Roofing the World's Largest Orb

By Karen L. Edwards

It may be the future of entertainment, but like every other building, it still needs a roof.

Las Vegas is known for the experiences it brings to millions of visitors each year and one of its newest additions promises to deliver. The new orb-shaped building is more than an entertainment venue, it's a multisensory experience like no other. The giant sphere is 366 feet high and 516 feet wide and engulfs visitors in live music events, sporting events and more with its 16K LED screens and haptic seats that make it feel like you are immersed in your surroundings.

No matter how amazing the experience will be, both inside and outside of the venue, it still needs a roof that will keep it watertight. So how do you roof a giant ball? To find out that answer, we talked to the team at General Coatings, the manufacturer of the waterproofing system for the structure. It took months of careful planning to choose the right system and ensure everyone stayed safe during the installation.

Finding the right system

The original specs for the 180,000-square-foot dome underneath the exoskeleton called for a single-ply PVC roof. But when they realized that about 45 truckloads of material would need to be brought up onto the roof while constructing the sphere on the outside, they began seeking alternative systems.

The team determined that the ideal solution would be to install a spray foam roofing system with a coating overtop. This would eliminate the material loading issue and avoid the 20 – 25 percent waste that would have occurred trying to install PVC on the round sphere.

A committed manufacturing partner

The 180,000 square-foot spray foam roofing system required a manufacturer that could deliver the materials in the timeframe needed to keep the project on schedule for the developers. They found that commitment in General Coatings.

General Coatings Sales Manager Steve Goold explained, "Our administration is committed to supplying materials for our customers to the point of having smaller margins in order to keep everyone going. We took personal responsibility as a family-owned business to step up and make sure the materials were out there."

General Coatings also needed to create a special color for the top coating that would effectively make the roof disappear because the LED monitors would be running 24/7. "We had to make a special material that could handle the sun without blistering," said Steve. "We developed a slate gray color that would allow people to look at the LED monitors and not see the roof behind it."

Ensuring a safe and quality installation

With much of the pitch being 8:12, or even steeper in some areas, the installers contracted with a scaffolding company for swing stage platform carriages. They had to use some ingenuity and modify the wheels so they would not crush the foam but would still allow the workers to be close enough to effectively spray and build up the required five inches of foam.

Installers began the work relying on five swing stage platform carriages about 30 to 40 feet long. This allowed three spray foam applicators to work simultaneously installing Ultra-Thane 230 while a crew followed behind to apply the Ultra-Flex 1000 elastomeric base coat and topcoat at five gallons per square to finish at 40 dry mils. Once the circumference of the dome was completed, crews moved to the top of the dome where they were able to stand while being tied off in the case of a fall.

The foam application wasn't just as simple as spraying it on. It needed to be applied to create positive water flow to the drains. The valley, the high points, the crickets and the tapers are very important. That's an art and a skill. It takes a true craftsman to get it right.

Preplanning was key to the installation's success, but they faced challenges along the way they had no control over. The crew had to be very cognizant of overspray during the application since it was done during a very windy time of year. When the wind would pick up the crew would shut down causing them to lose a lot of days due to the weather.

The installation also required some coordination with the iron workers who were building the exoskeleton of the sphere at the same time the roofing system was being installed. They had to work closely and coordinate with all parties to ensure that all the workers remained safe.

Long-term performance and protection

Once the dome portion was complete, the crew moved on to the tension ring around the bottom. This ring was 1,300 feet in circumference and was roofed with the same General Coatings system installed on the dome.

General Coatings delivered the materials needed to keep the project on track and provided support during the installation with their technical applicator being on site to observe, answer questions and help when needed.

By choosing the General Coatings roofing solution, this unique, orb-shaped entertainment venue benefits from its energy efficiency as well as its seamless finish that seals it from outside elements. A 20-year warranty delivers peace of mind to the owners that their investment will be well protected.

Learn more about General Coatings in their RoofersCoffeeShop Directory or visit www.generalcoatings.net.

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