

Specifying for Code Compliance

By Ronald L. Geren, AIA, CSI, CCS, CCCA, SCIP

As design professionals, we should all understand the importance of drawings and specifications in a set of construction documents—the differences between them, as well as their complementary nature. We know that drawings show the size and location of building elements, and usually the quantity. We also know that specifications establish the quality of the products, materials, and systems indicated on the drawings. In RLGA's *The Code Corner*¹, the subject of code-specific drawings was covered. This companion article addresses those code-related requirements that are typically provided in the specifications.

The building code establishes requirements which, by their nature, can be addressed in the construction documents in the drawings, in the specifications, or more likely, both. Drawings are best suited for showing the following:

- Dimensional requirements (*e.g.* corridor widths, parapet heights, foundation depths, stair risers and treads)
- Location requirements (*e.g.* exits, fire-resistive construction, safety glazing)
- Quantity requirements (*e.g.* number of exits, floor area, plumbing fixtures, ventilation area)

Specifications, on the other hand, are best suited for establishing the following qualitative requirements:

- Material/product characteristics (*e.g.* conformance to third-party standards, minimum thickness)
- Performance requirements (*e.g.* opening force for doors, flame spread, minimum activation temperature for smoke vents)
- Installation requirements (*e.g.* fastener spacing and number, conformance to third-party standards, special inspection coordination)

¹ See *The Code Corner* No. 40 "Construction Documents Revisited," Summer 2012.

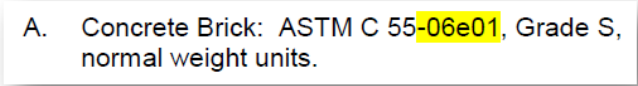
There are some requirements that may either be indicated on the drawings or in the specifications—a situation that demands close coordination so duplicate or, even worse, conflicting information is not provided.

Standards

The closest tie between the building code and specifications are the many standards that are referenced in the building code. But many specification sections, even those provided by master guide specification publishers, do not state a specific revision date of a referenced standard. On the other hand, the building code is very specific about which revision of a standard is referenced.

For example, the masonry section may specify that facing brick conform to ASTM C 216. According to ASTM International, the most current revision of ASTM C 216 was published in 2012 (ASTM C 216-12). However, when you look up ASTM C 216 in Chapter 25 of the 2012 edition of the *International Building Code* (IBC), you will find that the standard referenced is the 2007 revision—not the first revision of 2007, but the second revision, as identified by the lower case "a" (ASTM C 216-07a). Therefore, when complying with the code, the specific standards referenced in specifications need to be verified with the adopted building code. To ensure that correct editions of referenced standards are specified, there are a few methods that the specifier can employ.

The first is to review all specification sections and to insert the specific revision date used by the building code for each occurrence of a standard's designation (See Figure 1). This can be very tedious and time consuming for the specifier—especially if he or she prepares specifications for projects in jurisdictions that have adopted various editions of a building code.



A. Concrete Brick: ASTM C 55-06e01, Grade S, normal weight units.

Figure 1 - One option is adding a date (highlighted) for a standard at each instance the standard is used in the specification text.

Another method is a slight modification of the first. The specifier could insert a "References" Article in PART 1 of each section that lists all the reference stand-

1.02 REFERENCES

A. ASTM International (ASTM):

1. C 55-06e01 – Standard Specification for Concrete Building Brick.
2. C 90-08 – Standard Specification for Loadbearing Concrete Masonry Units.
3. C 270-08a – Standard Specification for Mortar for Unit Masonry.
4. E 514 – Standard Test Method for Water Penetration and Leakage Through Masonry.

1.02 REFERENCES

- A. Reference Standards: Comply with standards in effect as of the date of the Contract Documents except for those having different revision dates as referenced in the codes indicated [in Section 01 42 00 "References."] [on Drawings.]

Figure 2 - Two alternatives to providing dates at each standard reference. The top example provides a "References" Article that lists all references used in the specification. Dates (highlighted) are only provided once. Note that the last standard does not have a date; this is because it is a standard not required by the building code and can be covered by a general statement in Division 01. The bottom example provides a blanket statement in a "References" Article that directs the reader to Division 01 or the drawings for a list of applicable codes; however, the drawings are the preferred location.

ards used within the section. In this Article, the revision dates can be added, thereby eliminating the need to add the revision dates to each occurrence within the section. Again, it is a little time consuming and requires modifications if different building codes are used. To simplify this process further, a statement can be used in lieu of a list of references and their applicable revision dates that point to the adopted codes as indicated in Division 01 or the drawings, as applicable (See Figure 2).

Finally, the best solution is to leave the specification

sections as they are written (without dates), and address the revision dates in Division 01--specifically in Section 01 42 00 "References." The "References" Section in many guide specifications usually states that publication dates for standards used are those in effect as of date of the Contract Documents. However, this may allow the use of revised standards not recognized by the adopted codes. To ensure complete compliance with applicable codes, a paragraph can be provided that clarifies how dates will be determined (See Figure 3).

1.03 REFERENCE STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents except for those having different revision dates as referenced in the codes [listed below:] [indicated on Drawings.]

Figure 3 - An example of paragraphs that can be added to Section 01 42 00 "References" that addresses dates for reference standards used throughout all sections within the specifications. The list of codes can be provided in this section or on the drawings; however, the drawings are the preferred location.

Products and Materials

Closely tied to reference standards are the many products and materials regulated by the building code. Building codes incorporate requirements for building materials for purposes relating to load capacity, durability, energy efficiency, and combustibility, as well as a few others. But how you specify materials to comply with the building code really depends on the method used to specify.

For proprietary specifications, products and materials are selected by the design professional and are identified by product name, model number, trade name, or all of these. This is the easiest approach, and the design professional can almost guarantee that the product specified is the one that will be submitted and installed. But, proprietary specifying requires thorough research to ensure the product or material, if regulated by the code, is in compliance with it.

Since the building code uses reference standards, using the reference standard method of specifying provides a better chance of getting a product that complies with the code. Considering standards establish minimal thresholds for conformance, this opens the door to many products that may be unsuitable or not desired by the design team. However, the Construction Specifications Institute's (CSI) *Project Delivery Practice Guide* states, "more than one [specifying] method may be necessary in the same specification." Therefore, a semi-proprietary specification using reference standards, and possibly including some descriptive and performance requirements, as well as a list of acceptable manufacturers, might be the most likely method of complying with the code, which could still be able to limit the products or materials to those that are appropriate.

Research Reports

Research reports (sometimes called "evaluation reports") are generally prepared by evaluation services associated with publishers of model building codes, or other approved agencies, and are available to help select products that the building official will approve as being in compliance with the building code. Code officials like these reports because they know that the products, which have evaluation reports and are used on a project, comply with the building code.

When the International Code Council (ICC) was formed and created its Evaluation Service (ICC-ES), the evaluation reports from all three former model codes were incorporated into and maintained by ICC-ES. Therefore, many of the reports found on the website are for the "legacy codes" and not specifically for the International Codes. On ICC-ES's website, it states that all reports are considered valid, even if reexamination dates have passed. The ICC-ES will reexamine those reports as time permits and in accordance with their Rules of Procedure. Because of this, code officials may accept a report on a code other than the one adopted by the jurisdiction.

However, over-reliance on evaluation reports can hinder the product selection process—not all products regulated by the building code have an evaluation report prepared by ICC-ES. As an example, MasterSpec's Section 09 29 00 "Gypsum Board" lists eight manufacturers of gypsum board in each of the three types (interior, exterior, and tile backing). But looking at ICC-ES's website, you will find reports for only six manufacturers, and most of these are for specialty gypsum products. There is no requirement in the building code that states products must have evaluation reports. Using gypsum board as an example, the 2012 IBC only requires that the various types of gypsum board comply with the ASTM International standards listed in Table 2506.2. Therefore, the manufacturer should have test reports, from approved testing agencies, available for submission to the building official for approval in accordance with Section 1703.4.

Where to Place Information

There are times when the design professional is directed by code officials to place notations on drawings that logically should be located in the specifications. Whether right or wrong, the frequently provided reason is that plans examiners and building inspectors do not have the time to search for information in both the drawings and specifications. This is more of an excuse for not understanding the complementary nature of drawings and specifications—plus the available standards used to organize them—rather than a time issue.

However, burying code-related information in the documents does not help the situation. Coordinating the drawings and specifications through the use of reference

keynotes, as described in Module 7 of the National CAD Standard and Uniform Drawing System (NCS-UDS), will help tie information shown on the drawings to a specification section². Therefore, instead of indicating in some general note on the drawings that the roofing requires a Class B rating, you should use a reference key-note, such as “07 54 19.A01 - Roof Membrane”; this directs the user to Section 07 54 19 “Polyvinyl-Chloride Roofing,” where, in the “Quality Assurance” Article, you provide the requirements for exterior fire-test exposure.

Coordination

Code compliance is not just a designer responsibility, nor is it just a specifier responsibility—it is both. As in any other aspect of preparing construction documents, compliance with the building code is something that needs to be coordinated between drawings and specifications. For the specifier, this requires an understanding of what building code is applicable to the project, what code compliance strategy the design team is taking (*e.g.* construction type, separated vs. nonseparated uses, etc.), and what products and materials will be used to comply with the code. Once these issues are understood, then the methods used to convey code compliance information through the specifications will require ongoing communication between designer and specifier.

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Keynotes

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² See *Keynotes* No. 3 “Drawing Notations,” Spring 2010.