SP- 236023
(New)

SPECIAL PROVISIONS
FOR
HOT DRIVEN RIVETS

Buchanan County
TAP-R-C010(117)--8T-10

Effective Date
September 17, 2024

THE STANDARD SPECIFICATIONS, SERIES 2023, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

236023.01 DESCRIPTION.

This specification describes requirements for furnishing and installation of hot driven round button head rivets.

236023.02 MATERIALS.

Hot-driven round button head rivets conforming to the material requirements of ASTM A502 and the dimensional requirements of ANSI Standard B18.1.2. Provide rivets with heads that are approximately hemispherical in shape and of a uniform size throughout the bridge for the same size rivet. Provide rivets that comply with “Buy America” provisions.

236023.03 QUALIFICATION.

Contractor or subcontractor performing the work shall have at least 3 years’ experience or have been involved in a minimum of three projects in removal and installation of hot driven rivets for construction/rehabilitation of historic steel bridge structures. Contractor performing work shall submit proof of experience for review.

236023.04 CONSTRUCTION.

A. Removal.

Use a pneumatic rivet buster to remove rivet heads. If a rivet cannot be removed with a rivet buster, use an electric or pneumatic hand grinder to remove the rivet head. Use chisels and/or punches placed in the rivet buster to punch out rivets after the rivet heads are removed. If necessary, the rivet shank can be removed by drilling. Repair any damage to the base metal material of the member at no additional charge to the contracting authority.

B. New Rivet Holes.

1. Apply Article 2408.02, L of the Standard Specifications.

2. Apply Article 2408.02, N of the Standard Specifications.

3. Where riveting new steel to existing steel, match the new holes with existing holes in diameter and alignment. For existing steel that has deformed holes due to elongation, advanced corrosion, or other mechanical damage, ream holes to accommodate the next larger size rivet. Maintain the minimum required row spacing, pitch, and edge clearances when enlarging existing rivet holes. Limit enlarging of existing rivet holes to 20 % of the rivets or ten rivets in a single pattern, whichever is less. Notify the Engineer for approval of exceptions to these requirements as field conditions necessitate.

C. Preparation.

1. Before members are riveted together, remove all chips, burrs, and foreign material resulting from drilling, punching, or corrosion from the surfaces to be jointed. If burrs are removed by chamfering, do not exceed 1/32 inch.

2. Rigidly clamp members together prior to riveting using temporary pins or bolts to prevent misalignment and ensure proper fitment. Drifting of parts during assembly shall not distort or enlarge the holes. Remove temporary pins or bolts successively as rivets are installed.

3. Rivet grip lengths will vary depending on location. Size the length of undriven rivet to provide minimum head dimensions as specified in ANSI B18.1.2 (refer to AISC, Manual of Steel Construction, Sixth Edition, 4-83 for guidance).

D. Installation.

1. Heat rivets in an electric, gas, or kerosene furnace. Avoid direct flame impingement on the rivets during heating.

2. Drive rivets within a temperature range of 1500°F to 1950°F. Rivets will appear light yellow in color at the driving temperature.
   - Avoid continual heating of rivets in furnace after they have reached driving temperature (excessive “soaking”).
   - Any slag formed on the rivets shall be knocked clear prior to riveting.

3. Drive the rivet into the hole using a field-riveting hammer or hydraulic riveting tool.
   - The driven rivets should be tight and in uniform contact with the surfaces of the joined members.
   - Caulking, recupping, or double gunning of rivet heads is not permitted.

E. Workmanship.

Provide rivet assemblies of uniform quality and free from cracks, gaps, sharp edges, burrs, loose parts, or other defects which might render the assemblies unsuitable for its intended purpose.

F. Inspection.

1. Immediately upon completion of driving and forming ensure all rivet heads are seated against the base metal surface and are not cracked. Visually inspect each rivet for the conformance with ANSI standard B18.1.2.

2. Upon cooling, visually inspect and sound each rivet to determine if it is loose or defective.
   - A rivet is considered loose if it can be felt to move after being struck on the side of the head in a direction approximately perpendicular to its shank with a 40 ounce engineer’s hammer.
   - A rivet is considered defective if head dimensions are out of specification.

3. Rivets that are found to be loose or defective shall be removed and replaced at no additional cost to the contracting authority.

236023.05 METHOD OF MEASUREMENT.

Each as shown in the contract documents. Loose or defective rivets that are to be removed and replaced after installation will not be measured.

236023.06 BASIS OF PAYMENT.

A. Contract unit price for each rivet.

B. Payment is full compensation for

- Removal of existing rivets,
- Preparing holes and surfaces for rivet installation including repair of any damaged areas to base metal from rivet removal,
- Heating and installing rivets, and
- Inspection of newly installed rivets.