



Aerial view of the San Juan Luis Muñoz Marín International Airport

PUERTO RICO INTERNATIONAL AIRPORT

Runway Repairs Returned
Back to Service in Less Than
Two Hours

Property Manager:

Aerostar Airport Holdings

Concrete Contractor:

AT Specialty Cements &
Polymer Technologies

Product:

Rapid Set® DOT Repair Mix
FLOW Control®
SET Control®

San Juan Airport, known officially as San Juan Luis Muñoz Marín International Airport, is located in Carolina, Puerto Rico, just 3 miles southeast of San Juan. The airport, which has four terminals and two runways, is the busiest airport in the Caribbean. It serves as a gateway both to the Caribbean islands and to the United States.

The airport's two runways had taken an understandable beating over the years and began to show signs of wear and tear—including slab fragmentation at curled joints. At least 350 cubic feet of deteriorated concrete surface was identified, with most of the damage located in the apron areas where planes stop to unload and load passengers.

In May 2016, Aerostar Airport Holdings, which manages the airport via a public-private partnership, embarked on a yearlong maintenance program to repair the runways without having to shut them down. The program's success lies in the maintenance crew's ability to quickly perform partial-depth concrete slab and joint repairs and return those repaired portions of runway back to service during a two-hour window, so as not to disrupt scheduled flights. Only a fast-setting repair material could make this quick turnaround possible.

Aerostar worked with San Juan-based contractor and supplier AT Specialty Cements & Polymer Technologies to select a repair material capable of meeting the maintenance program's objectives. They chose CTS Cement's Rapid Set® DOT Repair Mix for its rapid structural strength and its long-lasting durability in harsh environments. Most importantly, surfaces repaired with this rich blend of specialty sand, hydraulic cement and additives need just one hour of wet curing and are ready for traffic and most loads within two hours. This project had repairs that were both partial and full depth. DOT Repair Mix is a versatile mortar that can be extended with coarse aggregate, up to 100% by weight.

PROJECT PROFILE

The weather also played a part in the material-selection process. Average highs stay within the mid- to high-80s range most of the year, with average lows in the 70s. Aerostar anticipated maintenance crews would often be working in temperatures from 85 to 92 degrees Fahrenheit. The hot weather could cause the repair material to harden quickly. To offset the high temperatures, the contractor added Rapid Set SET Control® to the DOT Repair Mix to slow down the setting time, giving crews more time to place and finish the material.

Rapid Set FLOW Control® also was used to increase the fluidity of the mix while reducing the amount of water needed—for increased strength and reduced shrinkage. When the additive is used as a replacement for water, the same slump can be achieved with approximately 20 to 40 percent less mixing water.

And finally, training was also critical to ensure that all work and materials comply with Federal Aviation Administration specifications for concrete repair. AT Specialty Cements educated the airport's entire civil works maintenance crew on concrete slab on grade repair—and specifically on using fast-setting materials. Much of the training took place during a three-hour seminar.

Once personnel were trained, Aerostar launched the runway maintenance program with great success. So far, more than 25 percent of damaged concrete has been replaced. As was hoped, crews have been able to return repaired areas back to service in less than two hours.



Crews return repaired areas back to service in less than two hours.