Technical Q & A

Fallen Trusses

Make sure you know how to proceed in the event of a truss collapse.

by Ryan J. Dexter, P.E.

Metal plate connected wood trusses are designed and manufactured to handle a given design load. In order for the trusses to properly do their job, it is essential that the contractor installs and braces them according to the industry guidelines outlined in the *Building Component Safety Information* (BCSI) booklet jointly produced by WTCA and the Truss Plate Institute (TPI). BCSI is referenced by the International Residential Code (IRC) in Sections R502.11.2, R802.10.3 and Chapter 43. What can happen if trusses are not handled, installed, braced and restrained according to BCSI?

Question

My company is a component manufacturer that has recently been contacted by a customer that reported their trusses fell during installation. How should we instruct the customer to proceed? What are the next steps?

Answer

It is often very difficult to determine the extent of damage caused to the trusses when they topple and fall, because breaks in the lumber or damage to the plates and/or plate contact areas may not be readily apparent. If trusses collapse during installation, the Truss Manufacturer, Truss Designer or Building Designer will need to assess the damage to the trusses at the onset. If the trusses have sustained any structural damage, an engineer must design the repairs. BCSI contains a chapter (BCSI-B5) entitled, "Truss Damage, Jobsite Modifications & Installation Errors." BCSI-B5 includes the following language:

> Metal plate connected wood trusses are pre-fabricated structural components, assembled with wood members and metal connector plates and designed to carry superimposed loads. Damage, jobsite modifications or improper installation will reduce the strength of a truss. Seek professional assistance from the Building Designer, Truss Designer or Truss Manufacturer to remedy the condition.

History has proven that the variety of potential consequences associated with trusses' natural lack of stability is typically the direct result of improper handling, installing, restraining and bracing. In certain cases, the trusses can be repaired, but many times the best structural and economic solution is to replace them. Unfortunately, there is not a "one-size-fits-all" solution and it is necessary to carefully assess the situation and consider the specific circumstances before choosing a repair strategy. The majority of cases will require a professional engineer to be involved in the decision-making process.

The 3rd Edition of the *Metal Plate Connected Wood Truss Handbook,* Section 20.3, also warns about trusses falling and striking wall plates or other surfaces:

> Trusses "domino" when they "roll over" toward one end of the building, each truss falling against the next. Hairline cracks, difficult to detect, frequently occur when trusses domino and strike wall plates or other surfaces. This type of damage may be extensive, and is nearly impossible to repair. Therefore, dominoed trusses need to be replaced.

If your customer decides to ignore your suggestions and/or those of a Truss Designer or Building Designer and uses trusses that have been involved in a collapse, we strongly recommend that you document how this is inappropriate and will void any warranty made by your company. Strong consideration should also be given to covering this type of problem in the contract you have with your customer on the front-end. SBC

To pose a question for this column, call the WTCA technical department at 608/274-4849 or email technicalqa@sbcmag.info.

at a glance

- Contractors should install and brace trusses according to the *Building Component Safety Information* (BCSI) booklet.
- History has proven that truss instability and the variety of potential consequences due to this is typically the direct result of improper handling, installing, restraining and bracing of trusses.
- Most collapses will require a separate assessment by a professional engineer to determine the correct course of action.

If trusses collapse during installation, the Truss Manufacturer, Truss Designer or Building Designer will need to assess the damage to the trusses at the onset. If the trusses have sustained any structural damage, an engineer must design the repairs.

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