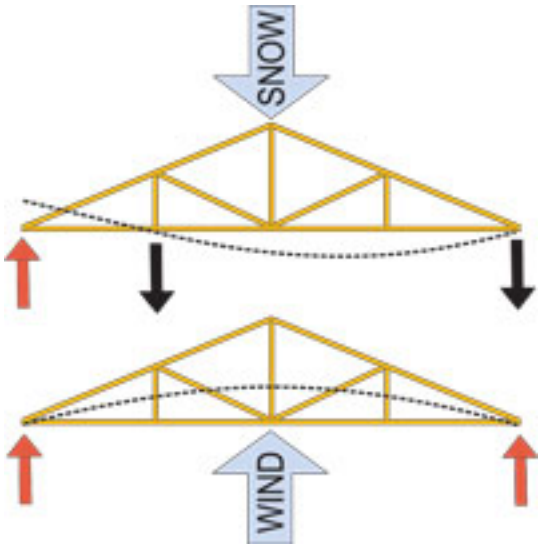
STRUCTURAL BUILDING COMPONENTS MAGAZINE
November 2000

Frequently Asked Questions

Uplift Values on Truss Design Drawings by Rachel Smith

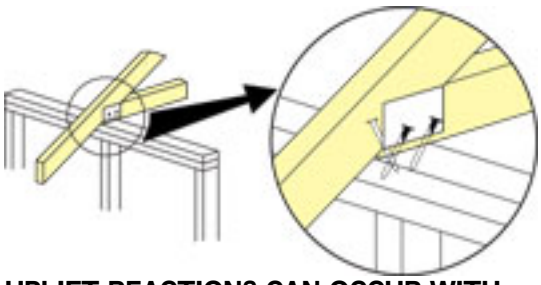
Earlier this year, the Iowa Truss Manufacturers Association (ITMA) asked WTCA to address truss-to-bearing connections in one of our Truss Technology for Builders (TTB) flyers. The brochure discusses how uplift capacity is affected by nail type, size, orientation and the species of top plate. In some cases the uplift capacity listed on a truss design drawing cannot be achieved with the customary three 16d toe-nails and the only solution is a mechanical connector. Although truss-to-bearing connections are the Building Designer's responsibility, ITMA wanted to shed some light on this misunderstood field connection. Judging from the overwhelming response to the brochure, we know there is a need. If you have a market place need like this, please contact WTCA and we'll create a TTB flyer for you and the rest of our industry.



THE CUSTOMARY TRUSS-TO-BEARING CONNECTION OF THREE TOE-NAILS MAY NOT DEVELOP ENOUGH RESISTANCE FOR THE CALCULATED UPLIFT REACTION.

On a related topic, we recently received this question concerning uplift values listed on truss design drawings.

QUESTION:



UPLIFT REACTIONS CAN OCCUR WITH GRAVITY LOADS ON MULTIPLE BEARING TRUSSES OR WITH HIGH WIND CONDITIONS.

I am a building inspector and I have a question on information provided on truss design drawings. What does the uplift reaction number represent? Some manufacturers are very specific and state "to provide for mechanical connection of the truss to the top plate with a connector capable of withstanding a specific load." Others simply list the uplift reaction with no further information. These are the ones that have caused a debate as to what the number actually represents. Some say the uplift is a net number to size a connector to, and others say it is a gross number that can be reduced and a lower rated truss connector used. Unless the engineer can provide calculations and be willing to "stamp" the calculations, we have stood by the uplift load listed, as the load to size the connector to. Any insight on this issue would be greatly appreciated.

ANSWER:

We contacted the plate manufacturer members of TPI's Technical Advisory Committee (TAC) and asked them what their listed uplift force represents. The overall answer to the question, “Does the listed uplift force represent the resistance for which the connection needs to be designed?” is YES. The reaction data is the worst case at each support considering all the loading the truss was designed for. It is a net uplift. The consensus is that they do not know how one would go about reducing the uplift reaction number. The confusion may stem from the fact that designers may use different methods to calculate the uplift. The same truss could have different uplift reactions depending on which method is used. As always, if you have any questions concerning the engineered calculations on the truss design drawing you should contact the engineer sealing the design.

To view other questions visit the WTCA website

SBC HOME PAGE

The mission of Structural Building Components Magazine (SBC) is to increase the knowledge of and to promote the common interests of those engaged in manufacturing and distributing of structural building components to ensure growth and continuity, and to be the information conduit by staying abreast of leading-edge issues. SBC will take a leadership role on behalf of the component industry in disseminating technical and marketplace information, and will maintain advisory committees consisting of the most knowledgeable professionals in the industry. The opinions expressed in SBC are those of the authors and those quoted solely, and are not necessarily the opinions of any of the affiliated associations (SBCC, WTCA, SCDA & STCA).