Wood Truss Construction Meeting Kit

WHAT'S AT STAKE

Trusses consist of triangular units constructed with straight members. The ends of these members are connected at joints, known as nodes. They are able to carry significant loads, transferring them to supporting structures such as load-bearing beams, walls, or the ground.

WHAT'S THE DANGER

DANGERS OF WOOD TRUSS CONSTRUCTION FOR WORKERS

Workers who build or install roof trusses may face hazards from heat and sun exposure. Working in high temperatures, with high humidity, direct sun exposure, no breeze or wind, in an enclosed area, or in impervious personal protective equipment, may lead to heat-related illnesses and, in severe cases, death. In addition, dehydration and other heat-related symptoms can lead to fatigue and increase the risk of injury.

Major Causes of Wood Truss Failures

Storm events, including heavy snowfall, wind, or rain, are a common cause of minor structural problems in the roof system. These are problems which may be present even if no major damage is visible from the outside. The other main cause is the normal aging and degradation of the wood structural members and the fasteners associated with them. When moisture from roof leaks above, or ceiling holes below, is introduced into the attic, this degradation process is accelerated. As such, knowing what to look for is important. The galvanized metal nailing plates that hold the truss members together are another area of concern and should be closely monitored. The increased stress they are put under during a wind or snow event can cause them to pull loose from the truss.

Most Truss Failures Are Attributed to One Of The Following:

- Improper or lack of temporary/permanent bracing.
- Incorrect loading or overloading during construction.
- High winds during erection.
- Utilizing weak members or bad joint connections.
- Damaged, broken or improperly repaired trusses.
- Installing unacceptable or unauthorized design changes in the field.
- Withdrawal of galvanized metal nail plates.
- Heavy snowfall.

HOW TO PROTECT YOURSELF

GOOD WORK PRACTICES IN WOOD TRUSS CONSTRUCTION

Delivery

Ahead of delivery, information on the **quantity, weights, and sizes of the trusses in the roof package** will have been provided to give staff on site time to develop a safe plan for unloading, handling, and installing the trusses. The builder should ensure that a suitable level and dry area is available for unloading.

Storage

If the trusses are not to be installed immediately once delivered to site, it is important that trusses should be protected from the elements and should never be left in an area that is damp or in or near water.

Before Installation Steps

- Check and read all assembly drawings and information provided by the truss supplier.
- Ensure all personal protective equipment (PPE) is worn and correctly fitted.
- Ensure scaffolding is in place and signed off.
- Make sure that there is a safe working platform within the structure.
- Ensure hop-ups and scaffolding edge protection are in place.
- After reading the truss layout drawings, identify the easiest starting point using the simplest roof of trusses.

KEY FACTORS IN THE INSTALLATION PROCESS

1. **Understand What Kind of Roof Trusses Being Used.** Hip roof trusses (often used in locations with heavy rain or snowfall) slope downward at every point. These trusses are relatively easy to install so much so that they don't even require the use of a crane in most situations.
2. **Fit the Roof Truss Members Prior to Lifting.** Do not get ahead of yourself during the roof truss installation. You don't want to begin lifting trusses to the top floor of the building, only to realize that the members don't all fit together like carefully laid-out puzzle pieces.If you use prefabricated trusses, you will receive a diagram and layout of the truss configuration from the manufacturer. This makes it fairly easy to understand how the trusses should fit together.
3. **Attach Ridge Beams to Each Truss.** After the first truss nailed and attached to its brace, you can move onto the second truss in a similar manner. At the apex of each truss, you'll need to attach a ridge beam that will transfer the loads to post or gable end walls.
4. **Only Nail Where the Manufacturer Indicates.** If installed a prefabricated roof truss, you should have detailed instructions from the manufacturers including designated spots for nailing the trusses. Don't ignore those instructions.
5. **Keep the Trusses Aligned at All Times.** Note the instructions for roof truss directions. Even if the webbing looks the same, there is a specific direction in which each truss should face. If you ignore the designated directions, you could wind up with trusses that need extra support but don't have proper load-bearing capabilities.

FINAL WORD

A site visit and visual inspection are crucial in determining the root cause of roof truss failures. A working knowledge of truss construction and installation as well

as the proper application of the codes stated above can help prevent truss failures and subsequent property damage.