

AISC Certification as an Alternative to Code-Required Special Inspections

AISC Certification provides help for industry professionals new to special inspection requirements.

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REQUIREMENTS FOR STRUCTURAL TESTS AND SPECIAL INSPECTIONS ARE NOT NEW.

Building codes and project specifications have included these requirements for a number of years. However, requirements have typically been reserved for projects with a critical use or that use unusual structural systems or materials.

So how are things different now? To begin with, expanding adoption and enforcement of the Chapter 17 provisions of the *International Building Code* (IBC) are bringing structural tests and special inspections to projects where they were previously not required. This direction in code development reflects a growing understanding of the contribution that quality construction makes to the safety of building occupants as well as to the overall value of buildings. Although the phrase “special inspection” is used, we will see that the requirements of the IBC combine process evaluation (quality assurance) along with product inspection to enhance construction quality.

Which projects need special inspections?

For what size and type of project are special inspections required? IBC Chapter 17 extends the applicability of special inspections to smaller and simpler buildings of all construction materials. But for steel construction specifically, IBC Section 1704.3 only allows exception from special inspections for steel elements on which the fabricator does not perform any welding, thermal cutting, or heating operation of any kind as part of the fabrication process. Very few structural steel projects would qualify for this exception. Even if one did, the fabricator is obligated to submit a detailed procedure for material control. Emphasis of the basic nature of the special inspection requirements is seen in the second exception of IBC Section 1704.3 where periodic rather than continuous special inspection of welding is allowed only in very limited cases; for

instance, single-pass fillet welds not exceeding $\frac{5}{16}$ ” in size.

Along with broader building project applicability, Section 1704 of the IBC sets forth specific responsibilities and expectations that may be new to many building officials, design professionals, and owners. When special inspections are required by IBC Section 1704, both the building official and the design professional are engaged in the process of qualifying the individuals or firms who will conduct the inspections. Certifications and accreditations by recognized agencies such as IAS, AWS, ASNT and others can make this work easier, but often a lack of available individuals or firms carrying these credentials leads to a qualifying process that consumes significant time and resources. In at least one municipality in the United States, the building department has amended the IBC provisions to relegate this responsibility (and the provision of the needed time and resources) to the design professional.

Statement of Special Inspections

Design professionals accustomed to projects of modest size and complexity could find themselves unprepared for enforcement of the IBC Section 1704 requirement that a Statement of Special Inspections be prepared and submitted with the application as a condition of permit issuance. The IBC requirements place the onus on the design professional to list the work requiring special inspection, the type and extent of inspections to be performed, and the qualified individuals or firms intended to conduct the inspections in advance of receiving a building permit.

Determining the work scope for the Statement of Special Inspections can be challenging. Uncertainty exists in that specific members of the project team are not likely identified by the time of permit application. An increase in the scope of special inspections to cover this uncertainty is

Summary in 50 Words or Less

- Adoption and enforcement of model building code provisions for structural tests and special inspections is increasing throughout the United States.
- A quality management system implemented for AISC Certification can reduce the scope or eliminate the need for structural tests and special inspections for many building projects.

Quality Corner is a monthly feature that covers topics ranging from how to specify a certified company to how long it takes to become a certified company. If you are interested in browsing our electronic archive, please visit www.aisc.org/QualityCorner.

Inspection vs. Quality Management

Can process control provided by a quality management system assure the level of quality that special inspection can? Yes, when the quality management system includes written procedures for developing inspection plans, conducting inspection activities, and training inspection personnel as the AISC Certification programs require. Special inspectors cannot be everywhere at once, and adding inspection hold points to production increases cost. Process control often provides better assurance of quality than special inspection where important aspects are not visible when the work is completed. Consider as examples welding where joint preparation and fit-up are important or coating application where surface preparation can be critical to the quality of the finished product.

unlikely to be well received by the project owner—IBC provisions require that the owner employ the special inspector.

Determining the level of special inspector services required can be particularly difficult where IBC Section 1704.2 may require the special inspector to not only inspect the fabricated product, but also to audit the fabricator's detailed fabrication and quality control procedures. A special inspector who is skilled and confident in performing product inspection may not feel as confident when tasked with effectively evaluating complex procedures, processes, and systems.

AISC Certification Can Help

So what benefit and value does AISC Certification provide? AISC Certification can serve to eliminate the IBC requirement for special inspection of fabricated structural steel for many building projects.

IBC Section 1704.2 requires special inspection of fabricated items (product) where fabrication of structural load-bearing members and assemblies is performed on the premises of a fabrication shop. However, an exception to this requirement for special inspections is provided where the

fabricator is approved in accordance with Section 1704.2.2, which states in part that:

“Special inspections required by this code are not required where the work is done on the premises of a fabricator registered and approved to perform such work without special inspection. Approval shall be based upon review of the fabricator's written procedural and quality control manuals and periodic auditing of fabrication practice by an approved special inspection agency.”

Approved vs. Non-approved Fabricators

The word *approval* has special meaning in the IBC, referring specifically to the building code official or authority having jurisdiction. The AISC Certification program is widely recognized for its effectiveness in assuring quality and is usually accepted by code authorities as a basis for approval.

No matter how well-implemented or effective the quality management system of a fabrication firm may be, the IBC requires periodic verification. In the case of fabricator approval based on AISC Certification,

the verification is made through a comprehensive audit to stringent industry-specific performance criteria by trained auditors and industry professionals. Quality Management Company, LLC (QMC) audits 15 areas specific to structural steel fabrication annually and more frequently when significant changes take place at a certified firm. The audits encompass quality management system documentation and on-site operations that include, in part: contract review, document and record control, material identification, process control, inspection and testing, and training. QMC auditors look closely for a demonstrated commitment to quality by assessing effective handling of non-conformances with corrective action, internal audits, and management review of the quality management system. QMC assures high standards for AISC Certification audits: personnel are carefully selected, regular auditor training is provided (including biannual formal training workshops), and fabricators are offered a different auditor for each scheduled audit to enhance objectivity. And what may be particularly good news for some is that, unlike the non-approved fabricator, the cost of the quality management system verifica-

“Approval” of Steel Fabricators by Building Officials

According to the *International Building Code*, the building official has the ultimate authority for approving fabricators. Depending on the resources available to the local building authority, this selection process can be as simple as “Are they AISC Certified?” However, jurisdictions with more resources may take on the burden of approving individual facilities on a project-by-project basis. This table illustrates how the code requirements (and subsequently the resources needed) can change depending on whether the fabricator is approved.

IBC Requirement per Chapter 17	Responsible party and/or check writer if the fabricator for your project is:	
	approved	not approved
Qualify special inspectors/firms for steel fabrication	Not required	Design professional is responsible with the cost borne by the owner
Develop Statement of Special Inspections for steel fabrication	Not required	Design professional at the owner’s expense
Approve Statement of Special Inspections and special inspectors/firms for steel fabrication	Not required	Building official on a project-by-project basis at the building code authority’s expense
Conduct special inspections for steel fabrication and prepare reports	Not required	Special inspector at the owner’s expense
Develop criteria, prepare audit plan, select auditors, and periodically verify fabricator quality management system	QMC- or IAS-accredited inspection agency at the fabricator’s expense	Special inspector on a project-by-project basis at the owner’s expense
Identify and resolve discrepancies with approved construction documents	Fabricator is responsible	Special inspector and design professional at owner’s risk and expense
Submit certificate of compliance to building official	Fabricator is responsible	Special inspector is responsible at owner’s expense

tion provided through AISC Certification is borne by the fabrication firm.

As a recognized leader in the steel construction industry, AISC is contacted frequently by individuals trying to develop their own criteria for evaluating non-approved fabricators. Verification of a non-approved fabricator’s quality management system is project-specific and requires the special inspector to develop evaluation criteria and audit plans, select (and perhaps train) auditors, and to document the verification—all at the expense of the project owner and often under project schedule pressure. Like the approved fabricators, non-approved fabricators are fully responsible for executing work and conducting inspections in accordance with contract document requirements. However, unlike the approved fabricator, the non-approved fabricator is not required to submit a certificate of compliance to the building official. Instead, this responsibility shifts to the special inspector and the risk and expense is borne by the project owner.

There are some who believe that the fabricator is incapable of conducting independent and objective inspection as part of their quality management system. This

misconception is predicated on the myth that it is less expensive to deliver low quality than high. Philip Crosby, author of the book *Quality is Free*, and a number of other notable quality professionals have researched this and found that the waste reduction and efficiency gain associated with providing higher quality usually lowers (yes, lowers) production costs. A fabrication firm’s management demonstrates a commitment to quality by becoming AISC Certified. Affirmation of this commitment is provided to the building official upon completion of fabrication, when the fabricator, as per IBC Section 1704.2.2, submits a “certificate of compliance” stating that the work was performed in accordance with approved construction documents.

Visit www.aisc.org/certification for more information about AISC Certification and how it could serve the special inspection needs of your project, or share your interest in a message to certinfo@aisc.org. **MSC**

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