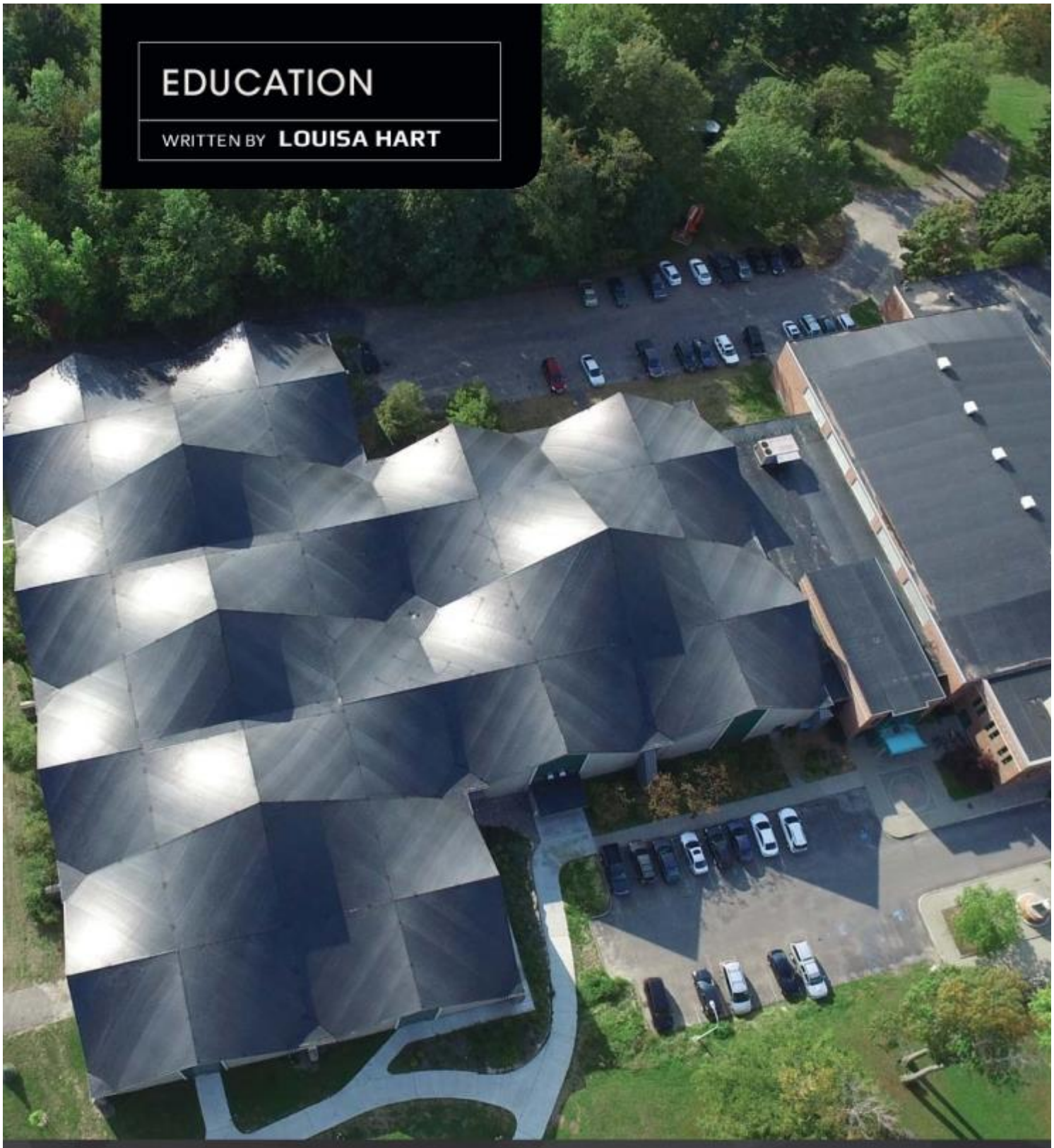
EDUCATION

WRITTEN BY **LOUISA HART**



Strength, Flexibility,

New Roo
System
Addresse
Challenge

Flexibility // Resilience

at Clarks Universit Athletic F

PHOTO

How do you put a new roof on a 66,300-square-foot hyperbolic paraboloid?

It takes a lot of skill, a lot of attention to safety, and the right choice of a roofing membrane – especially when the roof has to protect a full-service fitness center that serves thousands of college students and includes a swimming pool, locker rooms, a Jacuzzi and saunas. But we're getting a little ahead of our story.

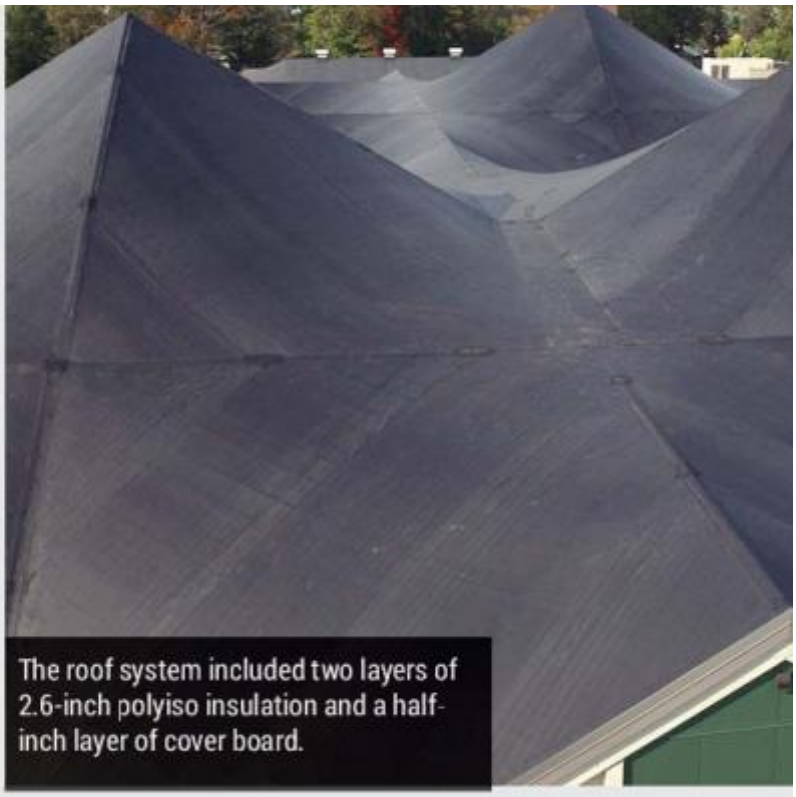
Faced with the combined threats of a global pandemic and major storms served up by the 2020 hurricane season, school buildings, their designs, and their resilience are being scrutinized now more than ever. School boards, university administrators, parents, students and teachers are looking at these structures with an eye to their impact on the health of the people who work and live there. Additionally, entire communities may be counting action by the deteriorating conditions of the existing roof, resulting in multiple leaks. They were working on a very tight time frame, and wanted to complete the work during the three-month window between the end of the fall semester and beginning of the spring semester. And, as a university committed to focusing on sustainable energy solutions and environmental technical innovations, they wanted the most energy efficient roof available for their climactic conditions. The design of the roof itself – the 66, 300-square-foot hyperbolic paraboloid referenced above – presented additional challenges.

Initially, the desig reflective roofing b vinced that a dark offer maximum en the northern climat gy costs down duri months. Additiona stallation challenge building's structur needed to be flexibl face of winters that ice. Given those par chose EPDM membr in a fully adhered s that the membran fastened to the und

on school buildings to house and protect their citizens during a cataclysmic weather event.

When Clarkson University embarked on a project to rehab the roof of its Indoor Athletic Facility three years ago, to most of the American public, pandemics were something that happened in other countries, preferably distant ones. But given Clarkson's location, in northern New York state, energy conservation during the harsh winters was a dominant concern. Just as important, the new roof needed to stand up to freezing temperatures and frequent ice storms. Winters in Potsdam, New York, where Clarkson is located, can serve up average lows of 9 degrees. A "warm" winter day might see a high temperature of 26 degrees.

The Clarkson staff was spurred to



The roof system included two layers of 2.6-inch polyiso insulation and a half-inch layer of cover board.

leaving no unsightly metal fasteners protruding through the membrane and detracting from the rooftop's appearance. But this choice was about more than aesthetics: the fully adhered system increased the roofing system's wind uplift resistance due to the strength of the adhesive and the reduced number of membrane seams present on the fully adhered system (as compared to a mechanically fastened system).

DEMANDING INSTALLATION

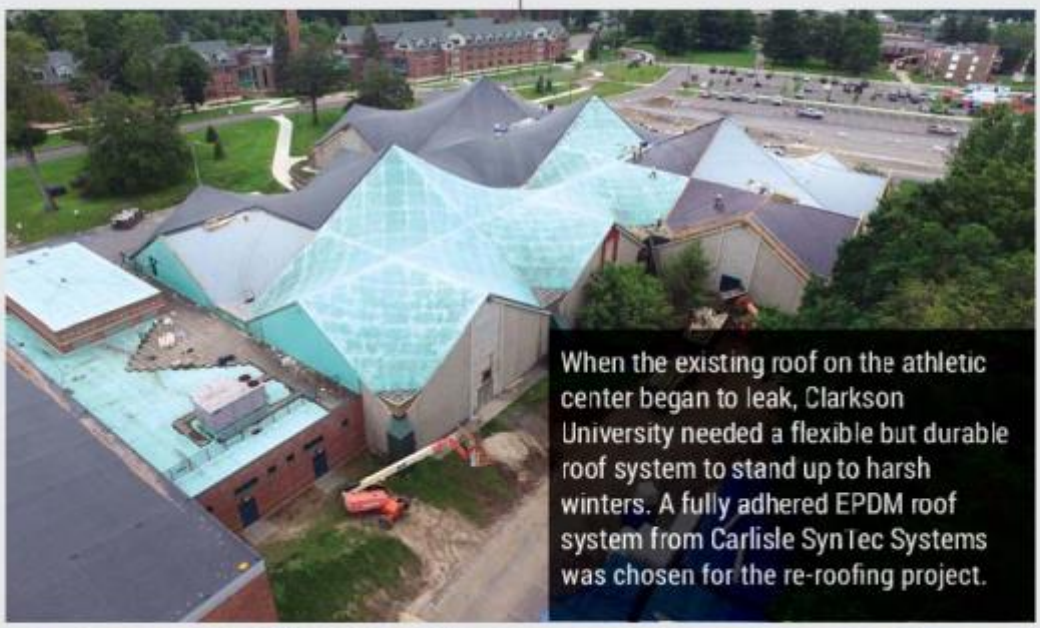
RSI Roofing from nearby Gouverneur, New York, served as contractor for the job, working through a series of special challenges presented by the building itself and the site of the structure. Temporary roads were installed to accommodate the use of manlifts and forklifts. Given the slope of the roof surfaces, all workers on the job needed to be tied off using harnesses and lanyards for fall protection. To ensure that the roof was aesthetically pleasing, membranes needed to match all the way around the building with laps and sheet length going the same way on each section.

The first step in this installation was tearing off the existing roofing membrane and installing new perimeter wood blocking around the existing wood deck. The crew then installed a vapor barrier directly to the wood deck, followed by mechanically installing two layers of 2.6-inch polyiso insulation, and a half-inch layer of cover board.

The final step was installation of the new 115-mil FleeceBACK EPDM roof system from Carlisle SynTec Systems. The installc adhesive to the cove rolled out the EPDM use of the adhesive c ficiency to this alreac system for even grea protection and redu Once the membrane installed perimeter new gutters and dov

The Clarkson gym shelter students as t wide variety of phys with its durable an EPDM roof, like many al buildings through could most likely p shelter during a cat other natural disast

While there may the cause, global sta increasing frequency



When the existing roof on the athletic center began to leak, Clarkson University needed a flexible but durable roof system to stand up to harsh winters. A fully adhered EPDM roof system from Carlisle SynTec Systems was chosen for the re-roofing project.

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In June 2017, the F

CLARKSON UNI
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POTSDAM, NEW

TEAM

ARCHITECT: LaBella A
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labellapc.com

ROOFING CONTRACTOR:
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rsiroofing.com

MATERIALS

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Management Agency (FEMA) reported that many of the nation's fifty million school children are at risk because of aging school buildings, or buildings that do not meet basic resilience standards to withstand a natural disaster. The FEMA report, "Safer, Stronger, Smarter: A Guide to Improving School Natural Hazard Safety," points out that "many of our nation's school buildings are older unreinforced masonry structures that are vulnerable to severe damage and collapse in the next earthquake, or are of lighter frame construction that is vulnerable to other types of natural hazards such as a tornado, hurricane, high winds, or flash flooding."

The FEMA report noted that the average public school building at that time was 44 years old. And while some of these schools have undergone major renovation, "the original construction of numerous school buildings predates many of the modern building code requirements protecting occupants from natural hazards." In other words, millions of schoolchildren are being educated in buildings that are using 20th century construction standards to meet 21st century hazards. And those 21st century hazards are becoming more and more of a threat.

Given these challenges, FEMA is offering extensive specifics on upgrading school structures to improve safety and notes the critical importance of roofing systems to protect the integrity of a school building. It warns that a roof that is damaged in a hurricane "will result in significant interior damage due to water leakage" and any roofing system that is "extremely susceptible to wind damage ... should be mitigated as soon as budget permits."

Whether your focus is a new gymnasium for college students, the renovation of a high school, or the repair of an elementary school, the roof is an essential component of a resilient building. If the roof fails, the structure as a whole will be compromised. The occupants of the
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