AirportImprovement™

San Diego Int'l Builds Consolidated Rental Car Facility

JFK Adds Stacked Walkways to Accommodate A380s

Port Columbus Int'l Invests in Existing Facilities, Prepares for Future Construction

SEE US AT THE 88TH ANNUAL **AAAE CONFERENCE**

AIRPORT STORIES INSIDE: ATL | BFL | CMH | CVG | JFK | MCO | MIA | MOT | MRY | PIT | RIC | SAN | SEF | YQF | YYC

New Terminal at Minot Int'l Dramatically Increases Capacity & Prepares Community for Future

Commerce Park Drives Growth at Sebring Regional

Settle for more.
Arconas creates furniture for people, not numbers.

As experts, we know how to optimize the crucial role that airport furniture plays in creating a high-end passenger journey. That is why Arconas designs efficient seating options with more personal space and individualized power sources, giving your customers room to breathe, relax and recharge.

Comfortable passengers are satisfied customers.

arconas.com

ARCONAS

CANADA'S BEST MANAGED COMPANIES

escape Lounges

Escape to a new premium lounge experience

FOOD & DRINK

Enjoy the best in fresh food, with complimentary food & drinks available alongside a premium à la carte menu.

TRANQUILITY

Escape the hustle and bustle of the airport and use our quiet space to relax, unwind or work and prepare for the journey ahead. Catch up with the daily news or enjoy a favorite magazine from our wide range of local and international newspapers and magazines.

WORKPLACE WITH FREE Wi-Fi

With plenty of desk space, free high-speed Wi-Fi and all the charging points a business traveller could ask for, it's a great spot to work

Lounges:
Minneapolis Saint Paul International airport - Now Open
Oakland International Airport - Opening Summer 2016
More to be announced!

escapelounges.com

magworld.com

MAG USA is an airport management and services company based in the United States, launched to bring three of our unique products and services to the U.S.:

CAR PARKING SERVICES - ESCAPE LOUNGES - PUBLIC-PRIVATE PARTNERSHIP (P3) REDEVELOPMENTS OF COMMERCIAL AIRPORT REAL ESTATE

We are wholly-owned by the largest U.K. owned airport operator, Manchester Airports Group (MAG). MAG is the fastest growing U.K. airport group, owning and operating 4 airports in the U.K. contributing more than $6bn to the UK Economy.

Contact Details:

Anthony Tangorra
Vice President - Commercial
+1 281 546 8679
Anthony.Tangorra@magairports.com

Patrick Heck
Vice President - Commercial
+1 303 963 6806
Patrick.Heck@magairports.com

Rosemarie Andolino
CEO and President
+1 312 447 1898
Rosemarie.Andolino@magairports.com

MAG USA

Publisher
Paul H. Bowers
paulbowers@airportimprovement.com
262.510.7832

Editorial Consultant
Rebecca Douglas
rebeccadouglas@airportimprovement.com
815.621.4525

Social Media Director
Kristin Shaw
kristinshaw@airportimprovement.com

Creative & Production Director
Becker 505, LLC – Chad Becker
chad@becker505.com

Circulation Director
Lisa Monday
lisamonday@airportimprovement.com

Webmaster
Matt Tews
matttews@airportimprovement.com

Contributing Writers
Jennifer Bradley, Ronnie Garrett, Nicole Nelson, Robert Nordstrom, Jodi Richards, Michael Schwanz, Kristin Vanderhey Shaw, Thomas J. Smith, Victoria Soukup, Dan Vnuk, Ken Wysocky

Advertising
Paul H . Bowers
paulbowers@airportimprovement.com
262.510.7832

Adrienne Gibson
adriennegibson@airportimprovement.com
262.844.4368

Vicki Jensen
vickijensen@airportimprovement.com
414-331-9768

Editorial Advisory Board
Dr. David A. Byers
Quadrex Aviation, LLC

Paul Cudmore
Eagle Integrated Solutions

William Fife
Peer Review Consultant

Glenn S. Januska
Casper/Natrona County Int'l Airport

Bob Mattingly
Sarasota Manatee Airport Authority

Andrew Platz
Mead & Hunt

Donna Speidel
Sightline Airport Marking Consultants

Kenneth Wiegand
McKinney Airport
Development Corporation

columns

advertiserindex

AIRPORT IMPROVEMENT published bi-monthly by Chapel Road Communications LLC, 3780 Chapel Road, Brookfield, WI 53045. All statements, including product claims, are those of the person or organization making the statement or claim. The publisher does not adopt any such statement or claim as its own and any such statement or claim does not necessarily reflect the opinion of the publisher. Printed in the USA. POSTMASTER: Send address changes to AIRPORT IMPROVEMENT to 3780 Chapel Road, Brookfield, WI 53045. All rights reserved. Permission to reprint or quote excerpts granted only upon written request.

Michael Baker
INTERNATIONAL

We Make a Difference

Providing a full continuum of professional consulting services for airports

Planning • Environmental • Architecture • Engineering
Construction Services • Operations/Systems Support • Technology

Gregory N. Fredrickson, PE, GFredrickson@mbakerintl.com • Claudia B. Holliway, CBHolliway@mbakerintl.com

MBAKERINTL.COM

Got CSR?

Harkening back to my early days in business school at UW-Whitewater, I'm reminded of freshman speech class. I like to talk, so giving speeches was no big deal. However, before we began writing, practicing and delivering speeches, much of our time centered on the topic of listening. That's right, listening.

Our professor said that the best communicators do more listening than talking. Hmmm. I've found that it's not always easy to make listening a priority, but I certainly try. (Apparently, the current class of U.S. presidential contenders didn't take Speech 101 at UW-W.)

Over the years, listening has served us well. *Airport Improvement*, its editorial format and circulation composition are the direct result of listening. We would have never factored airport consultants into both our editorial and circulation plans without listening to the market. The same can be said for many of the articles you read in each issue, which brings me to CSR.

Earlier this spring, Paul Behnke contacted me with an article idea about corporate social responsibility (CSR). Frankly, the subject wasn't on our radar of upcoming topics to profile. But the more I *listened* to Paul and what he said about the importance of CSR to airports, the more I came to believe that it was a story that really needed to be told.

What follows on Page 32 of this issue is a comprehensive primer about what CSR is, how it can be implemented and the need for it to be codified and put into practice at all airports, regardless of size. I'd make the case that CSR is also important for airport consultants and their suppliers.

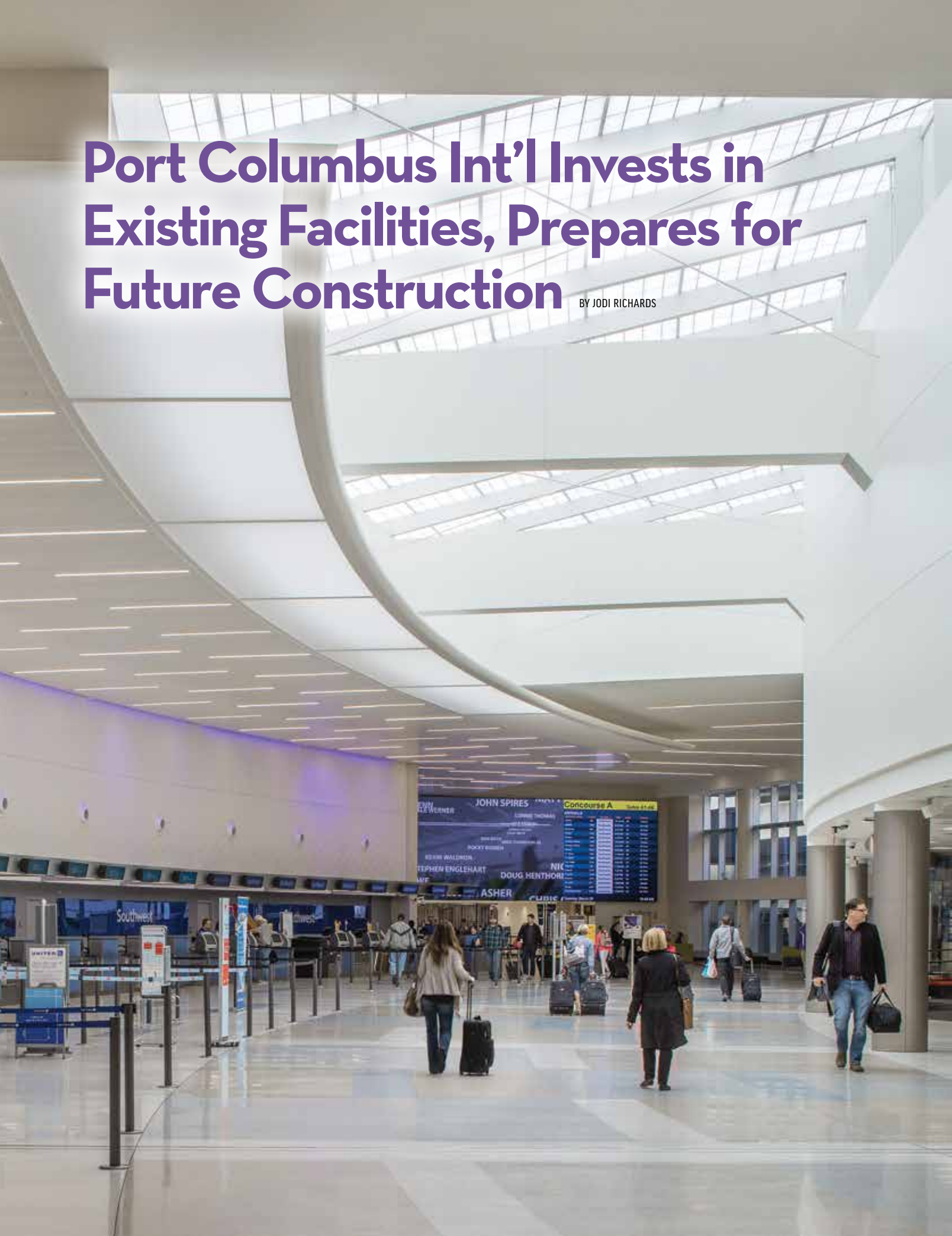
Listening to our communities, our employees and especially to our consciences is a great place to start!

Cheers,

Paul

Port Columbus Int'l Invests in Existing Facilities, Prepares for Future Construction

BY JODI RICHARDS



The decision to renovate or build new is often viewed as a high-stakes fork in the road, but Port Columbus International (CMH) seems comfortable straddling the common divide. In March, the Ohio airport celebrated the end of an $80 million terminal renovation program while maintaining its options to build a new midfield terminal in the future. Fresh finishes, an infusion of natural lighting and updated mechanicals were completed to bridge the gap until passenger numbers establish a clearer path toward ground-up construction.


ELAINE ROBERTS

The primary goal of the renovation program was to improve the travel experience for passengers by creating a more modern, open and attractive terminal, explains Elaine Roberts, chief executive officer of the Columbus Regional Airport Authority. From a functional standpoint, the upgrades are expected to extend the useful life of the building 15 to 20 years, or up to 8.5 to 10 million annual passengers. (Currently, the airport services 6.8 million per year.) Much of the lifecycle extension is driven by recent investments in CMH's mechanical systems, notes Roberts.

A study conducted in 2011 charted the course to extend the life of existing facilities, and crews began renovations in fall 2012. Planners primarily focused on the current terminal's ticketing level and investigated ways to modernize the building that was constructed in 1958.

Roberts characterizes CMH's previous facilities as well-maintained and functional, but certainly not modern looking: The ticket lobby was dark with a very low ceiling, and the aging ceramic tile floor was in poor shape. TSA checkpoints were particularly constrained, she adds.

"At the time, we didn't see the timing for a new terminal anywhere close," Roberts recalls. "We were trying to modernize and get more capacity out of the current building."

Together, the airport and AECOM studied passenger demand projections and explored case studies of other airports. This helped CMH officials "understand where they were" and what kind of investment the facility might need, explains Ron Dixon, AECOM's Eastern Midwest aviation leader.


RON DIXON

"They had air service and passenger traffic that was solid—this is a city that consistently increases its population year over year," Dixon comments. "There was a lot they could bank on about the metro population always wanting to use the airport."

While renovating the airport's 60-year-old terminal prevailed as the most prudent near-term route, the broader plan included keeping a close eye on future demands. The project team identified the ticket lobby as in dire need of an update, but quickly realized that the rest of the terminal would also benefit from a facelift. As the airport authority prepared for ticket lobby renovations, it expanded the project scope to include all public spaces, including CMH's three concourses, 35 gate areas and the lower-level baggage claim.

Three TSA passenger checkpoints were also expanded/renovated; and the car rental area received new Arconas Aerea™ seating with built-in power outlets as well as additional inPower Flex™ modules for existing seating. During previous projects, the airport increased the capacity of its free wireless network for passengers and partnered with Arconas to retrofit existing seats with additional power units. It also added Powermat™ charging disks to existing tables in holdrooms throughout all three terminals to provide new options for wireless charging.

Originally a $25 million ticket lobby update, the most recent renovation program mushroomed to $80 million of updates throughout the airport. "We couldn't look at another 10 or 15 years without doing this," Roberts explains. "You have to preserve and take care of your assets—keep them fairly modern and attractive and well-maintained throughout their useful life."

Program Objectives

CMH officials had very specific goals for the renovation, notes Roberts. Among them was to enhance the natural light in the ticket lobby and update/renovate restrooms throughout the terminal.

PORT COLUMBUS

FACTS&FIGURES

Project: Airport Renovation

Location: Port Columbus (OH) Int'l Airport

Total Cost: $80 million

Ceiling Tiles: 275,000 sq. ft.

Carpeting: 130,000 sq. ft.

Terrazzo: 150,000 sq. ft.

Drywall: 7,500 sheets

Light Fixtures: 2,000

CONCOURSE A

Cost: $4 million

Timeline: Jan. 2013-Sept. 2013

Design: AECOM

Renovation: Messer Construction Co.

CONCOURSE B

Cost: $14 million

Timeline: Oct. 2013-Sept. 2015

Design: AECOM; MSA Architects

Construction Manager at Risk: Gilbane Building Co.

CONCOURSE C

Cost: $7 million

Timeline: April 2013-Dec. 2013

Design: AECOM

Construction Manager at Risk: Gilbane Building Co.

TICKET LOBBY

Cost: $31 million

Timeline: Jan. 2014-March 2016

Design: AECOM

Construction Manager: Turner Construction Co.

Drywall & Ceiling: Combs Interior Specialties

Baggage Scales: Rice Lake Weighing Systems

BAGGAGE CLAIM

Cost: $6.3 million

Timeline: Feb. 2015-Feb. 2016

General Contractor: Corna-Kokosing

Design: MSA Architects

TECHNOLOGY INFRASTRUCTURE

Cost: $15 million

General Wi-Fi Contractor: Cincinnati Bell Technology Solutions

Wi-Fi Hardware & Access Points/Configured Servers: Aruba Networks

Cabling: Professional Cabling Solutions

CMH added more local brands when it broadened its array of concessions.

According to customer surveys, ambiance was one of the airport's weakest factors. "The terminal itself received high marks in cleanliness, etcetera. But it was the overall satisfaction with the airport experience that was coming back (negatively) in those surveys," she shares.

With the project complete, Roberts is especially pleased with improvements in the ticket lobby. "It looks like a new terminal," she raves.

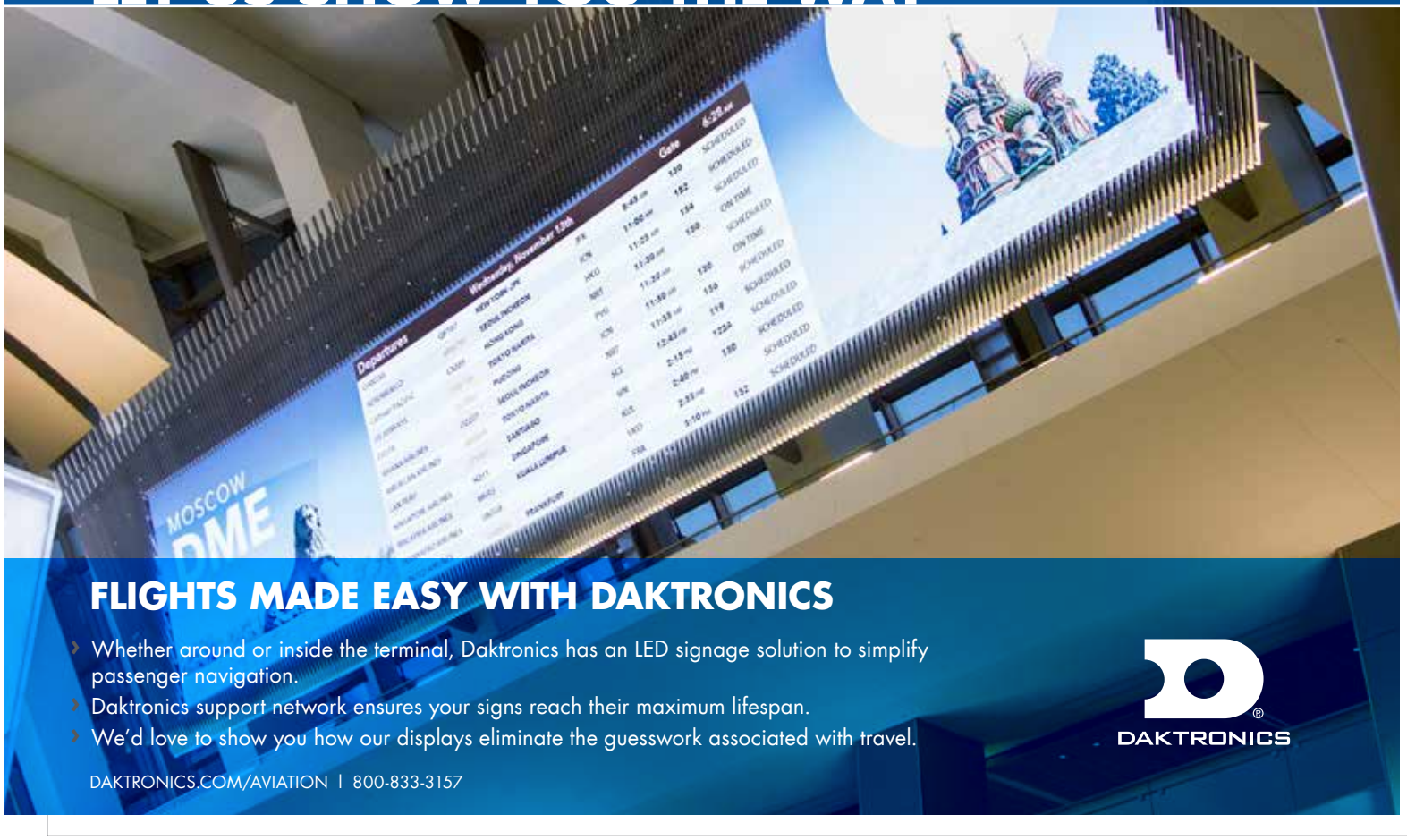
In addition to adding more natural lighting, the airport opted to install energy-efficient LED light fixtures. New common-use ticket counters further brighten the space and allow for more efficient, flexible working environments for the airlines. Dixon describes the new finishes as classic, well-detailed and cleanable. "It's a comprehensive modernization, but done with a lot of economy," he relates.

New terrazzo flooring replaced aging ceramic tiles in the lobby and carpet in circulation areas and corridors. Previously, CMH had to replace carpeting often; but the terrazzo is expected to last the life of the building. New carpeting was installed in holdrooms.

Restrooms, previously a common subject of passenger complaints, received a total makeover. Stalls were widened to accommodate patrons with wheeled luggage, and shelves were added to keep personal items like purses and briefcases off the floors. Hand dryers located next to each sink prevent patrons from dripping water across the floor, and the facilities are nearly paperless. "You can literally power-wash our restrooms," Roberts remarks.

Having all airport stakeholders involved in the planning process—early and throughout—was a tremendous asset to the project, she reflects. Personnel from the airport's asset management and custodial teams, for instance, helped strategize restroom renovations.

LET US SHOW YOU THE WAY



FLIGHTS MADE EASY WITH DAKTRONICS

› Whether around or inside the terminal, Daktronics has an LED signage solution to simplify passenger navigation.
› Daktronics support network ensures your signs reach their maximum lifespan.
› We'd love to show you how our displays eliminate the guesswork associated with travel.

DAKTRONICS.COM/AVIATION | 800-833-3157

DAKTRONICS®

As the program entered its third and final year, the airport had enough money to invest $800,000 in modernizing its pre-security food court, reports Roberts. Responding to feedback from passenger surveys, CMH broadened its array of concession options and added more than 6,000 square feet of space throughout all three concourses. Local concepts, such as Eddie George's Grille 27, Bob Evans Express and Donato's Pizza, were interspersed with existing concepts.

Concessions revenue is consequently up, exceeding passenger growth, note airport personnel.

Other line items added to the original program scope include new information counters in the ticket lobby and lower-level baggage claim. The airport also relocated its business center and currency exchange.

Not all of the potential projects that popped up during renovations were added to the renovation program. Some—such as a set of restrooms that are less visible to the traveling public and not as outdated as others—were placed on what Roberts calls the airport's "gap list." As officials evaluate the need for a new terminal, they'll also consider the projects accumulating on the gap list.

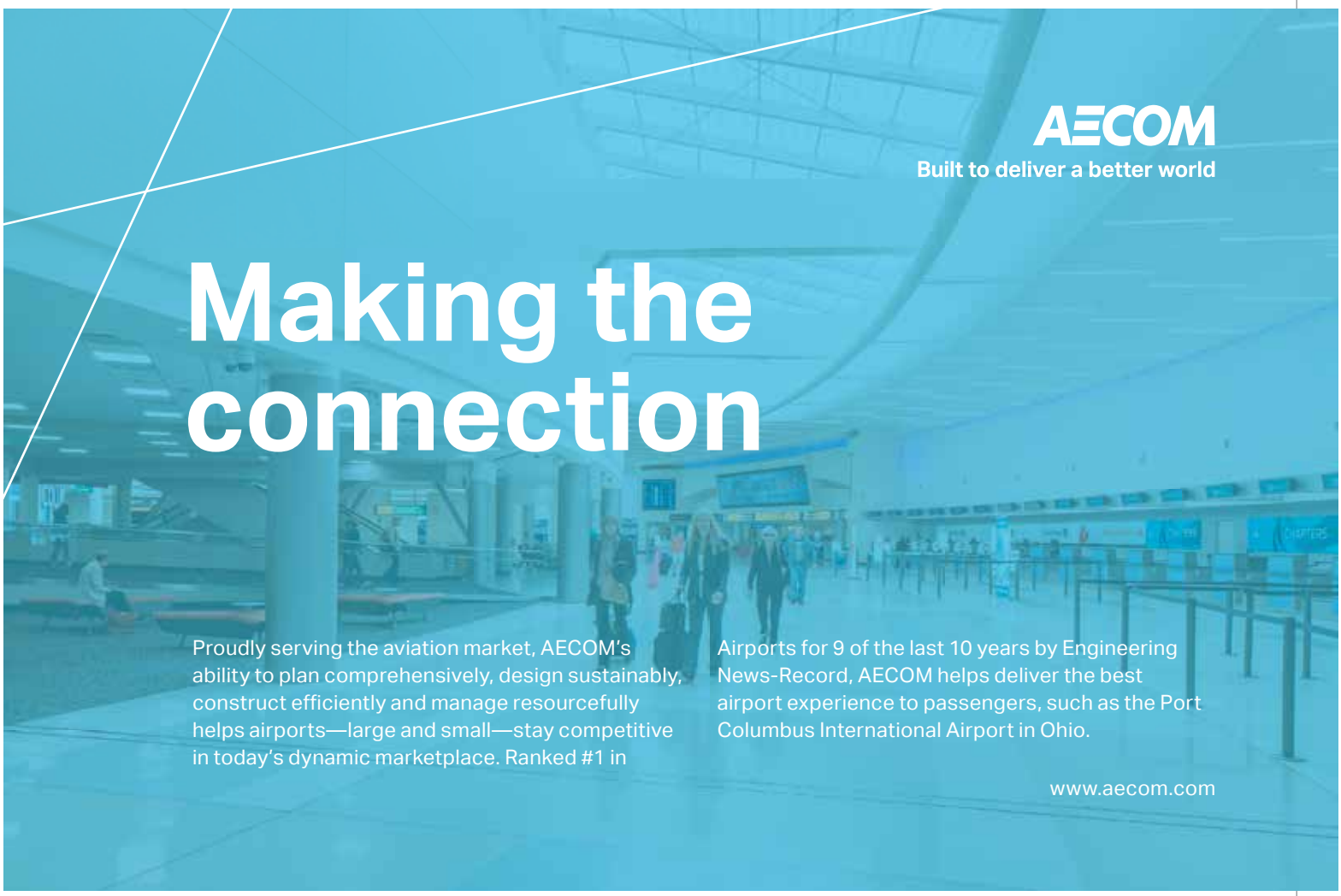
"This will be a continual question over the next 10 years or so," says Roberts. "How much more money do you keep pouring into this building, other than preserving the assets at a certain standard of customer service? You're not going to want to invest a lot more money if you're getting ready to walk away from the building. That will become a new challenge."

Elevator and escalator upgrades not included in the recent program will be needed in the near future, she notes.

Raising the Roof

Arguably, the most striking change at CMH occurred in the ticket lobby. What was once a dark space with a low, arching metal ceiling now features curved 30-by-110-foot skylights that flood passengers with sunlight. Removing the old ceiling allowed designers to take advantage of the space's original 28-foot structural clearance and creates an open, airy ticket lobby, Dixon comments.

Installing the new skylights was a monumental endeavor that required careful planning and coordination, notes Dave Shirey, project manager with Turner Construction Company, construction manager at risk for the lobby renovation. To add the new feature, crews reinforced the structure's columns and extended them



through the roof, which allowed them to build the skylights above the roof. Next, workers tied the existing roof into the skylight structure and cut out the structural joists, decking and roofing from underneath the skylights. "There were months of preparation and getting everything ready," Shirey recalls. "And then, over the course of about three days, we opened that up; and all of a sudden, there's a skylight in the ceiling."


DAVE SHIREY

Because the project was a renovation and not a fresh build, phasing was crucial, Roberts advises. "At times, it really looked like a major, major construction site," she recalls. "It was critical to have good signage, and tenants and everybody had to be very patient."

The biggest challenge was having about 20,000 people walking through the construction site every day, adds Shirey. Not surprisingly, wayfinding updates were considered critical, and CMH consequently hired additional customer service staff throughout the program to direct passengers. "Things were changing every few weeks, and the airlines shifted counters at least twice during this process," Roberts relates.

To ensure safety and minimize negative impacts on passengers, Turner Construction encapsulated the area where crews performed heavy structural work during the installation of the skylights. After that was finished, the interior renovation remained very visible to passengers—a strategy that consequently saved the airport money. "It took a long period of time to accomplish, but the difference was that the passengers were experiencing and watching it as it was going on. It wasn't behind a wall or curtain," comments Turner Vice President Kyle Rooney.


KYLE ROONEY

When barriers were necessary between construction workers and passenger traffic, Turner tried to make them aesthetically pleasing. Painted plywood walls displayed renderings of what the lobby would look like at the end of the project.

Eventually, only open metal barricades were needed to separate the work area from passenger flow. "That gave us a lot of flexibility to move passenger lanes around as need be, but allowed them to experience the construction, too," Shirey explains.

FROM THE LARGE TO THE SMALL

COBUS SERVES THEM ALL!

The figures are in – in 2015 airlines in North America flew 798.4 million passengers a total 902.4 billion revenue passenger miles on airplanes with load factors of 83.8%.

Airports reported traffic increases ranging from 2.3% to more than 11.0%.

How can they continue to handle all of these passengers at ever increasingly crowded airports?

Certainly one answer is to expand the gate facilities – but that takes a lot of time (generally several years) and a not inconsequential amount of money.

So is there another way? Yes there is – the use of off-gate aircraft parking on Hardstands. A proven system of accommodating a greater quantity of flights and passengers without having to construct additional gates.

COBUS Airport People Moving Buses provide the link between the hardstands and the aircraft terminals. Passengers are transported quickly, safely and comfortably to and from their flights. More than 20 airports in North America have found that this method works! In excess of 200 **COBUS** buses have been sold on this continent. And more than 3,500 **COBUS** have been sold to 325+ airports worldwide!

COBUS INDUSTRIES

Isn't time for you to contact us? Call COBUS at 1-203-380-9575 or Don@cobus.us or visit www.cobus.us.

C O B U S – *We Move People*

"We always had to have the passengers be able to pass through the lobby to get to the checkpoints," he emphasizes. "So we had that constraint to provide a safe walkway path right through the construction area."

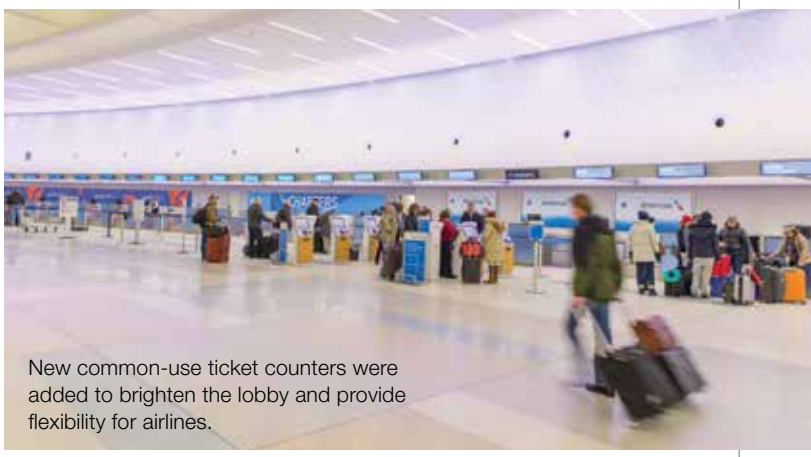
Turner ran two crews and saved work that was especially loud or potentially disruptive for the night shift. "At three in the morning, we would stop working and get things put back together; because at 4 a.m., those ticket counters opened," Shirey recalls.

To accommodate construction, airline ticket counters were consolidated in the north half of the lobby while renovations occurred in the south half. Once that end was completed, the counters were moved to the south. Advanced notice of the relocations was critical for construction crews and airlines alike, Shirey notes. It was important that all components of the customer service process could communicate when the moves occurred, he emphasizes.

"Whether it was a baggage office or ticket counters or holdrooms, it was a giant puzzle," Dixon recalls.

Mark of Columbus

Promoting the "essence of Columbus" was integral to the renovation program, says Roberts. Building on the notion that CMH is the front door to the community, airport officials partnered with the local convention/visitors bureau and business community to highlight what the region has to offer.



New common-use ticket counters were added to brighten the lobby and provide flexibility for airlines.

Space in the airport atrium previously used for paid advertising now displays photographic images of Columbus landmarks. Inside the front door, travelers find walk-through museums that showcase the history of Port Columbus. An art display in the center of the lobby features notable Ohio aviators including John

Airports Improved

Clear Channel Airports is proud to announce our new partnership with the Metropolitan Washington Airports Authority to develop new media programs for Ronald Reagan Washington National Airport and Washington Dulles International Airport.

Clear Channel Airports
Partner. Innovate. Deliver.

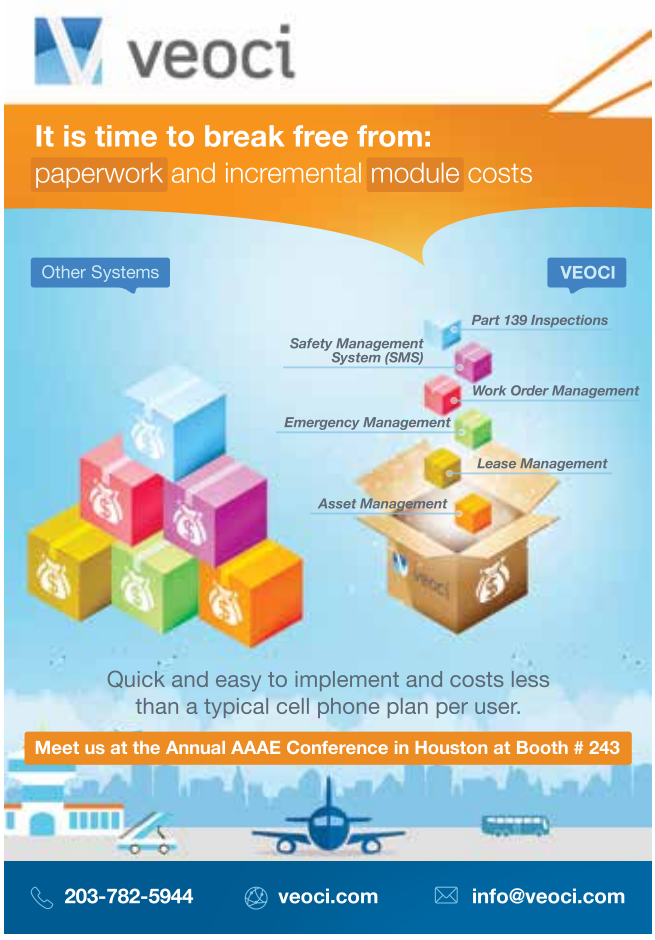
Glenn and Eddie Rickenbacker. “We’re doing a lot of things to really showcase the community and some of the exciting things around here,” Roberts notes. “I think it’s going to really add a lot to our facility.”

A large medallion artwork added to the terrazzo floor in the ticket lobby features iconic facilities and structures in the area. In partnership with the Ohio Art League, the airport will also showcase the work of local and state artists in updated exhibit spaces.

While new pieces of art and updated finishes provide immediate visual appeal to travelers, CMH invested roughly half of its $80 million project budget in back-of-house mechanical infrastructure for the aging terminal. Crews updated the heating, ventilation and air conditioning system along with boilers and information technology systems.

Shifting Timeline?

Developments associated with recent renovations may prove to accelerate plans for a new terminal. While work crews replaced carpeting, updated restrooms and modernized mechanical systems, CMH officials conducted a study to analyze the airport’s midfield area, where the future terminal, parking garage and car rental facility will eventually be built. The “mini master plan,” as Roberts calls it, investigated potential revenue-generating uses for the space while the airport and airlines prepare for new construction.



Artwork in the terrazzo flooring and museum-style exhibits showcase local highlights.

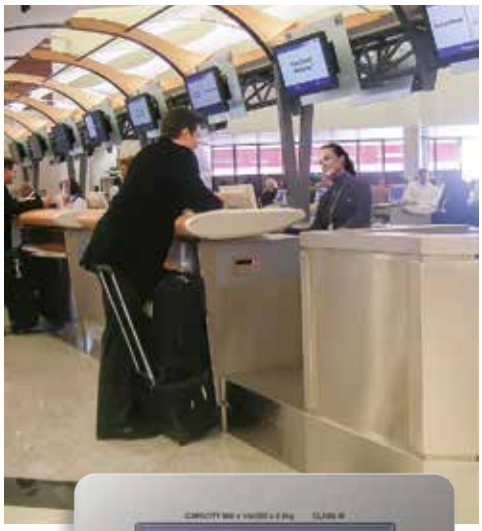
The study prompted officials to reassess previous passenger forecasts. Projections from 2014 estimated that CMH would need a new terminal around 2030—assuming passenger growth of slightly less than 2% per year, including capacity gains from the renovation program.

About 15 years earlier, CMH and its airlines agreed that a new terminal would only be built in phases, as the airport ran out of capacity in its current building. “We would not just build a brand new terminal and walk away from the old terminal,” Roberts summarizes.

Updated information, however, indicates that the airport will need to build a new terminal all at once to meet anticipated capacity demands by 2030. Passenger traffic at CMH surpassed original expectations by growing 7% last year and was tracking at roughly 6% as the first quarter of this year came to a close. “We’ve redone the forecast already,” Roberts relates, noting that a new terminal could be needed as early as the mid-2020s.

“Capacity is an interesting thing,” she muses. Ultimately, the timeline for CMH’s midfield terminal construction will depend on how fast passenger volume continues to grow.

LET YOUR Expectations



TAKE FLIGHT

From the nation's largest carriers and airports to regional operations, Rice Lake provides high-quality, dependable baggage scales and national calibration services.

From full profile to low profile, portable and custom sizes, visit **www.ricelake.com/avi** to see where Rice Lake Weighing Systems' aviation solutions can take you.

RICE LAKE®
WEIGHING SYSTEMS

1-800-472-6703
www.ricelake.com

Meadows Field Reduces Runway Reconstruction Cost With Quarter-Crown Design

BY KEN WYSOCKY

FACTS&FIGURES

Project: Reconstruction of Main Runway

Location: Meadows Field Airport (Bakersfield, CA)

2015 Enplanements: 270,000

Length of Main Runway: 10,855 ft.

Project Cost: $49 million

Primary Components: New quarter-crown runway; removing 12 taxiways & building 5 new taxiways; edge & centerline lighting

Funding: FAA grants (90%); airport funds (10%)

Consultant: Mead & Hunt

Phase 1 Contractor: Security Paving Co.

Barricades & Lighting: United Safety Systems

Noteworthy Details: Using quarter-crown design & reducing number of taxiways cut $21 million of costs; planners phased project over 3 years to help secure FAA funding

Key Benefits: Enhanced safety & operational efficiency; satisfying new federal requirements

When officials at Meadows Field Airport (BFL) in Bakersfield, CA, started planning to replace the facility's aging main runway, they expected a price tag of around $10 million. But the initial tally approached $70 million, prompting a bad case of sticker shock.

Currently, the project is expected to cost $49 million—about 30% less than the original estimate. BFL will pay $4.9 million, and the FAA is funding the balance over three years via Airport Improvement Program grants.

The substantial cost difference can be summarized in three Cs: communication, cooperation and consultants.

RICHARD STRICKLAND

The project officially took off after an inspection in May 2013 revealed longitudinal and horizontal cracks in the airport's 10,855-foot main runway. Richard Strickland had just become director of airports for the Kern County Department of Airports, which operates seven facilities, including BFL, the only commercial airport in the group. "Core samples also revealed some changes and inconsistencies in the runway's sub-base," Strickland recalls

Aside from a 2,700-foot keel section replacement in 1996, no substantial work had been performed on the 30-year-old runway for more than 20 years.

Starting From Square One

To plan for the project, BFL officials first conferred with the FAA about funding and hired Mead & Hunt, an engineering and architectural firm with expertise in aviation projects. The initial $70 million cost estimate emerged after the team performed preliminary design work, evaluated the runway complex grade and analyzed the airfield geometry. "We were very surprised," Strickland recalls. "Our consultant, Mead & Hunt, was surprised. And the FAA was surprised, too."

The chief culprit for the high price was a new set of FAA regulations that requires crowned runways and other airfield improvements. BFL's existing runway was built to follow the terrain of the airfield, which slopes to the west. "A crowned runway is significantly different than what we have now," Strickland explains. The regulations—known in shorthand as 13A—also call for improved taxiway geometry. At BFL, this meant removing 12 connecting taxiways and replacing them with five reconfigured taxiways designed to promote better visibility for pilots.


JON FAUCHER

"The new regulations came out just before we were selected as the consultant for the project," recalls Jon Faucher, vice president and business unit leader for Mead & Hunt. "The 13A regulations are all about enhancing operational safety. For example, fewer taxiway crossings make it easier for the control tower to maintain control of the airfield…and it's also less confusing for pilots because there are only five options instead of 12."

Moreover, by decreasing its number of taxiways, the airport spent less on pavement and electrical work during the project and will reduce on-going maintenance costs, he adds.

In addition to optimizing connector taxiway locations, Mead & Hunt officials developed a quarter-crown runway design that fulfilled other key regulatory requirements and saved construction costs. In this configuration, the crown is built one quarter of the way in from one side of the runway instead of directly down the middle. At BFL, one quarter of the runway consequently drains to the east and the remaining three quarters drains to the west. The quarter-crown runway, coupled with fewer taxiways, reduced the price tag of the project by about $21 million, Faucher notes.

"If you build a center crown, you have to build the center of the runway up almost 2 feet to make it work—to get positive drainage to the left and to the right," he explains. "But if you build a quarter crown, it doesn't have to be as high, so you use less asphalt."

Phased Funding

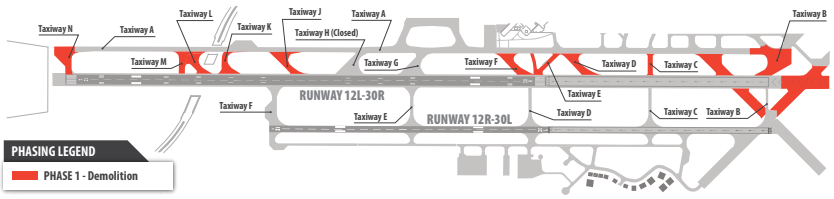
With multiple engineering obstacles cleared, the project team focused its attention on funding. Because of numerous other projects in the FAA Western Region, officials at BFL and Mead & Hunt knew that the agency could not afford to fund the project all at once. So they suggested phasing the project instead and ultimately settled on a three-year span.


Officials broke ground in March for the airport's largest project ever.

Runway 12L/30R Rehabilitation

PHASE 1 (2015–2016) – $18 Million

- Remove Taxiways
- Construct Five Replacement Taxiways



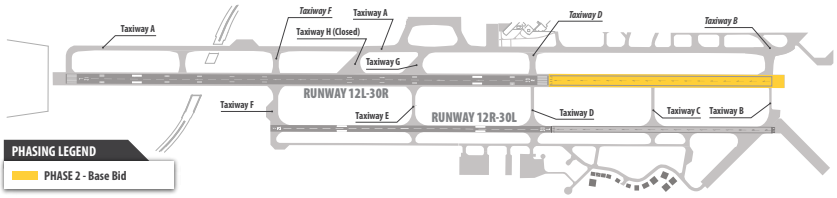
PHASING LEGEND

PHASE 1 - Demolition

TOTAL PHASE 1: $18 Million

PHASE 2 (2016–2017) – $16 Million

- Base Bid - Reconstruct South 3,420 LF of Runway Plus South Blast Pad
- Base Bid – Replace Approach Lighting System
- Bid Alternative 1 – Replace Runway Edge Lighting System and Remove Eastern Runway Shoulder
- Bid Alternative 2 – Reconstruct 3,100 LF East Half of Runway and Replace TDZs
- Bid Alternative 3 – Remove Two Connector Taxiways and Construct One New Replacement Taxiway



PHASING LEGEND

PHASE 2 - Base Bid

TOTAL PHASE 2: $16 Million

Program Management.

As a full-service aviation consultant, Mead & Hunt manages complex programs and routinely serves as an extension of airport staff to develop capital improvement plans, schedule projects and coordinate the activities of other consultants, contractors and vendors.

Visit us at booth #550 during the AAAE Annual Conference

Mead & Hunt

meadhunt.com
888-364-7272
a full-service aviation firm

"One of our main objectives was to keep the main runway open and active throughout the project because it's our instrument runway," says Strickland. "In the end, it will only close a few times and at those junctures, we'll use our alternate 7,429-foot-long runway."

During the first phase, scheduled to run from May 1 through November 1, crews will remove 10 of the 12 taxiways and build four of the five new taxiways. Phase two, slated to run from May through November 2017, will focus primarily on reconstructing the southern 3,420 feet of the runway. If more funding than expected becomes available, the airport might also install the runway's edge lighting system and remove the eastern shoulder; reconstruct 3,100 feet of the east half of the runway and replace the touchdown-zone lights; and remove the last two existing taxiways and build the fifth new taxiway.

Phase Three, scheduled to occur from May through November 2018, is slated to include rebuilding the rest of the runway and remaining east and west shoulders, installing the crown and replacing the centerline lights.

Phasing is structured to allow for multiple "alternative bids" for smaller portions of the project that could come into play if more FAA funding becomes available earlier than expected or if bids come in lower than anticipated. The alternative bid process provides Kern County and the FAA maximum flexibility in moving the project forward as efficiently as possible, explains Strickland.

For example: During phase two, contractors will be asked to submit a base bid for reconstructing the southern end of the runway, plus three alternative bids for other project components (as previously described). "Those three alternate bids within the project give the FAA some flexibility according to how they can afford to fund the project," says Strickland. "The county may not decide to issue all the alternate bids, depending on whether FAA can fund them at that time. The real trick to all of this is to design the project so the runway can still operate, even if you don't execute any of the alternate bids.

"If the FAA can't provide the funding for the alternatives, we tell the contractors they're a no-go, and those alternatives slide to the next year," he continues. "The

contractors know that we reserve the right to not execute all the alternative bids."

Anatomy of the Project

In late March, BFL officials broke ground for the new runway, the biggest construction project in airport's nearly 90-year history. Construction began slightly less than three years after the runway issues emerged—no small feat, considering that projects of this size and scope typically take four to five years of planning, notes Strickland.

Looking back, he says that the project seems like "one big jigsaw puzzle" and hiring a knowledgeable consultant was key to putting it together. "Mead & Hunt's level of expertise in airfield design and aviation in general played a critical role in getting this project up to speed quickly," he reflects. "Because they've touched other airfield projects so often, their level of expertise is higher than that of an average management team at a small airport like ours, and that knowledge is invaluable.

"They did a heck of a job doing the amount of work they did to get us and the FAA up to speed about the true condition of the runway and the magnitude of the project," he adds. "They did phenomenal work to get everyone caught up on what it would take to do it."

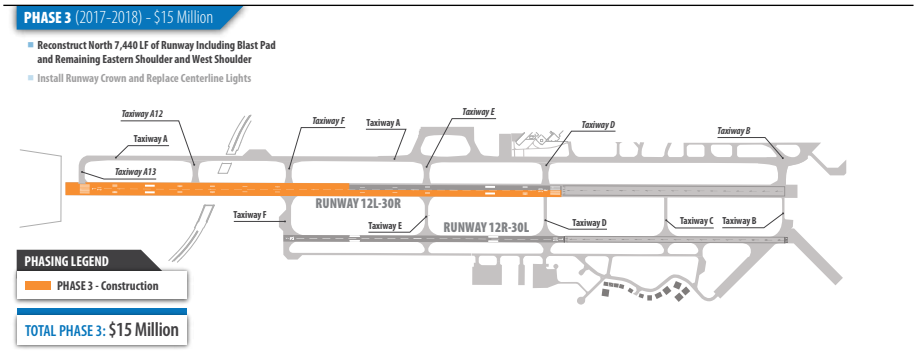
Strickland also cites coordination and communication with the FAA as critical factors— especially for finding unique solutions, like the quarter-crown design.

Faucher agrees that thorough pre-planning and communication are critical to successfully launching a project of this scope. "After we find out what we have, we brainstorm…discuss what the challenges are and ways to solve them," he explains. "Then, we had to get the FAA to buy into our approach."

To help build support for the project, Mead & Hunt prepared a 13A analysis that detailed various options from both a planning and an engineering perspective. Tailoring the highly technical information with easy-to-comprehend graphics helped focus discussion on solutions, not explanations, notes Faucher.

"And every time we brainstormed with our own team, we kept the county in the loop with weekly meetings," he adds. "Good communication is the key."

Runway 12L/30R Rehabilitation



New FAA airfield regulations came out just as project planning began.

Delta Passengers Plug in as Atlanta Int'l Begins Terminal Modernization Plan

BY NICOLE NELSON

FACTS&FIGURES

Project: Terminal Modernization

Location: Hartsfield-Jackson Atlanta Int'l Airport

Operating Entity: City of Atlanta Department of Aviation

Timeline: 2016 to 2019

Estimated Cost: $393 million ($136.8 Airside; $256.2 Landside)

Delta Concourse Seating/Power Module Provider: Zoeftig

Seating Installation: Green Heart Enterprises

Seating Units: 8,000

Landside Terminal Contractor: Hartsfield-Jackson + Partners (HOK; Stanley, Love-Stanley Architects; Chasm Architecture)

Airside Concourse Contractor: Hartsfield-Jackson Design Collaborative (HKS; Fitzgerald Collaborative Group; Corgan Associates)

Delta Construction Team: Dunn Aviation Group; AvAirPros

With a $6 billion renovation and expansion program getting underway at Hartsfield-Jackson Atlanta Int'l Airport (ATL), passengers are already enjoying tangible improvements. Early efforts focused on one of the most sought-after customer amenities: a comfortable place to sit down and plug in cellphones and laptops.

The overall project, dubbed ATL Next, is expected to span 20 years. Significant capital projects will include the addition of a new concourse (the airport's eighth) by 2023, and a sixth runway by 2034. Currently, the focus is on renovating ATL's existing terminals with a $393 million modernization program that is scheduled to last until summer 2019.

The $136.8 million airside component of the modernization program recently took a visible step forward with the installation of more than 8,000 new double-arm seats in Delta Air Lines' holdrooms. Between the armrests of the new Zoeftig inFINITE seats are nearly 2,000 power modules with 120V electrical outlets and 2.3-amp USB fast-charge sockets for mobile phones, laptops, entertainment systems and other electronics.

As the project progresses, a variety of other airside improvements will be made within concourses T, A, B and C. Landside improvements will include renovations to ticketing, baggage claim and security areas.

Overall, the objective is to bring the feel and finish of the International Terminal—the airport's newest facility—into the domestic terminal, explains ATL Design Manager Gary Summerlin. "We are not trying to imitate it, but we are trying to complement it," he explains.

To facilitate upcoming projects, the airport invites resident airlines to design and planning/development meetings. As such, they'll all have the opportunity to incorporate proprietary elements in their respective holdrooms.

Delta advanced to the beginning of the renovation sequence because it had suggested a seating project that stitched together nicely with improvements the airline was already planning, explains Summerlin. "From there, it sort of meshed into one project," he recalls, noting that blended financial streams are funding the cooperative effort.

Building on the recently installed modular seating, elements currently out for bid include floor-to-ceiling windows, raised ceilings with perforated metal finishes, sustainable LED lighting and electronic gate signs.

The airport worked in concert with Delta to make decisions about new carpet, seating, paint, branding and millwork to upgrade the airline's holdroom areas; and it plans to follow suit with other carriers to address their respective spaces, Summerlin explains.

"We will do this at each of the concourses, including the mid-point, where you find most of the concessions and the access to the train," he comments. In addition to proprietary changes, universal enhancements will include new ceiling panels with a decorative pattern and new full-height, full-length windows that will essentially quadruple ATL's current amount.

Upgrades are also slated for the transportation malls, which have otherwise remained the same for nearly 30 years. Plans are set to refresh connection stations with new carpet, an actual ceiling instead of a faux ceiling, and LED lighting. The ceiling plane at the mid-point of each concourse will be pitched upward, just as it is in the International Terminal.

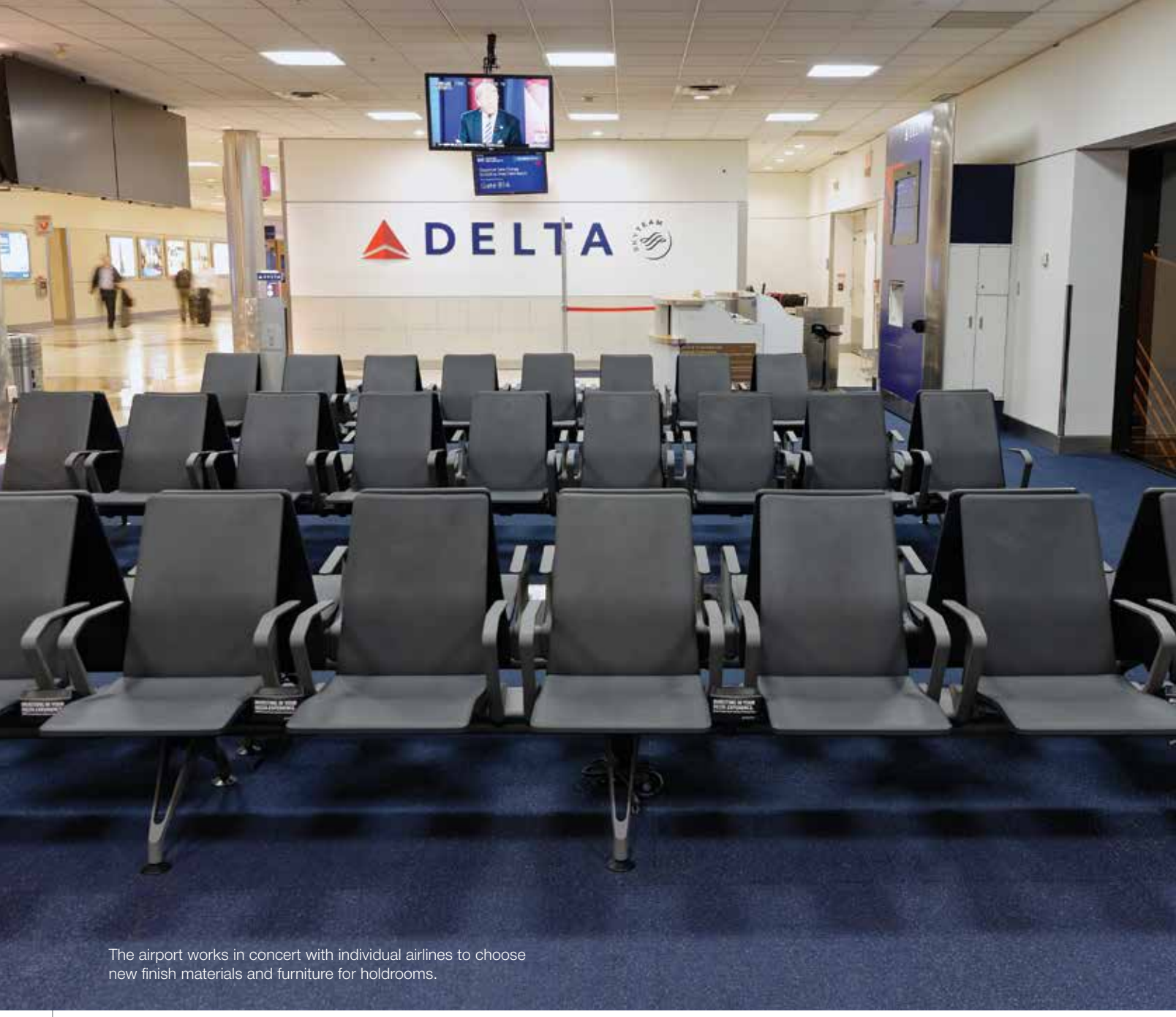
"Each concourse will be unique," Summerlin remarks. "Those (who) travel more frequently will notice the difference between T, A and B, instead of everything just looking the same. We are not theming anything; we are trying to make each concourse have its own identity."

Divide & Coordinate

While ATL's Department of Aviation is managing the landside portion of the modernization project, its airlines, and often their consortium, are leading airside efforts.

"We are running the airside project due to the amount of coordination required with and for our operation," says Kenneth C. Dodson, Delta's regional director of corporate real estate. "This will modernize 85 of our gates; so Delta is running this portion, which touches our 85 gates, as well as the center points."

KENNETH C. DODSON



The airport works in concert with individual airlines to choose new finish materials and furniture for holdrooms.

The effort got underway after Delta approached the Department of Aviation in early 2014 with ideas and requests to modernize specific areas and functions. “This led to many other good ideas, which led to the full program today,” Dodson chronicles. The Department of Aviation hired design teams, and Delta has been engaged in landside and airside design efforts since they began. “It has been successful collaboration,” he reflects.

Landside terminal work is being led by Hartsfield-Jackson and Partners, a joint venture of HOK; Stanley, Love-Stanley Architects; and Chasm Architecture. Airside concourse projects have Hartsfield-Jackson Design Collaborative at the helm, which is a consortium of HKS, Fitzgerald Collaborative Group and Corgan Associates.

Delta’s construction team is currently comprised of Dunn Aviation Group and AvAirPros. An inspections company will be hired later.

“Everyone has input and everybody follows along and has review opportunity to comment on the pros and the cons,” Summerlin reports. “We find we need to rely on each other often to figure out certain infrastructure needs because the airport has certain infrastructure (elements) that are separate and unique from those of the air carriers. That all has to be coordinated.”

With thousands of new seats and power/charging outlets in place for departing Delta passengers, ATL has an important foothold for the long climb ahead during its $393 million modernization program. Recent improvements also dovetail with Atlanta Mayor Kasim Reed’s ongoing vision for ATL as “a 21st century airport for the 21st century city.”

Zoeftig

The US choose us

With people on the ground and in locally based offices, only one company can really call itself an airport seating specialist to the US. Zoeftig. Our pioneering systems are designed with the specific needs of the American airport market in mind, and are proven in airports stretching the length and breadth of America – from San Diego to Seattle, from San Francisco to Salt Lake, from Chicago to JFK. To find out more about the leading authority on airport seating in the US, please email the sales team at **sales@zoeftig.com**

2,200 seats San Diego International Airport

Other American installations:
8,000 seats Atlanta International Airport
20,000 seats Miami International Airport
22,000 seats McCarran International Airport, Las Vegas
3,500 seats Minneapolis Saint Paul International Airport

Dedicated to public seating perfection

www.zoeftig.com

JFK Int'l Adds Boarding Bridge with Elevated Rotunda & Stacked Walkways to Accommodate A380s

BY THOMAS J. SMITH

FACTS&FIGURES

Project: Rebuild Gate to Handle Airbus 380

Location: John F. Kennedy Int'l Airport, Terminal 4

Cost: $3.7 million

Owner: JFK International Air Terminal LLC

Designer: Aero Systems Engineering

Passenger Bridge Fabricator: JBT AeroTech

Interface Fabricator: Airport Equipment

Installation Contractor: Aero BridgeWorks

Site Work: Holt Construction

The firm that operates Terminal 4 at John F. Kennedy International Airport (JFK) faced a unique challenge last year: It would soon have four carriers flying Airbus 380s into the terminal, and only two gates were equipped to handle the double-decker aircraft.

While the situation may sound like a "champagne problem" to some, it *was* a problem—a pressing problem. JFK International Air Terminal (JFKIAT), the private company that operates Terminal 4 under a lease with the Port Authority of New York and New Jersey, had just eight months to find a solution.

"As it was, we had Singapore Airlines, Emirates and Asiana Airlines; and now comes the fourth airline (Etihad) to operate an A380," explains Edmund Quintana, a senior manager with JFKIAT. "We were not looking just for a relief gate, but a gate where we can plan A380 operations. The gate had to be built by December 2015."

Currently, traffic into Terminal 4 is almost evenly split between domestic and international flights. The facility is Delta Air Lines' primary terminal at JFK and also hosts over 30 foreign carriers. Since the introduction of the A380, Terminal 4 has accommodated the giant aircraft at gates A6 and A7. Now, it's able to accommodate such traffic at Gate B29 as well.

"When Asiana, as the third A380 carrier, started flying the aircraft into JFK, we really needed a relief valve," recalls Shawn Makinen, JFKIAT's vice president for facility management. "It was important to have another gate with unrestricted access to the A380 upper and main deck."

In addition, Etihad requested that its first-class customers on the upper deck access the plane from the third floor of the terminal while the rest of its passengers board from the second floor.

The solution was a double-stacked walkway with an elevating rotunda and dual passenger boarding bridges. Since Gate B29 is not exclusively used for A380 flights, the dual-bridge unit was also designed accommodate more common airliners such as Boeing 747s and 777s, as well as A330s and A340s from the terminal's second floor.

Experience Required

Six years of A380 flights has taught JFKIAT a lot about handling the giant aircraft. "We make sure we learn from the past," Quintana remarks, noting that each plane has a different seating configuration. When the terminal operator contracted Aero Group about designing and building a new gate to accommodate the mega-airliner, it consequently requested a number of design and structural improvements. The list of discussion topics spanned operational controls, maintenance and component materials among others.

Aero Group includes Aero Systems Engineering, the company's design firm, and Aero BridgeWorks, its construction entity. Both focus solely on fixed ground support operations and often work together, but they also handle separate projects.

JFKIAT selected Aero Group based on its past performance at Terminal 4. The firm had previously replaced three other passenger boarding bridges via a design-build project that Quintana reports went very smoothly and seamlessly, with no impact on flight operations. "Aero Group delivered," he summarizes. "They have established confidence with us, and as a result, we continue on with them with confidence."

Beyond work at JFK, Aero Group has designed and/or provided construction services at more than 13,000 fixed ground support gates over the last 20 years, report company personnel.

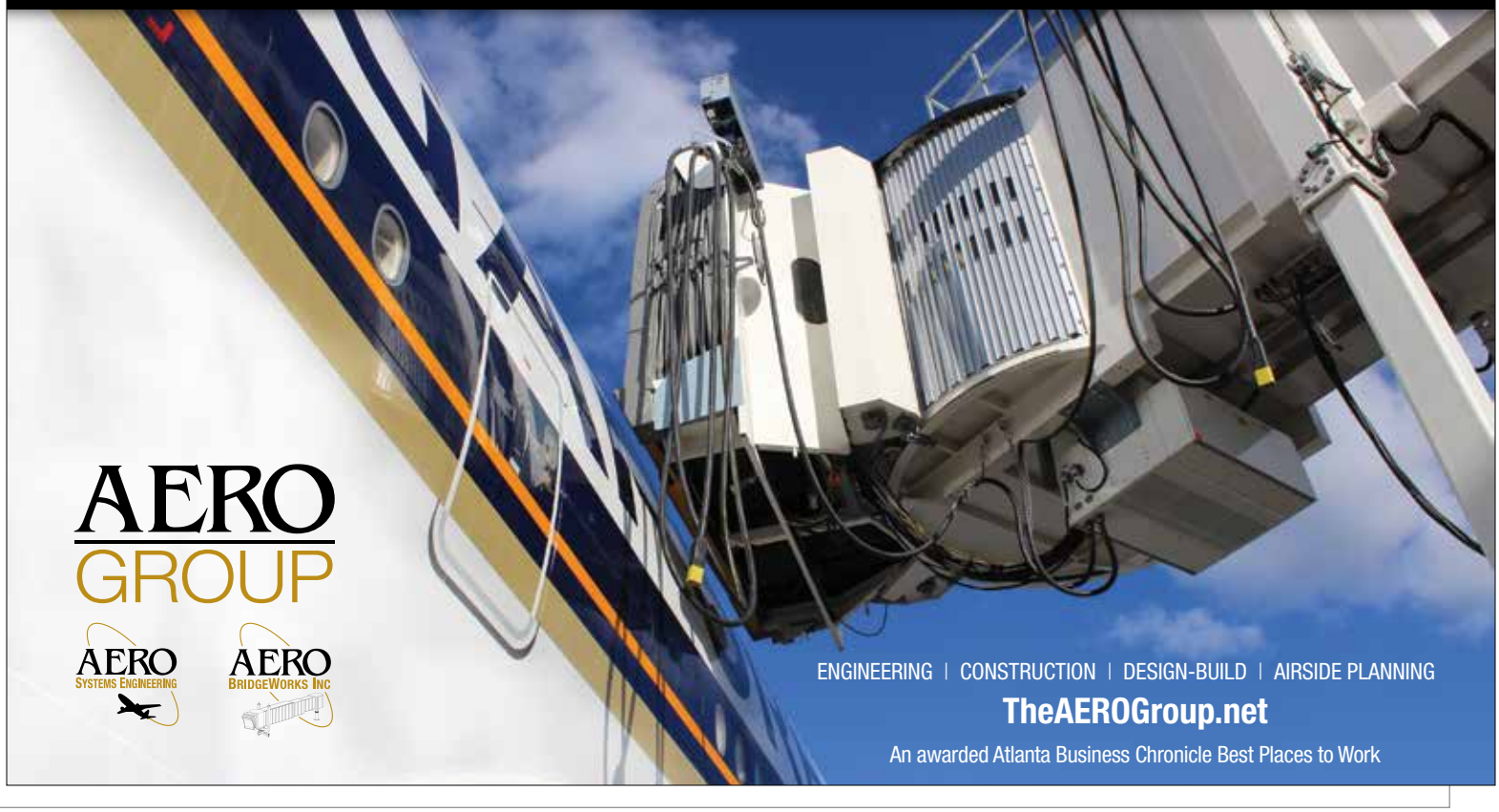

ALAN BARGE

Alan Barge, president of Aero Systems Engineering, recalls the preliminary stages of the company's recent Terminal 4 project: "When we put pen to paper and collaborated with our affiliated construction arm, Aero BridgeWorks, we determined we could technically solve the problem and knew that with great effort, we could deliver the project on time. We solved the vertical transportation issue with an elevated rotunda and double-stack walkways."

Aero Group completed the $3.7 million project on time and within budget, just eight months after their initial meeting. The new gate was commissioned on Dec. 23, 2015, and Asiana was the first carrier to use it. Although planned primarily as a relief

The Nation's Leading Aviation Fixed Ground Support Design-Builder

1997 ESTABLISHED | 200 AIRPORTS | 1,600 PROJECTS | 13,000 GATES & COUNTING



gate, B29 is now used three to four times a week for A380 flights, Quintana reports.

Aero Group and JFKIAT alike credit the on-time delivery of the project to the fast approval of the plans by the port authority. Personnel from both firms note that it is not unusual for the approval process to consume a major portion of a project's timeline as drawings get revised and re-drawn multiple times to meet an airport authority's requirements. Conversely, the initial review of JFKIAT's B29 gateway project was returned with only one modification requirement, and the project was subsequently approved after only one month.

In the end, it took about two months to design, one month for approvals, two months to manufacture and one month to install.

Double-Decker Design


MIKE MADLOCK

Mike Madlock, president of Aero BridgeWorks, describes B29 as a "unique design that has never been done before." Two 20-foot walkways stacked on top of each other extend perpendicularly from the terminal's second and third floors. An elevating rotunda allows one bridge to move between the second and third floors of the terminal and the first and second level of an aircraft.

"One of the biggest challenges was the overall interface between the walkways and the bridge," Madlock notes. Ultimately, a coiling curtain proved to be the answer. The 30-foot-high, 12-foot-wide device effectively seals the unused doorway when the bridge is on the other level.

JBT AeroTech fabricated the boarding bridge as designed by Aero Systems Engineering. To save time, however, JBT purchased the coiling curtain from Airport Equipment, the firm that owns the design for the door. With the project clock ticking, the curtain was shipped from the company's facility in New Zealand to Philadelphia, and then trucked to JFK in New York, notes JBT Regional Sales Manager J. Garrett Macfarlane.

During installation, Aero BridgeWorks encountered delays when the building did not match the as-built drawings it was provided. When this occurred, crews scrambled to modify their structural plans to accommodate the existing conditions, Barge explains. Workers also saved time by re-using grade beams already in place to eliminate the time-consuming process of driving new support piles.

Although the design of the new boarding bridge is certainly innovative, Barge acknowledges that its applicability is limited. Only a handful of U.S. airports service A380s, and JFK is one of the few in the subset that need to board passengers from different levels of the terminal. "It is not a requirement at most airports, but it is

Double-stacked walkways facilitate passenger flow to and from double-decker A380s.

a unique solution to consider, now that it has been successfully designed, built and tested at JFK," he remarks.

From JFKIAT's perspective, the new B29 gateway provides important operating efficiencies.

Based on input from JFKIAT, Aero Group designed the controls so that one operator, located in the terminal end of the bridge, can maneuver bridge placement on the second level with assistance from remote cameras. This eliminates the need for a second operator, as had previously been the norm, Madlock notes.

He describes the remote operation as "very operator-friendly and intuitive" and notes that operators only need about 30 minutes of training.

With the B29 project behind them, Aero Group and JFKIAT are now discussing renovating other passenger boarding bridges in Terminal 4.

NEW WAYS TO STAY COOL AND CONNECTED

PC Air Hoses, Cable Inspection Test Kit, and Replaceable Contact Section from J&B Aviation

STAY COOL
Count on our PCA Hoses to keep your aircraft cool no matter what the configuration. A wide range of Elbows, Tapered Adapters and Support Mechanisms maximize versatility, while the J&B Aviation Flat Duct design is both durable and flexible.

KEEP CONNECTED
Connect securely to any 400 Hz power aircraft with our new Replaceable Contact Section, featuring a durable tapered edge and made from composite for an extended service life.

Facilitate inspections with our new Cable Inspection Test Kit, containing our Aircraft Connector Tester, Pin Gauge Tester, Tensionometer, Imaging IR Thermometer, Wire Cleaning Brushes and more – all packed in a rugged locked case.

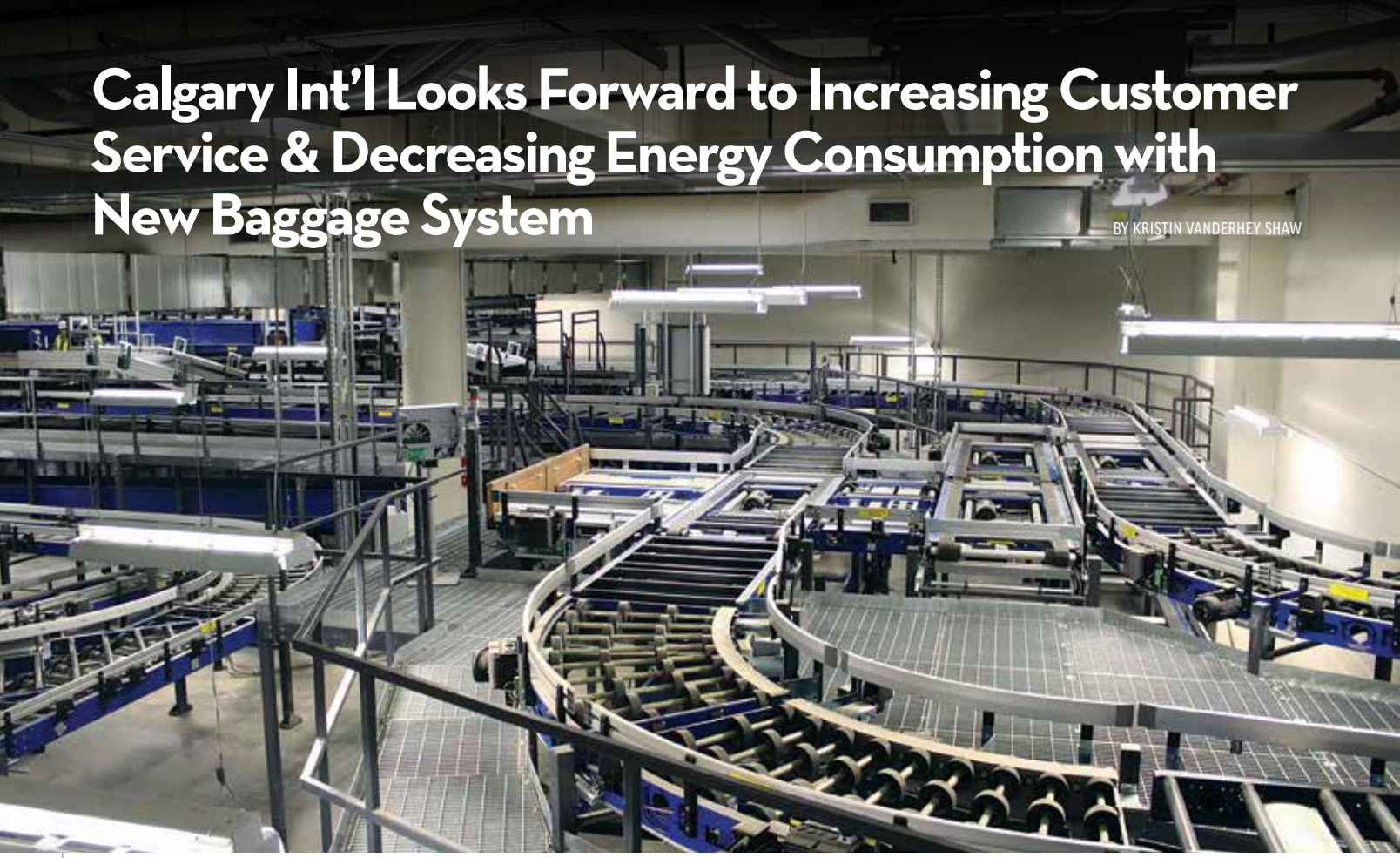
ITW GSE J&B AVIATION

www.itwgse.com/jb

It's all about connections

Calgary Int'l Looks Forward to Increasing Customer Service & Decreasing Energy Consumption with New Baggage System

BY KRISTIN VANDERHEY SHAW



YYC CALGARY AIRPORT AUTHORITY

FACTS&FIGURES

Project: New Baggage Handling System

Location: Calgary Int'l Airport

Expected Debut: Fall 2016

Will Serve: New Int'l Terminal & Existing Terminal

General Contractor for Int'l Facilities Project: Ellis Don

Baggage System Design Consultant: URS

Software Provider: Brock Solutions

System Manufacturer: Crisplant/Beumer

Make Up: 5 carousels plus oversize

Outbound Capacity: 4,000 bags/hr

Inbound Capacity: 3,800 bags/hr

Transfer Capacity: 1,100 bags/hr

Top Speed: 10 meters/second

Avg. Time for Bag to Travel Through System: 10 min.

Total Length: 10,000 meters of conveyor overall

Self-drop Bag Units in Int'l Terminal: 20

Key Benefits: Eliminate the need for connecting passengers to claim & recheck bags; increased speed & energy efficiency; new system-wide bag tracking capabilities; integrated European Civil Aviation Conference Standard 3 threat detection

When Calgary International Airport (YYC) in Alberta opens the doors to its new International Terminal later this year, a new baggage handling system will be among its notable features. The system is designed to run faster, use less energy and facilitate better bag tracking. Importantly, it will also eliminate the need for passengers on connecting flights to claim and recheck their bags.

DON EDWARDS

"A key premise behind this entire project is to help expedite transfer travel between Canada and international destinations," explains Don Edwards, director of the International Facilities Project for the Calgary Airport Authority. "This new terminal, with its completely new and automated baggage system, will help facilitate faster transfer times and help support our reputation as a well-connected airport."

As Canada's fourth busiest passenger airport, YYC served more than 15 million travelers last year. Preparing for years to come, officials considered every angle possible to ensure that the new baggage system matches the future-forward environment of its new 2 million-square-foot International Terminal, notes Edwards.

Due Diligence

After researching various systems, visiting numerous airports and consulting several facility operators about best practices for baggage delivery, equipment maintenance and system operation, the planning team developed specific parameters regarding speed, efficiency and bag tracking capabilities for YYC's system.

"We went to Europe and toured a number of systems that were not common in North America," Edwards recalls. "We didn't want to be on the bleeding edge; we wanted something that had been proven to be successful."

All the research made officials confident that the answer for YYC was a system that uses totes to carry individual bags throughout the screening and handling process. "Tote tray technology was little known in North America at that time, though it is in common use throughout Europe and all through Asia," notes Edwards.

After an extensive search, the airport awarded a contract to Crisplant, a Danish company that has led and managed

baggage/material handling operations since the '50s and was folded into Beumer Group in 2009. Among its features, the Beumer/Crisplant system has two elements crucial to YYC: integrated threat detection screening that meets European Civil Aviation Conference Standard 3 and the capability to handle oversize and irregular-shaped items such as skis and golf bags.

"The requirement by the Calgary Airport Authority for a system that can handle the necessary volume, faster and with better value, and [be] more energy-efficient than its existing conveyor system, is very much a fit with our product and capabilities, as proven in other installations," says Johan Rajczyk, international sales manager for Beumer's airport division.


JOHAN RAJCZYK

With airport officials set on a tote system, URS (which is now part of AECOM) drew up a basic design based on YYC's specific performance parameters such as current and future capacity, checkpoint throughput, sortation accuracy and compliance with Canadian Air Transport Security Authority requirements.

The system integrates Crisplant's CrisBag tote-based transport system with CrisBelt conveyors, which feature unique start/stop technology that allows sensor-controlled modules to power on only when totes are in operation. This, combined with a top speed of 10 meters per second, makes YYC's new system one of the fastest and most energy-efficient in the world, notes Rajczyk.

The airport also required the new system to track individual bags and tie into its new baggage image and weight information system (BIWIS) from Brock Solutions. BIWIS is a custom software system that allows the airport to process passengers through Pre-Board Screening prior to U.S. Customs. Originating and transfer passengers need not carry their bags through U.S. Customs. This provides an expedited transfer process, and streamlines the process for originating passengers as well, explains Dan Vandevenne, Brock's West Coast general manager. (YYC is one of eight Canadian airports with U.S. border preclearance facilities.)


DAN VANDEVENNE

Radio frequency identification (RFID) tags on each tote provide virtually 100% positive tracking and allow YYC to know where each bag is on the system, note Crisplant personnel.

"That's particularly important," says Edwards. "We need to be confident of the location of any given bag at all times. If someone's bag needs to be pulled from a flight, we can quickly determine the location of that bag."

As for energy savings, Crisplant says that its tote systems reduce energy costs by 60% compared to traditional conveyor systems because its equipment runs only when sensors detect a bag approaching. According to some studies, any given section of conveyer contains bags only 10% of the time. Running conveyors 100% of the time wastes energy, explain Crisplant personnel.

One for All

When YYC's new International Terminal opens later this year, its existing facility will become the Domestic Terminal. And installation of the tote system will begin in that facility as well.

"We made a decision that we would have only one overall bag system for all of YYC," says Edwards. "We were building a new International Terminal, but wanted this for the rest of the airport, too."

During Phase I, the airport upgraded the computer control system in its current terminal, so when the International Terminal opens, it will be ready for Phase II. The Calgary Airport Authority consequently awarded Beumer Group a contract for a second CrisBag system last year. Under the new contract, the company will replace the conveyor-based baggage handling system in YYC's existing terminal with a CrisBag tote-based sorting system with integrated Standard 3 screening. The contract also includes an extension that will link the CrisBag system in YYC's new International Terminal with the new system in its existing terminal, extending 100% system-wide traceability of individual bags to both facilities, note company officials.

Rajczyk highlights tracking as a crucial element in the future of baggage handling. System designers and manufacturers like Crisplant/Beumer are not only driven by the service expectations of airports and passengers, but also by regulatory requirements, he notes. "Right now, we see a number of hold baggage screening regulations, and we must help the airports ensure optimum efficiency and performance in baggage handling," Rajczyk relates. "In addition, the airline industry has until June 2018 to prepare itself to comply with the new International Air Transport Association (IATA) Resolution 753."

Resolution 753 requires IATA members to "maintain an accurate inventory of baggage by monitoring the acquisition and delivery of baggage." In other words, carriers must know the whereabouts of every piece of baggage from start to finish, paraphrases Rajczyk.

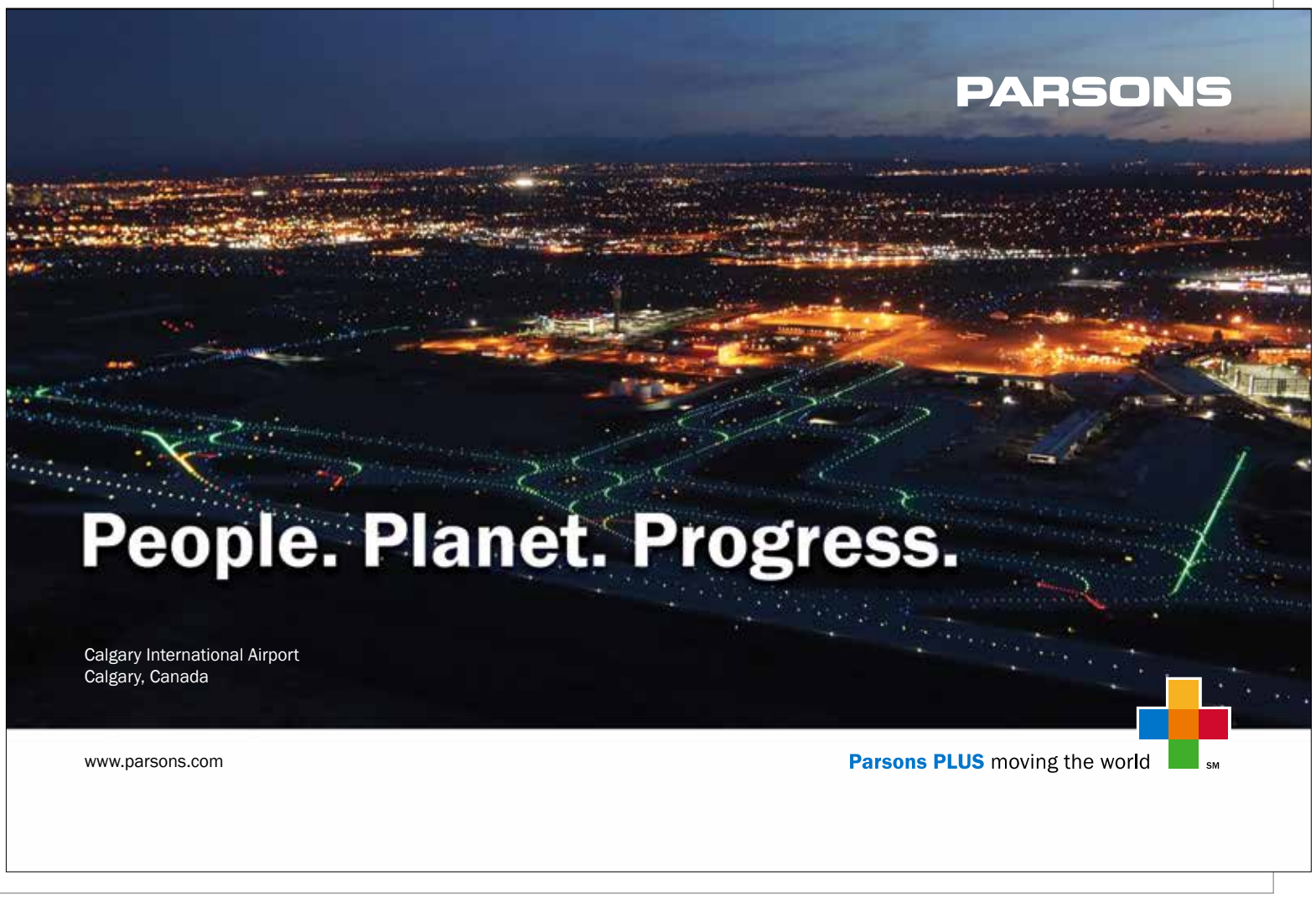
"While this resolution only applies to airlines that are members of the IATA, this still accounts for over 80% of all air traffic," he notes. "Full cooperation between the airlines, ground-handlers and airports, in addition to expert guidance, will be needed to transform a necessary investment in compliance into a cost-down initiative. This will not only benefit the airlines, airports and ground-handlers, it will mean that significantly fewer passengers will experience the frustration of arriving at their destination without their bags."

According to Crisplant, YYC's new system will provide an initial operational capacity of 8,000 bags per hour, inbound and outbound, when the new International Terminal opens this fall. Planned expansion will further increase capacity to support anticipated passenger growth.

The new baggage handling system is just one part of a larger development plan to help YYC continue to meet the demand associated with multiple years of passenger and cargo growth. As the major air transportation and logistics hub in Alberta, YYC has been the headquarters for WestJet for the last two decades and is an active hub for Air Canada and Air Canada Express. Overall, the airport serves 80 non-stop destinations.

In addition to opening the new International Terminal, which will double the size of terminal facilities at YYC, the Calgary Airport Authority plans to build a new runway, expand throughput capabilities throughout the airport, improve the existing terminal and add another in-terminal hotel. The International Facilities Project is the single largest expansion the authority has ever undertaken.

YYC's new baggage system is expected to have an initial operational capacity of 8,000 bags per hour, inbound and outbound.



CVG partners with Delta to help children on the autism spectrum become more comfortable flying

Cincinnati Int'l & Red Deer Regional Share Their Roadmaps for Social Responsibility

BY JENNIFER BRADLEY

From BP and Enron to Volkswagen and Valeant, there's no shortage of cautionary tales about companies shooting themselves in the foot with egregious—and ultimately actionable—breaches of conscience. It's no wonder that organizations in all sectors, including the airport industry, are beginning to recognize the importance of corporate social responsibility (CSR for short).

PAUL BEHNKE

Paul Behnke, a senior associate with the Montreal-based consulting firm Aviation Strategies International, notes that many airports have been "singing the right tune" regarding CSR for years, especially regarding noise control and reducing emissions. Many also engage in community service projects because they appreciate that the airport is a catalyst for economic growth and prosperity and needs to ensure its priorities are in lockstep with the community and the region.

Behnke attributes an increasing interest in formalized social responsibility programs to a major paradigm shift. Airports are no longer treated as public utilities, he explains, but rather as full corporate structures governed by business principles and the need to provide exemplary service. From parking and baggage handling to food and retail options, providing a pleasant journey for passengers is a proven approach that pays—in dollars and good public relations.

"The top 100 airports, even in a bad year, are in the double digits for bottom-line profit after tax. With those profits come a couple of things," Behnke reasons. "First, is the notion there might be some responsibility when you're earning this revenue in your community and from transfer passengers; and second, you should have a partnership with the community and stakeholders to ensure that the benefits from the airport are shared."

CVG

red deer airport

FACTS&FIGURES

Project: Corporate Social Responsibility Programs

Location: Cincinnati/Northern KY Int'l Airport

2015 Passenger Volume: 6.4 million

Sample Initiatives: System that captures & treats rainwater/snowmelt to protect local streams; sessions that help facilitate travel for passengers with autism; sound-insulation for nearby homes & businesses; visits from miniature horses to calm outbound passengers

Programs in Development: Green rental car facility; testing battery-powered mowers

Awards: Best Regional Airport in North America 2011, 2012, 2013, 2014, & 2015 (Skytrax)

Project: Corporate Social Responsibility Programs

Location: Red Deer Airport (Alberta)

2015 Scheduled Passenger Volume: 20,000+

Sample Programs: Charity barbecue; holiday card design contest for local children; purchasing clean fuels; bans on unnecessary engine idling

Under Consideration: Solar Arrays

The concept of the "triple bottom line," which takes in to account financial, social and environmental/ecological factors, is widely accepted by the world's airports, he adds.

Behnke, who is also an instructor for the Airport Management Professional Accreditation Program, recently helped design a session about CSR at this year's Passenger Terminal Conference. Candace McGraw, chief executive officer of Cincinnati/Northern Kentucky International Airport (CVG) and Roelof-Jan Steenstra, chief executive officer of the Red Deer Airport Authority, shared their experiences with the topic.

CSR at CVG


CANDACE MCGRAW

McGraw describes CSR as acting ethically and responsibly—making sure you not only comply with the letter of the law, but also the spirit of the law. "It's (operating) within a framework that will build a positive image for your business while working well with neighbors, employees and partners," she says.

As such, CVG has three guiding goals:

1. Act as a socially responsible neighbor
2. Foster relationships with local governments, businesses and community leaders to strengthen and grow business
3. Build a culture of collaboration and teamwork

McGraw reports that everyone was fully on board with the airport's new CSR perspective and initiatives. "Frankly, a lot of the efforts were employee-driven," she adds. "I think it's important to get all employees and stakeholders rallied around the notion that we have to be a business [that] acts responsibly, with a social conscience."

To protect local streams, CVG installed a system that captures rainwater and melting snow. Each year the system treats 400 million gallons of water. Also on the environmental front, the airport is currently changing its light fixtures to more energy-efficient models and plans to open a "green" rental car facility in 2021.

In the last 25 years, CVG has spent nearly $100 million acquiring 681 homes affected by aircraft noise and providing sound insulation for 563 homes, 10 schools and a nursing home.


Handlers bring miniature horses into the terminal to help travel-weary passengers relax.

Starting Our Adventure Right (SOAR) is a community outreach program CVG runs with Delta Air Lines to help children with autism spectrum disorders become more comfortable with flying and airports. Often, it enables travel that was previously unthinkable. "We've now had proven success, and families have been able to take vacations or visit grandparents," reports McGraw.

In a new initiative, CVG recently teamed with a local farm to bring miniature horses into the terminal to help calm passengers before their flights.

Why spend extra time and effort on social responsibility programs? McGraw likens CVG's efforts to Starbucks using environmentally friendly cups. "It brands them among their customers," she explains. Like Starbucks, the airport is a large corporation, she adds: "We generate $100 million in revenue and have a $3.6 billion economic impact on this community. We need them to be supportive of the airport and know we're a socially conscious business. People want to be supportive of a business that treats the environment well, the community well and pays its employees a fair wage."

CSR is even embedded in the mission statement that guides the airport's 2016-2021 Strategic Plan: *To become the airport of choice to work for, fly from and do business with.* One of the basic tenets of the plan is to rally employees and

Global ACI-ICAO Airport Management Professional Accreditation Programme (AMPAP)
AIRPORTS COUNCIL INTERNATIONAL
ICAO · OACI · ИКАО
DID YOU KNOW?
AAEs may request 2 of 6 credits toward the AMPAP curriculum
AMPAP
Check how to JOIN 1000+ Airport Managers WWW.IAP.AERO
Premier Sponsor
SITA
Media Partner
Air Transport News
Information
AMPAP Administrator
info@iap.aero
AVIATION STRATEGIES INTERNATIONAL
INTERNATIONAL AIRPORT PROFESSIONAL

stakeholders around the idea that CVG must be a business that acts responsibly and has a social conscience, summarizes McGraw.

With the airport's mission statement as a constant reminder, CVG personnel continue to develop new CSR programs. Currently, employees are testing battery-powered mowers and investigating ways to use excess land for growing food. "I think there's a myriad of things we can do in the future," says McGraw.

Altruism in Alberta

Located in the economic corridor between Edmonton and Calgary, Alberta's Red Deer Regional (YQF) shows that small airports can make a big difference.

ROELOF-JAN STEENSTRA

YQF's annual Christmas card design competition is a highlight of the year for local children, notes Roelof-Jan Steenstra, chief executive officer of the Red Deer Airport Authority. The winning entry appears on the airport's annual Christmas card, and the young artist who created it receives an educational grant from the airport and local co-sponsor. A summer barbecue raises money for multiple charities, and the airport consistently volunteers and participates in the area's holiday parade.

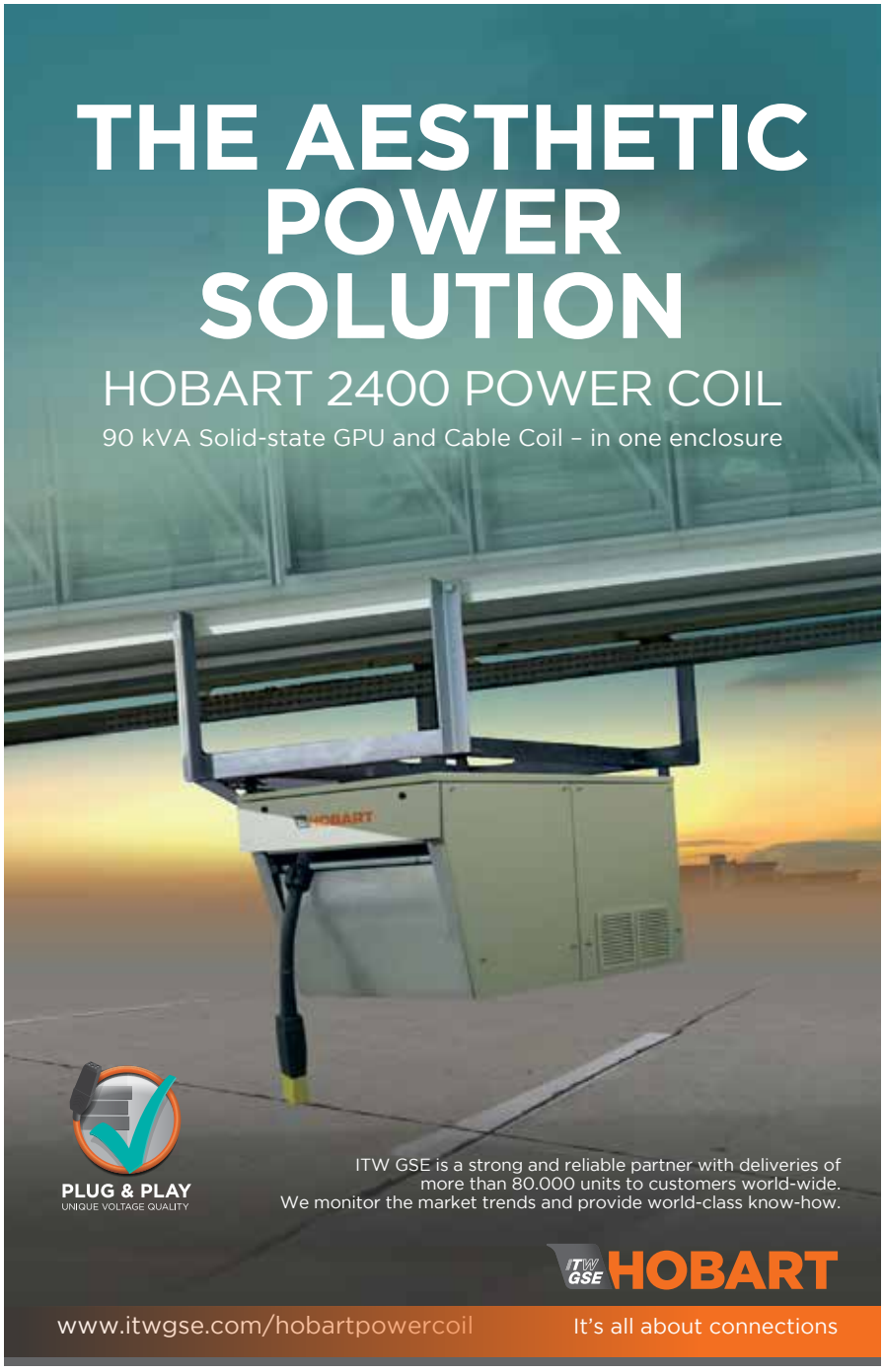
Such community events are essential for good exposure and put a face on the airport, says Steenstra. On the operational side, YQF's sustainability initiatives include purchasing the cleanest fuels possible and banning unnecessary engine idling. "These impacts are significant," he explains. "You're attracting airline services and passengers in a very competitive marketplace."

The airport is also considering a system to harness solar energy. It can be challenging to determine which endeavors will foster long-term success—and to justify their short-term costs, Steenstra adds. While CSR embodies two of the three elements in the triple bottom line (social and environmental) they also require time and money.

Dealing with social issues can be expensive, and traditionally there has been a limited relationship between CSR programs and financial performance, acknowledges Steenstra. "In a smaller airport, of course there are trade-offs," he relates. "Regional airports have tremendous challenges because we have limited resources. If you look at a larger airport's sustainability report, it's bigger than my annual report."

Financial costs and limitations don't discourage Steenstra; they inspire him to make CSR a priority by integrating practices directly into the airport's overall strategy and guiding values. "CSR is very real," he emphasizes. "It's a relevant business issue and can impact organizational financial performance positively if done in balance."

Striking a balance between making an impactful difference and maintaining focus on running a safe, efficient operation is no easy task. But despite the challenges, airports around the world are dedicating teams to sustainability and other CSR issues. Some facilities issue annual reports to the local community about their goals and accomplishments.



"One of the challenges airports have now is how to identify the social issues that affect strategy," notes Steenstra. "We're doing ok. There [are] certainly a lot of things being done."

With Profit Comes Responsibility

Behnke culls wisdom about CSR from Warren Buffett, the Berkshire Hathaway exec known for his own philanthropy and the Giving Pledge he encourages other wealthy people to sign. "It takes 20 years to build a reputation and five minutes to ruin it," says Buffett. "If you think about that, you'll do things differently."

Spring-boarding off Buffett's idea, Behnke notes that CSR is more than doing the right thing. "It's also an insurance policy against losing that reputation in five minutes," he explains.

Behnke consequently encourages airports to let their stakeholders, clients and communities know about the good work they're doing. With profit accountability also comes the responsibility to build and protect a brand, he remarks, reminding airports of Buffett's warning about how one big mistake can unravel an entire organization.

Steenstra underscores the point by noting that Volkswagen took a $26.6. billion hit due to its recent emissions scandal.

"The notion of protecting your brand is important," advises Behnke. He cites Delta Air Lines' recent employee profit-sharing bonuses and a tour/sixth birthday party his daughter was given at Geneva Airport in Switzerland as exemplary efforts.

What's Next?

While many airports are performing laudable acts of CSR, most aren't quantifying them and sharing the results like they should, notes Behnke.

Steenstra says the approach must be strategic because CSR matters—today and into the future. "Right now there are airports doing a really great job," he says, also noting a lack of guidelines about what airports should share publically. "In other industries, there are benchmarks and communications requirements to follow, because ultimately there are pitfalls and things that can hurt your organization."

Despite the potential difficulties, Steenstra says the next logical phase of CSR for airports is communication—specifically, showing communities and stakeholders the positive impacts of their efforts. He encourages operators to carefully communicate as much as possible, even if there isn't a structured framework requiring such news to be shared. Such efforts will help the

A PARTNER
YOU CAN TRUST.

Airports chose RS&H again and again because we deliver on our promises. We help you solve the challenges of today and achieve your vision for tomorrow. From the entrance road through the terminal to the end of the runway, **we do it all — all for you.**

rsandh.com

RS&H 75 years

ARCHITECTURE | ENGINEERING | CONSULTING

industry develop baselines for what CSR looks like on paper, even though standards will be different for each airport, he notes.

"Some are going to have higher electrical costs, so LED lighting is going to have an impact on overall operations," he cites as an example.

Behnke encourages airports to benchmark performance both against themselves over time and against "peer" airports. The ASQ customer service survey of Airports Council International, for instance, allows airports to assess their own performance over time and also ranks them among comparable facilities. "The idea is to keep improving all the time," he says. "Airports are competing with each other for air services, for cargo and for transfer passengers, as well as against other modes—particularly fast rail."

According to Behnke, cleanliness of terminals and restrooms is among the most important customer service parameters, followed closely by friendliness of airport, airline and security staff. "These parameters are absolutely huge," he stresses. "If you fail on those counts, you know exactly where to look. By using survey data, airports can come to a CSR meeting armed with all kinds of great data for the stakeholders."

McGraw notes that airports can enjoy plenty of benefits by engaging in a socially responsible manner, but the most important reason to embrace CSR is that it's simply the right thing to do. "If you always act with the best interest of your company in mind and do the right thing, you ultimately will reap rewards," she summarizes.

Participating in parades is just one way Red Deer Regional supports its community.

Although McGraw doesn't currently hear a lot of talk about CSR at U.S. airports, she senses that interest in the topic is growing. Dubai World Airports and a number of European airports publish annual CSR reports, and she predicts more U.S. facilities will follow suit, particularly regarding environmental and community programs.

Behnke agrees that more airport executives are now climbing on board. No airport would hire a new chief executive without asking questions about community outreach, stakeholder engagement or environmental sustainability, he notes.

Safetyflex Bollards
Exclusively from Tymetal Corp.
Tymetal Corp.
www.tymetal.com

- *Patented spring steel, low cost, crash tested.*
- *Used in the London 2012 Olympic games.*
- *Shallow mounting for fast inexpensive installation.*
- *Since 1985 - Providing the Best Perimeter Gate Systems.*

800-328-GATE (4283)
678 WILBUR AVENUE | GREENWICH, NY 12834
4501 DIXIE FARM ROAD | PEARLAND, TX 77581

ADD A SHARED-USE AIRPORT LOUNGE TO YOUR AIRPORT AMENITIES

Plan

Design

Build

Operate

Market

Deliver

Airport Lounge Development - **Your Expert Lounge Solution Provider**. We are the leading US-company specializing in the design, construction, operation, management and marketing of independent shared-use passenger airport lounges. Our experienced team delivers a proven turn-key lounge solution that can help you increase revenue and efficiencies, drive traffic to your lounge(s), or add lounges to your network.

The ALD experts will:

- Enhance your passenger services and your valued proposition letting you focus on your core business – attracting and retaining air carriers.
- Build, operate, and market a shared-use lounge that keeps your airport competitive and sharp.
- Transform underperforming lounges or empty spaces into cutting edge lounges.

Contact us today and see how we can help.

Contact: **Graham Richards** Director of Strategic Network Development
+1 972-535-0285 graham.richards@airportloungedev.com

www.airportloungedev.com

AIRPORT LOUNGE DEVELOPMENT™

ALD is a trademark of the Collinson Group. © 2016 ALD. All rights reserved.

Atlanta • Cincinnati • Dallas/Fort Worth • Las Vegas • London
Orlando • Phoenix • Seattle • San José

Orlando Int'l Activates Energy Reduction Plan

BY KEN WYSOCKY

ORLANDO INTERNATIONAL AIRPORT
The Orlando Experience

FACTS&FIGURES

Project: Energy Reduction Plan

Location: Orlando Int'l Airport

2015 Passenger Volume: Almost 40 million

Project Cost: About $125,000

Funding: Airport

Consultant: Hanson Professional Services

Primary Goal: Consume 10% less energy by 2018

Main Projects: Upgrading system controls; replacing existing light bulbs with longer-lasting, more energy-efficient LEDs

Key Benefits: Lower operating & maintenance expenses; less greenhouse gas emissions; more eco-friendly operations

While some airport operators talk about reducing energy consumption, others take action to make it happen. Orlando International Airport (MCO) recently committed to the goal of using 10% less energy in its facilities by 2018, a move that will significantly reduce operating costs and may boost the airport's reputation from "eco-friendly" to "eco-friendlier."

JEFF DANIELS

MCO is following a multi-phase strategy developed by Hanson Professional Services to reduce its largest utility bill: $14+ million per year for electricity. By implementing the first phase of the recommendations, the airport already has reduced energy expenses by roughly 6%—about $1.2 million—since 2012 and decreased greenhouse-gas production by 9%, reports Jeff Daniels, assistant director of maintenance operations at MCO.

An array of measures, such as replacing aging equipment and installing better controls for air conditioning and lighting systems, produced most of the cost savings. In addition, the airport replaced thousands of fluorescent and incandescent light bulbs with more energy-efficient and longer-lasting LED bulbs, Daniels says, citing another example.

Notably, the airport has managed to reduce its energy consumption despite increasing passenger traffic. "We experience approximately an eight percent passenger increase every year and are adding square

footage all the time," Daniels explains. "So our challenge is to control the growth of energy usage even as we're growing in terms of passenger levels and facilities.

"There are a lot of human candles running through here every year—about 39.5 million passengers last year alone," he continues. "That means there are a lot of people using moving sidewalks, elevators, escalators, restrooms and trains. Typically, as you increase usage of those things, the associated energy load increases, too. We've not only been able to control energy use, but even reduce it during a high-growth period."

MCO is using the energy utilization index (EUI) to measure progress toward its 10% reduction goal. EUI expresses energy used per square foot in facilities, similar to the way miles-per-gallon expresses fuel use by vehicles. Using EUI allows officials to compare the energy consumed by different types of systems—steam vs. water-cooled systems, for example—on an apples-to-apples basis, says Daniels.

"EUI is the only realistic way to accurately measure comparisons," he asserts. "Our total EUI is down by about 4.5 percent since 2012. Typically, I'd guess it would have increased more than 10 percent during that time period."

Developing a Plan

Social consciousness also provided significant impetus for MCO's energy initiatives. "We're a big part of the community here," Daniels explains. "So we need to be sure we're doing our share in terms of energy conservation. Too often airports are seen as big energy wasters and producers of excessive greenhouse gases."

Last April, airport officials consequently awarded Hanson a $125,000 contract to develop a master plan for energy conservation.

"On my end of the business, our responsibility always is to find ways to reduce energy usage," Daniels comments. "We have a responsibility to our community and to the world. Many times, that results in savings that can be passed along to our customers. That's not the primary consideration here, but it can work out that way…anything that helps airlines pay lower fees is great."

To develop a comprehensive plan, Hanson is reviewing the airport's operations in phases. During phase one, the engineering and allied services firm performed energy audits in MCO's ancillary airport buildings. Using those results, personnel ranked various energy-conservation measures in a logical sequence to deliver the most cost-effective results, explains Nate Boyd, a mechanical engineer and energy specialist at Hanson.

NATE BOYD

HANSON
Engineering | Planning | Allied Services

» COMMISSIONING
» ENERGY & UTILITY STRATEGIC PLANNING
» SUSTAINABLE MASTER PLANNING
» BUILDING AUTOMATION & CONTROLS ASSESSMENTS
» ENERGY AUDITS

AS WELL AS A FULL SUITE OF AVIATION PLANNING & ENGINEERING SERVICES

904.737.0090
CHIP SNOWDEN
Senior Vice President | Aviation Market Principal
www.hanson-inc.com

ej

You can rely on EJ to provide reliable drainage and access solutions for your next airport project.

Learn more at ejco.com
or call 800 626 4653

Visit us at the 88th Annual AAAE Conference & Expo in Houston, TX.

"Our overall goal is to identify current energy use in each building and asset at the airport, identify realistic savings targets and determine a methodology, through energy-conservation measures, to achieve those goals," says Boyd.

For example, the payback on upgrading building automation systems might come sooner than the payback for replacing heating, venting and air conditioning (HVAC) equipment. But if the HVAC equipment is old, it may make more sense to replace it first and *then* install a new control system.

"We call it a rack-and-stack method, where we analyze a number of different things to rank those projects by using three primary criteria: cost, anticipated savings and return on investment," Boyd says. "Sometimes indoor air quality also is a ranking factor."

Small Changes, Big Results

After the phase one review, Hanson proposed 38 energy conservation measures; and the airport elected to implement 19 of them. The result: an estimated savings of $70,000 a year, with a payback period of just less than five years, Boyd reports. Most of the changes involved optimizing the operation of existing HVAC systems in ancillary buildings and swapping out existing light bulbs with LED light bulbs.

"For example, we made programming changes to the systems that control things like the speed output of fans or the damper positions within HVAC equipment," Boyd says. "There's a lot of energy to be saved by reducing the speed of fans or pumps if water or air flow isn't needed…a lot of times the original programming takes a very conservative approach that sends more air and water into systems than needed—sort of a just-to-be-sure philosophy."

It may seem like a stretch that a small change in fan speeds could have a significant impact. But if the airflow of just one fan is cut in half, it uses just 1/8 of the energy it did before, points out Boyd. "And we're easily talking hundreds of fans and pumps in an airport of this size, so little changes throughout the system add up to significant savings," he emphasizes. "If you take these hundreds of fans and pumps all over the airport and dynamically control their air flow, you're talking about potentially saving hundreds of thousands of dollars."

Better programming capability saves money because MCO personnel can now monitor conditions throughout the airport more accurately and make adjustments faster. For example, the new controls send an alarm if an air-handling unit goes out of calibration. This allows employees to adjust it immediately, as opposed to waiting (possibly for hours) for someone to complain about a room being too hot or too cold.

The airport also installed occupancy sensors that automatically reduce heat or air conditioning and turn off lights when rooms are unoccupied. "If there's plenty of sunlight in a room, for example, it will automatically turn off any lights," explains Daniels. "And if a lot of people leave, say, a baggage claim area, the system senses that and turns off lights and adjusts the air conditioning accordingly."

Next Step: Airside Terminals

The second phase of Hanson's plan included energy audits in three of the airport's four airside terminals. (The fourth terminal was not included because it's undergoing renovations.) The company also worked with the Orlando Utility Commission to compile three-, five- and 10-year forecasts of items such as utility tariffs, rebates and incentive programs, pending legislation and infrastructure improvements. The team also gained insight about potential plans and timelines for upgrading transmission lines or substations and other projects that would affect the airport. In short, Hanson investigated anything that might affect the airport's future utility costs, Boyd says.

MCO received a review of Hanson's second phase of audits last fall and is implementing the bulk of its recommendations this year. Projects largely focus on upgrading controls for air conditioning systems in the three terminals. In effect, the new controls allow the complex system of pumps and valves that distribute chilled water to the terminals to operate more efficiently, Boyd explains.

"Now, if the valves close off, then a set point in the chilled water system can slowly ratchet down and slow the pumps down, too," he elaborates. "Those valves are set

to deliver a designed flow rate (of chilled water) to the farthest coil in the loop to ensure that, in any circumstance, the necessary amount of water required by the farthest coil is always available.

"Now, that set point responds to the position feedback from the valves, where before it remained at a set differential pressure set point," he adds. "It now effectively becomes a self-learning system that delivers what's needed, as opposed to possibly over-compensating for a worst-case scenario."

Although it's too early to definitively quantify results from changes made during phase two, Boyd expects cost savings to range from tens of thousands of dollars to more than $100,000 per year.

The airport is working to use 10% less energy by 2018.

Beyond acting on Hanson's recommendations, the airport has also spent about $4 million over the last five years to replace four aging centrifugal chillers with high-efficiency units, plus three older cooling towers. Three remaining cooling towers also are scheduled for replacement.

"They were replaced more because of their age than for energy savings," notes Daniels. "We're also building a new centrifugal chiller plant to accommodate an expansion of one of our airside terminals. It features four magnetic-bearing (vs. oil-bearing) chillers and will be one of most efficient chiller plants in the Southeast."

Looking Ahead

Currently, the airport is considering a third phase, in which Hanson would audit facilities not addressed in previous efforts. Boyd says that the idea is to continuously update the energy roadmap every one to three years, depending on how long it takes to execute measures the airport decides to implement.

For other airports interested in reducing energy usage, Boyd suggests starting with "low-hanging fruit." Upgrading controls for air conditioning and heating systems provides immediate savings for the least amount of investment, he notes. "The development of optimized programming is continuously evolving," he observes. "The sophistication of programming keeps getting better and better, which allows us to fine-tune systems better."

Daniels identifies hiring a consultant to perform an energy audit as a critical first step. In addition to identifying high-priority measures, an audit provides building managers with an action plan and helps airport officials develop a capital improvement plan for funding purposes, he explains.

"You've got to have a plan," Daniel stresses. "Like the old saying goes: People don't plan to fail, they fail to plan."

UNSURPASSED **AVIATION**
EXCELLENCE

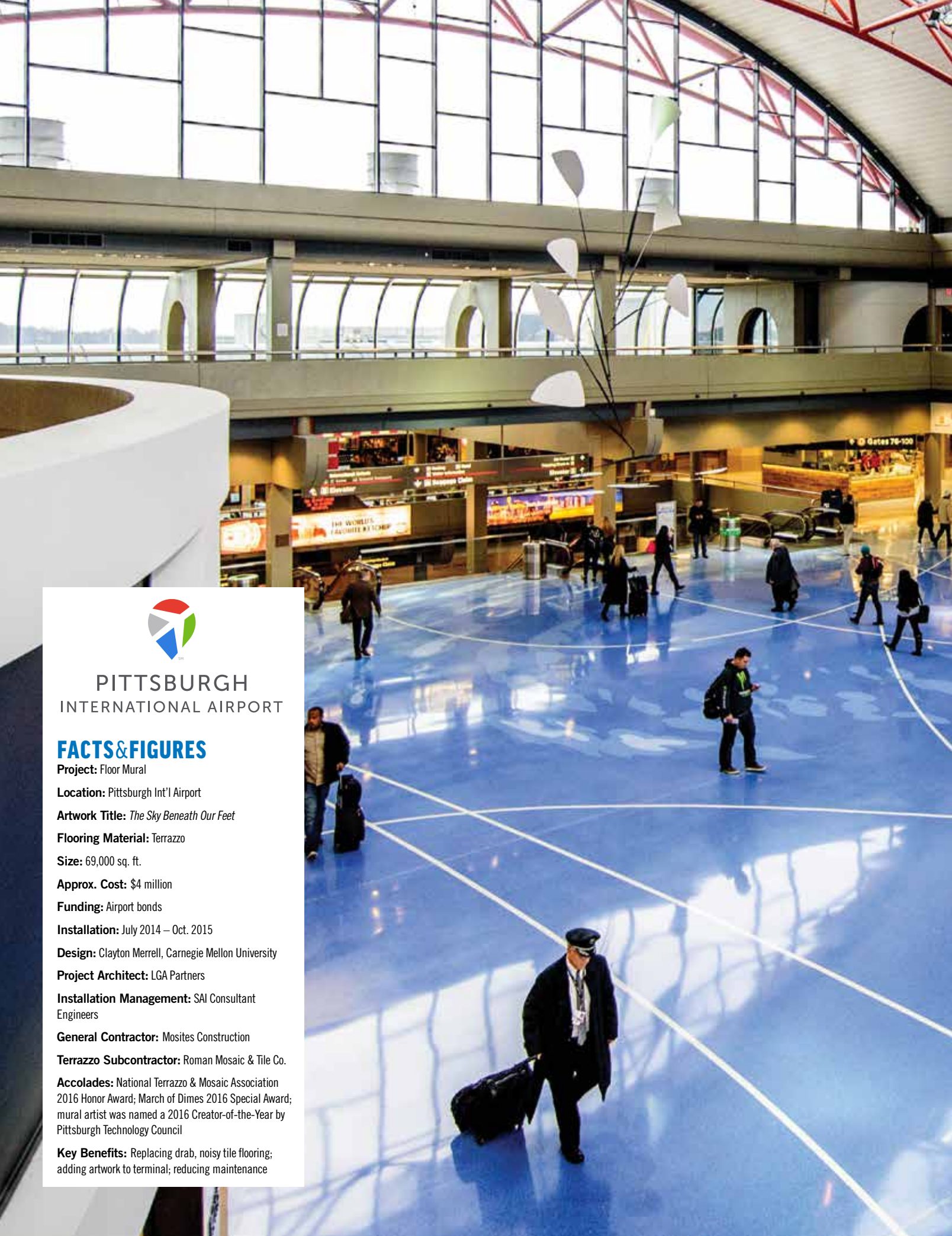
TOP: SFO Air Traffic Control Tower, *California* | LEFT: Denver International Airport – DIA Hotel and Transit Center (photo courtesy of Denver International Airport)
RIGHT: Charlotte-Douglas International Airport Parking Garages, *North Carolina*

HNTB's aviation professionals are dedicated to serving as a true extension of each airport client's staff. We have a long history of delivering a wide range of airside and landside services and projects – including terminals, runways, advanced financial services and airport planning – to the largest airports in the country.

HNTB

The HNTB Companies
Infrastructure Solutions

hntb.com



PITTSBURGH
INTERNATIONAL AIRPORT

FACTS&FIGURES

Project: Floor Mural

Location: Pittsburgh Int'l Airport

Artwork Title: *The Sky Beneath Our Feet*

Flooring Material: Terrazzo

Size: 69,000 sq. ft.

Approx. Cost: $4 million

Funding: Airport bonds

Installation: July 2014 – Oct. 2015

Design: Clayton Merrell, Carnegie Mellon University

Project Architect: LGA Partners

Installation Management: SAI Consultant Engineers

General Contractor: Mosites Construction

Terrazzo Subcontractor: Roman Mosaic & Tile Co.

Accolades: National Terrazzo & Mosaic Association 2016 Honor Award; March of Dimes 2016 Special Award; mural artist was named a 2016 Creator-of-the-Year by Pittsburgh Technology Council

Key Benefits: Replacing drab, noisy tile flooring; adding artwork to terminal; reducing maintenance

Pittsburgh Int'l Installs Terrazzo with Extra Razzle-Dazzle

BY DAN VNUK

Travelers passing through Pittsburgh International Airport (PIT) need only look down to see one of the most striking components of the airport's recent multimillion-dollar renovation. The airport replaced its uninspired, dated tile flooring with smooth new terrazzo that serves as the "canvas" for an eye-catching piece of art. The new material also eliminates the familiar racket of suitcases rolling over tile flooring.

In total, the project took 18 months and cost about $4 million.

The large-scale mural installed within the terrazzo, titled *The Sky Beneath Our Feet*, portrays five iconic Pittsburgh scenes and 12 aircraft (a paper airplane, blimp, the historic Wright Flyer and others). The artwork begins in the airside terminal of PIT's center core, extends into the food court and then leads to its four concourses—spanning 69,000 square feet. Together, it's all designed to engage visitors as they walk through the airport.

Clayton Merrell, the local Carnegie Mellon art professor who created the mural, feels that airports should be welcoming, beautiful places. "It is a city's most obvious public face," he explains. "When the Greater Pittsburgh Arts Council's Office of Public Art reached out to me for a proposal to rejuvenate the region's primary gateway, I knew the airport's dull, gray tiles presented the perfect opportunity. The airport atrium is a great space, but it had never really lived up to its potential. The former floor had been an aggravation for some time with the clickety-clack, and it was drab. It was a good time to make a change."

Goodbye Tile, Hello Terrazzo

Airport personnel note that besides being noisy and prone to cracking, the terminal's former tile floor was "high-maintenance." PIT officials initially considered simply replacing the floor, but ultimately decided it should be a piece of art. The project team ultimately chose terrazzo for its durability and sustainability. Airport officials also wanted to reduce maintenance for the cleaning crews.

Typically, terrazzo consists of marble, quartz, granite, glass or other material chips that are sprinkled onto a surface and covered with a binder. Once the poured mixture cures, it is then ground and polished to a smooth surface.

Some say construction workers in Venice developed terrazzo 500 years ago by mixing marble chips left over from upscale jobs with clay to create floors for their own homes and patios. Originally, they sealed the chips with goat milk to bring out the marble's shine. When electric industrial grinders and other power equipment emerged in the 1920s, terrazzo became much easier to install and consequently more popular.

To create the design for PIT, Merrell first made a digital collage of photographs he and others took, and then translated it into the piece of art that now embellishes the facility's floor. After arriving at a preliminary design, he and other artists came to the airport to spend time thinking and drawing. The photos in the digital collage were all traced and digitally combined. From there, the artists refined the photos into artistic images that could be rendered in terrazzo.


DENNIS PIVIK

It took crews 16 months to remove the old tile and install new terrazzo flooring according to Merrell's design. Dennis Pivik, vice president of engineering at the airport, describes the process of pouring the terrazzo as very labor-intensive. "Each of the designs in the floor is made by the use of metal strips," explains Pivik. "The amazing end-product has resulted in numerous awards. Everyone involved in the project did a fantastic job."

Art & Commerce

PIT's recent flooring project was not its first foray into public art. Numerous isntallments throughout the terminal include *Fraley's Robot Repair Shop,* an Andy Warhol exhibit and many others. The airport, in fact, has a rich history of promoting art in collaboration with the Office of Public Art, a public-private partnership between the city of Pittsburgh and Greater Pittsburgh Arts Council. A staff member from the office comes to the airport two days per week to consult with its Art in the Airport Committee, which reviews projects and proposals.


CHRISTINA CASSOTIS

"The beautiful new terrazzo floor reflects our commitment to bringing the local arts community, as well as unique elements of Pittsburgh, into our terminal and letting passengers know they've landed someplace special," says Christina Cassotis, chief executive officer at PIT. "We've worked hard in the past year in adding nearly 20 nonstop destinations while also improving our facilities. *The Sky Beneath Our Feet* brings a new experience for our passengers, and we've very proud of it."

Last year, PIT served more than 8 million travelers, ranking it as Pennsylvania's second-busiest passenger airport.

Like Cassotis and other airport executives, Merrell is pleased with how travelers are receiving the new mural. "When I went into this project, the thing that was most important to me, the measure of success I set for myself, was that it would change the feeling of being in the airport," reflects the artist. "It's been really great for me that it seems to have done that, that it feels completely different out there; and I think people are connecting with the new feel the space has."

World-class airports are replacing storefront "pull-down gates" with HUFCOR® movable glass walls

A superior ***window-shopping*** experience

- "Sell while Closed" with Movable Glass Walls
- Increase your Storefront Presence
- Enhance Passenger Experience
- For more information visit **www.hufcor.com/airports**

HUFCOR®

OPERABLE | VERTICAL LIFT | GLASS WALL | ACCORDION

2101 Kennedy Rd. | Janesville, WI 53547 | 800-542-2371 Ext. 214 | **www.hufcor.com**

Miami Int'l "Walks the Walk" with Passengers Through Security

BY VICTORIA SOUKUP

Each year, airports spend millions of dollars improving the passenger experience. But despite luxury lounges, gourmet restaurants and high-end retail stores, many still share a common Achilles' heel: security checkpoints. Passenger grumbling has grown noticeably louder at facilities where traffic volume continues to rise and TSA staffing levels remain unchanged due to budget constraints.

Miami International Airport (MIA), which served more than 44 million travelers last year, is addressing checkpoint complaints within its control by focusing on visitor comfort and hygiene. Last fall, the airport began installing antimicrobial mats throughout its screening areas. Now, with more than 400 protective mats in place, its passengers don't have to step on cold, public floors after they remove their shoes for screening.

"The antimicrobial mats at our checkpoints are the latest way that we are improving the travel experience for our departing passengers," says Miami-Dade Aviation Director Emilio T. González. "The mats and other enhancements at MIA are in direct response to their feedback, as we strive to deliver the world-class level of service our passengers deserve."

The 2-by-6-foot floor runners begin where travelers place their shoes and personal carry-on items in bins for screening, and they span the entire length of the conveyor belt. The airport also has mats in front of body scanners and near benches passengers use when putting their shoes back on and packing away loose items collected from the bins.


GREGORY C. OWENS

Gregory C. Owens, MIA's assistant director of business retention and development, notes that the airport didn't install the mats because its floors were actually dirty; it added the extra measure because some passengers *perceived* the floors to be unsanitary. "Here in South Florida, few people wear socks," Owens relates, noting that many travelers consequently pass through security checkpoints barefoot—much to the chagrin of other passengers.

Cleaned Nightly, Replaced Quarterly

BellaMat™, the company that provides MIA's new checkpoint runners, bundles the cost of daily maintenance into the purchase price of the mats and contracts a janitorial company to clean them every evening. "They clean, vacuum and wipe down all the fill to

FACTS&FIGURES

Project: Security Checkpoints Mats

Location: Miami Int'l Airport

Product: BellaMat™

Key Feature: Antimicrobial properties for increased passenger comfort/hygiene

Ancillary Benefit: Mats can display airport messages & paid advertising

Product Care: Vacuumed/cleaned every evening; replaced every 3 months

Maintenance Provider: ABM Industries

Procurement Details: Cost of maintenance is included in purchase price & contracted by BellaMat


CYNTHIA LAZARUS

retain the antimicrobial benefits," explains BellaMat President Cynthia Lazarus. "We are responsible for placing the mats and then taking them up and replacing them. If something comes loose on the floor, the mats are replaced. If they are soiled, new mats are installed. The mats are always pristine and taken care of."

According to Lazarus, the standard lifecycle for each 2-by-6-foot mat is three months.

Crews adhere the mats to hard surface floors with water-soluble, double-stick tape, and to carpeting with hook and loop fastening. MIA notes that it hasn't received any reports of slips or falls due to the mats, which are compliant with the Americans with Disability Act. "This is in an area where you're not making huge steps," Owens comments. "You're taking small steps because you're waiting. You're waiting for your personal items to come through the machines, so everyone walks with extreme caution in this area."

The patent-protected mats, which have antimicrobial properties blown into their structure, took several years to develop. The idea came from Lazarus' personal experience in checkpoint lines. "After 9/11, security changed at airports," she recalls. "I'm a high-heeled lady, and I hated taking my shoes off and walking on bare floors. If there was any water on the floor, I stepped into it. If there was gum on the floor, I stepped on it."

Because the mats are made from recycled soda bottles, they are not only environmentally friendly, they are also lighter than traditional woven mats, adds Lazarus. The mats themselves are fully recyclable as well. "They can be placed directly in the recycling container when replaced," she notes.

Your Message Here

Although nearly a dozen U.S. airports use BellaMat products, MIA is currently the only one leveraging their promotional capabilities. When its first mats arrived in October, the airport opted to run an "in-house ad" on them, thanking travelers for selecting MIA. The second set, installed in January, promotes MIA's electronic magazine.

Currently, the airport is looking for outside companies to run paid ads on the mats. "If an airport gets an advertiser, the cost of the mat to the airport is basically zero," Lazarus explains. "And the quality of the advertising film is terrific. The colors are rich and vibrant."

Airports can improve the passenger experience by increasing customer comfort, while offsetting the cost of the mats with advertising, she elaborates. "More than anything, advertisers value captive space for advertising brand messages. On average, passengers spend 10 minutes in airport security. That's 10 minutes of exclusive exposure to (a) brand message. And, the bigger the airport, the more eyeballs and, thus, the more value."

According to Lazarus, independent research conducted two years ago found that advertising on BellaMat products improves brand awareness, message communication and purchase intent. "We were able to prove that we can generate significant brand awareness and purchase intent on the part of the passengers," she reports.

Lazarus also notes that checkpoint mats don't interrupt consumers, as many traditional media do. Furthermore, the positive feelings generated by the mats' antimicrobial benefits accrue to the brands advertised on them, further driving positive perceptions, she adds.

MIA has validated the company's customer benefit claims. "The mats are in place, and people feel a little more comfortable walking on the mats with their bare feet as opposed to walking on the floor or on something that is not sanitized," reports Owen.

Overall, the airport is "extremely happy" with the mats, adds Gonzaléz. "They are serving as a customer service for our passengers, and the additional space to notify travelers about our digital magazine, *MIA Connections*, is an added bonus."

ACC/TSA SECURITY CAPABILITIES WORKSHOP

ARLINGTON, VA DOUBLETREE HOTEL, CRYSTAL CITY

JULY 19 – 21, 2016

ACC

ACC AIRPORTS TECHNICAL WORKSHOP

AUGUST 10 – 11
2016

WASHINGTON, DC
RENAISSANCE DUPONT CIRCLE HOTEL

ACC 38th annual Conference & Exposition

SYNERGY:
DRIVING INNOVATION & COLLABORATION

14 – 16
NOVEMBER 2016

PGA NATIONAL
RESORT & SPA >>>
PALM BEACH GARDENS
FLORIDA

MORE INFO: **www.ACConline.org** ACC @ACC_HQ

San Diego Int'l Builds $316 Million Consolidated Rental Car Facility

BY JODI RICHARDS

The new 2.1 million-square-foot rental car center at San Diego International (SAN) consolidates the busy airport's car rental operations under one roof to maximize operational efficiency and enhance service for customers. Given the airport's active car rental market (more than 1 million transactions per year) and limited overall footprint (661 acres for all airport operations), the project was a tall order to fill.

BOB BOLTON

Bob Bolton, director of airport design and construction, describes SAN's car rental business as "robust," with fully 14% of all arriving passengers renting vehicles. Due to its particularly healthy rental market, SAN ended up with operators scattered all around the airport—on both private and public property. The system was especially inefficient for customers who had to search nearby neighborhoods for their car companies, notes Bolton.

SAN's new $316 million facility improves customer service by consolidating its 10 rental car companies into one on-airport facility. In addition, the San Diego County Regional Airport Authority assumed sole responsibility for transporting passengers to and from the new facility; so customers no longer wait for brand-specific shuttles. Since all rental car companies are now located in the same facility, fewer buses are needed (16 vs. 81) and traffic on the airport's main roadway has been significantly reduced.

SAN even built a new roadway system to reduce travel time to and from the new rental car center. Removing rental car traffic from the main airport road was a major goal for officials. "We wanted to get the rental car operations separate from the terminal operations," Bolton explains.

Beyond providing logistic improvements, the airport's new fleet runs on compressed natural gas, which reduces the operation's carbon footprint. "It makes things much more efficient," Bolton summarizes.

Consolidating rental operations into one building also provides efficiencies for the facility's tenants, Bolton comments. Instead of each company paying for its own building, tenants now share facility


Photo: Pablo Mason

SAN ORG
San Diego International Airport

FACTS&FIGURES

Project: Consolidated Rental Car Facility

Owner: San Diego County Regional Airport Authority

Cost: $316 million

Facility Size: 4 levels; 2 million sq. ft.

Parking Capacity: 5,400 rental vehicles

Tenants: 10 rental companies, representing 19 brands

Gas Pumps: 72

Site Size: 25.5 acres

Notable Features: 7 bio-swale ponds to collect rain & runoff water; space for 300-person restaurant on top level

Shuttles to/from Terminals: 16 buses, each with capacity for 25 passengers

Project Manager: Kimley-Horn

Design & Architect of Record: Dattei Wong Architects

Construction Manager at Risk: JV Austin Commercial; Sundt Construction

Curbside Cover: Birdair

Installation of Underground Water & Sewer Lines; Storm Drains: MarCon Engineering

Installation of Fueling Dispensers & Underground Storage Tanks: Western Pump

Supplied Construction Materials: Supply Patriot

Foundation: SCST Engineering


WESLEY WONG JR.

costs such as fueling stations and car wash equipment. From a service delivery perspective, the facility is the "most efficient way for the rental car companies to operate," says Wesley Wong Jr., principal at Dattei Wong Architects. The multi-level quick-turn area reduces the time and distance cars need to travel within the facility, which allows rental companies to return cars to service quickly and smoothly, he explains.

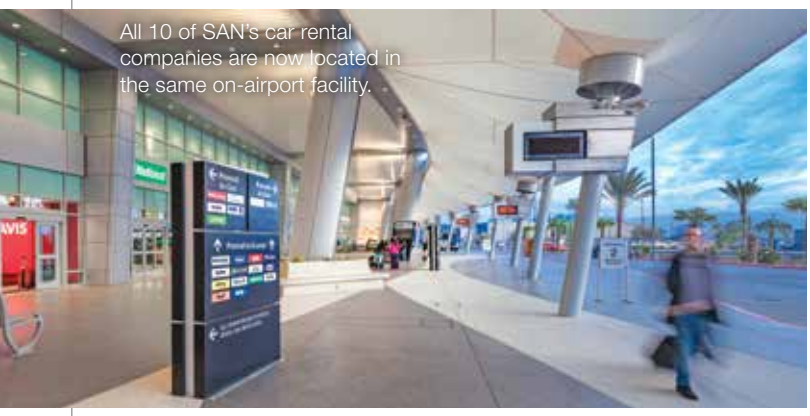
The new consolidated rental car center (conrac) is located north of the airport's sole runway, in an area previously used for aerospace manufacturing. After

INNOVATIVE
AVIATION DESIGN

TranSystems
EXPERIENCE | Transportation
www.transystems.com

The architects and engineers at TranSystems have a proven track record of creating the ultimate customer experience while emphasizing innovative, sustainable and cost conscious solutions. Since 1966 we have been providing planning and design services for airports, airlines, concessionaires and the rental car industry. Let our experts assist you on your next project.

Contact: Gary Luczak, PE, National Aviation Market Sector Leader at (443) 717-1801


All 10 of SAN's car rental companies are now located in the same on-airport facility.

SAN's 2008 master plan identified several options for the area, the airport launched its Northside Development Program. In addition to the recently completed conrac, the initiative added a new 21,000-square-foot receiving and distribution center and Landmark Aviation's 19,000-square-foot terminal, which opened in 2014. The last piece of land included in the Northside Program is slated for cargo operations and will be developed via a public/private partnership. SAN is currently requesting qualification packages for the cargo area project.

Location Challenges

Planning for the conrac began in 2005, when the airport authority's business group analyzed SAN's existing and future car rental operations. The study helped the authority develop a construction plan for the facility, including the optimum lifespan for a building (typically 20 to 30 years for a parking structure) and designs to accommodate more than 5,000 vehicles, Bolton explains.

With only 661 acres of land and a single runway, SAN officials are particularly mindful of land use. "We spend a lot of effort in our planning department really working on what the needs are, and what they'll be in the future to utilize every piece of land that we have," says Bolton. Because of limited acreage, there were not many options available, and officials wanted to keep the facility onsite.

An active fault line running through the airport property was another complicating factor in establishing the facility's footprint. "We had to move the building, per the building code, a certain distance from that fault," Bolton explains. "That helped us lay out exactly how this building was going to function and how large it would be."

Aesthetics

SAN officials took extra care planning the exterior appearance because of the facility's location: The new conrac faces a nearby residential neighborhood *and* it's the first thing visitors see when entering the airport from Pacific Highway/I-5. "From the very beginning, one of the main priorities and goals from the airport was that they did not want the facility to look like a parking structure," Wong recalls.


BRAD KIRSCH

The façade not only had to be constructible, durable and cost-effective, it also had to be aesthetically pleasing, adds Brad Kirsch, vice president of preconstruction for Sundt Construction. Although the overall building is cast-in-place concrete, the exterior façade is pre-cast concrete panels to provide a more striking look than most parking structures, he explains.

"Of all the conracs that we've designed and worked on, this one probably placed the most emphasis on aesthetics," Wong notes.

To visually relate the new structure to the rest of SAN's facilities, designers dipped from the same color palette and used similar materials, Wong says. The conrac's open-air lobby and awning are also elements carried over from the design of the terminals.

The swooping awning on the façade was designed for aesthetic appeal and utility. In addition to shading shuttle bus passengers from the sun (and protecting them from occasional rain showers), it also reduces the facility's operating costs by facilitating an open-air lobby, Bolton explains. The awning is made of 16,700 square feet of polytetrafluoroethylene cone-structure

canopies from Birdair. The same concept and materials were used during SAN's Terminal 2 expansion, further relating the structures aesthetically, he notes.

Inside, two customer lobbies provide restrooms and vertical transportation to other levels.

Noteworthy Features

Multi-level fueling, with 72 stations spread throughout three floors, is one of the most exciting aspects of the new facility, asserts Bolton. "Normally you don't fuel vehicles inside a building," he explains, noting that the facility consequently includes multiple safety features.

Designing the indoor, above-grade fueling system was a challenge, Wong acknowledges. Ultimately, however, the project team demonstrated to building and fire officials that its design meets the safety intent of applicable codes.

Another notable feature is a 7,500-square-foot restaurant space on the top floor. Although the space does not have a tenant yet, SAN officials expect it to be a sought-after location, given its views of the airfield, San Diego Bay and downtown San Diego.

Construction Logistics

Keeping the work zone outside of SAN's aircraft operating area allowed Sundt Construction to manage the airport conrac project as if it were any other job, notes Kirsch. Not having to badge crewmembers saved the airport time and money, adds Bolton.

Because the work site was located in a largely undeveloped area of the airport, it provided other advantages unrelated to security. Direct access off the freeway facilitated truck traffic and material delivery, and there was space available for contractor parking, material storage and staging equipment/supplies.

At one point, crews used tower cranes to move materials, but otherwise, construction did not impact airport operations. Overall, Bolton recalls the construction process as "pretty straightforward."

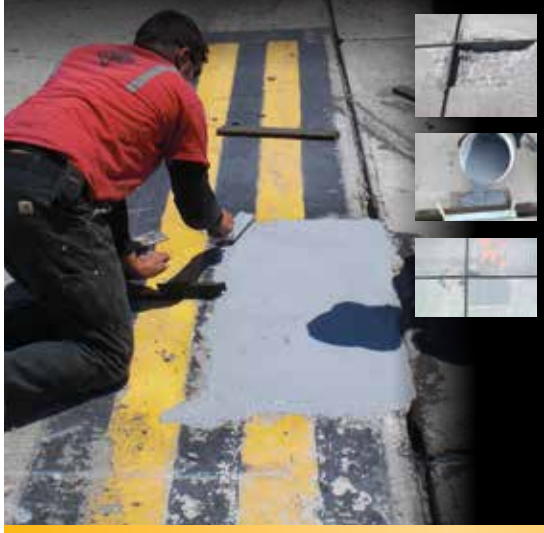
Building the 2.1 million-square-foot facility in less than two years required careful planning, Kirsch qualifies. Following a detailed schedule and sequence plan, crews cast the entire structure in place in less than a year, he notes. To do so, the team ran three distinct concrete

Protecting & Preserving

New and Existing Airfield Pavements

D.S. Brown has over 50 years of experience of supplying the highest quality joint sealants and concrete repair materials to airports worldwide.

Delpatch™ Elastomeric Concrete



Primary Applications:
Partial Depth Spall Repair
Airfield Lighting Retrofit

- *Permanent*
- *Safe*
- *Flexible*
- *Durable*
- *Easy*
- *Fast*
- *Chemical Resistant*
- *Cost Effective*

Please contact the D.S. Brown Company to learn why you too, should rely on Delpatch™ Elastomeric Concrete.

Delastic® Preformed Pavement Seals

- *Meets FAA P604 ASTM D 2628 & CRD-C 548*
- *Longest Lasting Joint Seal*
- *Jet Fuel Resistant*
- *Keeps FOD and Moisture out of the joints*
- *Reduces Faulting*
- *Reduces Joint Spalling*

For over 50 years, our most discerning customers have realized the superior performance of Delastic® Preformed Pavement Seals.

D.S. BROWN®
A GIBRALTAR INDUSTRIES COMPANY

www.dsbrown.com | 419-257-3561

operations and poured three decks in three different areas each week to meet the airport's aggressive schedule. On average, crews poured close to 50,000 square feet of deck concrete every week, details Kirsch. In total, the project required more than 325 tons of structural steel and 100,000 cubic yards of concrete.

Environmental Concerns

As with all new construction at SAN, sustainability was a primary goal for the new conrac, notes Bolton. The building is designed to achieve Silver Certification from the United States Green Building Council in Leadership in Energy and Environmental Design (LEED).

Creating a lighting system that is both practical and energy-efficient was a particular challenge because the facility is staffed 24 hours per day, and the ready/return area requires roughly three times more light than a typical parking garage. A control system that turns down lights in some parts of the facility during off-peak periods helped designers meet the challenge, notes Wong.

Also an environmental plus, the facility is designed to reclaim 85% to 90% of the water used onsite.

The airport's proximity to the San Diego Bay added unique challenges regarding soil conditions. Because most of the work site included reclaimed Bay muds from previous dredging operations, engineers were concerned about liquefy-able soils, Kirsch explains. The site was also previously home to World War II-era aerospace facilities, so they were also attuned to potential soil contamination and the pile foundations of buildings that remained on the site. The associated mitigation process involved a lot of testing, with specialists monitoring soil and air quality prior to and during construction, Bolton reports.

After environmental studies determined that soil contaminants were minor and not harmful to the public, the project team developed ways to minimize the amount of soil exported from the site. Crews used an auger displacement approach to install piles for the building structure that bridged what was already in the ground, Kirsch says.

Business & Community Outreach

As part of SAN's ongoing effort to help local and small businesses, the airport built out tenant space for small market operators. The program allows rental car companies that might not otherwise be able to afford space in the new facility an opportunity to conduct business at the airport, comments Bolton. The airport recoups its build-out costs through monthly rent payments from the small businesses that consequently became tenants. "That got a lot of the smaller companies into the building with the big, national companies," he explains. "The airport authority has a strategy where we try to engage the community at multiple levels when we do a construction project."

Toward that end, the authority awarded about $70 million of the total $186 million in construction contracts for the project to local businesses.

Public art is another visible outreach effort, with the airport authority requiring SAN to spend 2% of all of eligible construction costs on artwork for the airport. "This fits our community strategy to really make this a unique experience and engage the art community in public art projects at the airport," says Bolton.

Two major pieces, *Swarm* and *Hive*, are located in the vertical transportation areas. Both were inspired by insect behavior and include automobile parts. *Swarm* is comprised of roughly 800 Hyundai taillights, and *Hive* includes side mirrors from a Ford truck.

The bio-swale area that was added outside the facility to collect rain and runoff water includes two 54-foot kinetic sculptural forms that take inspiration from aircraft marshals, metronomes and the San Diego Bay.

Ueberall International, an artist group based in Southern California, developed artwork for the facility's northeastern exterior façade that is expected to debut later this year.

Looking Forward & Back

After completing its Terminal 2 "Green Build" expansion a few years ago, SAN created a formal program for identifying and analyzing lessons learned during construction projects. The process helps the airport team review each project to understand what worked, what did not and what could be improved for the next project, explains Bolton.

"We can always do better," he notes. When the best practices summary for its consolidated car rental facility project is complete, SAN plans to make the document available to other airports.


ADB GROUP
SAFEGATE
GROUP
TOGETHER
TOWARDS THE FUTURE
The airport industry is changing at warp speed. Traffic numbers will double in the next 15 years. This is a challenge that will bring with it opportunities.
ADB Safegate is now one company – working together to help you seize these opportunities. With the largest product portfolio for the airfield, tower and gate, and unmatched operational knowledge, we are ready to boost airport performance around the world. More and faster movements without the need for expanding infrastructure.
ADB Safegate – together towards the future.
Visit us at the 88th Annual AAAE Conference & Exposition – Booth #301
www.adbsafegate.com

Monterey Regional Adds Runway Safety Areas Amid Perfect Storm

BY RONNIE GARRETT

Sometimes, the phrase "perfect storm" refers to a rare combination of events that leads to disaster. Other times, it describes similarly unusual circumstances that create an amazing outcome. Surprisingly, a recent runway safety area project at Monterey Regional Airport (MRY) met *both* definitions at various points.

One month into the $52 million initiative, the central California airport was sued by a land-use watchdog group called the Highway 68 Coalition. The citizen group argued that the project's environmental impact report didn't adequately address alternatives and greenhouse gas emissions. It also alleged that construction of a new access road was a steppingstone to help the airport build a 45-acre office and industrial park on its north side.

CHRIS MORELLO

"There are 30 days for a plaintiff to sue, and on the 30th day, they sued," recalls MRY Project Manager Chris Morello. "The project was stopped by the courts and subsequently held up for two years."

When the 498-acre, four-airline airport finally reached a settlement agreement with the Highway 68 Coalition, it had just 18 months to comply with the new federal requirement that requires all commercial airports to have runway safety areas (RSAs) to stop aircraft from overrunning or veering off their runways. Despite the significant delays, MRY met the December 2015 deadline.

Personnel from program manager Kimley-Horn and Associates attribute the on-time, under-budget finish to a perfect storm of people working well together. "All of the stakeholders—the airport board, the airport manager, the contractor and the FAA—checked their egos at the door," says Kevin Flynn, vice president/practice builder for Kimley-Horn. "Everybody was committed to the project and working to resolve issues and challenges in order to get it done on time."

FACTS&FIGURES

Project: Runway Safety Area Enhancement

Location: Monterey (CA) Regional Airport

Cost: $52 million

Funding: FAA (95%); Passenger Facility Charges & Airport Improvement Program grants (5%)

Unique Challenge: Runway is landlocked & located on a plateau

Dirt Moved: 390,000 cubic yards

Consultant Team: Coffman Associates; Kimley-Horn and Associates

Engineered Material Arresting Systems: Zodiac Arresting Systems (Zodiac Aerospace)

Airfield Lighting: ADB Airfield Solutions

Of Note: Project was delayed 2 yrs. by lawsuit from local citizen group; airport adjusted site plans to address traffic concerns by keeping service road on airport property instead of connecting it to nearby highway

Gee ASPHALT SYSTEMS, INC.
GSB-88®
MAKES GOOD RUNWAYS LAST LONGER!
GSB-88® Qualifies for AIP Funding


For ALL Airport Pavements, Including NEW!
Potential 400% ROI
Proven on 500+ Airfields & 350+ Runways!
Call Us! 800.747.8567 • geeasphalt.com/ai

Finding Room

Work began in 2014 to make the airport's primary runway, 10R-28L, meet the FAA's dimensional standards for RSAs (a requirement originally mandated by Congress via House Resolution 3058). Specifically, airports must have a 500-foot wide RSA that extends 1,000 feet beyond the end of each runway, with a graded area to stop aircraft from overrunning or veering off the sides.

A team from Kimley-Horn and Jim Harris, president of Coffman Associates, conducted extensive environmental studies and presented several solutions before the airport district approved a project that met MRY's needs and satisfied the conditions of its lawsuit settlement.

Due to a perfect storm of site constraints, there simply wasn't enough room for 1,000 feet of safety enhancement on each end of Runway 10R-28L airport. So the airport opted to use an engineered material arresting system (EMAS) to create an acceptable RSA.

For starters, the runway is essentially landlocked by development on both sides. Further upping the project's degree of difficulty, the airport also rests on a plateau. On one side, the plateau drops approximately 30 feet to a military-owned golf course. On the other side, it drops about 80 feet to a shopping center situated below. For yet another challenge, the plateau was missing a considerable size triangular piece on the east end.

Because the FAA requires airports to improve RSAs to the "extent practicable," engineers proposed a number of ways to resolve the issue, notes Flynn. Options included shifting or shortening the runway, building up the plateau's missing corner from below, and constructing a bridge or cantilever extension of the plateau. "We developed and evaluated the alternatives with Coffman Associates to determine which would be feasible, and to put an approximate cost on those alternatives," he recounts. "After that, we worked with the FAA to figure out how much they would pay for each alternative and if they agreed with them."

Ultimately, officials decided the best approach was to re-construct the missing corner of the plateau. A cantilever bridge was deemed too expensive; and shortening the runway wasn't an option, because the existing length was needed to accommodate current airport users. "Building up the corner was constructible and feasible, and the FAA agreed to support it," informs Flynn.

Airport Construction & Maintenance Solutions

We offer a full line of innovative products to meet FAA Advisory Circular standards.

- Aerocade™ Low-Profile Airport Barricades
- Safe-Hit® Certified Airport Taxiway Markers
- Yodock® 2001 & 2001MB water-filled barricades to delineate work zones for construction and maintenance

TRINITY HIGHWAY RENTALS

trinityhighwayrentals.com

888.496.3625

Morello notes that the original project proposal included a 7,008-foot runway, but it had to be shortened 8 feet to meet requirements of the lawsuit settlement. That left the runway at 7,000 feet, the airport's minimum length.

Adding an EMAS cost $12.5 million—95% of which was paid for with FAA funds and 5% with Passenger Facility Charges and Airport Improvement Program grants.

Moving Dirt & Mitigating Impact

Keeping the airport in operation as work progressed was a key consideration throughout the project. (MRY serves approximately 400,000 passengers annually.)

Because construction crews were working in front of the Instrument Landing System (ILS), work had to be phased to keep the instrument approach available during operational hours. This required nighttime closures with very tight windows for construction crews and airlines alike, notes Morello. The contractor started work after MRY's last commercial flight (at 11:30 p.m.) and finished before the first commercial flight the next morning (at 5:30 a.m.). "We were able to accommodate commercial flights as long as they were on schedule; but if they had any delays, they might not be able to land," she says.

To ready the area for construction, crews removed trees and shrubs, modified an existing gate to provide an entrance and exit along Highway 68 for construction equipment, and constructed barriers along the north side of the highway to minimize traffic disruptions. They then built up retaining walls to support the plateau and EMAS bed, and relocated the vehicle service road.

The airport addressed traffic concerns raised in the Highway 68 Coalition lawsuit by adjusting plans to keep the service road for the project on airport grounds rather than connecting it to Highway 68 as originally proposed. "We pulled back our retaining walls and made them a little taller (10 feet)," explains Morello. "By having one less retaining wall, we were able to pull back enough to keep the vehicle service road on airport property."

The service road, originally planned with two lanes to facilitate emergency vehicles, was also reduced to one lane to help everything fit.

"By keeping the road entirely on airport property, we were able to move forward on the project," Morello says. "Doing this required us to redesign the project slightly. Most of it stayed the same, but the retaining walls were changed slightly." In total, crews installed more than 135,000 square feet of retaining walls.

Offering a unique combination of airport planning specialists, airfield design experts, and parking and transportation professionals, Kimley-Horn identifies customized solutions to fit your airport's needs.

To learn more, contact aviation@kimley-horn.com or call Loy Warren at (214) 420-5609.

Kimley»Horn

Expect More. Experience Better.

As recognized by the FAA, Kimley-Horn's industry-leading knowledge and experience in airfield geometry, runway safety, and Runway Incursion Mitigation (RIM) planning and improvement design can help your airport use a safety risk perspective to develop cost-effective, operationally efficient, and implementable mitigation strategies.

Development on both sides of MRY's primary runway made it difficult to find room for additional safety areas.

GSB PRESERVATION PRODUCTS 88®

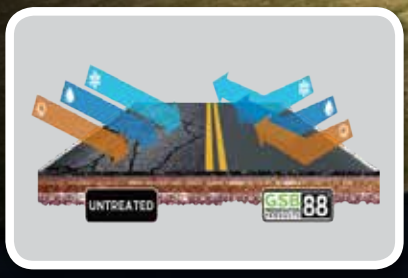
HIGH PERFORMANCE ASPHALT PRESERVATION TREATMENT

FAA AC P-608 COMPLIANT

EXTENDING THE SERVICE LIFE OF ASPHALT PAVEMENTS

GSB-88, PROVEN FOD PREVENTION
RECOGNIZED FOD MITIGATION SYSTEM

SAFE
PROVEN
EFFECTIVE



A SUSTAINABLE SOLUTION
GreenCircle CERTIFIED
LIFE CYCLE ASSESSMENT OPTIMIZED

asi
ASPHALT SYSTEMS INC.™

P.O. Box 25511 | Salt Lake City, UT | Phone: 801.972.2757 | asphaltsystemsinc.com

After the retaining walls were completed, crews landscaped the hillside with 366 trees and 4,200 native plants. “The airport is along a scenic highway,” Flynn explains. “We did everything we could to mitigate the impacts of construction.”

The dirt used to rebuild the missing corner of the plateau was dirt captured as crews relocated the service road. Throughout the project, crews moved 390,000 cubic yards of dirt (230,000 cubic yards from cuts, 160,000 from fills).

“It was a very creative solution to minimize the impacts of moving dirt,” observes Flynn. “Had we not been able to design it the way we did, we would have been exporting about as much dirt as we had to import.”

Site-Specific Solution

In order to create space to install an EMAS bed for 10R-28L, MRY had to move the runway 425 feet to the east and add retaining walls supported with new earthen fill. Zodiac Arresting Systems provided the EMAS, which was custom designed for the specific variables of MRY’s challenging site using computer models. Andrea Manning, sales and marketing regional director at Zodiac, notes that the company bases EMAS designs on factors such as available space, runway length, elevation and fleet mix.


ANDREA MANNING

“We use all that information to design an EMAS bed that is as long, wide and with varying depth of material to efficiently stop the aircraft using that runway,” she explains. Typically, the company provides several designs, so airport officials can assess which one makes the most sense for their budget and project needs.

“We have over 110 systems installed worldwide, and each one is custom,” says Manning. “Each one is designed specifically for a particular runway. When there are multiple installations, such as we had at Monterey, you have unique EMAS designs for each one.”

With the airport’s new EMAS in place, Morello is resting easier, knowing that MRY successfully met the federal deadline for

LEADING WATER JET TECHNOLOGY™

For over a decade, NLB has pioneered the removal of pavement markings and runway rubber with its StarJet® ultra-high pressure water jetting systems.

NLB Corp.

NLBSTARJET.COM | (800)227-7652

© Copyright 2016 NLB Corporation PsaleSTR_16_003.v1

The airport built up the corner of a plateau to make room for required runway safety enhancements.

runway safety area improvements. In addition, the airport's new system has a 20-year design life, and repairs should only be needed if a runway incursion occurs. Should that happen, crews will simply need to remove and replace the damaged EMAS blocks, notes Manning.

"We didn't have a choice but to complete this project," notes Morello. "It was congressionally mandated [for all commercial airports]." But it was also a project the airport *wanted* to undertake, she adds. "Our focus is always on making the airport safer; that's our mantra. This project helped us meet new standards and make an already safe airport safer."

CYCLONE COMES OUT ON TOP!

The **CY4006AC** – Purpose-built chassis/cab gives direct line-of-sight to the cleaning path. Providing superior operator visibility and comfort.
Best Value for Money.

The **CY4006HT** – Heavy-duty Cyclone Technology cleaning power on a Heavy-duty truck. High water capacity allows for over 5 hours of operating time.

The **CY4006LT** – The cleaning power of a Cyclone combined with the convenience of a commercial truck chassis. Ideal for smaller airports.

The **CY4006ST** – Rubber and paint removal with the power of a Cyclone on a compact and affordable platform. Ideal for contractors and low volume airports.

Faster, Greener, Cleaner The Cyclone Difference

The US Army Corps of Engineers, ERDC, (Engineer Research and Development Center) evaluated the performance of 3 Ultra-high pressure water (UHPW) rubber removal technologies for the Air Force Civil Engineering Center.

Here are some of their conclusions.

- **Pavement-tire friction coefficients -** Measured sections cleaned by the Cyclone 4006 showed the most improvement at 40 mph friction test and at 60 mph friction test.
- **The Cyclone 4006 operates noticeably quieter -** The Cyclone was the only system that could be operated without hearing protection and made it easy for airfield radio communication and training.
- **Easy to operate -** This [Cyclone] technology can potentially reduce manpower, decrease training requirements, and improve reliability.

Cyclone TECHNOLOGY 1.800.335.9695 | *info@cycloneclean.com*

Distributed in North America by: Team Eagle **Team-Eagle.ca**

Check Out Our New & Improved Website! CycloneClean.com facebook.com/cycloneclean twitter.com/cyclonetech

A Practical Approach to AOA Safety

Optimize value, performance, and guidance with proven pavement marking materials supplied from one source.

AirMark® Preformed Thermoplastic for Multi-Colored Markings at 150+ Airports / Benefit Cost Analysis Available

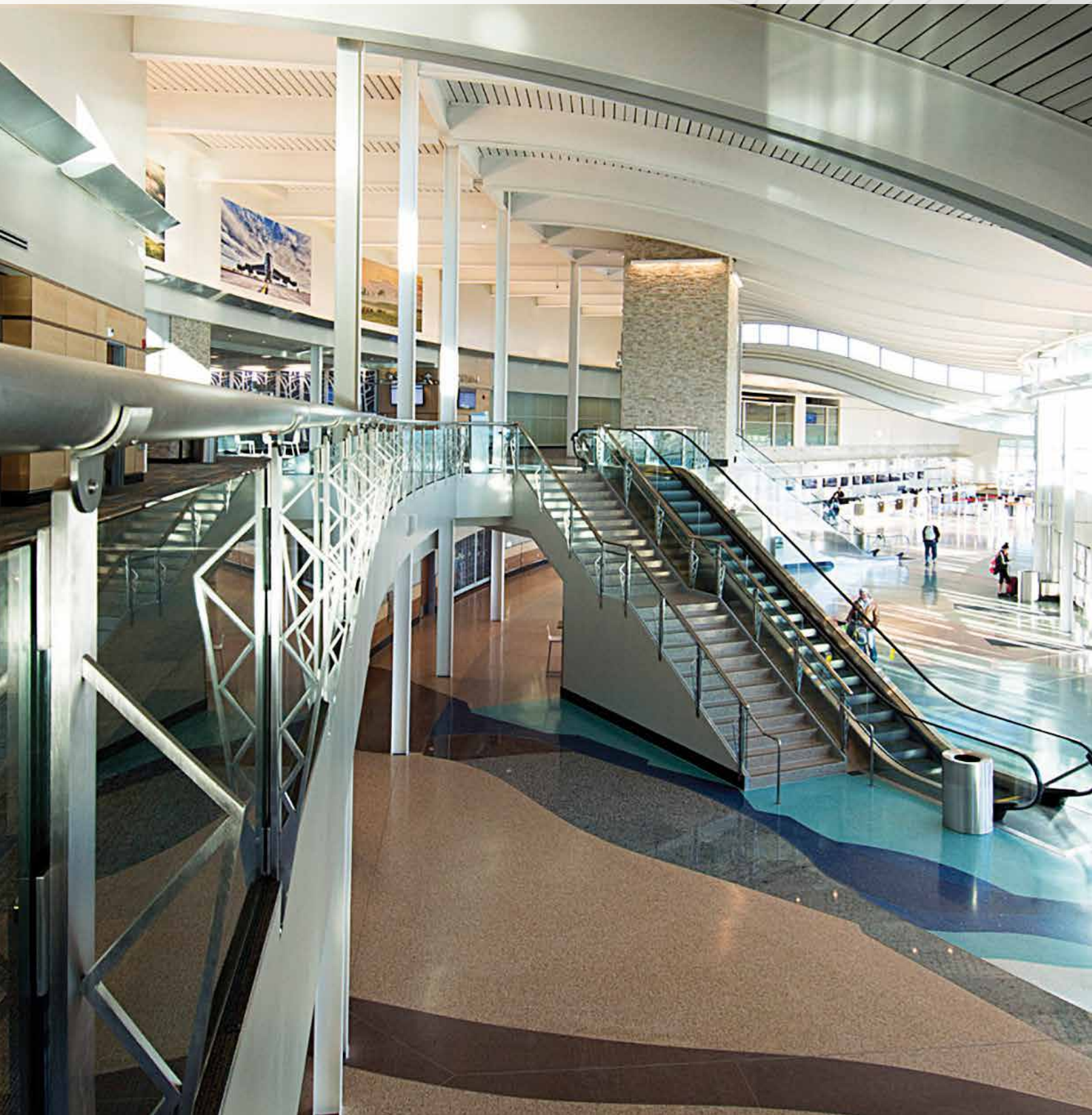
Fast-Dry and High-Build Waterborne & Solvent Based Paint / FAA Listed Buy-America / NJPA Awarded Contract

www.ennisflint.com

Ennis-Flint 115 Todd Court Thomasville NC 27360 sales@ennisflint.com Phone: 800-331-8118

New Terminal at Minot Int'l Dramatically Increases Capacity & Prepares Community for Future

BY ROBERT NORDSTROM



For many years, the only escalator in Minot, ND, was at Woolworth's, which also had a lunch counter. Today, there's a new escalator in town—inside the airport's spanking new terminal, and Minot International (MOT) holds its own claim to fame as the largest airport terminal in North Dakota.

After approximately five years of planning, design and construction, MOT's new facility leaped into operation on February 29 (Leap Day, in case you missed the shameless pun). At 121,000 square feet, the new terminal is nearly four times the size of the airport's old facility and is designed to serve the community's needs well into the future.

MOT's previous passenger terminal was designed to handle roughly 100,000 enplanements per year. From 1989 to 2009, the facility averaged 76,000 annual enplanements; but in 2011, it broke 150,000 enplanements, due to the surge in local oil extraction, explains former Airport Director Andrew Solsvig. In 2012, the facility served 220,000 enplanements—more than double its intended capacity.

"We had people parking in ditches or on grass, wherever they could find a spot," recalls Solsvig. "Our holdrooms, at times, would reach capacity and we would have to halt Security operations until passengers boarded. Sometimes, two flights would board simultaneously out of one gate: One flight would use the jet bridge and the other would leave out of the same door, descend onto the ramp and board a regional jet. We had to do something, because the oil boom had changed everything."

If push comes to shove, the new terminal can handle up to 500,000 enplanements per year, he notes. Increasing the airport's passenger capacity required nearly $84 million of construction—and not just a new terminal.

Moving Quickly

In 2011, MOT asked its longtime engineering consultant, KLJ, to evaluate the airport's current terminal facilities. It didn't take the team long to determine that there was no simple way to expand the existing terminal, recalls KLJ Program Manager Mike Mahoney.


MIKE MAHONEY

With passenger volume still climbing from the oil boom, time was of the essence. "Everyone agreed that instead of doing a typical master plan study, where everybody scratches their head for 18 months then produces a 300-page document that few people read other than the summary, we would address issues separately in a white paper," recalls Mahoney. The game plan allowed stakeholders to review and comment on plans, and helped KLJ and the airport secure decisions from the

MINOT
INTERNATIONAL AIRPORT

FACTS&FIGURES

Project: New Terminal

Related Projects: New Snow Removal Building; Customer Parking Lots; Apron & Taxiway

Location: Minot (ND) Int'l Airport

Approx. Cost: $84 million

Funding: FAA (42%); state (26%); city (32%)

Terminal Building: 121,000 sq. ft.

Engineering Consultant/Program Manager: KLJ

Architect of Record: Coover-Clark & Assoc.

Airport/New Terminal Consultant: Chrysalis Aviation Solutions

General Contractors: Graham Construction (terminal); Strata Corp. (apron & taxiway electrical); Wagner Construction (taxiway)

IT & Security Design: Ross & Baruzzini

Mechanical Engineering: BCER

Electrical: Main Electric; Moorhead Electric

Local Area Network/Wi-Fi: Parsons Electric; ACG

Systems Installation: MEI Technologies; Parsons Electric

Electronic Video Information Display System: Infax

Audio Paging: IDS; IED

Access Control System/Video Surveillance System: Genetec

Structural Steel: Ted Mannstedt Steel

Jet Bridges: JBT

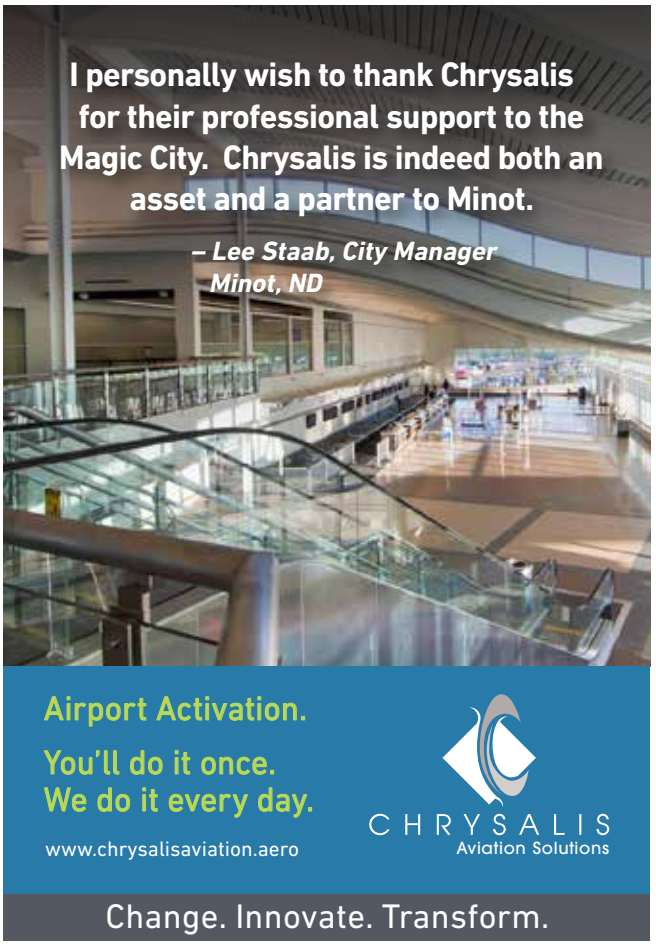
Baggage Handling: Logan Teleflex

Furniture: Zoeftig

Terrazzo Flooring: WTG

Crowd Control Equipment: Visiontron

Of Note: Terminal & related projects were fast-tracked to meet travel demands associated with regional oil boom



Designers specified low-emissivity glass to minimize heat loss and gain.

SWIFT
WORLD'S PREMIER AIRFIELD OPERATIONS CONFERENCE

CONFERENCE + TRADE SHOW

Addressing Airfields' Biggest Challenges

Join the conversation
September 19-22, 2016
Minneapolis-St.Paul

Register now at
swiftconference.org

city, FAA and North Dakota Aeronautics Commission in a timely fashion, he explains.

Minot City Council approved the alternate approach in early January 2012, and a terminal area study was completed by the end of April. KLJ recommended constructing a new terminal directly east of the existing terminal building and identified associated work that would also need to be accomplished. The list included demolishing an existing snow removal building and constructing a new one, reconstructing a taxiway, building a new apron for the new terminal and adding new parking lots.

Despite the extent of the projects, the new terminal opened just four years and one month after the city gave the go-ahead to assess the old facility, Mahoney emphasizes. "By executing on the frontend, we were able to take advantage of funding as soon as it became available," he explains. "I don't think you'll find another new terminal project executed anywhere near that quickly."

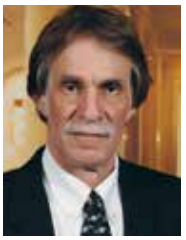
Before construction could begin on the new terminal, crews had to demolish the airport's existing snow removal equipment facility. They erected a new equipment building southeast of the remote parking lot, which needed to remain in operation because much of MOT's other parking options would be unavailable during terminal construction. Two new surface lots eventually increased parking capacity from 450 vehicles to 1,450.

The new terminal plan also required MOT to move its fire-training site off airport grounds, reroute an access road and construct a new taxiway and apron. All told, the airport entered into seven construction projects totaling approximately $84 million.

"Scheduling was a challenge," Mahoney reflects. "We constantly had to reassess, reprioritize and reschedule the various projects. Because of funding delays, the parking lot access road, the apron and the terminal building were all being constructed at the same time, which required a lot of coordination and cooperation among the contractors."

Celebrating the Region

The overarching goal for architect of record Coover-Clark and Associates was to create a memorable terminal building that reflects the region. "We wanted travelers to know where they were when they entered the terminal—that they were in North Dakota and, more specifically, Minot," says Edward Balkin, the firm's design director.



EDWARD BALKIN

TRAX®

The Queue-Monitoring Solution for Airport Operations and Customer Service

Use Bluetooth, video analytics, Wi-Fi, beacons and thermal camera technology to monitor passenger counts and passenger flow for

- Security Checkpoints
- Restrooms
- Gatehouse Area
- Concession Use
- Passenger Loading And Unloading
- Exit Lane Monitoring
- Traffic Flow

INNOVATIVE AIRPORT SOLUTIONS

INFAX.COM

To learn more about Trax or to schedule a presentation, please contact **Sales@infax.com or call (770) 209-9925.**

INFAX AVIATION

Large mezzanine-level artwork highlights local images and ideals.

Ross&Baruzzini

Global Aviation Experts

200 AIRPORTS 30 COUNTRIES 5 CONTINENTS

Information Technologies • Security Consulting & Engineering
Telecommunications Engineering • MEP/FP Engineering
Intelligent Transportation Systems • Commissioning Support Services
Program & Construction Management

rossbar.com

Design & Consulting

To that end, architects exposed the terminal's support beams as a tribute to the Gassman Coulee railroad trestle, a local landmark that highlights the importance of commerce and trade within the region. Still in operation today, the vital railroad bridge facilitated Minot's overnight growth in the late 1800s.

RICK SKUMAVC

General contractor Graham Construction installed nearly 2 million pounds of structural rolled-steel beams to achieve the desired look inside the terminal (see photo on Page 64). Rick Skumavc, Graham's project manager, describes the effect as very impressive. "Every column and beam matched up, and all the anchor bolts were spot on the first time," he reports.

The trestle-theme design extends onto the terrazzo floor, which also pays homage to the region's rolling agricultural landscape. Based on aerial photographs taken by Balkin, designers used 12 colors of terrazzo interspersed with ribbons of eight varieties of native granite to depict the region's undulating terrain.

To help handle Minot's severe seasonal temperature swings, engineers specified extensive amounts of low-emissivity glass, which reflects infrared energy from the sun to minimize heat loss and gain. The building also features in-floor heating to help maintain consistent temperatures throughout the 25,000-square-foot main lobby.

A privately funded children's play area adds to the family-friendly feel designers worked to incorporate throughout the terminal. The 600-square-foot area is named MOT Power Play, referencing the strength and power Minot draws from oil, freight and the local U.S. Air Force base. Seven glass-cube art kiosks placed throughout the terminal showcase regional jewelry, pottery and air museum artifacts.

"There is great clarity to the building," Balkin summarizes. "It is well-organized, understandable. At the center core of the building, visitors and meeters and greeters can stand in the non-secure area and see through a large glass wall onto the airfield outside the holdrooms in the secure area."

Ross & Baruzzini designed and oversaw installation of communications and information technology (IT) infrastructure for the new terminal. Major elements included copper and fiber optic cabling, local area network and Wi-Fi network systems, access control and video surveillance systems, an electronic video

The airport secured private funding to add a children's play area.

information display system with integrated audiovisual paging, a conference room audiovisual system and master antennae television system.

Mark Adams, senior systems project manager for Ross & Baruzzini, describes the combined access control and video security system installed by subcontractor Parsons as one of the best he has seen at an airport.

Adams praises the team that contributed to the IT portion of the terminal project: "To my mind, what set this project apart… was the mix of the latest and greatest user-intuitive technologies,

Retracta-Belt®

*Manufacturer of signs and crowd control systems for over **50 years***

- **Featuring EVERstraight® Technology**
- **10 year warranty**
- **Made in the USA**

Featured in
Minot International Airport
& Airports Around the World

Custom | Standard
Luggage Sizers · Panel Systems · Signage

Visiontron Corp.
800.585.7750 · Hauppauge, NY
donnag@visiontron.com
visiontron.com/airportimprovement

Previously, MOT had to meter passengers through security checkpoints when holdrooms reached their capacities.

the selection of quality airport systems integrators and providers, and the work ethic of the workforce that participated in the project."

Grateful Community

With the new terminal and other projects complete, MOT officials believe that the airport is well-prepared to meet air traffic demands for the next 20 years. Gone are the days when they had to stop passengers at security checkpoints because the holdrooms were full. And gone are the times when two aircraft had to share one gate simultaneously.

MOT now boasts six new gates, with jet bridges for four gates. Although the airport currently doesn't need all six, officials designed for future growth, Solsvig explains.

Inside the terminal, designers from Coover-Clark and Associates also focused on the future. "As air travel progresses… passengers' needs become more customized, connected and unique," reflects design architect and company president Carol Coover-Clark. "We are always looking for new ways to bring these needs to life and express the local community while reinventing the flexible travel experience for the future."


CAROL COOVER-CLARK

With oil prices falling, travel at MOT has slowed. As of January 2016, enplanements are down 25% over last year. Even so, passenger boardings are still up 136% compared to 2010 informs Solsvig.

Excitement is also still running high about the new facilities. When the new terminal opened in February, nearly 6,000 people celebrated the occasion. Some drove from as far as Winnipeg, Canada. "This is an extraordinary building and a huge stepping stone for the community," Balkin reflects enthusiastically. "People don't feel entitled here; they just feel grateful."

AIRPORTS THINK M-B IN WINTER

M-B THINKS AIRPORTS ALL YEAR LONG

MB2 WITH CRADLE

TOW BROOMS – DE-ICER OPTIONAL

CUPPING RAMP PLOW

MB5 MULTI-TASKING

WE HOLD OURSELVES TO YOUR STANDARDS

SINCE 1907

M-B Companies, Inc.

M-B Airport Maintenance Products

Verisys Registrars®
ISO 9001:2008 Certified

800.558.5800 | www.m-bco.com

NJPA AWARDED CONTRACT

080114-MBC

Commerce Park Drives Growth at Sebring Regional

BY MIKE SCHWANZ

FACTS&FIGURES

Project: Industrial Park Development

Location: Sebring (FL) Regional Airport

Commerce Park Income: $2.25 million/yr

New Tenant: CitraPac

CitraPac Rent Revenue: $20,000/yr

Financial Incentives Provided: $1.3 million

Incentive Funding: City of Sebring ($250,000); Sebring Regional Airport Community Redevelopment Agency ($250,000); Highlands County ($400,000)

In-Kind Incentives: Highlands County ($400,000 of on-site civil improvements); Atkins Global (engineering services); Sebring Regional (fill material for construction of plant & parking lot)

Size of New Plant: 42,000 sq. ft.

Initial Employees: 65 (will grow to 240)

Competitive Advantages: Central Florida location (at epicenter of citrus industry); CSX rail spur; part of Foreign Trade Zone; in-place infrastructure; on-airport locations facilitate customer visits; focus on commercial tenants by airport management

Key Benefits: Increased income for airport; regional job expansion

Maximizing income from multiple sources is important for all airports, but it's especially crucial for small general aviation facilities that don't collect commercial landing fees, or have high-volume potential from parking and concessions.


MIKE WILLINGHAM

Mike Willingham, executive director of Sebring Regional (SEF) in Florida, takes revenue diversification very seriously, and attracting tenants to the airport's industrial park has been key to his success. With 44 businesses currently located on SEF's property, landside development brings in more than $2 million per year—fully 90% of the airport's annual revenue.

"I always felt that a general aviation airport needed more sources of income. The runways were more of an amenity," says Willingham. "Aviation didn't pay all the bills."

Attracting CitraPac to SEF's commerce park was a recent accomplishment that will generate $20,000 per year in rent. The large frozen-fruit manufacturer was no easy sell, however. It took a determined, cooperative multi-year effort by the airport, city and county officials to land the family-run company as a new tenant.

"We knew for several years that CitraPac was seeking a site to expand and build a new plant, and I first started to talk to Gregg Harshman, the president of CitraPac, back in 2010," Willingham recalls. "Many towns in central Florida were competing with us to lure CitraPac to their city, and were offering many amenities. Gregg told us we needed to up our game to be on an even playing field with them."

To be competitive, SEF provided about $1.3 million in financial incentives—a package that took Willingham months of meetings and negotiations with city and county officials to secure. The city of Sebring

invested $250,000; Sebring Regional Airport Community Redevelopment Agency contributed $250,000; and Highlands County provided $400,000 plus $400,000 of on-site civil improvements.

In-kind contributions included engineering services from Atkins Global, and the airport supplied base and fill material for plant construction and a new parking lot.

"We had to convince our local officials that more jobs would be created, which is the key to economic activity in any region," explains Willingham.

CitraPac is expected to employ 65 full-time workers during its first year at SEF, and plans to expand its workforce up to 240 people in the following five years. Construction of the soon-to-open plant will provide another 100 jobs.

Baiting the Hook

One huge advantage SEF offers all of its industrial tenants is easy connection to a CSX Railroad mainline just two miles away. With a spur line running right through the airport property, trains can stop at each plant in the industrial park to unload raw materials. After the raw materials are unloaded and processed, companies usually transport their finished products via truck.

Another enticement for commercial tenants is that SEF is part of a Foreign Tax Zone (FTZ) that encompasses several

Responsibly Improving
The World We Live In

We work with clients to create facilities and infrastructures that enable people, communities and businesses to thrive.

Airside/Landside/Facilities

Mike DeVoy
317.780.7232
mdevoy@chacompanies.com

Paul Puckli
703.625.4889
ppuckli@chacompanies.com

www.chacompanies.com

CHA
design/construction solutions

How will you handle your Runway Safety Plan?

NAC covers it!
- Safety Plan Requirements
- FAA Certified Products (many sold to contractors do not qualify)
- Placement Details

Our experienced certified airport planners will work with your contractors to make sure they're following FAA standards. Don't risk getting your project delayed or shut down for non-compliance. Call NAC today.

"BUY AMERICAN" STANDARDS
MBE - State of Florida Certified Business Enterprise

NAC NEUBERT AERO CORP.
Airport Products & Services

www.airportnac.com
727.538.8744
info@airportnac.com

ISO 9001:2008 Certified for its Quality Management Systems in design, manufacture and supply.
Copyright © 2016 Neubert Aero Corp. NAC Dynamics, LLC. Brooksville, FL, USA

Convincing CitraPac to locate its new facility at SEF required years of ongoing effort.

south-central Florida counties. “This is a huge advantage for our customers,” Willingham notes. “They can import raw materials and products duty-free that will be finished or assembled at our site. When the products leave the FTZ and are transported elsewhere in the United States or to other countries, duties may be deferred, reduced or eliminated.”

Willingham actively promotes the airport’s FTZ status to potential customers overseas. “We go to the Paris Air Show every other year, and I often go to Eastern Europe as well,” he comments. “Being in a FTZ can really help the bottom line of many companies doing business here in the United States.”

With an ample amount of undeveloped land, SEF has options for current tenants whose businesses are prospering, and new companies from around the globe that want to expand or relocate.

GREGG HARSHMAN

The combination of financial incentives and SEF’s competitive advantages convinced Harshman to locate the new CitraPac plant at the Sebring airport. “We had been planning to build a larger plant for several years,” he recounts. “Our current facility in Dundee, FL, only covers 6,500 square feet. Our new plant will have 42,000 square feet of space when it opens this June.”

The company plans to produce frozen fruit cups for school districts in its new plant. “Fortunately, the demand for these healthy alternatives to school lunch menus continues to increase, so that is why we needed to build a new facility,” explains Harshman.

Each day, the new plant at SEF will receive several trucks filled with freshly picked oranges from local orchards. “Once they are

www.michels.us

We are your partner.

MICHELS CORPORATION

- Runways, taxiways, aprons and ramps
- Site preparation, excavation, earthwork and development
- Paving and concrete flatwork
- Specialized equipment fleet
- New construction and repairs

TRANSPORTATION RENEWABLE ENERGY CONSTRUCTION MATERIALS
COMMUNICATIONS HEAVY CIVIL CONSTRUCTION DEEP FOUNDATIONS
POWER DELIVERY RAILWAY WORK OIL AND GAS SEWER AND WATER

AA/EOE/M/W/Vet/Disability

IS YOUR BUSINESS IMAGE EVERYTHING IT COULD BE?

Becker 505 specializes in marketing and design for the aviation industry. Let us create your corporate identity, advertisements and marketing campaigns so you can get back to what you do best — running your business!

BECKER505 Inspired Ideas

CALL OR EMAIL US TODAY FOR A FREE QUOTE AND CONSULTATION
INFO@BECKER505.COM | 608.205.2788 | BECKER505.COM

Sebring Raceway Boosts Bottom Line

In addition to its thriving industrial park, Sebring Regional Airport (SEF) has another less traditional income source: Sebring International Raceway. Located on airport property, the auto racing tenant sponsors Twelve Hours of Sebring, an annual road race that draws about 150,000 people to the area every March.

Beyond the monthly rent that SEF collects from the Raceway, the airport also receives a percentage of all ticket sales, subleases and track rental associated with the annual race. “They are a significant source of revenue,” notes SEF Executive Director Mike Willingham.

On another front, SEF uses airport grounds to host the U.S. Sport Aviation Expo, which attracts about 20,000 aviation enthusiasts from across the country. “We do not yet break even on that event, but consider it a good investment because of the economic development possibilities,” Willingham explains. “It allows us to meet several potential clients in a short amount of time.”

YOU COULD KEEP NAMES & PHONE NUMBERS OF A MILLION & ONE AIRFIELD SUPPLIERS and try to remember who sold what, or…

Sherwin Industries, Inc.
AIRPORT RUNWAY SUPPORT

YOU COULD REMEMBER
ONE NAME FOR MOST ANYTHING YOU REALLY NEED

TAKE THIS DOWN — SHERWININDUSTRIESINC.COM | 804.275.6900

harvested, they are delivered to us that day; and within another 24 hours, they are processed and stored in a freezer," he says.

Trucks will then deliver the fruit cups to large distribution centers in Georgia and Texas, and the products will eventually be shipped to individual school districts. "Four or five trucks a day will leave the new plant, starting this summer. Within just a few years, we will be filling up to 20 trucks a day," he projects.

Beyond the financial incentives, SEF's location was a big plus, notes Harshman: "We are in the heart of Florida's citrus industry, and we represent a new market for local growers."

Another factor that affected CitraPac's decision to locate at SEF was in-place infrastructure. "Since the airport's commerce park has been up and running for several

years, we didn't really have to worry about that," says Harshman. "The road access is excellent. The water, sewer, fire hydrants, utilities and waste collection are all set up."

Being located on airport grounds is also a noteworthy benefit, he adds. "Our partners can fly right in to the airport, so there is virtually no extra commuting time for them to get to our facility. They can be in and out in a few hours."

Overall, Harshman considers CitraPac's new plant at SEF a strong investment in the company's future. "Although the final tab to build this plant will eventually be about $10 million, we anticipate $10 million in revenue a year. It should pay for itself relatively quickly," he says.

Harshman already sees potential for the airport to help expand his business. "Eventually, we hope to air freight our products to various Caribbean islands. Many potential markets are less than a two-hour flight away," he notes.

There are also expansion opportunities closer to home. "Right now, the new plant sits on a five-acre parcel of land, so we can double our capacity easily," Harshman explains. "In Phase 1, we will have four processing lines. In Phase 2, we will have up to eight processing lines."

Regenerative Air Sweepers
For a Deeper Clean

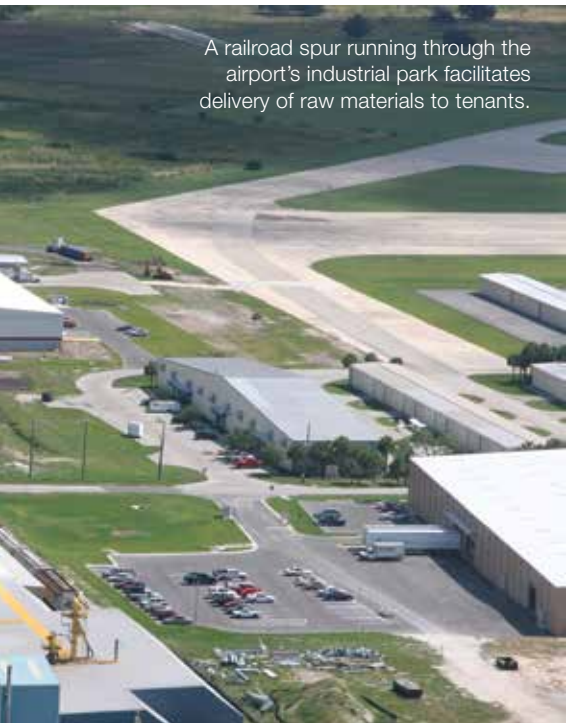
ROUTINE CLEANING OF RAMP, RUNWAY, & ROADS
Removes FOD that can hide in cracks & crevices

Model 600® HSP® Options

- Chassis Mounted Magnet removes ferrous metals at sweeping speeds up to 25 miles per hour.
- Lateral Air Flow Nozzle clears debris, such as sand, grass and snow from runways and taxiways.
- Liquid Recovery System removes and recovers standing liquids, such as glycol.
- Runway Sweeper, High Speed Performance.

TYMCO®
REGENERATIVE AIR SWEEPERS

FOR MORE INFORMATION CALL 800.258.9626 | **TYMCO.COM**



A railroad spur running through the airport's industrial park facilitates delivery of raw materials to tenants.

The airport gave CitraPac options for two additional five-acre parcels of land to facilitate further expansion.

Financial incentives and land options notwithstanding, Harshman cites the personal service and flexibility of Willingham and the airport staff for convincing him to set up shop in SEF. "Mike has been terrific in every step of the process, and I am sure this will be a good move for us as we move forward," remarks the fourth-generation family business exec.

Guaranteeing a smooth transition for new clients such as CitraPac is a priority for Willingham. "My staff and I try to assist each new or expanding tenant with any needs they have, every step of the way," he emphasizes.

Welcome to the Neighborhood

Beyond CitraPac, SEF has signed deals with other companies in the last three years. Tecnam USA, Paradise Aircraft of Brazil, FLG Teardowns and Gulf Coast Supply and Manufacturing are all new tenants. In addition, Lockwood Aviation expanded into a new space last April.

Although Willingham has plenty of latitude to run the airport as he sees fit, he works closely with the Highlands County Commission and Sebring City Council to inform them about important airport matters and garner their support before launching new initiatives. "This consistent networking and follow-up provides much-needed support for the airport authority to enable growth for the community," he says.

Having a good working relationship with local government recently paid off big time. As of February, the airport's Community Redevelopment Agency has funding until 2045, thanks to a $133.8 million redevelopment plan approved by the Highlands County Commissioners Board.

The Community Redevelopment Agency plan commits to support four main airport projects: industrial park development; airport infrastructure/economic development; Sebring International Raceway infrastructure and U.S. Sport Aviation Expo economic development. (See sidebar on Page 75 for specifics on the last two projects.)

"This funding will ensure positive growth of the region's economy for the next 30 years," Willingham concludes.

Varco Pruden's Attractive & Affordable

AVIATION INDUSTRY FACILITIES

We help get your building plans off the ground. Whether you need a hangar, aircraft maintenance, FBO, or air cargo facility, Varco Pruden Buildings and their coast-to-coast network of authorized builders work as a team to provide a high quality building, on time and on budget.

Varco Pruden, a pioneer in the steel framed building industry, can offer your organization:

- Lower material and labor costs.
- Faster completion schedules.
- Flexible designs for interior space.
- Choices of exteriors such as brick, stucco, glass, wood or steel panel
- Nationwide network of independent authorized builders

With our value-engineered steel framed building systems, recycled material content and long-life "cool paint" choices, VP Buildings can help you meet sustainable construction and LEED certified project plans as well. Energy-efficient structures can help curb operating costs.

Visit us online to request this free brochure about Varco Pruden's aviation and transportation facility capabilities!

VP BUILDINGS VARCO PRUDEN

Building Solutions...
one relationship at a time.

Find Out More. Visit www.VP.com/ad/AIN

Varco Pruden Buildings is a division of BlueScope Buildings North America, Inc.


Photo: RIC/Chris Cunningham

Richmond Int'l Pitches Paper & Saves Time with New Identity Management Software

BY ROBERT NORDSTROM

RICHMOND INTERNATIONAL AIRPORT®
Now you're going places.

FACTS&FIGURES

Project: Computerizing Identity Management Processes

Location: Richmond (VA) Int'l Airport

Software: SAFE for Aviation

Provider & Installer: Quantum Secure

Data Capture & Authentication: AssureID

Servers: Dell

Fingerprint System: Crossmatch

Scanners & Touchscreen Monitors: 3M ID; Hewlett Packard

Vetting Agency: Transportation Security Clearinghouse

Of Note: New system eliminated paper filing & storage; increased annual badging productivity by 27%; reduced badge audit time by 60%; reduced time to complete monthly financial reports by 75%

Managing the safety, security and credentialing of employees and outside workers presents complex challenges for airport operators across the globe. U.S. airports, in particular, have found themselves swimming chin-deep in paperwork associated with post-9/11 security regulations.

About two years ago, Virginia's Richmond International Airport (RIC) took steps to streamline its paper-centric credentialing process by purchasing and installing identity management software. As is often the case for such transitions, personnel in the airport's security, operations and information technology (IT) departments teamed up for the project.


JIM NILO

"Since going live in October 2014, we have transitioned to nearly 100% paperless," reports RIC Operations Manager Jim Nilo. "If you entered our badging office right now, you would see stacks of paper that are being eliminated. Now, everything is stored digitally."

Saving Trees, Time & Money

In spring 2014, RIC contracted Quantum Secure to implement a new physical identity management system—SAFE for Aviation. The calculated payback period for the software suite was 23 months, and annual operational savings of approximately $200,000 are expected now that it is fully in use.

The new system, which went live in October 2014, manages the airport's worker identity and credentialing requirements with its existing security infrastructure. Saurabh Pethe, director of Aviation Vertical for Quantum Secure, describes the primary challenges RIC was facing.

- The manual processes used in the badging office were labor-intensive.
- Compliance audits took months to complete, primarily due to the paper-based systems being used, and required multiple reminders and rechecks.
- The access control system was outdated. (Any updates or changes to identity management and badging office procedures would consequently need to be compatible with the airport's future access control system, which had yet to be selected.)

Pethe was confident that updating and automating RIC's processes and procedures would yield operational and security benefits, not to mention produce better and faster results.

"The airport management team had a good understanding of the broader implications of the project, which helped make implementation go smoothly," he recalls. "They understood that the new system affected both security and IT, and both teams were deeply involved throughout the planning and implementation process."


JONATHAN SEARLES

By October 2015, after one year of live operation, the new system had proved its worth on a number of fronts, informs RIC Airport Security Coordinator Jonathan Searles. The badge approval process was 27% more productive than the previous best year. The time required to compile monthly financial reports had been cut by 75%—from one day to two hours. And the annual badge audit was more than 75% complete and projected to be completed one month earlier than the last one. Future audits were projected to take even less time.

"It's all about productivity," Searles notes. "The more we use it, the easier and more productive the system becomes. At the end of the day, one thing matters: Is the airport receiving complaints about how long the badging process is taking? The system allows us to use the resources we have much more efficiently and productively. Ultimately, the system translates into dollar savings because it takes fewer employees to manage the system."

Changing the Process

Under RIC's old identity management system, badge applications were "backend loaded." That is, an individual would enter the badging office with an application filled out and signed by a designated and vetted company signatory. A badging office employee would photocopy the required personal identification documents, then place the individual's application on a stack to be dealt with later. At the end of the day, several staff members would enter the biographical information from the applications into spreadsheets.

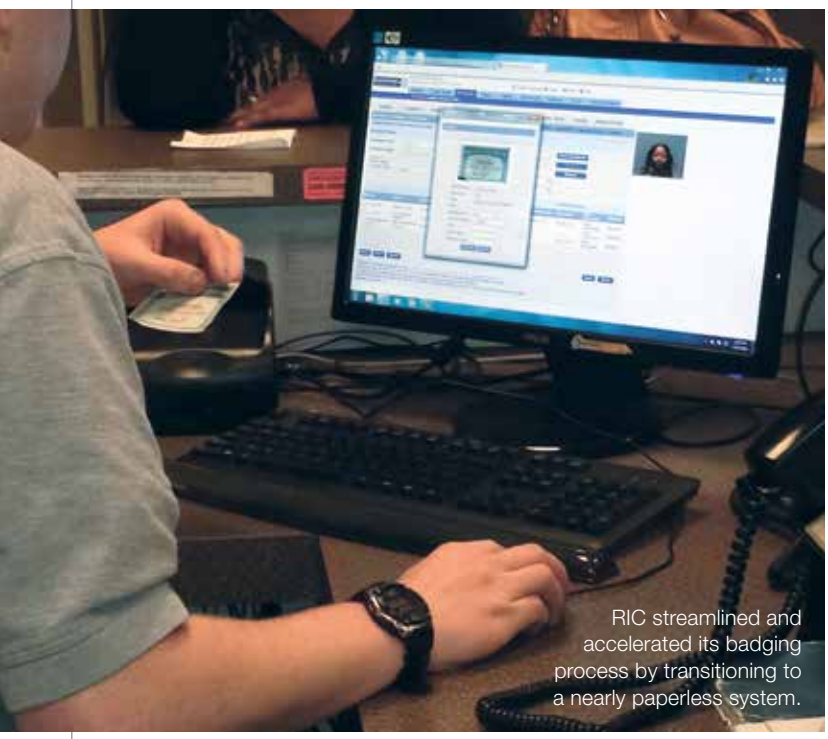
The time it took for staff to enter biographical data, the associated potential for human error and a growing backlog of applications led to a cumbersome and inefficient process, Nilo reflects. Sometimes, it took up to a month or longer to process a badge.

"One of the major benefits for the airport and its tenants is the time savings," says Nilo. "Before SAFE, we essentially entered the same data into four separate systems, which took longer while also significantly increasing the chance an error would slow the process for a new applicant. If a couple digits of a Social Security number were entered incorrectly, it could create tremendous problems, especially with vetting an applicant. The new system gives us an extra level of assurance that the information is accurate while reducing staff time significantly and enhancing security."

Under the new system, an applicant's biographical information is entered on the front end by a designated, fully vetted company signatory. When the applicant later goes to the airport's badging office, an employee verifies that the information entered by the


Automated equipment and procedures help the airport keep pace with new TSA fingerprinting requirements that went into effect last summer.

signatory is correct and directs the applicant to the enrollment station for fingerprinting. A badging office employee also copies the required identification documents, which are turned into PDFs, and then transmits the information to Transportation Security Clearinghouse—RIC's vetting agency of choice.



RIC streamlined and accelerated its badging process by transitioning to a nearly paperless system.

The new system ties together the information and procedures required during the vetting process and allows airport security personnel to manage and track identity information and access control. In short, it determines what doors each applicant is allowed to open.

More specifically, the system:

- centralizes company and identity information across systems and departments into a single policy and privilege-based view;
- reduces dependence on operator training by managing the required steps for badge authorization and allowing operators to issue policy-driven badges;
- provides a portal that allows employer-authorized signatories to interact electronically with the airport (for new applicants, renewals, name and privilege changes, terminations, employee audits, training, etc.);
- eliminates paper files and photocopy storage;
- efficiently ties background checks to credentialing and monitors airport workers vetting and badge status in real time;

KABA®
BEYOND SECURITY

It's time for a new exit strategy — *Get fit with Kaba.*

Staffing exit lanes with guards is costly and unproductive. Real, effective exit lane control is possible with technology that prevents potential exit lane security breaches and detects the presence of left-behind objects.

Kaba's Exit Lane Breach Control system employs real-time video surveillance and motion sensors that integrate with airport security and fire detection systems. The modular stainless steel construction allows for multi-lane configurations, providing the highest achievable throughput. In addition, the system saves time and money without compromising airport security or passenger safety.

Security and savings are the cornerstones of a solid exit strategy. Get fit with Kaba.

Kaba Access & Data Systems Americas
1 800 849 8324
Join us at the 88th Annual AAAE Conference & Expo
May 15 — 18, 2016
Houston TX · Booth 201
www.kaba.to/Getfit-ELBC

- provides a financial module for company-specific billing and invoicing for badging, background checks, penalties, violations, lost keys or cards, training, etc.; and
- simplifies compliance monitoring, reports and audits.

Doing More With Less

For Searles, the new system's greatest selling point is its person-centric orientation. A person can have multiple employers, multiple badges, different types of badges, leave the airport then come back years later, and still appear within the system. Each person has a unique personal identification number, which becomes the key that links all of the databases together.

"Once all the information is in the system, that's when the magic happens," Searles says enthusiastically.

Based on business rules, the system pushes information to the various places it needs to go. The software knows what is required, and specific document information must be satisfied before the system will continue processing an applicant. For example, the system knows it needs to have fingerprints and a threat assessment for a SIDA (security identification display area) badge—unless the applicant is exempt, as is the case with law enforcement officials. When an applicant enters the enrollment room for fingerprinting, the record is transmitted electronically, eliminating the chance for the information to be altered, notes Searles. As long as the information is entered correctly and validated at the beginning of the application process, it will be correct on the back end, which is very important in the fingerprint matching process, he emphasizes.

The new system also enhances the airport's ability to demonstrate its compliance with federal security requirements, adds Searles. Under the old system, a spot check from TSA on three names could take hours to address. Airport staff had to locate paper applications, I-9 documents, fingerprint cards, training records, etc. Now, all of an applicant's documents are in one easily accessible place, he contrasts. "That's what TSA likes—because it shows transparency," says Searles.

With the recent TSA regulation (Aviation Security Directive 1542-04-8K) requiring new fingerprinting every two years during two-year background checks, both Searles and Nilo agree that RIC's new system went live at just the right time.

"If we didn't have this system in place when this new fingerprint requirement came out last July, we would have been in real trouble," Searles reflects. "We have gone from doing 70 fingerprints per month to over 300 per month. If we didn't have a system that automatically pre-populates the fingerprint machine and we were having to manually match fingerprint records, it would have been a nightmare."

Nilo concurs: "Even though demand has increased, we're breaking even by being able to do more work with fewer people."

Presented By:

ACI NORTH AMERICA AIRPORTS COUNCIL INTERNATIONAL

ACI AIRPORTS COUNCIL INTERNATIONAL

YUL16
2016 ACI-NA/World
Annual Conference/World
Annual General Assembly
September 25-28, 2016 | Montréal

Join us in Montréal for the 2016 ACI-NA/World Annual General Assembly, Conference & Exhibition.

Taking place September 25 – 28, the 2016 ACI-NA/World Annual General Assembly, Conference and Exhibition will bring all sectors of the global aviation industry together in Montréal. As one of the world's major aerospace centres, there is no better place to discuss the latest trends and strategies aimed at moving the industry forward safely, securely and sustainably.

AÉROPORTS DE MONTRÉAL

annual.aci-na.org

A Call to Action on Runway Condition Reporting

JOHN GADZINSKI

John Gadzinski is president of Four Winds Aerospace Safety as well as a 737 captain for a major airline. He holds the patent for a unique cockpit display designed to alert pilots of poor braking during landing. The display is part of a safety system being developed by Zodiac Arresting System America. He has been a featured speaker at NASA and the Flight Safety Foundation and makes regular appearances on CNN and Fox News. Currently, he is working with the FAA on a flight-testing project involving new data collection and cockpit alerting methods for runway safety.

Later this year, airport operations will enter a brand new era. For the very first time, they will be implementing procedures designed by aircraft manufacturers, pilots, performance engineers, safety professionals and other airport operators.

Guidance for the new era can be found in the revised edition of AC 150/5200-30D, *Airport Field Condition Assessments and Winter Operations Safety*, a product of more than 10 years of work and development. This new advisory circular (AC) is the final component in a series of related AC revisions encompassing aircraft certification, flight standards and Notice to Airmen standards, all of which were designed to complement each other. According to the FAA, the new AC will be implemented on Oct. 1, 2016.

This groundbreaking effort has resulted in a common language that ties together aircraft manufacturers' landing and takeoff performance calculations, airports' abilities to report runway conditions and aircrews' ability to assess landing capabilities while in flight. The new AC's guidance will likely bring a dramatic change to some long-held beliefs and highlight the significant role airports have in interacting with all stakeholders in the national airspace system.

To fully understand the context of this guidance, we must start with the events that provided the catalyst for what was to become a major industry shakeup. Two accidents, occurring 23 years apart, bookended a major dysfunction embedded in commercial aviation. The first was a DC-10 overrun in 1982 at Boston Logan that served as an impetus for a special report by the National Transportation Safety Board on winter runway hazards. The report set in motion an industry trajectory in practices that appeared, on the surface, to be moving toward much-needed improvements in the measurement, classification and reporting of runway conditions and aircraft performance.

When an overrun occurred at Chicago Midway in December 2005, many of the assumptions that emerged after the Logan incident proved to be invalid. The case at Midway was not just another accident; it involved multiple aircraft that had the latest flight data monitoring capabilities available at the time. When information collected during the incident was analyzed, the results were staggering.

The regulatory efforts of the previous 20 years had occurred effectively shrouded in the buffered silos of academic and professional interests. Aircraft builders concerned themselves with their own priorities, and the same was true of friction device manufacturers and airport operators. In the background, the concepts of safety evolved at a stunning pace. By 2006, the gaps between how major aviation sectors viewed the original issues from 1982 were significant.

Pilots did not understand what the performance engineers meant by "braking action." Friction devices were not subject to the same certification criteria as jets. In addition, aircraft builders did not recognize the challenges airports faced in reporting surface contamination. In short, there was no consensus or understanding of how snow-covered runways affect commercial aircraft.

A large group of dedicated representatives from various sectors, the Takeoff and Landing Performance Assessment Aviation Rulemaking Committee (TALPA ARC), worked for two years to address the myriad of issues at hand. Its recommendations were followed by two years of operational validation with airports and airlines. This winter, the results of those efforts will be put in place.

For airports, the key to success will lie in standardization, communication and training. An important factor will be airports' ability to recognize that the methods described in the guidance within the new AC contain both strengths and weaknesses. Friction devices, pilot reports, contaminant observations and weather trends are all key elements. Ultimately, practical success will depend on how effectively these tools are combined so errors can be mitigated and quality information can be shared.

The entire system will depend on how well airports interact with airlines, pilots and air traffic controllers. It will require airports to understand how those other entities operate and why they view certain issues as important. As aviation continues to grow, this new method of managing risk is a critical element in the global aviation community.

smiths detection

HI-SCAN™ 10080 XCT
automated explosives detection system

Next generation of high speed checked baggage screening

- Highest throughput of 1800 bags per hour reduces the number of EDS units needed
- Fastest belt speed of 98.5 feet per minute screens more bags with fewer systems
- Largest tunnel size available of 42.1 x 31.9in minimizes out-of gauge bags

HI-SCAN 10080 XCT is the most reliable and efficient high speed solution for automatic detection

FOR US GOVERNMENT USE ONLY

TSA lab certified

For further information on the product, service or sales, please access smithsdetection.com or contact usa@smithsdetection.com

HI-SCAN is a trademark of Smiths Detection Group Ltd.

Get a grip!

MOVIGEAR®

DRC Electronic Motor

Do you really have a handle on wasted energy? Independent research proves that the MOVIGEAR® from SEW-EURODRIVE can reduce your startup and operating costs by 20-30%. In fact, some installations actually yield 50% or more!

MOVIGEAR® combines the gearing, permanent magnet motor (IE4), and electronics into a single hygienic unit. Or if you prefer using your existing gear units, the DRC Electronic motor (IE4) is the solution. MOVIGEAR® or DRC…either way, you save.

SEW EURODRIVE

seweurodrive.com / 864-439-7537

— Driving the World —