

conference
preview

STEEL SPECIFICATIONS... UNRAVELED!

BY JON BEIER, PE

Project specifications for steel can help keep designs grounded in reality while also serving as a guide.

AS THOSE OF US that work in steel design and construction know, the hands-on aspects of the industry—designing members and connections, fabricating beams and columns or erecting trusses and frames—comprise the face of the job.

But how do we ensure that our designs come together properly and are accurately communicated? Drawings are not enough. This is where project specifications come in. Project specifications provide a great deal of information that drawings and general notes cannot always convey. A well thought-out set of specifications can help elaborate on the information in the drawings, assist with defining expectations related to standards compliance and ensure that contractors are competing on a level playing field.

As players in the design and construction industry, it is important that we understand the information in a project specification, especially as it relates to steel. What options exist when editing specifications, and what are the implications of each option? How do the specifications relate to the general notes included on the drawings? How are responsibilities defined in the specifications, and what impacts could those responsibilities have on a fabricator or erector? These are some of the questions that we will explore.



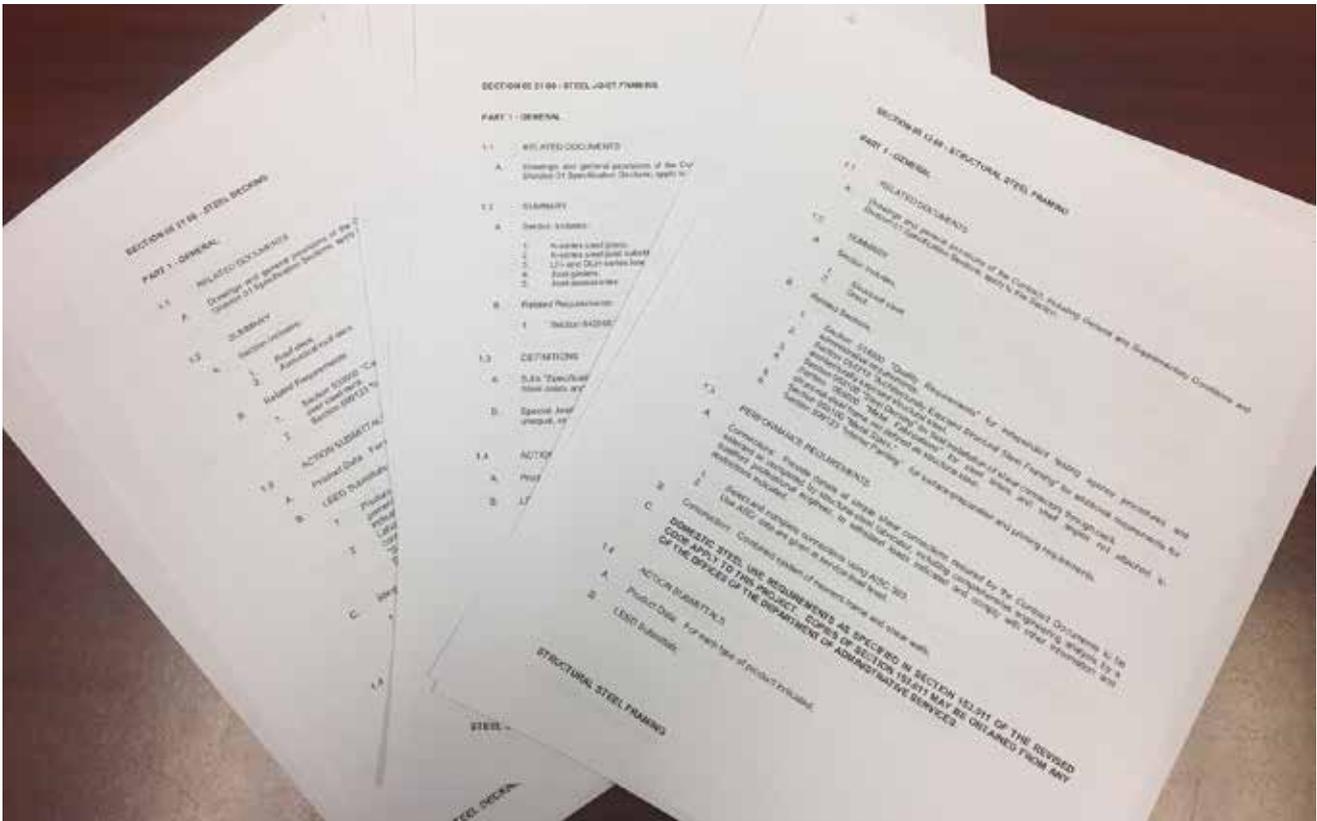
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While these inquiries aren't always easy to answer, some common language can go a long way. In the U.S. and Canada, this common language can be found in MasterFormat. Managed by the Construction Specifiers Institute (CSI), MasterFormat is a system for organizing specifications and other documentation for commercial construction. It divides construction products into 50 divisions, and each division is then divided in multiple sections, which are generally organized by material type or trade. This helps to define responsibilities of the contractor as well as provide individual specifications for different materials. Metals such as steel typically occupy Division 05, which contains several sections dedicated to areas such as structural steel, architecturally exposed structural steel (AESS), steel joists, steel deck and metal fabrications.

Each section typically has three parts: general, products and execution. The general part discusses overall requirements including submittals, meeting requirements and quality assurance. The products portion defines material properties included in the project. The last part, execution, discusses various responsibilities associated with the fabrication and erection of the specified elements, as well as quality control.

Although each section is separate, there are often associations between them. When it comes to applying MasterFormat to a specific project, it is important that the sections are well coordinated and consistent with the other specification sections, general notes and construction drawings. It is equally important for designers to be cognizant of what information appears in multiple places. For example, steel member properties such as yield strength are given in both the steel specifications and in the general notes.

Project specifications for steel are dealt with in a variety of ways by different companies. Customization is common and important for maintaining efficiency and consistency between all of a company's projects. Therefore, each company's specifications will likely look a little different from others. This session will discuss some possible options for customizing of-



specifications and, in addition to the questions mentioned above, address the following queries: Who edits specifications within your office? Do you have a dedicated specification writer or does each engineer edit their own specifications? As an erector or fabricator, what are the common items that could have a big effect on cost?

The focus will mainly be on the Structural Steel Framing section of Division 5 in MasterFormat (05 12 00). Some of the items to be discussed are:

- Definitions that ensure consistency on the project
- Submittals including product data, LEED submittals, shop drawings and delegated-design submittals
- Quality assurance requirements such as AISC Certification
- Material properties and finishes
- The different types of bolts, connectors and anchors
- Fabrication and erection tolerances
- Field connections
- Field quality control

While the structural steel section will be the main focus, a few other sections will be discussed as well, including AESS (05 12 13), Steel Joist Framing (05 21 00), Steel Decking (05 31 00) and Metal Fabrications (05 50 00). Each section has its unique set of options. For example, when AESS is specified, it is very important that this section is coordinated with the structural steel section. Steel joists are unique in that they often have delegated

design aspects. Therefore, there is certain information related to the design that must be conveyed to the joist supplier. Metal fabrications are similar in this respect, and a unique aspect of this section is the fact that the architect (not the structural engineer) is the one that often edits it. Finally, the metal deck section contains several options related to type, finish and capacity. Not fully considering or understanding the options for these various sections could have detrimental effects on a project.

Another consideration is that specifications are technical documents that can be used when resolving a dispute. If inconsistencies exist in the specifications or information is missing, it takes much more effort and resources to resolve these disputes than if a little more time and effort were spent on the front end to ensure consistency and clarity.

Overall, specifications are an important part of most projects. They provide information on material properties in addition to the contractor's expectations. It is important for designers, detailers, fabricators and erectors to take the time to fully read and understand the specifications for their projects. Consider them another tool to guide your projects and help them go smoothly. ■

This article is a preview of Session N19 "Steel Specifications Unraveled" at NASCC: The Steel Conference, taking place April 11-13 in Baltimore. Learn more about the conference at www.aisc.org/nascc.