
minimum:	4 hours	2 hours	1 hour
maximum:	1 year	1 year	1 year
To cure:	10 days	7 days	5 days
Pot Life:	6 hours	4 hours	2 hours
Sweat-in-Time:	1 hour	30 minutes	15 minutes

Drying time is temperature, humidity, and film thickness dependent.
*NOTE: Film must be free of solvent, hard and firm. When rubbed with the face of a coin or knife the film should polish but not flake or chip.

Application of coating above maximum or below minimum recommended spreading rate may adversely affect coating performance.

CLEAN UP INSTRUCTIONS

Clean spills and spatters immediately with R7K111 or R6K10. Clean tools immediately after use with R7K111 or R6K10. Follow manufacturer's safety recommendations when using any solvent.

DISCLAIMER

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PERFORMANCE TIPS

Stripe coat all crevices, welds, and sharp angles to prevent early failure in these areas.

When using spray application, use a 50% overlap with each pass of the gun to avoid holidays, bare areas, and pinholes. If necessary, cross spray at a right angle.

Spreading rates are calculated on volume solids and do not include an application loss factor due to surface profile, roughness or porosity of the surface, skill and technique of the applicator, method of application, various surface irregularities, material lost during mixing, spillage, overthinning, climatic conditions, and excessive film build.

Excessive reduction of material can affect film build, appearance, and performance.

Do not mix previously catalyzed material with new.

Do not apply the material beyond recommended pot life.

In order to avoid blockage of spray equipment, clean equipment before use or before periods of extended downtime with R7K111 or R6K10.

Keep pressure pot at level of applicator to avoid blocking of fluid line due to weight of material. Blow back coating in fluid line at intermittent shutdowns, but continue agitation at pressure pot.

Application above recommended film thickness may result in mud cracking.

Refer to Product Information sheet for additional performance characteristics and properties.

SAFETY PRECAUTIONS

Refer to the MSDS sheet before use.

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WARRANTY

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Protective & Marine Coatings

MACROPOXY® 646-100 FAST CURE EPOXY

PART A B58-620
PART B B58V620
SERIES HARDENER

Revised 5/11

PRODUCT INFORMATION

4.52

PRODUCT DESCRIPTION

MACROPOXY 646-100 FAST CURE EPOXY is a high solids, less than 100 g/L VOC, high build, fast drying, polyamide epoxy designed to protect steel and concrete in industrial exposures. Ideal for maintenance painting and fabrication shop applications. The high solids content ensures adequate protection of sharp edges, corners, and welds. This product can be applied directly to marginally prepared steel surfaces.

- Low VOC,<100 g/L
- Low odor
- Outstanding application properties
- Chemical resistant
- Abrasion resistant

PRODUCT CHARACTERISTICS

Finish:	Semi-Gloss
Color:	Mill White and a wide range of colors available through tinting
Volume Solids: Mill White	73% ± 2%, mixed
Weight Solids: Mill White	83% ± 2%, mixed
VOC (EPA Method 24): mixed	Unreduced: <100 g/L; .83 lb/gal Reduced 10%: <100 g/L; .83 lb/gal
Mix Ratio:	1:1 by volume

Recommended Spreading Rate per coat:

	Minimum	Maximum
Wet mils (microns)	**7.0** (175)	**13.5** (338)
Dry mils (microns)	**5.0*** (125)	**10.0*** (250)*
~Coverage sq ft/gal (m^2/L)	**116** (2.8)	**232** (5.7)
Theoretical coverage **sq ft/gal** (m^2/L) @ 1 mil / 25 microns dft	**1168** (28.6)	

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

*See Recommended Systems on reverse side. See Performance Tips section also.

Drying Schedule @ 7.0 mils wet (175 microns):

	@ 40°F/4.5°C	@ 77°F/25°C *50% RH*	@ 100°F/38°C
To touch:	4-5 hours	2 hours	1.5 hours
To handle:	48 hours	8 hours	4.5 hours
To recoat:			
minimum:	48 hours	8 hours	4.5 hours
maximum:	1 year	1 year	1 year
Cure for			
service:	10 days	7 days	4 days
immersion:	14 days	7 days	4 days
Pot Life:	10 hours	4 hours	2 hours
Sweat-in-time:	30 minutes	30 minutes	15 minutes

If maximum recoat time is exceeded, abrade surface before recoating.
Drying time is temperature, humidity, and film thickness dependent.

Shelf Life:	36 months, unopened Store indoors at 40°F (4.5°C) to 100°F (38°C).
Flash Point:	61°F (16°C), PMCC, mixed
Reducer/Clean Up:	Reducer R7K111 or Oxsol 100

RECOMMENDED USES

- Marine applications
- Fabrication shops
- Pulp and paper mills
- Power plants
- Offshore platforms
- Refineries
- Chemical plants
- Tank exteriors
- Water treatment plants
- Mill White is acceptable for immersion use for salt water and fresh water
- Not acceptable for potable water
- Suitable for use in USDA inspected facilities
- Conforms to AWWA D102 OCS #5

PERFORMANCE CHARACTERISTICS

Substrate*: Steel
Surface Preparation*: SSPC-SP10/NACE 2
System Tested*:
1 ct. Macropoxy 646-100 Fast Cure @ 6.0 mils (150 microns) dft
*unless otherwise noted below

Test Name	Test Method	Results
Abrasion Resistance	ASTM D4060, CS17 wheel, 1000 cycles, 1 kg load	84 mg loss
Accelerated Weathering - QUV[1]	ASTM D4587, QUV-A, 12,000 hours	Passes
Adhesion	ASTM D4541	1,037 psi
Corrosion Weathering[1]	ASTM D5894, 36 cycles, 12,000 hours	Rating 10 per ASTM D714 for blistering; Rating 9 per ASTM D610 for rusting
Direct Impact Resistance	ASTM D2794	30 in. lb.
Dry Heat Resistance	ASTM D2485	250°F (121°C)
Exterior Durability	1 year at 45° South	Excellent, chalks
Flexibility	ASTM D522, 180° blend, 3/4" mandrel	Passes
Immersion	1 year fresh and salt water	Passes, no rusting, blistering, or loss of adhesion
Pencil Hardness	ASTM D3363	3H
Salt Fog Resistance[1]	ASTM B117, 6,500 hours	Rating 10 per ASTM D610 for rusting; Rating 9 per ASTM D1654 for corrosion
Water Vapor Permeance	ASTM D1653, Method B	1.16 grains/day

Epoxy coatings may darken or discolor following application and curing.

Footnotes:
[1] *Zinc Clad II Plus Primer*

Protective & Marine Coatings

MACROPOXY® 646-100 FAST CURE EPOXY

PART A B58-620 SERIES
PART B B58V620 HARDENER

PRODUCT INFORMATION

4.52

RECOMMENDED SYSTEMS

		Dry Film Thickness / ct. Mils	(Microns)
Immersion and atmospheric:			
Steel:			
2 cts.	Macropoxy 646-100	5.0-10.0	(125-250)
Concrete/Masonry, smooth:			
2 cts.	Macropoxy 646-100	5.0-10.0	(125-250)
Concrete Block:			
1 ct.	Kem Cati-Coat HS Epoxy Filler/Sealer as needed to fill voids and provide a continuous substrate.	10.0-20.0	(250-500)
2 cts.	Macropoxy 646-100	5.0-10.0	(125-250)
Atmospheric:			
***Steel:**			
(Shop applied system, new construction, AWWA D102, can also be used at 3 mils (75 microns) dft when used as an intermediate coat as part of a multi-coat system)			
1 ct.	Macropoxy 646-100 Fast Cure Epoxy	3.0-6.0	(75-150)
1-2 cts. of recommended topcoat			
Steel:			
1 ct.	Recoatable Epoxy Primer	4.0-6.0	(100-150)
2 cts.	Macropoxy 646-100	5.0-10.0	(125-250)
Steel:			
1 ct.	Macropoxy 646-100	4.0-6.0	
1-2 cts.	Acrolon 218 Polyurethane	3.0-6.0	(75-150)
or	Hi-Solids Polyurethane	3.0-5.0	(75-125)
or	SherThane 2K Urethane	2.0-4.0	(50-100)
Steel:			
2 cts.	Macropoxy 646-100	5.0-10.0	(125-250)
1-2 cts.	Tile-Clad HS Epoxy	2.5-4.0	(63-100)
Steel:			
1 ct.	Zinc Clad II Plus	3.0-6.0	(75-150)
1 ct.	Macropoxy 646-100	5.0-10.0	(125-250)
1-2 cts.	Acrolon 218 Polyurethane	3.0-6.0	(75-150)
Steel:			
1 ct.	Zinc Clad III HS	3.0-5.0	(75-125)
or	Zinc Clad IV	3.0-5.0	(75-125)
1 ct.	Macropoxy 646-100	5.0-10.0	(125-250)
1-2 cts.	Hi-Solids Polyurethane-100	3.0-6.0	(75-150)
Aluminum:			
2 cts.	Macropoxy 646-100	5.0-10.0	(125-250)
Galvanizing:			
2 cts.	Macropoxy 646-100	5.0-10.0	(125-250)

The systems listed above are representative of the product's use, other systems may be appropriate.

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SURFACE PREPARATION

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Refer to product Application Bulletin for detailed surface preparation information.
Minimum recommended surface preparation:

Iron & Steel	
Atmospheric:	SSPC-SP2/3
Immersion:	SSPC-SP10/NACE 2, 2-3 mil (50-75 micron) profile
Aluminum:	SSPC-SP1
Galvanizing:	SSPC-SP1
Concrete & Masonry	
Atmospheric:	SSPC-SP13/NACE 6, or ICRI No. 310.2, CSP 1-3
Immersion:	SSPC-SP13/NACE 6-4.3.1 or 4.3.2, or ICRI No. 310.2, CSP 1-3

Surface Preparation Standards

	Condition of Surface	ISO 8501-1 BS7079:A1	Swedish Std. SIS055900	SSPC	NACE
White Metal		Sa 3	Sa 3	SP 5	1
Near White Metal		Sa 2.5	Sa 2.5	SP 10	2
Commercial Blast		Sa 2	Sa 2	SP 6	3
Brush-Off Blast		Sa 1	Sa 1	SP 7	4
Hand Tool Cleaning	Rusted	C St 2	C St 2	SP 2	-
	Pitted & Rusted	D St 2	D St 2	SP 2	-
Power Tool Cleaning	Rusted	C St 3	C St 3	SP 3	-
	Pitted & Rusted	D St 3	D St 3	SP 3	-

TINTING

Tint Part A with Maxitoners at 150% strength. Five minutes minimum mixing on a mechanical shaker is required for complete mixing of color.

Tinting is not recommended for immersion service.

APPLICATION CONDITIONS

Temperature:	40°F (4.5°C) minimum, 140°F (60°C) maximum (air, surface, and material) At least 5°F (2.8°C) above dew point
Relative humidity:	85% maximum

Refer to product Application Bulletin for detailed application information.

ORDERING INFORMATION

Packaging:	
Part A:	1 gallon (3.78L) and 5 gallon (18.9L) containers
Part B:	1 gallon (3.78L) and 5 gallon (18.9L) containers
Weight:	13.24 ± 0.2 lb/gal ; 1.6 Kg/L mixed, may vary by color

SAFETY PRECAUTIONS

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WARRANTY

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Protective & Marine Coatings

MACROPOXY® 646-100 FAST CURE EPOXY

PART A B58-620
PART B B58V620
SERIES HARDENER

Revised 5/11

APPLICATION BULLETIN

4.52

SURFACE PREPARATIONS

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Iron & Steel, Atmospheric Service:
Minimum surface preparation is Hand Tool Clean per SSPC-SP2. Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. For better performance, use Commercial Blast Cleaning per SSPC-SP6/NACE 3, blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (2 mils / 50 microns). Prime any bare steel within 8 hours or before flash rusting occurs.

Iron & Steel, Immersion Service:
Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. Minimum surface preparation is Near White Metal Blast Cleaning per SSPC-SP10/NACE 2. Blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (2-3 mils / 50-75 microns). Remove all weld spatter and round all sharp edges by grinding. Prime any bare steel the same day as it is cleaned.

Aluminum
Remove all oil, grease, dirt, oxide and other foreign material by Solvent Cleaning per SSPC-SP1.

Galvanized Steel
Allow to weather a minimum of six months prior to coating. Solvent Clean per SSPC-SP1 (recommended solvent is VM&P Naphtha). When weathering is not possible, or the surface has been treated with chromates or silicates, first Solvent Clean per SSPC-SP1 and apply a test patch. Allow paint to dry at least one week before testing adhesion. If adhesion is poor, brush blasting per SSPC-SP7 is necessary to remove these treatments. Rusty galvanizing requires a minimum of Hand Tool Cleaning per SSPC-SP2, prime the area the same day as cleaned.

Concrete and Masonry
For surface preparation, refer to SSPC-SP13/NACE 6, or ICRI No. 310.2, CSP 1-3. Surfaces should be thoroughly clean and dry. Concrete and mortar must be cured at least 28 days @ 75°F (24°C). Remove all loose mortar and foreign material. Surface must be free of laitance, concrete dust, dirt, form release agents, moisture curing membranes, loose cement and hardeners. Fill bug holes, air pockets and other voids with Steel-Seam FT910.

Concrete, Immersion Service:
For surface preparation, refer to SSPC-SP13/NACE 6, Section 4.3.1 or 1.3.2 or ICRI No. 310.2, CSP 1-3.

Follow the standard methods listed below when applicable:
ASTM D4258 Standard Practice for Cleaning Concrete.
ASTM D4259 Standard Practice for Abrading Concrete.
ASTM D4260 Standard Practice for Etching Concrete.
ASTM F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete.
SSPC-SP 13/Nace 6 Surface Preparation of Concrete.
ICRI No. 310.2 Concrete Surface Preparation.

Previously Painted Surfaces
If in sound condition, clean the surface of all foreign material. Smooth, hard or glossy coatings and surfaces should be dulled by abrading the surface. Apply a test area, allowing paint to dry one week before testing adhesion. If adhesion is poor, or if this product attacks the previous finish, removal of the previous coating may be necessary. If paint is peeling or badly weathered, clean surface to sound substrate and treat as a new surface as above.

Surface Preparation Standards

	Condition of Surface	ISO 8501-1 BS7079:A1	Swedish Std. SIS055900	SSPC	NACE
White Metal		Sa 3	Sa 3	SP 5	1
Near White Metal		Sa 2.5	Sa 2.5	SP 10	2
Commercial Blast		Sa 2	Sa 2	SP 6	3
Brush-Off Blast		Sa 1	Sa 1	SP 7	4
Hand Tool Cleaning	Rusted	C St 2	C St 2	SP 2	-
	Pitted & Rusted	D St 2	D St 2	SP 2	-
Power Tool Cleaning	Rusted	C St 3	C St 3	SP 3	-
	Pitted & Rusted	D St 3	D St 3	SP 3	-

APPLICATION CONDITIONS

Temperature:	40°F (4.5°C) minimum, 140°F (60°C) maximum (air, surface, and material) At least 5°F (2.8°C) above dew point
Relative humidity:	85% maximum

APPLICATION EQUIPMENT

The following is a guide. Changes in pressures and tip sizes may be needed for proper spray characteristics. Always purge spray equipment before use with listed reducer. Any reduction must be compliant with existing VOC regulations and compatible with the existing environmental and application conditions.

Reducer/Clean Up .....Reducer R7K111 or Oxsol 100

Airless Spray
Pump.....30:1
Pressure.....2800 - 3000 psi
Hose.....1/4" ID
Tip .....017" - .023"
Filter.....60 mesh
Reduction.....As needed up to 10% by volume

Conventional Spray
Gun .....DeVilbiss MBC-510
Fluid Tip .....E
Air Nozzle.....704
Atomization Pressure.....60-65 psi
Fluid Pressure.....10-20 psi
Reduction.....As needed up to 10% by volume
Requires oil and moisture separators

Brush
Brush.....Nylon/Polyester or Natural Bristle
Reduction.....Not recommended

Roller
Cover .....3/8" woven with solvent resistant core
Reduction.....Not recommended

If specific application equipment is not listed above, equivalent equipment may be substituted.

Protective & Marine Coatings

MACROPOXY® 646-100 FAST CURE EPOXY

PART A B58-620 SERIES
PART B B58V620 HARDENER

APPLICATION BULLETIN

4.52

APPLICATION PROCEDURES

Surface preparation must be completed as indicated.

Mix contents of each component thoroughly with low speed power agitation. Make certain no pigment remains on the bottom of the can. Then combine one part by volume of Part A with one part by volume of Part B. Thoroughly agitate the mixture with power agitation. Allow the material to sweat-in as indicated prior to application. Re-stir before using.

If reducer solvent is used, add only after both components have been thoroughly mixed, after sweat-in.

Apply paint at the recommended film thickness and spreading rate as indicated below:

Recommended Spreading Rate per coat:

	Minimum	Maximum
Wet mils (microns)	**7.0** (175)	**13.5** (338)
Dry mils (microns)	**5.0*** (125)	**10.0*** (250)*
~Coverage sq ft/gal (m^2/L)	**116** (2.8)	**232** (5.7)
Theoretical coverage **sq ft/gal** (m^2/L) @ 1 mil / 25 microns dft	**1168** (28.6)	

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

*See Recommended Systems on reverse side. See Performance Tips section also.

Drying Schedule @ 7.0 mils wet (175 microns):

	@ 40°F/4.5°C	@ 77°F/25°C 50% RH	@ 100°F/38°C
To touch:	4-5 hours	2 hours	1.5 hours
To handle:	48 hours	8 hours	4.5 hours
To recoat:			
minimum:	48 hours	8 hours	4.5 hours
maximum:	1 year	1 year	1 year
Cure for			
service:	10 days	7 days	4 days
immersion:	14 days	7 days	4 days
Pot Life:	10 hours	4 hours	2 hours
Sweat-in-time:	30 minutes	30 minutes	15 minutes

If maximum recoat time is exceeded, abrade surface before recoating.

Drying time is temperature, humidity, and film thickness dependent.

Application of coating above maximum or below minimum recommended spreading rate may adversely affect coating performance.

CLEAN UP INSTRUCTIONS

Clean spills and spatters immediately with Reducer R7K111 or Oxsol 100. Clean tools immediately after use with Reducer R7K111 or Oxsol 100. Follow manufacturer's safety recommendations when using any solvent.

DISCLAIMER

The information and recommendations set forth in this Product Data Sheet are based upon tests conducted by or on behalf of The Sherwin-Williams Company. Such information and recommendations set forth herein are subject to change and pertain to the product offered at the time of publication. Consult your Sherwin-Williams representative to obtain the most recent Product Data Information and Application Bulletin.

PERFORMANCE TIPS

Stripe coat all crevices, welds, and sharp angles to prevent early failure in these areas.

When using spray application, use a 50% overlap with each pass of the gun to avoid holidays, bare areas, and pinholes. If necessary, cross spray at a right angle

Spreading rates are calculated on volume solids and do not include an application loss factor due to surface profile, roughness or porosity of the surface, skill and technique of the applicator, method of application, various surface irregularities, material lost during mixing, spillage, overthinning, climatic conditions, and excessive film build.

Excessive reduction of material can affect film build, appearance, and adhesion.

Do not mix previously catalyzed material with new.

Do not apply the material beyond recommended pot life.

In order to avoid blockage of spray equipment, clean equipment before use or before periods of extended downtime with Reducer R7K111 or Oxsol 100.

Insufficient ventilation, incomplete mixing, miscatalyzation, and external heaters may cause premature yellowing.

Excessive film build, poor ventilation, and cool temperatures may cause solvent entrapment and premature coating failure.

Tinting is not recommended for immersion service.

Use only Mil White for immersion service.

Quik-Kick Epoxy Accelerator is acceptable for use. See data page 4.99 for details.

Application of coating above maximum or below minimum recommended spreading rate may adversely affect coating performance.

For Immersion Service: (if required) Holiday test in accordance with ASTM D5162 for steel, or ASTM D4787 for concrete.

When coating over aluminum and galvanizing, recommended dft is 2-4 mils (50-100 microns).

Acceptable for Concrete Floors.

Refer to Product Information sheet for additional performance characteristics and properties.

SAFETY PRECAUTIONS

Refer to the MSDS sheet before use.

Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.

WARRANTY

The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accord with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Protective & Marine Coatings

ACROLON™ 218 HS
ACRYLIC POLYURETHANE

PART A	B65-600	GLOSS SERIES
PART A	B65-650	SEMI-GLOSS SERIES
PART B	B65V600	HARDENER

Revised 4/12

PRODUCT INFORMATION

5.22

PRODUCT DESCRIPTION

ACROLON 218 HS is a low VOC, polyester modified, aliphatic, acrylic polyurethane formulated specifically for in-shop applications. Also suitable for industrial applications. A fast drying, urethane that provides color and gloss retention for exterior exposure.

- Can be used directly over organic zinc rich primers (epoxy zinc primer and moisture cure urethane zinc primer)
- Color and gloss retention for exterior exposure
- Fast dry
- Outstanding application properties

PRODUCT CHARACTERISTICS

Finish:	Gloss or Semi-Gloss	
Color:	Wide range of colors available	
Volume Solids:	65% ± 2%, mixed, may vary by color	
Weight Solids:	78% ± 2%, mixed, may vary by color	
VOC (EPA Method 24):	Unreduced:	<300 g/L; 2.5 lb/gal
mixed	Reduced 10% with R7K15:	<340 g/L; 2.8 lb/gal
mixed	Reduced 9% with MEK, R6K10:	<340 g/L; 2.8 lb/gal
Mix Ratio:	6:1 by volume, 1 gallon or 5 gallon mixes premeasured components	

Recommended Spreading Rate per coat:

	Minimum	Maximum
Wet mils (microns)	**4.5** (112.5)	**9.0** (225)
Dry mils (microns)	**3.0** (75)	**6.0** (150)
~Coverage sq ft/gal (m^2/L)	**175** (4.3)	**346** (8.5)
Theoretical coverage **sq ft/gal** (m^2/L) @ 1 mil / 25 microns dft	**1040** (25.5)	

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

Drying Schedule @ 6.0 mils wet (150 microns):

	@ 35°F/1.7°C	@ 77°F/25°C 50% RH	@ 120°F/49°C
To touch:	4 hours	30 minutes	20 minutes
To handle:	18 hours	6 hours	4 hours
To recoat:			
minimum:	18 hours	8 hours	6 hours
maximum:	3 months	3 months	3 months
To cure:	14 days	7 days	5 days
Pot Life: (reduced 5% with Reducer R7K15)	4 hours	2 hours	45 minutes
Sweat-in-Time:		None	

If maximum recoat time is exceeded, abrade surface before recoating. Drying time is temperature, humidity, and film thickness dependent.
Paint temperature must be at least 40°F (4.5°C) minimum.

Shelf Life*:	Part A - 36 months, unopened Part B - 24 months, unopened Store indoors at 40°F (4.5°C) to 100°F (38°C).
*Aluminum (Part A, Rex # B65SW655) has a shelf life of 12 months.	
Flash Point:	55°F (13°C), Seta, mixed
Reducer/Clean Up:	
Spray:	Reducer R7K15, MEK R6K10, or R7K111
Brush / Roll:	Reducer #132, R7K132 or R7K111

RECOMMENDED USES

Specifically formulated for in-shop applications.
For use over prepared metal and masonry surfaces in industrial environments such as:

- Structural steel
- Rail cars and locomotives
- Conveyors
- Bridges
- Wind Towers - onshore and offshore
- Offshore platforms - exploration and production
- Suitable for use in USDA inspected facilities
- Conforms to AWWA D102 Outside Coating Systems #4 (OCS-4), #5 (OCS-5) & #6 (OCS-6)
- Acceptable for use in high performance architectural applications
- A component of INFINITANK
- Tank exteriors
- Pipelines
- Ships

PERFORMANCE CHARACTERISTICS

Substrate*: Steel
Surface Preparation*: SSPC-SP10/NACE 2
System Tested*:
1 ct. Macropoxy 646 @ 6.0 mils (150 microns) dft
1 ct. Acrolon 218 HS Gloss @ 4.0 mils (100 microns) dft
*unless otherwise noted below

Test Name	Test Method	Results
Abrasion Resistance[1]	ASTM D4060, CS17 wheel, 1000 cycles, 1 kg load	43 mg loss
Adhesion	ASTM D4541	975 psi
Corrosion Weathering[2]	ASTM D5894, 9 cycles, 3024 hours	Rating 10 per ASTM D610, for rusting; Rating 10 per ASTM D714, for blistering
Direct Impact Resistance[1]	ASTM D2794	50 in. lb.
Dry Heat Resistance[1]	ASTM D2485, Method A	200°F (93°C)
Flexibility[1]	ASTM D522, 180° bend, 1/8" mandrel	Passes
Humidity Resistance[2]	ASTM D4585, 100°F (38°C), 1500 hours	Rating 10 per ASTM D610, for rusting; Rating 10 per ASTM D714, for blistering
Pencil Hardness	ASTM D3363	3H
Salt Fog Resistance[2]	ASTM B117, 7000 hours	Rating 10 per ASTM D610, for rusting; Rating 9 per ASTM D714, for blistering

Meets the requirements of SSPC Paint No. 36, Level 3 for white and light colors. Dark colors may require a clear coat.

Complies with ISO 12944-5 C5I and C5M requirements.

Footnotes:
[1] *Finish coat only tested*
[2] *Primer — Zinc-Clad II Plus*
Intermediate — Macropoxy 646
Finish — Acrolon 218 HS

Protective & Marine Coatings

ACROLON™ 218 HS
ACRYLIC POLYURETHANE

PART A	B65-600	GLOSS SERIES
PART A	B65-650	SEMI-GLOSS SERIES
PART B	B65V600	HARDENER

PRODUCT INFORMATION

5.22

RECOMMENDED SYSTEMS

		Dry Film Thickness / ct. Mils	(Microns)
Steel:			
1 ct.	Macropoxy 646	5.0-10.0	(125-250)
1-2 cts.	Acrolon 218 HS Polyurethane	3.0-6.0	(75-150)
Steel:			
1 ct.	Zinc Clad II Plus	3.0-5.0	(75-125)
1 ct.	Macropoxy 646	5.0-10.0	(125-250)
1-2 cts.	Acrolon 218 HS Polyurethane	3.0-6.0	(75-150)
Steel:			
1 ct.	Zinc Clad IV	3.0-5.0	(75-125)
1-2 cts.	Acrolon 218 HS Polyurethane	3.0-6.0	(75-150)
Steel:			
1 ct.	Corothane I-GalvaPac Zinc Primer	3.0-4.0	(75-100)
1-2 cts.	Acrolon 218 HS Polyurethane	3.0-6.0	(75-150)
Steel:			
1 ct.	Epoxy Mastic Aluminum II	6.0	(150)
1-2 cts.	Acrolon 218 HS Polyurethane	3.0-6.0	(75-150)
Steel:			
1 ct.	Recoatable Epoxy Primer	4.0-6.0	(100-150)
1-2 cts.	Acrolon 218 HS Polyurethane	3.0-6.0	(75-150)
Concrete/Masonry:			
1 ct.	Kem Cati-Coat HS Epoxy Filler/Sealer	10.0-20.0	(250-500)
1-2 cts.	Acrolon 218 HS Polyurethane	3.0-6.0	(75-150)
Aluminum/Galvanizing:			
1 ct.	DTM Wash Primer	0.7-1.3	(18-32)
1-2 cts.	Acrolon 218 HS Polyurethane	3.0-6.0	(75-150)
ISO 12944 C5M System:			
1 ct.	Zinc Clad III HS	3.0-5.0	(75-125)
1 ct.	Tower Guard Epoxy	5.0-11.5	(125-287.5)
1 ct.	Acrolon 218 HS	3.0-6.0	(75-150)

The systems listed above are representative of the product's use, other systems may be appropriate.

DISCLAIMER

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SURFACE PREPARATION

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Refer to product Application Bulletin for detailed surface preparation information.

Minimum recommended surface preparation:
* Iron & Steel: SSPC-SP6/NACE 3, 1-2 mil (25-50 micron) profile
* Galvanizing: SSPC-SP1
* Concrete & Masonry: SSPC-SP13/NACE 6, or ICRI No. 310.2, CSP 1-3
* Primer required

Surface Preparation Standards

Condition of Surface		ISO 8501-1 BS7079:A1	Swedish Std. SIS055900	SSPC	NACE
White Metal		Sa 3	Sa 3	SP 5	1
Near White Metal		Sa 2.5	Sa 2.5	SP 10	2
Commercial Blast		Sa 2	Sa 2	SP 6	3
Brush-Off Blast		Sa 1	Sa 1	SP 7	4
Hand Tool Cleaning	Rusted	C St 2	C St 2	SP 2	-
	Pitted & Rusted	D St 2	D St 2	SP 2	-
Power Tool Cleaning	Rusted	C St 3	C St 3	SP 3	-
	Pitted & Rusted	D St 3	D St 3	SP 3	-

TINTING

Tint Part A with Maxitoner Colorants.
- Extra white tints at 100% tint strength
- Ultradeep base tints at 150% tint strength

Five minutes minimum mixing on a mechanical shaker is required for complete mixing of color.

APPLICATION CONDITIONS

Temperature:	35°F (1.7°C) minimum, 120°F (49°C) maximum (air and surface) 40°F (4.5°C) minimum, 120°F (49°C) maximum (material) At least 5°F (2.8°C) above dew point
Relative humidity:	85% maximum

Refer to product Application Bulletin for detailed application information.

ORDERING INFORMATION

Packaging:	1 gallon (3.78L) mix:	5 gallon (18.9L) mix:
Part A:	.86 gal (3.25L)	4.29 gal (16.2L)
Part B:	.14 gal (0.53L)	0.71 gal (2.7L)
(premeasured components)		

Weight: 11.2 ± 0.2 lb/gal ; 1.3 Kg/L mixed, may vary with color

SAFETY PRECAUTIONS

Refer to the MSDS sheet before use.

Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.

WARRANTY

The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accord with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Protective & Marine Coatings

ACROLON™ 218 HS
ACRYLIC POLYURETHANE

PART A	B65-600	GLOSS SERIES
PART A	B65-650	SEMI-GLOSS SERIES
PART B	B65V600	HARDENER

Revised 4/12

APPLICATION BULLETIN

5.22

SURFACE PREPARATIONS

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Iron & Steel
Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. Minimum surface preparation is Commercial Blast Cleaning per SSPC-SP6/NACE 3. For better performance, use Near White Metal Blast Cleaning per SSPC-SP10/NACE 2. Blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (1-2 mils / 25-50 microns). Prime any bare steel the same day as it is cleaned or before flash rusting occurs.

Aluminum
Remove all oil, grease, dirt, oxide and other foreign material by Solvent Cleaning per SSPC-SP1. Primer required.

Galvanized Steel
Allow to weather a minimum of six months prior to coating. Solvent Clean per SSPC-SP1. When weathering is not possible, or the surface has been treated with chromates or silicates, first Solvent Clean per SSPC-SP1 and apply a test patch. Allow paint to dry at least one week before testing adhesion. If adhesion is poor, brush blasting per SSPC-SP7 is necessary to remove these treatments. Rusty galvanizing requires a minimum of Hand Tool Cleaning per SSPC-SP2, prime the area the same day as cleaned or before flash rusting occurs. Primer required.

Concrete and Masonry
For surface preparation, refer to SSPC-SP13/NACE 6, or ICRI No. 310.2, CSP 1-3. Surfaces should be thoroughly clean and dry. Concrete and mortar must be cured at least 28 days @ 75°F (24°C). Remove all loose mortar and foreign material. Surface must be free of laitance, concrete dust, dirt, form release agents, moisture curing membranes, loose cement and hardeners. Fill bug holes, air pockets and other voids with Steel-Seam FT910. Primer required.

Follow the standard methods listed below when applicable:
ASTM D4258 Standard Practice for Cleaning Concrete.
ASTM D4259 Standard Practice for Abrading Concrete.
ASTM D4260 Standard Practice for Etching Concrete.
ASTM F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete.
SSPC-SP 13/Nace 6 Surface Preparation of Concrete.
ICRI No. 310.2 Concrete Surface Preparation.

Surface Preparation Standards

	Condition of Surface	ISO 8501-1 BS7079:A1	Swedish Std. SIS055900	SSPC	NACE
White Metal		Sa 3	Sa 3	SP 5	1
Near White Metal		Sa 2.5	Sa 2.5	SP 10	2
Commercial Blast		Sa 2	Sa 2	SP 6	3
Brush-Off Blast		Sa 1	Sa 1	SP 7	4
Hand Tool Cleaning	Rusted	C St 2	C St 2	SP 2	-
	Pitted & Rusted	D St 2	D St 2	SP 2	-
Power Tool Cleaning	Rusted	C St 3	C St 3	SP 3	-
	Pitted & Rusted	D St 3	D St 3	SP 3	-

APPLICATION CONDITIONS

Temperature:	35°F (1.7°C) minimum, 120°F (49°C) maximum (air and surface) 40°F (4.5°C) minimum, 120°F (49°C) maximum (material) At least 5°F (2.8°C) above dew point
Relative humidity:	85% maximum

APPLICATION EQUIPMENT

The following is a guide. Changes in pressures and tip sizes may be needed for proper spray characteristics. Always purge spray equipment before use with listed reducer. Any reduction must be compliant with existing VOC regulations and compatible with the existing environmental and application conditions.

Reducer/Clean Up:
Spray.....Reducer R7K15, MEK R6K10, or R7K111
Brush/Roll .....Reducer #132, R7K132, or R7K111
If reducer is used, reduce at time of catalyzation.

Airless Spray
Pressure.....2500 - 2800 psi
Hose.....3/8" ID
Tip .....013" - .017"
Filter.....60 mesh
Reduction.....As needed up to 10% by volume with R7K15 or R7K111, or up to 9% with MEK, R6K10*

Conventional Spray
Gun .....Binks 95
Cap 63P
Atomization Pressure.....50 - 70 psi
Fluid Pressure.....20 - 25 psi
Reduction.....As needed up to 10% by volume with R7K15 or R7K111, or up to 9% with MEK, R6K10*

Brush
Brush.....Natural Bristle
Reduction.....As needed up to 10% by volume*

Roller
Cover .....3/8" woven with solvent resistant core
Reduction.....As needed up to 10% by volume*

If specific application equipment is not listed above, equivalent equipment may be substituted.

* Note: Reducing more than maximum recommended level will result in VOC exceeding 340g/L

Protective & Marine Coatings

ACROLON™ 218 HS
ACRYLIC POLYURETHANE

PART A	B65-600	GLOSS SERIES
PART A	B65-650	SEMI-GLOSS SERIES
PART B	B65V600	HARDENER

APPLICATION BULLETIN

5.22

APPLICATION PROCEDURES

Surface preparation must be completed as indicated..

Mix contents of each component thoroughly with low speed power agitation. Make certain no pigment remains on the bottom of the can. Then combine six parts by volume of Part A with one part by volume of Part B (premeasured components). Thoroughly agitate the mixture with power agitation. Re-stir before using.

If reducer is used, add only after both components have been thoroughly mixed.

Apply paint at the recommended film thickness and spreading rate as indicated below:

Recommended Spreading Rate per coat:

	Minimum	Maximum
Wet mils (microns)	**4.5** (112.5)	**9.0** (225)
Dry mils (microns)	**3.0** (75)	**6.0** (150)
~Coverage sq ft/gal (m^2/L)	**175** (4.3)	**346** (8.5)
Theoretical coverage **sq ft/gal** (m^2/L) @ 1 mil / 25 microns dft	**1040** (25.5)	

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

Drying Schedule @ 6.0 mils wet (150 microns):

	@ 35°F/1.7°C	@ 77°F/25°C *50% RH*	@ 120°F/49°C
To touch:	4 hours	30 minutes	20 minutes
To handle:	18 hours	6 hours	4 hours
To recoat:			
minimum:	18 hours	8 hours	6 hours
maximum:	3 months	3 months	3 months
To cure:	14 days	7 days	5 days
Pot Life: (reduced 5% with Reducer R7K15)	4 hours	2 hours	45 minutes
Sweat-in-Time:		None	

If maximum recoat time is exceeded, abrade surface before recoating. Drying time is temperature, humidity, and film thickness dependent.
Paint temperature must be at least 40°F (4.5°C) minimum.

Application of coating above maximum or below minimum recommended spreading rate may adversely affect coating performance.

CLEAN UP INSTRUCTIONS

Clean spills and spatters immediately with Reducer #132, R7K132. Clean tools immediately after use with Reducer #132, R7K132. Follow manufacturer's safety recommendations when using any solvent.

DISCLAIMER

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PERFORMANCE TIPS

Stripe coat all crevices, welds, and sharp angles to prevent early failure in these areas.

When using spray application, use a 50% overlap with each pass of the gun to avoid holidays, bare areas, and pinholes. If necessary, cross spray at a right angle.

Spreading rates are calculated on volume solids and do not include an application loss factor due to surface profile, roughness or porosity of the surface, skill and technique of the applicator, method of application, various surface irregularities, material lost during mixing, spillage, overthinning, climatic conditions, and excessive film build.

Excessive reduction of material can affect film build, appearance, and adhesion.

Do not apply the material beyond recommended pot life.

Do not mix previously catalyzed material with new.

In order to avoid blockage of spray equipment, clean equipment before use or before periods of extended downtime with Reducer #15, R7K15 or MEK, R6K10.

Mixed coating is sensitive to water. Use water traps in all air lines. Moisture contact can reduce pot life and affect gloss and color.

Quick-Thane Urethane Accelerator is acceptable for use. See data page 5.97 for details.

E-Z Roll Urethane Defoamer is acceptable for use. See data page 5.99 for details.

Refer to Product Information sheet for additional performance characteristics and properties.

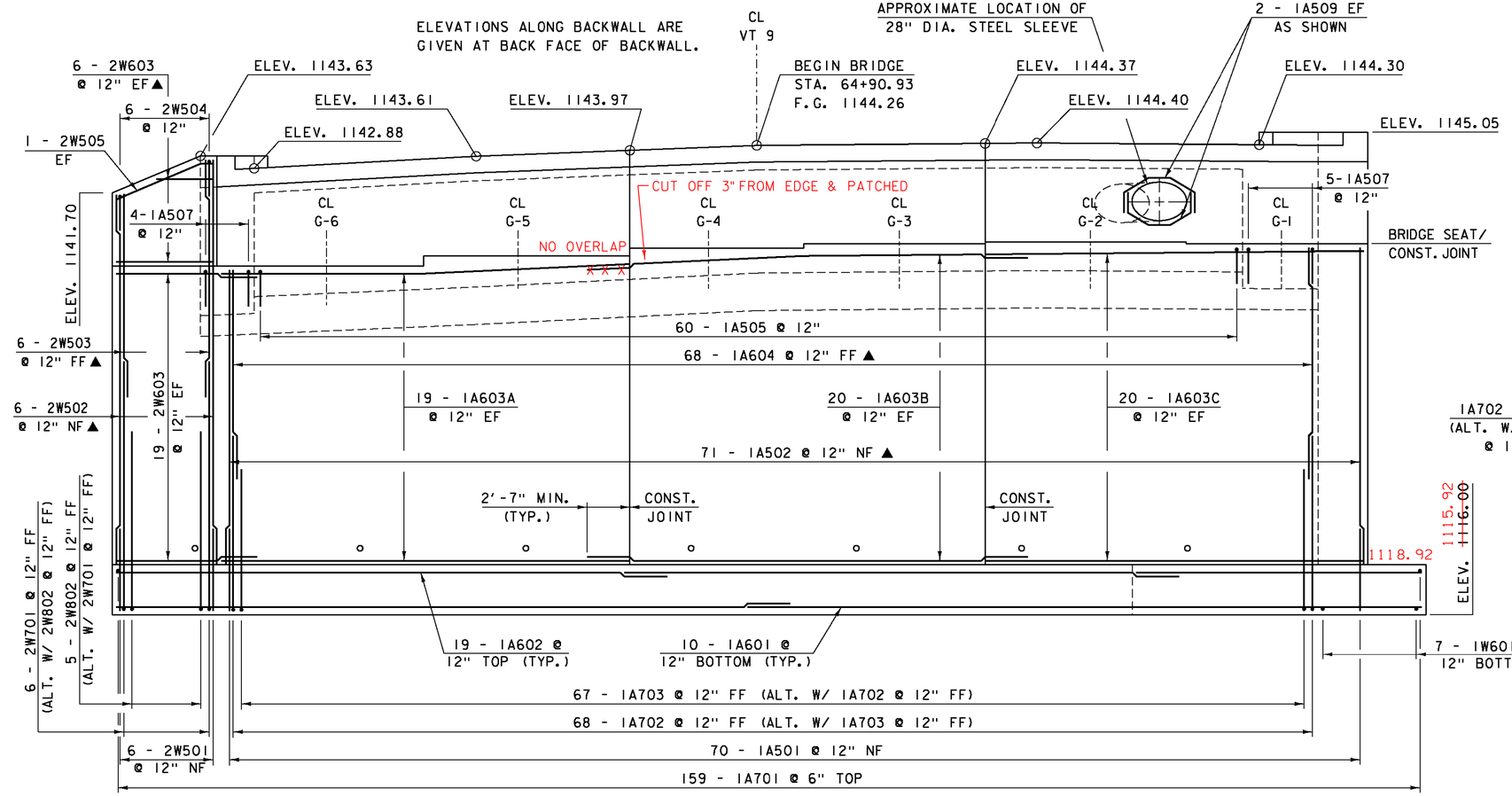
SAFETY PRECAUTIONS

Refer to the MSDS sheet before use.

Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.

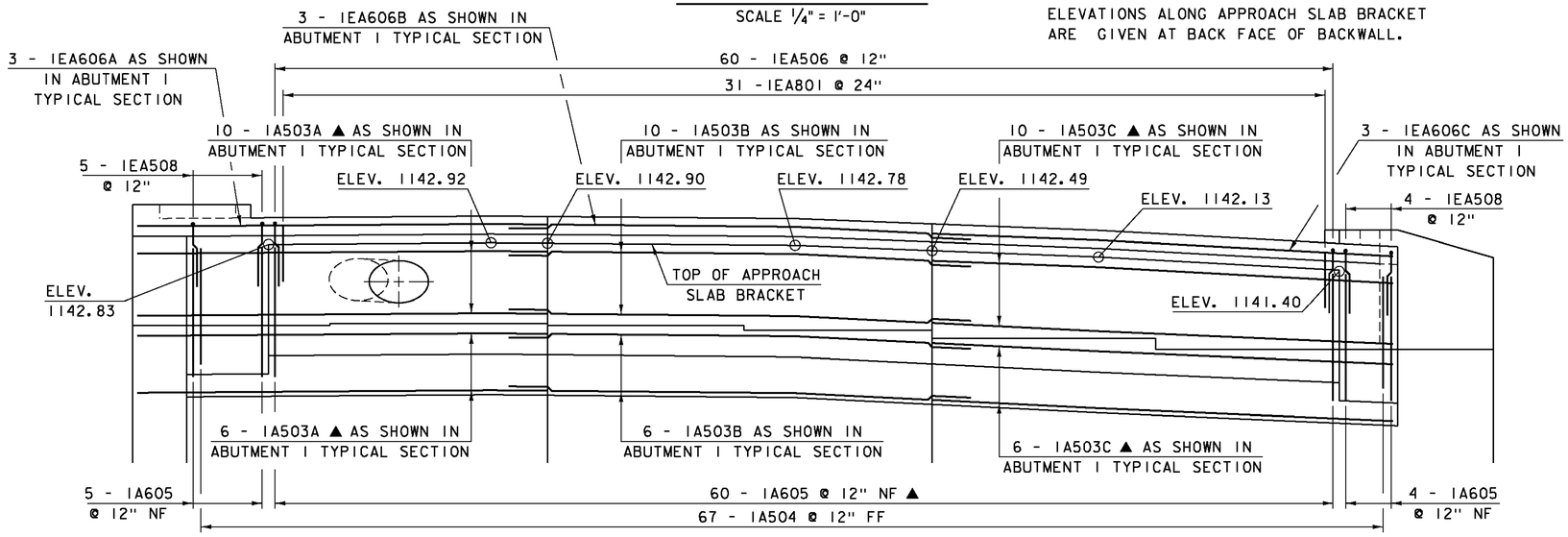
WARRANTY

The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accord with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.



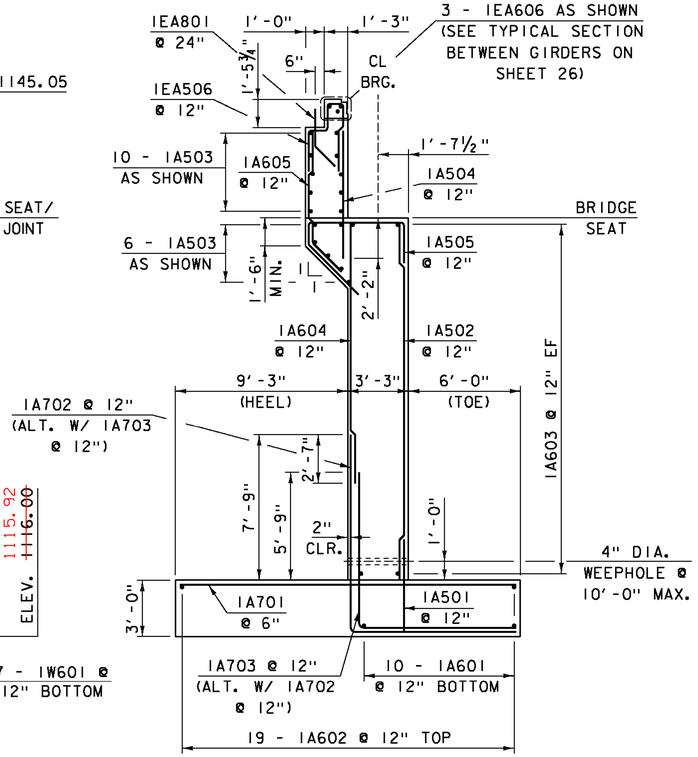
ABUTMENT 1 ELEVATION

SCALE 1/4" = 1'-0"



ABUTMENT 1 ELEVATION (LOOKING AT BACK OF ABUTMENT)

SCALE 1/4" = 1'-0"



ABUTMENT 1 TYPICAL SECTION

SCALE 1/4" = 1'-0"

BRIDGE SEAT	ELEVATION
SEAT 1	1138.33
SEAT 2	1138.42
SEAT 3	1138.33
SEAT 4	1138.06
SEAT 5	1137.61
SEAT 6	1136.99

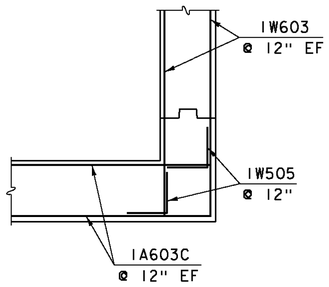
NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

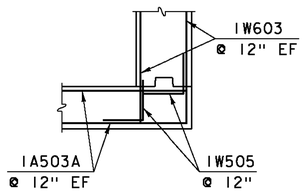
PROJECT NAME: WOODFORD
PROJECT NUMBER: ER BHF 010-1(44)

FILE NAME: s11b214sub.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: M. EVANS-MONGEON
ABUTMENT 1 ELEVATION

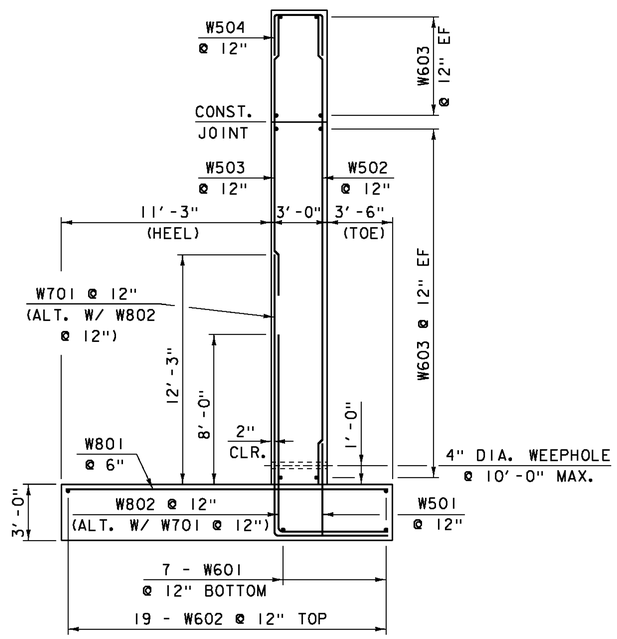
PLOT DATE: 23-MAR-2012
DRAWN BY: G. ROY
CHECKED BY: M. EVANS-MONGEON



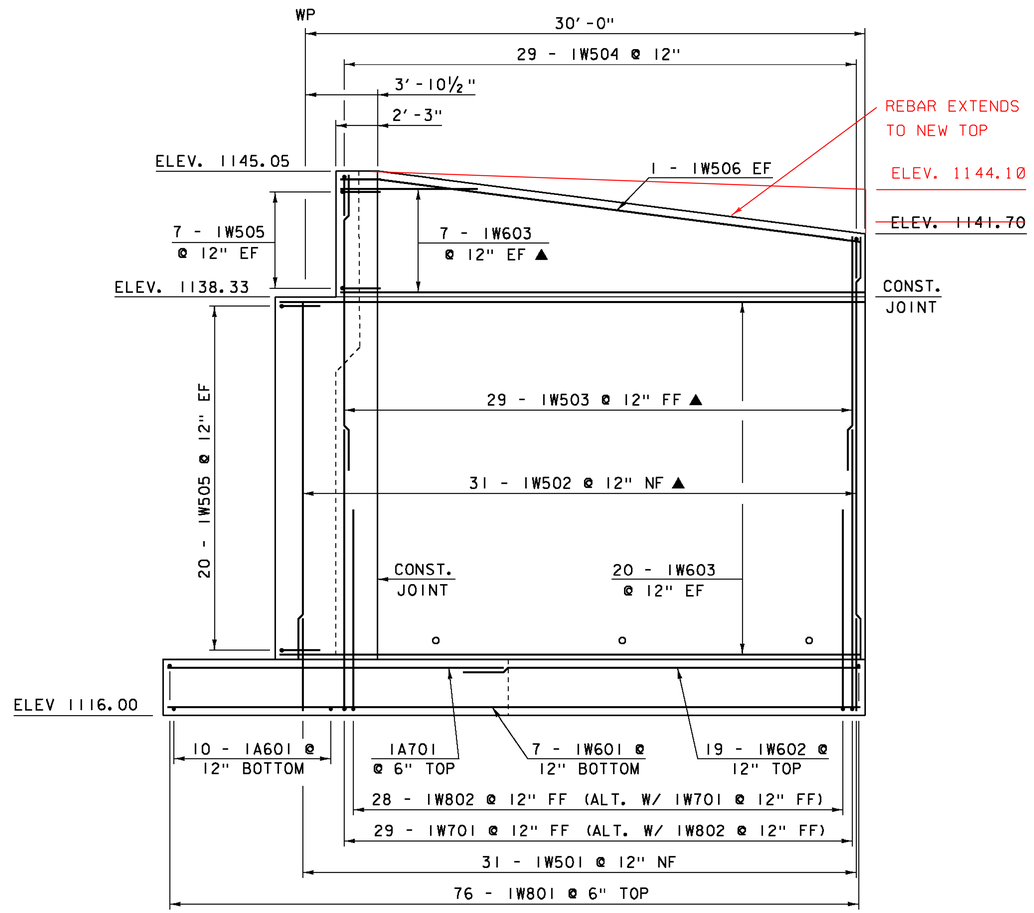
WINGWALL 1 CORNER
REINFORCING BELOW BRIDGE SEAT
SCALE 1/4" = 1'-0"



WINGWALL 1 CORNER
REINFORCING ABOVE BRIDGE SEAT
SCALE 1/4" = 1'-0"



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



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

NOTE:
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
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3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

PROJECT NAME: WOODFORD
PROJECT NUMBER: ER BHF 010-1(44)

FILE NAME: sllb214sub.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: M. EVANS-MONGEON
WINGWALL DETAILS

PLOT DATE: 23-MAR-2012
DRAWN BY: G. ROY
CHECKED BY: M. EVANS-MONGEON
SHEET 34 OF 58