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Cold Roof Keeps Hot Springs Safe in Wyoming

by Tony Matter, freelance writer for the construction industry

amous for being home to one of the largest collections of mineral hot springs in the world, Thermopolis, Wyoming, is a haven for anyone looking to be surrounded in the natural beauty of small-town-America. While the pristine setting and relatively low-key lifestyle of Thermopolis has its obvious advantages, it also comes with a price for the town’s local firefighters. Thermopolis, a town of only 3,200 people, is the largest community in Hot Springs County and therefore holds the distinction of being the county seat. Thus, Thermopolis and its 20-member volunteer fire company are in charge of protecting the 22,100-square-mile county in the event of a fire.

Covering such a large area requires a large number of fire trucks and equipment. The fire company was beginning to suffocate in its small, outdated fire hall located in downtown Thermopolis. Built over 80 years ago, the fire hall was a 1,400-square-foot facility that no longer met the needs of the county or the firemen in charge of protecting it. According to Tim Anderson, chairman of the Hot Springs County Fire District, the building could no longer accommodate the district’s growing number of fire trucks. “Our old facility was just not big enough to hold all of the newer, larger equipment that we have purchased in the past few years,” said Anderson. “We have been parking some of our trucks off site because there was not enough room in the old facility.”

To solve its problem, the Hot Springs County Fire District’s board of directors began lobbying for a new fire hall to be constructed, and a few years ago got its wish. Working with JGA Architects in Billings, Montana, Anderson and the rest of the district’s board of directors helped design a new structure that catapulted the department into the 21st Century. JGA designed the new facility to meet the firemen’s current needs while giving them enough room to grow in the future. The new building features 22,000 square feet of usable space, dwarfing the original fire hall by more than 20,000 square feet, giving the fire district the room and resources needed to protect the county adequately.

In a symbolic gesture that signifies the building’s true intentions, the new fire hall features a bright red, standing-seam metal roof that looks as though it has been perfectly color-matched to the firetrucks parked inside. David Petersen, architect at JGA, was in charge of designing the building and for the roof he opted to specify a cold-roof system that features nearly seven inches of vented and traditional polyisocyanurate insulation from Hunter Panels LLC. The cold roof is intended to keep Wyoming’s notorious snow and ice from melting and sliding off the roof, which could result in injuries, damage equipment, and ultimately hinder operations.

To make this cold-roof system possible, Petersen specified the use of Hunter Panels’ Cool-Vent®, a vented insulation panel. Cool-Vent is a three-part product consisting of a 4’ x 8’ NexGen Chemistry® polyisocyanurate foam insulation board, a middle layer of wood spacers, and a top layer of 4’ x 8’ plywood. Cool-Vent provides 92% open air space and allows for 75% lateral air movement throughout the roof assembly, which was essential to the cool-roof system that Petersen designed. The vented, Cool-Vent insulation keeps a continuous flow of air moving through the roof system that cools the metal roof panels and helps keep rooftop snow and ice from melting.

According to Petersen, this type of cold-roof system is beneficial in Wyoming, and it is one that he has specified numerous times for other buildings in the area. “Because of its durability and aesthetics, metal roofs are very common in this area. The vented insulation is what makes them possible, and...”

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Firehouse

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even more so, practical,” said Petersen.
“Standing-seam metal was our choice from
the beginning and we never really consid-
ered any other roofing options.”

Keeping the rooftop cool is only part of
the reason that Hunter’s polyiso insulation
and Cool-Vent were selected for this build-
ing. The excellent insulation qualities of
Hunter’s polyiso insulation were also a fac-
tor. In addition to providing increased air
flow, the 5” Cool-Vent used on this project
provided an R-value of 21.7 while the stan-
dard polyiso contributed an R-value of 10.3.

“As a way to keep energy costs down and
stabilize the interior temperatures of this
building, we were aiming for an R-value of
30,” said Petersen. “With the two Hunter
Panels products that were installed, we end-
ed up with an overall R-value of 32, which
will help keep the building’s winter heating
costs in check.”

Construction of the new firehouse began
in May of 2006 and was headed up by Mid
Valley General Contractors from nearby by
Riverton, Wyoming. Mid Valley subcon-
tracted the roof installation for the new fire-
house to Schrader Metal and Design, from
Cody, Wyoming. Before Schrader’s workers
could install the polyiso insulation and
Cool-Vent on the t-shaped building that fea-
tures three different roof levels, they had to
lay down a six-mil poly vapor barrier. The
vapor barrier helps eliminate vapor infiltra-
tion into and out of the building, further
reducing its energy demands. When all of
the 20’ x 100’ rolls of vapor barrier were
loose-laid into place, Schrader installed
Hunter’s 1.7” standard polyiso. The insula-
tion was also loose-laid and quickly covered
with the 5” Cool-Vent. After the Cool-Vent
was placed on top of the traditional polyiso,
Schrader used Hunter’s nine-inch fasteners
and plates to attach both products directly
to the building’s brand new steel roof deck.

According to Gene Schrader, owner and
estimator for Schrader Metal and Design, his
crew had never used Hunter’s insulation
products before, but they were very pleased
with its ease of installation, particularly the
Cool-Vent. “We used a similar vented insu-
lation product from a different manufactur-
er in the past and our installers had a hard
time fitting the pieces together. There
always seemed to be gaps between each
subsequent piece,” said Schrader. “Hunter’s
Cool-Vent was much easier to use. The
guys really liked it and given the chance, we
would definitely use it again.”

After the Cool-Vent was fastened, a peel-
and-stick shield for ice and water was
adhered around the eaves of the roof to pre-
vent ice damming, a common problem with
metal roofs in Wyoming. Following the ice-
and-water shield was a synthetic underlay-
ment that was mechanically attached to the
entire roof. Schrader then fastened clips to
the Cool-Vent that hold the 22-gauge, 17”
wide Kynar®-coated metal roof panels in
place. To complete the roof installation,
Schrader installed perforated soffit that
allows air to flow into the Cool-Vent and
out the ridge.

In addition to the new, cold roof system,
some of the building’s other enhanced fea-
tures include a much larger apparatus bay
that houses all of the district’s 14 fire trucks,
offices, meeting spaces, and additional room
for hazmat and emergency vehicles. The
entire project, from conception and design to
roof installation and touch-up work, took a
couple of years. But, according to those
involved, it has been well worth the wait.
“We couldn’t be happier with the new build-
ing,” said Anderson. “We now have enough
room and resources to adequately protect this
beautiful county and the unique roof system
offers us the protection we need to do that.”

Built on a hilltop overlooking downtown
Thermopolis, the large new fire hall stands
as a symbol of the commitment that every
volunteer firefighter has made to serve and
protect their county. With the help of a pre-
mium roof system and Hunter Panels’ poly-
iso insulation products, the necessary
resources so vital to those 20 volunteers will
also be protected for a long time.