Metal roofing becomes another reroofing option

Retro-fitting with standing seam a growing practice

by John Stover

To claim their share of the retrofit market, roofing contractors should consider using metal roofing systems. Market surveys have revealed that architectural specifications for the standing seam metal roof have doubled annually since 1983. More significantly, the use of metal systems for retrofit work is growing three times as fast as the use of these systems for new construction.

On a cost-per-square-foot basis, an installed and insulated metal roof is competitively priced with other systems, especially when the cost is calculated over the roof's typical 20-year lifespan. The cost of reroofing with a standing seam metal roof ranges from $1.75 to $3 per square foot or more, depending on the complexity of the project. Extended warranties, covering up to 20 years, are available for these systems. When compared with a four-ply, top-of-the-line built-up roof carrying a 20-year warranty, a standing seam metal roof normally will be less expensive.

Metal's shining future

The energy crisis and the search for durable roofing systems spurred interest in the metal standing seam roof (SSR) design. Architects, specifiers and owners like metal roofs for their impervious nature, fire resistance, ability to accommodate thermal movement, relatively modest weight and competitive cost when calculated on the basis of life-cycle performance.

The typical standing seam roof, which was introduced more than 50 years ago and greatly refined in the last decade, provides a continuous membrane over the entire building. Roof panels, which can be from 12 to 30 inches wide and 30 to 50 feet long, are attached to purlins by means of a clip concealed inside the seam. These clips are uniquely designed to allow roof panels to expand or contract with temperature changes.

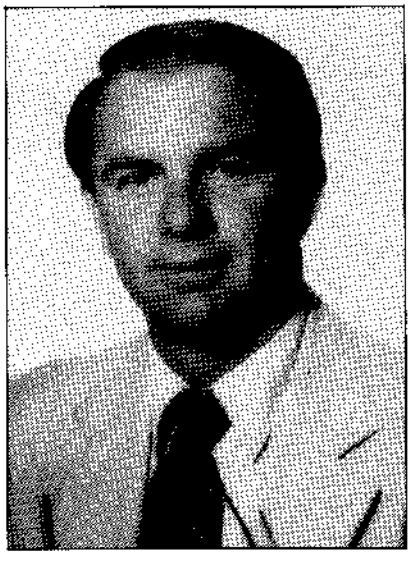
The mating side of each panel stands 2 to 3 inches above the roof plane to reduce the possibility of leaks from rain and melting snow. A bead of sealant applied along the entire length of the panel, plus a crimped seam, snap-together construction or a batten cap technique, secure the roof panels to complete the covering. Panel profiles and seam configurations will vary according to the manufacturers' proprietary designs.

Reroofing techniques vary

A contractor can use standing seam metal roofing to reroof both pre-engineered metal buildings and conventional buildings.

To re-cover an existing metal roof, a hat channel is placed perpendicular to the ribs of the metal roof and then screwed into the existing metal deck or purlin. The standing seam roof is then attached to this hat channel. For better thermal efficiency, blanket insulation can be installed with a thermal block prior to installing the new roof.

When the existing roof is a sloped built-up system, a hat channel is placed perpendicular to the slope of the roof and screwed into the existing steel joist or structural system. Again, insulation and a thermal block can be added to improve the roof's overall thermal performance.



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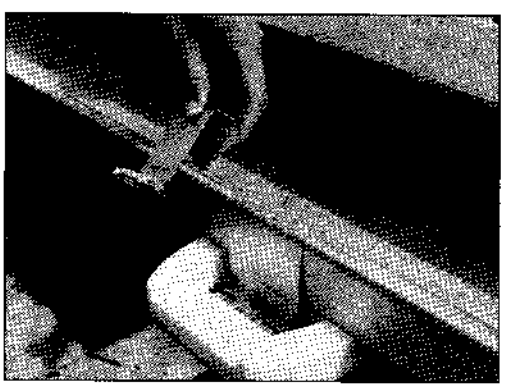
Standing seam roofing's design makes it easy to increase thermal resistance during a retrofit.

For flat, built-up roofs, a slope must be created to assure proper drainage. Various methods can be used, depending on whether the existing roof is tied into the top of a wall or into a parapet wall. In some cases, a shop-fabricated truss is anchored to the existing roof by through bolts. The standing seam roof is then attached to the truss.

When working with a parapet wall on a flat roof, a framing system must be developed to get the final elevation of the roof above the parapet wall. This can be accomplished with hat channels or light angle trusses. Once this framework is installed, a hat channel is screwed into the rafter.

It may be necessary to raise rooftop penetrations and equipment to give their capflashings sufficient height above the new roof. By consolidating the rooftop penetrations and eliminating unnecessary ones, the roof installation can be greatly simplified. It is important to use appropriately coated steel for support brackets on any roofing equipment.

The size of the installation crew will depend on the project and the desired completion date. Normally, an experienced metal roofing contractor with a crew of four to six workers can install a standing seam metal roof on a 70-by-150-foot building in three days. Metal roofing contractors estimate 2.6 man-hours per square on a retrofit project. The time will depend on the job requirements and the condition of the existing roof.



Specially designed fastener clips secured roof panels to Z purlins on the roof of a West Mifflin, Pa., high school.

The rust is history

Paints, organic and metallic-type coatings are used to protect metal roof surfaces from corrosion. Some materials, such as galvanized steel or zinc-coated carbon sheeting, are durable by themselves. If paint coatings are used, the best are typically silicone polyester or high-quality fluoropolymers over galvanized sheet metal. Aluminum-coated steel's non-water soluble surface makes it especially weather-resistant. Hybrid aluminum/zinc coatings offer the advantages of aluminum with the self-healing properties of zinc.

Because sloped metal roofs are more visible than traditional flat roofs, they are sometimes coated to enhance their appearance as well as inhibit corrosion. Prepainted metal panels come in a broad range of colors to complement or blend with brick, glass, wood, stone or concrete structures.

Building profits by saving energy

Standing seam roofing's unique design makes it relatively easy to increase the rooftop's thermal resistance during a retrofit project. Roofing contractors who call the owner's attention to this money-saving step will probably find themselves first in line for the insulation work as well as the reroofing job.

While metal roofs will accept a variety of insulation systems, the two most commonly installed are fiber glass blankets and rigid boards. Blanket insulation is normally unrolled over the purlins with insulation blocks placed between the blanket layer and the roof panel at the points where the soft blanket would be compressed. Blanket insulation is typically used on roofs with slopes between 1/12 and ¼/12. However, some designers have used this type of product on slopes as great as 30 degrees. Rigid boards are preferred by many roofing contractors when the roof slope is greater than 1/12.

Some metal roofing manufacturers also have introduced composite roof designs with rigid insulation boards attached to the interior sides of roof panels. According to the manufacturers, this design allows the insulation to form a frontline barrier against the weather by protecting against heat or cold at the roof line instead of the ceiling.

For vapor retarders, membranes such as foils, coated papers or plastic films applied to fiber glass blanket insulation are the most familiar in the metal roofing industry. Another type is the structural barrier made of a rigid sheet of steel, aluminum or reinforced plastic. A third is the coating barriers, including paint.

Metal reroofing's on the rise

Modern metal roofs, and in particular the standing seam metal roof design, have proven to be dependable performers. Many building owners have received years of maintenance-free service from their standing seam metal roof. Contractors should expect to see the these systems used more and more in retrofit applications as roofing professionals and roofing consumers become more familiar with the systems and their benefits.