CARLISLE SYNTEC SYSTEMS

Sure-Weld® TPO Roofing Systems

CASE STUDY

Roofing Solution for the Largest Grocery Store Chain in Corpus Christi, TX

TEXAS FIFTH WALL ROOFING SYSTEMS

JOB PROFILE

PROJECT LOCATION:
Corpus Christi, TX

CARLISLE APPLICATOR:
Texas Fifth Wall Roofing Systems

BUILDING OWNER:
Largest grocery store private employer in Texas

ROOFING SYSTEM:
- White 80-mil Sure-Weld TPO
- HP-X Fasteners™ and RhinoBond® Plates
- SecurShield® HD Polyiso Cover Board

Located just blocks from the Corpus Christi Bay and the Gulf of Mexico, a grocery store at 3500 Leopard Street in Corpus Christi is in an 'Inland I' zone, according to the Texas Department of Insurance, which requires structures to be designed and built to withstand a 120-mph wind gust of three seconds. So, when it was time to put a new 66,200-square-foot roof on its store there, the grocery store needed a roofing solution that would offer high performance in the windy coastal area, and long-term weatherability in the hot Texas climate.

San Antonio-based grocery store is the largest private employer in Texas, with more than 430 stores and 155,000 employees in Texas and Mexico. As a multi-format retailer, operates a line of grocery stores, as well as upscale organic and fine food stores in the Houston area.

Texas Fifth Wall Roofing Systems was hired to recover the grocery store in Corpus Christi. The 50-year-old roofing firm headquartered in Austin, with offices in Dallas-Fort Worth and San Antonio, is one of the largest commercial roofing contractors in Texas, with more than 65 million square feet of commercial roofing installed across the state and nearly 2,000 'Perfect 10' Carlisle SynTec Systems installations. They have been a long-time

Carlisle Authorized Applicator and have been the recipients of Carlisle's Excellence in Single-Ply (ESP) award for 25 consecutive years.

Out With the Old

"We have worked on similar projects, but this one was especially challenging given the condition of the existing roof and the store's proximity to the bay," said Charlie Cerf, Texas Fifth Wall Project Manager and Estimator.

The original built-up roofing (BUR) system on the lightweight insulating concrete deck of the grocery store was over 20 years old, and at the end of its useful service life. The roof, framed on three sides by parapet walls, includes several large air handling units, a vast network of pipes and electrical conduit crisscrossing the roof, as well as a litany of curbs and penetrations, many of which were no longer needed or in use. In addition, the multi-layered built-up roof had a gravel surface, with much of the gravel embedded in asphalt.

"One of the biggest challenges for this project," said Cerf, "was removing the loose gravel and spudding the roof. While we hired a company to remove the loose gravel, they could not spud the roof due to equipment availability issues and the local noise ordinance, since the store is in a residential area. So, we had to manually scrape the embedded aggregate from the asphalt on the roof, which is much quieter than spudding, but it added a lot of labor to the project for sure. Our team did the work at night when it was a bit cooler."

As if that was not a big enough challenge, the crew of about 10 from Texas Fifth Wall also had to demo and remove several abandoned curbs built onto the roof as well as several old penetrations and the associated flashing materials.

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"Preparing the roof for the new system was a big challenge as was working around all of the rooftop pipes, air-handling units, and associated curbs and penetrations," said Cerf.

In With the New

Once the roof was smooth, cleaned of the aggregate, and the unused curbs and penetrations were removed, work could begin installing the new roof.

The first step was installing a ½-inch Carlisle SecurShield HD Polyiso cover board. SecurShield provides exceptional protection against hail, rooftop traffic, mold, and moisture, and provides a higher R-value than gypsum or wood fiber cover boards. It also provided the crew with an ideal substrate for the new roofing membrane.

"SecurShield HD boards are really great to work with and were a key to making this job a great success," said Cerf. "They are much easier to install than the alternative options, so they help us save on labor and be more productive. We use them whenever possible."

The project was specified with an 80-mil Carlisle Sure-Weld TPO membrane, in 12-ft. x 100-ft. rolls, installed with the Carlisle RhinoBond induction welding system, one of the fastest-growing application methods in the industry, for securing thermoplastic roofing membrane. Carlisle's Sure-Weld TPO features advanced polymerization technology that combines the flexibility of ethylene-propylene (EP) rubber with the heat weldability of polypropylene. The membrane includes Carlisle's exclusive OctaGuard XT™, a state-of-the-art weathering package that enables the material to perform well in severe climates like Corpus Christi, and one that would also provide superior wind uplift performance.

"Given the building's proximity to the coast, we needed a system that could be installed efficiently and provide high wind uplift performance even with wind gusts reaching 120 mph," said Cerf. "The induction system was a perfect choice for this project."

When compared to a traditional mechanically attached system, the induction-welded system offers several advantages. It uses the same fasteners and RhinoBond Plates to secure both the membrane and the insulation to the roof deck without penetrating the new membrane. In addition, the system does not require the use of half-sheets or traditional perimeter 'picture framing,' so there's less seaming and fewer fasteners to install, which can save valuable rooftop productivity time.

"With the induction system, you use full width sheets of membrane everywhere on the roof. For perimeter and corner enhancements, you simply install more fasteners and plates, since every installed RhinoBond Plate is an attachment point for the membrane," said Cerf.

"We have been installing thermoplastic membrane roofs with induction for nearly 10 years," said Cerf. "Our crew really like the system, and have become very proficient installing it, and it's a great way to install a high-performance roofing system."

To achieve the high wind rating, the team from Texas Fifth Wall installed the 4-ft. x 8-ft. SecurShield coverboards with 10 fasteners in the field of the roof, 16 fasteners in the perimeter, and 20 fasteners in the corners, using Carlisle HP-X Fasteners and RhinoBond Plates.

"It's much more economical to achieve a high wind rating with the induction system than it is with a mechanically attached or fully adhered system," said Cerf. "It's faster, easier, and more productive."

At the perimeter parapet walls, the crew ran the membrane up six or eight inches, secured it with termination bar, and then welded a new piece of membrane below the term bar and ran that up and over the wall, before installing the new coping cap.

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Texas Fifth Wall has an established ES-1 certified sheet metal shop where they shop-fabricate their own fascia, coping, gutters, and other metal components. For this project, the team replaced all the coping cap on the parapet walls using a design profile that complies with the ES-1 test standard. This unique grocery store has multi-colored facades in the front and sides of the buildings that are blue, white, and seafoam green. For the coping on the parapet walls over these areas, the contractor matched the façade color for a seamless look.

On the back side of the building, Texas Fifth Wall installed a shop-bent box gutter and downspouts, all made to meet code in this coastal zone. They secured the box gutter using hurricane straps every four feet below the gutter, as well as additional straps over the top.

“We were very careful making all the edge metal to comply with the test standards,” said Cerf. “We know that failure of the edge metal often leads to roof failures, and we used materials and proven designs to minimize that possibility.”

The last step was installing pipe supports for the network of gas, freon, electrical conduit and condensation lines on the roof. For this, the contractor specified a variety of single-line and strut supports from PHP. In addition, they installed walk pads around all the air handling units to protect the membrane during maintenance and repairs.

“The pipes range from six or eight inches off the roof deck to a foot or more and run the entire 375-foot length of the roof, as well as across the 180-foot width of the roof,” said Cerf. “It’s quite a large network of pipe and conduit, so our team had to be very careful when installing the membrane. For this size roof, there were not many areas where we could run the membrane without interruption of a curb, the pipes, or another type of penetration.”

In the end, the project was well received by the business owner. “We worked closely and talked daily with the owners team, so by the end there were no surprises for this project,” said Cerf.

This grocery store in Corpus Christi location now has a high-performing Carlisle roofing system with a 20-year, No-Dollar-Limit (NDL) warranty that is designed to withstand 120 mph wind gusts, severe heat and UV rays, and whatever else mother nature can throw at it.

WIND-RESISTANT ROOFING EXCELLENCE

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