



REHABILITATING THE BRIDGE OF THE AMERICAS

Location:

Panama Canal

Project size:

13,000 Square feet

Owner:

Ministry of Public Works of Panama

Contractor:

MCM Global

Supplier:

Construventas S. A.

Start and finish dates:

July 2015 – December 2015

Products:

Rapid Set® Cement All®

The Bridge of the Americas, also known as Puentes de las Americas, is an impressive sight to behold. Standing approximately 354 feet tall, the cantilever bridge stretches more than 5,000 feet to connect the land that was divided by construction of the Panama Canal. Built between 1959 and 1962, it greatly increased road traffic capacity across the canal and became a key part of the Pan-American Highway for more than four decades (until the Centennial Bridge opened to redirect the highway in 2004).

In 2015, the Ministry of Public Works of Panama commissioned Panama City-based contractor MCM Global to perform inspection, analysis, design and rehabilitation of the aging bridge's structural and nonstructural elements. The contractor identified several elements in need of replacement or repair, including nearly 13,000 square feet (1,200 square meters) of patching for the 54-year-old concrete bridge deck.

FAST-TRACK DECK REPAIRS

Because the bridge could not be shut down during repairs, a quick-set mortar was specified for the patching material. After testing seven different repair products, MCM Global and material supplier Construventas S.A. found that Rapid Set® Cement All® offered the best adherence to old concrete. It also was compatible with the carbon fiber products used to reinforce the deck.

Cement All® is a non-shrink, multipurpose product ideal for general concrete and highway repair. A high-performance blend of Rapid Set® Cement and specialty sand, Cement All® sets fast (in as little as 15 minutes) to achieve high early strength. It is typically ready for traffic in one hour, which was a critical component for this project.

Crews had five hours to complete a section of deck before it reopened to traffic. Each patch area was four inches deep, with the largest area covering 581 square feet (54 square meters). Work was performed at night and oftentimes parallel to passing vehicles.

Because of the ease of use of Cement All, the crew was able to finish the surface immediately after the repair material was placed. The contractor employed manual finishing techniques to achieve the desired porosity for future adherence to an overlay. The finish that was given was scratched with a broom to maintain and create roughness on the surface. In addition, in order to ensure a better grip with the final coating layer, once the patch was completed, the contractor created a rough surface by profiling approximately 2-mm deep across the surface of the bridge.

CONTROLLED SET TIMES

Although fast installation was required, to ensure material did not set too quickly in such high humidity (evening temperatures ranged from 75 to 82 degrees Fahrenheit), the contractor blended the Cement All mix with ice water via mechanical mixer. By keeping the product cool and the mix water chilled, the contractor was able to control the setting time. This also helped ensure a one-hour cure time after placement. Additionally, the contractor stored the product on-site for no more than two weeks at a time and made additional storage arrangements with the supplier for longer-term needs.

The deck surface repair portion of the project was completed in December 2015—five months after it began in July. Panama's Bridge of the Americas not only continues to awe travelers with its magnificent views, but now it also offers a smoother driving surface.

CTS Cement Manufacturing Corporation manufactures Rapid Set professional-grade cement products for concrete repairs and new construction projects. Contractors, owners, engineers and architects choose Rapid Set to eliminate problems they have with other concrete repair materials, to save time and money, when superior durability is required and results need to be aesthetically pleasing. For more information about CTS Cement and Rapid Set, please visit www.CTScement.com.

