

STEEL

News & Views

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Steel Recycling At 25-Year High

Editor's Note: Information for the following story was taken in part from the June issue of *Metal Construction News*.

The Steel Recycling Institute (SRI) announced recently that the recycling rate for steel—the world's and America's most recycled material—reached 70.7% in 2004. Total tons of steel recycled increased by over 7.2 million tons. This increase, driven by an expanding market for steel, continues to position steel as the leader in recycled material.

"Over 76 million tons of scrap steel was recycled in 2004. It was the most scrap recycled in the United States in over 25 years," said Bill Heenan, president of the Steel Recycling Institute. "More importantly, the composition of the tons recycled in 2004 contained almost 35% more obsolete scrap than in 1980," Heenan noted.

SRI reported that the recycling network throughout the U.S. benefited dramatically from an increase in demand for "The New Steel" that automotive, appliance, container, and construction customers use for their products. As a result of this demand, the steel industry continues to require more steel scrap.

Did You Know?

Cold-formed steel (CFS) framing utilizes material with a high recycled content. In fact, a recent report by the Steel Recycling Institute (SRI) reports that about 88% of all steel that is used in beams and plates in construction are recycled into new products at the end of their useful life—an amazing statistic. In addition, CFS framing is resistant to insect attack and does not provide a medium for the growth of mold.

Using Metal Decks over Cold-Formed Steel Trusses

Editor's Note: The following article was written by Sowrie Rajan, Manager of Alpine Structural Consultants, and is reprinted with permission.

"How do I correctly design and provide metal decks over cold-formed steel (CFS) truss roofs?" This question is frequently asked by designers and installers. When properly attached to the structure, roof decks should be designed to transfer the dead and live loads imposed on the roof as well as the lateral loads on the building due to wind and seismic forces. Decks should also be designed to provide adequate permanent bracing to the top chords of trusses (to prevent chord buckling). Designers should note that standing seam roof decks typically do not provide adequate bracing to the top chords of trusses.

When designing metal decks over heavy steel members, designers should refer to the Steel Deck Institute (SDI) *Diaphragm Design Manual*, which provides tables with shear design values for various metal decks, and the SDI manual *Design Manual for Composite Decks, Form Decks, and Roof Decks*, which gives design guidelines for vertical loads. Both of these publications are available from the SDI and can be ordered from their website: <http://www.sdi.org>.

For attachment of metal decks to cold-formed steel trusses, the designer must calculate the design values using fastener values that are appropriate for the deck-to-CFS truss connection. This detailed calculation can result in more time spent by the engineer in the design cycle.



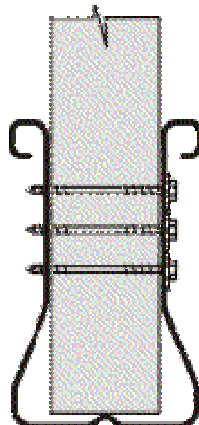
Light Gauge Steel Engineers Association

A joint American Iron and Steel Institute (AISI) Steel Framing Alliance (SFA) Technology team, with the assistance of some metal deck manufacturers, is now working to develop tables to address this issue and create tools to clarify and speed the design process. TrusSteel® has published a Technical Bulletin TB 01.09.14 *Sheathing Attachment to TrusSteel® Members*, to obtain the proper attachment techniques, design considerations, and responsibilities. The attachment of metal decks to CFS trusses by welding is not recommended. To determine the correct installation procedures for metal decks, designers should refer to the individual deck manufacturer's installation guide and SDI *Manual of Construction with Steel Deck*, which gives instructions for each deck type.

One commonly specified type of metal decking is the 1.5" deep wide rib deck commonly referred to as Type B deck. It comes in a 36" wide profile, has 6 ribs, and is available in several thicknesses. Various connections, which affect the shear design capacity of the deck, include the deck-to-truss, deck-to-deck side-lap, and deck-to-perimeter connections. Decking is typically orientated such that the ribs are running perpendicular to the trusses. While decking is generally available in lengths up to 40 ft, the minimum length typically presumed in designs is one long enough to create a three span condition.

Photo Gallery

This feature in this issue of *Steel News and Views* really brings home the excellent handling characteristics of TrusSteel® cold-formed steel trusses. The symmetrical design creates a truss with exceptional handling for both the in-plane and out-of-plane. The patented truss chord shape and closed tube webs make TrusSteel® the strongest and most rigid cold-formed light gauge steel truss product on the market.



The exceptional strength-to-weight and lateral stability of TrusSteel® allows roof sections to be preassembled on the ground and lifted into place as an assembly. This process is known as rafting. The roof sections can be just the trusses, or the trusses plus purlins, roof deck, and final roofing material.

A project under construction in the Chicago area is a good example of rafting. The Hawthorne Woods Golf Club has wide truss spans with intersecting rooflines.



Truss assembly, with plywood sheathing applied and ready for lifting, weighed over 9,000 pounds.

The installing contractor, Altounian Builders, was looking for an efficient way to frame and install the roof to save on installation time.

Eddie Peddle, jobsite superintendent, was concerned with lifting and keeping the roof balanced.



This roof section is 72'-0" long, 24'-0" wide, and 14'-0" tall.

Working closely with Cascade Mfg Co's design team and area rep Curt Kruger, a method for rafting was devised. Eddie comments, "With a lot of planning and help from Cascade's office and field staff, everything fit together well. We were able to save our company an estimated 80 man hours and several sleepless nights for me!"



Final truss bearing elevation is 14'-0".

Put Cascade's expertise of over 40 years in the design and fabrication of trusses to work for you on your next project. Call Cascade Mfg Co at 800/942-4685 today!

Our people make the difference!