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TPI & WTCA's Collective Point of View on the Benefits & Costs of Implementing ANSI/TPI 1-2002

In an open letter to all component manufacturers dated May 19, 2003, the TPI Board of Directors and WTCA Board of Directors present their joint position on the implementation of the new ANSI/TPI 1-2002 "National Design Standard for Metal Plate Connected Wood Truss Construction."

The industry-wide target implementation date for ANSI/TPI 1-2002 "National Design Standard for Metal Plate Connected Wood Truss Construction" (revision of ANSI/TPI 1-1995), May 1, 2003, has just passed. This date was selected as a voluntary target date, in part, because it corresponds with the release of the 2003 International Codes which include the new ANSI/TPI 1-2002 standard by reference. Implementation of ANSI/TPI 1-2002 will not be mandatory until reference codes are adopted by local jurisdictions.

The standard is state-of-the-art for truss design. Since there are some economic and therefore competitive advantages to implementing these new design procedures, the truss industry has reasons to voluntarily adopt the standard sooner than required where referenced by the local jurisdiction.

An industry position statement on the background for rewriting the structural quality standard for the manufacture of metal plate connected wood trusses, Chapter 4 of ANSI/TPI 1-1995, appeared in the November 2001 issue of Structural Building Components. Although the structural quality standard comprises a significant portion of the new changes in ANSI/TPI 1-2002, for purposes of discussion these changes are joined with other changes to the standard to provide a more complete picture of what is in store as industry-wide implementation takes place.

CHANGES IN MEMBER DESIGN

Chord member design in ANSI/TPI 1-2002 includes new repetitive member increases for axial stresses in addition to the traditional increase for bending. Under the new standard, the allowable axial stresses (F_t and F_c) can be increased by ten percent and the allowable bending stress can be increased by 15 percent when a repetitive chord member is braced with wood sheathing. Without wood sheathing directly attached, the allowable axial and bending stresses all get a ten percent increase. Alternatively, the traditional 15 percent increase on bending alone may be taken if more beneficial to the member design.

Overall, we are confident that the effect of this change will be a reduction in chord material costs. The magnitude of this reduction will be dependent on the range of lumber inventory available for the design and the optimization of panel lengths and web configurations. Careful software setting review of default panel length and web configuration is recommended when

implementing the 2002 standard to assure full optimization of the member design process.

QC STANDARD IMPLEMENTATION

The QC standard in ANSI/TPI 1-2002 is the product of a cooperative effort by WTCA and TPI to meet the competing demands of efficient production and necessary structural quality. Our industry goal for the new structural quality standard was to provide an opportunity for an in-plant QC program that:

- Is quick to do in a typical truss plant.
- Is easy to understand and implement by plant personnel.
- Provides assurance that, even when QC is done quickly, the result will be the expected, code-mandated structural performance of the trusses that are produced.

Some connector plates designed to the new QC criteria may be larger than if designed to the previous tooth count method. This potential plate increase is expected to be offset by the friendlier and more forgiving plate positioning method (PPM). Additionally, the new QC standard calls for the inspection of only critical joints (as defined by the quality standard), requiring detailed inspection of fewer joints to determine acceptable quality, hence a more efficient QC process.

With the design software now incorporating the provisions of the 2002 QC standard, some limited comparisons of specific truss designs and full jobs indicate a range of three percent to 15 percent increase in overall plate sizes. Actual magnitude of the increase (and if you plate conservatively, it could stay the same or be a decrease) will be dependent on design process, plate handling and related judgment factors, any other conservatism factors set in the connector plate sizing files, and plate inventory. Careful review of all your default plating configuration settings in your software is recommended when implementing the 2002 standard, so that you are assured of fully optimizing the truss plate design process, while at the same time taking full advantage of the new in-plant quality standard.

The more time intensive requirements of the tooth count method are also accommodated by the new standard. Choice of methods is flexible and would likely be based on each plant's historical performance in meeting requirements of its quality assurance process.

NET BENEFIT OF THE NEW STANDARD

As indicated above, on any given truss there may be plate increases of three percent to 15 percent when the cumulative effects of new plating moment design and all PPM QC-related revisions in ANSI/TPI 1-2002 are considered. However, the new repetitive member increases will ensure opportunities to use lumber much more efficiently for every truss design that can take advantage of these increases. Given the percentage of overall truss cost of chord material versus plates, it would take less than a one percent reduction in lumber cost to more than offset a ten percent increase in plate cost, and generally will result in a net material cost savings.

The ANSI/TPI 1-2002 standard offers an economic benefit due to changes in chord member

design utilizing new repetitive member increases while at the same time providing the opportunity for improved quality control that meets manufacturing needs. Clearly, the impact of these changes on the individual component manufacturer will only become known in the weeks and months following the implementation of the standard and will be highly dependent on how an individual company manages its truss design function.

The collective changes in ANSI/TPI 1-2002 are intended to improve the reliability of metal plate connected wood truss construction while at the same time ensuring it remains an economical building choice. The Board of Directors of both TPI and WTCA have been intimately involved in the development of this consensus standard. Both Boards furthermore believe that this new standard successfully meets TPI's mission of maintaining the wood truss industry on a sound engineering basis and WTCA's desire to promote the safe, economic and structurally sound use of wood trusses and related components, thereby increasing the market penetration of truss products.

Should you have any questions regarding any of this, please give one of us a call to discuss further.

Respectfully Yours,

Charles C. Hoover, Jr. P.E.
President of TPI

Scott Arquilla
President of WTCA

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