PR 9.6 CORRECTION OF CAMBER

1. PURPOSE

This procedure provides guidelines for the correction of camber through the application of heat.

2. SCOPE

This procedure shall be used for welded steel girders with a specified minimum yield point of 50 KSI or less and A709-70W.

3. REFERENCES

AASHTO/AWS D1.5:2010 Bridge Welding Code

DOT Specifications

4. DEFINITIONS

4.1. May denotes a choice

4.2. Shall or will denote a requirement

4.3. Should denotes a guideline

5. PROCEDURE LINE HEAT CORRECTION METHOD

5.1. QC and The DOT QA Representative shall be notified of the intent to perform heat correction.

5.2. Support the girder / rolled beam, with web in vertical position, at girder ends and at intermediate points as necessary to produce the required camber per the approved shop drawings, within the limitations of the specifications.

5.3. 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.

5.4. The beam being cambered shall be supported or braced to prevent deflection laterally and overturning during the heating process.

5.5. Heating patterns shall be marked on the steel prior to heating. Line heats shall be marked along the centerline of web, on the surface of the flange which is to be heated. The beam and/or girder will move in the opposite direction of the flange being heated. The line heat lengths and locations shall be determined by the amount of initial camber that is needed, or the amount of camber correction needed, and in which location the correction

occurs. The Production supervisor and/or leadman will determine the locations of the strip heats.

5.6. QC and The DOT QA Representative shall be notified prior to the application of heat.

5.7. Heating shall be controlled so that the temperature does not exceed 1200°F for materials of 50 KSI or less minimum yield strength. Heating of Grade HPS 70W shall not exceed 1100°F. Temperature indicating crayons to be used: 1000°F, 1100°F, 1150°F, 1200°F and 1250°F, as needed for grade of material per applicable code.

5.8. Artificial cooling through the use of forced air or a water mist may be used once the material has cooled to 600°F.

6. PROCEDURE FOR THE V-HEAT METHOD

6.1. QC and The DOT QA Representative shall be notified of the intent to perform heat correction.

6.2. Support the girder / rolled beam, with web in vertical position, at girder ends and at intermediate points as necessary to produce the required camber per the approved shop drawings, within the limitations of the specifications.

6.3. 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.

6.4. The beam being cambered shall be supported or braced to prevent deflection laterally and overturning during the heating process.

6.5. 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. Patterns shall be truncated triangles with the base of the triangle being at the flange, the base shall not exceed 10 inches. 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. The Production supervisor and/or leadman is to determine the locations of the V-heats.

6.6. 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 1,200F. 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, 1,150 F, 1200°F, and 1250°F temperature indicating crayons. The steel surface temperature shall be monitored frequently during the heating process.

6.7. QC and The DOT QA Representative shall be notified prior to the application of heat.

6.8. Heating shall be controlled so that the temperature does not exceed 1200°F for materials of 50 KSI or less minimum yield strength. Heating of Grade HPS 70W shall not exceed 1100°F.

6.9. Cool to 250°F before applying another set of heat patterns.

6.10. Only reheat after a minimum of three (3) sets of patterns have occurred at other locations.

7. INSPECTION

7.1. Camber shall be rechecked when material has cooled to 250°F Max.

7.2. Camber shall be checked at locations indicated on shop profile drawings.

7.3. Camber shall be measured from the outside of the bottom flange to the horizontal reference line as shown on the shop profile drawings.

7.4. Camber tolerance shall be governed by the project drawings, codes and specifications.