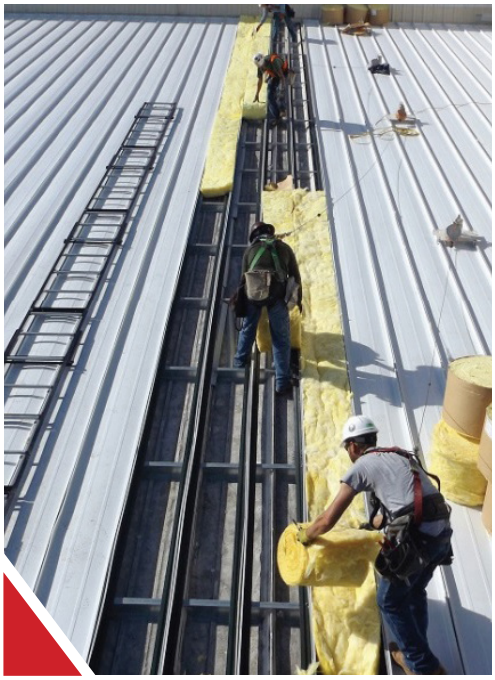
CASE STUDY:
SOUTHWEST AIRLINES

Southwest Airlines, one of the world's largest low-cost carriers, has long been known for employees who create a fun traveling experience aboard their well-cared-for planes. But after years of taking a beating from Mother Nature, there was nothing "fun" about their hangar in Orlando, Florida (MCO).

Originally constructed in 1984, the MCO Hangar had weathered multiple tropical storms, including Hurricane Charley in 2004. Although the structure—while battered—survived, leaks and failing insulation remained a problem that could no longer be ignored.

During the summer of 2014, Southwest Airlines Senior Project Manager Matt Coon contacted McElroy Metal with a renovation challenge that would repair the integrity and daily functionality of the hangar while withstanding the incredibly high uplift values of future storms and hurricanes.

Within a week, McElroy Metal Recover Manager Charlie Smith was onsite with Terry Wolfe of Force Engineering and Brian Gardiner with Austec Roof Consultants to gain a better understanding of the situation and to offer solutions.



PROJECT SPECS

PROJECT NAME: MCO Southwest Hangar

PHYSICAL LOCATION: Orlando, FL

MCELROY SYSTEM UTILIZED: 238T - Metal-Over-Metal Recover

SELECTED COLOR: Low Sheen Regal White

SQUARE FEET ON PROJECT: 70,000

ROOF CONSULTANT: Austech Roof Consultants

STRUCTURAL ENGINEER: Force Engineering, Humble, TX

INSTALLER: Commercial Siding & Maintenance, Houston, TX

DATE INSTALLATION BEGAN/ENDED: June 2014 – January 2015

THE CHALLENGE

Upon close inspection of the hangar, it was determined that the current trapezoidal standing seam roofing system was under-engineered and unable to meet building codes. Several tropical storms had damaged part of the system, and repairs (including the addition of an elastomeric coating) had proven unsuccessful.

Roofing repair often meant that workers would need to be relocated and inventory would need to be moved.

That's not all. After years of moisture absorption, the original insulation had been compromised and was beginning to fall into occupied spaces below, sometimes landing onto heavy-traffic walkways or on top of the multi-million-dollar aircraft within the hangar.

Suddenly, a mere nuisance had turned into a matter of public safety and inventory protection.

THE SOLUTION

While there were plenty of low-cost options available for roofing repair, Charlie knew Southwest would only want the best. After a thorough review of the project, it was determined it would be best to recover the existing roof in lieu of removing and replacing. This could be accomplished with minimal disruption to the occupants. With the addition of a Roof Hugger retrofit purlin, the load-carrying capacity of the existing purlins could be enhanced while the new roof was being installed over the old one.

Terry Wolfe from Force Engineering noted that the existing purlins were an abnormally wide 5' 3" OC. Fortunately, the 238T roof system could meet the wind uplift requirements at that purlin spacing. He also determined that a significant amount of other structural enhancement would be required to meet current building codes. He found that the purlin connections were insufficient and recommended that each purlin lap joint be reinforced. There were also unstable purlins over the planes that were at risk for racking, which could result in total building failure.

To resolve this issue, he recommended three rows of 16-gauge hat channel be attached to the bottom of the purlins from the interior of the building. As far as the roof system, an 18-inch panel width to reduce installation costs was installed with a 100% continuous clip from eave to ridge. "I pick the continuous clip every time," said Wolfe. "It's typically less expensive than adding more structural members to the roof and it's a much stronger system."

> **"Given the history of this project and the propensity for tropical storms, I felt it was important to involve a top-notch structural engineer to visit the site and minimize the potential for surprises," said Smith. "And, I'm glad we did. Our ability to bring the right people together definitely helped us exceed the owner's expectations."**

Austech Roof Consultants assembled the construction documents and invited five qualified contractors to bid the job. Commercial Siding and Maintenance from Houston was awarded the contract.

CONTACT MCELROY METAL

Southwest Airlines was in need of a long-term and problem-free solution to protect its aircraft fleet. Given the specifics faced on the MCO Hangar project in Orlando, FL, using the McElroy Metal 238T system as a total metal “Recover” was definitely the right choice. To learn more about metal roofing and recover, check it out now.

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