

A quick look at AISC's quality requirements and how they increase the value of fabrication and erection services and the steel package as a whole.

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HIGHER QUALITY, LOWER COST

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THE FOLLOWING PARAGRAPH is from a project specification that was recently brought to my attention:

"Fabricators for structural steel work shall be certified by the American Institute of Steel Construction or shall include in their bid the amount of \$3,000 to cover the cost of inspections by an independent testing agency to verify that the fabricator is capable of performing the desired level of quality in the work to be performed. The fabricator shall cooperate with and make available to the testing agency records and documents that focus on general management, engineering and drafting, procurement, operations and quality control. The fabricator also shall allow access to facilities to allow the testing agency to examine actual fabrication work in the shop and drafting room at the time of inspection. The inspection will be performed prior to the signing of a contract between the owner and the fabricator, and will be the basis of recommendations from the A/E to the owner as to the qualifications of the fabricator to perform the work."

While I don't know who authored the paragraph (it was forwarded along several times and the string did not lead me back to the origin), it's pretty clear to me that they recognize the importance of having and implementing a quality plan. They also explicitly recognize that there is a value in the quality control and assurance procedures that are the basis upon which fabricators are evaluated when they receive AISC Certification. They even put a number on it for that job, thereby revealing the cost of work that should be done for equivalency when an uncertified fabricator is considered. The bottom line: Quality matters and must be planned for.

For those of you unfamiliar with AISC's quality plans, a review of Chapter N in AISC 360-10 (the AISC *Specification*) for R=3 applications and Chapter J in AISC 341-10 (the AISC *Seismic Provisions*) for high-seismic applications can be very helpful. These chapters are geared toward helping fabricators and erectors identify and eliminate problems early, make quality inspections more effective and ultimately increase the overall value of the steel package.

In fact, both chapters (available in their respective parent documents as free downloads at www.aisc.org/epubs) are referred to in the quality requirements for steel construction in Chapter 17 in the 2012 *International Building Code* and reflect what is currently done in AISC certified fabrication shops. Accordingly, a certified fabricator qualifies for the waiver of independent inspections that is provided in *IBC* Chapter 17; independent inspection is required for other fabricators.

Learn About Chapter N—by Reading Chapter N

Chapter N offers a clear, coordinated and complete quality plan. Although some of its requirements are derived from related standards, such as AWS D1.1 and the RCSC *Specification*, the list of inspections in Chapter N puts them into a single document.

Essentially, the chapter provides a plan of requirements for the minimum observation and inspection tasks deemed necessary to ensure quality in structural steel construction. As enumerated in Section N1, this plan is defined with a comprehensive system of:

- quality control (QC), which is provided by the fabricator and erector.
- quality assurance (QA), which is provided by others when required by the authority having jurisdiction (AHJ), applicable building code, purchaser, owner or engineer of record (EOR).
- nondestructive testing (NDT), which is to be performed by the agency or firm responsible for quality assurance.

The underlying philosophy of this plan is to involve all levels of management and the workforce in the quality control process to ensure that the necessary levels of quality will be achieved.

Section N2 addresses the requirements that must be met by the fabricator's and erector's QC program. It includes requirements for material identification and items that the fabricator's and erector's QC inspectors must inspect. The requirements in Chapter N recognize that many quality requirements are common from project to project, and that consistency in imposing quality requirements between projects facilitates success and greater uniformity in quality.

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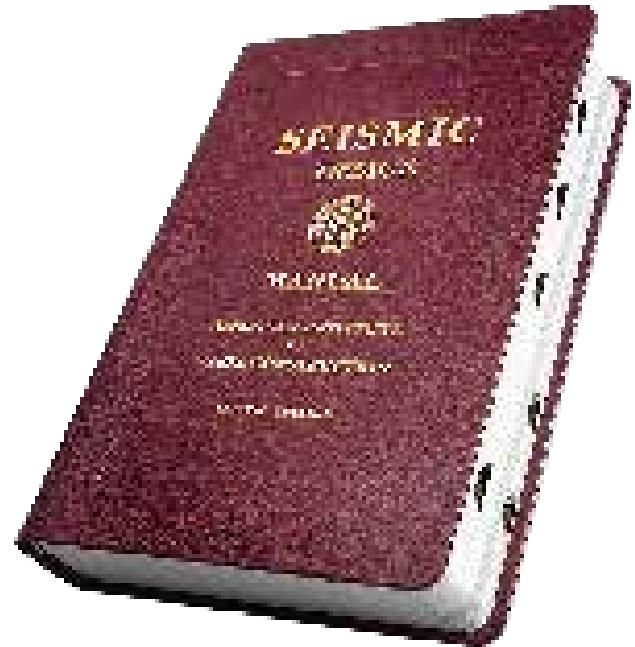


Section N3 covers requirements relating to fabricator's and erector's documents—the shop and erection drawings. It also lists other supporting documents that must be made available if requested, such as material test reports and manufacturer's certifications, welding procedure specifications and quality and inspection procedures.

Section N4 covers requirements for inspection and NDT, including the required qualifications for the fabricator's and erector's QC inspectors, as well as for the independent QA inspector and NDT personnel.

Sections N5 and N6 address inspection requirements in steel and composite structures, respectively. These sections cover, in significant detail, the list of tasks to be addressed in QC and QA and identify each as a perform (P) task or an observe (O) task. P means that the task must be performed for each joint or member, whereas O means that the task is to be observed on a random basis. Essentially, a classification of P is assigned to tasks that cannot be properly treated using random sampling procedures.

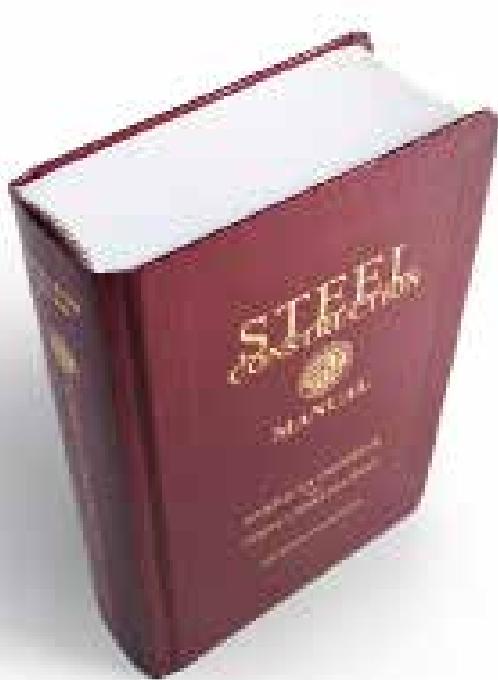
Section N7 covers the use of approved fabricators and erectors. When a fabricator or erector participates in an approval process that is acceptable to the AHJ, such as the AISC Quality Certification program, QA inspections (but not NDT) are waived. Additionally, NDT also can be performed by the fabricator when approved by the AHJ, provided the QA agency



reviews the fabricator's NDT reports. At the completion of fabrication or erection, the approved fabricator or erector must submit a certificate of compliance to the AHJ stating that the materials supplied and work performed by the erector are in accordance with the construction documents.

Section N8 addresses how nonconforming materials and workmanship are to be handled.

A quick note on high-seismic applications: Learn about Chapter J in AISC 341-10 the same way (read it). It has different and generally more stringent quality control and quality assurance requirements for high-seismic construction than what is required in Chapter N of AISC 360-10.



Preventing Poor Performance

Clearly, observation of bad practices will result in increased inspection. However, Chapters N and J go further; they require measures that are intended to prevent poor work in the first place. The requirements for written procedures and qualification of workers result in greater consistency, which also permits quality inspections to be focused where they can be most effective. The explicit requirements in these documents result in more uniform and effective quality control and assurance practices.

To find out more about AISC's quality certification programs, visit www.aisc.org/certification.

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