



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.

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

The basis of qualification of a shop or plant shall be based on its quality control program, equipment, welding procedures, certified welders, certified quality control inspectors (CWI) capability and resources to fabricate the items listed to the appropriate specification requirements.

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 Mill Test Certifications and heat number identification.

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

BOLT HOLES (2408.0352)

Additionally, all holes for bolts shall be made by punching or drilling holes in all metal thicker than $\frac{3}{4}$ " (19 mm) for carbon steel and $\frac{5}{8}$ " (16 mm) for alloy steel **shall be made by punching, but shall be subdrilled and reamed or shall be drilled full size.**

Holes in main stress carrying members shall be subpunched and reamed, subdrilled and reamed or 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.

BRIDGE COMPONENTS & MISCELLANEOUS ITEMS

An approved fabricator must fabricate bridge components and miscellaneous items. 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:

Item Description	Manufacturer's Name	No. of Pieces	Fasteners ASTM	Galvanizing ASTM	Lot / Heat #
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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 the galvanizer and shall include zinc thickness, production lots, dates, and ASTM specification requirements.
7. Galvanized fasteners:
 1. High strength fasteners (ASTM A 325), galvanizing methods shall be limited to ASTM B 695 Gr. 50 or 55.
 2. Anchor bolts and non-high strength fasteners, galvanizing methods shall be limited to ASTM F 2329 with bath zinc temperature (documented) not exceeding the 850°F or ASTM B 695 Gr. 50 or 55.