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Design Responsibilities - What Are You Doing? by Kent J. Pagel



Let me begin by taking a chance with an anecdote to help make my point. Over the holidays my family had the good fortune of spending time with a very kind family from the United Kingdom. When the discussions turned to topics that relate to our respective teenagers, my fourteen-year-old son asked his new British teenage friends whether they had ever attended a KISS or Aerosmith concert (his two favorite rock bands—and, by the way, my favorite groups 25 to 30 years ago). They had not, and to his great surprise they had not even heard of what my son most certainly assumed were world-recognized bands

Now to my point. We assume things too often. The lesson for component manufacturers is to not assume anything with respect to their customers, especially when it comes to design responsibilities. For example, if a customer's order requests a roof system, should the component manufacturer assume that the components that it always provides, and nothing more, would suffice? Quoting an industry veteran, "The only people who think they are getting a [roof or floor] system are the truss industry customers. [The truss manufacturers] sell sticks that [they] say will work for a specific span/load. Presently, it is up to the building designer to make a 'system' out of that."

Another question that needs to be asked is how should the component manufacturer respond to its customer's assumption that if a brace is attached to the bracing point shown on the truss design drawing, that the roof system is braced. How should the component manufacturer communicate the fact that when a continuous lateral brace is only nailed to the webs, it connects only the webs and does not transfer the corresponding loads to the structure?

Standard Responsibilities in the Design Process Involving Metal Plated Connected Wood Trusses, published in 1995 by WTCA (and referred to as WTCA 1-1995), was intended to provide a guideline with respect to the allocation of design responsibilities when wood trusses were incorporated into a structure. This document was prepared at a time of real confusion concerning the delegation of design responsibilities to the truss manufacturer and truss designer. While these responsibilities were clearly understood on the component manufacturing industry's end, confusion ran rampant with respect to inspectors, contractors and building designers.

WTCA 1-1995 has never been a standard per se, but only a guideline. Nevertheless, it has been viewed as a convenient, comprehensible and persuasive document that can be used to convince the building designers of the world (e.g. architects, engineers, builders, contractors or building owners) as to what is really required of them when it comes to designing structures that will utilize prefabricated structural components.

For those of you who have read WTCA 1-1995, you understand that this guideline essentially

assigns responsibilities to the structure owner, building design professional and contractor in addition to the truss manufacturer and the truss designer. (See sidebar). Certainly, if these responsibilities are met, things work smoothly for all parties concerned.

Unfortunately, in the real world, except for most commercial and multi-family projects (although some may dispute this fact) and some single-family structures, the responsibilities assigned by WTCA 1-1995 are not fully met. One primary reason is that the structure may have no registered professionals involved in its design. Generally speaking, state law does not require that a registered design professional be involved in the design of a single-family residence. Thus the responsibilities assigned to the building designer by way of WTCA 1-1995 may not get done. The only design professional involved in any aspect of design of the structure may be the plate vendor engineer who is reviewing the design information provided to him/her, using it to design the truss, and sealing the individual truss design if required to do so by applicable law. No overall building design work has necessarily been performed.

Furthermore, the design process oftentimes seems to break down even when a registered professional prepares the preliminary design as no specialty engineer is typically involved in installation and bracing of the structure issues. And despite the opinions of many, this is NOT the responsibility of the truss designer or, more specifically, the engineer designing the truss.

Even though it is only a guideline, the notion of assigning responsibilities to others, as is done in WTCA 1-1995, is not always functional. Remember, the component manufacturer has neither a legal right nor control over who does what with respect to design, except for what is done by the truss manufacturer itself and the truss designer it uses. Instead, project specifications and contracts dictate the responsibilities that various parties are to meet.

As the component manufacturing industry has realized that it cannot effectively dictate responsibilities through WTCA 1-1995 or otherwise because of these factors that I have discussed, efforts have been undertaken to modify WTCA 1-1995 as it has gone through the American National Standards Institute (ANSI) consensus process. The purpose of what is now referred to as the National Standard and Recommended Guidelines on Responsibilities for Construction Using Metal Plate Connected Wood Trusses (which we expect will be referred to as ANSI/TPI/WTCA 4-2002), is to define as a standard the usual duties and responsibilities of the truss manufacturer and the truss designer and to provide only recommended guidelines to the owner, building designer, contractor and others on matters relating to the design of trusses and other structural components.

WTCA 4-2002 could then serve to be a scope of work statement in the component manufacturer's customer contract as it clearly spells out what the component manufacturer and truss designer will and will not do. Too often, there is nothing in writing between the component manufacturer and its customer that sets forth the component manufacturer's scope of work or design responsibilities. Other times these type provisions, if they do exist, are vague, confusing or even ambiguous.

To avoid confusion and unmet expectations, the description of the component manufacturer's work, or the scope of work provision, should contain at least three basic elements: (1) a detailed description of the work to be done and more importantly, work that will not be done by the

component manufacturer; (2) designation of the relevant contract documents by date and date of last revision; and (3) designation of the project specifications that the component manufacturer is expected to meet. WTCA 4-2002, once it is finished, will accomplish the first of these three elements quite effectively. At the same time, this document will serve in the guideline capacity of educating the owner, building designer and contractor.

Above quoted from the following sections of WTCA 1-1995:

3.0 BUILDING DESIGNER RESPONSIBILITIES

- 3.1 Design a structure suitable to ensure that the intended function of each Truss is not affected by...moisture, temperature...
- 3.2 Prepare the Construction Design Documents...providing as a minimum the following...[e.g. information to determine truss profiles; permanent bracing design for the structure; the location, direction and magnitude of all design loads, etc.]
- 3.3 Review and approve the Truss Placement Plan and each Truss Design Drawing...
- 3.4 Specify permanent lateral bracing where indicated [on the Truss Design Drawing]...[and] specify how the permanent lateral bracing is to be anchored and restrained...

4.0 CONTRACTOR RESPONSIBILITIES

- 4.2 Review and approve the Truss Placement Plan and each Truss Design Drawing...
- 4.4 Provide the approved Truss Design Drawings, approved Truss Placement Plans, and any supplemental information...to the [person] responsible for the installation of the Trusses.
- 4.5 Comply with the field storage, handling, installation, permanent bracing...and field assembly requirements of the Construction Design Documents.
- 4.6 Determine and install the temporary bracing for the structure, including the Trusses.

5.0 TRUSS MANUFACTURER RESPONSIBILITIES

- 5.1 Communicate the design criteria from the Construction Design Documents to the Truss Designer.
- 5.2 Where required by the Construction Design Documents prepare the Truss Placement Plan... [setting forth the Truss Manufacturer's interpretation] of the Construction Design Documents.
- 5.3 Submit to the Contractor [the Truss Design Drawings and Truss Placement Plan, when required]...
- 5.4 Manufacture the Trusses...[in accordance with the National Design Standard for Metal Plate Connected Wood Truss Construction]...

6.0 TRUSS DESIGNER RESPONSIBILITIES

- 6.1 Prepare the Truss Design Drawings ...[in accordance with the National Design Standard for Metal Plate Connected Wood Truss Construction]...
 - 6.2 For each Truss Design Drawing set forth as a minimum the following...[e.g. slope or depth, span and spacing; design loads; metal connector plate and lumber descriptions; compression forces in the Truss members to enable the Building Designer to design the permanent continuous lateral bracing; etc.]
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Kent J. Pagel is a senior shareholder of the Houston, Texas firm of Pagel, Davis & Hill, a Professional Corporation. Mr. Pagel serves as the outside general counsel to WTCA, STCA, SCDA, CSCI and Truss Publications, Inc. (TPI).

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