
AISC Certification Program for Steel Bridge Fabricators

Standard for Steel Bridges—2011

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Approved by the AISC Certification Committee



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1. Purpose

The purpose of the AISC Certification Program for Steel Bridge Fabricators is to confirm to *owners*, the design community, the construction industry, and the public that a certified steel bridge *fabrication* facility has the personnel, organization, experience, *documented procedures*, knowledge, equipment, and commitment to produce fabricated steel of the quality required for steel highway or railroad bridge construction.

2. Program Scope and Fabricator Eligibility

This Certification Standard for Steel Bridges offers assistance to steel bridge professionals, *owners*, general contractors, and other interested parties in assessing *fabricators'* capability to satisfy project quality needs. Specifiers of this standard are encouraged to evaluate fabricator capability independently, particularly with regard to project- or owner-specific requirements.

The standard describes requirements for certification of facilities that fabricate and supply steel highway or railroad bridges. These facilities have *quality management systems* with defined functions and responsibilities.

The quality management system of *fabrication* facilities (not products) is certified. The certification should not be understood as a product inspection of fabricated steel bridges. Certification includes all functions of providing steel bridge fabrication from receipt of contract through final delivery. The scope of this certification does not include design or erection. For bridge rehabilitation, the specifier is encouraged to consider on a project-specific basis the nature of the items being fabricated to determine whether this certification is appropriate. Likewise, for pedestrian bridges the specifier is encouraged to consider the structure type and loading to determine which is the most appropriate certification for a particular project.

The scope of this certification does not extend to the application of complex coating systems as defined in AISC 420/SSPC-QP 3 *Certification Standard for Shop Application of Complex Protective Coating Systems*.

The certification program is open to all fabricators of steel highway or railroad bridges, regardless of size and regardless of AISC membership status.

This standard, including its supplemental requirements, has three categories of certification: simple bridges, intermediate bridges, and advanced bridges. Fabricators producing fracture-critical members, intermediate bridges, or advanced bridges shall be required to meet specific supplemental requirements.

Simple bridges consist of unspliced rolled sections.

Intermediate bridges are typical bridges that do not require extraordinary measures. Typical examples might include: (1) a rolled beam bridge with field or shop splices, either straight or with a radius over 500 ft; (2) a built-up

I-shaped plate girder bridge with constant web depth (except for dapped ends), with or without splices, either straight or with a radius over 500 ft; (3) a built-up I-shaped plate girder with variable web depth (e.g., haunched), either straight or with a radius over 1000 ft; (4) a truss with a length of 200 ft or less that is entirely or substantially pre-assembled at the certified facility and shipped in no more than three sub-assemblies.

Advanced bridges are those requiring an additional standard of care in fabrication and erection, particularly with regard to geometric tolerances. Examples include tub or trapezoidal box girders, closed box girders, large or non-preassembled trusses, arches, bascule bridges, cable-supported bridges, moveable bridges, and bridges with particularly tight curve radius.

3. References

The *fabricator* shall have the reference documents and standards necessary to make personnel aware of work requirements. References shall be consistent with the requirements of existing contracts and be readily available to those who need them.

4. Definitions

The following terms are italicized where they appear for the first time in a section to alert the user that the term is defined in this section. Acronyms for professional organizations are not italicized in the text. As used in this standard, the words **shall** or **will** denote a mandatory requirement. The word **should** denotes a guideline or recommendation. The word **may** denotes an opportunity to make a choice.

AASHTO. The American Association of State Highway and Transportation Officials.

AISC. American Institute of Steel Construction—the certifying body.

ASNT. The American Society for Nondestructive Testing.

ASTM. ASTM International.

AWS. American Welding Society.

C of C. Certificate of Compliance or Certificate of Conformance.

Checker. A person in a *detailing* organization who, because of experience and ability, has advanced successfully to a position of responsibility with the ability to perform the final verification of *shop drawings* without direct supervision.

Checking (of shop drawings, digital manufacturing models, and erection framing drawings). A detailed review of all sketches and dimensions on *shop drawings*, *digital manufacturing models*, and *erection framing drawings* by a qualified *checker* other than the original *detailer*.

Contract Documents. The documents that define the responsibilities of the parties that are involved in bidding, fabricating and erecting steel bridges. These documents normally include the *design drawings*, the *specifications* and the contract.

Corrective Action. The action or actions undertaken to identify and eliminate the root cause of a product or process *nonconformance* to prevent its recurrence. *Corrective action* is not the *repair* or *rework* of identified nonconforming product to meet specified requirements.

Design Drawings. The graphic and pictorial portions of the *contract documents* showing the design, location and dimensions of the work. These documents generally include plans, elevations, sections, details, schedules, diagrams and notes.

Detailer. Person who performs the function of *detailing*.

Detailing. The function that produces *shop drawings*, digital *manufacturing models*, and *erection framing drawings* from *contract documents*.

Documented Procedure. A procedure that is established, documented, implemented and maintained. The documentation provides information about how to perform the activity or process consistently. Documentation can include written instructions, drawings, diagrams, charts, *specifications* and references or excerpts of appropriate technical standards and codes. Documentation shall contain:

- The purpose of the procedure.
- Process definition that includes steps required for completion.
- Assignment of responsibility for completion.
- Assignment of responsibility for review of the procedure.
- Identification of records that are generated.

Documented Training. Training in which there is a record of the course outline, a record of who attended, the date it was given, and the instructor who provides the training.

Erection Framing Drawings. Field-installation or member placement drawings that are prepared by the *fabricator* to show the location and attachment of the individual *shipping pieces*. Means and methods, safety procedures, and engineering calculations for erection are excluded from the *fabricator's* responsibilities for *erection framing drawings*.

Executive Management. The chief executive officer, president, or other individuals with executive function and the authority to assign resources. *Executive management* has ultimate authority and responsibility in final decision making for all aspects of the *quality management system*.

Fabrication. The process of preparation and assembly of individual parts into a *shipping piece*. *Fabrication* includes all production operations performed in the manufacturing

and shipping of the product (e.g., assembly, welding, drilling, sawing, milling, and thermal and mechanical cutting).

Fabricator. The entity that is responsible for fabricating the steel bridge. NOTE: The *fabricator* referenced in this document is the entity being certified.

Manufacturing Model. Digital sub-model of the Logical Product Model as defined in Appendix A of the AISC *Code of Standard Practice for Steel Buildings and Bridges*. The *manufacturing model* includes data represented in *detailing* for *fabrication*.

MTR. Material test report, manufacturer's test report, or mill test report, meeting the requirements of the "Test Reports" section of ASTM A6.

Nonconformances. Attributes of materials, consumables, fabricated product (in-process or final), or processes that do not meet contract, regulatory, or *fabricator*-defined requirements.

NDT (NDE). Nondestructive Testing (Nondestructive Examination).

Objective Evidence. Data supporting the existence or verification of something. In this context, it is evidence that the *quality management system* is functioning properly. *Objective evidence* can be obtained through:

- Observation of the performance of a task or physical products.
- Measurements.
- Tests.
- Review of a record, *documented procedure*, or other document.
- The result of an interview with one or more employees about their duties or performance of a task.

Owner. The entity or its authorized representative who has authority to define or accept changes to contract requirements and who is or represents the ultimate *owner* of the finished/completed product.

PQR. (Welding) procedure qualification record as defined by AWS A3.0.

Quality Assurance (QA). That part of quality management focused on providing confidence that quality requirements will be fulfilled. For the purposes of this program, *quality assurance* is the planned system of *documented procedures* and organizational requirements developed and implemented for the purpose of assuring compliance with the requirements of the *contract documents*, providing confidence that quality goals are achieved, and measuring effectiveness of the *quality management system*. *QA* encompasses such areas as compliance with project *specification* technical requirements, compliance with referenced standards, and achievement of