Information

General Contractor:
Advanced Building Concepts

Insulation Supplier:
Therm-All
therm-all.com

Insulation Installer:
Itchy and Scratchy Insulators
itchyandscratchyinsulators.com

Erector:
Midmass Construction Group
midmass.com

Components Supplier:
Foremost Buildings
foremostbuildings.com

UIC Energy, LLC.

Portsmouth Abbey School Ice Rink Retrofit Case Study

Overview

A leaky screw-down roof on the Portsmouth Abbey School's 35,000-square foot ice rink in Portsmouth, RI led Paul Jestings, Director of Operations and Project Manager, to contact John Brooks of Advanced Building Concepts for a complete building retrofit.

After evaluating the building's needs, Jestings and Brooks determined that the ice rink required several updates, including:

- a new roof
- new lighting
- new boilers, and
- new roof insulation.

Based on his experience with a wide variety of retrofit applications, Bill Beals, District Manager of Therm-All, was selected for the insulation job. The building, which was constructed in the 1960s, contained minimal 3" fiberglass insulation with a vinyl vapor retarder. After examining the interior condition of the ice rink, Beals noted that the job would require insulation with a higher R-value. Additionally, Beals suggested using a vapor retarder with a low perm rating, and one that would help foster a bright interior appearance.

The project wasn't a straight-forward case.

Challenges

In addition to the roof leak, the purlins were rusted. Initially, Jestings considered sandblasting the purlins to solve the rust problem, but opted not to due to concerns of heavy snow loads. After consulting with a structural engineer and conducting weight load tests, Jestings decided to completely replace the purlins. As Beals notes, this proved to be a unique challenge in prescribing an insulation solution. "Because all the purlins had to be torn out, we were somewhat limited in our options for the insulation retrofit. When we considered the need for a high-R system, coupled with the use of the building, the ProLiner™ roof system was an easy win," says Beals.

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Project Needs and Selected Products

The ProLiner™ Bi-Directional Banded Liner System provides OSHA-compliant leading-edge fall protection while maximizing thermal performance in pre-engineered metal buildings using Owens Corning® fiberglass. ProLiner™ meets energy code requirements, improves the acoustical environment and aids in sound abatement, meets fire code ratings, and is GREENGUARD Certified. A bright white or black polyethylene fabric serves as the low-permeance vapor retarder, which prevents condensation, contributes to air barrier integrity, and provides a brighter, resilient finish. The fabric sections were custom-fit for each bay, which allowed for a swift installation and for the roof cavities to be completely filled with uncompressed insulation.

Owens Corning® EcoTouch® Certified R Metal Building Insulation was used in the liner system and Owens Corning's PROPINK L77 PINK Fiberglas Unbonded Loosefill blown-in insulation was used to fill cavities between the draped insulation under the new roof and the ProLiner™ system.

Brooks underscores the match between the job's needs and the system's benefits. "Because we were working with an ice rink, we had to keep the cold in and the heat out, which isn't usually the case; the condensation points are inverted. We looked at multiple insulation systems, but ProLiner™ was the only one that would maintain the cold-in/heat-out balance, provide maximum R-value and ultimately achieve the thermal breaks we were looking for." Jestings agrees. "We looked at other similar products on the market, but we felt ProLiner™ offered the best insulation values and provided better thermal breaks than any other product. ProLiner™ was the clear choice."

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Considerations

The retrofit process proved to be unique. The first order of business included melting the ice, which was done by turning off the refrigeration below the concrete floor slab. The erector, Midmass Construction Group, then removed the old roof and purlins, and began rolling out the EcoTouch® insulation after the new purlins were in place. The replacement roof and insulation were installed simultaneously. Next, the ProLiner™ system was installed from the interior of the building by Stephen Hayes from Itchy and Scratchy, after which PROPINK L77 PINK Fiberglas Unbonded Loosefill was blow-in to fill the roof cavities.

The renovation, which began in April 2014, also included the installation of high-efficiency LED lighting and high-efficiency gas condensing Viessmann boilers. Jestings collaborated with UIC Energy to create custom-made lights suited for the rink. “We needed lights that would be well-matched for our purposes, so they had to be reliable, long-lasting, and somehow protect against hockey puck damage,” he says. UIC Energy created an exclusive energy-efficient prototype with special guards adhered to each light fixture. Additionally, Jestings purchased new Viessmann boilers to better regulate temperatures in the heated spaces throughout the building, such as the locker rooms.

Conclusions

Though it wasn’t a simple job, it was completed seamlessly due to the superior products used and the collaborators involved in the project. “We’ve worked with Advanced Building Concepts for about 20 years now,” says Jestings. “John Brooks and his team are organized, they pay close attention to detail, and we always come in under budget. The quality of their work is unparalleled.” Brooks echoes a similar sentiment about Jestings and his team, and about Bill Beals’ work. Brooks notes, “Bill from Therm-All was instrumental in developing the insulation and vapor barrier specifications for the project. His knowledge and expertise were critical in providing the owner and design team with the comfort that the system selected would exceed the unique requirements of the project. Throughout the process, Bill was attentive and proactive in answering questions and concerns from the owner as well as finding solutions to a few hurdles that we encountered during installation. Both Advanced Building Products and Portsmouth Abbey School would highly recommend and endorse Bill and the ProLiner™ system from Therm-All for future projects.”

The Portsmouth Abbey School ice rink was completed in October 2014, and now has a brighter, more inviting appearance that will benefit the school’s hockey players. In addition to the new roof, boilers, and lighting, Jestings is also pleased with the value of ProLiner™ and the system’s ability to meet the unique requirements of the ice rink. “At the start of the project we were really worried about the thermal breaks. In a hockey rink, if you don’t have a good thermal break between the steel, condensation begins to occur. When condensation occurs, water droplets drip down and land on the rink, which leads to ice buildup. In turn, ice buildup could cause injury or interference in a hockey game, so having uniform, quality insulation is key to maintaining a first-class ice rink. The ProLiner™ system provided that.”

ProLiner™ maximizes thermal performance and meets the definition of Liner System (Ls) as described in the latest version of ASHRAE 90.1, which is also referenced by the IECC (International Energy Conservation Code).

For more information about ProLiner™, visit https://therm-all.com/proliner/ or scan the QR code below.

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