Restoring Roof Saves Time, Money, Disruption

by Gordon Blickle, APOC Roofing & Waterproofing

MESA, AZ—Mesa Public Schools is the 39th largest school district in the United States with 74,000 students. To accommodate the students and staff requires dozens of school buildings and other facilities. Properly maintaining these structures, especially the roofs, is critical to the overall operations of the district.

The roofs take the brunt of the extreme Arizona heat, harsh sun and damaging UV rays. As a result, the district is looking for new and better roofing systems for many of the buildings.

The original, 28-year-old gravel roof on the single-story operations maintenance facility was getting to the point of disrepair. Over the years, the 500-square roof had retro fitted a number of tie-ins and penetrations with the addition of new mechanical, electrical lines and other equipment. It was time to put on a new roof.

"We decided this was an opportunity to plan for the future," says Keith Pickens, Structural Lead Senior of Mesa School District. "With the extreme heat in our area, we wanted a product that offered good reflectivity and energy savings. We also wanted a sustainable roof system that was environmentally friendly and wouldn't fill up the landfills."

Due to several district-wide projects going on simultaneously and the area's monsoons, Pickens did not want to do a complete tear-off. He knew an open roof deck would expose the communications and operations division equipment to the elements, but he was not sure how to avoid it. Based on these criteria, Pickens looked at a variety of alternatives and products.

BEFORE
Aged, worn roof badly in need of a fresh start

AFTER
New white coating lowers interior temperatures, protects roof surface

When APOC initially approached Mesa Schools, Pickens first instinct was "well, here's another elastomeric coating and we're not interested." But, APOC flew in a team of experienced installers to perform a demonstration over a damaged section of the roof so Pickens could see the detailed installation techniques, the multiple layers of reinforcement, the seamless surfacing and the cool energy efficient coating.

During the demonstration, APOC also invited local contractors and roofers to see and touch the 3-square sample area. The base installation consisted of APOC's Monoform system which is made from a water based asphalt emulsion reinforced with a chopped fiberglass strands. Then multiple layers of polyester and emulsion were installed followed by a high performance, LEED accredited and CRRC rated acrylic coating. All APOC coatings used in the installation were water based which means that there were limited to no VOC's or ozone depleting chemicals released into the atmosphere. In addition, the APOC acrylic coating installed provided a highly reflective and emittive surface which drastically reduced roof temperatures, lowered cooling costs and reduced energy consumption while provided a reflective shield that will protect the new roof for years to come.

"It's 93 degrees at 8:30 in the morning and by the afternoon it's 110 degrees," says APOC representative Rene Lujan. "The sun is scorching on the ground and the roof feels twice as hot. When I tell people to put their hand on the white coating, they don't want to touch it. But it's cool to the touch. It's incredible, even in the hot Arizona sun!""

Cool roof coatings can reflect 70% - 90% of the sun's energy. Conventional roofing materials have a reflectivity of only 5% - 25%, meaning they absorb 75% - 95% of the sun's energy. This absorbed energy is transferred to the building.

"APOC products offer highly reflective and high emittive properties, and it's a complete roof system, not just a coating or a sprayed-on emulsion," says

Pickens. "Basically, that sold us on the product. That and the money we would save versus tearing off the roof."

Not removing a roof is a huge plus, because a building is never open to the elements. Sustainability is also becoming increasingly important to our society. Schools and Governments need to set an examples as leaders and not as adding roofing material waste to our landfills. With APOC's roofing system, there is no downtime for a facility, no disruption to the people inside, and it's much quieter. Plus, there are no fumes, harsh odors of fire hazards, so the product can be used where others are prohibited.

"The school district saved a ton of money by not tearing off the problematic roof. And now they have an energy efficient asset, which will save them a considerable amount of money each year on lower energy costs," says Lujan. "If you can restore a roof, coat it, make it cooler and save energy, that's what it's all about."

Pickens took heat readings throughout the process. The temperature on the original gravel roof exceeded 160 degrees Fahrenheit. Before applying the finish coat, a reading on the base coat was 135. After the new roof was completed, the temperature on the finished coat was only 115 in the sun and 103 in the shade.

"We got a 32 degree difference between the base coat and top coat, and more than a 55 degree difference from the old roof to the new roof," says Pickens. "That's a significant temperature change. So, the mechanical will not have to work as hard and we're going to see a considerable utility savings."

Pickens is pleased with the cost savings, the heat difference, and the appearance of the roof. "We've already targeted other buildings that are prime candidates for this roofing system," he says. "APOC is going to be a valuable partner for us."