

Gateway to Design Success

Spray Foam Roofing Accommodates Design Changes in New Aerospace Facility



Rapid growth led to a major move for Able Engineering, an aerospace manufacturing company specializing in repair work on both fixed-wing aircraft and helicopters. Able had a need for a facility nearly three times the size of their old one, near Phoenix Sky Harbor Airport. They partnered with the City of Mesa and Phoenix-Mesa Gateway Airport Authority to have one built at the growing Gateway airport.

Since 2007 Mesa Gateway Airport has been one of the fastest growing airports in the US and traffic has grown to reach one million passengers annually.

Able's new 191,000 square foot building is the largest facility at the airport and largest private employer in the Gateway area. It is also one of the largest high profile building projects in the Phoenix Metro area in the last several years, according to

Tony Mackelprang, Senior Project Manager/Consultant with Arizona Foam & Spray.

Arizona Foam & Spray was selected as the spray foam contractor for the project due to their more than 40 years' experience and over 250 million square feet of spray foam roofing they have installed establishing a reputation for integrity and reliability.

From the beginning Quik-Shield

spray foam manufactured by SWD Urethane was the product of choice for the project. "We only use spray foam as a standard roofing system on all of our projects", said Steve Nevala, of Cawley Architects, a locally based architectural firm.

"Spray foam is our roofing system of choice, especially because of its insulation value, adaptability over different types of substrates and its highly reflective coating", said Steve.



The aircraft maintenance, repair and overhaul (MRO) facility was built with four separate high bay sections; a commercial aircraft-sized hanger for maintenance and repair, an electroplating section, an 84,000 square foot machine shop, and a 31,000 square foot office building.

The facility's four separate sections required flexibility of installation not only because of the different uses of each area, but also because of design and equipment changes and relocations that were made during the project.

The different types of wood and metal roof decks made spray foam roofing an ideal solution for this project, according to Steve. The hanger and plating facilities both had metal decking, while the deck of the machine shop and office area were both wood. To provide higher system R-value, 1.5" to 3.3" inches of Polyisocyanurate board was mechanically fastened to the metal deck of the hanger, plating facility and machine shop roofs, prior to the foam being applied.

Quik-Shield 1000 roofing primer was applied to the metal fasteners that held the polyiso board in place. All 160,304 square feet of roofing area was then coated with 1 ½" of Quik-Shield 125 roofing spray foam. At 2.5 pound density per cubic foot a total of 98,000 pounds of spray foam was used for the project that took 50 days to complete.

Use of spray foam allowed for on site design changes that were needed on the project.

Although there was a structural slope to the building, crickets needed to be spray applied to divert water flow laterally to drains. During the application of the foam roof, the building of large crickets had to be done on site, according to Tony. He said that, "the ability to accommodate changes in design and structure quickly and cost effectively makes foam roofing a superior roofing choice. Without the flexibility of the foam roof, plans would have to be reworked

for each change to the project. We were able to facilitate design alterations on site when equipment was moved and complete them in a timely manner."

Other key advantages to Quik-Shield 125 include the fact that it provides a seamless water and air barrier. The chemicals don't come together until they hit the head of the gun, then they begin to expand infiltrating cracks and crevices, providing an unsurpassed barrier throughout the entire roof. Quik-Shield also is easy to apply and hardens so that you can walk on it within 90 seconds. As the foam expands into a solid, it forms a closed-cell structure with a high R-value of 6.3 for 1" of foam. These characteristics make a spray foam roofing system the best roofing option.

To finish the roofing project, Quik-Shield 1929F acrylic roof coating was used in bright white to offer even more energy efficiency. The bright white coating and limestone granules offer more than 80% sun reflection, reducing summer roof temperatures, solar heat gain and winter radiant heat loss.





As with all projects, safety is of utmost importance. The one concern for this project was the possibility of overspray and made this project particularly challenging. With multi-million dollar commercial aircraft in the area, making sure the product went on the roof and not into the air was priority. Tony said the two crews paid close attention to a flag system set up to monitor wind conditions.

“The product can become airborne during the application process and precautions need to be taken to

avoid property damage from overspray.”

The cost savings for the facility are expected to be substantial. The superior insulation properties combined with the reflective coating to reduce summer roof temperatures, solar heat gain, and winter radiant heat loss will lead to a reduction in energy costs.

In addition, spray foam roofing systems have the lowest life cycle cost of any roofing system. There is no need to remove and replace a roof after 10 years like a traditional Built-Up Roof or Single-Ply system. Spray foam provides easy maintenance and simply needs to be power washed and re-coated with a top coat when it shows signs of wear.

Design changes and a need to alter plans on site made the Able Engineering facility not only challenging for crews, but also made spray foam the only effective option for roofing. “We added lots of penetrations and there were special requirements in a lot of areas,” said Steve. “This along with all the other advantages of using

foam made it a huge benefit to the project.”

Arizona Foam & Spray
(www.arizonafoam.com)

Located in the southwest desert, Arizona Foam & Spray has been providing outstanding service to its clients since 1969.

SWD Urethane
(www.swdurethane.com)

Quik-Shield brand is owned and operated by SWD Urethane and represents 40 years of spray foam experience in the construction industry. Today SWD Urethane is one of the most innovative system houses in the spray polyurethane/polyuria marketplace. Whether you’re a homeowner, are in architectural design or builder contracting, you will find SWD is committed to partnering with its customers to develop meaningful solutions.

