

ASTM STEEL FRAMING STANDARDS

By Ron Wollard

“Studs shall be positioned vertically, shall engage both the floor and ceiling runners, and shall be spaced not more than the maximum framing spacing allowed for the finish specified. Studs located adjacent to door and window frames, partition intersections and corners shall be anchored to runner flanges by screws, or by crimping at each stud and runner flange.” This meant the contractor did not have to screw-attach every stud in the project.

The architect stood in disbelief since she thought manufacturers’ salesmen knew only the rules of golf and the current standings in the NBA. The contractor was relieved because the project would not exceed his budget as much as he anticipated.

As my partner, Rod and Ms. Rite left to go to lunch at some trendy LA. restaurant (she was buying), Gyp and I

decided to go to the Pantry on 8th and Fig (short for Figueroa St.) for some lunch (I was buying) and to talk about ASTM standards.

Although this parody has a happy ending, there is a moral—Read the fine print. ASTM standards are often included as reference documents in project specifications. Even if they are not explicitly mentioned in the specification, they may be part of another document that is listed as a reference—and, lawyers are good at doing research.

So be aware of the reference documents as much as the installation instructions written in the project specification. If you are not sure what the referenced document is, contact your local contractors’ association, industry bureau or Mr. Wachuwannano at AWCI. ASTM standards and other industry reference

documents contain information regarding installation, materials or testing.

In the rest of this article, we will discuss ASTM in general, and, specifically, the standards related to steel framing.

What is ASTM? Organized in 1898, the American Society for Testing and Materials has grown into one of the largest standards development systems in the world. ASTM is a not-for-profit organization that provides a forum for producers, users, consumers and people who have a general interest to meet on common ground and write standards for materials, products, systems and services. Standards are produced and reviewed by the various committees within ASTM. For the drywall portion of the wall and ceiling industry it is the C-11 committee: Gypsum and Related Building Materials and Systems. A standard is a document that has been developed within the consensus principles of the Society and must meet the approval requirements of ASTM procedures and regulations. In other words,

all interested parties have a voice in the development of an ASTM Standard, including wall and ceiling contractors.

Although there are a number of standards that relate to the wall and ceiling industry, we'll limit discussion in this article to the standards that concern steel framing by identifying them with their standard number and title, and an abstract of their contents. We'll begin with the installation standards and work our way to material standards. Each of the standards beginning with a "C" can be found in the Annual Book of Standards volume 04.01, Cement; Lime; Gypsum.

G754, Installation of Steel Framing Members to Receive Screw-Attached Gypsum Board. Scope: This standard describes the minimum requirements for the installation of interior non-load-bearing steel framing and furring members designed to receive screw-attached gypsum panel products. This includes attaching run-

ners to concrete slabs and suspended ceilings; chase wall partitions; suspended and furred ceilings; and installation of liming channel to concrete. The steel framing and fix-ring members covered in this standard must meet ASTM C-645 (mentioned later).

C-1007, Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories.

Scope: This standard covers the installation requirements of load bearing steel studs and accessories measuring 0.0329" (20 ga.) to 0.112" (10 ga.) thick. This standard is not as detailed as C-754, but it does address important items such as fully seating the stud squarely against the web portion of the track, squareness of prefabricated panels, field cutting holes in the stud's web, touching up welds with zinc-rich paint on galvanized steel and an appendix (which is non-mandatory information) that recommends to the specifier information that should be included into the project specification. If the designer

does not include these requirements in the specification, and if the drawings do not detail specific conditions, a contractor has the right to pursue a change order if the work is required as the job progresses. This standard applies to steel framing members manufactured in accordance with standard C-955.

C-645, Non-Load Bearing (Axial) Steel Studs, Runners (Tracks), and Rigid Furring Channels for Screw Application of Gypsum Board.

Scope: This standard covers framing members used to construct suspended ceiling systems and non-load-bearing interior partitions. It applies to manufacturers because it provides manufacturing tolerances for length, web width, flare overbend, crown, camber, bow and twist. In addition, it refers to related standards including the type of steel used to manufacture the framing members covered in this standard.

continued on page 35

C-956, Load-Bearing (Transverse and Axial) Steel Studs, Runners (track), and Bracing and Bridging for Screw Application of Gypsum Board and Metal Plaster Bases.

Scope: This standard covers the materials, dimensions and permissible variations for structural framing members measuring 0.0329" to 0112" in the same way C-645 covers non-load bearing framing; it also applies to the manufacturer rather than the contractor. In addition, this standard, as well as C-645, mentions that the steel used to manufacture these products must meet the mechanical requirements and section property computations of the American Iron and Steel Institute's Specification for the Design of Cold-Formed Steel Structural Members.

The AISI specification "requires the use of steel of structural quality as defined in general by the provisions of the following specifications of ASTM"; and lists the standards for these steels. These stan-

dards are identified with the designation "A-xxx." The most common steels used to manufacture steel framing are A-653, Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; A-570, Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality; and A-792, Steel Sheet 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

The AISI specification does allow the manufacturer to use "Other Steels" provided "such steel conforms to the chemical and mechanical requirements of one of the listed specifications or other published specification which establishes its properties and suitability, and provided it is subjected by either the producer or the purchaser to analysis, tests and other controls to the extent and in the manner prescribed by one of the listed specifications... ."

Much of this information may seem academic and pointless to some people. However, the three model building codes used in the United States—

BOCA, SBCCI and UBC—are being combined into a single national building code. Some of these codes already refer to ASTM standards and will likely place more importance on them in the future. If you do not already have a current copy of the Annual Book of Standards, volume 0.4.01 Cement: Lime; Gypsum, spend \$75 to acquire one. When you review the project specifications, check which ASTM standards are listed in the section for "Reference Documents." It might save you the anxiety our drywall contractor Gyp Somme faced in our story. 

About the Author

Ron Wollard work for CEMCO, a steel framing manufacturer in Los Angeles, and is a member of the ASTM C-11 committee. Wollard's credentials include 17 years of experience in the steel and construction industries. Prior to his position at CEMCO he worked with the Drywall, Lath and Plaster Bureau and the California Wall and Ceiling Contractors Association in Southern California.