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January 2010 issue

Product News

Rapid Set TRU solves CityCenter Towers' fountain levelling problem

From the glittering gold windows of Mandalay Bay to the ersatz pyramid and Sphinx at the Luxor, the Las Vegas strip is one of the most recognizable cityscapes in the world. But the familiar makeup of Las Vegas Boulevard's famous stretch will soon change in a dramatic way with the construction of CityCenter, an \$11 billion venture by MGM Mirage designed to bring the aesthetics and principles of urban living to the city.

The mixed-use, 16.8-million-square-foot project on 76 acres, located on the site of the former Boardwalk Hotel and Casino between the Bellagio and the Monte Carlo hotels, will feature six high-rise structures incorporating hotel, condominium and retail space, situated around pedestrian walkways. Using recycled water and generating electricity from its own onsite power plant, CityCenter developers hope to achieve LEED certification from the U.S. Green Building Council, a designation that will make it the largest green development in the world.

After a 20-month-long design process that included input from such world-famous architects as Cesar Pelli, Helmut Jahn and Lord Norman Foster, construction officially began with a groundbreaking ceremony in June 2006. The project is scheduled for completion in 2010.

MGM Mirage's CityCenter will be a mini-city with its own fire station, an onsite power plant and pedestrian space. In addition to these elements, the design integrates numerous sculptures and fountains. Some of these fountains are rather large, measuring 100 feet long, 12 feet wide and 2 inches thick. In total, the project includes 12 large fountains outside and many smaller, decorative fountains on the inside, each requiring a very flat surface on which it would be placed.

However, the contractor, Perini, and the fountain contractor, Water FX, initially experienced issues related to concrete flow that could have compromised the slab's flatness. To get the concrete to flow properly, they had to use more than the recommended water content. Doing so can lower the concrete's overall strength, cause shrinkage cracks and require a lot of trowelling. As such, Water FX sought a different solution to ensure a durable, level slab for the fountains.

William Deal, Contractor Support of CTS Cement (ctsconcrete.com), learned of the flowability and workability issues on the project and demonstrated the Rapid Set TRU Self-Leveling product. This innovative, high performance material with proven success on diverse floor construction projects was chosen. What's more, TRU Self-Leveling is a green product that contributes to LEED certification.

"We needed a product that was workable during the curing process, especially as it pertained to working with a hand trowel," said Jay Richter

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of Water FX. "The product we used before stuck to the trowels and defeated the purpose of pouring a levelling slab."

An ideal product when long flow life and working time are essential, TRU Self-Leveling is used for high performance floor topping, underlayment and re-surfacing projects. It achieves high early strength and cures to a light off-white color, ideal for stained or colored floors and decorative embedded aggregate flooring. The product also grinds and polishes well, making it a great solution for polished, decorative floors. Although it rapidly levels, TRU Self-Leveling maintains workability for up to 30 minutes and produces a smooth, strong surface with high bond strength. Further, the product can receive foot traffic in two to three hours and coatings in about 12 hours.

First, the surface must be cleaned, sound and free of any oil, dust or bond-breakers. To do this, hydroblasting, shotblasting or sandblasting is recommended. After the surface is dry, apply Rapid Set Acrylic Primer to all surfaces and then mix the product with water. Next, pour or pump TRU Self-Leveling, ensuring there is at least 1/8-inch thickness. No wet curing is required under normal conditions for the product.

For the CityCenter project, Water FX used approximately 14 pallets of TRU Self-Leveling and prepared the product with a mixing paddle and bucket. Crews finished the concrete with a gauge rake. In addition to providing level platforms for the fountains, TRU Self Leveling saved Water FX time on the project.

"We were pleased with the result and have kept a small amount of TRU Self-Leveling at our warehouse for future use," Richter said. "The surface finish we achieved with the TRU Self-Leveling ultimately saved us time by virtually eliminating the need for grinders to remove the waves left by the product we used previously."

"This project proves there are many undiscovered uses for TRU Self-Leveling, and fountain levelling is just one of them," Deal said.

This article appears in the [January 2010 issue](#) of Concrete Monthly.



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