

EASTERN BRIDGE, LLC
WELDING PROCEDURE SPECIFICATION

WPS NUMBER: SMAW PL#00-02				ISSUE DATE: 7/11/05			
PROJECT: VT AOT BRO-BTN 2004 (1)				EB JOB NO.: 6005			
BASE METAL: A709 GR 345W				WELDING PROCESS: SMAW			
FILLER METAL SPEC: A5.5 LINCOLN E8018 C3				FLUX / SHIELDING GAS: N/A			
CURRENT AND POLARITY: DCEP				ELEC STICKOUT: N/A			
WELDING POSITION: 2F				WPS QUALIFICATION: PREQUALIFIED			
PREHEAT AND INTERPASS TEMP: AWS D1.5 TABLE 4.4				SUPPORTING PQR#: N/A			
HEAT INPUT: 29.04 - 137.7 KILJOULES							
ELECTRODE SIZE	WELDING AMPS	CURRENT VOLTS	TRAVEL SPEED	JOINT DETAIL AND AWS NUMBER: FILLET 2F			
1/8"	110-130	22-26	3-5 IPM				
5/32"	130-170	22-26	3-5 IPM				
3/16"	170-255	24-27	3-5 IPM				
NOTES: FOR WELDING GR 345W TO GR 345W GR 345W TO GR 485W RECEIVED JUL 21 2005 RESUBMIT APPROVED BY DATE 8-1-05							
MINIMUM PREHEAT AND INTERPASS TEMPERATURES SHALL BE AS FOLLOWS: MAXIMUM INTERPASS TEMPERATURE SHALL BE 450F THICKNESS OF THICKEST PART AT POINT OF WELDING TEMPERATURE, F ASTM A709 GR 345W STEEL							
THIS PROCEDURE MAY VARY DUE TO FABRICATION SEQUENCE, FIT UP, PASS SIZE, ETC. WITHIN THE LIMITS PROVIDED IN THE CONTRACT DOCUMENTS AND THE AWS D1.5 BRIDGE WELDING CODE							

EASTERN BRIDGE, LLC
WELDING PROCEDURE SPECIFICATION

WPS NUMBER: 2005-3-1				ISSUE DATE: 7/11/05			
PROJECT: VT AOT BRO-BTN 2004 (1)				EB JOB NO.: 6005			
BASE METAL: ASTM A709 GR 345W				WELDING PROCESS: SUBMERGED ARC WELDING			
FILLER METAL SPEC: AWS A5.23 LINCOLN LA75				FLUX / SHIELDING GAS: LINCOLN 960			
CURRENT AND POLARITY: DCEP				ELEC STICKOUT: 1" +/- 1/4"			
WELDING POSITION: 1G				WPS QUALIFICATION: AWS D1.5 / 5.13			
PREHEAT AND INTERPASS TEMP: AWS D1.5 TABLE 4.4				SUPPORTING PQR#: 2005-3			
HEAT INPUT: 50.68 - 73.92 KILJOULES							
ELECTRODE SIZE	WELDING AMPS	CURRENT VOLTS	TRAVEL SPEED	JOINT DETAIL AND AWS NUMBER: BL2c-S			
3/32"	396-440	28.8-31.5	11.25-13.5				
NOTES: OVER 1/2" TO 1" R = 0 F = 1/4" A = 60 DEGREES OVER 1" TO 1 1/2" R = 0 F = 1/2" A = 60 DEGREES RECEIVED JUL 21 2005 RESUBMIT APPROVED BY DATE 8-1-05							
MINIMUM PREHEAT AND INTERPASS TEMPERATURES SHALL BE AS FOLLOWS: MAXIMUM INTERPASS TEMPERATURE SHALL BE 450F THICKNESS OF THICKEST PART AT POINT OF WELDING TEMPERATURE, F ASTM A709 GR 345W STEEL							
THIS PROCEDURE MAY VARY DUE TO FABRICATION SEQUENCE, FIT UP, PASS SIZE, ETC. WITHIN THE LIMITS PROVIDED IN THE CONTRACT DOCUMENTS AND THE AWS D1.5 BRIDGE WELDING CODE							

EASTERN BRIDGE, LLC
WELDING PROCEDURE SPECIFICATION

WPS NUMBER: SMAW PL#00-02-6				ISSUE DATE: 7/11/05			
PROJECT: VT AOT BRO-BTN 2004 (1)				EB JOB NO.: 6005			
BASE METAL: A709 GR 345W				WELDING PROCESS: SMAW			
FILLER METAL SPEC: A5.5 LINCOLN E8018 C3				FLUX / SHIELDING GAS: N/A			
CURRENT AND POLARITY: DCEP				ELEC STICKOUT: N/A			
WELDING POSITION: 2F				WPS QUALIFICATION: PREQUALIFIED			
PREHEAT AND INTERPASS TEMP: AWS D1.5 TABLE 4.4				SUPPORTING PQR#: N/A			
HEAT INPUT: 29.04 - 137.7 KILJOULES							
ELECTRODE SIZE	WELDING AMPS	CURRENT VOLTS	TRAVEL SPEED	JOINT DETAIL AND AWS NUMBER: FILLET 2F			
1/8"	110-130	22-26	3-5 IPM				
5/32"	130-170	22-26	3-5 IPM				
3/16"	170-255	24-27	3-5 IPM				
NOTES: 6MM FILLET RECEIVED JUL 21 2005 RESUBMIT APPROVED BY DATE 8-1-05							
MINIMUM PREHEAT AND INTERPASS TEMPERATURES SHALL BE AS FOLLOWS: MAXIMUM INTERPASS TEMPERATURE SHALL BE 450F THICKNESS OF THICKEST PART AT POINT OF WELDING TEMPERATURE, F ASTM A709 GR 345W STEEL							
THIS PROCEDURE MAY VARY DUE TO FABRICATION SEQUENCE, FIT UP, PASS SIZE, ETC. WITHIN THE LIMITS PROVIDED IN THE CONTRACT DOCUMENTS AND THE AWS D1.5 BRIDGE WELDING CODE							

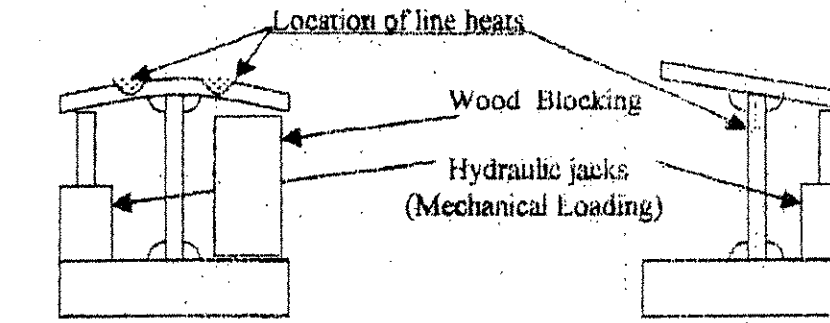
EASTERN BRIDGE, LLC
RR 2, BOX 302
CLAREMONT, NH 03743

PHONE (603) 542-5202 FAX (603) 542-5317

Warpage and Tilt of Flange Correction Procedure, Rev. 1 NYS

SCOPE: This procedure is to be used to correct unacceptable amounts of warpage, (deviation from flatness) or flange tilt, (deviation of flanges from a line normal to the centerline of the web) in fabricated girders or rolled beams. Correction shall be achieved through the use of line heating on the girder web, or flanges, or both, in combination with the use of moderate mechanical loading if needed.

- The area to be heated shall be determined by the correction required, see sketch below. Warpage shall be corrected through the use of line heats on the flanges. Flange tilt shall be corrected through the use of line heats on the appropriate surface of the web.



- Heating shall be performed using appropriate sized rosebud style heating torches. Heating shall be confined to areas described in step 3 and shall be performed so as to bring the steel in those areas to a temperature between 1,000 F and 1,100 F as rapidly as possible without overheating the steel.
- Heating patterns shall be marked on the steel prior to heating. Line heats shall be marked so as to avoid the areas of high restraint directly opposite fillet welds. The line heat length shall be determined by the amount of flange tilt or flange warpage requiring correction.
- Heating shall begin at one end of the line and not proceed to the other end until the initial area is brought up to a temperature between 1,000 F and 1,100 F. The torch operator shall have 1,000 F, 1,100 F, and 1,150 F temperature indicating crayons. The steel surface temperature shall be monitored frequently during the heating process, and the temperature shall be controlled so as to achieve 1,100 F and not to exceed 1,150 F.
- The force applied shall be a minimum to maintain and support position during the heating process. Mechanical loading shall be achieved using hydraulic jacks in the locations shown for the two types of correction being performed.
- The QA representative for the state shall be notified prior to implementation of this procedure.

RECEIVED
 JUL 21 2005
 RESUBMIT APPROVED BY DATE 8-1-05

EASTERN BRIDGE, LLC
RR 2, BOX 302
CLAREMONT, NH 03743

PHONE (603) 542-5202 FAX (603) 542-5317

HEAT CAMBERING AND CORRECTIVE HEAT CAMBERING PROCEDURE

- Support girder, with web in vertical position, at girder ends and at intermediate points as necessary to produce a uniform curvature in the member.
- Intermediate safety catch blocks shall be maintained at mid distance between supports of the member and not more than 2" below the flanges at all times.
- The beam being cambered shall be supported or braced to prevent deflection laterally and overturning during the heating process.
- Heating shall be performed using a properly sized rosebud style heating tip. Heating shall be confined to areas described in Step 3 and shall be performed so as to bring the steel in these areas to a temperature not exceeding 1,150F as rapidly as possible without overheating the steel.
- Heating patterns shall be marked on the girders prior to heating. Heat patterns will be located at even distances in a quantity sufficient to produce the desired camber. Whenever possible heating patterns shall be centered on stiffener locations. Additional blank stiffeners may be required at panel midpoints to provide sufficient heating sites in an effort to prevent or reduce web distortion. Patterns shall be truncated triangles with the base of the triangle being the flange which shall be concave in the finished girder. The apex of the triangle shall be located in the web at a point not less than 75% of the depth of the beam from the base of the triangle. The total included angle of the triangle shall not exceed 20 degrees and the base of the triangle shall not exceed 10".
- Heating shall begin at the apex of the triangle and not proceed toward the base until the truncated area is brought up to a temperature not exceeding 1,150F. Once heating begins to progress towards the base of the triangle it shall not return to the apex. The torch operator shall have 1,000 F, 1,100 F, and 1,150 F temperature indicating crayons. The steel surface temperature shall be monitored frequently during the heating process.
- No weight shall be applied without prior approval of the state.
- After application of heating patterns the member being cambered shall stay in the vertical position until the heated areas cool to below 200F. To check and record results.
- The heated areas shall be allowed to cool to below 600F in ambient conditions. After which time, the areas may be cooled in an accelerated manner using dry, compressed air.
- The QA representative for the state shall be notified prior to implementation of this procedure.

RECEIVED
 JUL 21 2005
 RESUBMIT APPROVED BY DATE 8-1-05

** TOTAL PAGE: 04

EASTERN BRIDGE, LLC
WELDING PROCEDURE SPECIFICATION

WPS NUMBER: 2005-3-2				ISSUE DATE: 7/11/05			
PROJECT: VT AOT BRO-BTN 2004 (1)				EB JOB NO.: 6005			
BASE METAL: ASTM A709 GR 345W				WELDING PROCESS: SUBMERGED ARC WELDING			
FILLER METAL SPEC: AWS A5.23 LINCOLN LA75				FLUX / SHIELDING GAS: LINCOLN 960			
CURRENT AND POLARITY: DCEP				ELEC STICKOUT: 1" +/- 1/4"			
WELDING POSITION: 2F				WPS QUALIFICATION: AWS D1.5 / 5.13			
PREHEAT AND INTERPASS TEMP: AWS D1.5 TABLE 4.4				SUPPORTING PQR#: 2005-3			
HEAT INPUT: 50.68 - 73.92 KILJOULES							
ELECTRODE SIZE	WELDING AMPS	CURRENT VOLTS	TRAVEL SPEED	JOINT DETAIL AND NY SCM NUMBER: FILLET			
3/32"	396-440	28.8-31.5	11.25-13.5				
NOTES: FOR WELDING GR 345W TO 345W GR 345W TO 485W RECEIVED JUL 21 2005 RESUBMIT APPROVED BY DATE 8-1-05							
MINIMUM PREHEAT AND INTERPASS TEMPERATURES SHALL BE AS FOLLOWS: MAXIMUM INTERPASS TEMPERATURE SHALL BE 450F THICKNESS OF THICKEST PART AT POINT OF WELDING TEMPERATURE, F ASTM A709 GR 345W STEEL							
THIS PROCEDURE MAY VARY DUE TO FABRICATION SEQUENCE, FIT UP, PASS SIZE, ETC. WITHIN THE LIMITS PROVIDED IN THE CONTRACT DOCUMENTS AND THE AWS D1.5 BRIDGE WELDING CODE							

EASTERN BRIDGE, LLC
WELDING PROCEDURE SPECIFICATION

WPS NUMBER: SAW PL#14-3				ISSUE DATE: 7/11/05			
PROJECT: VT AOT BRO-BTN 2004 (1)				EB JOB NO.: 6005			
BASE METAL: ASTM A709 GR 485W				WELDING PROCESS: SUBMERGED ARC WELDING			
FILLER METAL SPEC: AWS A5.23-97 LINCOLN LA85 H4 MAX				FLUX / SHIELDING GAS: LINCOLN MIL800 HPNI			
CURRENT AND POLARITY: DCEP				ELEC STICKOUT: 1" +/- 1/4"			
WELDING POSITION: 1G				WPS QUALIFICATION: AWS D1.5 / 5.13			
PREHEAT AND INTERPASS TEMP: HPS70 GUIDE TABLE 3				SUPPORTING PQR#: SAW A332-3 PL#14			
HEAT INPUT: 50.68 - 73.92 KILJOULES							
ELECTRODE SIZE	WELDING AMPS	CURRENT VOLTS	TRAVEL SPEED	JOINT DETAIL: GROOVE B-L2c-S			
3/32"	396-440	28.8-30	11.25-13.5				
NOTES: OVER 1/2" TO 1" R = 0 f = 3/8" min a = 60 degrees OVER 1 1/2" TO 2" R = 0 f = 3/8" min a = 60 degrees RECEIVED JUL 21 2005 RESUBMIT APPROVED BY DATE 8-1-05							
MINIMUM PREHEAT AND INTERPASS TEMPERATURES SHALL BE AS FOLLOWS: MAXIMUM INTERPASS TEMPERATURE SHALL BE 400F THICKNESS OF THICKEST PART AT POINT OF WELDING TEMPERATURE, F ASTM A709 GR 485W STEEL							
THIS PROCEDURE MAY VARY DUE TO FABRICATION SEQUENCE, FIT UP, PASS SIZE, ETC. WITHIN THE LIMITS PROVIDED IN THE CONTRACT DOCUMENTS AND THE AWS D1.5 BRIDGE WELDING CODE							

EASTERN BRIDGE, LLC
RR 2, BOX 302
CLAREMONT, NH 03743

PHONE (603) 542-5202 FAX (603) 542-5317

HEAT CURVING AND SWEEP CORRECTION PROCEDURE STRIP HEAT METHOD

- Support girder, with web in horizontal position, at girder ends and at intermediate points as necessary to produce a uniform curvature in the member.
- Intermediate safety catch blocks shall be maintained at mid distance between supports of the member and not more than 2" below the flanges at all times.
- Heating shall be performed using large (1") rosebud style MAPP gas heating torches. Heating shall be confined to areas described in Step 4 and shall be performed so as to bring the steel in these areas to a temperature between 1,000 F and 1,150 F as rapidly as possible without overheating the steel.
- Heat shall be applied to those edges of the girder flanges, which shall be on the concave side after completion.
- Heating shall be done beginning at the center of the girder and working out to either end. Care shall be taken to heat both top and bottom flange edges at the same time.
- If heating torches are mounted on an automatic Bug-O type carriage; the torch head proximity and travel speed shall be set to achieve 1,000 F as measured on the flange edge at a distance of 6" behind the torch head. The steel temperature shall be checked frequently to see that the temperature achieves 1,000 F and does not exceed 1,150 F. The rate of progression along the flange edge shall likewise be carefully controlled.
- If heating is done manually, care shall be taken to ensure that the heating is done in a consistent manner to achieve predictable results. The torch operators shall monitor the steel temperature frequently to see that the temperature reaches 1,000 F and does not exceed 1,150 F. The rate of progression along the flange edge shall likewise be carefully controlled.
- Edge heats may be done continuously or intermittently, depending on the amount of final horizontal curvature required. If heats are done intermittently, the individual heats shall be allowed to cool below 200F before beginning the next heating cycle.
- The heated areas shall be allowed to cool to below 600 F in ambient conditions. After which time, the areas may be cooled in an accelerated manner using dry, compressed air.
- The intermediate safety catch blocks under the girder shall be monitored to maintain a space of no more than 2" during the heating process. It will be necessary to substitute different thickness catch blocks to maintain this space as the girder begins to contract and move.
- The member being heated shall not be moved until the steel has reached ambient temperature.
- The QA representative for the state shall be notified prior to implementation of this procedure.

RECEIVED
 JUL 21 2005
 RESUBMIT APPROVED BY DATE 8-1-05

NOTICE
 This drawing shall not be used or reproduced in any manner, nor shall any similar drawings or structures be made therefrom, nor shall the information thereon be used for any purpose other than that for which it is released without the written consent of an officer of EASTERN BRIDGE LLC.

EASTERN BRIDGE LLC
 RR 2, BOX 302
 CLAREMONT, NH 03743
 603-542-5202

PROJECT: BRIDGE 8 OVER THE WHITE RIVER, PROJECT NO BRO-BTN 2004(1)	LOCATION: TOWN OF HARTFORD, COUNTY OF WINDSOR, VERMONT
ENGINEER: STATE OF VERMONT, AGENCY OF TRANSPORTATION	CUSTOMER: FW WHITCOMB CONSTRUCTION CO.
DRAWING TITLE: WELD PROCEDURES	DRAWN BY: YJ 06/02/05
CHECKED BY: GG 06/06/05	NUMBER: 6005
SHEET NUMBER: WP1	

0995