Summary
The use of light gage trusses is increasing, and the fabrication process is improving. Combining wall panels and steel trusses allows for fabrication during the construction of building foundations. This shortens construction time. This advantage, along with the longer spans available in steel and the noncombustible material, makes light gage steel trusses a very attractive construction solution.

About the Author
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More on Roof Trusses

by Brad Beczkalo

With a major emphasis on public safety, the construction industry is continually providing products and systems that provide sound structural integrity, are economically feasible, and can provide protection from fire hazards. Light gage metal framed roof trusses provide all of these.

Using a wide range of depths and gauges, trusses can span up to 70'-0" clear span and on center spacings limited by the roofing materials to be applied. Any configuration is available including monoslope, Fink, Howe, truss joists and scissors trusses.

Trusses are capable of transferring heavy loads in the vertical direction but can carry almost no load in the horizontal direction. Due to this fact, horizontal bridging, running perpendicular to the trusses, is attached at the panel points. This allows the truss to be positioned in a true vertical plane and prevents the load from distorting the truss in the horizontal plane. More horizontal bracing may be required, or if the truss span is short, less may be required.

A jig is made to build the trusses. This can consist of a table, at least as large as the truss itself, and some angle fastened to the table at the location of the various members. The top and bottom chords as well as the web members are cut to the needed length, put into place and either welded or screwed together. Top chords must bevel cut at the peak, and web members must be beveled to fit onto the chords. Since most truss jobs require repetitive trusses, the bevel cuts can be made at one time in a separate step.

To avoid weather delays and on-site crowding, trusses may be prefabricated off site. This will enhance the quality control of the project and allow the contractor to control the labor force. Materials are generally on hand and work may proceed into the night hours if needed. Consideration must be given to the following:

1) Size of truss—Shipping restrictions may require the truss to be built in several different sections. This will require connections to be made at the site as well as utilize additional material on the truss.

2) Measurements will need to be taken in the field and relayed back to the shop. This might result in erroneous information and cannot be double-checked without causing further delays.

3) Trusses will have to be handled at least three or four times before the final placement on the job. The size of the trusses might require heavy cranes or many employees to manhandle each truss. The more a truss is handled, the more likely it is to be damaged.

4) Trusses must be stored await-
This 21’ by 42’ section of a hip truss for the River Run Country Club was prefabricated on the ground and set in place by a 35-ton crane.

...ing shipment to the jobsite. This requires a large area or a safe, out-of-the-way place.

On-site fabrication of trusses is probably the most economical method of building trusses. No shipping costs are involved, and handling of trusses is kept to a minimum. Also dimensions can be checked on a regular basis to insure proper fitting of the trusses. The GC usually has a crane for the other trades, and this can be shared, cutting down on the expenses. Manpower is already at the jobsite, reducing the need for extra help. Consideration must be given to the following:

1) Available space on the jobsite; most jobsites are very crowded and have limited space.
2) Jig and work areas will be exposed to the weather. Delays due to rain or cold could shut down the operation.
3) Access to utilities may be limited on the site; electrical outlets may be scarce.
4) Delays in building erection will require storage of trusses on site. Again, space may be limited and damage may occur from other trades.

As the versatility and economic benefits of light gage framing trusses are recognized, the specification of this type of construction will begin to increase rapidly.

About the Author

Brad Beczkalo is with BLB Consulting, Inc., of Mableton, Georgia. He graduated in 1976 from Georgia Tech with a degree in civil engineering and founded BLB in 1987.

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