



---

## QUALIFICATION OF STEEL FABRICATION SHOPS & PLANTS

### GENERAL

In addition to the requirements set forth in the Standard Specifications, all steel fabrication shops and plants, shall be on an approved list prior to letting for work covered by Iowa Department of Transportation, English or Metric, Standard Specifications for Highway & Bridge Construction.

Approval of fabrication shops and plants shall be on the following basis:

1. Approved Quality Control Plan/procedures
2. Qualified quality control personnel
3. Applicable certifications
4. Shop approval (welding equipment, certified welders)
5. AISC quality certification program qualifications for fabrication
6. SSPC quality certification program qualifications of paint application
7. Facilities, capabilities, equipment and resources.
8. Quality management system for policies and objectives.
9. Approved facilities shall have a quality system with defined positions and responsibilities.

#### Written Quality Policy:

A Statement of commitment to achieve quality goals signed by the highest level of management at the facility. The goals should include quality planning, training, personnel qualifications and quality control. Goals of each of these major function effecting quality such as management, engineering, operation, production, and QC (Quality Control) shall be considered.

#### Organization Description:

- An organization chart showing the positions that effect quality control shall be listed. The chart shall show position titles and names (if chart is updated). The chart shall also show formal reporting relationship and informal relationship (with a dotted line) pertaining to quality system.
- Quality control personnel cannot perform double duties and cannot perform in production as well as in QC.

### GROUPS OF FABRICATION

All steel fabrication can be divided into two groups:

1. Steel structures with main members per [Section 2408.01](#).
2. Other steel items are as follows:
  - a. Bridge Components as noted in the AASHTO / AWS D1.5 M / D1.5: 2002, Chapter

---

1, General Provisions 1.3.6 welding of ancillary products and Miscellaneous Items. This includes swedge anchor bolts\*, self lubricating bronze plate, sole plates, pintle plates, masonry plates, curved sole plates, finger joint devices, floor drains, drain pipe, welded wire fabric fence panels, metal railing (steel, aluminum, and stainless steel), bearing assemblies-castings, disc bearings, steel laminated elastomeric bearing pads\*\*, and tread plates.

- b. Traffic Signal Components
- c. Sign Support Components
- d. Lighting Structure Components – high mast lighting tower shall require procedure qualification reports (PQR) for verification of the weld procedure specifications.
- e. Pre-engineered Pedestrian Bridges

For all the items in group 2, welding procedures and requirements shall conform to the ANSI/AWS D1.1 Structural Welding Code, except that filler metal and welder qualification requirements shall be in accordance with AASHTO / AWS D1.5M / D1.5: 2002.

\* For swedge anchor bolts, consult [IM 453.08](#)

\*\* For steel laminated elastomeric bearing pads, consult [IM 495.03](#)

### **QUALIFICATION / PURPOSE**

The approved structural steel fabricating plant shall have the personnel, organization, experience procedure, knowledge, equipment, capability, and commitment to produce fabricated steel of the required quality for a given category of structural steel work.

### **MAIN STRESS-CARRYING MEMBERS**

The main members of steel structures are fined to include rolled section of flange and web plates in main beams and girders, floor beams, stringers, abutment diaphragms, cross frames carrying direct live loads, lateral bracing in horizontally curved bridges, cover plates, bearing stiffeners, pot bearing devices, splice plates, gusset plates, and stiffeners connecting live load carrying members to main beam or girder webs. The contract documents may also designate other members as main members.

For members that require Charpy V-Notch tests, see [Article 4152.02B](#)

All of the above require certified Mill Test Certifications and heat number identification.

All of the above main members have restrictive specifications governing shearing and hole punching.

### **BOLT HOLES (2408.02.L)**

Holes for bolts metal thicker than  $\frac{3}{4}$ " (19 mm) for carbon steel and  $\frac{5}{8}$ " (16 mm) for alloy steel **shall not be made by punching, but shall be subdrilled and reamed or shall be drilled full size.**

- Holes in other than main stress carrying members not thicker than  $\frac{3}{4}$ " (19 mm) for carbon steel and  $\frac{5}{8}$ " (16 mm) for alloy steel shall be punched or drilled full size.
- When reaming is required, subpunch or subdrill of all holes is permitted.
- Subdrilling will be required if thickness limitations governs.
- After assembling either ream holes to  $\frac{1}{16}$ " (2mm) larger or drill holes full size to  $\frac{1}{16}$ " (2mm) larger than the nominal diameter of the bolts.
- Misplace or misdrilled holes may be a basis for rejection. Fill or repair only with the prior approval of the structural materials engineer.

---

## **BRIDGE COMPONENTS & MISCELLANEOUS ITEMS**

Bridge components and miscellaneous items shall be fabricated by an approved fabricating shop. See [IM 557 Appendix B](#).

## **FASTENERS**

All fabricators in Group 1 and Group 2 shall provide a summary report of the fasteners to be furnished for each project. The summary reports shall include the fasteners certified mill test reports and shall identify the following:

<b>Item Description</b>	<b>Manufacturer's Name</b>	<b>No. of Pieces</b>	<b>Fasteners ASTM</b>	<b>Galvanizing ASTM</b>	<b>Lot / Heat #</b>
-----------------------------	--------------------------------	--------------------------	---------------------------	-----------------------------	---------------------

## **ACCEPTANCE OF MATERIALS**

1. All steel and aluminum materials shall be of domestic origin, melted and manufactured in the USA. The fabricator shall certify to the state that these materials are of domestic origin.
2. Materials Identification – The method of material identification and documentation such as heat number, grade, and type for any piece or any member shall be maintained throughout and to the end of the fabrication process. Material traceability by heat number shall be required.
3. Mill Test Reports – all mill test reports from the mills shall be certified (stamped, signed, and dated).
4. All sharp / cut edges shall be rounded with a grinder for safety handling and for purpose of galvanizing and painting.
5. Defect and other discrepancies shall be corrected, repaired, or otherwise replaced with an approved procedure or method.
6. Galvanizing test reports shall be certified by an approved galvanizer and shall include zinc thickness, production lots, dates, and ASTM specification requirements.
7. Galvanized fasteners:

High strength fasteners (ASTM A 325), anchor bolts and non-high strength fasteners, shall be galvanized by the following methods: ASTM F 2329 with bath zinc temperature (documented) not exceeding the 850°F or ASTM B 695 Gr. 55, Type 1.