

**Sure-Weld® TPO**  
Roofing Systems

CASE STUDY



**Daedalus Project**



**JOB PROFILE**

**PROJECT LOCATION:**  
Easley, SC

**CARLISLE APPLICATOR:**  
Radco Roofing

**BUILDING OWNER:**  
Daedalus Industrial

- ROOFING SYSTEM:**
- » White 60-mil 16'-wide Sure-Weld TPO
  - » RhinoBond Plates and fasteners
  - » LIQUISEAL Liquid Flashing

When it comes to re-roofing a standing seam metal roof, there's nothing faster or easier than the induction-welding-based RhinoBond® system, especially when combined with Carlisle's 16-foot-wide Sure-Weld® TPO membrane. That's because unlike traditional roofing assemblies, fasteners for the RhinoBond system are installed into the purlins for maximum uplift strength, but they do not have to be placed in the seams of the membrane, which eliminates the need for purlin-width sheets of membrane. This not only can improve rooftop productivity but also reduces waste and increases project profitability.

"There's no easier way to handle a metal roof retrofit project," said Patrick Poirier, Project Manager for Radco Roofing, a large NRCA-member contractor headquartered in Charlotte, NC serving the southeastern U.S., that specializes in all aspects of commercial roofing including installation, maintenance, and sheet metal work.

"The induction-welding system requires fewer fasteners and does not penetrate the new membrane. For prescriptive fastening, we just install more of the special Carlisle RhinoBond plates as additional attachment points, and the 16-foot-wide rolls reduce the overall seaming by 33 percent," said Poirier. "It's really a no brainer!"



Daedalus Industrial, a company specializing in designing, building, installing, and supporting high-volume and custom automation systems for data centers, manufacturing operations, as well as for the government and defense contractors, needed to replace part of the roof on its 65,000-square-foot facility in Easley, SC.

A large portion of the facility's metal roof was nearing the end of its service life and in dire need of repair and replacement to provide long-term protection for the sensitive design and process equipment below.

Radco Roofing was hired for the project and recommended the Carlisle RhinoBond system and 16-foot wide Sure-Weld TPO membrane. Induction welding is one of the fastest growing methods for attaching thermoplastic membranes in the roofing industry, and Sure-Weld is a premium, heat-weldable, single-ply thermoplastic polyolefin membrane designed for new and re-roofing applications. At the heart of the

membrane is advanced polymerization technology that combines the flexibility of ethylene-propylene (EP) rubber with the heat weldability of polypropylene. In addition, Sure-Weld TPO membrane includes OctaGuard XT™, a state-of-the-art weathering package that enables the membrane to withstand extreme weather conditions.

"Unlike many typical metal roof recovers," said Poirier, "Radco was hired only to recover one half of one of the three roofs at the Daedalus facility."

The 15,000-square-foot section of roof which needed to be recovered included two air handling units on curbs, as well as several 3 x 10-foot translucent panels that were removed and replaced with new R-panel decking.

Once the new decking was in place, the crew of 8-12 from Radco started the recover process. The first step was to fill the flutes using



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loose laid EPS insulation. Once in place, the crew installed a 1-inch layer of Carlisle InsulBase Polyiso Insulation, a rigid roof insulation panel designed for single-ply systems.

“We secured the insulation to the deck using Carlisle InsulFast Fasteners and 3-inch insulation plates,” said Poirier. “The polyiso provided us with a good, flat substrate for the membrane.”

Next, in preparation for the membrane, the crew installed the RhinoBond Plates.

“Since we were only re-roofing half of the building, we had to make sure that wind would not be an issue,” said Poirier. “So we installed the RhinoBond Plates with Carlisle HP Purlin fasteners at 12-inches on center across the ridge and on the next two purlins, and then on the bottom three purlins at the eave. For the purlins in between, we installed the plates on every other purlin with the same 12-inch OC spacing.”

Purlin spacing on the Daedalus facility was 5 feet wide. Traditionally, contractors would have to order special width membrane for these applications to match the purlin spacing. But with the induction-welded system, the membrane width is not an issue because the seams do not have to be over the purlins.

Due to the size and weight of the 16 x 100-foot rolls, staging the roof properly was important.

“We had a lift deliver the first rolls of membrane all the way to the ridge,” said Poirier, “so we could work down the roof to the eave. This was the first time that we worked with the 16-foot rolls, and

we really liked the way they handled, as well as the productivity we got on this project,” he said.

The three-inch round induction plates are coated with a special hot-melt adhesive. Once the membrane is rolled out over the top, an induction welder is placed over each plate and activated. The electromagnetic induction process heats the plate below and fuses the bottom of the membrane to the top of the plate in about five seconds. A magnet is then placed on top of the membrane directly over the plate to help cool the plate and to promote a strong bond.

On the front end of the building, the roof had a parapet wall that served as a divider with the lower office section of the building. To address the parapet, Radco added new plywood to the inside of the wall, terminated the membrane at the base, then fully adhered the membrane up and over the wall and capped it with shop-bent coping.

Terminating the membrane at the ridge was a bit more challenging. When rolling out the first sheet of membrane, the crew from Radco left a foot or so hanging over the ridge. Next, they installed wood blocking and terminated the membrane with plates and a termination bar to the deck where appropriate.

To ensure that the assembly would remain watertight at the ridge, Radco used Carlisle LIQUISEAL® Liquid Flashing, a two-component polyurethane-based resin used with a special Flashing Fleece. The low-VOC system is solvent-free and can be used to flash odd shapes and difficult penetrations as well as to tie dissimilar roofing systems together without a curb.

# CASE STUDY



“LIQUISEAL Liquid flashing is the perfect product for this roof,” said Poirier. “The profile of the deck is somewhat intricate, so using the felt and resin layers was the ideal way to seal the roof at the ridge.”

Terminating the membrane at the drip-edge was fairly straightforward for this type of application. The Radco crew installed 2 x 6 inches blocking between the flutes and then added a 1 x 6 inches over the top to provide a sound substrate that met the top of the installed polyiso cover board. They then installed a gutter with its flange over the wood blocking, ran the membrane over the top, installed a shop bent drip edge, and stripped in a 6-inch Pressure-Sensitive cover tape over the drip edge to complete the termination.

“Overall, for metal retrofit applications, we really love the extra-wide membrane and induction system,” said Poirier. “It’s a great system for this type of job, and we’ll definitely use this assembly again for other projects. With the wide rolls there’s less seaming so a reduced chance for leaks or cold welds, fewer T-joint patches to install, plus with induction welding there’s no penetration of the new membrane. It’s just a solid system all around.”