

Knowledge is Power



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"Little Technical Details Can Impact You - Positively & Negatively" by Kirk Grundahl

This column has been entitled "Knowledge is Power" since the September/October 1990 issue of WOODWORDS. We had the same

fundamental belief then as now that the more information we have upon which to make decisions, the better the decisions we will make. Our industry is very technical in nature, which means that in reality, unless you work with technical issues daily or have been exposed to them intimately for your entire career, all of the nuances of our engineering technology and how it can impact a truss manufacturer's business are not necessarily readily apparent. Certainly one of the key roles of WTCA is to stay abreast of this.

ANSI/TPI 1-1995 CHAPTER 3 "THE TRUSS INDUSTRY QUALITY STANDARD

The current version, still going through the consensus process, states among other things that all trusses and metal connector plates be fabricated to the "minimum or higher requirements for fabrication quality [specified in Section 3]."

Another way of saying this is: "the design of your trusses will not work unless they are manufactured equal to or better than the minimum requirements outlined in all the sections that follow."

Let's take the simplest example I know of

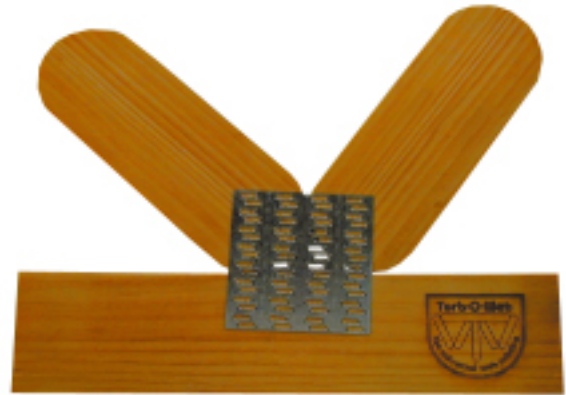
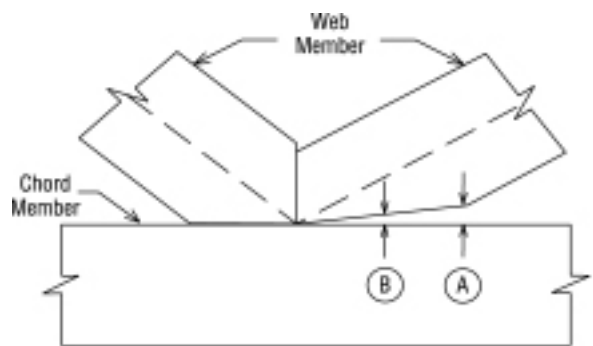


FIGURE 1

CLICK ON IMAGE FOR LARGER VIEW



| | |
|------------------------------------|-----------------|
| A - MAXIMUM GAP | 1/4 INCH |
| B - AVERAGE GAP¹ | 1/8 INCH |

Note 1 - a uniform gap is equivalent to an average gap.

FIGURE 2

CLICK ON IMAGE FOR LARGER VIEW

immediately to illustrate a very important issue—the Turb-O-Web product. Clearly, Turb-O-Webs have rounded corners to facilitate mass production of webs and to assist with making the manufacture of trusses easier from an application and inventory perspective. However, with Turb-O-Webs, by definition, come joint gaps. These gaps may end up being greater than the standard allows. (See Figure 1.)

So what does this mean in the context of the existing Quality Control standard? Does this mean that any truss design that uses Turb-O-Webs where the gaps exceed an average of 1/8" or exceed the maximum of 1/4" will not work? In these types of circumstances, section 3.1.4 of the standard which says "Fabrication inaccuracies exceeding the allowable tolerances described in Section 3 are acceptable upon approval and follow-up documentation by a truss designer." So under current conditions, each Turb-O-Web truss design that is produced needs to have follow-up documentation by the truss designer saying it is fine.

WHAT WOULD ONE SUSPECT IS THE APPROVAL AND FOLLOW UP DOCUMENTATION THAT IS NEEDED TO SAY ALL IS FINE?

- Test data that shows that the gaps produced by Turb-O-Web do not effect the overall performance of the truss.
- Or, should the truss designer render any opinion that the gaps produced by Turb-O-Web do not negatively impact the design and subsequent performance of the truss.

The next question is, if this is the case, then why do we have the joint gap criteria that we do when trusses perform fine, either during testing or in the professional's judgement, with gaps that sometimes exceed the tolerances of the standard? This leads us directly to a larger question: How does the truss manufacturing quality standard relate to the performance of the finished product we produce?

WHAT DO THE ANSWERS TO THESE QUESTIONS SAY ABOUT THE TRUSS INDUSTRY QUALITY STANDARD?

- Maybe the standard that we have been using all these years to assure that the design works and the truss performs in the application for its intended purpose is too strict or too liberal or perfect. No matter what the answer, each has an impact on both actual structural performance and truss industry economics.
- Given some of the answers we have been getting to these questions we may have found that we do not really have enough knowledge to accurately assess how our industry's quality standard relates to the actual performance of the finished truss as manufactured, and what changes should be made to the quality standard so that there is a tight correlation between the truss design, in-plant manufacturing quality and actual structural performance of the truss.
- One can even advance the concept that the current standard constrains innovation by all involved in the truss industry. One only has to look at Turb-O-Web as an example of this. Taking this one step further, if the only thing that is important is that the finished product carries all the loads applied to it, then how it is put together to carry those loads is nearly irrelevant. The key is to ensure that the finished truss does perform. A good example of this

comes from the I-joist industry. They test the finished product on an ongoing basis to ensure that the finished product meets their structural performance expectations. They have been very good at innovation over the years due to undertaking a great deal of testing.

As a result of this, and after a healthy discussion of these issues at a Roundtable Discussion of component manufacturers at our recent spring meeting, WTCA has submitted the following ballot as part of the ANSI process: "The WTCA membership opposes the quality section of the ANSI/TPI 1 Standard as currently written. WTCA needs to obtain test data that specifically correlates the defects allowed in the quality standard with the actual performance of the finished product, and the resultant factors of safety that exist for the finished product. WTCA requests that the ANSI/TPI process be placed on hold until WTCA can gather the additional data it needs to evaluate this manufacturing standard, and its member's ability to consistently meet the minimum requirements. Or, this standard should be pulled from ANSI/TPI 1-95 in its entirety and from this draft standard and replaced with a new standard after this evaluation has been made."

The job that WTCA has been asked to do on behalf of all our members is ask the tough questions and ensure that we understand the answers we get back. Then we need to apply these answers to the business problems or opportunities that they create. By definition, the more knowledge we have, the easier it will be to understand the issues and resolve them so that the truss manufacturing industry can grow and prosper.

The foregoing is a very small example of the issues we are tackling technically. Others include:

- **"ANSI/TPI 1 CHAPTER 3 QUALITY CRITERIA FOR METAL PLATE CONNECTED WOOD TRUSSES"** and how this section in total impacts the truss manufacturers in terms of their ability to comply with the standard and what changes, if any, need to be made to ensure design and manufacturing integrity.
- **"ANSI/TPI 1 CHAPTER 4 TRUSS INSTALLATION & BRACING"** and how this section of the standard really applies to the truss design and manufacturing process. Also how it is perceived and used in the market and how that interrelates with our desire to have a well-defined scope of work as truss manufacturers in accordance with our industry document WTCA 1-1995. Additionally, what TPI does with their standard directly impacts both real and perceived responsibilities in the marketplace. Hence your risk, your liability, your customers expecting you to say yes to scope of work expansion requests, your doing sophisticated technical work and having customers expecting this work to be done for free, etc. is directly impacted by the TPI standard.
- **Truss Industry Research and Testing (R&T).** We are embarking on industry research and testing that will generate knowledge that will in turn provide us with data that we do not have now. We are also hopeful that it will increase the industry's knowledge of the actual performance of trusses and allow our industry to make technically sound changes to the manner in which components are installed and applied.

The intent of all the technical work that WTCA undertakes is to fulfill its mission of understanding and providing for the safe, economic and structurally sound use of trusses. This is accomplished through research, development and testing of trusses that places the truss industry on a sound engineering basis and improves the quality and efficiency of our products for the

purpose of obtaining greater product acceptance. We have found through the years that the only way to accomplish this is with our industry obtaining the best possible knowledge we can and digesting it all.

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