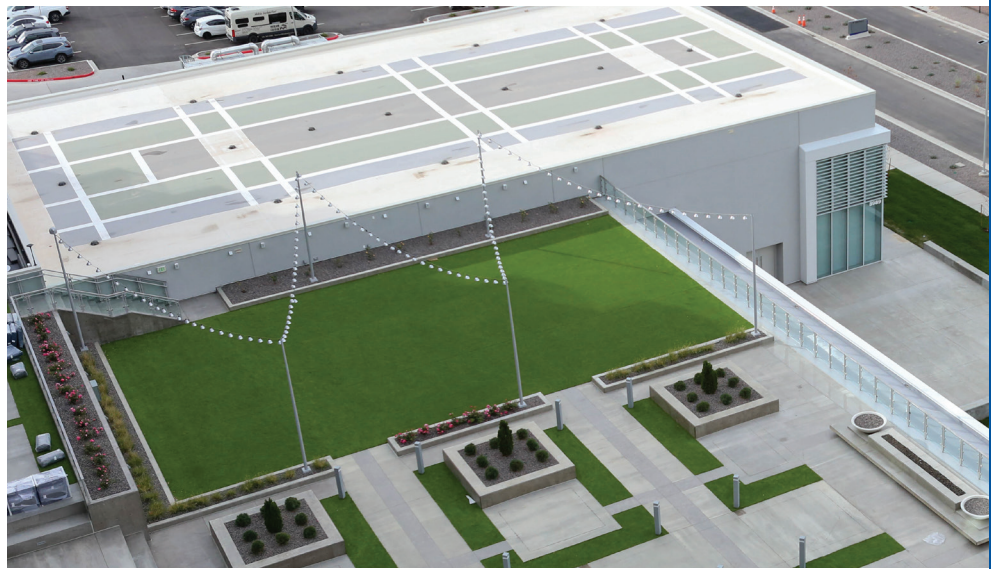


Sure-Weld® TPO

Roofing Systems

CASE STUDY

Hotel Polaris Takes Flight with Carlisle's Sure-Weld TPO and Flexible FAST™ System



JOB PROFILE

PROJECT LOCATIONS:
Colorado Springs, Colorado

CARLISLE APPLICATOR:
Douglass Colony Group

BUILDING OWNERS:
Provident Resources Group

ROOFING SYSTEM:
60-mil Sure-Weld TPO in White,
Slate Gray, Gray, and Green

Nestled at the base of the Rocky Mountains in the shadow of Pikes Peak, Hotel Polaris is a premier hotel and convention center inspired by aviation. Located at the North Entrance of the U.S. Air Force Academy in Colorado Springs, this nine-floor luxury hotel offers 375 guest rooms, 24,000 square feet of meeting and event space, and top-tier amenities, including a rooftop bar, outdoor pool and sundeck, full-service spa, and fitness center. It is also the only hotel in the U.S. featuring flight simulators, where aspiring pilots (ages 12 and up) can 'fly' a Boeing 737 MAX or an F-16 Fighting Falcon.

Designed by Atlanta-based BLUR Workshop and built by DPR Construction of Denver, Hotel Polaris is a landmark project showcasing innovation, craftsmanship, and high-performance building materials. In 2023, Douglass Colony Group (DCG) – the largest commercial roofing, metals, solar, and waterproofing company in Colorado and the Rocky Mountain region, and longtime Carlisle SynTec Systems Authorized Applicator – was selected to install the hotel's 50,000-square-foot roofing system.

"This was a perfect project for us," said Chris Faulkner, Vice President of DCG. "We have extensive experience working with the Air Force Academy and understand the high standards and requirements necessary for working on and near the base."



Hotel Polaris was designed to maximize its stunning surroundings. The lobby, ballroom, event lawn, pool terrace, rooftop bar, and restaurant all offer breathtaking views of the Front Range of the Rockies. The guest rooms are set back, overlooking a raised amenity deck and event space below.

“It’s a beautiful location,” said Faulkner, “but from a roofing perspective, it was extremely challenging.” The timeline was tight, as the hotel needed to be open in time for the Air Force Academy’s graduation. Additionally, the unpredictable weather, particularly the strong fall winds, made the project even more demanding.

From a wind perspective, the hotel is in the Zone II risk category as defined by the ASCE 7 wind zone map. It is not uncommon for winds in the area to reach 70 to 90 miles per hour, which is why the roofing system specified was designed to meet a Factory Mutual (FM) 1-150 wind uplift rating.

Roof damage caused by wind occurs when the air pressure below the roofing assembly is greater than the air pressure above the building’s roof. As the wind flows across and over the building, the pressure directly above the surface of the roof decreases. At the same time, internal air pressure increases due to air infiltration through openings, cracks, etc. The result is a net upward force on the roofing system, called wind uplift. An FM 1-150 rated system is designed to withstand 150 pounds per square foot of upward pressure on the roofing system.

In addition to the timeline and weather challenges, the logistics of working at a military installation were also challenging.

“Every team member underwent background checks and had to wear identification badges. Material deliveries were scheduled at specific times and locations, requiring extensive pre-planning and constant coordination with the GC and other subcontractors,” Faulkner explained.



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“The **Flexible FAST** system is **incredibly efficient**. Our field team appreciates its ease of use, and we’ve successfully **implemented it on numerous projects**.”

Dry-In and the Roofing Assembly

The roof deck is corrugated metal with concrete poured over the top to provide a composite substrate.

Once the roof was fully dry and cleared of dust and debris, the first step for DCG’s 10- to 12-person crew was to dry-in the facility so that work could begin on the inside. For that, they installed Carlisle’s VapAir Seal™ 725TR Air and Vapor Barrier, which also serves as a temporary roof membrane. VapAir Seal 725 is a 40-mil composite with 35 mils of self-adhering rubberized asphalt laminated to a 5-mil woven polypropylene film, and is ideal for use on concrete decks.

To address the dead flat deck, DCG recommended adding a full ¼-slope of InsulBase™ Tapered Polyiso Insulation for improved drainage, which was accepted by all parties. For the first step, the DCG team installed two layers of 2.6-inch polyiso insulation across the deck using Carlisle’s Flexible FAST Adhesive for a totally non-penetrating system application.

“The Flexible FAST system is incredibly efficient. Our field team appreciates its ease of use, and we’ve successfully implemented it on numerous projects,” said Faulkner.

Once the polyiso was installed, the crew went to work following the tapered plan for each roof deck and installing the build ups that would efficiently move water to the drains and off the roof. The tapered system was also installed with Flexible FAST Adhesive.

Before the roofing membrane was installed, the DCG team installed ½-inch DensDeck® Prime, a gypsum-based cover board, also using the Flexible FAST Adhesive. Once the cover board was installed, DCG installed 60-mil Sure-Weld TPO membrane in 10-foot-wide rolls. In addition to offering excellent breaking strength and resistance to punctures and tears, Sure-Weld TPO membranes include Carlisle’s exclusive OctaGuard XT™ technology. OctaGuard XT is a state-of-the-art weathering package that enables Sure-Weld TPO to withstand extreme weathering and exposure to severe climates, like the one found at the base of the Rockies.



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The roof over the hotel has hundreds of penetrations that had to be carefully flashed, including internal and overflow drains, vent stacks, and a recessed mechanical well. In addition, there were 120 davits installed across the center of the roof to support window washing equipment. For the smaller pipe penetrations and davits, the DCG team installed pre-molded TPO pipe boots welded to the deck and sealed at the top with Water Cut-Off Mastic and a stainless-steel pipe clamp.

"The TPO lining in the grease containment area was essential to prevent buildup and long-term damage," Faulkner noted.

Additionally, the roof has a large mechanical area hidden behind a 10-foot-tall wall. For that area, DSG terminated the membrane at the base, then adhered the membrane to the walls, and capped the top with custom coping made with Drexel Metals.

The amenity deck which houses the hotel's pool and garden areas, as well as the roof over the ballroom and meeting space, are visible from the front-facing rooms in the hotel. While having a bright white roof is beneficial in terms of solar reflectivity and energy savings, the glare can be a nuisance for people in the rooms above.

Therefore, to reduce the glare and avoid having a large white roof next to the pool and patio areas, the roof design called for a patchwork of green, slate gray, and gray TPO membrane framed and outlined with the original white membrane.

"The colored membrane sections create a visually appealing blend with the adjacent areas, enhancing the guest experience while maintaining the benefits of a reflective TPO roof," Faulkner explained.

DCG successfully completed the roof on time, allowing Hotel Polaris to open as scheduled for the Spring 2024 Air Force Academy graduation. For their outstanding work, DCG and Carlisle SynTec received an A+ rating on the project when the roof was inspected.

"This project was a testament to our team's expertise, planning, and execution. We are proud to have played a key role in delivering a high-performance roofing system for such a prestigious hotel," said Faulkner.

By overcoming tight deadlines, extreme weather, and military security requirements, DCG demonstrated its ability to execute complex, high-profile roofing projects with precision and quality.