

# THE *Right* STUF

## *Universal Metal Stud Designators*

*By Don Moody*

At a joint meeting of the Metal Stud Manufacturers Association and the Metal Lath and Steel Framing Association on April 19, 1996, the memberships of both associations unanimously agreed to adopt, use and encourage the widespread acceptance of a universal designator system for light gauge steel framing members. The letters S, T, U and F figure prominently in that system. Ever since that meeting, I have been looking for an opportunity to use "The Bight STUF." Putting aside the arguable cleverness of that slogan, the industry's decision to use a universal designator system is a smart and long overdue move intended to facilitate the use of light gauge steel framing members in existing markets and to accelerate their acceptance in new markets.

### **The New Designator System Explained**

To identify any common light gauge steel framing member, the new designator system uses the web depth, flange width and minimum base metal thickness of the framing member, in conjunction with the following designators:

- S** = Stud or joist sections with flange stiffeners (Cee shapes)
- T** = Track sections
- U** = Cold roiled channel or channel studs (without flange stiffeners)
- F** = Furrings channels

The flange width and web depth are expressed in 1/100 inches, and the minimum base metal thickness is expressed in mils (1/1000 inches).

For example, a 6" 16-gauge Cee shape with 1-5/8 flanges would be designated 600S162-54. Broken down, it means this:

- 600 = 6" Member depth in 1/100 inches
- S = Stud or Joist with Flange Stiffeners
- 162 = 1 5/8" Flange in 1/100 inches
- 54 = Minimum base metal thickness in mils  
(0.054 in. = 54 mils)

Another example: A 3½" 20-gauge track with 1¼" flanges, would be designated 350T125-33, where *continued on page 49*

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350 = 3½" Member depth in  
1/100 inches (inside to  
inside dimension)

T = Track Section

125 = 1¼" flange in 1/100 inches

-33 = Minimum base metal thickness  
in mils (0.033 in. = 33 mils)

Simple, right? Well, it may take some getting used to, but consider that in today's market, all of the following are used to designate that same basic 6" 16-gauge Cee stud used in the first example: 600XC16; 6WCS16; 600CS16; 16XHD600; 6.000WC16; 6"CSJ16; and 600AWC16.

The new system is simple by virtue of being universally agreed upon. With a universal system, only one designator needs to be remembered for a given shape. But there are other reasons why the new designators are comprised as they are. They may be easier to remember and use if you understand some of the logic behind them.

### **The Logic Behind the New Designator System**

We first used the dimensions of the webs and flanges because they convey an intuitive picture of the shape in question, much like a 2 x 4 describes a wood stud. We put the web depth first instead of the flange width (the 2 in the 2 x 4) because, for steel studs, the strength-to-weight (read: cost) ratio is usually optimized by increasing depth instead of flange width, all else being equal.

The web depth and flange width are expressed in 1/100 inches because fractions are messy. Because such a variety of depths and widths is available,

rounding to the nearest fraction of an inch is not sufficiently descriptive. Also, one day, we just might have to start using the metric system. In which case, the depths and widths would probably be expressed in millimeters, which, in most cases, would result in the same three-digit format.

If the logic behind the alpha designators (S for Stud, T for Track, etc.) isn't obvious, then we have missed the mark

It was agreed that the thickness designators would be based on the International Conference of Building Officials's minimum prescribed thickness' and be

expressed in mils. These minimum thicknesses have rapidly become the industry standards.

For 20-gauge and heavier, they are the same as those included in ASTM C955 and those included in the *Prescriptive Method Residential Cold-Formed Steel Framing*, parts of which have recently been adopted by the Council of American Building Officials into the *1996 One and Two Family Dwelling Code*.

The minimum allowable bare steel thickness' and their mil designators are as follows:

25 Gauge-0.0179"	=	18 mil
22 Gauge-0.0269"	=	27 mil
20 Gauge-0.0329"	=	33 mil
19 Gauge-0.0428"	=	43 mil
16 Gauge-0.0538"	=	54 mil
14 Gauge-0.0677"	=	68 mil
12 Gauge-0.0966"	=	97 mil
10 Gauge-0.1180"	=	119 mil

### **Stiffening Lips on Cee Sections**

The final element agreed upon was the dimension of the stiffening lip by flange width and material thickness. The table

below summarizes the stiffening lip dimensions agreed upon by the two groups:

<b>Material Thickness</b>	<b>Flange Width</b>	<b>Stiffening Lip</b>
0.0179"-0.0329"	1-1/4"	2/16"
All Thicknesses	1-3/8"	3/8"
All Thicknesses	1-5/8"	1/2"
All Thicknesses	2"	5/8"
All Thicknesses	2-1/2"	5/8"

### **What's Next?**

With the new standard designator system and the agreed upon minimum thickness and stiffening lip dimensions, the section properties and load-carrying abilities of any given profile can be calculated and standardized.

In the same way that the 6" 16-gauge Cee, in the first example, will be designated as 600S162-54, regardless of manufac-

turer, the section properties and load-carrying abilities of that standard member will be uniform throughout the country,

In addition to helping eliminate the confusion in the market stemming from the widely varying properties and loads published by manufacturers that make essentially identical shapes, these standards should greatly facilitate submittals for plan check, code removals, prescriptive standards, software development, etc. Again, the intent is to make the products easier to use in existing markets and to accelerate their acceptance in new markets.

This approach has successful precedence in the construction industry. The production of I-beams, structural channels and angles is standardized in terms of dimensions and structural data, and those standards are published by the American Institute of Steel Construction in a single manual. Consequently every designer, engineer and plan checker knows exactly where to find the information he needs, relative to structural steel products. Every building code has adopted AISC's specifica-

tions. Dimensioned lumber, with its 2x format, is another notable example.

### **MSMA & MLSFA**

It is currently estimated that the combined memberships of MSMA and MLSFA represent about 70 percent of

the total domestic steel stud market. Using the new designators, design thicknesses and stiffening lips, MSMA and MLSFA each will publish new catalogs, which will replace each manufacturer's individual catalog of structural data. MSMA's membership standardized their products several years ago

and published a catalog reflecting those standards. The new catalog will reflect the new designators and standards. This year, MLSFA will publish its first standard catalog that uses the new designators and standards. With some minor variances for regional differences, these two catalogs will contain essentially identical information and be prepared using the same software.

Having two trade associations representing the stud industry based on the same software and using the same designators and standards led to discussion about the possibility of merging the two groups. In that event, there will be one catalog published for the combined memberships of both associations. Each association has unanimously endorsed the formation of a single autonomous trade association.

A task group consisting of three representatives from each association is currently hard at work to form this association. Some of the anticipated benefits of combining the two associations are as follows:

First, a single association would enable the stud industry to speak with one voice when dealing with standards-writing groups, building code bodies and other groups whose actions impact the use and application of steel studs.

Second, intra-industry differences would be resolved at the association level, resulting in less confusion in the market, fewer regional differences and a general enhancement of the industry's effectiveness in serving its existing markets and in developing new markets.

Third, research and development efforts would be prioritized and funded by the combined resources of both groups. In

addition to eliminating duplication of research efforts, this would permit a larger scale of research to be undertaken and would ensure that changes resulting from new research would be universally accepted. Ultimately, this would result in newer and better technical information for the industry


Fourth, the industry would benefit from a broader perspective that would enable it to rapidly and effectively identify and address the evolving needs of its customers.

Finally, a single association representing about 70 percent of the total market might attract additional manufacturers who do not belong to either existing association.

### **Acceptance of New Designators and Standards**

It is a monumental achievement that the memberships of MSMA and MLSFA have agreed to the uniform designators and standards. Since that time, the designators have been incorporated into the newest draft of the *Prescriptive Method for Residential Cold-Formed Steel Framing*, which was prepared by the National Association of Home Builders Research Center for the U.S. Department of Housing and Urban Development. The work was co-sponsored by the American Iron and Steel Institute and NAHB. This Prescriptive Standard will be the basis of submittals to include new and more model building code information in each of the existing model codes and in the upcoming national building code.

The light gauge steel framing industry is growing rapidly. Light commercial structures previously framed in other building materials are increasingly

being framed in light gauge steel. Residential construction represents a new and extremely large opportunity for light-gauge steel; every 10 percent of market penetration doubles the existing size of the stud industry. Meeting the needs of these new markets, while encouraging and enabling growth in existing markets, are what the new standards and the probable merger of MSMA and MLSFA are intended to accomplish. They are the necessary first steps. 

#### **About the Author**

Don Moody is president and chief executive officer of Western Metal Lath, Riverside, Calif. Moody, a registered professional engineer, has spent more than two decades in the light gauge steel industry and is widely recognized as one of the driving forces behind the current light gauge steel framing movement in residential construction.

Since 1991, he has been active in the American Iron and Steel Institute's Steel in Residential Construction Advisory Group and currently serves on its steering committee.

Moody is a member of the board of directors of the Metal Stud Manufacturers Association and is chairman of the Steel Framing Section of the Metal Lath and Steel Framing Association.