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Atlanta Int'l Tackles Nation's Largest Ground Support Project

BY JENNIFER BRADLEY

When Hartsfield-Jackson Atlanta International Airport (ATL) was built, it was the largest airport construction project of the time. Today, the airport is continuing that legacy with the single largest ground support project in the history of the United States.

Atlanta's Department of Aviation began the \$175 million project in January 2015 and expects to complete it in February 2022. When complete, ATL will have 116 new passenger boarding bridges, new ancillary systems such as preconditioned air and 400Hz ground power, and code-compliant emergency egress pathways.





The landmark renovation project is designed to improve operations and the passenger experience. “We want the passenger to be exposed to an all-new interior, a new experience as they walk out of the aircraft,” says Bob Liber, senior project manager for the Atlanta Department of Aviation. “The new bridges are doing that. They bring state-of-the-art technology to ATL operations and they are very aesthetically pleasing.”

Six of ATL’s concourses will undergo infrastructure improvements and receive modern equipment throughout the course of the project. Working collaboratively, AERO BridgeWorks, the project builder, and AERO Systems Engineering, the project designer, turn over a new gate each week. Two bridges are under construction at any given time, offset by one week. A gate closes every Sunday night, and a new gate re-opens every Friday afternoon, explains Jay Grantham, vice president of AERO BridgeWorks. During that period, installation crews set a new bridge, ground power, air conditioning, network systems, and related ancillary support systems, and also refurbish the associated vestibules.



JAY GRANTHAM

Throughout the seven-year project, crews will repeat the cycle more than 100 times.

Time for Change

“The air carriers and airport were spending more effort to maintain the passenger boarding bridges than they were worth,” explains Shawn Craig, senior program manager with the Atlanta Airlines Terminal Corp. “The outdated equipment was causing downtime to the airlines and thus impacting the overall passenger experience.”

Liber agrees, noting the airlines are happy to work alongside the airport on the replacement project, as the new bridges are being customized with each airline’s standard finishes and preferred features. With more than \$1 million being spent per gate, the bridge renovation project is a critical element of the overall modernization efforts underway airport-wide.

In 2013, the airport and carriers surveyed the condition of the boarding bridges to prioritize those that were eligible, or close to eligible, for replacement under the FAA’s 20-year rule. ATL’s concourses D South and C South housed the oldest equipment, notes Craig. “Those operators were very happy to see the old equipment being retired,” he notes. “It’s most

FACTS&FIGURES

Project: New Passenger Boarding Bridges

Location: Hartsfield-Jackson Atlanta Int’l Airport

Owner: Atlanta Dept. of Aviation

Project Cost: \$175 million

Owner’s Rep: Atlanta Airlines Terminal Corp.

Designer: AERO Systems Engineering

Contractor: AERO BridgeWorks

Bridge Manufacturer: JBT AeroTech

Project Scope: 116 bridges, 145 gates

Timeline: Jan 2015 - Feb. 2022, with 2 separate design/construction phases

Project Goals: Enhance operational efficiency; improve customer experience

Noteworthy Detail: Largest single ground support project in the U.S.



Assembling and installing the new boarding bridges requires precise scheduling and coordination.



fulfilling when you can walk up to a gate agent, regardless of air carrier, ask how the bridge is driving, and they simply smile.”

Technology & Training

The new bridges require a wide variety of building infrastructure and gate upgrades. Crews are upgrading networks, central plants, monitoring equipment and software, communications systems, air conditioning units and central plant controls. All existing bridge foundations had to be analyzed for structural adequacy for new loads and general conditions. Designs were made for modifications as necessary.

“When those bridges were installed, I don’t think pagers even existed; cellphones certainly didn’t,” muses Alan Barge, president of AERO Systems Engineering. “These modern fixed ground support systems can be monitored remotely and can send maintenance staff text message alerts when a fault occurs or equipment otherwise needs attention.”



The recently installed bridges include new features for ATL passengers, most notably air conditioning as they board and deplane. This is a huge enhancement, notes Barge. The pre-cool option allows ground support personnel to cool the bridge before it’s connected to the aircraft.

Liber is also excited about the pre-park and pre-position options. When set up properly, the new bridges almost dock themselves to the aircraft, he reports.

New monitoring capabilities allow staff to analyze the equipment’s performance statistics. “None of that existed on the 30-year-old bridges,” says Chris Britton, design manager for AERO Systems



Engineering. The new monitoring capabilities are why networks throughout the airport had to be researched and replaced, he adds. The existing infrastructure was modified piece-by-piece during various projects over the last few decades, and the airport needed to get away from the “patchwork quilt” approach, explains Britton. This project provides an organized and modern network to seamlessly support and monitor the new gate equipment, he adds.

Before a new gate opens each week, AERO BridgeWorks performs a walk-through with all involved stakeholders on Wednesday. Once AERO BridgeWorks completes its work, the resident airline begins training with the bridge manufacturer, JBT AeroTech. Training materials run the gamut from printed syllabi

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and manuals to videos and hands-on demonstrations about use and maintenance.

Integrated Approach

Assembling the right team for this massive project followed the Tuckman Model of “forming, storming, norming and performing,” notes Craig. In addition to coordinating the design team, construction team, owners and operators, he focuses on satisfying individual objectives, while also keeping the project moving forward on schedule and within budget.

That said, Craig considers the project a true team effort that could not be completed without competent engineers and quality construction crews. “Once we started clicking, we’ve been turning over a new gate every week,” he reports. “Everyone has stepped up and pulled together as a team to figure out how to do this.”

“We did not have a single punch list item on the last couple gate turnovers,” adds Grantham. “This is a true testament to the effectiveness and teamwork on this project.”

Even though they operate as two separate entities, coordination has been natural for AERO Systems Engineering and AERO BridgeWorks because the team has collaborated on many design/

build projects over the years. Former projects include some of the nation’s most complex and time-sensitive projects, says Barge. “It’s our close relationship that allows us to very rapidly solve problems in the best interest of the owner, while moving the project forward, on schedule and on budget,” he says.

Collectively, these firms are known as the AERO Group. “Their knowledge, capabilities and focus on aviation fixed ground support systems allowed this project to be designed and construction commenced in record time,” notes Craig.

AERO Group has a construction office on site at ATL, and its headquarters is nearby, on the north side of the city.

Project leaders emphasize the need for every airline, operations manager and crewmember working on the renovations to know what gates are going to be closed, when they will close and when they will reopen. “To clearly communicate gate closures through an airport of Atlanta’s size could be a huge challenge,” Grantham remarks. “But working alongside airlines and stakeholders, the project team collaborated to develop a suitable schedule with consistent bridge deliveries that met everyone’s goals. The project schedule is sequenced around holiday and blackout periods to ensure airline operations and passenger experiences are not impacted.



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The schedule is routinely updated, distributed and posted throughout the airport so everyone has the same information.”

The variety of airline-distinct specifications for the new boarding bridges makes the airport’s integrated approach even more important. The design team needed to tailor each bridge for the particular equipment and configuration requirements of the resident airline—while also complying with the city of Atlanta’s expectations for the project. Everyone had to approve and agree within a nine-month Phase 1 design period, notes Britton.

The installation calendar is committed to paper two years in advance, and Craig can tell at any moment what gates are out of service and when they are turned back over for use. “That is key for us,” he emphasizes. “We saw this enormous project with many moving parts and it was complicated—116 gates over a few years. But we broke it down into manageable pieces and developed a comprehensive schedule, and that has made a major difference.”

The scheduling strategy is specifically designed to help the team proactively resolve field issues and airline requests. That is especially important for the ATL control tower, notes Barge. “With more than 2,500 flights a day, the control tower of the world’s busiest airport needs to know the status of every piece of equipment on the airfield,” he says. “The comprehensive schedule allows that.”

The Lowdown on Logistics

JBT AeroTech, which supplied the original boarding bridges to ATL in 1980, is proud to be the airport’s supplier once again. While the associated site work has been challenging, installing the new bridges in the same configuration as the previous equipment has saved the city time and costs, by minimizing foundation work, notes Garrett Macfarlane, a regional sales manager for the company.

Four full-time AERO BridgeWorks crews work on two gates for two shifts per day, every day. The amount of associated deliveries in and out of the already congested airside of the world’s busiest airport is noteworthy.



MIKE MADLOCK

AERO BridgeWorks President Mike Madlock explains some of the details: “Each passenger boarding bridge requires three tractor trailer loads to deliver. A crane is required, including separate trucks to carry the crane counterweights and miscellaneous material and equipment deliveries.

“Combining this with other ongoing ramp projects and airline operations, the airfield and security stations naturally become congested,” he continues. “Initially, it was a challenge to get everything delivered; but through experience and teamwork, the project has become very efficient.”

“Now, we take a bridge off Sunday night, and Monday night, the old bridge is removed from the site,” explains Craig. “Tuesday night the new bridge comes in, they stand it up and start wiring. What used to take a week is now accomplished in three days.”

Madlock has also witnessed the evolution. “In a nutshell, we had to develop a complete system on how to escort everything in and

out,” he comments. “We have dedicated escorts for that purpose. In today’s environment, you can’t simply drive onto the airfield with a delivery. Deliveries must be coordinated well in advance, and our dedicated escorts allow the construction crews to focus on construction while all deliveries are made without delays.”

Another logistical element has been upgrading emergency egress. Because building codes have changed since the terminal was constructed 30 years ago, improvements are being designed and built to bring the terminal current, explains Barge. Similar issues have arisen with the electrical infrastructure that supplies the new equipment—the new electrical loads required significant electrical infrastructure upgrades.

“And, we are operating in one of the most secure environments in the world,” advises Barge. “The design has to be right, the equipment has to be right, and the construction has to be right. There is simply no time for mistakes—it has to all be coordinated correctly, without impacting any of the ongoing operations at the world’s busiest airport.”

“It’s been quite a coordinated effort,” agrees Madlock.

Lessons Learned

What makes such a large project work? “Planning, planning, planning and more planning,” emphasizes Craig. “Outside of that, you have to assemble a team that understands the big picture from the beginning.”

The ability to readjust as needed is equally vital, he adds, explaining that no matter how much a team plans, there is always potential for problems. “Errors may occur, but it is most important to respond quickly and resolve the issue to avoid true operational or project impacts,” Grantham adds. “So far, the project has effectively overcome any bumps along the road, but everyone remains flexible and available for when the next unknown surfaces.”

Liber, who has been with ATL for 39 years, says that a pre-design phase is essential because it helps determine what airlines want—from the overall design to smaller details such as finishes and specific accessory equipment.

As work proceeds, the airport is also discovering that it needs to further research the replacement of additional air handling units, chillers and pumps. This will likely be a follow-up project that will be developed over the next year, notes Liber.

With 38 new gates turned over for operation by late August, the team at ATL has plenty of work ahead on its 116-bridge project. But it has a system in place that is working. “All in all, it’s been a really good project,” observes Liber. “AERO Group and JBT AeroTech have formed a very cohesive group, are very responsive to our needs, and do a great job. It is comforting to know the overall program schedule is two months ahead of our baseline schedule. All stakeholders are happy with the progress on the project, and we take great satisfaction in knowing that we are able to solve any issues in a timely fashion, while maintaining coordination with other numerous ongoing projects. Hartsfield-Jackson Atlanta International Airport will continue to pursue projects that progress, improve and enhance the customer experience at the world’s busiest airport.” 

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