



## The Challenge of Tiling America's Busiest Airport Hartsfield-Jackson International Airport, Atlanta, Georgia

By Jack C. Davis

The City of Atlanta allocated millions of dollars to upgrade and improve both the exterior and the interior of the Hartsfield-Jackson International Airport (HJIA). The interior upgrades included the removal of a soft surface material (carpet tile) and installation of a hard surface (tile).

### **PRODUCT SELECTION:**

In August of 2005, we met with City of Atlanta officials to discuss our recommendations for installing a large format agglomerate 18"x 18" on a concrete substrate. One of our associates, Heather Yario, had preliminary discussions with RPLUS and Associates, one of the four architectural firms involved and submitted a guide specification with product specifications. MAPEI products had been at several airports around the United States, and our company was relied upon to provide successful product performance and technical field support for the contractor and the owner at HJIA. As a manufacturer, we recommended the only "tried and true" setting system in the tile and stone industry, *Kerabond™/Keralastic™* and its faster setting version, *Granirapid®*. The general contractor chose the MAPEI because we had experience with this particular tile manufacturer and the physical properties of the manufactured stone.

The stone is a composite of resin and epoxy binder and has no absorption. The city officials wanted to specify *Kerapoxy®* grout to complete the installation. This was a challenge, as *Kerapoxy* requires 24 hours to allow for proper curing before opening the floor to traffic. Our recommendation was to use fast-setting *Ultracolor* grout, which would allow traffic in a 4- to 5-hour time frame. *Ultracolor* has been used successfully on several airports throughout the United States, including San Diego International Airport, Salt Lake City International Airport, Cleveland Hopkins International Airport, and Denver International Airport. However, Atlanta city officials would not budge, insisting upon the 100% solids epoxy grout for Hartsfield-Jackson.

### **SITE CONDITIONS:**

Our discussion also focused on substrate preparation. We recommended the complete removal of all carpet residues and the installation of a sheet membrane system over any cracks in the substrate that resulted from the removal of the carpet adhesive. The other main concern was the flatness, deflection, and curvature of the existing substrate and its ability to support large-format tile. These issues were significant because of the building dynamics, which include suspended slabs and the continuous use of the floor by airport staff and passengers.

Although the city officials and the architects did provide a recommended control joint throughout the installation to accommodate the movement of the tile over the substrate, the city chose not to provide any deflection or curvature studies though they were aware of MAPEI's concerns. When test areas were prepared, we faced several challenges as the carpet had covered some of the existing conditions to be addressed. A letter from MAPEI Technical Services was submitted, requiring the complete removal of all carpet adhesive as designated by TCA and ANSI. Some of the floors were out of level as much as ¾ of an inch in 10 feet. The contractors had submitted self-leveling compounds as part of

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their bid package, but the amount required to bring the floor into an acceptable level for the substrate to receive 18"x18" tile made the cost excessive.

The removal of the existing pressure sensitive carpet adhesive was also challenging, since shotblasting the concrete substrate required more than one pass and all work needed to be completed in a short time frame. The tile contractors were allowed to work on only 1000 to 1200 square feet of floor at a given time. These constraints required surface preparation, self-leveling, or crack isolation and installation of tile in a limited time. Several options were discussed to address the problems that the contractors faced as the project moved forward. On Concourses A, B, and C a decision was made to use Mer-Krete to cover the carpet residue. The contractor then used *Granirapid* to compensate for the out of level pre-existing condition.

The jobsite called for erection of barricades to block-off the area to allow work completion and acceptance by the City of Atlanta. The work began at the center point of the each concourse (A, B, C and D), and contractors worked outward down each concourse in opposite directions. In addition, work also started on the Baggage Claim and Ticketing areas. The MAPEI Technical Services Department demonstrated the correct application technique for *Kerapoxy* on two different occasions.

### **LOGISTICS:**

All five contractors were faced with logistical issues as only the amount of product being installed and all other related products had to be staged due to limited access and time constraints. There was little or no storage available for each contractor, so tile and all related materials had to be brought in each night. All of the work was being done at night from 10:30 p. m. to 5:30 a. m. As work progressed, the barricades were removed and the contractors laid masonite board over the completed work. This allowed the Concourse to be opened to traffic much more quickly and gave the contractor more space to work and complete each section on a daily basis while the *Kerapoxy* grout remained covered and could cure properly.

The contractors used MAPEI's Cold Weather Additive to help accelerate the set time of *Kerapoxy*. There is a trade-off with fast-setting epoxy grouts, because the faster the product sets-up, the more it cuts into the clean-up time to remove any epoxy residue.

### **SECURITY:**

Security was a major concern for all of those involved with the airport project. Everyone had to complete a two-step process to obtain the proper security clearance and access to the interior of the airport. The first step was an FBI fingerprint screening that was completed digitally. After this step, approved workers were then required to complete a class where they watched a video regarding airport security and then had to pass a test as part of the final screening. This procedure took several days, and each contractor and their employees were required to complete this process before work could begin. This proved very problematic for all contractors due to the diversity of their employees. Staffing a project this large was difficult as well as challenging.

### **CLEANING:**

A major problem that occurred during the installation of the agglomerate focused on a film that coated the tiles. After each 12- to 24-hour work period, a dirty film appeared on the tile. The film was especially noticeable on the white tiles. At first, the film was thought to be epoxy haze or residue left over from the clean-up process during the installation of the *Kerapoxy* grout. MAPEI was asked to test the *Kerapoxy* with the Geoquartz agglomerate at our labs in Deerfield Beach, Florida. The test results

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showed that no epoxy residue would remain on the tile if cleaned properly. A field inspection at the airport was conducted by Mike Micalizzi, Manager of MAPEI Technical Services; Mike Daniels, Senior Technical Advisor; Paul Hosford, MAPEI Regional Manager, and myself. We observed areas under the Masonite protection board that had not yet been grouted, and we could see where the dirty film had attached itself to this tile, which obviously indicated that the source for the dirt was *not* the *Kerapoxy*.

Airport officials, along with the consultant, then set about determining the true cause of the problem. Tile samples were submitted to independent testing facilities to identify what constituted the dirty residue. The test results showed that the residue was actually dirt from the nearby carpet. Since the old carpet was being removed and the carpet that remained in the gate areas was being cleaned, there was enough dirt in the air inside the concourse to create a dirty film on the tile surface. Airport officials had to decide on the proper cleaning agents needed to clean each night and whether or not to install tile in the gate areas before the dirt source was completely removed.

During our attempts to resolve the cleaning issues on each of the concourses, work on the Ticketing and Baggage Claim areas was proceeding smoothly. The previously existing brick pavers were removed and replaced with granite. There were no signs of the dirt residue in this area of the airport because there was no carpet in the Ticketing and Baggage Claim area, further supporting the consultant's results.

MAPEI took the lead in providing technical support for the contractors and delivering the most reliable setting and grouting system offered to the tile industry today. The results are a stunning tile installation at Atlanta's Hartsfield-Jackson International Airport.

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