

## Common Specifying Problems

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Construction documents, as defined by CSI, are “the written and graphic documents prepared for communicating the project design for construction and administering the construction contract.” They consist of the drawings, specifications, contracting requirements, procurement requirements, modifications and addenda, and resource drawings. Some of these documents are used for procurement of a construction contract (*i.e.* bidding and negotiation) and some are used for the construction contract (*i.e.* contract documents). Of these documents, the drawings and specifications provide essential information for the building design. Therefore, the drawings and specifications usually receive a lot of attention when problems arise during construction.

Architects and engineers (A/Es) spend a considerable amount of time developing the drawings; mainly because, as the saying goes, “a picture is worth a thousand words,” or a drawing in this case. Attempting to describe what the drawings convey would probably take more than a thousand words—especially when considered within the context of a contractual environment. For example, try to describe in words the elevations of Frank Gehry’s Walt Disney Concert Hall (See Figure 1) that would be concise enough to ensure proper execution with minimal confusion. It’s impossible. Even though the drawings convey the design intent very well, they cannot provide all the information needed to build a project.

The drawings provide the graphical information needed to construct the building. They include plans, sections, elevations, and details that show how the various materials, systems, and components go together. Notations are used to identify elements on the drawings, but the notations do not provide detailed information—that is the purpose of the specifications. Specifications provide the qualitative requirements for the materials, components, and systems selected for a given building. Thus, a building could not be built without both drawings and specifications.

This interdependency between drawings and specifications is written into many general conditions of the construction contract. For example, the American Insti-



**Figure 1** - Walt Disney Concert Hall, Los Angeles, California. The curvilinear forms would be impossible to describe in writing so that it could be constructed. (Photo Credit: John Sullivan, pdphoto.org)

tute of Architects’ (AIA) Document A201-2007, *General Conditions of the Contract for Construction*, states in Section 1.2.1, “The Contract Documents are complementary, and what is required by one shall be as binding as if required by all[.]” This provision means both documents—the drawings and specifications—must be considered when performing the work of a construction contract.

It is not news that many sets of construction documents contain errors, whether they are found in the drawings or specifications. Construction documents are products of humans and are not warranted to be perfect. Architects and engineers are held to a standard of care that is consistent with other professions, such as attorneys and doctors, which means that they have to perform similarly to other architects or engineers who are located in the same region, at the same time, under comparable conditions. Although architects and engineers are not required to provide perfect documents, they should provide documents that are as clear, concise, complete, and correct as possible.

Drawings errors vary, but can consist of something as simple as an incorrect dimension to something as complex as detailing an assembly that could not possibly be fabricated as shown. Many of these errors are unique to drawings, but some can be shared with specifications. Specifications, like drawings, have their unique common errors—but what may be considered an error by some may actually be just a violation of best practice. Therefore, the remainder of this article will address, in no particular order, errors and best practice violations (*i.e.* problems) commonly found in construction specifications.

**Problem No. 1 – Not following CSI’s standards for specifications, such as MasterFormat™, SectionFormat™, and PageFormat™.**

This is probably the most common problem encountered—it is not considered an error, but more of a violation of best practices. Not using CSI’s standards when preparing specifications could lead to confusion, since specification information may not be located where it would normally be found. This confusion may increase the number of requests for information (RFIs) and claims. Nonconformance with industry standards, which CSI’s standards are considered, may be viewed as not performing to the professional standard of care. This exposes the A/E to potential liability if the nonconformance to standards is considered a major contributing factor to a claim.

*MasterFormat™* establishes the organizational format of the project manual, which includes the specifications, as well as the procurement and contracting requirements. It outlines where the documents and specification sections are located in a logical, numerical order.

*SectionFormat™* establishes the structure of information contained within a specification section. It provides the recognized three-part format of PART 1 GENERAL, PART 2 PRODUCTS, and PART 3 EXECUTION, and organizes the articles within each of the three parts.

*PageFormat™* establishes recommendations for the printed format of specification information, such as margins, headers, footers, spacing, fonts, and paragraph structure and numbering.

Master guide specifications that are available through subscription generally follow these standards; however, they do not provide master sections for all possible construction materials, products, and systems. Therefore, A/E’s may rely upon guide specifications available from manufacturers of the products they propose to use. These manufacturer guide specifications may be available for A/E’s to edit directly or the manufacturers’ representatives may edit the sections for use by A/E’s. Unfortunately, many manufacturer guide specifications, whether edited by representatives or not, do not follow CSI standards; thus requiring the A/E to modify the specifications to conform to the standards.

**Problem No. 2 – Not using proper specification language.**

Specifications communicate construction requirements using a writing style that differs from common prose—it even differs from typical legal jargon, or *legalese*. There are two writing styles used in specification writing: the indicative mood and the imperative mood. The indicative mood is the historical and obsolete method of specifying, which consistently begins each paragraph (and most sentences) with the phrase “The Contractor shall...” as illustrated in the example below:

Contractor shall fill bollards solidly with concrete, mounding top surface to shed water.

The writing style for specifications has evolved to utilize the imperative mood, which reads like a set of instructions by placing the verb at the beginning of the sentence, as follows:

Fill bollards solidly with concrete, mounding top surface to shed water.

The example sentence above effectively describes the requirement in fewer words. There is no need to say who needs to “set” the frames, because all of the specifications are essentially instructions directed to the contractor—the contractor then assigns portions of the work to subcontractors.

Although the imperative mood greatly improves the readability of specifications, some specification provisions can be even further simplified using *streamlining*. Streamlining places the subject of the provision first followed by a colon (:). The colon is interpreted to imply

the words “shall,” “shall be,” or “shall conform to.” Streamlining works best when specifying products and characteristics as shown in the example below:

Concrete Building Brick: ASTM C 55.

This sentence can legally be interpreted to read as follows:

Concrete Building Brick shall conform to ASTM C 55.

### **Problem No. 3 – Reusing specifications from a past project on a current project.**

Reusing specifications prepared for a previous project could lead to potential problems because the content of the master section that was deleted (or retained) for the former project may not be suitable for the present project.

For example, let us assume that a specification section for an aluminum storefront section was edited by one specifier for a previous project. Another specifier decides to use the same section for a project currently in design in order to save some time. However, the storefront for the previous project was used only for an interior application, whereas the current project uses storefront systems in an exterior application, as well. Unbeknownst to the second specifier, all of the requirements regarding wind loading, air infiltration, and water penetration were deleted by the first specifier, since they were irrelevant for an interior application.

This is not to say that a previously edited section from another project could never be used. If the specifier for the present project wrote the section for the past project, then that specifier may be well aware of what needs modification to make the section suitable for the present project. Therefore, caution is needed when reusing specification sections and sections should be compared to unedited master section to identify differences.

### **Problem No. 4 – Not thoroughly editing a master guide specification for the specific project at hand.**

A master guide specification section provides all of the requirements and options that could be applicable to the work result of that section. “Could be” needs to be emphasized, since not everything within a master guide specification section is necessary for every installation. For example, there is no need to retain performance,

product, and installation requirements for fire-rated door assemblies when no fire-rated doors are required on the project, or for listing door hardware products in the hardware schedule and not specifying any minimum requirements in PART 2 of the specification section. Specifications such as these create ambiguous requirements that will likely lead to confusion and RFIs.

### **Problem No. 5 – Using old master guide specifications.**

Similar to reusing specifications from past projects, using old master guide specifications could also create problems. Commercial master guide specifications are reviewed and updated on a regular basis to add new standards, to delete old standards, to incorporate new materials and methods, and to revise to conform to the latest CSI standards.

For example, guide specifications that are over ten years old may state that fire-rated doors be tested in accordance with Uniform Building Code Standard 7-2 (an obsolete standard) instead of UL (Underwriters Laboratories) 10C, which is the referenced standard in the *International Building Code*.

### **Problem No. 6 – Writing a proprietary specification when a nonproprietary specification is required.**

Many public projects do not allow proprietary specifications when public funding is involved. In order to promote competition to keep costs down, many public agencies require the listing of three products or manufacturers that are acceptable. However, an A/E may select one product and add the names of two other products without confirming whether or not the other products are comparable to the selected product.

Another method commonly used to avoid a proprietary specification is to not name any products at all, but only describe the desired characteristics of the product desired. Nonetheless, when specifying the characteristics, the A/E will insert the characteristics of the product desired, probably from a manufacturer’s product data sheet or guide specification. The problem with using that method is that it is very likely that the product on which the specification was based is the only product that will comply with the specified characteristics. When specifying characteristics, there should be minimums or maximums, as appropriate, and not absolutes, thus allowing some flexibility for compliance.

## **Problem No. 7 – Assigning work to subcontractors.**

As mentioned in Problem No. 2, the specifications (as well as all contract documents) should be prepared with only the contractor in mind. The construction contract is between the owner and the contractor and the contract documents are the owner's instructions to the contractor on how to construct the building. The means and methods used to accomplish the construction of the building are left to the contractor. This assignment is expressly provided in AIA Document A201.

Specifications that assign the responsibility for execution of the work specified to a particular subcontractor or trade circumvents the contractor's responsibility for means and methods. For example, specifying that the electrical subcontractor is required to make power connections to an automatic door operator might be acceptable, but it may invalidate the warranty, be contrary to union requirements, or the electrical subcontractor may just not want to do the work. This situation would be similar to a client telling its architect that the structural engineer must make the interior finish selections.

Another confusing assignment of work is the use of "by others." In the specifications, the use of "by others" should not be used and instead indicate if the work is provided or furnished by the owner (either by the owner directly or by another contractor hired by the owner) or under another specification section. For example, in lieu of stating in the door hardware section that a keypad is "by others," the specification should state that the keypad is either *furnished* by the owner (i.e. supplied by owner for the contractor to install), *provided* by the owner (i.e. supplied and installed by the owner or owner's other contractor), or specified in the applicable Division 28 section for access control.

## **Problem No. 8 – Specifying unachievable requirements.**

This is usually a problem when specifying products using both performance and descriptive requirements. The problem occurs when the contractor provides exactly what is described, but the product does not perform as specified. For example, concrete for a project is specified to have a minimum compressive strength. Additionally, the concrete mix is specified by describing the exact proportions for each material (i.e. cementitious material, aggregate, fine aggregate, and water). The

contractor has concrete delivered to the site in the proportions specified; however, when the test cylinders are crushed, the compressive strength falls short of the specified value. Without realizing it, the specifier established a minimum compressive strength that could not be achieved using the specified mix proportions.

By specifying the concrete mix, there is no assurance that the concrete will meet the desired performance. But if the specification states the minimum required compressive strength with minimal requirements for materials, such as conformance to material standards, then the contractor must provide an assembly that meets or exceeds the minimum performance requirement.

Another variation of this problem is to specify a number of characteristics of which many products can meet the majority, but no product exists that will comply with all of the specified characteristics.

## **Avoiding the Problems**

The most effective way to reduce problems when preparing specifications is education. CSI provides numerous sources of specification education, such as seminars, webinars, forums, and books. One book that should be on every specifier's desk is CSI's *Construction Specifications Practice Guide (CSPG)*. This essential resource provides a variety of specification-related topics, such as methods of specifying, specification language, formats, general requirements, and coordination with drawings. The *CSPG* is also the primary source document for CSI's *Certified Construction Specifier (CCS)* credential. Candidates who prepare specifications on a regular basis and have earned CSI's *Construction Documents Technologist (CDT)* credential may apply to take the CCS examination.

Since the drawings and specifications are complementary, the specifications should be given the same amount of care in their preparation as that given to the drawings. Specifications are legal documents and should be treated as such, for if a problem should occur on a project, the written word, such as the specifications, will likely carry more weight than the drawings.

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