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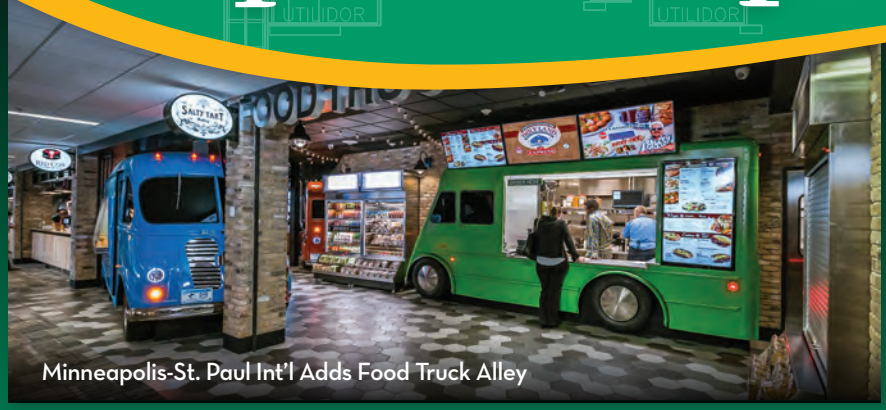

Minneapolis-St. Paul Int'l Adds Food Truck Alley

New Parking Structure at Asheville Regional Showcases Local Landscape

San Luis Obispo Regional Celebrates New Terminal

AIRPORT STORIES INSIDE: AVL | FLL | JNU | MFR | MSP | MVY | PIT | SBP | STS | TPA | WWD | YFB | YYZ

Public-Private Partnership Delivers New Terminal at Iqaluit Int'l

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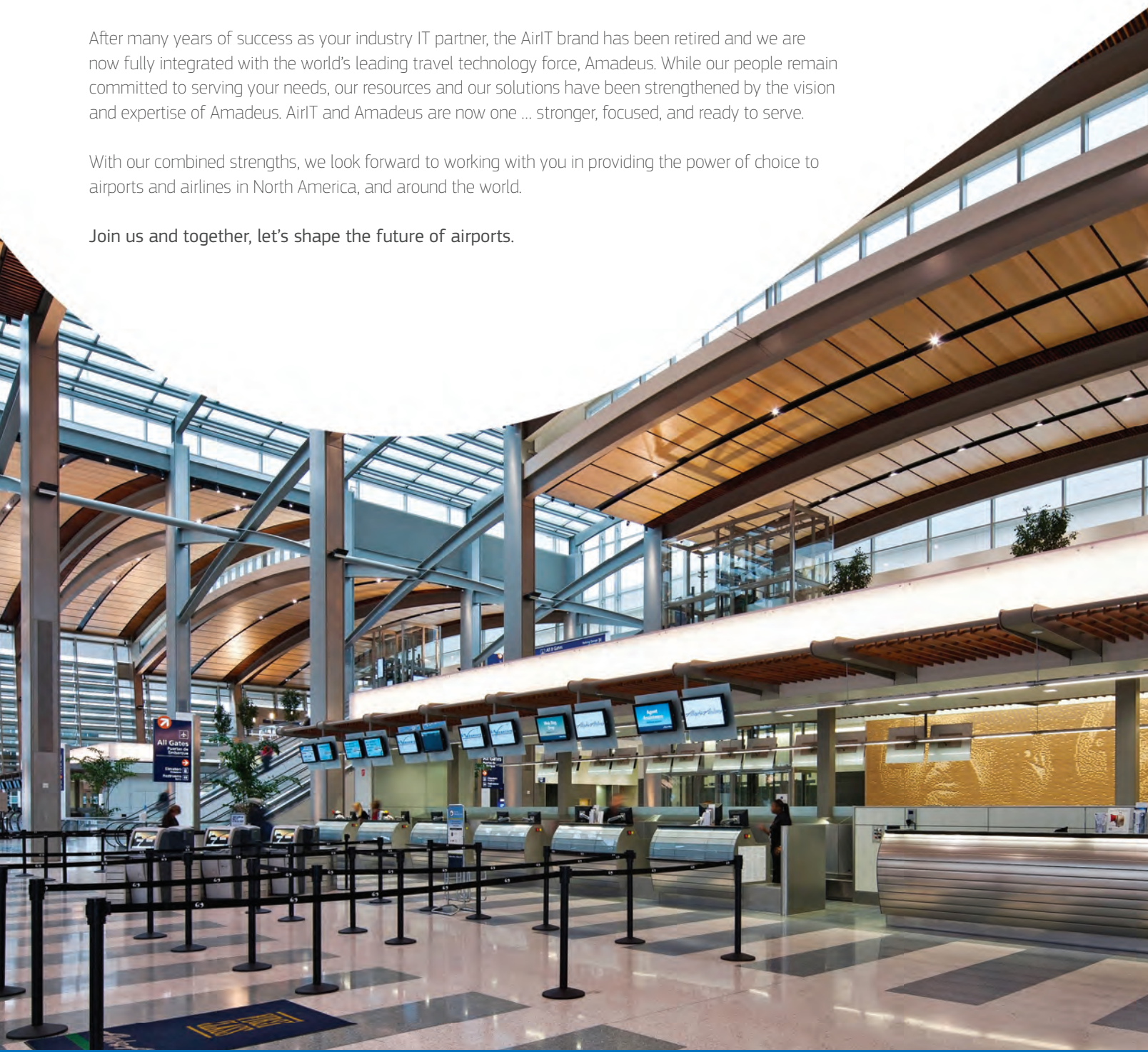

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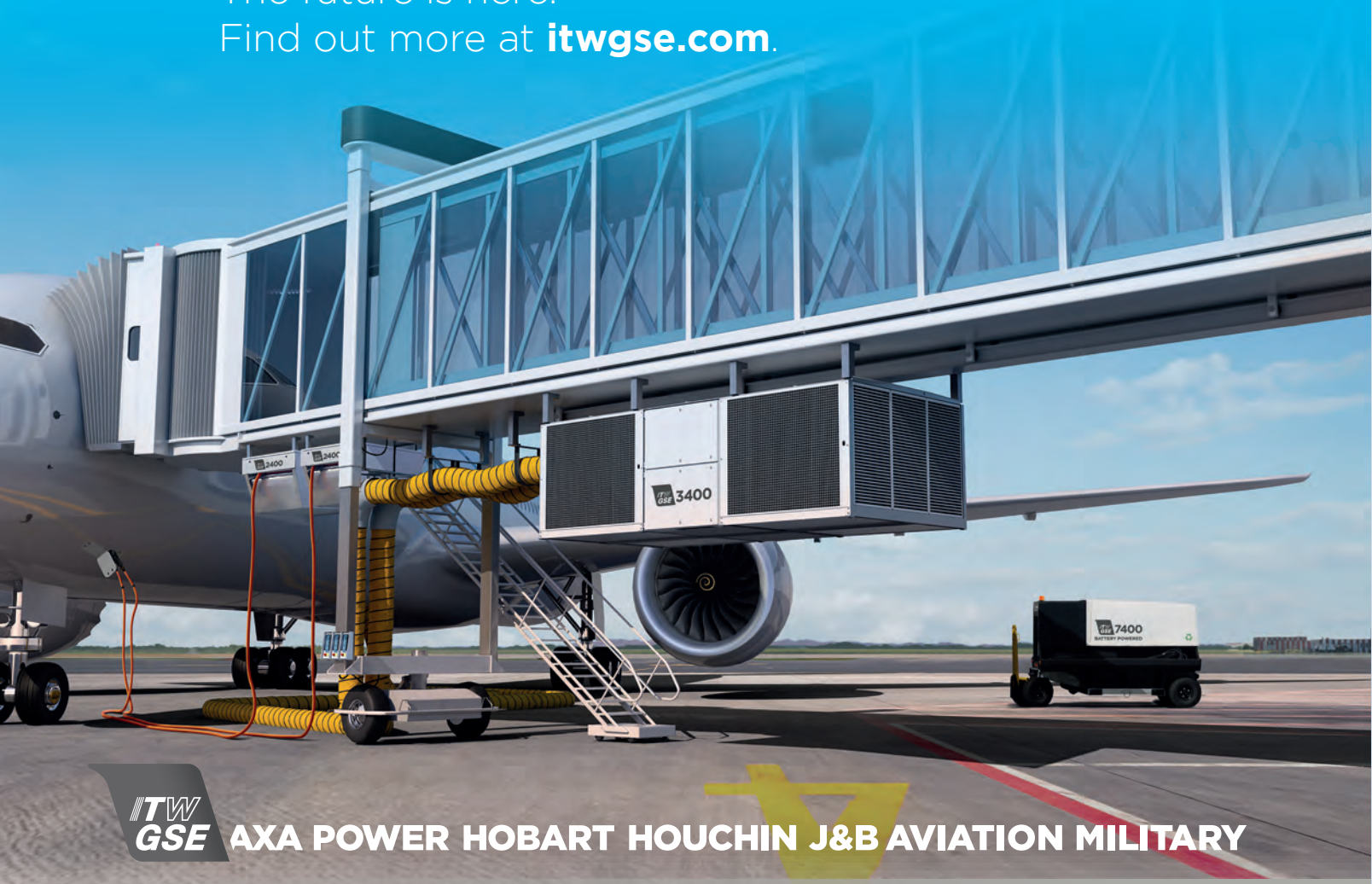

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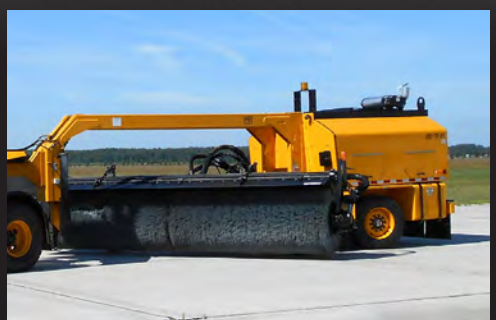

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You Can't Do That! Can You?

At first thought, you wouldn't imagine that Pittsburgh International and Rogue Valley International have much in common. Their differences—size, location, traffic profile, etc.—keep thoughts and comparisons quite separate.

However, as you'll learn in this issue, they do have one strong similarity: Their directors believe that airports are not simply departure and arrival points for ticketed passengers, but places where the general public is welcome and encouraged to visit.

Bern Case, airport director at Roque Valley International, has been at it a long time. He's going to retire soon after managing the airport for 24 years. Over that time, he has developed an extensive list of ideas that serve the community and generate revenue. There's the retired KC-97 Stratotanker aircraft that's permanently parked just outside the airport fence. It's used as a rental facility for parties. Inside the airport, he turned a spare room into a replica of the White House Oval Office that's popular for weddings and other celebrations. Add in a unique restaurant and gift shop that serve customers inside and outside secured areas, and it's clear that Bern has continually kept the community in mind. Check out the story on Page 50 to read about more of Bern's clever ideas.

PAUL BOWERS, PUBLISHER

In Pittsburgh, Allegheny County Airport Authority Chief Executive Officer Christina Cassotis has created an environment where friends and family can greet or say good-bye to their loved ones right at the gates. PIT is the first airport in the country to allow non-ticketed visitors access to airside gates, restaurants, shops and other attractions since 9/11 overhauled our security requirements. Sure, there are revenue opportunities to be had, but more importantly the community is invited within the secure area of the airport—make that *their* airport! See Page 36 for more details about how PIT pulled it off.

In both cases, these airport leaders are thinking outside the box to bring in something exciting, something new. They're reaching into their communities to forge stronger bonds. This not only makes financial sense, but it also creates a local fan base that is oh-so-important when addressing future growth.

Cheers,

Paul

San Luis Obispo Regional Celebrates

After nearly two decades of preparatory projects and two radically different terminal designs, San Luis Obispo County Regional Airport (SBP) will finally get to cut the ribbon on its new $39.5 million terminal this November.

At 56,000 square feet, the terminal is nearly five times larger than the airport's old facility. It's also more environmentally friendly and includes new operational features such as common-use ticketing stations, inline bag screening, a new single carousel baggage claim, space for four rental car companies, an emergency operations facility, updated TSA screening lanes, and two new "low-rider" boarding bridges. Passenger amenities include the airport's first airside concessions, a larger holdroom, free WiFi throughout the terminal, and 17 self-service check-in kiosks.


KEVIN BUMEN

"To get to where we are today required undertaking multiple projects over many years," reflects Airport Director Kevin Bumen. "I'm the third airport director involved with this project since the initial master planning process began in 1998."

Before SBP could construct its new terminal, crews first had to extend its main east/west runway; remove and relocate aircraft hangars; and complete apron, roadway and infrastructure improvements.

The first terminal design in 2006 featured an ambitious multilevel facility to accommodate the airport's projected growth trajectory at the time. "It was a pretty aggressive program," Bumen relates. "It featured a pier-style terminal with a second-level concourse and holdroom."

After the 2008 recession hit, however, the county board of supervisors became very concerned about costs and the amount of debt the airport would incur. Approximately one-third of SBP's air service disappeared, and the board "had the good sense to put the project on hold," says Bumen.

Almost a decade later, the air traffic lost in 2008 has returned. In 2007, the airport served about 368,400 travelers, but volume dropped to approximately 241,000 passengers in 2009. From January through July 2017, the airport handled about 188,000 travelers, and traffic continues to increase as a result of new Alaska Airlines service that began in April.

In 2012, when the county went back to the drawing board for a new terminal design, the airport handled 14 flights per day, primarily by Brasilia turboprop aircraft. Throughout design and construction, flight activity subsequently dropped to nine flights per day, though with larger aircraft and additional seats.

These days, the airport is back up to 14 flights per day and has experienced a nearly 50% increase in flight activity and 30%

New Terminal

BY ROBERT NORDSTROM

increase in enplanements. Another airline has come on board, and the airport now accommodates five different models of aircraft.

"Historically, the airport hosted one or two aircraft models for approximately 15 years," Bumen explains. "Our airport footprint is smaller than 350 acres—the nineteenth smallest commercial service airport in the United States. That makes it very challenging when you're looking at ways to evolve with airlines and significant traffic increases. It's been an interesting and challenging process managing growth throughout construction."

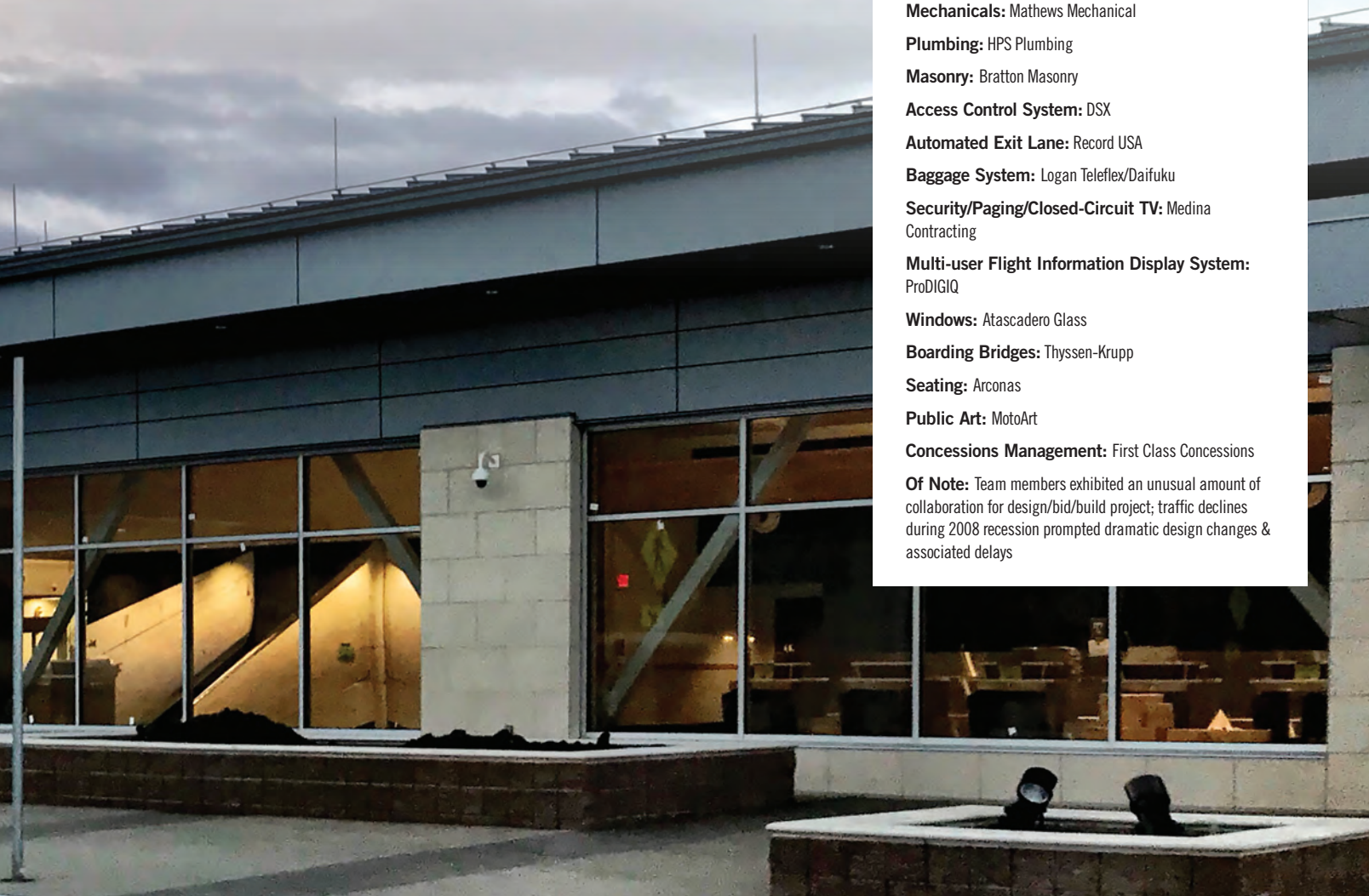
Worth the Wait

The county hired RS&H to design the new terminal, which ended up being about half the size of the facility portrayed in the 2006 plans. Given the drop in enplanements after 2008 and the significant changes in the regional aviation market, the airport no longer needed a two-story terminal, explains RS&H Senior Aviation Architect Dennis Iskra.

DENNIS ISKRA

Construction began in October 2015 and is scheduled to conclude this November.

The new terminal features a central lobby with a 30-foot-high ceiling. Travelers move through the ticketing area and TSA screening, then exit into a post-security open-air courtyard with a protective canopy on one side. Travelers can linger outdoors to enjoy the warm Southern California sunshine or proceed directly into the indoor concessions, holdroom and gate area at the other end of the courtyard.



FACTS&FIGURES

Project: New Terminal

Location: San Luis Obispo (CA) Regional Airport

Cost: $39.5 million

Funding: Airport Improvement Program (68%); passenger facility charges & customer facility charges (10%); third-party financing (15%); local funding (7%)

Initial Master Planning: 1998

Original Terminal Design: 2006

Post-Recession Design: 2012

Construction: Oct. 2015-Nov. 2017

Design & Architecture: RS&H

General Contractor: Q&D Construction

Construction Management: Arcadis

Electrical/Info Technology: Electricraft

Mechanicals: Mathews Mechanical

Plumbing: HPS Plumbing

Masonry: Bratton Masonry

Access Control System: DSX

Automated Exit Lane: Record USA

Baggage System: Logan Teleflex/Daifuku

Security/Paging/Closed-Circuit TV: Medina Contracting

Multi-user Flight Information Display System: ProDIGIQ

Windows: Atascadero Glass

Boarding Bridges: Thyssen-Krupp

Seating: Arconas

Public Art: MotoArt

Concessions Management: First Class Concessions

Of Note: Team members exhibited an unusual amount of collaboration for design/bid/build project; traffic declines during 2008 recession prompted dramatic design changes & associated delays

From a long-term planning perspective, the courtyard can be filled in if the "holdroom needs to be expanded in the future. "Instead of having to expand outwards and enlarge the building's footprint, the airport can expand inward to accommodate growth," explains Iskra.

He describes the design of the courtyard as purposely introspective, with architectural cues that focus attention inside the space. A series of large volcanic boulders set in planter beds lining the circulation path between the ticketing and holdroom buildings are a nod to the extinct Seven Sisters volcanoes that run through a 12-mile swatch of San Luis Obispo County. The planter beds, in turn, highlight the area's various flora: succulents found along the coastline, plants indigenous to the mountainous terrain, and olives and grapes from the agrarian region.

The six-gate holdroom has seating for 350 passengers—a marked improvement over the 50-seat holdroom in the old terminal. Counter-high workstations are interspersed among banks of traditional holdroom seating and offer travelers access to 70 power outlets.

New "low-rider" boarding bridges connect to two of the gates; ground loading occurs at the other four gates. "A few years back, we worked with Thyssen-Krupp to develop low-rider jet bridges, whereby the bridge would start at ground level and move up to the aircraft," Iskra explains. "One of the bridges is able to swing to connect to another gate as well. The two bridges the airport purchased are the first all-glass low-rider bridges in the world."

Mobile gate podiums with Internet and telephone hookups were added to enhance operational flexibility. While each carrier has a home gate, the mobile podiums allow airlines to move to any gate quickly and easily, explains Bumen. "They can roll the unit with its boarding pass reader and computer, plug in and begin boarding operations," he remarks. "It gives us a lot of flexibility with flight schedules and allows all the carriers to utilize jet bridges as needed."

The concessions program in SBP's new terminal offers considerable updates from the previous offerings. For the first time, travelers will have retail and food/beverage options after they clear the TSA checkpoint. First Class Concessions invested $120,000 to build out the new SLO Café & Market Place. The 1,000-square-foot operation serves snacks, hot and cold food items and beverages. A full-service bar offers spirits, beer and wine from local vineyards. Newspapers, magazines and sundry items are available in the retail section.

"With its open, warm and inviting atmosphere, our post-security marketplace is designed to fit seamlessly into the overall terminal design," says company president Tasneem Vakharia. "Showcasing local vendors is a top priority."

The overall building design focused significant attention on green technologies, including state-of-the-art lighting controls,

The airport worked with Thyssen-Krupp to develop low-rider jet bridges that start at ground level and move up to the aircraft. The two bridges the airport purchased are the first all-glass low-rider bridges in the world.

daylight harvesting, ultra-low water usage toilets and urinals, solar-powered flush valves and faucets operated with artificial room lighting, an efficient variable-refrigerant volume mechanical system that transfers heat energy from one part of the building to another, and landscaping that requires little water. "Although the county did not pursue LEED (Leadership in Energy and Efficiency Design) certification, the building achieves the equivalent of a LEED Gold rating," says Iskra.

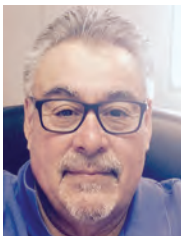
Kudos for the Team

While the project followed a traditional design-bid-build delivery method, the airport and its contractors agree that the collaborative approach taken by everyone on the team was anything but common.

LISA MILLAR

"Partnering was key to the success of this project," summarizes Lisa Millar, vice president and Central Coast manager for Arcadis, the firm that provided construction management services. "Typically with projects such as this one, the contractor has its office, the design team their

office and the construction manager theirs. Everyone is huddled in their own corners. That's the way adversarial relationships develop. With this project, we moved the entire team into a triple-wide trailer complex. A facilitated partnering meeting was held monthly. By sharing office space, when issues came up, the entire team was forced to come together to find a resolution."


BUDDY WILLIAMS

Arcadis Senior Construction Manager Buddy Williams cites the following as a representative example of the teamwork: Early on, the project team determined that the clay soil at the building site was wet and expansive, and therefore unsuitable to support the building foundation. The initial plan called for excavating approximately 75,000 square feet of existing soil to a depth of 7 to 12 feet, disposing the soil offsite, then trucking in new soil. In addition to significantly increasing costs, this approach would have delayed the project and created traffic problems and air pollution as trucks transported materials through the community.

"We sat down as a team and went through various scenarios on how we could resolve this soil issue," Williams recalls. "At the end of the day, we learned that we could treat the existing soil with lime to change the expansion index and make it suitable for backfill. This approach ended up turning a potential $2 million cost increase into a $450,000 cost increase—a total team effort that built trust and confidence that carried throughout the course of the project."


LAMONTE FORGAYS

Q&D Construction Project Manager Lamonte Forgays agrees that the collaborative team approach at SBP was uncommon for a design-bid-build project—and key to its success. "The team's resolution of the soil issue had a significant impact on both time and costs, but everyone came to the table," says Forgays. "We met with the airport director, agreed to split costs and moved forward."

The team-centric culture also helped prevent common and potentially volatile strife regarding change orders—an inevitable part of any large project. Change orders may not have a significant impact on the project when considered individually, but they can have a substantial cumulative effect over the life of the project, explains Williams. If the costs associated with change orders are held until the end of the project, determining who is responsible for specific delays and the associated costs can become quite contentious, he notes.

Williams uses a travel analogy to illustrate the point: "It's as if you are taking a trip, run into a roadblock and are sent 20 miles in another direction. Over the course of your trip, this may occur a number of times. At the end of the trip, you've spent more time and money to get to where you need to go. These were costs you were not anticipating and for which you wish to be compensated."

To prevent end-of-project disagreements about various change orders, the team pulled together midway through construction to analyze additional costs and determine who was responsible for each line item.

Returning to the travel metaphor: "Perhaps as a result of your detour, you decided to go sightseeing. Who is responsible for those costs?" Williams asks rhetorically.

"By gathering the team to create a wraparound agreement midway through the project, we were able to resolve lingering conflicts and resolve cost issues early on—items than can create hard feelings and take forever to resolve if left to the end of the project. The contractor was very fair," he continues. "We analyzed the actual conditions that occurred [to that point] of the project and agreed [who caused what.] We all agreed to accept our portions of costs and responsibility. It's as if midway through the project we were able to renegotiate a new start to the contract. These issues can result in difficult discussions in this industry. Here, everyone was fair and reasonable."

Knowing that terminal projects are not currently a high priority for FAA funding, Bumen is grateful for the $20 million of Airport Improvement Program funding support—the maximum allowed for a non-hub airport, he notes. The remainder of the $39.5 million project was paid for with passenger and customer facility charges, a third-party bank loan and local funding.

As a result, San Luis Obispo County now has a new terminal that allows for anticipated growth over the next 25 to 30 years, notes Bumen. Moreover, the building's high ceilings and large windows bring the beautiful Southern California environment into the building, he adds. "With the airport sitting in a valley, mountains in both directions, the views are spectacular."

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Minneapolis-St. Paul Int'l Adds Food

FACTS&FIGURES

Project: Food Truck Concessions

Airport: Minneapolis-St. Paul Int'l

Location: Lindbergh-Terminal 1, Concourse E

Development Cost: $3 million

Size of Program: 3 food trucks; 1 full-service bar truck; 1,200-sq.-ft. shared seating area

Open Date: June 2017

Concessionaire: Midfield Concession Enterprises

Food Truck Builder: Chameleon Concession

Food/Beverage Vendors: Red Cow; Salty Tart; Holy Land Deli

Tables & Seating: Design Within Reach

Projected Revenue: $5 million the initial year, with subsequent 5% annual increases

Of Note: The food trucks were refurbished/built off site & installed through a temporary opening in the building created during a separate window replacement project. Airside cranes lifted the trucks to the opening, then crews pulled them inside & pushed them through the concourse to the installation site.

No matter how cold and blustery it gets this winter, passengers and employees at Minneapolis-St. Paul International (MSP) will still be able to enjoy the wildly popular food truck trend that is sweeping the nation. This summer, the Twin Cities airport transformed a traditional food court in its Lindbergh Terminal into an indoor urban alleyway, complete with faux brick walls, decorative outdoor lighting and four full-size food trucks.

LIZ GRZECHOWIAK

The Metropolitan Airports Commission, which operates MSP, is excited about how the unique concept has fared since its June debut. "This project has allowed us to create an ambiance and a feeling like you've never quite experienced in an airport before," explains Liz Grzechowiak, assistant director of Concessions and Business Development. "We wanted people to transcend from the busy concourse…into what feels like an urban landscape. And it's been received extraordinarily well."

Total development cost was $3 million, and the new concession is expected to generate about $5 million in revenue during its first year.

Notably, MSP's 4,000-square-foot Food Truck Alley occupies a nondescript area that otherwise had limited development potential due to its narrow width and lack of depth. When considering options for the oddly configured space, the airport chose to follow a national trend of "experiential retail," explains Grzechowiak. Although they require less square footage than traditional vendors, the food trucks are

Truck Alley

BY VICTORIA SOUKUP

expected to generate similar financial results—*and* they offer customers a unique experience, she notes.

Three of the trucks focus on food; the fourth serves beer, wine and other drinks from a full-service bar with built-in seating. The airport also added a separate 1,200-square-foot seating area with room for up to 93 guests just outside the narrow alley. Like the typical design of outdoor food truck courts, MSP's seating includes long community-style tables. In the truck/ordering area, ceiling tiles include small twinkling lights to create an outdoor evening feel, and strings of bare bulbs zigzag overhead to reinforce the casual alleyway vibe.

"It's got something for everybody," says Grzechowiak. "We have a grab-and-go area, 'counter-to-go' service, sit-down service and a full bar. Most concessions have elements of that, but this is true to a food truck experience that you would have streetside. You can walk up to the window, order your food and pick it up and leave; or you can eat in our faux alleyway and sit beneath the café lights and order a beer."

MSP partnered with three local brands—Red Cow, Salty Tart and Holy Land Deli—for the food. Red Cow also operates the bar truck.

Behind the Scenes

The airport released a request for proposals in March 2015, and Midfield Concession Enterprises began designing the project in February 2016.


SAMIR MASHNI

Samir W. Mashni, vice president and general counsel for Midfield, considers MSP's indoor food trucks a game-changer for airport concessions. "It is innovative and cutting-edge," says Mashni. "This concept seized on a food trend on the street that was very popular with Millennials, and we at Midfield Concession Enterprises are always interested in setting a new standard by bringing new designs and new concepts to airport food and beverage dining."

Midfield contracted Chameleon Concession, a Twin Cities firm that specializes in building food trucks, to procure the appropriate vehicles and modify them into revenue-generating venues for the airport. The company tracked down two vintage finds—a 1952 Ford camper and a 1960 Metro originally used to deliver milk and bread—and also purchased the shell of a new Airstream travel



After Chameleon Concession refurbished its vintage finds, crews lifted them into the terminal through an airside window opening and pulled them through the concourse to their new homes.

trailer, which was used to create one food truck and the sit-down bar.


MARK PALM

"It was important to source the vehicles to fit the footprint and layout of the space we were going to use," notes Mark Palm, president of Chameleon. Crews thoroughly cleaned the vintage equipment and stripped interior and exterior mechanisms (including wheels) off all three vehicles. "The older trucks came through in pretty bad shape—they had been sitting in a farm field," explains Palm.

Because MSP's trucks wouldn't have to drive from location to location like their outdoor counterparts, crews split the vehicles open to create an attractive façade on the front and extra room in the back for equipment and personnel. "We had to be very careful with the structure when we cut them in half," Palm recalls. "We had to cut and reframe them all."

Crews then repainted the trucks and installed new headlamps, windows, grills and other accessories. Because the company had previously created numerous food trucks for street side use throughout the country, Palm was versed in food safety regulations and health department codes for the build-outs. Ensuring that materials conformed to airport fire codes was a new twist.

All of the vendors showcased in the trucks are local brands.

Getting the completed trucks into the terminal was a challenge in itself. MSP coordinated installation of the large prefabricated units with a previously scheduled project to replace windows in the same concourse. After crews removed the old glass panels, workers brought in the food trucks before the new windows were installed.

Flatbed trailers delivered the food trucks to the airside of the building and cranes lifted each one onto a temporary deck outside the temporary opening in the building. "The opening was 16 feet off the ground," Palm explains. "We built the deck from the tarmac all the way to the top window. When the flatbed came in and hoisted the vehicles up, we placed them on the deck and pushed them through. There was no other way in. We just pushed everything through the window opening and into the concourse."

After the trucks were inside, crews maneuvered them through the concourse to the installation site and workers closed up the opening with new window panels. Work was completed at night, when the airport was closed.

Successful Lineup

Deciding which brands to feature in Food Truck Alley was not difficult, reports Mashni. "All three vendors are very popular in Minneapolis and represent every food and beverage category that travelers would want in this type of concession space—burgers, salads, sandwiches, pastries, ethnic and healthy food, and alcoholic beverages."

Red Cow specializes in hamburgers; Salty Tart offers sandwiches, salads and pastries; and Holy Land Deli caters to customers looking for international options.

Grzechowiak notes that the airport originally planned to rotate in new brands, but that idea has been placed on the back burner due to the popularity of its original selections. "The powerhouse of brands that came through are really Twin Cities' institutions," she explains. "We are so successful with this lineup that we won't cross that bridge until we come to it."

Together, the four trucks are expected to generate $5 million in sales their first year, with 5% annual increases thereafter, reports Mashni. "Travelers are very interested and intrigued by

the innovative design and the options provided in this Food Truck Alley," he observes. "We constantly see people posing to take pictures next to the trucks."

Grzechowiak credits Midfield for executing the airport's vision accurately and for going the extra mile during the project. "They did an exceptional job with selecting materials," she specifies. "It has an industrial look and is very much on trend.

"Midfield was genuinely enthused about the opportunity to do something so unique in an airport environment. We are very pleased with the result, and so is the concessionaire. For a concourse location that is not in our main mall area, it's performing in the top of its class."

Fort Lauderdale-Hollywood Int'l Installs Virtual Ramp Control System

BY KRISTIN VANDERHEY SHAW

FACTS&FIGURES

Project: Virtual Ramp Control

Location: Fort Lauderdale-Hollywood (FL) Int'l Airport

Approximate Cost: $1.3 million

System Provider: Amadeus (formerly AirIT)

Service Provider: Robinson Aviation

Remote Video Management Platform: Searidge Technologies

Key Benefits: Improved safety & operational efficiency due to enhanced situational awareness

Just as NASA has a Mission Control room to monitor spacecraft, Fort Lauderdale-Hollywood International (FLL) has a ramp control room to track aircraft in non-movement areas. Earlier this year, the airport installed a high-tech system that is especially valuable for monitoring and managing aircraft in areas outside of the visual field of air traffic controllers.

The windowless room features two six-panel video walls that provide ramp controllers with a panoramic window-like view of the entire airfield. The system also includes an interactive, real-time map display that allows them to click on any gate for a thermal high definition pan/tilt/zoom view and improve on-block and off-block status updates.

"Our airport is land poor, and to create new multimillion-dollar towers for line of sight didn't make sense," explains Michael Nonnemacher, FLL's acting assistant director of Aviation. "The Virtual Ramp Control

program is a technological response rather than a traditional brick-and-mortar solution. Our ramp controllers can see the whole airfield from one room, which operates like an FAA Air Route center."


MIKE NONNEMACHER

Managing Expansion

The new tech-centric ground control system is the latest initiative in a series of improvements FLL has executed to help manage increasing traffic levels. What began as an abandoned nine-hole golf course in 1929 has evolved into one of the fastest-growing airports in the United States. Currently, FLL is on pace to enplane 30 million or more passengers by year-end.

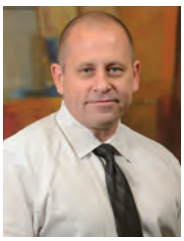
Throughout the decades, the South Florida airport has outgrown its facilities time and again. Several years ago, FLL drafted a $2.3 billion improvements and renovations program to modernize its terminals, add gates and build a second runway. The runway opened in 2014 to great fanfare, expanding the airport's maximum capacity to 425,000 flights per year—an effective increase of 40%. As a result, Emirates announced it would begin daily 777 service from Dubai to Fort Lauderdale in 2016—a coup for the market and airport.

Amid the continual growth, FLL officials found they needed to take a hard look at the airport's blind spots—literally, not figuratively. From the bird's-eye view of the FAA air traffic control tower, there were a handful of non-movement areas that were not visible to controllers. To maintain safe operations, they relied on ground personnel to report the status of incoming and outgoing aircraft from particular gates.

Given its high traffic and limited airside infrastructure, FLL typically has aircraft docked at every gate overnight, plus another 15 or so parked in two remote zones. Each morning, Robinson Aviation, the company that provides ramp control services at FLL, sent a ramp employee to the gates that were out of controllers' line of sight to log which aircraft were on block.

Don Starbuck, a former FAA air traffic controller and supervisor, manages FLL's virtual ramp control facility for Robinson Aviation. "We had access to line of sight, but we could not see all the gates," he says of the previous system. "We had to keep track of them via a dry erase board to know if they were empty or filled."

Now, the Virtual Ramp Control System from Amadeus (formerly AirIT) provides the critical information in video format. Company personnel estimate that before the new system was installed, controllers could view 65% to 70% percent of the airfield at any given time. The virtual system is designed to provide full visibility.


JEFF SHULL

"Effectively what we're doing is displaying the information graphically," explains Jeff Shull, the company's vice president of implementation and delivery. "We use disparate systems and combine them to create a graphic interface. Basically, in the morning when the airport starts operations, we have a complete database of what is scheduled for that day."

The company's Virtual Airfield Management System (VAMS) simulates an "out-the-window view" of geographically dispersed aprons, remote stands and aircraft parking areas by consolidating multiple images into one operator display. The aerial view of the airport includes accurately scaled images of terminal buildings, gates, stands, remote parking positions, cargo facilities and maintenance areas. With this system in place, the airport can deploy resources to other areas.

Shull describes the crucial tracking and handoff components as follows: "The ASDE-X (Airport Surface Detection Equipment, Model X) picks up the aircraft as it nears the runway. When a plane lands, we take the data tag from the aircraft and we follow the aircraft into the non-movement area. Then, it's taken over by Searidge technology, which follows it to the non-movement area."

Base Software

Amadeus recruited Searidge Technologies to the project team in 2012 to provide the video platform that depicts airfield traffic. Its high-grade remote video management system is a key component that allows the overall system to monitor aircraft from the time they land until they pull into their assigned gates.

By replicating a tower-like window view for an off-site location, the system enhances situational awareness on the airfield, explains Searidge Vice President Derek Bayford.

As for the transition from window to screen, Bayford reports that ramp controllers who have used the system say it doesn't take long to get used to. It feels just like watching traffic from the tower, he explains.

"The virtual system allows ramp controllers to make intelligent decisions in real time," he comments. "Through augmented reality thermal views and PTZ [pan/tilt/zoom] controls, ramp controllers can now see into areas that were previously not visible. If they can't see it, they have to rely on 'ground in, ground

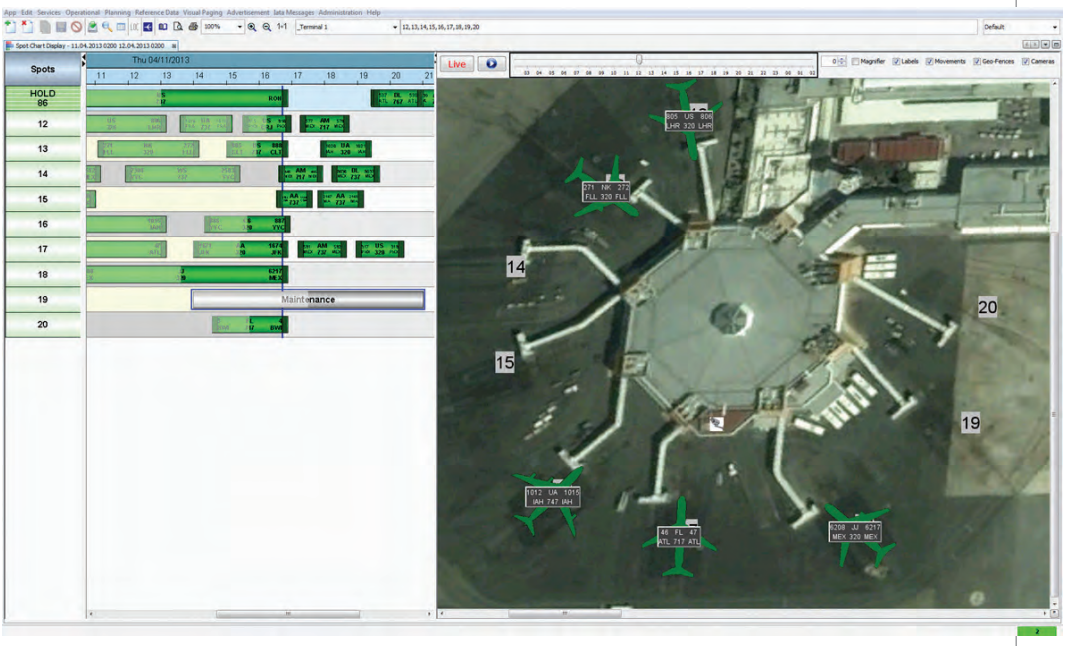
out.' We give them eyes to anywhere in the area."

The system is also scalable, so airports can choose to surveil as much or little of their airfields as desired. One airport might only need coverage on a specific side of the terminal or remote taxiway, while another needs "eyes" on its cargo area.

"The more information the airport has, the better able it is to make decisions," says Bayford. "This can lead to more accurate flight information displays, too."

Searidge provides a mix of different kinds of sensors to provide FLL visual access to every gate. This allows personnel to see any gate at any time, and make decisions according to what they see, explains Bayford.

The virtual system can expand for other uses, such as identifying foreign



Real-time data about gate utilization enhances ramp safety.

The Virtual Ramp Control System is housed in a facility designed to withstand a Category 5 hurricane.

object debris and wildlife hazards, or interfacing with billing companies, he adds. Airports that regularly experience heavy fog could also benefit from the base tracking and monitoring capabilities.

FLL is currently not using the system for extra services, notes Bayford.

Integration Opportunities

Before it implemented the Virtual Ramp Control System at FLL, Amadeus had provided the Airport Operational Data Base (AODB) there for more than a decade. By tying the two together, the airport is able to funnel real-time information about flight operations from the virtual system to Flight Information Display System (FIDS) displays throughout the airport.

"Using all of the data available, the airport can be more efficient by analyzing the trends," says Shull. "In Fort Lauderdale, this integration is going to give them an advantage. It makes them

the most technologically integrated airport in the country."

Shull says if airports are capturing robust data, they can create metrics and audit the information to develop new routes based on customer need.

"This kind of collaborative decision-making benefits all parties," adds Nonnemacher.

On the Cutting Edge

The technology driving FLL's new ramp control system is so emergent, some of the hardware that engineers specified became outdated before the procurement process was complete. "What we learned is that when you choose a high-tech solution like this, you need to be prepared to make it adaptable and portable to what you have," Nonnemacher reflects.

When the project took longer than expected, camera technology improved in the interim, and the airport was able to install about half as many cameras as originally planned, notes Shull.

Durability was also a key issue. Despite four to six hours of damaging winds during Hurricane Irma, all but one camera was still working when the storm subsided, reports Starbuck. Because the system has other cameras pointed at the same gate, coverage was still intact.

"Even if a camera fails, we have backups," he relates. "In fact, a number of cameras could fail, and we could still zoom in with others."

The airport also keeps an inventory of spare cameras on hand, and a contractor can install a replacement in a matter of hours, he adds.

Tech & Towers

After operating with the virtual control system in place for almost a year, Nonnemacher describes the project as collaborative and forward-thinking. "We have to be a vanguard, because we don't have another choice," he muses. "Like many other airports, we're capacity-constrained. We had two towers and still had blind spots. This system takes away the blind spots and gives our controllers good views of the whole field."

Built-in safeguards and redundancies provide further confidence. The control center is designed to withstand a Category 5 hurricane and is equipped with a fire station and full-size generator that can operate its critical systems even if the airport loses power.

"I can't really quantify the results, but prior to adding virtual ramp control, we had some wingtip collisions, and we had aircraft going head to head," relates Nonnemacher. "Since we put this system in place, we haven't had any of that."

Martha's Vineyard Airport Replaces Fire Station

BY THOMAS J. SMITH

FACTS&FIGURES

Project: Facility for Firefighting & Snow Removal Equipment

Location: Martha's Vineyard (MA) Airport

Owner: Dukes County

Cost: $10.4 million

Funding: $8.3 million FAA grant (for ARFF portion of building); $1.6 million airport funds; $461,000 from state

Building Size: 14,674 sq. ft.; 6 service bays

Owner's Project Manager: Daedalus Projects

Lead Design: Jacobs Engineering

Project Architect: Keenan + Kenny Architects

General Contractor: Dellbrook JKS

Noteworthy Details: Airport faced FAA sanctions for previous failure to improve ARFF facility; instituted its first passenger facility charge to help fund project

Faced with the prospect of heavy FAA sanctions, Martha's Vineyard Airport (MVY) was under the gun to replace its aging, non-compliant aircraft rescue and firefighting (ARFF) building. When its new $10.4 million facility opens in November, officials will officially close the book on a difficult chapter for the county-owned airport located on a picturesque island off the southern coast of Cape Cod.

In summer 2015, FAA put the Massachusetts airport on notice. After years of inaction and lack of response from MVY about a set of partial plans for a new ARFF facility, the federal agency gave the airport until the end of the year to submit completed plans. Its very license as a Part 139 commercial airport was at stake as well as millions of dollars in federal funds.

Needing to act quickly, the MVY Airport Commission found inspiration for a solution just a few miles away in the recently completed Oak Bluffs Volunteer Fire Department facility. The commission instructed Jacobs Engineering, the architect that produced partial plans for the airport back in 2011, to retain Keenan + Kenny Architects, the firm that designed Oak Bluffs facility. The two firms collaborated to produce a final design specifically modified for airport use, and MVY is on pace to complete the facility on time and on budget. The new structure will house snow removal equipment as well as ARFF equipment and personnel.


ANN CROOK

Airport Manager Ann Crook explains that the 2011 drawings commissioned under previous airport leadership represented a "Taj Mahal that was way more than what we could afford with the FAA grant."

Specifically, the airport had secured an $8.3 million FAA grant for the ARFF portion of the building, but the full price for the facility was projected to be nearly $15 million.

Just in Time


JOSEPH SULLIVAN

"If we went back to Jacobs for a total new design, it would have been six months and we would have lost the funding," adds Joseph Sullivan, manager with Daedalus Projects, the firm MVY contracted to supervise design, procurement and construction. Daedalus, which is based in Boston, served in similar capacity with the town of Oak Bluffs for its fire station project.

Making it Work

"My thoughts were to make this a team collaborative effort, and we came up with a clear timeline to meet the FAA requirements," continues Sullivan.

After inspecting the Oak Bluffs station in detail, team members determined that they could modify its design to create a facility for MVY. "It looked like the pieces could fit together," recalls Sullivan. "We had to incorporate the FAA requirements into the building to be an airport fire station."

Construction of 14,674-square-foot building began last November and is scheduled to conclude this November.

"In the original design, the engineering firm was tasked with providing a state-of-the-art emergency response facility, and in doing so tried to include many state-of-the-art components, which drove up the costs," explains Sullivan.

For example, the facility's equipment bays were to be air-conditioned. The new plans use high-efficiency mechanical equipment to reduce ambient humidity.

In a similar money-saving fashion, general contractor Dellbrook JKS used modular construction techniques to create the exterior walls. Unlike the original 2011 design, which called for an entirely "stick built" facility, the final design specified wall panels that were fabricated off the island and subsequently assembled onsite.

"We don't feel we are settling," Crook notes. "It is a nice building that will give us what we need now and into the future."

The building includes six service bays—three for firefighting equipment and three for snow removal equipment. Because the bays are designed with drive-through access, the building can simultaneously house 12 pieces of equipment.

A 10-person crew will staff the facility. Geoffrey R. Freeman, a 25-year MVY employee who was promoted to assistant airport manager last spring, explains that the ARFF/airport operations team perform a wide range of duties—everything from fueling general aviation aircraft, painting, mowing grass and plowing snow, to fighting fires and conducting safety inspections.

"They do it all," Crook relates. "The airport is so seasonal, we can't have a dedicated staff year-round for each task."

The entire staff supports both commercial and general aviation operations. MVY has 10 daily regional jet flights by American Airlines, Delta Air Lines and JetBlue Airways on a seasonal basis. And Cape Air flies Cessna 402s to/from the island—15 times per day in season and 10 times daily during the offseason.

Combined, the four airlines carry about 50,000 passengers per year. The airport serves even more passengers on private aircraft—everything from small single-engine planes to large corporate jets.

Building Details

The ARFF portion of the new facility has a watch room with direct contact to the air traffic control tower. Other elements include

The airport now has three bays for firefighting vehicles and three for snow removal equipment.

separate training and meeting rooms, office space, equipment storage areas and a new computer server room for the entire airport. The airport installed an extra, empty set of conduits to provide flexibility for meeting future data needs.

There is also a bunkroom that houses staff during intense snow plowing operations. As an around-the clock operation, the airport routinely keeps one person on duty overnight to provide coverage for general aviation operations.

The firefighting equipment that will be housed in the new station includes a 2002 KME 1,500-gallon foam truck, a 2002 E-ONE 1,000-gallon foam truck and a mutual aid emergency communications vehicle.

The fleet of snow removal equipment includes a 2014 Kodiak snow blower/sweeper, a 2014 Kodiak plow, a 2016 TYMCO high-speed runway sweeper and four dump trucks equipped with plows.

A jib crane will allow staff to maintain snow removal vehicles inside the new facility. Previously, they had to perform work out on the driveways.

To bring the airport into FAA compliance, the new building has direct access to the airfield. The old building required vehicles to make a sharp right turn. The orientation of the previous facility made it challenging to respond to an airfield emergency within the prescribed three minutes, Freeman explains.

The new building was built on the same footprint as the original structure, parts of which dated back to World War II, when it served

as a boiler room for the old Naval Air Station that occupied the site. During construction, fire equipment was housed in a renovated county-owned hangar.

Financial Matters

Funding for the $10.4 million facility came from various sources. An $8.3 million FAA grant is paying for 90% of the ARFF portion of the building; and the state of Massachusetts contributed $461,000 to the project

The airport is raising a portion of its $1.6 million share by instituting MVY's first passenger facility charge, $4.50, in September.

It also collects $1.3 million in annual lease payments from tenants in the 72-acre business park on airport grounds, notes Crook. The airport commission is exploring options to expand the business park that could generate another $500,000 in annual revenue.

The Backstory

Putting it mildly, 2015 was an eventful year for MVY. In spring, the Dukes County Commission appointed a new majority to the airport commission; and MVY's long-time manager was gone before the end of the year.

One of the primary issues came to a head in August, when the airport commission learned that MVY did not comply with FAA Part 139 rules due to years of inaction regarding its ARFF facility and deficiencies in the airport's wildlife management plan and runway markings. The FAA had awarded the airport an $850,000 grant in 2011 to design a new ARRF facility. Most of the funds were spent, but the designs were never completed. Flash forward to summer 2015, and the airport had just a handful of months to submit completed plans for an improved ARFF facility to avoid FAA sanctions.

As the FAA issues bubbled to the surface, the airport commission tried to reach an amicable separation with the airport manager. When those efforts failed, it placed him on paid leave in mid-September, and he ultimately resigned in late November. The *Vineyard Gazette* noted that the embattled manager's 10-year tenure was "colored by heated legal and political battles over autonomy and authority" and his departure was preceded by "months of acrimony and legal tussles" with the reconfigured airport commission.

The commission subsequently hired Crook, who came on board in May 2016 with nearly 30 years' experience managing airports in Oregon, Kansas, New York and Massachusetts. The personnel change cleared the way for movement on the ARFF project, and the airport ultimately avoided impending FAA sanctions. However, previous delays cost MVY federal funds that would have paid for a portion of the new snow removal equipment facility.

"With the change in airport managers and the airport commission, Ann's expertise was very fruitful helping us put the pieces together," says Sullivan.

Freeman also credits the New England FAA Region: "They played an important role and understood our situation."

Sonoma County Boosts Airfield Revenue With Automated Aircraft ID System

BY MIKE SCHWANZ

FACTS&FIGURES

Project: Billing & Collecting Landing Fees

Location: Charles M. Schulz-Sonoma County (CA) Airport

Annual Operations: 80,000 (20% commercial; 80% general aviation)

Automation Technology: Vector Airport Systems

Equipment: 6 camera pods, placed near critical taxiways

Equipment Cost: $116,500, plus $15,000/yr for maintenance plan

Cost for Billing Services: 15% of collected landing fees

Installation: May 2016

Key Benefits: Increased revenue from airfield fees (nearly double); decreased staff time required for billing

Ancillary Benefit: Improved recordkeeping of tenant aircraft

Collecting aircraft landing fees can be a hit-or-miss proposition, and many airports accept the problem as an unfortunate industry norm. Charles M. Schulz-Sonoma County Airport (STS) is not one of those facilities. After automating its aircraft identification and billing system in May 2016, the Northern California airport has almost doubled the revenue it collects in airfield fees.


JON STOUT

"Before last year, we were concerned that some aircraft were not being billed for landing fees, especially at night, when operations staff is limited," relates Airport Manager Jon Stout.

Previously, the field's fixed-base operators (FBOs), KaiserAir and Sonoma Jet Center, collected the landing fees and kept a 15% commission for their efforts.

"The FBOs did the best they could," Stout explains. "One area we missed often: charters that drop off people and then take off right away. Some never even reported to the FBOs."

Now, the process is automated via PlanePass, by Vector Airport Systems. The system uses solar-powered, wireless camera pods to capture aircraft identification data, which it then integrates with flight tracking and flight plan data to confirm airfield activity.

After determining the aircraft model and weight, PlanePass applies the fee structure established by STS, and then delivers invoices to the aircraft operator via U.S. mail or email. Aircraft operators can view and print invoices, and pay with a credit card via Vector's secure, web-based Pilot Portal.

In addition to increasing the percentage of aircraft fees collected, the system provides airports with operational metadata such as

date and time of flight activity, aircraft tail numbers, operation and aircraft type of airfield customers, runway activity, flight numbers and beacon codes.

It also automates a traditionally laborious duty prone to human error. "It was an onerous activity for our FBOs. It took a lot of their time to do the billing for us," Stout says. "I do believe they were happy to get rid of that duty."

Prepping the Field

Given its size and configuration, STS required six camera pods. Due to the airfield layout, airport and Vector staff agreed that it would make more sense to capture images of planes at rest on taxiways instead of while they landed. Cameras were consequently located along major taxiways near the runways, outside the runway safety areas (see photo on Page 30). Placing the cameras around taxiways rather than runways reduced the number of cameras required, notes Stout.

Installation was carefully planned, he adds. "Before installation, Vector requested details about the whole airfield's geometry, prepared the 7460 forms [to provide notice of upcoming construction] and handled the FAA approval process. They shipped gear here, and assembled it on airport grounds. The whole process took maybe three or four days."

Navigating Sonoma County's procurement process was probably the biggest hurdle in getting the system up and running, Stout reflects. "We usually have to go through a lengthy purchasing process," he notes. "For this project, we did a great deal of research and could not find any other vendors with the same services. We convinced our Purchasing Department to go with Vector, as only one bid proposal was received. They did their own research anyway, to justify the expense. It took a full year to complete the review."

In the end, STS purchased the needed equipment for $116,500 (not including California state sales tax) and added a three-year maintenance plan for $15,000 per year. The airport also contracted Vector to handle its billing for 15% of the collected fees—the same arrangement it preciously had with the field's FBOs.

Based on the increase in fee revenue the new system is expected to produce, Stout anticipates the airport to recover its equipment costs in less than three years. And cash flow for operations will remain unchanged, he adds.

Pete Coleton, president and founder of Vector, notes that fees for using PlanePass vary depending on many factors. "Some airports prefer to lease the Vector system, while others, such as Sonoma, prefer to buy it outright. Some airports hire us just to collect aircraft identification and operations data. Tucson International hired us so they could count and identify military aircraft," he comments. "We work closely with airport staff to find the Vector solution that best solves their issues."

PETE COLETON

At STS, the staff opted to charge departure fees rather than landing fees. "We did get some pushback from a few of our customers, because they were so used to paying for landing fees," recalls Stout. "Everything soon settled down once they got used to the new billing procedure."

Under the new system, the airport does not charge permanent non-commercial tenants departure fees. "We did ask our FBOs for specific information about what aircraft were based at what hangars," says Stout.

Wireless, solar-powered cameras capture aircraft identification data to improve collection of airfield fees.

Six wireless, solar-powered camera pods capture aircraft identification data to improve collection of airfield usage fees.

"Getting accurate information on this had previously been a challenge. The FBOs had to supply us with this info so their tenants would avoid paying departure fees, which they gladly did. This ended up being a really nice side benefit."

Recouping Fees & Time

Billing and collection processes are far more streamlined since switching to the automated system last spring, reports Stout.

"Once a month, we get a detailed reconciliation report from Vector, with the aircraft numbers, time and date, type of aircraft, etc. It took us a couple of months to get everything running smoothly, mostly with proper identification of based aircraft, but now it is an effortless process."

After an administrative aide from the airport verifies the accuracy of the current report, Vector electronically transfers funds for that month. "This happens very efficiently," says Stout. "It usually only takes 10 or 11 days from the end of the month." The funds and a copy of the report are sent to the clearinghouse for Sonoma County, the entity that oversees STS.

Billing processes that used to take hours and hours now require about 20 minutes of report review, Stout reports. "Better yet, we are confident we are collecting 99 percent of the fees owed to the airport."

Authorized airport employees also can use the collected data to verify aircraft visits, track down overdue aircraft and investigate noise complaints.

Multi-Layer Technology

Vector's Coleton notes that PlanePass uses proprietary hardware, software and processes. The system layers together multiple technologies because no single technology is perfect for accurately identifying all the aircraft using an airport, he explains.

"For instance, flight tracking data is easy to get, but the quality of this data depends on the source, as well as the type of transponder on the aircraft," Coleton explains. "We rely primarily on our proprietary automated camera technology, and fuse the camera data with other information, including flight tracking and flight plan data.

"Cameras are placed at choke point adjacent to taxiways and runways," he continues. "Invisible, infrared lights and IR-sensitive cameras are used to identify aircraft at night."

The company customizes its equipment for various climates. In regions that regularly experience high temperatures, it adds sunshields to protect components. Systems installed at northern airports include extra batteries to help power them through long winter storms, and Vector makes sure camera pods are tall enough to see over snow banks.

Coleton recommends the company's newest cameras, which focus on runways, for airports that want to identify training aircraft performing pattern operations as well as other more typical traffic.

Beyond the technology of the PlanePass system, Coleton also stresses the role of Vector's customer service staff. "Aviation is a small world, and I want us to be known for good customer service," he says. "I truly believe that the difference between collecting the industry standard 80 percent, compared to 100 percent of what we bill for our clients, is being available to talk to people when they have questions."

The company dedicates a specific staff member to assist large operators like NetJets and FlexJet, which fly regularly into multiple airports that use its system.

Including STS, 20 U.S. airports currently using the PlanePass billing system; seven also use the company's VNOMS noise and operations management system.

FAA Conducts Airfield Safety Research at

BY BRIAN SALGADO

FACTS&FIGURES

Project: Taxiway Rehabilitation

Location: Cape May (NJ) Airport

Airport Manager: Delaware River & Bay Authority

Approximate Project Cost: $6 million

Funding: FAA's Airport Technology Research & Development Section

Construction: Nov. 2015-Dec. 2016

Project Scope: Rehab 3,200-foot taxiway for FAA research about airport safety; pavement technologies; taxiway & runway lighting

Prime Contractor: CJ Hesse

Electrical Engineer: Consultant Services Int'l

Electrical Subcontractor: Gary Kubiak & Son

Asphalt: A.E. Stone

Of Note: Taxiway is open for public use when not in use by FAA for research

When it comes to partners for airfield projects, the recent match between Cape May Airport (WWD) and the FAA seems straight out of an eHarmony commercial. FAA needed somewhere to conduct field research about airfield pavement and lighting, and the New Jersey airport had a decommissioned taxiway waiting for a new purpose.

The Delaware River and Bay Authority, which manages WWD, teamed up with the federal agency to rehabilitate its abandoned taxiway for research and development work by FAA's William J. Hughes Technical Center. Now that the project is complete, FAA has a new field-testing site, and the fully operational taxiway is available to WWD customers when not in use for research purposes.

Jim Salmon, a spokesman for the Authority, was upbeat about the project when speaking to local media shortly after construction began: "We are really happy to be able to partner with the Tech Center to facilitate this project. Every incremental development at the airport is a positive."

Renovations to the 3,200-foot taxiway cost about $6 million and were funded completely by the FAA's Airport Technology Research and Development Section. "There was a need for a field-testing site for airport safety and airport pavement-related research in a location that would not interrupt service at a larger airport," says Murphy Flynn, construction manager for the FAA.

With construction completed late last year, FAA is using the research taxiway to test new airport lighting systems, pavement monitoring technologies and surface detection systems. The renovated taxiway allows researchers to set up tests and let them run for days, weeks or even months, notes FAA spokesman Rick Breitenfeldt.

Engineered for R&D

Practically speaking, the taxiway is 50 feet wide. But it is 150 feet wide from edge-to-edge of the paved surfaces when its paved shoulders are included. This design feature, along with associated lighting, allows researchers to simulate a runway for testing purposes.

Project engineers designed the taxiway with a highly configurable electrical infrastructure that can be adapted to a wide variety of airfield lighting research, notes Flynn. It is also equipped with a complete

Cape May Airport

array of airfield lights, including taxiway edge and centerline lights, runway edge and centerline lights, runway guard lights, runway status lights (takeoff hold lights and runway entrance lights), touchdown zone lights and a clearance bar. The electrical vault is equipped with six regulators.

JESS NADEL

The electrical systems are more typical of a major airport than a regional facility like WWD, observes Jess Nadel, the specialist from Consultant Services International who designed the systems. There is a huge amount of capacity from a conduit power and electrical infrastructure perspective to allow researchers to ramp up their efforts in the future, he explains.

The taxiway also has 16 service panels located outside of the taxiway safety area that provide power and ethernet connectivity. This allows the FAA to power test equipment in the field and connect data-collection equipment to the lighting vault—something that doesn't occur at other airports, notes Nadel.

Designers specified a prefabricated airfield lighting vault to avoid construction of this facility on site. The 40-by-11-foot steel structure was fabricated off site and lifted by a crane onto a concrete slab with conduits and utilities already in place. The vault includes an abundance of interior lighting, power and space for housing research equipment.

The FAA, airport and construction team broke ground on the project in November 2015, and the job was completed in December 2016. Per a memorandum of agreement between the FAA and Delaware River and Bay Authority, the FAA is entitled to construct, operate and maintain research infrastructure at WWD until Sept. 30, 2030.

Pavement Particulars

The taxiway was paved with five different variations of asphalt mixes:

- P-401 Marshall Hot Mix Asphalt with a PG 64-22 binder;
- P-401 Marshall Mix Asphalt with PG 64-22 warm-mix binder;
- P-401 Superpave Hot Mix Asphalt with a PG 64-22 binder;
- P-401 Marshall Hot Mix Asphalt with a polymer-modified PG 76-22 binder; and
- a stone matrix asphalt mix with a polymer-modified PG 76-22 binder.

Multiple products were installed so researchers can evaluate and compare the long-term aging behavior of the various mixes. "Producing all the different asphalt mixes in small quantities and performing a large amount of quality control testing as part of our experiment was challenging," Flynn remarks.

Initial Results

FAA personnel completed their first lighting research project on the renovated WWD taxiway this July. Researchers conducted a series of flight tests of LED aviation obstruction light fixtures by pilots wearing infrared emitters (FAA Type L-810 and L-864).

Project engineers added extra conduit power and electrical infrastructure to allow researchers additional capacity for future research.

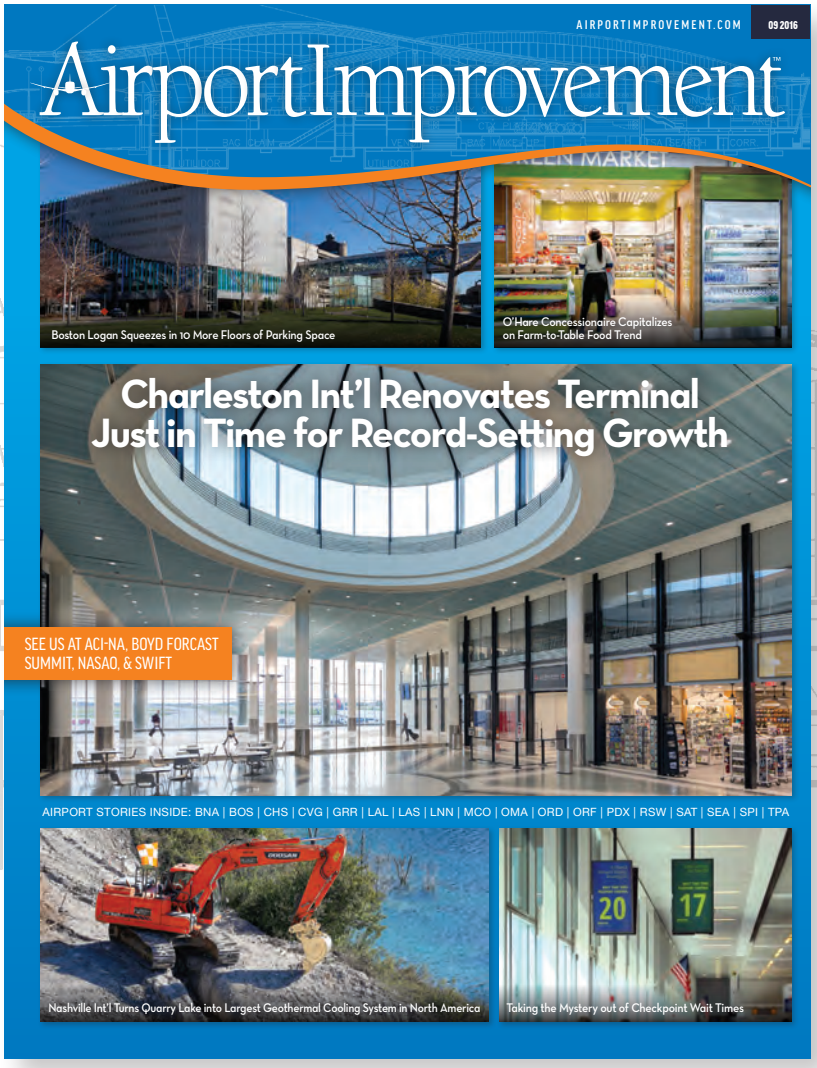
The airfield lighting vault was prefabricated off site and lifted by crane onto a concrete slab with conduits and utilities already in place.

The purpose of the testing was to identify a minimum intensity for the infrared emitters within the fixtures to be seen by pilots wearing night vision goggles. Using results from the research, FAA's Office of Airports published a draft of Engineering Brief 98, *Infrared Specifications for Aviation Obstruction Light Capability With Night Vision Imaging Systems*.

Researchers are also acquiring pavement data from the taxiway. General topics include longitudinal and transverse profiles, pavement texture and ground-penetrating radar. The taxiway at WWD gives the FAA Airport Pavement Research and Development Section the opportunity to collect pavement data and compare the relative profile data to known survey elevations.

Airport Projects Profiled Here

Featuring Airports, Their Consultants & Suppliers



AirportImprovement.com

The Show & Tell of Airport Project Work

Pittsburgh Int'l Opens Airside Areas To Non-

FACTS&FIGURES

Prject: Airside Access for Non-Ticketed Visitors

Location: Pittsburgh Int'l Airport

Program Name: myPITpass

Debut: Sept. 5, 2017

Development Timeline: 3 yrs

How it Works: Non-ticketed visitors with valid IDs obtain stamped passes from ticketing counter & undergo same TSA screening as ticketed passengers

Operational Safeguards: PIT employees monitor flow of TSA checkpoints & prioritize ticketed passengers if needed; airside passes are only available on weekdays, 9 a.m.-5 p.m.

Initial Volume: About 20 passes/hr

Associated Increase in Concessions Revenue: Not significant

Examples of Airside Features: Live music; children's museum; art exhibits; T. Rex skeleton; retail shops

Remember the good ol' days, when passengers reunited and parted ways with family and friends right at their gates? After the 9/11 terrorist attacks, hugs, kisses and welcome signs were relegated to curbside drop-offs, baggage claim areas and designated meet-and-greet spots.

Until recently, that is.

Visitors at Pittsburgh International Airport (PIT) are returning to the nostalgic era of greeting their loved ones the second they deplane or embracing them tearfully one last time before they board. Under the airport's "myPITpass" program, which debuted Sept. 5, non-ticketed visitors with valid identification who pass the same security screening as ticketed passengers are able to access the airside terminal.

Christina Cassotis, chief executive officer of the Allegheny County Airport Authority, says it's no accident that PIT is the first U.S. airport to open its airside gates, restaurants, shops and other attractions to non-ticketed visitors. "This is a unique community in Pittsburgh that loves its airport and wants to use it," she explains. "I speak frequently around the city, and one of the top five questions I've gotten is, 'When will I be able to go airside again?'"


CHRISTINA CASSOTIS

A Long Time Coming

Airport officials began working with local TSA representatives three years ago to obtain approval for its new initiative. The myPITpass program builds on the airport's annual holiday open house, which draws up to 1,000 non-ticketed visitors, explains Cassotis. The airport

-Ticketed Visitors

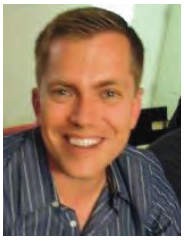
BY PAUL NOLAN

also has long provided guests of the on-campus Hyatt Regency access to airside restaurants and shops.

Both Cassotis and TSA officials emphasize that the airport's new program will not impact security, nor will it cause delays for passengers needing to clear security checkpoints. PIT employees monitor the flow of people in TSA checkpoint lines and restrict myPITpass access to prioritize flow of ticketed passengers if needed. In addition, passes for non-ticketed individuals are only available on weekdays between 9 a.m. and 5 p.m., when the airport is typically less busy.

According to Cassotis, the airport issued about 20 myPITpasses per hour in the program's first couple weeks.

TSA spokesman Mike England notes that TSA did not need to hire any additional personnel to accommodate the myPITpass program.



MIKE ENGLAND

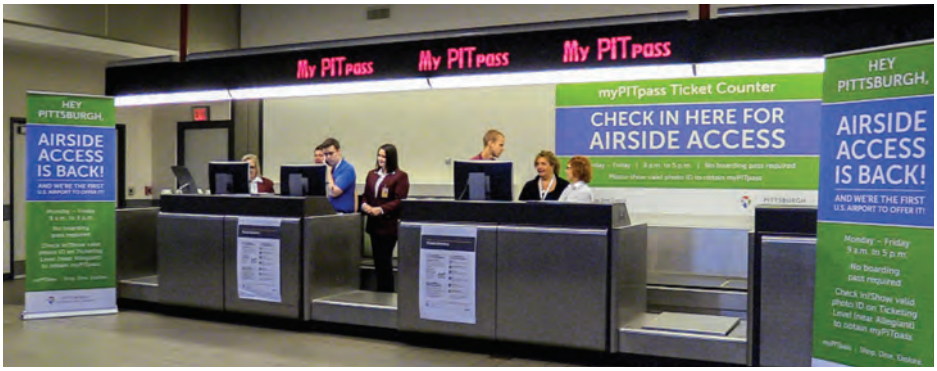
More ThanFlight Ops

Like some other airports, PIT has created a veritable shopping mall and entertainment hub within its airside space. Post-checkpoint areas feature live music performances, a children's museum, art exhibits, a massive T. Rex skeleton and shops that are not available anywhere else in the city. In July, *Travel & Leisure* ranked PIT the sixth-best U.S. domestic airport (up two spots from 2016), lauding its "easy access, vast selection of restaurants, and design with a sense of place."

The myPITpass program allows local residents to take advantage of all the airport offers.

Additional concessions revenue from non-ticketed visitors is welcomed, but not expected to be significant if the use of airside passes continues at its current rate, notes Cassotis. "We're interested in monitoring the guest participation, but the program is already a success," she says. "The success is that we got it done. The success is the community feels good about it. The success is that some little kid gets to go over and see (airplanes from) WOW, Condor and Delta all lined up. That's why we did it."

The 25-year-old airport was originally designed and built as a hub for US Airways. In its heyday, PIT handled 21 million passengers at 100 gates. But US Airways and other airlines began closing hub operations at many U.S. airports



Non-ticketed visitors can request special passes to access airside gates and concession areas.

in the early 2000s. US Airways pulled its hub out of PIT in 2003, and the airport now handles about 8.3 million passengers per year. It has 75 gates available, but uses less than 50.

Enjoy It Now

Pittsburgh area residents who love their airport may want to visit it before it completely changes. In September, the Allegheny County Airport Authority approved a $1.1 billion project that will "right-size" and modernize PIT. The project includes a new, two-level landside terminal, new parking garage and streamlined boarding facility with 51 gates. The existing facility will be demolished, sold or leased to developers.

The new facility will be built without local tax dollars, and the airport's cost per enplaned passenger will actually decrease once the new terminal is completed, emphasizes Cassotis. In one line item alone, the airport authority expects to save $23 million per year by not operating the tram and other people movers that transport passengers around the current oversized boarding area.

Plans call for breaking ground on the new airport in 2019 and completing it by 2023. The fact that the current terminal will be replaced may make non-ticketed visitors enjoy it even more. In a press event

announcing the new airside access for non-ticketed passengers, Pennsylvania Congressman Tim Murphy said the program hearkens to a bygone time.

"I remember the era when you would see someone off at the airport gate," he mused. "Whether welcoming a grandparent you haven't seen for several months or a soldier home from war, it should be the point where they step off that plane that the families, the loved ones, the spouses and children should say hello. We have not been able to have that in the United States for over a decade."

In September, TSA didn't have any requests from other airports wanting to implement similar programs. Any airport that wishes to let non-ticketed visitors go airside will have to work with its local TSA officials and propose how it will address the change in its security plan, notes England.

Cassotis says the extra effort made sense for PIT because of the community's unique affinity for its airport, and she does not expect a rush from other airports to launch similar programs. "I can't imagine the congested, large hubs with wait times will find this to be a good idea," she reasons. "When I came here and realized how much people are interested in this airport, it was clear they want to be out here. I have not seen that in too many other communities."

Cassotis Receives ACI-NA Visionary Leadership Award

Christina Cassotis, chief executive officer of Pittsburgh International Airport (PIT), received the 2017 Visionary Leadership Award from Airports Council International-North America (ACI-NA) at the organization's annual conference in September.

"Over the last year, Christina has significantly increased air service options, improved the airport's passenger experience, and elevated the role of the airport in its community and the broader aviation system," said ACI-NA's President and Chief Executive Officer Kevin M. Burke. "Her commitment to professional development and innovative thinking has strongly positioned the airport authority as a leader within the Pittsburgh community."

Cassotis said she is grateful for the honor and promptly credited her team. "From my first day as CEO, I have been inspired by the grit and resolve of a community that rises to meet its challenges head-on and continually comes together to succeed. I am lucky to lead this talented and hard-working team at this important time."

Cassotis assumed the top spot at PIT in January 2015. Since then, she has been instrumental in growing it and Allegheny County Airport, the general aviation airport also under her purview.

Public-Private Partnership Delivers New

Like other airports in Canada's northernmost territory, Iqaluit International Airport (YFB) on Nunavut's Baffin Island plays a vital role connecting the region to the rest of the world. The airport's new 9,800-square-meter terminal, which opened in August, will also keep far-flung residents connected to one another, as it includes a central gathering space that will be used for local meetings and civic events as well as arrivals and departures.

In a territory with 36,000 residents and 25 communities spread over 2 million square kilometers, those kind of human connections can be just as vital as transportation connections.

YFB's new terminal is the centerpiece of a $300 million program that also included construction of a 4,500-square-meter combined services building, expanded aprons, new lighting systems and an upgraded runway. The new terminal building replaces the airport's bright yellow facility that was built in the 1980s. Air traffic control will continue to operate out of the former terminal, but the rest of the building will be repurposed.

PPP Canada, a federal corporation created to support innovative public infrastructure projects, provided 25% of the overall cost for the projects. In 2013, the government of Nunavut chose Arctic Infrastructure Limited Partners (AILP) to redevelop the airport. (See list 41 for list of consortium members). Nunavut Airport Services, a subsidiary of Winnipeg Airport Services Corp. (WASCO), operates YFB.

Regional Reflection

YFB's new terminal was specially designed and built around its Northern Canadian environment. It had to be hardy and well insulated to stand up to the region's extreme arctic temperatures, explains Stanis Smith, executive vice president of Stantec. At only 9,800 square meters, it is also designed to provide a high level of service, he adds.

STANIS SMITH

WASCO's managing director, Michael O'Gorman, describes the terminal as beautiful, built to last and flexible. Gates can easily be changed from secure to non-secure to accommodate adjustments in day-to-day flight schedules, and the layout and electrical/mechanical systems are designed to accommodate future expansion if necessary.

MICHAEL O'GORMAN

Because of its location at the intersection of High Atlantic and Polar air routes, YFB plays a strategic role in both military and civilian aviation.

The terminal's single-level design eliminated the cost of elevators and escalators for passenger areas. It also decreases the walking distance to gates (the average is 165 meters) and reduces the

PHOTO: STANTEC

Terminal at Iqaluit Int'l

BY JODI RICHARDS

overall building volume, which consequently reduces heating costs and makes the building more sustainable. "The ability of the airport to function with a minimal amount of maintenance is important," he explains.

Enclosed ground loading bridges are a next-step plan to protect passengers from the area's harsh climate as they transition from their aircraft to the terminal.

Window glazing was employed strategically to ensure thermal savings, and the curved, aerodynamic shape of the roof is designed to prevent buildup of drifting snow and withstand wind speeds of up to 81 miles per hour, while also adding visual appeal. The bright red exterior serves as a beacon in an otherwise stark landscape and is inspired by the red inuksuk—a figure made of stacked stones to communicate with others throughout the arctic—that appears on the Nunavut flag.

Project engineers veered from local tradition by designing YFB's new terminal to sit directly on grade. Most buildings in the area are constructed on stilts, so cold air can pass underneath the structure to keep the ground below frozen, and therefore stable, year round. The new terminal preserves the permafrost with a thermosiphon system that uses a passive system of looped pipes to move building heat away from the foundation.

Community Connection

In addition to designing the terminal for practicality and efficiency, Stantec focused on creating a sense of place and identity that celebrates the community and its heritage. "It's more than just a processor of people and bags," explains Smith. "It's an important part of the community fabric."

A central rotunda is reminiscent of the circular form of traditional Nunavut Inuit igloos. The expanse serves not only as an arrivals area, but also as a community space for public functions. The Winnipeg Art Gallery was commissioned to provide art for the new terminal, including the curved walls of the rotunda and built-in display cases.

FACTS&FIGURES

Project: New Terminal

Location: Iqaluit (NU) Int'l Airport

Owner: Government of Nunavut

Project Delivery: Designed, built, financed, operated & maintained under a Public-Private Partnership

Term: 30 years

Terminal Size: 9,800 sq. meters

Cost: $300 million

Other Key Components: 4,500-sq-meter combined services building; taxiway/apron extension; new taxiway; 40,000 sq. meters of runway repairs & resurfacing; runway lighting & airside electrical upgrades

Consortium: Arctic Infrastructure Ltd. Partners, comprised of Bouygues Building Canada; InfraRed Capital Partners Ltd.; Sintra; Winnipeg Airports Authority

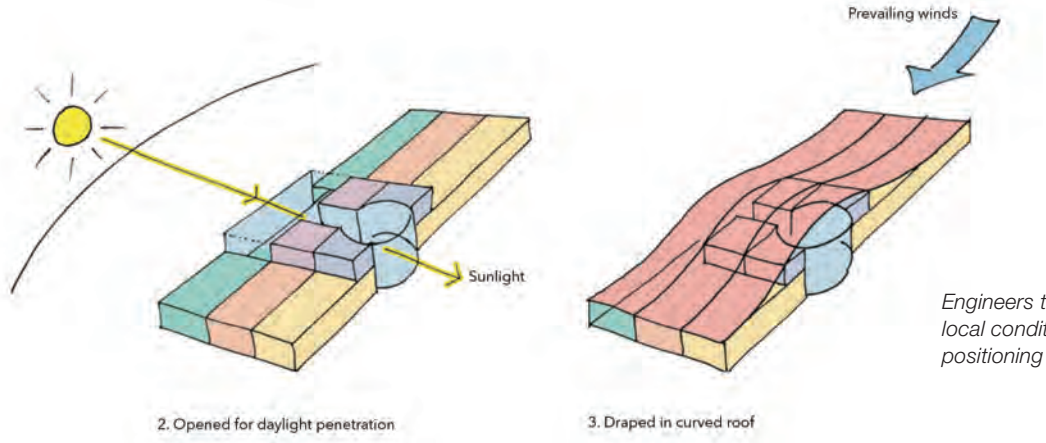
Construction: JV Bouygues Building Canada; Sintra

Design: Stantec

Geotechnical: EBA

Snow & Wind Modeling: RWDI

Operations & Maintenance: Winnipeg Airport Services Corp., operating as Nunavut Airport Services



Engineers took into account the harsh local conditions when designing and positioning the new terminal.

The project "goes beyond what one traditionally thinks of an airport being and makes it part of the community," explains Smith.

Challenges of the North

Construction of the new terminal began in spring 2014, but planning started well in advance. Needless to say, the airport's remote location made the process challenging.

Logistics—including delivering supplies and equipment to YFB—was a tremendous obstacle, relates Olivier Walon, project director with Bouygues Building Canada. With only three sealift deliveries per year (one at the end of July, another in the middle of summer and the final one at the end of September) scheduling and sequencing the arrival of materials and equipment required precision. "You have a timeframe of two months to get all of your materials in Iqaluit; and if you miss the boat, you may miss a year of work," Walon explains.


OLIVIER WALON

Transporting construction supplies and equipment by air is extremely expensive, and depending on the dimensions, they might not even fit on an aircraft. “It was a very big challenge,” he adds.

Nunavut’s extreme weather also abbreviates the construction season. “If you’re working outside, you may be able to work only between four and six months of the year because of the temperature,” specifies Walon. Initial projects had to be carefully scheduled to ensure that all exterior work was complete before the season ended, because subsequent projects during the colder months relied on those being finished first. “If you [get off schedule], then you cannot heat your building and work inside; and then the next season you are limited,” he explains.

Although working in Iqaluit was a first for Bouygues, Walon says that the firm had previous experience in remote locales and is skilled at the precision scheduling needed to keep a project like YFB’s on task. “The scheduling is something we are used to,” he remarks. “The difficulty here is that you don’t have a lot of the contingencies you may have on other projects. If you miss something, it can be a disaster.”

Preparation and precision scheduling are the keys to success on such projects, Walon reflects. “There is no miracle solution or remedy to that. It’s just good scheduling at the beginning and

Air traffic control will continue to operate out of the airport’s former terminal, but the rest of the bright yellow building will be repurposed.

PHOTO: STANTEC

stick to the plan. And every time you don’t stick to the plan, to keep it in action to get back into schedule.”

A fire on the roof of the terminal building in 2015 threatened to derail the carefully crafted schedule, he recalls. Work on the building was halted for a few days, but contractors were able to make temporary repairs that allowed the rest of the project to move forward and preserved the schedule.

Subcontractors that were not familiar with working in Iqaluit’s extreme environment were thoroughly briefed about conditions and expectations before the start of the project. “We sat with

The terminal's bold red exterior helps distinguish the facility from the stark local landscape.

PHOTO: STANTEC

them, talked and explained how it would be," says Walon. "Some of them accepted the challenge, and others did not."

Finding enough housing for the labor force was another challenge. To accommodate workers, Bouygues rented a former Iqaluit hotel and also assembled a mobile camp. During peak times, it also arranged hotel and apartment rentals to provide extra capacity. "It was a bit of logistic work, but we always managed to have someplace for the [contractors] to stay and not affect the work," he notes

LEED in the Far North

Achieving Leadership in Energy and Environmental Design (LEED) certification adds complexity to any construction project, but it is especially challenging in the arctic, notes Walon. The team delivering YFB's new terminal took the challenge one step further and sought silver-level certification.

Obstacles emerged in several areas. For starters, it was not an option to earn credits by using local materials to avoid the impact of associated transportation. Instead, the team focused on credits it *could* achieve in the arctic north.

Air quality credit, which is often tough to come by, was one of the team's specific targets. "Most construction sites do not apply for this credit," Walon notes, explaining that last-minute painting and other product fumes make it hard to achieve. By allowing enough time in the construction schedule to flush the building with fresh air, the team at YFB received positive results on its air quality tests and netted the associated LEED points.

Reducing energy consumption was another focus. A combined heat and power unit uses the heat that is generated producing electricity for the terminal to warm spaces inside the building.

The final report supporting the project's application for LEED silver certification was sent to the Canada Green Building Council at the end of July.

Reflecting back on the project as a whole, Walon notes that continuous communication and early stakeholder involvement were particularly important while building YFB's new terminal. Iqaluit's challenging conditions and the unique public-private partnership that drove the project made the commonly cited factors vital, he explains. "There is no way to work alone and then get people involved."

O'Gorman, who manages the entity that will operate the terminal, agrees wholeheartedly: "It's the people and the collaborative approach of the consortium that make this project successful."

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New Parking Structure at Asheville Regional

As North Carolina continues to grow as a popular tourist destination, Asheville Regional Airport (AVL), in the western part of the state, is working to keep pace with the associated influx of passengers.

The Greater Asheville Regional Airport Authority recently addressed record demand for parking by constructing a five-level structure that will not only increase capacity but also represent some of the region's landscape on its exterior facade.

"We have gotten to a point where parking numbers had increased and parking availability had decreased, so push came to shove," explains Lew Bleiweis, executive director for the Authority. "We had to expand so we could do something about the public parking."


LEW BLEIWEIS

The airport's solution took the form of a five-level, 1,300-space parking garage to augment a surface lot that previously held a maximum 375 vehicles. The new 422,000-square-foot structure will include 1,100 spaces on the top four floors for the general public and 200 on the ground for rental car operations. With a net gain of about 800 public parking spots, the airport's total capacity is now approximately 2,300 spaces.

The construction team broke ground on the new structure in September 2016 and is scheduled to be finished this November. AVL is self-funding the $22 million project with airport revenue and user fees.

A steady increase in passenger traffic forced the issue, explains Bleiweis. In 2014, AVL's passenger numbers jumped 11.5%, followed by another 3.9% in 2015 and 5.6% more in 2016. Currently, the airport's passenger volume is on track to increase more than 10% this year.

Form & Function

One of the key challenges of the project was separating vehicle traffic for public parking and rental car returns. Walker Parking Consultants,

Showcases Local Landscape

BY BRIAN SALGADO

the firm that designed the structure, solved the issue by adding a flyover bridge to carry rental car patrons over the public parking access road to the return area within the parking deck.

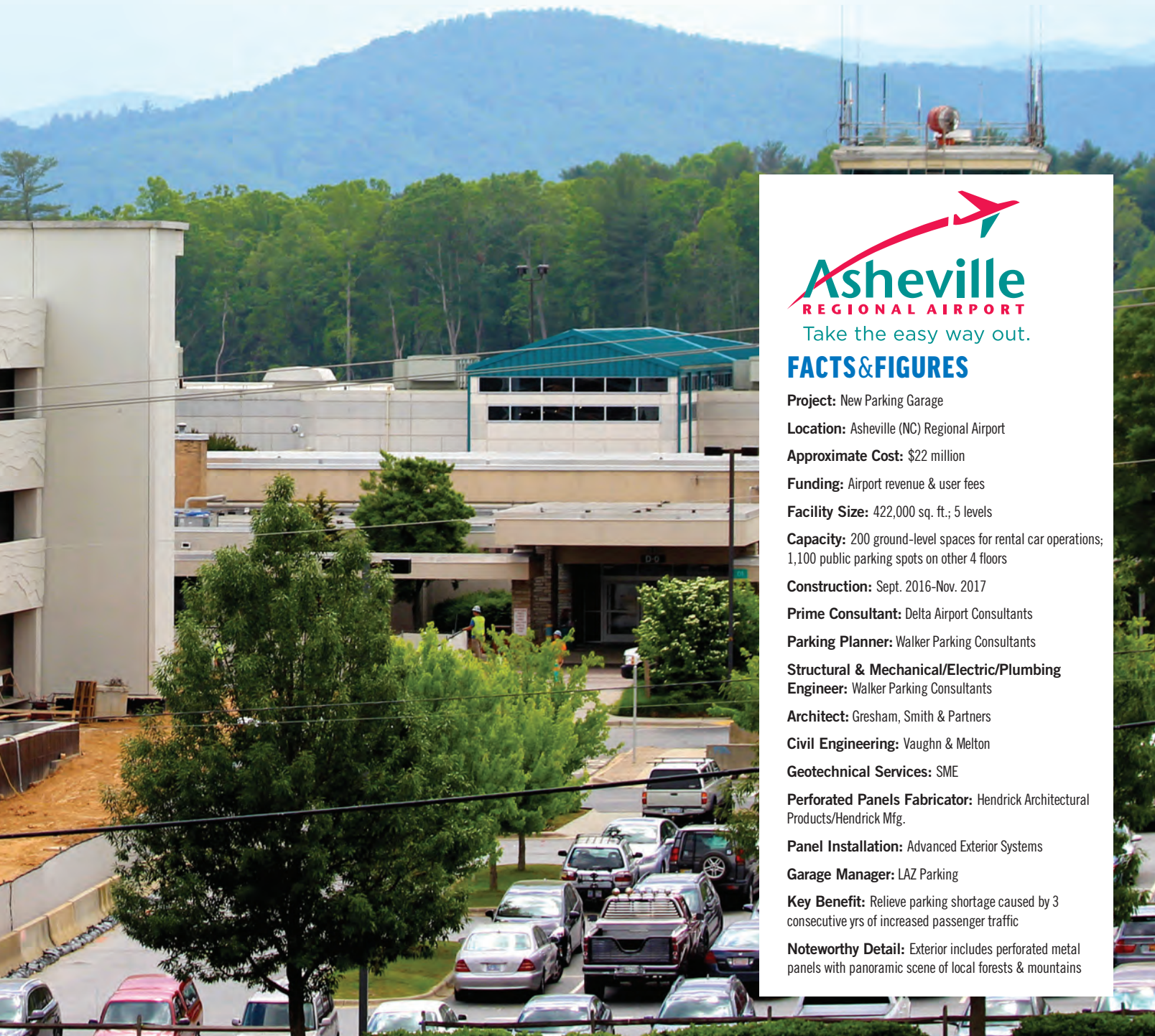
The airport authority also wanted the new garage to showcase Asheville's rural beauty. To pull this off, architects and designers from Gresham, Smith and Partners adorned the exterior facade with precast concrete spandrel panels and perforated metal panels with different sized holes and perforations that create a panoramic scene of the trees, forests and Blue Ridge Mountains that western North Carolina is known for.

"We wanted something different and artistic; we didn't want a concrete box," Bleiweis comments. "This was something that caught our attention because it was reasonably priced, and it worked."

DAVID L. KING

Gresham, Smith and Partners had designed garages with images cast in precast concrete panels before, but this was its first that uses perforated metal panels as the main exterior design component, explains Division Vice President David L. King. AVL's garage is among just a handful in the nation to use decorative metal perforated panels in this manner, he notes.

Personnel from AVL and its architectural team toured parking structures in Miami with perforated metal panels to learn more



Asheville REGIONAL AIRPORT

Take the easy way out.

FACTS&FIGURES

Project: New Parking Garage

Location: Asheville (NC) Regional Airport

Approximate Cost: $22 million

Funding: Airport revenue & user fees

Facility Size: 422,000 sq. ft.; 5 levels

Capacity: 200 ground-level spaces for rental car operations; 1,100 public parking spots on other 4 floors

Construction: Sept. 2016-Nov. 2017

Prime Consultant: Delta Airport Consultants

Parking Planner: Walker Parking Consultants

Structural & Mechanical/Electric/Plumbing Engineer: Walker Parking Consultants

Architect: Gresham, Smith & Partners

Civil Engineering: Vaughn & Melton

Geotechnical Services: SME

Perforated Panels Fabricator: Hendrick Architectural Products/Hendrick Mfg.

Panel Installation: Advanced Exterior Systems

Garage Manager: LAZ Parking

Key Benefit: Relieve parking shortage caused by 3 consecutive yrs of increased passenger traffic

Noteworthy Detail: Exterior includes perforated metal panels with panoramic scene of local forests & mountains

Precast concrete spandrel panels and perforated metal panels create panoramic scenes of the area's trees and mountains.

about the design and performance of the decorative feature. They also worked closely with panel fabricator Hendrick Architectural Products/Hendrick Manufacturing and installer Advanced Exterior Systems to ensure that the panels achieved the desired result.

Maintaining Operations

Keeping the existing surface lot in operation while decommissioning many of its spaces to build the new parking structure added considerable challenges to the project. The footprint of the new structure eliminated about 375 parking spaces, creating shortages during peak seasons, notes Bleiweis. Some drivers didn't heed warnings the airport posted about the project, and it had to relocate their vehicles. In total, about 120 cars were towed out of the construction site. The airport also moved its employee parking to an offsite location, and shuttled employees to and from the terminal.

To minimize use of the short-term lot while spaces were eliminated, AVL raised its rates from $12 to $25 per day for cars parked more than four hours. This reduced use of the short-term lot by 50%, and left more space available for meeters-and-greeters rather than overnight parkers looking for a good deal. The short-term rate will return to its previous price once the new garage is open for business.

The footprint of the new structure also eliminated one of the airport's entrances for a full year during construction. To decrease confusion for drivers, AVL worked with the North Carolina Department of Transportation to post signage on the highways. The state also added some much-needed traffic lights, adds Bleiweis.

The garage project also included an unexpected challenge: the discovery of


KENNETH W. MOODY

existing utilities in construction areas. Delta Airport Consultants, the airport authority's on-call architectural/engineering firm and prime consultant for the project, managed to take the setback in stride. No amount of time and energy during planning and design can completely prepare a construction team for the presence of existing utilities—especially in a parking lot for an old terminal building, notes company vice president Kenneth W. Moody.

"It's never enough," he reflects. "You will not know where everything is until the contractor starts digging."


The five-level expansion includes more than 1,000 spaces for airport visitors and 200 spots for rental car operators.

Sequel in the Works?

As the parking planner, structural engineer and mechanical/electrical/plumbing consultant for the project, Walker Parking Consultants performed the majority of planning and design work for the structure. Based on AVL's current and anticipated growth rates, Walker considered the implications and logistics associated with a possible second garage.


JOEY ROWLAND

Joey Rowland, managing principal of the company's Charlotte office, notes that the project team identified a location for a second structure, projected its needed capacity, identified necessary electrical and infrastructure requirements, and determined how it would connect with the existing parking facility.


LESLIE JO HURWITZ

"We had some initial planning on how the two parking structures would interact together, and how cars would go between the two if they were connected," adds Walker Project Manager Leslie Jo Hurwitz. "We also did some planning as to where the rest of the rental cars would be located."

If passenger traffic continues to increase on its current trajectory, the extra parking facility will be needed in the not-too-distant future.

Ideas Build Success at Medford Airport

FACTS&FIGURES

Project: Unconventional Revenue Streams

Location: Rogue Valley Int'l-Medford (OR) Airport

Catchment Area: Southern Oregon/Northern California

2016 Volume: 822,000 passengers

Concessions Strategy: One-way sally ports allow airport to sell food/beverages & gift shop merchandise to visitors on the non-secure side of the terminal

Sponsorships: Various entities pay promotional fees associated with baggage carts, hand sanitizing stations & animal relief area

Party Venues: Private events held in a retired KC-97 Stratotanker & Oval Office generate nearly $10,000/yr

Cost-Saving Measures: Solar panels on parking lot canopies; contracted firefighters & security personnel; using balloon vs. piloted aircraft for fog seeding

Thinking "outside the box" is uncomfortable and difficult for many adults. For Bern Case, AAE, it seems to be second nature.


BERN CASE

Case, the soon-to-retire director at Rogue Valley International-Medford Airport (MFR), has a knack for generating unconventional ideas that help promote the airport and generate non-aeronautical revenue along the way.

For example, there's a retired KC-97 Stratotanker parked permanently outside the airport fence that serves as a rental facility for parties and other special occasions. In the past year alone, it has been the site of more than 200 events. Then there's the replica of the White House Oval Office, created in a spare room inside the terminal. It's also popular for weddings and other celebrations.

Concessions at the Southern Oregon airport further demonstrate Case's open-mindedness regarding facility development. Nine years ago, MFR completed a new terminal with a second-floor observation deck and reconfigured its restaurant to serve screened passengers and unscreened visitors from the same kitchen. With 410,000 annual enplanements, MFR is simply not big enough for two separate restaurants, Case explains.

Instead, the airport installed a one-way

BY DAN VNUK

mechanism known as a sally port that allows restaurant staff to pass food from the secure-side kitchen to customers on the other side of the TSA checkpoint, with a common wall separating the two populations. The clever arrangement provides MFR with two restaurants for the overhead of one, quips Case. Sales in the restaurant increased as well. "In 2008, we were making $56,000 a year with a conventional restaurant; last year, we made over $128,000," he reports, noting that 2017 revenue should be even better.

"The approach works really well for us because it increased service and dollars," comments Case. Similar caged ports have since been added to restaurants at about a dozen airports, he reports.

MFR also added a sally port in its gift shop. "We have an area that serves both secure and non-secure people operated by one person," describes Case. As with the restaurant, annual sales jumped accordingly—from $24,000 to $91,000.

Brought to You by...

Case even manages to generate a little revenue (about $600 per year) from the airport's animal relief area. "We partnered with a local organization, Dogs for the Deaf, that was looking for some greater exposure," he explains. "They sponsor the area, and MFR gets some compensation for providing the space."

One of the organization's leaders perhaps said it best: "Bern even gets paid for poop." Apparently, Case had people "feelin' the Bern" just like Bernie Sanders did during his recent presidential campaign.

Sponsorships are leveraged in numerous other areas as well. The installation of hand sanitizer stations throughout the terminal, sponsored by Valley Immediate Care, brings in $2,700 annually. Baggage carts are provided to passengers for free, but they are sponsored by a local business and that pays the airport $3,000 a year for the associated advertising exposure. Another $6,000 per year is yielded by two

large-screen televisions that alternately broadcast Fox, CNN and a promotional video from Adroit Construction, the company that built MFR's terminal almost a decade ago.

The Oval Office replica was also developed using sponsorship dollars, and the KC-97 was donated to the airport. Working closely with the airport's public relations staff, Case considers both programs community outreach mechanisms as well as sources of revenue.

"We have had weddings, an Eagle Scout Court of Honor, a centenarian's birthday party, and other events in the Oval Office space," he comments. "While we don't charge much—last year it made just over $3,000—the concept adds much to the airport by turning it into a destination spot."

Although the donated KC-97 required an elevator and other investments to make it comply with local codes, it nets more than $6,000 a year. "Again, it is a wonderful, novel addition to our airport's image," emphasizes Case. "We pipe in audio from the tower; visitors can sit up front and touch the controls, and more."

According to Case, MFR was one of the first U.S. airports to handle advertising in house rather than use an agency. "When I arrived in 1994, the airport got 50 percent of the ad revenue—about $25,000 a year," he recalls. "Throughout the years, we added more signs, outside billboards and kiosks and went in-house. We now average over $300,000 a year on revenue, and there's a waiting list of mostly local firms ready to advertise with us. Our maintenance guys change out the ads, and our paralegal writes up the contracts; it's as simple as that."

Case in Point

Like any good businessperson, Case realizes there are two sides to every balance sheet. As such, he focuses on costs as well as revenue.

To help decrease energy expenses, he secured a grant for solar panels to place on top of canopies in the parking lot. "We covered the walkways and generate so much electricity that we're making more energy than what we actually use," raves Case. "Besides being a zero-carbon energy footprint in the 16-acre parking lot, we get about $12,000 a year by making the meters run in reverse some of the time…The utility is actually buying electricity from us."

He also managed to cut costs associated with the airport's fog-seeding program that dates back to the 1950s. Previously, a small aircraft flew back and forth above the airport dispersing dry ice to help dissipate thick fog that would otherwise impede flight operations. Case and his crew developed a modernized system they call Casper that uses a large balloon (18 feet wide, 20 feet tall) to accomplish the same result. Tethered to an Operations truck, the balloon is raised 500 feet into the sky with a winch over the runway, where dry ice is dumped from the basket by remote control. Now, the Operations crew handles the task without a pilot or plane, and gone are service contracts that ranged from $50,000 for a mild year up to $250,000 during years with particularly foggy weather. Last year, the Casper program cost MFD just $6,800—and garnered appreciation from airlines serving the airport.

Costs to run the all-contract, on-site fire station for the Index B airfield ran $581,000 in 2016—probably the lowest in the country, says Case. In a similar vein, MFR uses contracted armed security personnel to assist TSA officers instead of local law enforcement. The practice is allowed by the FAA and costs the airport $160,000 per year—about one-third of what most similar size airports pay, he notes.

"I guess I have always had a penchant for saving money," Case shares. "I actually started out, way back when, as a mortician. I wrote a book on how to save money on funerals; but when it got published, I got fired.

That said, he considers himself fortunate to have landed in a career in aviation. "It's hard for me to retire, but it's time," says the energetic 70-year-old. "I really enjoy what I do. We actually have fun running the airport. It's a blast."

Before his 24 years with MFR, Case worked at Lubbock Preston Smith International and MBS International near Saginaw, MI. "I actually started in 1978

in Salt Lake City, where I was in the Operations staff for eight years and ended up as manager of Operations."

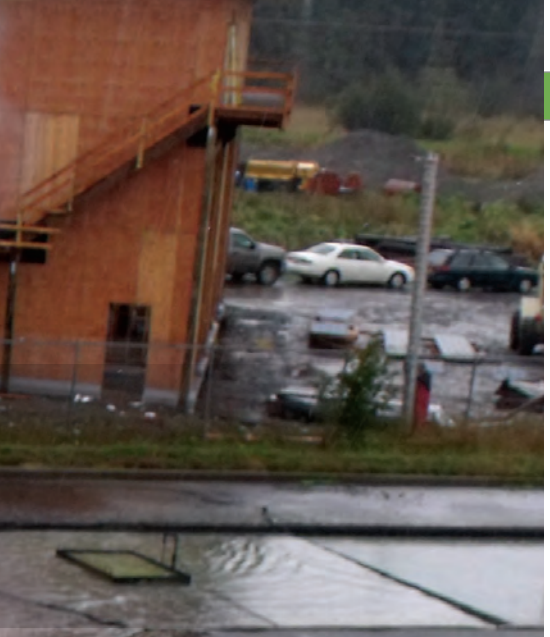
Case even married an aviation-friendly gal. His wife, Michelle, invented the Turbo Way passenger boarding ramp in 1998 and produced about 100 units before selling the business to her fabricator in 2002. The product, now sold by KCI, remains a popular option that helps airports accommodate the general public and passengers with disabilities.

As for retirement, Case is considering some industry consulting work, and he and his wife plan to visit their 15 grandchildren throughout the country—but not right away. "Medford is the longest place of any area where I lived, and it's a special place," he says. "You enjoy California weather and Oregon taxes, which is a great combination."

A replica of the Oval Office inside the terminal is a popular rental venue for weddings, birthday parties and other special events.

New Vehicle & Station Expansion Boost Emergency Response at Juneau Int'l

BY KEN WYSOCKY



Traffic is changing at Juneau International (JNU), and so is the airport's emergency response program. As the airfield begins to receive an increasing number of larger-capacity aircraft, officials are enhancing its aircraft rescue and firefighting (ARFF) capabilities accordingly.

Last year, the Alaska airport purchased a $750,000 state-of-the-art ARFF vehicle that is so tall and wide, JNU needed a larger station to house it. The recent $2.6 million renovation project also brought its facility up to FAA specifications and added more room for gear and support functions.


PATTY WAHTO

In years past, fewer large-capacity planes—Boeing 737-800s, for example — landed at JNU's sole 8,857-foot runway. "It's difficult to get in and out of Juneau because of the weather and terrain," explains Airport Manager Patty Wahto. "In fact, many airlines used to over-fly Juneau when the weather was bad; and it's bad a lot of the time. Plus, we're located in a narrow corridor with mountains on both sides."

Given the volume and nature of its usual traffic, JNU historically only needed two ARFF vehicles, with a total water capacity of 1,500 gallons, to satisfy associated FAA safety requirements.

The advent of more sophisticated aircraft instrumentation, however, is making it safer to land during inclement weather. The specific technology helping more aircraft land at JNU was developed by Alaska Airlines in conjunction with the FAA. "They used Juneau as their test bed," Wahto notes. "We're the birthplace of commercial required-navigation procedures (RNPs)."

Because JNU now handles more than five daily departures of larger aircraft (it currently averages 22 such departures), FAA consequently increased its airport index for firefighting capabilities. For example, now its vehicles must be able to carry 3,000 gallons of water. Although the airport's two existing ARFF vehicles met that requirement by carrying 1,500 gallons of water each, JNU officials felt that was an uncomfortably thin margin of error.

"If one truck goes down, we don't meet the standard," Wahto explains. "By adding one truck, we now have a safety net."

FAA covered 93.75% of the bill for the additional vehicle, and JNU funded the balance. FAA also paid 93.75% of the facility remodeling costs; the state of Alaska and city/borough of Juneau chipped in $81,000 each; and JNU funded the remaining portion.

Despite recent changes in its traffic profile, most of JNU's approximately 100,000 annual flight operations involve air taxi/regional commuter aircraft. The airport also accommodates a much smaller number of general aviation and private aircraft.

Firefighting Beast

The airport's new ARFF vehicle is a futuristic-looking Panther, made by Rosenbauer America. Think high-tech emergency vehicle wrapped inside the body of the Batmobile, and you get the idea. It's 39 feet long, 11 feet wide and 12 feet tall, with enough capacity to carry 3,000 gallons of water, 500 pounds of dry firefighting chemical (potassium bicarbonate) and 400 gallons of aqueous film-forming foam.


MARTY HUFFMAN

Although the six-wheel-drive Panther weighs almost 43 tons fully loaded, it can accelerate from 0 to 50 miles per hour in less than 35 seconds, courtesy of a 14-liter, 720-horsepower diesel engine. Top speed is 70 miles per hour, notes Marty Huffman, Rosenbauer America's western regional manager for ARFF equipment.

"These vehicles have to be able to carry everything needed to fight a fire…you can't rely on a fire hydrant being near an airplane crash," says Huffman, who served on ARFF crews in the U.S. Air Force and at Tucson International for more than 20 years.

"It's designed for high-speed, rapid response," he continues. "That's what makes these trucks so unique. They're designed to respond rapidly, [so crews can] get control of fires and create life-saving paths for people. If there's a fire on a runway, [passengers and crew] conceivably have 90 to 120 seconds to

FACTS&FIGURES

Project: Enhancing Emergency Services

Location: Juneau (AK) Int'l Airport

2016 Aircraft Operations: About 100,000

2016 Enplanements: About 420,000

New ARFF Vehicle: Panther, by Rosenbauer America

Cost: $750,000

Funding: 93.75% FAA grant; 6.25% airport

Facility Upgrades: Remodel/expansion of airside station

Cost: $2.6 million

Funding: 93.75% FAA grant; remaining portion by airport, state of Alaska & city/borough of Juneau

Building Contractor: Dawson Construction

Architect: Jensen Yorba Lott

Engineering: PND Engineers

Mechanical Engineers: Murray & Associates PC

Electrical Engineering: Begenyi Engineering

Key Benefits: Larger facility for equipment; faster response to aircraft emergencies; compliance with FAA requirements for new traffic profile

get off the aircraft before fire gets inside the airplane…and starts to eat away at the aircraft. As such, [ARFF teams] have a matter of seconds to get that agent—foam or chemical—down on an aircraft. That's why these trucks have such speed, power and extinguishing capabilities."

The truck is also equipped with full-time, all-wheel drive for off-road duty. "It has to be capable of traveling off-road at speeds of up to 30 mph and still be controllable," he notes.

Smooth Operator

The Panther is designed to optimize operator efficiency. For starters, one person can drive the vehicle *and* operate the firefighting controls. Everything can be done from the cab, including chemical application via a remote-controlled turret, adds Huffman.

"When dealing with aircraft fires, the amount of dry chemical dispersed is critical," he emphasizes. "The Panther can discharge anywhere from 600 to 1,200 gallons per minute of foam and water."

Inside the cab, video monitors and specially designed mirrors allow the operator to see what's going on outside the truck without wasting precious seconds exiting and reentering the vehicle. Controls are centrally located, and most have been simplified to push-button operation. The keypad-like panel allows operators to focus more on firefighting than on trying to hit the right switch or lever, says Huffman.

"There's no more shifting gears to get into pump mode," he explains. "If the operator needs lights, it's one button. Foam? One button. That helps keep the operator's head up and out of the controls, so he can look at the fire, which is what the operator should be doing."

Like other Rosenbauer customers, JNU received a week-long training course when its new Panther was delivered. Company trainers familiarize drivers/operators with basics such as filling and driving the vehicle and operating its controls. More extensive training is then provided by the local airport or fire department that handles firefighting operations.

According to Huffman, experienced drivers usually get the hang of a new ARFF truck in about a week, but it can take rookies a good six months to get fully acclimated. "These vehicles are really, really heavy and really, really fast," he comments. "It's not like driving your mom's Buick."

More Space Needed

The new Panther joined the airport's existing ARFF fleet—two older Oshkosh trucks—in 2016. The airport's newly expanded and remodeled facility was completed this July.

JNU contracts out firefighting services to the city of Juneau's Capital City Fire/Rescue Department, so the facility is split into two sections, one devoted to airside firefighting operations and the other to serving the city's central borough. The airside operation is known as the Glacier Station, because it overlooks the Mendenhall Glacier.

Previously, the station's airside section could only accommodate two ARFF vehicles. To add room for the airport's new Panther, crews tore down the airside portion and built a new structure that is 3 feet taller, with about 1,000 more square feet of space. Now, the airside section measures 93 by 56 feet.

"We previously had four skinny bays that did not meet FAA specs for the vehicles we had and could not house larger trucks," explains Wahto. "Now, we have three larger bays, plus room to accommodate bunker gear, lockers and support functions, such as a decontamination room and a washer and dryer for bunker gear."

Together, the remodeled facility and new ARFF vehicle position JNU to provide comprehensive, fast and efficient response to aircraft emergencies, she notes. "To maintain our FAA certification, we're required to have ARFF station ready-response," Wahto explains. "We're open 24/7, so having the right building, equipment and staffing available is critical.

The new station includes a decontamination shower and facilities to launder staff gear.

"We're also a diversion airport for medical or mechanical emergencies because there's no other airport nearby that's open 24/7," she notes. "We're a small airport, but we're still an important one."

Toronto Pearson Int'l Extends Self-Service Surge to Checked Baggage

BY NICOLE NELSON

Toronto Pearson
For You. The World.

FACTS&FIGURES

Project: Self-Serve Bag Drop

Location: Toronto Pearson Int'l Airport

Airport Authority: Greater Toronto Airports Authority

Contractor: Materna

Units: 46

Airlines Served: 11

Bags Processed: More than 3 million (thru mid-Sept.)

Key Benefits: Shorter queues; increased passenger throughput from same or smaller area; smoother passenger experience; frees airline staff to serve passengers needing assistance

With 46 self-service bag drops operating in its terminals as of mid-October, Toronto Pearson International (YYZ) is on the fast track to expediting the check-in process for passengers flying out of Canada's biggest and busiest airport.


KURUSH MINOCHER

Kurush Minocher, associate director of Airline Programs and Services for the Greater Toronto Airports Authority, explains that self-service bag drops reduce unnecessary touch points for passengers by allowing them to arrange their own check-in experience from a home computer, mobile device or self-service kiosk. After arriving at the airport, passengers can proceed to the baggage drop-off site, rather than standing in a queue to wait for check-in.

Automating the process shortens queues and reduces the end-to-end check-in time for passengers, reports Minocher.

"Toronto Pearson is experiencing record growth and needed to find innovative ways to add check-in capacity," he explains. "Reconfiguring check-in facilities in both terminals to increase the use of self-service technologies will deliver additional capacity for growth by allowing for increased throughput. Self-service bag drops also provide air carriers with a choice for how they wanted to deliver the check-in experience, either as a full-service or self-serve process."

Since YYZ debuted its first self-service bag drop stations in January 2016, travelers have chosen the automated option more than 3 million times.


GARY MCDONALD

Materna Americas supplies the airport's automated systems. Gary McDonald, the company's president, notes that Materna systems reduce the bag drop process to mere seconds.

"One and one-half minutes is what an [airline] attendant spends with an average customer checking one bag," he reports. "In contrast, we have self-service bag drops processing 120 bags per hour. You think of how many people have been helped without having to stand in a line, and it is huge."

The fastest bag drop in the world, a Materna operation at Norway's Oslo Airport, takes an average of 10 seconds, says McDonald.

Return on Investment

When it comes to value for cost, Minocher notes that YYZ's self-service bag drops provide significant benefits for its customers.

"Before investing in new technology like self-service bag drops, we evaluate multiple factors to determine what the best solution is, looking at our current situation and how those patterns would change in the future," he explains. "Are we using our existing facilities to the best of their ability, or could we be more efficient? What is the cost, benefit and impact to the status quo if we don't change? Our evaluation always maps back to our No. 1 goal, which is to push the envelope on improving the passenger experience."

Minocher considers automating the airport's checked bag process to be a sound investment, based on the improvements it provides for the passenger experience.

"Self-service bag drops have made the experience smoother and more enjoyable for passengers by reducing amount of time they need to check in," he summarizes. "We see the [self-service drop stations] as part of the [overall] baggage handling system with live monitoring of the environment. The system provides real-time information on check-in throughput as it happens, which gives us the ability to map processing times to our other metrics in the terminal."

Mutually Beneficial

Minocher reports very positive reactions from both passengers and air carriers.

Automating the bag drop process has shortened queues and reduced passenger check-in time at YYZ.

"Passengers enjoy having the option of using full-service or self-service check-in, which gives them the ability to manage their own experience," he relates "Those who are using the self-service bag drops are seeing a reduction in check-in time, with a smoother, faster experience."

Minocher has also noted a shift in the orientation of air carriers —from processing passengers to *serving* them.

Airline agents are able to spend more time helping travelers that require assistance, because other passengers choose to complete the check-in process independently at the self-service bag drops.

As of mid-September, 11 airlines were using YYZ's self-service bag drop system.

Growing Demand

Following the successful rollout of the technology at YYZ, other Canadian airports are taking notice of the self-service option, reports McDonald. Aéroports de Montréal has ordered 16 variants of the Materna systems, and Québec City Jean Lesage International Airport has ordered eight units.

Stateside, Minneapolis-St. Paul International is conducting a two-unit pilot in conjunction with American Airlines.

"The airports have invested in this equipment to streamline the process for the airlines and to attract more airlines into the airport," McDonald remarks. "Because [the self-serve bag drops] can process more bags than an agent at a desk, [airports] need fewer of these injection points. If they have the same number of injection points, they can get more airlines into the same space and cope with the expansion that is happening."

In addition to operating one of the largest self-bag drop operations in Canada at YYZ, Materna also has the largest installation in the world at Gatwick Airport in London.

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Social Sustainability: Beyond Community Engagement

When most people hear the word "sustainability," they think about efforts to protect our air, water and biodiversity. Those more actively engaged in the sustainability profession recognize that it's about more than just the environment. Sustainability is also about considering and balancing three critical elements: people, planet and profit.

For airports, sustainability is often defined by the acronym EONS—economic viability, operational efficiency, natural resource conservation and social responsibility. Airports across the globe actively support sustainability concepts by considering return on investment and operational lifecycle factors, protecting and enhancing the natural environment and engaging their stakeholders and community. At Tampa International (TPA), our comprehensive program encompassing all aspects of sustainability is dubbed Legacy of Environmental Actions for our Future (or LEAF).

So, we're done here. We've got it covered, and we're all on-board. Right?

Not necessarily.

Although the industry has made major headway supporting initiatives that foster environmental sustainability, there's one area that has yet to gain broad exposure. It's the concept of social sustainability—but not just at the community level. It goes one step further to the individual level. The human level. It's your co-worker, your manager, your team. It's the individuals who make your airport operate successfully. Social sustainability is the protection and enhancement of humans as resources. Just as we strive to protect our environmental and fiscal resources, we must do the same for our human resources.

MELISSA SOLBERG

Melissa Solberg, LEED AP, is the sustainability manager at Tampa International (TPA) and part of a diverse team leading the airport through a historic period of construction and growth. Specifically, Solberg is responsible for implementing TPA's sustainable management plan and employee health and wellness program.

At TPA our solution is straightforward. We focus on the health and wellness of individual employees. This, in turn, leads to greater organizational strength and continuity.

This year, TPA renewed its commitment to social sustainability with the launch of *Be WELL*, an internal campaign designed to educate employees about wellness. The program's tagline, *Sustainable Living Starts with Me*, helps emphasize the importance of health and well-being in their day-to-day activities—both at work and at home.

The primary message of *Be WELL* is simple: Employees' health and well-being matter. Healthy, emotionally engaged employees striving for common goals are happier and more productive at work. Education and awareness, open dialogue and employee development are at the forefront of the campaign.

Be WELL encourages employee engagement and provides a common platform to address wellness as we strive to:

- engage employees in personal and programmatic development;
- actively listen to their needs and suggestions;
- provide mechanisms for open conversation and feedback;
- encourage all employees to lead by example; and
- support employee interaction throughout all levels of the organization

Additionally, *Be WELL* supports the idea of individuality, recognizing that each employee has a unique set of skills that contribute to the greater good of the organization. The program has evoked a sense of pride, purpose and responsibility in our employees' pursuit of personal sustainability goals. Our employees are encouraged to become more aware of their mental, emotional and physical health, and also to support friends and colleagues pursuing their respective personal goals.

The program is helping develop individual leaders throughout the organization by offering each team the freedom to use means that work best for current and future goals. One size does not fit all. Ownership of the *Be WELL* program is encouraged department-by-department, recognizing and accepting that there are many different paths for achievement and recognition.

Individually and collectively as an organization, the emphasis on social sustainability has led to increased environmental stewardship and economic vitality through improved employee interaction, engagement, productivity, health and well-being.

Through the implementation of social sustainability, we are developing leaders who feel invested not only in their own personal health and well-being, but in that of their colleagues. Focusing on the human aspects of sustainability helps TPA succeed as one of America's favorite airports.

IND AUGMENTS MAINTENANCE STAFF THROUGH M-B CONTRACTED SERVICE

Indianapolis Airport Authority has invested heavily in its snow removal fleet and has realized 40% gains in clearing times. We are protecting and extending the effectiveness of that investment by contracting the M-B Service Department for seasonal audits, updates, and equipment maintenance. It's all about how we manage our mechanics' time to keep our fleet in top condition and our runways open. It has been a very effective partnership for us at IND. – *Mike Medvescek, Senior Director of Operations and Public Safety at IND*

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