Think Outside the Rectangle

Open-web roof trusses offer creativity

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Parallel chord trusses create extreme roof profiles for Las Vegas Cyclery
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Who says that commercial roofs need to be flat? Sure, a ridge beam and sloping members yield all kinds of slopes, but they still provide nothing more than flat planes. With wood-manufactured open-web trusses, structures gain a wide range of available truss profiles allowing for design creativity that will get you thinking "outside the rectangle."

Open-web trusses are pin-connected trusses constructed of wood chords, tubular steel webs, and high-grade pin connections. The wood is typically a high-grade machine stress-rated lumber, though in some cases the chords are manufactured with a laminated veneer lumber. Pin-connected trusses have a long-span capability of up to 120 ft., offering the design flexibility needed for complex commercial construction. Pin-connected open-web trusses are commonly used in offices, schools, banks, and retail structures.

Beyond the benefit of long spans, open-web trusses come in a variety of profiles. These trusses offer an excellent strength-to-weight ratio and can be left exposed for the warm look of a wood structure. All of these features result in creative and visually interesting roof systems.

These heavy-duty, long-span pitched trusses are installed modularly.
PHOTO CREDIT: RedBuilt

These scissor trusses help create multi-purpose space for Taylor Middle School.
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PARALLEL CHORD: This economical workhorse provides lightweight, long spans in hundreds of flat roofs and floors. They can also be built with camber to compensate for deflection. Parallel chord trusses created the extreme roof design for the two-storey, 9,793-sq.ft. Las Vegas Cyclery, a LEED Platinum building. Exposed parallel chord open-web trusses contributed to both aesthetics and the building's Platinum LEED certification.

TAPERED: Tapered open-web trusses allow for built-in roof drainage, but give a dramatic look when designed with a more extreme depth differential. There are select manufacturers that can build a truss that uses a minimum depth as low as 14 in. on one end and a maximum depth of 60 in. on the other.

PITCHED AND RADIUS PITCHED: Varying slopes create different looks while still allowing for roof drainage. A radius-pitched profile is a pitch, but rounded off at the ridge.

BOW STRING: This profile smoothes out the radius pitch into a single arc on the top chord while still providing a flat interior ceiling at the bottom chord. This under-used roof shape is graceful and elegant. See the photo on page 34 of a standalone restaurant near Beaverton, OR that uses a bow string truss to create curb-appeal.

BARREL AND COMPOUND BARREL: For these two profiles, both the top and bottom chords are radiused, providing curved ceilings that look great in both commercial and residential applications. A compound barrel profile is created when there is a different radius on the top chord than the bottom. The barrel truss provides dramatic rooflines for the ultra-modern Yogurtland in southern California. Here, the barrel trusses are 74 ft. long with a 7-ft. camber. In a luxury home near Scottsdale, AR, 3,400 lineal feet of barrel trusses were used in the main living area to provide architectural drama – and room for recessed lighting, 12 in. of insulation, and other mechanical lines – all while staying under height restrictions.

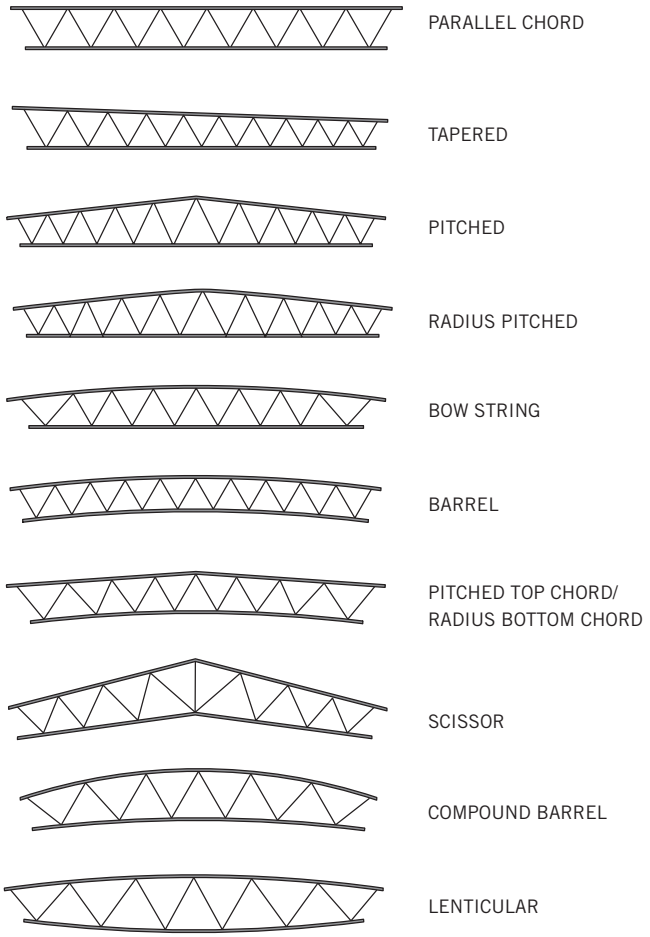
PITCHED TOP CHORD/RADIUS BOTTOM CHORD: This unusual profile combination provides an original look. In the historic Duluth Depot Train Shed, part of the Lake Superior Railroad Museum, 38-ft. gable pitch top chord and radial curved bottom chord trusses were added to the original legacy trusses. The sister trusses were installed to carry the live loads of drifting and sliding snow while maintaining the historic rail station look.

SCISSOR: Providing highly vaulted interiors over a long span, scissor trusses offer interior drama, especially when left exposed. For the Taylor Middle School cafeteria, scissor trusses span 85 ft. to create an open-space with lots of visual appeal. The column-free area does double duty not only as a cafeteria but also as a multi-purpose space for graduations, community meetings, and basketball and volleyball games.

LENTICULAR: This is a lens-shaped truss – some call this shape 'parabolic' – which offers a different aesthetic to any structure. It turns heads when used in retail and restaurant applications.

Open-web trusses provide options. Whether used in commercial or custom residential applications, these pin-connected wood trusses create unique roof lines. Note – these trusses are custom-designed, detailed and manufactured to meet the structural needs and design intent of each specific application. As such, architects, engineers and builders will need to find an open-web truss manufacturer with the service and technical support needed to design and build these unique structural products. "Think outside the rectangle" and enjoy the freedom of designing a visually appealing roof system.

Mary Eun, PMP, is a technical representative with RedBuilt LLC, and has been working with open-web trusses since 2006. RedBuilt is a leading manufacturer of engineered wood products for commercial and multi-family construction. Products include RedBuilt open-web trusses, Red-I joists, and RedLam LVL beams. For more information, go to RedBuilt.com.



Bow string trusses add curb appeal.
PHOTO CREDIT: RedBuilt