THE COMPLETED SCOTTSDALE INSURANCE COMPANY ROOF IN ARIZONA.

Some Like it Hot

Putting Green Technology to Work in Scottsdale, Arizona

by Bill Kelley, Polyglass

Scottsdale, Arizona is hot, in more ways than one. The city of 200,000 residents, located 18 miles east of Phoenix and dubbed "The West's Most Western Town" for its rich western history, ranks tourism as its number one moneymaker. The *New York Times* reinforced this distinction when it described the city's fast-paced, late night entertainment scene as, "a desert version of Miami's South Beach." But that same Wild West desert locale also makes for some hot days to go with those steamy Scottsdale nights.

With summer temperatures routinely topping 100˚, the roofs of the bustling city's businesses take a beating. The Scottsdale Insurance Company, a subsidiary of Nationwide, knows this first hand. After 18 years of scorching sun, the flat roof of the company's headquarters had begun to deteriorate. The result: ponding water penetrated broken seams and had the company's employees and maintenance team chasing leaks throughout the building for almost five years.

Ushering in the 21st Century

The aging roof, a ballasted EPDM over 4" of insulation on a concrete roof deck, was a relative dinosaur among more modern, heat-resistant applications used in Arizona today. The blanket of 2" river rock used to cover the Scottsdale Insurance Company headquarters was, as Starkweather Roofing president Jeff Starkweather notes, not always conducive to the region's climate.

"You just don't see a lot of ballasted roofs in Arizona because of the heat," said Starkweather, whose company was called in to make the repairs. "The old roof had reached the end of its life-cycle and the seams had begun to pull loose from the walls and penetrations." Starkweather noted that thermal shock, a condition common in Arizona, was a contributing factor to the roof's downfall. "When a monsoon rolls in, a roof can go from 180˚ to 80˚ within minutes, which shrinks the roof rapidly," said Starkweather. "When it goes through that cycle a couple thousand times, the roof starts getting tired."

For the new roof, Starkweather's team turned to Polyglass' Poly ISO board insulation with a tight set roofing adhesive glued to the concrete roof deck. Over that, they installed a self adhesive Polyglass Eastoflex SA V base sheet and a PolyKool cap sheet. The result was a roof capable of withstanding the wavering Arizona temperature extremes, and one that brought the Scottsdale Insurance Company headquarters into the 21st century.

The PolyKool sheet provided a white, reflective surface that not only met all current and proposed energy performance standards, but was also capable of withstanding foot traffic, pooling water, and residual chemicals from the building's cooling towers.

The Polyglass Elastoflex SA membranes are manufactured using Polyglass' patented ADESO technology. The ADESO-enhanced membranes use the latest in asphalt adhesive advances, as well as proven long-term membrane waterproofing compounds. The technology is further enhanced with the FastLap seaming system.

This technology provides a self-adhering, factory applied lap system at the end of each roll that improves the speed of application, and a quick and clean positive lap to ensure superior bonding and strength. Self-adhesive membranes with ADESO are easy to install, maintain an integral bond, and do not have the traditional roofing problems of noise, safety, and smell.

"With the self-adhering sheets we were able to reduce the fumes that some other roof systems have and reduce the impact on the building's tenants," said Alan Benson, RRC, president of Alan Stevens Associates, who served as the consultant and designer for the project and oversaw the installation. "The white surface of the Polykool sheets also made the new roof more energy-efficient, which, in this climate, is extremely important."

Against All Odds

The project, totaling 11,400-sq.ft., was the largest undertaking to date for Starkweather Roofing, and one that presented some unique challenges.

First was the Scottsdale Insurance Company's budget. The original proposed roofing system totaled $1.2 million, about $400,000 more than what the company could spend. To meet his client's needs, Starkweather's team value-engineered the project, switching to the PolyKool system and eliminating the full taper system.

Next was the challenge of working on a building with an underground garage. The garage prevented the crew from placing cranes and other equipment within 20' of the structure, a buffer which posed problems when removing old materials and loading new ones. Larger cranes were brought in to overcome this obstacle and a large hydro-vac truck was used to remove the 2" river rock from the existing roof. But even with these solutions, the team had limited work hours.

"We could only access the building with equipment on the weekends because the parking lot was full," said Starkweather roofing estimator and project manager, Sherm Robison. "And we couldn't work at night because noise issues would disrupt a nearby condo."

As a result, the 10- to 20-man crew stockpiled old materials on the roof, clearing large areas on which they could apply the new roofing system. Waste was removed on weekends, and the river rock was recycled. Storing material on the roof also made it easier to recycle the removed rubber and insulation – a first for Starkweather Roofing. Recycling these materials helped offset the increased cost of the crane and made an already environmentally-friendly project even greener.

Because the building was occupied throughout the construction process, noise and harmful odors had to be minimized. The self-adhesive Polyglass membranes used during the project alleviated this issue. The new roof was also ply redundant, making it more durable and helping it stand up to foot traffic. In fact, the Polyglass Elastoflex SA V base sheet topped with a PolyKool peel-and-stick cap created a dual modified system, resulting in a finished product tougher than most roofs.

"We were able to value engineer a solution that not only fit their budget, but was also durable enough to take some punishment," said Robison. "And the fact that we were able to recycle so much of the old roof made it even better."