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AirportImprovement

Publisher

Paul H. Bowers

paulbowers@airportimprovement.com
262.510.7832

Editorial Consultant

Rebecca Douglas

rebeccadouglas@airportimprovement.com
815.282.6744

Creative & Production Director

Becker 505, LLC - Chad Becker

chad@becker505.com

Circulation Director

Lisa Monday

lisamunday@airportimprovement.com

Webmaster

Matt Tews

matttews@airportimprovement.com

Contributing Writers

**Michael Bernos, Jennifer Bradley,
Michael Bernos, Greg Gerber, Victoria
Jensen, Rebecca Kanable, Robert Nordstrom,
Jodi Richards, Kathy Scott, Ken Wysocky**

Advertising

Paul H. Bowers

paulbowers@airportimprovement.com
262.510.7832

Adrienne Gibson

adriennegibson@airportimprovement.com
262.844.4368

Carie Grall

cariegrall@airportimprovement.com
608.770.6899

Tom Novotny

tomnovotny@airportimprovement.com
414.702.0678

Reprints

Paul H. Bowers

paulbowers@airportimprovement.com
262.510.7832

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General Mitchel Int'l Airport

Paul Cudmore

Eagle Integrated Solutions

William Fife

Peer Review Consultant

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Andrew Platz

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The Name Game

What's in a name? Well, it's a first impression. It's also a descriptor. And it *should* be an opportunity. Consumer product companies spend big dollars developing their names. There's a lot at stake, and the right name can help define a business and even influence its success or failure.

How about airport names? Do you think the politicians in charge ever consider marketing potential when choosing a name for one of their community's most prized possessions? An airport name is too valuable of a commodity to waste on obscure dead leaders. It's one of the most powerful marketing tools an airport has at its disposal ... and it's free!

An appropriate airport name can help attract passengers or even new airline service. Manchester-Boston Regional Airport is an excellent example of how a name can be used proactively. The facility was known as Manchester Airport until April 2006, when it added "Boston Regional" to advertise its proximity to Boston, about 50 miles (80 km) to the south. Brilliant. Savannah International was changed to Savannah/Hilton Head International in 2003. Customers traveling to Hilton Head may have never considered using the airport prior to its name change.

Now consider airports with names like Jones-Smith-Johnson Anytown International Airport. What a waste of signage and opportunity! How many local Anytown citizens can correctly recite the full name of their very own airport? Does anybody know when former politician Jones, war hero Smith and civic leader Johnson lived, or why the city named an airport after them? If so, do they care?

When it comes to airport names, it's important for people *outside* the community to know and find you. Too often, the opportunity for a great airport name is missed so a politician can be honored. Give them a statue instead. It will serve the local citizens and birds better.

In today's era, airports are competing for passengers, air service and revenue. Let's save the good stuff for something that will help the cause.

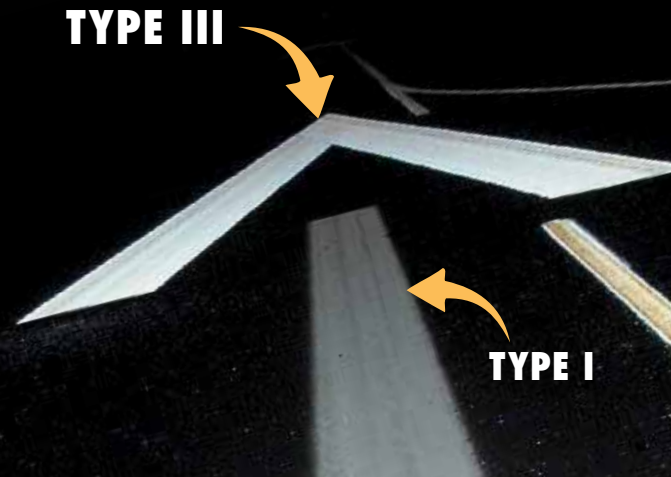
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ATLANTIC CITY
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Project: Terminal Expansion

Airport: Atlantic City (NJ) Int'l Airport

Size: 75,000 sq. ft.

Cost: \$25.1 million

Key Elements: Mini federal inspection station; new exit lane security; 3 new airside gates; baggage claim enhancements

Timeline: Planning/design began in 2009; construction began in Dec. 2010; facility opened in Nov. 2012

Annual Operations: 120,000

2012 Passenger Volume: 1.39 million

Prime Consultant, Project Mgt., Terminal Planning/Programming, Architecture: AECOM

Structural & Civil Engineering: AECOM

Construction Manager: O'Donnell & Naccarato

General Contractor: Hunter Roberts Construction Group

Geotechnical Engineering: McClymont & Rak Geotechnical Engineers

Site Survey: Dresdner Robin

Mechanical, Electrical, Plumbing Engineering: ARORA Engineers

Fire Protection, Life Safety: ARORA Engineers

Code Consulting: Rolf Jensen and Associates

Building Permits Coordination: TPD Architects

Baggage Systems Design: BNP Associates

Bag Claim Devices: G&T Conveyor

Passenger Boarding Bridges: JBT Aerotech

Seating: Zoeflig

Gate Displays: Forms & Finishes

FIDS/BIDS and Gate Counter Integration: Infax

Canopy Systems: CPI Daylighting

Security Bollards: Secure USA

CBP Scanners: Rapiscan

Exit Lane Security: Eagle Security Group

IT & Security Systems: Faith Group

Interior Signage: Priority Sign

Exterior Site Marker Sign: Custom Finishers

Digital Advertising: Clear Channel Airports

Achievements: Nearly doubles the terminal's size (the addition is two-thirds the size of the previously existing terminal), readies the airport for scheduled international flights



Atlantic City Int'l Provisions for Scheduled International Service

With a recently completed \$25.1 million addition in place, Atlantic City International Airport (ACY) in New Jersey cannot only accommodate more domestic flights, it is also now equipped to add scheduled international flights. The 75,000-square-foot expansion, which nearly doubled the terminal's size, includes three new gates (two can be used for international flights), three new passenger boarding bridges, a "mini" federal inspection station and five upgraded exit portals. The expanded baggage claim area now includes a new inbound bag room, three new bag claim devices and three new baggage service offices.

Planning and design for the project began in 2009, construction ensued in December 2010 and the new addition opened in November 2012.

Each year, ACY handles about 120,000 airfield operations; but the airport could easily double its traffic and still have excess airfield capacity, notes Sam Donelson, acting executive director of the South Jersey Transportation Authority.

Recent improvements have consequently focused on the terminal — specifically, the departures and inbound baggage areas. The

new space and infrastructure, combined with efficient gate utilization, will allow ACY to handle twice the passengers it presently serves, notes Donelson.

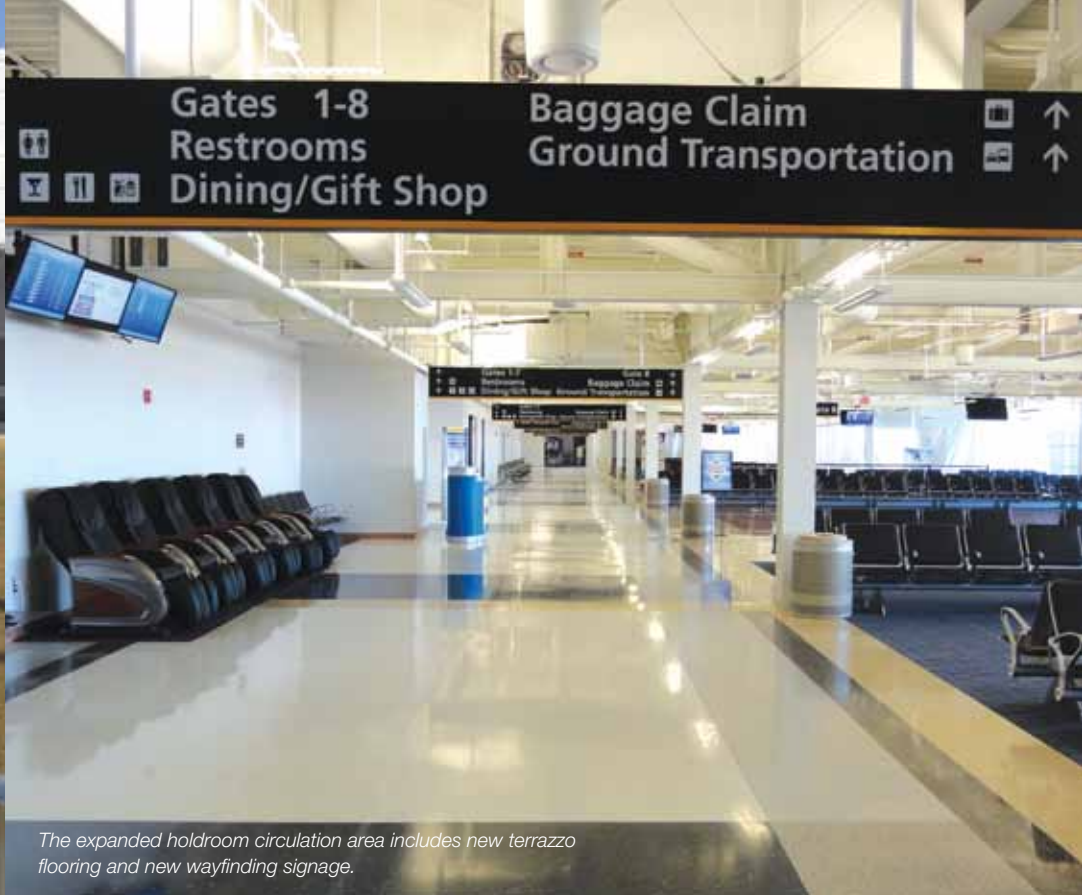
"We've been hanging around a million and a half (annual) passengers for a couple of years," he reports. "We knew that was our trigger point, where we would need to have the next terminal expansion."

For years, the airport has received occasional international diversions. Its long runways (10,000 feet and 6,100+ feet), dedicated airspace (ACY is a joint-use National Guard facility) and control tower that's staffed 24/7 make the East Coast airfield a practical choice for irregular operations.

Its previous lack of terminal services for international traffic, however, used to make ACY a less-than-ideal option overall. Passengers often had to remain on the aircraft. And when deplaning was necessary, airport crews had to set up a makeshift area to separate the international passengers from its usual domestic traffic.



Sam Donelson



The expanded holdroom circulation area includes new terrazzo flooring and new wayfinding signage.

By Rebecca Kanable

With new facilities in place, the airport is better equipped to handle impromptu international guests. Donelson, in fact, is leveraging diversions as a “foot in the door” to secure scheduled international service.

A federal inspection station (FIS) to process international travelers’ entry into the United States was a key component. The expansion project’s prime consultant, AECOM, designed a 16,000-square-foot “mini FIS” for the airport and obtained approval for its smaller-than-usual size from U.S. Customs and Border Protection. With a maximum processing capacity of 200 passengers per hour, the facility may sound small to large airports; but Donelson considers it just the right size for ACY.

“We’re not going to be handling multiple international arrivals at one time,” he explains, “but we can handle virtually any size aircraft that would be using our airport from an international standpoint (up to B767).”

If the addition of scheduled international service eventually requires the airport to accommodate multiple planes simultaneously, there’s plenty of room on ACY’s 5,000 acres to expand, he adds.

Donelson is often asked to justify the cost of adding an international passenger processing station at an airport without international service. While he acknowledges the “if-you-build-it-they-will-come” appearance, he emphasizes the facility’s strategic nature. “We couldn’t get scheduled international flights until we had this,” he notes.

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A canopy of opaque panels on steel trusses shields the airport's new meter-greeter entrance.

With the new FIS in place, ACY is marketing its airfield *and* landside capabilities to international carriers.

Planning For Growth

Being owned by a transportation authority benefits ACY, notes Donelson. Shared resources and economies of scale make operations less costly, and the airport can pass those savings on to airlines via lower rates and charges, he explains. The recent terminal addition, in fact, was wholly funded by tolls collected on the Atlantic City Expressway.

South Jersey Transportation Authority assumed airport operation responsibilities from the FAA's William J. Hughes Technical Center in 1997 and began master planning in 1999.

"It's really been a long process," reflects Donelson, who wears multiple hats as the authority's director of operations for about five

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years and chief engineer for about eight. “When we took over operation of the airport, we had to strategically plan our money to get to this point.”

In recent years, the transportation authority has completed a taxiway relocation project, constructed a baggage screening facility and built a six-story parking garage.

“We started at the most crucial points, which are runways, taxiways and electrical facilities,” he explains. In order to expand the terminal and apron, the taxiway closest to the terminal had to be moved 800 feet so it wouldn’t crowd the new facilities. “It gives us great satisfaction that we’ve been able to work through a process we put in place back in the early 2000s,” Donelson notes.

Exit Portals

Along with the mini FIS, Donelson considers new security exit lane technology a highlight of the airport’s recent project. The expansion provided room for portals that prevent people on the airport’s nonsterile side from entering the sterile side. Donelson estimates that the equipment saves ACY about \$300,000 per year by reducing the staff needed to monitor exit lanes.

The cylinder-shaped portals, made by Eagle Security Group, each have two doors. When a customer approaches the door on the sterile side, it automatically opens and up to six people can enter. After the sterile side door automatically closes behind the last customer, the door to the nonsterile side automatically opens in less than one second.

Because the portal’s two doors are never open at the same time, there’s always a physical barrier between the sterile and nonsterile sides, stresses Raymond C. Wong, vice president of Eagle Security Group. If a user holds one door open, the other is designed not to open.



Raymond C. Wong

ACY was the first airport to install Eagle’s exit lane breach control portals as part of a pilot project in 2009, notes Wong. The exit portals and other new technologies are field-tested at ACY through a unique partnership with the U.S. Department of Homeland Security’s Transportation Security Laboratory. The partnership, known as a Cooperative Research and Development Agreement, was the first such agreement between a public airport and DHS. The laboratory is located on the airport campus at the William J. Hughes Technical Center.



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After a series of tests during pilot operations, local TSA officials approved the Eagle portals for continued use as part of ACY's overall security plan. The airport recently replaced its initial equipment with updated Eagle 2 units. According to Wong, the newer version is 25% faster and moves 25% more people.

With five portals, each able to accommodate six customers and cycle five times per minute, ACY's maximum throughput rate is 150 people per minute.

The portals are designed with an "anti-passback feature" to prevent airport visitors from passing items (explosives, guns and other objects as small as a quarter) from the nonsterile to the sterile side.

Although travelers may assume they are being scanned as they walk through the exit devices, the portals are actually scanned for objects after people exit, Wong explains. When the door to the nonsterile side closes, the system uses proprietary technology to scan the volume of the portal and compare it to the volume of an empty portal. If the volumes don't match, the system knows something is in the portal and opens the door to the nonsterile side so passengers can

retrieve item (often a forgotten bag). If an item is not removed after multiple audible alarms, an operations officer intervenes.

High-definition video cameras inside each portal allow remote monitoring from the operations center, and an audio system provides two-way communication. Other safety features include an emergency button that opens the door to the nonsecure side and a backup battery system, notes Wong.

There have been no reported exit lane breaches at ACY since the portals have been in operation, reports Donelson.

More Space

From a design perspective, correcting deficiencies in the terminal was one of the project's key achievements, says AECOM project director and principal architect Terry Rookard. Designers overhauled inbound and outbound baggage operations, baggage claim areas, passenger circulation and concessions/terminal operation support spaces.



Terry Rookard

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Designers overhauled both inbound and outbound baggage operations.

The project also established a new set of design standards for the airport, notes Donelson. "The areas are much more spacious," he describes. "We've changed the entire look inside the terminal. Everything is new. It's really a pleasure to walk through and give tours and hear people's reactions. People are amazed at how beautiful the facility is."

About 3,000 square feet of additional concessions space was designed to enhance passenger convenience and maximize airport revenue; and the meeter-greeter area was expanded.

Additional support spaces include a loading dock and terminal storage areas. The airport's operations area is now twice as large and is equipped with wall-mounted flat panels, a smart board and updated workstations.

The AECOM team designed the terminal to reflect "today," while respecting the character of the existing terminal. "We used similar materials (glass and metal), but applied them in a way that struck a balance between old and new," Rookard explains.

He describes the finishes as "shiny, clean and vibrant — almost casino-like." The terminal's image was polished and articulated to reflect current times, he adds.

Rookard considers improving the image and the identity of the airport another key achievement of the project. AECOM designed a 10-foot tall metal and stone dimensional entrance sign to set the tone outside the airport. The giant artwork features a large A (for Atlantic) with an airplane swooping around it to form a C (for City).

Overcoming Challenges

Adhering to New Jersey's stringent construction requirements and ensuring that work impacted airport operations as little as possible were particularly challenging accomplishments during the project, notes AECOM associate vice president and project manager Larry Bauman.



Larry Bauman

"From a technical perspective, there were a plethora of challenges that emerged after construction started," Rookard recalls. Many related to the terminal's multiple previous expansions.

"During demolition, structural and life safety issues were revealed that had to be solved on the fly," Rookard explains. "Existing structural details were not reflected in the available as-built information, and wall construction was not executed according to the original design documents. This meant that the design and engineering team, working closely with the contractor (Hunter Roberts Construction Group), had to modify details and work with the local building inspectors to resolve these issues and bring the terminal into compliance with current building codes."

The project was executed in two main phases: construction of the extension space and connecting it to the existing structure. Installing the second-level terrazzo floor, however, required several sub-phases.



Three gates had to be taken down during the expansion. "When we're only starting with seven, that's a significant hit to our operational capacity," Donelson remarks. "It took a lot of flexibility on the part of our operations folks, the airline station managers, our tenants and our customers."

Now that the expansion is complete, the airport has 10 gates.

More in Store

The development of a fiberoptic network for the FIS will benefit the entire ACY campus, because crews pulled cable throughout the airport, notes Joel Falk, director of information and tolls technology for the transportation authority. The new technology builds a ring topology capable of withstanding a cut or service disruption, explains Falk. Using this network improvement, a new "crash phone" system will be developed to complement the five-bay Aircraft Rescue and Firefighting facility currently under construction. Completion is expected in May.



Joel Falk

Verizon Wireless is building a distributed antennae system throughout the terminal and garage. The system includes an in-house repeater to augment cellular coverage strength, Falk explains. In addition, enhanced Cisco WiFi hotspots were upgraded to improve WiFi coverage and bandwidth in the terminal. ACY secured sponsorships for the service, which it provides free to airport visitors.

Construction of a direct roadway connecting the Atlantic City Expressway and the airport access road is expected to begin in June. In late January, the project was in the final design phase.


Based on future demand and funding, Donelson anticipates that ticketing will be the next area ACY needs to expand, followed by the construction of a second parking garage. Fortunately, the latest terminal expansion was designed to allow space for two to three more additions. ✈️

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Salt Lake City Int'l Overhauls Concessions with Local Faves & National Brands

By Nicole Nelson

 Maureen Riley, executive director of the Salt Lake City Department of Airports, rarely totes a brown bag to work these days. “There are a lot of lunch options we never had before,” she notes.

That’s because Salt Lake City International Airport (SLC) recently contracted 35 new food/beverage options and 32 additional retail, news and gift outlets. Other than modest upgrades in 2000 to help prepare for visitors during Salt Lake City’s 2002 Winter Olympics, the airport had not made major renovations in years, notes Riley.



Maureen Riley

With plans on the drawing board to build an entirely new terminal, SLC faced a fork in the road about three years ago, when many of its concessions began approaching their lease expiration dates. Officials could either initiate a comprehensive overhaul of the existing program or put temporary offerings in place until the new terminal was ready.

The decision to execute a comprehensive program overhaul will allow the timeline for the debut of the new terminal to largely coincide with the terms of new food and beverage agreements, Riley explains. While retail agreements are typically five to seven years, food and beverage agreements are often 10 years, to allow for the amortization of higher investments in the kitchen equipment.

Airport officials report that the new food and beverage concepts are faring well in the short time they have been open. In December 2011, under the previous program, the average food and beverage sale per enplaned passenger was \$4.26. In December 2012, with nearly everything re-opened, the average sale increased nearly 20%, to \$5.10 per enplaned passenger.

The Spice of Life

The airport’s new blend of local restaurants and national brands was assembled to provide options for every palate, and Riley is apparently not the only one sampling the offerings. Food and beverage providers report that they are serving a lot more employees than before. “We usually open our staff meetings (by discussing) what has been discovered at our variety of restaurants,” says Riley. “I like to rotate and try everything, and it is hard to pick out one favorite because we have so many options.”

With staggered openings beginning in summer 2012, staffers have had a lot to talk about.

“We are really pleased with the outcome of our program,” she reports. “As a hub airport, 45% of our passengers are just changing planes and looking for a nationally recognized brand. Since 55% of our passengers are O&D (origination and destination), we wanted to introduce local providers into the market. We wanted a blended program that would ac-



factsfigures

Project: Concessions Overhaul

Location: Salt Lake City Int'l Airport

Governing Body: Salt Lake City Dept. of Airports

Contract Packages: 7 Food & Beverage; 7 Retail, News & Gift

Food & Beverage Contract Holders: HMSHost (43%); Hojeij Branded Foods/Air Terminal Gifts (43%); Salt Lake Brewing Co. (11%); McDonald's (3%)

Retail, News & Gift Contract Holders: Duty Free Americas; HMSHost; The Paradies Shops; Sweet Ventures

commodate both the connecting passengers as well as the local and destination passengers, and we have achieved that with our program.”

Local Flavor

Concessions with local ties include Squatters Pub Brewery, a renovated version of Salt Lake Brewing Company’s existing airport brewhouse, and Vino Volo Ale House, a joint venture between the same company and boutique vintner Vino Volo. While one side of the restaurant is beer-oriented, the other is wine-centric; a seating area in between the two bars allows customers to order from both menus with table service.

With two locations, Salt Lake Brewing Company operates 11% of SLC’s concessions.

Also from the local scene are High West Distillery and Saloon, a Park City restaurant and watering hole; Market Street Grill, an iconic local seafood restaurant; and Vivace Cucina Toscana, the speedier cousin of Cucina Toscana, an Italian restaurant in downtown Salt Lake. The three local-flavor restaurants are part of a larger HMSHost contract that encompasses 43% of the new food and beverage offerings at SLC.

“What you are seeing in Salt Lake is consistent with a broader trend in the industry to promote local restaurateurs and local chefs,” reports Joe Waller, vice president of business development at HMSHost. “For us, it is right in our wheelhouse.”



Joe Waller

HMSHost has found that design is an important factor in attracting customers to local restaurants — especially out-of-towners who may not be familiar with the brands.

“The look and the design of the space is very important to draw people in,” Waller explains. He considers SLC’s Vivace Cucina Toscana one of the most beautiful restaurants anywhere, much less in an airport. “It’s absolutely gorgeous,” he raves. The restaurant’s design allows customers to see the chefs working. Waller likens the “display cooking” to dinner and a show.

With less than 90 days of operations underway, Waller described the new HMSHost concepts as “absolute babies.” Accordingly, he spoke like an adoring proud papa: “These are beautiful restaurants, and it is a really nice statement for the people of Salt Lake City. I am personally very proud to be on the team that made this all possible.”



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National Notoriety

The airport's revamped concessions lineup includes a variety of national and specialty brands, including 15 new offerings from Hojeij Branded Foods, which partnered with locally based Air Terminal Gifts.

After securing contracts for 43% of the food and beverage locations at SLC, Hojeij began its transition last January by shutting down various concessions on a rolling basis and running temporary facilities while renovations and changes were made. "I am very proud to say that by the end of December 2012, we had all 15 new facilities constructed, up and operating successfully," notes Regynald Washington, the company's chief operating officer.

SLC can now claim to be the second Popeye's location in Utah. It's also the proud home of Cat Cora's Kitchen, the celebrity chef's newest airport restaurant, cocktail and tapas lounge. San Francisco International and Bush Intercontinental in Houston

have sister locations, but SLC also has a takeout version of the brand: Cat Cora's Gourmet Market, which features health-oriented selections such as salads and sandwiches.

Other quick-service concepts include Manchu Wok, Seattle's Best Coffee, Qdoba Mexican Grill, Pei Wei, Boar's Head Deli and UFood Grill, an all-natural concept. On the sit-down side, Gordon Biersch Brewery is an upscale restaurant with 230 seats.

"These are great, great concepts," emphasizes Washington. "And we are seeing the results of our work, because it is being well received. People seem to be extremely pleased with the variety of concepts."

Importantly, Riley and her staff count themselves in that group. ✈️

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Huntsville Int'l Upgrades & Expands Baggage Claim

By Kathy Scott



factsfigures

Project: Baggage Claim Renovation & Expansion

Location: Huntsville (AL) Int'l Airport

Owner: Port of Huntsville

Cost: \$25.9 million

Timeline: Aug. 2010 – Nov. 2012

Objectives: Improve wayfinding; accommodate traffic growth

Key Challenge: Renovations eliminated two reclaim carousels for 16 months

Baggage Reclaim Carousel Mfr.: Vanderlande

Escalators & Glass Elevator: Otis

Jumbotrons: Planar

General Construction: WG Yates Construction

Architectural & Engineering Consultant: Chapman Sisson

It's hard to overestimate the importance of a good baggage claim system. According to Jim Gaz, senior director of travel and entertainment at J.D. Power and Associates, "Baggage claim has the greatest impact on overall satisfaction, along with airport accessibility." The 2010 J.D. Power airport satisfaction survey found that passengers will tolerate 17 minutes of wait time at Baggage Claim and Security before satisfaction drops to low levels; and every additional five minutes of waiting decreases satisfaction as much as 12 index points.

At Huntsville International (HSV) in Alabama, business travelers account for fully 71% of the airport's overall passenger volume, and they're a notoriously hurried group. But customer feedback indicates that HSV's recent \$25.9 million baggage claim renovation is helping keep them on time and satisfied. In November, officials unveiled the final phase of a two-part project that nearly quadrupled the size of the area and transformed its appearance.

Huntsville is a city dominated by defense, military and government jobs — sectors that have experienced recent cuts. It's also home to some of the nation's most technologically advanced agencies and corporations. Redstone Arsenal, the U.S. Army's garrison in Madison County, contains the U.S. Army Materiel Command, the Army's Aviation and Missile Command, the Missile Defense Agency

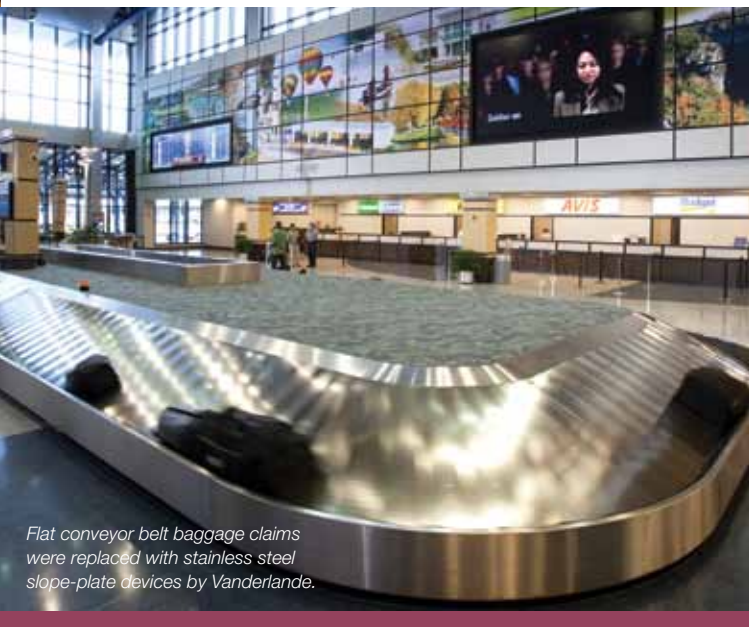
of the Department of Defense and the National Aeronautics Space Administration's Marshall Space Flight Center.

With sequestration looming large, it's more important than ever for Huntsville to entice new businesses to the area. Over the past five years, HSV has invested \$92 million in upgrades and additions to its facilities. The baggage claim renovation is the most recent of those projects. In addition to expanding the area from 10,620 to 40,738 square feet, designers transformed its appearance with large windowed walls and open architectural lines.

The need for baggage claim improvements was identified more than a decade ago in August 2001, when the Port of Huntsville drew up a master plan to upgrade and expand the airport, recalls HSV Director of Capital Improvements Stan Hogan. But the plan was sidelined less than a month later on Sept. 11th, when TSA security directives overshadowed practically everything else. Although the baggage claim area was originally a top priority, security mandates required other projects to take precedence. In 2010, Executive Director Rick Tucker committed to the renovation, and the project moved forward.



Stan Hogan



Flat conveyor belt baggage claims were replaced with stainless steel slope-plate devices by Vanderlande.

Social media traffic in December indicates that travelers noticed and appreciated the improvements. Several customers posted comments on the national review website Yelp and gave the airport four- and five-star ratings:

"This airport just keeps getting nicer. Since last time I was at HSV, the baggage claim area has been upgraded and is much, much nicer with plenty of natural light. The check-in area is the same – small, but efficiently done with such a small crowd."

"It's a lovely airport. Airy, easily managed with high ceilings so no claustrophobic feeling. You check in on the lower level where baggage claim is – then go up the escalator to the restaurants, shops and gates."

Growing Pains

The last time HSV had updated its baggage claim area was nearly 25 years ago, in 1988. At that time, its annual passenger traffic had just broken the 441,000 mark. By 2010, the burgeoning airport was serving more than 1.2 million passengers per year. The need to accommodate the enormous growth became an important priority, recalls Hogan.

He cites improved wayfinding as a key to the airport's new baggage claim area. Eliminating obstructions was important, so passengers "knew where they were going," Hogan explains.

Architects at Chapman Sisson designed HSV's new baggage claim area, opening low ceilings with vaulted spaces and creating a glassed entrance to increase natural lighting. Designers also covered 40,000+ square feet of space with terrazzo flooring that incorporates the airport's overall color scheme and features an embedded version of the Port of Huntsville's logo at key high-traffic points.

"It's a high-tech city," explains Chris Waters, the company's senior architect. "We wanted to create a front-door image for the City of Huntsville."

Chapman Sisson led HSV's overall design as architects of its \$92 million, five-year capital expansion.

The first phase of the \$25.9 million baggage claim project began in August of 2010, when crews relocated carousels and rental car counters so demolition could begin. Passengers were routed to the east side of the airport and used a single baggage claim carousel rather than the usual three. Within 16 months, the area tripled in size and gained two jumbotrons that are visible from all three new carousels. One screen provides community information, while the other delivers advertising messages through HSV's partnership with Clear Channel Airport.

Gone are the flat conveyor belt baggage claim carousels. They've been replaced by stainless-steel slope-plate devices: Vanderlande's tilted Triplanar carousels. Feed conveyors and belts were also included in the turnkey system, notes Curtis Jefferson, Vanderlande's business development manager.

Renovations also added "creature comforts" including improved curbside loading and unloading areas, a new public waiting area, free WiFi service, five escalators, a glass elevator and an expanded ground transportation area. Hogan expects the recent baggage claim improvements to accommodate local growth through 2022. ✈️

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Less is More for Snow Removal Fleet at Cincinnati/Northern Kentucky Int'l



Project: New Snow Removal Fleet & Plan

Location: Cincinnati/Northern Kentucky Int'l Airport

Crew: 100 full-time & seasonal workers

Shifts: 7 a.m. - 8 p.m.; 7 p.m. - 8 a.m. (1-hour overlap is used for debriefings, strategy discussions, equipment issues, etc.)

Equipment Suppliers: Fortbrand Services (nine Vammas PSB 5500 multifunction snow removal vehicles); Myselik (a Tellefsdal Runway Light Plow; two FOD BOSS units)

Equipment Manufacturers: Aljon Mfg. (Vammas PSB 5500); Tellefsdal (runway light plow); Aerosweep (FOD BOSS)



With substantial overnight air traffic from DHL Express, it's imperative for Cincinnati/Northern Kentucky International Airport (CVG) to keep its runways open 24/7. When temperatures drop and precipitation flies, all eyes are on the snow removal crew to keep DHL's airplanes flying.

CVG management recently enacted a flurry of changes to the airport's snow removal operations with an eye to improving efficiency and safety while lowering costs. Last year, the airport traded in 16 various pieces of snow removal equipment for nine multifunction vehicles and a plow specifically designed for runway lights.

The investment in multifunction equipment has allowed the airport to downsize its fleet while reducing labor, fuel and maintenance costs, reports Shannon Oldfield, CVG's director of maintenance.



Shannon Oldfield

"Essentially, we're able to be more efficient," Oldfield explains. "If you remove one piece of equipment from the airfield and you're able to maintain operational efficiency, then you have, in my opinion, also improved safety."

This is not the first time CVG has overhauled its wintertime strategies. The airport previously used a daytime crew for the bulk of its snow removal and ran a skeleton crew at night to maintain airfield conditions. But when DHL left

in 2004, the airport no longer needed to run snow removal operations throughout the night, explains Oldfield. When the express carrier returned to the field in 2009, so did the need for overnight snow removal.

Back then, CVG used traditional plow trucks, front-mounted brooms and snow blowers to clear its runways, taxiways and ramp areas — a process that is costly in terms of time and labor, notes Oldfield.

During heavy snow events, broken runway lights were also an issue. Using traditional equipment and methods, plow trucks weave in and out of lights. "But even the best operator will destroy a few lights," Oldfield explains. "Plus after the storm, uncovering the lights with shovels and backhoes was not efficient."

Given such shortcomings, CVG management decided to overhaul its snow removal procedures by investing in multifunction snow removal equipment and refining its strategic approach.

The New Fleet

In a less-is-more move, the airport bought nine Vammas PSB 5500 multifunction snow removal vehicles and a Tellefsdal runway light plow to replace its runway deicing truck and 15-piece fleet of front-mounted brooms and plow trucks.

The Vammas machine allows a single operator to plow, sweep and blow snow in the same vehicle, at speeds up to 37 miles per hour. The unit



Nine multifunction vehicles like the one pictured here are the workhorses of CVG's new snow removal fleet.

By Robert Nordstrom

combines front wheel mechanical and rear articulated steering to maneuver on taxiways, aprons and runways.

The vehicle's 30-foot polyethylene moldboard plow is self-adjusting, with independent spring-loaded cutting edge segments designed to minimize damage to in-pavement lighting. The broom section, which is placed behind the plow, covers a 22-foot swath. The 46-inch diameter broom with wafer bristles runs on 31-inch castor wheels. A blower at the rear of the unit removes remaining snow.

The order of operations is key — and a key to the unit's high top speed, says Alan Stearn, executive vice president of Vammas' distributor Fortbrand Services.

Because the plow performs the bulk of the work, putting it in front rather than the broom prevents the broom from getting bogged down, explains Stearn. The Vammas' middle-mounted broom sweeps up what the plow may leave, and an intense air blast at the rear of the machine clears remaining remnants, he continues.

According to Stearn, a fleet of these units can clear a 10,000- to 12,000-foot runway in 10 to 12 minutes.

CVG operates its new nine multifunction vehicles simultaneously in a staggered or V formation, pushing snow from unit to unit until it reaches the sides of the 150-foot-wide runways.



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Crews use a wheel loader to push the airport's new Tellefsdal runway light plow directly over the edge lights. Two small adjustable plows in the front of the unit separate snow from each side of the lights, and two brushes in the center of the unit clear the snow close to the lights. Two larger plows at the rear of the unit then push the snow out for a plow truck or snow blower to clear.

The specialized plow is often connected to various prime movers, but CVG connected its unit to a wheel loader with an offset coupler to make use of an existing vehicle.

"The runway light plow is actually set off to the right side of the loader," explains Bill Myslik, vice president of Tellefsdal distributor Myslik Inc. "The operator drives the loader to the left side of the runway lights while lining up the plow to go directly over the lights. The alternative was to change to larger tires during snow events, which was not cost effective for the amount of time CVG would be using the light plow."

CVG also purchased a foreign object debris (FOD) sweeper that is towed behind a vehicle. The FOD BOSS, manufactured by Aerosweep, uses a 6-foot-long, 8-foot-wide mat with brushes underneath to agitate FOD, then scoop it up and trap it in a retaining mesh. The airport's duplex system covers a 16-foot path.

"It's a very simple piece of equipment to use," says Oldfield. "It picks up small debris, from nuts and bolts to pieces of concrete. We use it regularly and have had tremendous luck with it."



Bill Myslik


Winter Ready

These days, CVG relies on more than 100 full-time and seasonal workers to clear the airport's four runways, associated taxiways, ramp areas and side pavements of streets. The daytime shift (typically 7 a.m. to 8 p.m.) has up to 65 employees, and the nighttime shift (usually 7 p.m. to 8 a.m.) has as many as 45 employees.

The 13-hour shifts provide a one-hour overlap for debriefings, strategy discussions, equipment adjustments and other logistics, notes Oldfield.

Flexibility is an important part of the airport's approach. "With access to seasonal employees, we are able to scale up or down as needed," he explains.

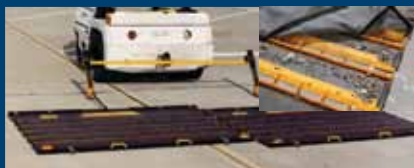
Every member of CVG's snow team undergoes rigorous training from the airport, Oldfield adds. Fortbrand also provided supplemental operation and maintenance training with the delivery of the new multifunction equipment.

"Fortbrand was very helpful in answering questions and suggesting different routines and equipment configurations for using the multifunctional equipment to its fullest capacity," Oldfield reports. "They evaluated our equipment inventory and made suggestions. We drew from our experience and took Fortbrand's suggestions to develop a tailor-made program for CVG. With the new multifunction equipment, we've noticed a big difference in our snow removal operations. We are able to work much more efficiently and effectively." 

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Project: Runway & Taxiway Reconstruction/Extension

Location: Eastern West Virginia Regional Airport

Cost: \$48 million

Funding: U.S. Dept. of Defense Military Construction Program

Prime Consultant & Airfield Design: Atkins North America

Prime Contractors: Clark Construction (phase 1); Head Inc. (phases 2 & 3); Atlantic Contracting & Material Co. (phase 4)

Pavement Design: Tigerbrain Engineering

Airfield Lighting Fixtures: Crouse-Hinds; ADB Airfield Solutions; Multi-Electric Mfg. (MALSR)

NAVAID Relocation: The Burns Group

Geotechnical & Surveying: Triad Engineering

Concrete Paving: Head; Atlantic Contracting & Material Co.

Asphalt Paving: Jefferson Asphalt Products Co.

Earthwork: Independence Excavating; Kinsley Construction; David H Martin Excavating; Atlantic Contracting & Material Co.

Electrical: M. C. Dean; Barnes & Powell Electrical Co.; Wellington Power; Portico Services

Quality Control: Engineering & Materials Technologies

Pavement Markings: Midlantic Marking; Roads & Runway Striping Service; Falcon UHP

Runway Grooving: Safety Grooving & Grinding

Concrete Cutting: East Coast Concrete Cutting Co.

Concrete Breaking: Pieces Breaking Service

Rubblization: RMI Worldwide


PCCP Sawing & Sealing: East Coast Concrete Specialties

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Eastern West Virginia Regional Reconstructs Runway to Handle C-5 Traffic

 With a cargo bay large enough to carry six Apache helicopters or five Bradley tanks, the C-5 is a massive aircraft. And it took a massive runway conversion to allow joint-use Eastern West Virginia Regional Airport (MRB) to accommodate the military behemoth.

MRB put the finishing touches on its four-phase, \$48 million runway/taxiway project in last fall. Originally projected to be a single project spanning two construction seasons, the endeavor stretched over six years due to funding limitations and work scope that was more complex than initially anticipated.

The goal of the project was to accommodate the West Virginia Air National Guard's conversion from C-130s to a fleet of 10 C-5s. One of the largest military aircraft in the world, the C-5 requires an 8,000-foot runway for full missions. Before the project, MRB's runway was not much more than 7,000 feet.

While the project was fully funded by the U.S. Department of Defense Military Construction Program, the funding arrived in increments, which required the project to be divided into four phases, explains Major Paul Henry, deputy base civil engineer for West Virginia Air National Guard's 167th Airlift Wing.



Major Paul Henry

The large scale, multi-phase project presented ample challenges for Airport Manager William Walkup. "There were periods of time when we actually had to move some of the users off the field," Walkup recalls. "The (airport's only) runway was shortened to 2,300 feet for about a two-month period and was operational only for very small aircraft. We were down to 4,100 feet for about a year, which caused us to relocate our charter business. We went without an instrument landing system for about two years, which was very challenging."

Four Phases, Six Years

In Phase 1 of the project, which began in July 2006, the airport shortened its 7,015-foot runway so crews could fix a 10-foot hump in the west end. Before the project, the hump on Runway 8-26 was so severe, one pilot said he couldn't see the 8 end from the 26 end. Other pilots described flying into MRB as "landing uphill."

Removing the hump, however, was no simple task, explains Chris Holmes, senior project manager for prime consultant Atkins North America. "We cut out 10 feet — not only from the runway depth, but for the entire width of the primary airspace surface, which is about 1,000 feet wide. That's a large swath of dirt and rock," emphasizes Holmes.



Chris Holmes



By Robert Nordstrom

In all, crews removed 700,000 cubic yards of dirt and rock, and by the end of Phase 1 in August 2007, the runway length was brought up to 6,000+ feet.

During Phase 2, crews extended the west end 800 feet and milled 3,500+ feet of the original runway on the east end. The old surface was rubblized, then overlaid with asphalt. The first 1,100 feet on the west end was paved with 13 inches of Portland cement concrete (PCC), and crews also constructed a PCC turnaround. When Phase 2 was complete in August 2008, the runway was 7,815 feet long with 400-foot blast pads at both ends. The east end blast pad was constructed with full-strength pavement for future extension as an overrun, notes Holmes. New localizer equipment was also installed on the 26 end.

During Phase 3 (July 2008 to August 2010), crews extended the east end of the runway 600 feet. A connection point for the taxiway extension was constructed, and the medium-intensity approach lighting system with runway alignment indicator lights (MALSR) was replaced. The airport also added a 400-foot long blast fence at the end of the runway to protect vehicles on a nearby county road from jet blast.

In the final phase of the project, the primary taxiway was realigned and extended 1,000 feet to the east, with 25 feet of paved shoulder on each side. The extension allows pilots to launch C-5 aircraft without having to make a U-turn on the runway. To create the extension, crews excavated approximately 175,000 cubic yards of dirt and rock and constructed a

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Congratulations to the 167th Airlift Wing of the West Virginia Air National Guard on the completion of the C-5 conversion program!

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30-foot embankment. New LED lighting was also installed on the taxiway.

Throughout the project, MRB maintained a 400-foot buffer between the active runway and construction activity.

Making Adjustments

During the concept stage of the project (2004 to 2005), the original goal was to lengthen the runway 1,000 feet — 800 feet to the west and 200 feet to the east. Because the east side extension would require the relocated approach lighting system to extend past the airport's available land, the airport and design team considered other alternatives.

"Initially, the goal was to extend the runway to a minimum of 8,000 feet in order to support the Air National Guard's full mission for C-5s," recalls Holmes. "We determined that we could extend the runway to 8,815 feet by constructing a 1,000-foot paved over-run strengthened for aircraft use on the east end, which would give the C-5s the necessary pavement length for departures from the east end of the runway. However, the pilots would still use the original threshold to provide 7,815 feet for landing. From the west end, pilots have the full 8,815 feet for landing."

Wind patterns dictate that C-5 pilots depart from the east (26) end of the runway. With the original taxiway, that meant departing

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aircraft would have to enter the runway, turn to the east, then make a 180-degree turn to have access to the runway's full 8,815 feet for takeoff. To resolve this problem, the taxiway was extended to the east to provide direct access to the end of the runway and, therefore, eliminate the need for turnarounds.

"Doing a 180 turn in the hammerhead area at the end of the runway is very hard on the landing gear," explains Major Henry. "The gear configuration on the C-5s is a lot wider than that on the C-130s. With the new extended taxiway, aircraft can access the runway at the end of the runway and have 8,815 feet available for takeoff. Or if they are going out light, they can access the runway at the original A-1 connector and have 7,815 feet available for takeoff."

Poised for the Future

With the MRB runway/taxiway project complete, the final piece of the puzzle is in place for the West Virginia Air National Guard's conversion to C-5 aircraft. All told, the entire conversion cost over \$300 million.

"We acquired an additional 111 acres of land, built several new buildings and a new entrance to the base, and constructed a new control tower, three 80,000-square-foot hangars with a maintenance mall, base supply, operations facility, simulator facility, fuel facility and tank farm and a new fire department," Henry itemizes. "We went from 15 acres of concrete to 44 acres of ramp area — all since 2006."

Despite the growing pains encountered during the extension project, the Air National Guard and airport consider the new runway/taxiway a win-win.

"The Air National Guard has full access to the runway through an Airport Joint-Use Agreement," Henry explains. "As part of that agreement, the Guard helps out with a portion of the runway/taxiway maintenance costs, provides fire rescue services and the air traffic control tower and its controllers."

MRB, in turn, has a longer runway, compliments of the federal government. "We now have an extra 1,800 feet of runway, which is always good for attracting corporations and businesses with larger aircraft," explains Walkup. "Our Inland Port Authority has been promoting our improved facilities in an effort to attract freight carriers and other business-related aircraft to the airport." ✈️

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Alternative Funding Facilitates New Terminal at MBS Int'l

By Mike Bernos



factsfigures

Project: New Terminal

Location: MBS Int'l Airport in Freeland, MI

Size: 75,000 sq. ft.

Cost: \$54 million

Funding: \$13 million in stimulus funds; state & local gov't grants; \$5 million cash & in-kind donations from private entities

Architect: RS&H

Acoustic Consultant: Coffeen, Fricke & Associates

Airport Study: Peckham Engineering

Flight Information Display System: Infax

Related Projects: New entrance & in-bound roadways; passenger parking facility & revenue control system operated by Standard Parking; rental car & employee parking lots; ground run-up enclosure; expandable aircraft apron

Project Challenge: Scheduling 14 phases to coincide with available funding

Noteworthy Detail: Airport is owned by 3 municipalities but receives tax revenue from none of them.



One of the nation's newest terminals — MBS International in Freeland, MI — began serving passengers in October, nearly a year earlier than anticipated.

The airport's previous terminal had become badly outdated, relates Airport Manager Jeff Nagel, AAE. "It was simply not sufficient to meet our future needs," he explains. "The decision was totally independent of passenger traffic."

The airport's HVAC, boarding bridges, electrical vault and other key components were on the verge of obsolescence, adds Nagel. A 2003 airport study by Peckham Engineering documented such shortcomings.

After weighing the pros and cons of remodeling its existing facilities, the airport commission voted in 2006 to construct a new terminal on the north side of the airport. Although the project received partial funding in 2007, planning for the \$54 million terminal didn't take off until the airport received \$13 million of stimulus funds in 2008.

"Our objective was to provide a facility that could take this region into the next 40 years," Nagel recalls. MBS officials also focused on

maintaining the convenience passengers were accustomed to in its previous single-story facility.

The airport's new 75,000-square-foot terminal opened at a very opportune time, he says. Deplanements at MBS increased from 134,189 in 2011 to 134,646 in 2012. With service from United Express and Delta Air Lines, Nagel says airport officials are confident that future capacity will hold steady.

Nagel is pleased with the terminal that architectural consultant RS&H created for the airport. "It is a great overall design and a vast improvement from the old facility," he notes. "It is much more welcoming, user-friendly and has been positively received by the traveling public."

Unpredictable Bankroll

In an unusual arrangement, MBS is owned by three different municipalities — Midland, Bay City, and Saginaw — but doesn't receive tax revenue from any of the communities whose initials form its name. "We are self-sufficient, except for the federal monies we receive for capital improvements," explains Nagel.



Mark Wilcer

Mark Wilcer, RS&H project manager, considers the airport's new terminal a prime example of vision, patience and creative funding.

"The project delivery method required a great deal of flexibility to produce bid packages to meet the available funding levels," Wilcer relates.

Capital for the project's 14 different phases came from multiple sources, including the FAA, state and local governments and private entities.

"When we first started the project in 2006, FAA funding was tight," he recalls, noting that the firm developed a flexible project schedule to allow for financial uncertainties. Detailed coordination meetings with the airport, tenants, funding agencies and contractors were key, he adds.

According to Wilcer, RS&H is especially adept at identifying opportunities for FAA funding, guiding airports' expectations and planning project frameworks, because it employs former FAA personnel.

At MBS, the firm suggested alternative funding sources that resulted in over \$5 million of cash and in-kind contributions, he notes. "The monies we received in 2012 allowed us to open the terminal a year early," he adds.

"RS&H proved to be an excellent partner in this project," Nagel agrees, noting the firm's contributions from preliminary design work through funding and construction administration. "They were able to meet the challenges of this complex project and deliver a quality product and allow us to open early."

Along with the new terminal, the project included a new entrance and in-bound roadways, an 800-space passenger parking facility, complete with a new revenue control system, and parking areas for rental cars and employees.

New Terminal, New Look

Nagel considers the terminal's open design and wrap-around floor-to-ceiling glass windows that allow visitors to observe arriving and departing flights two of its most distinguishing features.

Designers incorporated wave-like clerestory windows facing north to maximize natural light, showcase the surrounding native landscaping materials and enable daylight harvesting, notes Martin Wander, RS&H's lead architect for the project.

"The result was a terminal that is energy-efficient, sustainable and adaptable," he explains.

Other project elements included an "architectural themed blast wall," with a block construct that matches the terminal and a new aircraft apron designed to accommodate six gated aircraft simultaneously.

"In today's ever-increasing competition to provide a cost-efficient operating environment for airlines and concessionaires, tenant spaces have been right-sized for efficiency, and the apron was designed to allow 'power out' operations and reduce airline staffing requirements," Wander relates. "The entire campus is designed for flexibility and future expansion."

As the home airport for Nexteer Automotive, Hemlock Semiconductor and several other multinational companies headquartered in the area, officials knew it was important for the new terminal to serve as an appropriate first impression and gateway. RS&H consequently incorporated a number of historic features and natural materials from the surrounding region. In a nod to the airport's military past, for instance, the Morse Code symbols for "MBS" are etched into the passenger exit lane and elsewhere throughout the building.

"Our architects design terminals that incorporate the signature of the community, not the firm," stresses Bill Sandifer, RS&H's national aviation director.



Bill Sandifer

Audio Matters

Like many other airports, MBS strives to minimize the usual din of terminal and concourse noise while facilitating communication among passengers and airport personnel.



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An open design and wrap-around windows provide MBS with an entirely new look.

Coffeen, Fricke & Associates, an acoustics and audio/visual communications consultant, was hired to design the airport's paging system and optimize sound properties throughout the terminal.



Edouard **Charland**

Edouard Charland, the firm's vice president, notes that the open and airy nature of MBS' modern design creates more volume, which increases the need for greater sound absorption. Coffeen, Fricke & Associates' other recent airport projects include Terminal 3 at Las Vegas McCarran International and Terminal B at Sacramento International.

"We look at room acoustics – controlling the reverberation time, which is a function of absorption and volume of the space," he explains. "Usually, most of the absorption can be achieved in the ceiling. Thus, it is important to work with the architect to create a space that satisfies both the acoustical and aesthetic requirements."

The acoustic and audio/visual communications consulting firm strives to ensure that an airport's building envelope minimizes objectionable noise outside the terminal. Another regular focus is recommending interior partitions that will keep noisy operations from negatively affecting customers.

Once the acoustics are correct, Charland notes, his firm then designs the paging system by mapping the terminal's functional zones to determine appropriate loudspeaker types and strategic locations. Placing microphone paging stations at the necessary

gates, ticketing lobby and baggage claim, and other locations is also important.

Accommodating Growth


Beyond the search for additional funding, the MBS project was also challenging because of the airport's need for expandable terminals – an increasingly popular trend in the industry, reports Wilcer.

"We design airports with the future in mind," he says, noting that MBS' terminal can grow by fully 50% without any major structural complications. The four passenger bridge locations, for example, can be increased to six without much difficulty, he relates.

The aircraft apron was designed to expand without intruding into the airfield, and primary infrastructure, water lines, sanitary sewers and storm drainage, can also serve greater capacity. Even nonstructural design elements such as the exterior glass wall will be easy to dismantle for future expansion, Wilcer adds.

"We projected 'what if' scenarios to plan for future needs: If storm water increases by 'x' percent, how would the systems handle it?" he explains.

Building on a Greenfield site eased such challenges by allowing planners to set aside space for subsequent growth.

"At MBS, we are able to look at the 'big picture' and plan with the future in mind," Wilcer concludes. 

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DENVER INTERNATIONAL
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Denver Int'l Upgrades Security Camera System

By Ken Wysocky

A \$1.8 million TSA project designed to enhance security and improve video management at Denver International Airport (DEN) has paved the way for the airport to undertake a broader, ongoing effort to replace all of its analog closed-circuit television (CCTV) surveillance cameras with newer digital technology.

The initial project, funded by TSA and designed by URS Corp., included a Genetec Omnicast Internet protocol (IP) video management system, 12 new servers, a variety of work stations/monitors and 256 digital surveillance cameras.



Phillip E. Medina

TSA added cameras in security checkpoint areas to allow the agency to observe passengers and its employees at baggage belts and magnetometers, explains Phillip E. Medina, DEN information technology supervisor. The ability to monitor baggage inspection areas helps TSA assess and resolve passenger claims regarding lost and stolen items, he adds.

"In essence, the TSA bought the technology, and we run it and maintain it," says Mark Nagel, DEN director of security.



Mark Nagel

The Genetec system also demonstrated the advantages of digital/Internet protocol technology to DEN security officials — specifically, superior image quality and easier sharing of video files within the airport and with outside agencies.

After the new video management platform was installed in late 2009, DEN decided to spend about \$4 million of its own funds to upgrade the facility's surveillance cameras. It replaced about half of the existing 980 analog cameras with new digital models. The rest were effectively turned into digital cameras with video encoders that convert analog signals into digital streams for the new network, Medina explains. The airport also boosted overall coverage by purchasing 70 additional digital cameras, bringing its total to about 1,300 (including TSA's equipment).

The digital conversion was about half complete in late January, Nagel reports. The scope and complexity of the process varied among different parts of the airport.

No More Tapes

DEN officials considered about a dozen different digital platforms, and narrowed the field to three before selecting Genetec's Omnicast system through a request for proposal process, recalls Medina. A key consideration: The ability to control camera access for airport partners such as TSA, the Denver Police Department and U.S. Customs and Border Protection.

"With the Genetec system, you can federate pockets of control and share them," Medina explains. "The TSA's cameras are an entity by themselves, and the airport's other cameras belong to the city and county of Denver. The system allows us to distribute images to other organizations. We can incorporate or cross-feed cameras from each organization, regardless of ownership."

With the old analog-camera system, DEN officials could only view security cameras at about 120 dedicated CCTV stations, each equipped with an analog monitor, keyboard and joystick. With the digital system, operators can send images to virtually anyone, and the airport currently has about 400 system users, he reports.



factsfigures

Project: Video Surveillance Enhancements

Location: Denver Int'l Airport

Components Upgraded: CCTV Security Cameras; Video Surveillance/Mgt. System

Funding: \$1.8 million from TSA; \$4 million from airport

Timeline: 2006 – present; ongoing system expansions anticipated

System Designer: URS Corp.

Software Supplier: Genetec

CCTV Cameras: Axis Communications

Electrical Contractor: Servitech



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Denver Int'l uses pan, tilt, zoom domes like this unit to enhance terminal security.

Airport personnel find the digital video much more convenient to work with than the VHS tapes the previous analog cameras produced. If, for instance, DEN security officials are looking for a suspicious individual within the airport, they can bookmark five minutes of an hour-long video and e-mail it to security guards, police and TSA "in the field" for instant viewing.

Genetec personnel cite scalability and a failover mechanism that prevents data loss as two other key features of the Omnicast system.

High-Resolution Imagery

Digital technology increased the image clarity and color fidelity of DEN's system. The enhanced image quality helps officials identify situations, people and objects more

easily and accurately — a capability that, in turn, speeds the airport's resolution of nonstandard operations.

The airport's new cameras, by Axis Communications, provide images with 720p or 1,080p resolution — about the same image quality as high-definition television sets, explains E. Anthony Incorvati, business development manager for Axis' transportation vertical North American market. "Comparing it (to analog images) isn't even like comparing apples and oranges," explains Incorvati. "It's more like comparing apples and bowling balls. And the network infrastructure makes it very easy to add more cameras to the system."



Anthony Incorvati

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According to Medina, DEN uses about an equal mix of fixed-view cameras and equipment that can pan, tilt and zoom.

Incorvati says each Axis camera is essentially a computer with a lens. In addition to capturing video images, he explains, they provide processing technologies such as “wide dynamic capture,” which helps overcome harsh backlighting, a feature that provides color images in low-light conditions, without external lighting.

Analytics Increase Efficiency

The cameras’ ability to run sophisticated analytics against images is another notable feature. If an airport perimeter camera conveys an indistinguishable image, for instance, the system can determine if it’s an animal or a human.

In other applications, motion detection technology is key, adds Medina. Rather than posting personnel to monitor cameras surveilling empty, restricted-access rooms, DEN uses equipment with motion sensors that notify security personnel if someone or something enters the camera’s field of view.

“This type of analytic is important because it allows us to direct all our attention on areas that need it most, not to empty rooms where there’s no activity,” he adds.

Some of DEN’s cameras also include Genetec AutoVu, a system that uses optical character recognition to identify and store license plate numbers. When customers lose their parking tickets, attendants can quickly search the airport’s data files by license plate number to determine when a specific vehicle entered the parking lot — a feature that helps prevent revenue loss, notes Medina.

The Omnicast system’s open architecture integrates with virtually all IP cameras on the market, notes Danny Peleg, Genetec’s director of market development for transportation.

“(Airports) can choose the best breed of camera for their needs, and it will be compatible with our software,” he explains.

The Omnicast system also enabled DEN to reduce its storage space for archive videos, thanks to tools such as multicasting and multistreaming that optimize bandwidth. In addition, DEN was able to preserve some of its initial investments, including a storage area network.

In-House Integration

Unlike many airports, DEN opted to perform its own systems integration, rather than outsourcing the job to a third-party contractor. Very little

integration work was required, explains Nagel, because URS designed the system, and the project entailed replacing an old system with a new one rather than combining the two.

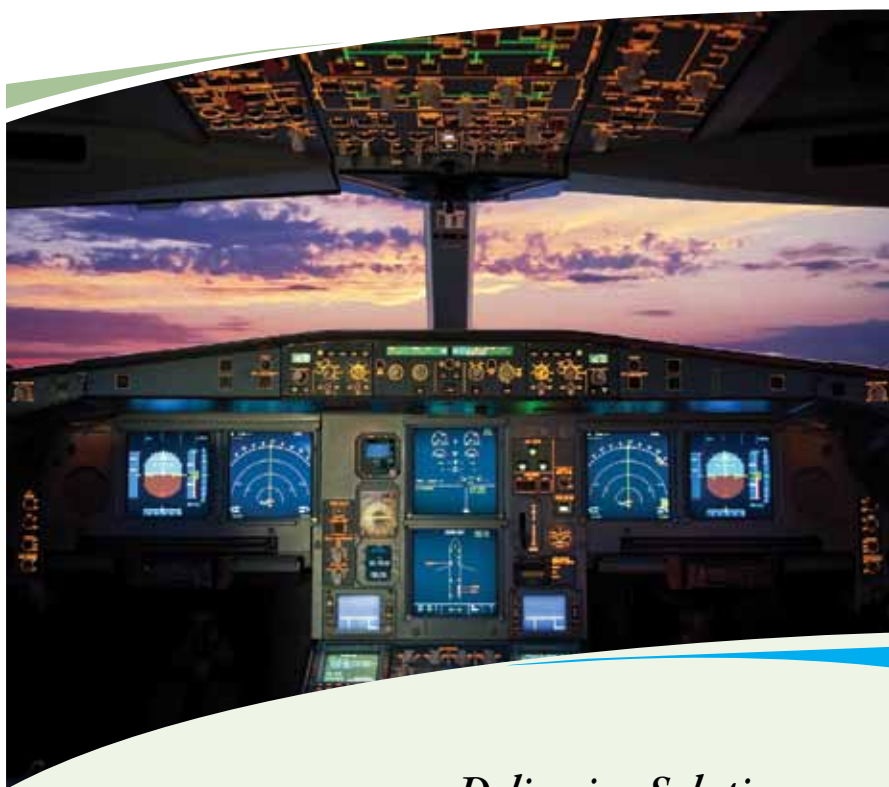
Performing the integration itself allowed the airport to avoid certain problems, adds Medina: “If we relied on someone else as an integrator, it would be much more difficult for us to determine what standards and protections are needed, who would have access and so on. Doing it ourselves helped us better understand issues and the opportunities available — and at less cost, too.”



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Project: Automated People Mover

Location: Phoenix Sky Harbor Int'l

Stage 1 Cost: \$644 million

Stage 1A Cost: \$240 million

Stage 2 Cost: Not yet finalized

Funding: Airport revenue; passenger fees

Of Note: World's first airport transit system to cross an active taxiway via bridge

Train System Provider/Operator: Bombardier

Construction Manager for Stage 1:
Hensel Phelps

Facilities Designer: Gannett Fleming

Train System Consultant: Lea+Elliott

Construction Manager for Stage 1A:
McCarthy/Kiewit

Taxiway Bridge Subcontractor:
Austin Bridge & Road

**Civil Engineer/Design Subcontractor
for Gannett Fleming:** Kimley-Horn and Assoc.

Program Consultant: URS

General Contractor for Bombardier: Weitz

Electrical Subcontractor for Weitz:
Wilson Electric


Civil Designer for Bombardier: CK Group

**Architect/Subcontractor for Gannett
Fleming:** HOK

**Architect/Subcontractor for Bombardier
on Mfg. Service Facility Building Design:** RNL

Subcontractor for Hensel Phelps & Weitz:
Suntec Concrete

PHX Sky Train Glides into Sky Harbor & Airport History

 More than a decade in planning, the PHX Sky Train at Phoenix Sky Harbor International Airport (PHX) is on track to begin public service this spring. In addition to providing a new level of customer convenience, the system will drastically reduce landside traffic and the need for airport shuttle buses. Making the service a reality, however, required an unprecedented feat of airside engineering.

Because the train connects with Phoenix's Metro light rail system, PHX passengers will be able to avoid congested highways and "ride the rails" from downtown into the airport's busiest terminal, and vice versa. In addition, passengers parking in PHX's east economy lots and those arriving at the airport's new 44th Street Station will be able to print their boarding passes and ride the airport's free, 24-hour train directly into Terminal 4. Many will also be able to check their luggage before boarding.

Approximately 2.5 million passengers are expected to ride the train during its first year of operation — about 7,000 per day. And airport officials expect annual ridership to balloon to 14 million when subsequent stages of the project extend train service to PHX's other two terminals and consolidated rental car center.

When complete, the entire system is expected to cost \$1.58 billion — funded completely with airport revenues and passenger fees, not tax dollars, emphasizes Heather Lissner, acting public information officer for the City of Phoenix Aviation Department. Best of all, Lissner adds, the project will create about 8,000 jobs.

Early projections expect the full system to be up and running in late 2020. That's when PHX will all but eliminate its fleet of shuttle buses — a change that will simultaneously slash operating expenses and vehicle emissions. Initial train service to Terminal 4 alone is expected to reduce greenhouse gas emissions by 5,913 tons per year.

Planes, Trains & Automobiles

Landside traffic congestion at PHX has grown in proportion to the expansion of Phoenix, the sixth largest U.S. city and a regular on the Census Bureau's list of fastest growing cities. With 4.3 million residents, plus millions of annual snowbirds and baseball spring training fans, officials knew local roadways would eventually be unable to accommodate increasing traffic at the airport.

The city envisioned connecting some type of mass transit system to PHX as early as the 1980s, during construction of Terminal 4, says

The tube-shaped 44th Street Station (upper center) connects the PHX Sky Train system to a primary platform of Phoenix's light rail system (lower center) via a pedestrian bridge.



By Greg Gerber



Mark Pilwallis

Mark Pilwallis, senior project manager for Gannett Fleming, the PHX Sky Train facilities designer. In 2005, the city conducted a detailed transportation study to examine the impact the community's growth would have on airport operations.

"The study looked at the real needs of the city and airport and explored how capacity limits would impact daily operations as the facility continued to grow," says Pilwallis. "The study speculated on what the airport would look like in the future and suggested ways to improve capacity. But, eventually, city officials knew they would get to a point where the current road system could not fully handle the airport's ground transportation needs."

System consultant Lea+Elliott prepared the feasibility study that identified various options, including expansions to existing bus service and roadways, adding a dedicated road just for bus traffic, and installing an automated people mover.

"In evaluating our options, we completed simulations as to how quickly we could load people onto and off of buses, and the people mover just made much more sense," says Pilwallis. "We would have had to assist people onto and off the bus, and then secure wheelchairs to the floor. The PHX Sky Train allows people using wheelchairs to roll themselves on and roll off the system quite easily."



Nate Walnum

Additionally, Sky Harbor Blvd., which leads into the airport, could not be expanded because of its proximity to the airfield. That meant additional traffic lanes could not be added, even for pass-through traffic, explains Nate Walnum, an engineer with Kimley-Horn and Associates.



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“The plans basically looked at how long the airport could continue to make improvements and minor fixes until the point that failure of the current transportation system would occur due to unacceptable traffic congestion,” explains Pilwallis. “It became very clear that the airport needed a secondary ground transportation system if it hoped to sustain its current rate of growth.”

At the same time the airport was exploring its options, Phoenix officials were laying the groundwork for the city’s light rail system. Anticipating potential problems associated with increased traffic into and around the airport, city leaders had the vision to factor in a connection to PHX when launching the first segment of light rail in 2008, Pilwallis notes.

A lifecycle cost analysis of PHX’s various options indicated that an automated people mover system would be the most cost-effective solution. Although it required a large initial capital investment — \$644 million for Stage 1 alone — it would allow the airport to eliminate a significant number of buses and reduce annual operating costs over time.

“Eventually, the people mover system will pay for itself,” says Pilwallis.

Marrying the large capacity of a people mover to the existing roadway, explains Walnut, allows the airport to alleviate a consid-

erable amount of traffic from Sky Harbor Blvd. “By connecting the airport to the light rail system at the 44th Street Station, people can access the airport from anywhere in central Phoenix,” he notes. “And business people heading toward the downtown convention center need only step on the PHX Sky Train to begin their journey.”

Using the 44th Street Station will be especially attractive to travelers during peak hours, because they will be able to print boarding passes for all airlines and check luggage for flights on US Airways and Southwest Airlines, two of the airport’s largest carriers.

“This is a great service for our customers,” says PHX’s Lissner. “They can check their bags, then park their cars and be on their way at no additional cost, although airline baggage fees still apply.”

Because luggage needs secure transport from the stations to the baggage control facility, early check-in service will be available during select hours based on passenger traffic levels.

Plans were developed to make connecting between the airport train and Metro light rail as seamless as possible. The floor of the 44th Street Station, for instance, was designed to align accurately with the floor of the people mover to make it easy for passengers to roll luggage, golf bags and wheelchairs on and off the airport’s train. An enclosed pedestrian bridge allows them to access the Metro platform across the street without navigating street-level traffic.

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The flooring of the 44th Street Station is designed to help lead pedestrians to their destinations.

For comfort during Phoenix' hot summers, the train stations at 44th Street and inside Terminal 4 are equipped with air conditioning; the outdoor station in the economy parking area includes fans and a shaded waiting area to keep passengers cool. The station that will serve terminals 2 and 3 will also be air-conditioned.

Many consider the 44th Street Station the project's most prominent and attractive feature. "It's an impressive facility that really stands out at night," says Doug Ostermeyer, director of operations and maintenance for the Phoenix PHX Sky Train.

The station's overall form was inspired by the simplicity and beauty of aircraft design, explains Ernest Cirangle, the HOK designer who created the structure's architecture. "In designing the station, our primary goal was to give a public face and physical connection to the facility that would connect the airport to the city's light rail system," explains Cirangle. "Because it brought together ground transportation, buses, cars and trains, we wanted its image to be an iconic symbol of transportation."

Passengers being dropped off at the station are protected by two opposing cantilevered canopy wings — one side for public vehicles, the other for private vehicles. They then enter a common breezeway that takes them to escalators, which deliver passengers to the elevated PHX Sky Train platform. The breezeway's



Photo Credit: Bob Prezel

blue iridescent ceiling artfully conveys the sense of sky and air travel, notes Cirangle.

Passengers arriving via the Metro light rail system connect to the PHX Sky Train Station through a pedestrian bridge. The floor of its walkway also includes a colorful art installation designed to help guide passengers to their destinations.

"All along the path, passengers encounter architecture and art that enriches their experience," Cirangle explains. "The station is totally about passenger convenience and making it easy for them

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The first of its kind in the world, the PHX Sky Train crosses an active taxiway via a bridge with 80 feet of vertical clearance and 340 feet of horizontal clearance.

to transition from one transportation mode to the next in a stress-free environment. Its sleek contours were created to represent the concept of flight as the visitor's first impression of the airport."

With passengers arriving via Metro, bus, car and cab, PHX's 44th Street Station may represent a new breed of intermodal airport facilities.

A Worldwide First

Designing the train system to flow within the confines of airport property was a unique challenge during the early phases of the project.

To connect with the city's light rail system, planners began the PHX Sky Train route near the 44th Street Metro platform and ran the first alignment along 44th Street to the airport's long-term economy parking lot, so the train could pick up additional passengers. From there, they plot-

ted a course for the train to enter Terminal 4 at a station that straddles the landside and airside of the airport. Doing so would allow passengers to exit the train and proceed directly to the security checkpoint or to connect to other terminals by catching a shuttle bus from the first level.

One major obstacle stood in the way of that plan: an active taxiway.



Ron Sheahan

Ron Sheahan, a principal with system consultant Lea+Elliott, describes the situation as "complicated geometry." The guideway not only had to cross a taxiway, roadways and miscellaneous facilities, it also had to maintain the proper slope and grade so the train could operate at peak efficiency while ensuring passenger comfort and safety.

Designers initially contemplated running the system below the taxiway, then up to the station. But planners discovered that the train couldn't attain the necessary lift quickly enough to make the transition back to the Terminal 4 station.

"We had to come up with an alignment that everyone was comfortable with that still provided good connections to the terminal and parking lot," recalls Pilwallis. "Plus, we had to construct the track and station without causing significant impact to airport operations, all while ensuring the project remained within budget."

Running the train system over the taxiway originally seemed like a long shot, because there was no precedent for it anywhere in the world; but it eventually proved to be the answer, explains Kimley-Horn's Walnum.

"We had no design criteria or examples to follow," recalls Pilwallis. "So, we scheduled some early meetings with FAA officials to ask for their opinion. They suggested we assemble some technical data for them to consider."

The team came up with several designs that would allow 747s to travel under the track.

"It was a fairly comprehensive memo that justified the vertical and horizontal clearances," recalls Pilwallis. "We sought input from the tower to see how it would impact operations and even investigated whether lighting on the train would have some type of negative effect."

After reviewing the background data and proposed designs, the FAA gave PHX initial clearance for a bridge with 80 feet of vertical clearance and 340 feet of horizontal clearance. When the tower staff and airline officials green-lighted the final plan, the project was well on its way in 2010.

The taxiway was shut down for six months in the spring and summer — traditionally PHX's slowest traffic period — so crews could construct a bridge over it. Aircraft were rerouted to another taxiway just 2,000 feet away to minimize inconvenience for the airlines and ground staff.

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Although the structure's 350-foot main span is not out of the ordinary in the realm of bridge engineering, it was considerably more complicated to develop than a standard freeway overpass, relates Pilwallis.

The system, notes Sheahan, is designed to last at least 30 years.

20/20 Foresight

Despite the size and complexity of the project, Pilwallis reports that it included notably few surprises. "We spent a lot of time up front with the aviation staff showing them how the stations would work and how they would impact customer service and airport operations," he explains. "We met with many people to understand how the Phoenix transit system could work within the airport's traffic system so that the airport and city could get the most bang for their buck. Once we had that buttoned down, we looked to see what else the stations could do to make them more functional and flexible."

On-site baggage check-in and the ability to print boarding passes will likely be just two of the passenger conveniences offered. Airport officials expect private businesses to develop hotels, restaurants and coffee shops within walking distance of the station.

The city's decision to bid facility construction under a construction manager at risk contract also helped the project run smoothly, Pilwallis adds. Because contractors were included when the design was just 30% complete, constructability issues were flagged while designers were still finalizing the plans, he explains.

"Once everyone was comfortable in how the PHX Sky Train would work to serve passengers and how it would be constructed within the airport environment, I think we cleared most of the hurdles before construction started," he reflects. "I felt better knowing the contractor was with us early in the project planning so their crew was ready to step forward and begin construction as soon as the final plans were approved."

Walnum similarly attributes the project's success to ample and effective planning. "We really didn't encounter anything unexpected outside of not being exactly sure where some utilities were located," he explains.

Site selection was also significant, notes Lea+Elliott's Sheahan. "We needed a lot of space not only to construct the station and the PHX Sky Train's maintenance/storage center, but to ensure future expansion as well," he explains.

To provide room for the PHX Sky Train track and facilitate planning, the city of Phoenix worked with the Arizona Department of Transportation to convert State Route 153, a six-lane highway, into a four-lane city street (44th).

"The roadbed for State Route 153 was already an approved transit area near the runway protection zone," says Kyle Kotchou, special projects administrator at the City of Phoenix Aviation Department. "So, by reducing the lanes from three to two in each direction, we had enough room on the west side of the road to construct the train alignment."

Preparing for Passengers

In its current state, the state-of-the-art PHX Sky Train includes 18 vehicles, 1.7 miles of guideway and an offline maintenance

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The architecture of the 44th Street Station was inspired by aircraft design.



Photo Credit: Bob Prezel

facility to house and service the fleet of Bombardier Innovia 200 vehicles. The columns that support the guideway are as deep underground as they are tall — up to 125 feet.

The train itself was built in Pittsburgh and trucked to PHX. Each car can hold 53 passengers and has the capacity to carry 2,000 people per hour, per direction. Throughout the day, Bombardier staff can add and remove cars to keep passengers moving at peak efficiency, says Ostermeyer.

While operation will vary according to anticipated passenger demand, a typical day will start at 4 a.m., when Ostermeyer's staff releases four two-

car trains at three-minute intervals. By 9 a.m., the system will typically be reduced to three two-car trains, which continue operating until 9 p.m., when another train is eliminated. A single two-car train will then run continuously throughout the night.

At an average line speed of 23 mph, it takes just three minutes to get from the 44th Street Station to the economy parking area, and another two minutes to travel to Terminal 4. If necessary, the train can travel as fast as 38 mph.

At the request of airport staff, Ostermeyer's team can uncouple a train to run as a single car, or add a middle unit to create a three-car train. The typical configuration will include two cars coupled together at their blunt ends, so their sloped ends make the train look like it is moving forward regardless of the direction it's traveling. In a three-car configuration, the middle unit has blunt ends on both sides.

After the train makes its 1.7-mile journey along the guided track, the software reverses direction and the train's taillights become headlights.

The driverless train is electrically powered, and the stations were designed to require 30% less power than similar facilities. All are expected to earn gold certification in the Leadership in Energy and Environmental Design program because of green construction strategies and energy-saving equipment. More than 50% of all construction and demolition waste created during the project will be recycled or salvaged.

Ostermeyer, who will manage the PHX Sky Train under a 10-year contract, moved to Phoenix from New York City, where he worked on JFK's Air Train. He also helped install an expansion system at Houston's Bush International Airport, and also worked on the Las Vegas monorail.

"The biggest challenge is getting the system set up completely," he notes.

After the cars were mounted to the PHX Sky Train guideway, Bombardier crews began testing the system. In late January, the train completed a crucial precursor to commissioning for passenger service. "We use sand bags as weight to simulate passenger loads at different times of the day," he explains. "The purpose is to make sure we have fleet availability 99.5 percent of the time. By working out any bugs during the demo period, we can prove to the airport that we can run the train according to our contract."

If the system had failed at any point during the 30-day trial, Ostermeyer and his crew would have had to start another 30-day test; but the system succeeded on the first try.

Keeping the Team on Track

Kotchou considers the PHX Sky Train project "by far one of the best" he has worked on for the city of Phoenix. "We had a great team that worked well together because they were constantly coordinating with one another," he explains.

The process, however, was more complicated than usual, because it included two separate contracts: one for the train and another for the stations and guideway. "Getting two contractors

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to coordinate their work together required time and effort to keep everyone working toward the same goal," he relates.

Sheahan notes that managing expectations up front helped alleviate problems and misunderstandings. He cites an example of disagreements about how complete the station needed to be before work could begin on the train: "Everyone was willing to modify their plans and share some of the inconvenience to keep the project moving forward. That enabled both contractors to be working at the same time in the same place."

Having the track builder and train contractor work together also helped ensure optimum ride quality, he adds. The center guide beam and running surfaces called "plinths" were carefully designed to fit into the space and curvature of the track, Sheahan explains. Civil engineers, in turn, designed the track so loaded trains could cruise along a 6% grade with minimal tweaking needed to navigate curves and slopes.

"The project was not without its challenges," notes Pilwallis, "but the teams gelled together quite well and, from my experience, it was a fun project to work on. When working on a project of this size, relationships can sometimes be strained before the work is finished; but all the contractors on this project still enjoy great working relationships with each other."

Kotchou concurs: "You expect issues on big projects, but this one has been very smooth and clean."

Sheahan credits city leaders for developing "an end-game solution" that encouraged various contractors to solve potential issues. "That created a productive environment that allowed all major players to make good connections to move the project forward," he explains.

"I'm excited to ride it," says Walnum. "We've been involved in the design process for 10 years. I am anxious to see how it really works."

Next Stop: Terminal 3

With Stage 1 of the project not officially open, the airport has already begun work on Stage 1A, which will bring train service to PHX's other two terminals in early 2015. That stage will require a .7-mile guideway extension and continued air-side dexterity, because the train will pass beneath two taxiways before climbing to an elevated station at Terminal 3. A new walkway will connect to Terminal 2.

Estimated cost for Stage 1A is \$240 million. When it is complete, officials plan to eliminate the airport's remaining parking shuttles and all inter-terminal and Metro connection buses.

Stage 2, still in planning, will link the PHX Sky Train to the airport's consolidated rental car center. When that 2.5-mile extension is complete, the airport will retire its remaining buses — and further reduce associated emissions, expenses and landside traffic. ✈️

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Naples Municipal Stops Cracks on Primary Runway with Reinforcing Grid

By Jennifer Bradley

factsfigures

Project: Runway Rehabilitation

Location: Naples (FL) Municipal Airport

Runway: 5/23

Length: Expanded to 6,600 ft.

Total Cost: \$2.3 million

FAA Funding: \$2.2 million

Engineer: Kimley-Horn & Associates

Asphalt Mix: P401

Supplemental Product: GlasGrid® Pavement Reinforcement System 8511

Amount Used: 30,000 sq. yds.

Manufacturer: Saint-Gobain ADFORS

Nat'l Distributor: Tensar Int'l Corp.

FL Distributor: National Highway Maintenance Systems, Ltd.

Contractor: Better Roads

Subcontractor/GlasGrid Installation Team: Landsaver Environmental

Rehab Completed: Dec. 2010

Extension Completed: Jan. 2012

Related Projects: Runway Safety Areas & Jet Blast Deflectors

Jet Blast Deflectors: Blast Deflectors Inc.

General Contractor: Owen-Ames-Kimball Co.



"Asphalt is like skin," says Tom O'Donnell, an engineer from Kimley-Horn & Associates. "After time and wear, it shows its age. If you get to the cracks early enough, however, you save a lot of money."



Tom O'Donnell

Naples Municipal Airport (APF) in Florida tended to its cracks in 2010, after officials learned its primary and longest runway, 5/23, needed serious work. When maintenance personnel detected deep cracks in the asphalt very close to the foundation on the south side of the runway, the airport contracted Kimley-Horn & Associates to devise a rehabilitation strategy.

Simply milling the asphalt then repaving and sealing the runway wasn't an option, explains O'Donnell. So he turned to Bill Leahy, manager of National Highway Maintenance Systems, to help provide APF with a healthy runway for the next 20 years.

Halting the Cracks

The FAA appreciated the airport's timely detection of the pavement stress and funded about 95% of its \$2.3 million rehabilitation, reports Ted Soliday, executive director at APF.

Certain sections of the pavement had not been improved for more than two decades,

and some of the base material dated back to the 1940s, when the runway was built. "It was in serious condition," Soliday recalls.

Several years prior, part of Runway 5/23 had been dug up and promptly repaved in an ultimately unsuccessful attempt to determine what was distressing the asphalt pavement. But O'Donnell advised against paving over the problem once again, and Soliday agreed.

Leahy recommended fortifying the pavement with GlasGrid® Pavement Reinforcement System 8511 based on a number of factors, including the results of nondestructive testing and South Florida's climate, which can cook airport pavement at temperatures up to 150° F. The runway's visible network of longitudinal and transverse cracking, and the associated low Pavement Condition Index score it earned, were also key considerations.

According to the product's manufacturer, Saint-Gobain ADFORS, GlasGrid doubles or triples the lifecycle of asphalt by reducing reflective cracking — a primary issue on Runway 5/23. The product has always been a good fit for airports, and its performance claims are backed by 20 years of testing, notes Dan Hunt, the company's product sales manager

GlasGrid was commercialized back in 1989, adds Greg Lyons, technical service manager



Ted Soliday



Dan Hunt

for Saint-Gobain ADFORS. The first airports to install it — Toronto Pearson International and Winnipeg James Armstrong Richardson International — have continued to use it for subsequent projects, he reports.

Leahy commends APF for choosing GlasGrid, a product he puts in the “you-get-what-you-pay-for” category. While he acknowledges that it’s more costly than other asphalt remedies, he stresses that it provides a long-lasting runway that saves on overall maintenance expenses.



Greg Lyons

Saint-Gobain ADFORS describes the product as a mesh-like mat made of fiberglass that is coated in elastomeric polymer to protect the fiberglass fibers and maximize the product’s overall tensile strength.

Tensor International, the exclusive distributor for the GlasGrid product line in the Americas, explains that GlasGrid complements asphalt pavement, which possesses good compressive strength, but cracks under tensile stresses caused by temperature changes and heavy loads when it’s not otherwise reinforced. “The time comes when the surfaces are deteriorated to the point that the cracks need to be sealed,” explains Scott Whaley, Tensor’s regional sales manager. “But when surface water gets in the cracks, it can compromise the subgrade and overall pavement structure.”

Runway Extension Optimizes Resources

About a year after Naples Municipal Airport (APF) finished the rehabilitation of Runway 5/23, the Naples Airport Authority improved it again by investing \$3.6 million to add safety areas and 102-foot-long jet blast deflectors to both ends.

As with the previous project, it was important to have the airport’s primary runway open to traffic for the Thanksgiving holiday and annual influx of snowbirds from the north. Crews completed the work in just less than four months.

Executive Director Ted Soliday notes that the runway improvements enhance three vital areas for the airport: sound attenuation, safety and service.

The new pavement required for the safety areas also provides an additional 800 feet of takeoff length, which allows aircraft to climb higher more rapidly and, in turn, reduces associated noise for airport neighbors. In addition, the extra length also provides supplementary runway space for aborted takeoffs or emergencies that may arise.

Potentially, the runway enhancements could help pave the way for the return of commercial service to the airport. With strictly general aviation traffic, APF logged more than 87,000 operations in 2011.



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GlasGrid, he continues, provides a tensile element between the new asphalt overlay and the existing asphalt — an element that distributes loads from the cracks laterally rather than vertically and delays the rate at which cracks rise again. In addition, the product's pressure-sensitive adhesive provides a strong bond to the leveling course, which allows crews to use less asphalt tack and saves time and money, Lyons adds.

Both O'Donnell and Soliday deem the product a success at APF. It helped solve the reflective cracking issue on Runway 5/23, and prevented further cracks from initiating, they report.

"GlasGrid solves an old problem in a better way," notes O'Donnell.

After more than two years since the installation, Soliday is glad the airport followed the advice of its engineering and product advisors. "Putting that down was the right thing to do, and it has worked well," he reflects.

Leahy also stands by the choice of a "value-added product," and predicts it will demonstrate its financial worth many times over. "(Airports) want it done once, want it done right and want it to last a long time, with decreased maintenance costs," he explains.

Soliday likes that sentiment. "We don't break budgets," he says, noting that prudent spending has helped airport management form a trusting relationship with its board members. They appreciate timeliness and staying on budget, he adds.



Snowbird Scheduling

While most airports plan runway work around local weather forecasts, APF was more attuned to conditions halfway across the country when scheduling its 5/23 rehab. The runway had to be ready before temperatures "up north" dropped and drove snowbirds south to APF in flocks of private and chartered aircraft.

Although the South Florida airport is certified for commercial traffic, it hasn't had any for years. JetBlue Airways recently considered adding service, but officially suspended its evaluation last fall. In 2012, however, APF was named the state's general aviation airport of the year by the Florida Department of Transportation.

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Crews rehabilitated the primary runway at Naples Municipal by (1) sealing existing cracks, (2) milling previous pavement (3) verifying thickness of new asphalt and (4) applying GlasGrid reinforcing layer.

Given the airport's distinctive customer base and scheduling constraints, O'Donnell considered it essential to understand the project's unique needs. But those needs changed dramatically when the airport's resident engineer retired mid-project. Resolute about staying on schedule, Soliday personally took over the project. "You get the work done," he reflects.

The "team aspect" became very important, and the engineering group, general contractor, subcontractors and airport personnel all contributed to the project's successful completion, recalls Leahy.

Good communication with the airport's 400+ tenants was also an important aspect, adds Soliday. With notification that the airport would close for 1½ days, aircraft owners "checked on their houses" before the shut-down. "It was neat to see them all fly in," he recalls.

O'Donnell, a self-described taskmaster, worked multiple crews at full speed to expedite the runway work. "An airport's an important thing to the community," he notes. "So when you shut it down, it's a big deal."

Soliday couldn't agree more, and was disappointed that controllers had to divert some traffic to surrounding airports. "But we did get it done and open before our season started, which was critical," he relates.

APF's marketing campaign encourages travelers to "Fly Naples;" airport officials reason that ongoing improvements like the rehab of Runway 5/23 will help facilitate that for a long time to come. ✈️

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The \$1 million fuel system at Victoria Regional includes a 20,000-gallon Jet-A tank and a 12,000-gallon self-service Avgas system.



Texas Helps General Aviation Airports Upgrade Fuel Systems

By Victoria Soukup Jensen



factsfigures

Project: Fuel System Design/Assistance Program

Administered by: Aviation Division, TX Dept. of Transportation

Funding: FAA Block Grants

Who Benefits: Gen. Aviation Airports throughout TX

Participants to Date: 6

Total Funds Awarded: \$3+ million

Pending Requests: 6

Sample Participants: Cleveland Municipal Airport; Victoria Regional Airport

Engineering Firm: Argus Consulting

System Types: Avgas & Jet-A for delivery to parked aircraft; Avgas self-service

Tank Sizes: 6,000 - 20,000 gal.

Tank/Skid Mfr.: Bassco

Self-Serve Fueling Terminal: QT Technologies

Program Strategy: Qualifying airports tailor template fuel system designs to their specific sites. Using a template saves design, installation & maintenance expenses. Overall project cost split is 75% TxDOT, 25% airport.



Airport Manager Alf Vien snagged a major bargain for Cleveland Municipal Airport before he retired earlier this year. The single-runway nontowered Texas airport recently installed a new fuel system, complete with a 6,000-gallon above-ground Avgas tank and self-service pumps, for \$200,000; but Vien spent only \$50,000 of municipal funds to purchase it. A program administered by Texas Department of Transportation (TxDOT) provided the \$150,000 difference.



Alf Vien

With Vien's initial research indicating a new system could have easily cost \$500,000, the airport's bill for \$50,000 was relatively painless — especially since maintaining its aging 10,000-gallon underground tank was becoming increasingly painful. "It was getting very old (30+ years), and we were starting to have trouble getting equipment such as pumps for it," he recalls. "It was time to upgrade."

The small airport, however, could not afford to shoulder the cost of a new system by itself. Visiting nearly 20 other Texas airports left Vien discouraged about prevailing prices for a replacement system; so he was elated to learn about the state-run grant program. "By keeping the costs down, it was affordable for both the city of Cleveland and TxDOT," he explains.

After running the airport and its fixed-base operation for 27 years, Vien is thrilled with Cleveland Municipal's new system and predicts it will make the facility more competitive for local fuel sales. The self-serve equipment and aboveground tank literally brought the airport into the 21st century, he notes. Crews completed the installation in mid-February.

Communal Designs

The TxDOT program that enabled the transformation at Cleveland Municipal uses FAA block grants and a set of shared system designs to defray the cost of fueling infrastructure upgrades at the state's general aviation airports. The program covers 75% of design and construction expenses; qualifying airports/municipalities pay 25%.

To date, Texas has spent slightly more than \$3 million and improved six airports via the program, reports Greg Miller, planning and programming director of TxDOT's Aviation Division. Last year was the program's most active, he adds, with four projects completed. Requests from six airports are currently being evaluated.



Greg Miller

By providing fuel system templates for use by general aviation facilities throughout the state, TxDOT defrays the cost for individual

airports, Miller explains. Designs include receiving, storage and distribution equipment specifications for Jet-A and Avgas systems. "There are things that are common to all the systems, so you don't have to start over with each airport," Miller relates. "Smaller general aviation airports are given the opportunity to upgrade their aircraft fueling facilities by getting involved with a contractor to install an engineered system, which can be faster and cheaper than if they did it on their own."

Adaptations to the standard designs are made to accommodate specific needs and conditions at each airport. Beginning with a template, however, streamlines the process, notes Miller.

TxDOT hired Argus Consulting, an engineering firm that specializes in complex petroleum systems, to develop its system standards and subsequently design the shared templates. The firm's previous experience spans commercial, military, general aviation and railroad fuel systems and includes work with the U.S. Army Corps of Engineers and the U.S. Air Force Air Combat Command.



Dan Frank

After completing a comprehensive analysis, including code and hydraulic reviews, Argus developed three fuel system designs, explains Dan Frank, PE, vice president of engineering at Argus.

Two of the systems – one for Jet-A, another for Avgas – are designed to load refueling trucks that deliver fuel to parked aircraft. The third is an unattended, self-serve Avgas system that pilots operate. All three employ aboveground, shop-fabricated tanks; tank capacities range from 6,000 to 20,000 gallons.

Argus engineers designed the pumping/filtration and dispensing systems as pre-manufactured skids to reduce costs and on-site construction time. The systems are also designed to save airports money by minimizing future maintenance costs. Argus' extensive aviation experience and code knowledge help ensure quality and reliability, Frank notes.

"With the development of the standards and our specifications, everyone gets a safe system — a system that's going to function for a number of years," he adds.

Victory in Victoria

The \$1 million fuel system at Victoria Regional Airport (VCT), southwest of Houston, is one of the program's largest installations. The system, which supports traffic for four runways and a helipad, includes a 20,000-gallon Jet-A tank and 12,000-gallon Avgas self-service system that allows pilots to purchase fuel with credit cards. Both systems included transport unloading and refueler loading skids, as well as fencing, roadways for transporting fuel and a spill-containment basin.

"We definitely would not have been able to do this without TxDOT's assistance," notes Airport Manager Jason Milewski. "Financially, it would have been cost-prohibitive."



Jason Milewski

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Officials at Cleveland Municipal expect a new self-service Avgas system to help the single-runway airport stay competitive for local fuel sales.



A lack of replacement parts was making it difficult to keep VCT's previous 25-year-old equipment operational. "When our fuel system would go down, it cost the airport quite a lot of money in lost revenue," explains Milewski. "And we consistently – and constantly – had operational issues."

The airport, which averages 60,000 takeoffs and landings each year, values the financial and logistic support provided by the program. The grant allowed VCT to increase its fueling capacity while replacing aging underground tanks with aboveground equipment.

TxDOT's hands-on assistance reduced the everyday strains of infrastructure improvements. "They actually managed the entire project," Milewski says. "It's been fantastic. We're used to doing everything ourselves. This allows us to focus our resources elsewhere."

A Texas Tradition

TxDOT determines which airports qualify for assistance by analyzing the "business argument" behind each facility's request, explains Miller. Aviation Division personnel review runways, taxiways and


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other basic infrastructure in addition to balancing revenue potential with startup and maintenance costs. The ultimate goal is to predict how much a new system will help each facility's bottom line.

"It (the new fuel system) produces revenue for the airport, which is what we want to support," Miller says. "We'd like to see the airports maintain the system and use it to support and promote their facility."

Once an airport receives the initial go-ahead from TxDOT, Argus completes a site survey, conceptual design, preliminary engineering report and cost estimate. After final approval is secured, the firm then develops a more detailed design that includes spill-containment specifications, electrical power, drainage, roadways, security and other site-specific elements. An open bid process is used to select contractors, and Argus makes site visits and reviews compliance submittals during construction to ensure installations meet original design standards.

The program's benefits and results warrant its cost, says Miller. "It helps the whole community when you develop a more sustainable level for a general aviation airport," he explains.

David Fulton, TxDOT Aviation Division director, connects airport improvements to the state's overall economic growth, noting that


more jobs are being created each year in Texas than in all other 49 states combined.

"Texas is the fastest growing state in the nation," Fulton says. "We are committed to continuing to improve Texas airports to ensure that companies using business aviation have the access and facilities necessary to support future economic growth."



David Fulton

The sentiment and proactive approach are nothing new, adds Miller. During the past two decades, the state has spent more than \$1 billion improving its 278 general aviation airports, he reports. Projects included runway repairs, taxiway upgrades, installation of navigational aids and the construction of aprons, hangars, terminal buildings and control towers.

"We've worked hard to help improve the airports in the last 20 years," he says. "Once the airside needs are met, the next phase of development at an airport may be to sell fuel so it's a one-stop proposition for pilots." 

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New Jetport Becomes Front Door to Tennessee Business Region

By Greg Gerber

factsfigures

Project: New Airport

Location: Cleveland (TN) Regional Jetport

Total Cost: \$42.3 million

Terminal Cost: \$1.6 million, including technology

Funding: 90% state & FAA; 10% local

FBO: Crystal Air

Prime Designer: PDC Consulting

Engineering: A2H Engineering

Terminal Designer: Rardin & Carroll Architects

Prime Contractor (Terminal): J&J Contracting

Prime Contractor (Airport): Wright Brothers Construction

Prime Paving Contractor: Hinkle Contracting

Lighting: Guardian Electric Corp.

Stone Provider: Vulcan Materials

Environmental Permitting: S&ME

Video Displays: Wheeler Communications

LED Airfield Lighting: ADB Airfield Solutions

Prime Lighting Contractor: Guardian Electric Corp.

Stream Mitigation Contractor: Backwater Environmental



Cleveland, TN, is a small-town community with big-city business partners. What it didn't have was an airport capable of serving its partners' travel needs. But that recently changed, when Cleveland Regional Jetport (RZR) opened in late January, replacing the area's previous airport, Hardwick Field.

With a 5,500-foot runway and new 8,000-square-foot terminal building, RZR is proving to be a better fit for Fortune 500 companies including Whirlpool, Amazon and Coca-Cola.



Mark Fidler

“This is a dynamic facility designed to meet the needs of those companies which have a business relationship with the city,” explains Mark Fidler, RZR's director of operations. “Now that it is open, it's a tremendous timesaver for business executives who, in the past, had to fly into Chattanooga and drive to Cleveland.”

With just 41,285 residents, Cleveland has a surprisingly large population of corporate

heavyweights. Proctor & Gamble, Merck Pharmaceuticals, Volkswagen, M&M Mars and many other business icons also have major manufacturing centers or warehouses in the community. Although Cleveland is a relatively small city, it's located in the center of one of the fastest growing regions in the United States and close to the borders of Alabama, North Carolina and Mississippi.

Cleveland's new airport was in the “development stages” for more than 40 years, inching along with every change in city administration, relates Fidler. After considering a plan to expand Hardwick Field, the city opted to build a new facility on a new site. The FAA and state funded 90% of the \$42.3 million project, and the local community paid for 10% of the cost.



Steve Carroll

“Hardwick Field served the community well for many years, but it had become one of the worst, if not the worst, airport in Tennessee,” explains Steve Carroll, principal with Rardin & Carroll Architects, the firm that designed

Designers used stone and wood finishes to help create the feel of a mountain lodge in the main lounge.



RZR's terminal. "For a city that was attracting international industry, having a small airport was becoming problematic."

Built on property donated by a prominent local family, Hardwick Field had become landlocked by a neighborhood of affluent homes and a private school that were added as the city grew around the airport. In addition, its 3,300-foot runway was simply too short to fully accommodate many corporate jets. The largest aircraft that could safely use the facility was a 12-seat jet, and it required every inch of runway to achieve takeoff speed, explains Carroll. Smaller jets had to pull up so fast that pilots risked clipping trees, he adds.

When Tennessee's governor came to Cleveland for ribbon-cutting ceremonies or meetings, his plane could land at Hardwick Field, but would have to depart from Chattanooga. That required pilots to reposition the empty aircraft and staffers to add a 30-minute drive to the governor's schedule.

Now that RZR is fully operational, Cleveland can accommodate a variety of corporate aircraft, including "heavy iron." City officials plan to sell land at Hardwick

Field to help pay for the new terminal and other infrastructure improvements.

Finding the right land for the new airport proved to be an ongoing problem. As soon as the city selected a location, one of the property owners would back out, recalls Fidler. "We never wanted to exercise eminent domain," he explains. "We wanted this to be a community project where everyone felt comfortable with building a new airport in the right location."

Eight years ago, he adds, city officials got serious about building a modern airport. Lynn DeVault, a former executive at Northwest Arkansas Regional Airport, took the reins of the project and vowed to make the new airport a reality.

"She had the right combination of leadership experience and aviation skills to move the project along," explains Fidler, noting that DeVault pulled together multiple community resources. These days, she chairs the Cleveland Airport Authority.

FAA officials were also involved in the process, guiding the airport team through various forms and applications needed to get the project approved.

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Still Waters

PDC, designer and prime engineer for the project, conducted two site selection studies: one to expand the old airport and another for a new site. PDC Vice President Mark Paslick, who was involved with the airport for fully half of its 40-year development period, recalls being nervous about the narrow configuration of the land acquired to construct RZR.

“At that time, we thought it was pretty tight for airport use, because the property is wedged between a railroad and a highway. Although one end is next to open farmland, the other end was adjacent to an industrial park,” explains Paslick.

The site also drew attention from state and federal regulatory agencies. “I have done eight airport projects, and this one had more public projects done under federal contract than any of the others,” he reflects.

To make the property functional, the airport figured it would have to relocate a county road, replace an aging bridge and — the biggest hurdle — reroute a creek meandering through the site. PDC’s design eliminated the need for a new bridge by relocating a segment of the Little Chatata Creek that was already considered impaired due to sediment and e-coli contamination from cattle.

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"We had to create a pathway for the creek to pass underneath the property through a viaduct that empties into another meandering stream," Fidler explains.

A "three-barrel culvert" that measures 9 feet high and 600 feet long was part of the fix. In addition, consultants from Backwater Environmental developed a plan to recreate 3,500 feet of streambed. "What we thought was a ditch, they identified as a stream," recalls Paslick. "The discovered tributary (to Little Chatata) increased the total stream length being mitigated to 3,800 feet."

The Tennessee Department of Environment and Conservation also required the airport to create a mitigation site on the other side of town, notes Fidler. The effort was "very time consuming and expensive," he recalls, but ultimately created a "beautiful park" with 30 acres of walking trails for local residents.

The RZR project was the first of its kind to receive an individual environmental permit from the state, notes Paslick. In order to obtain the permit, PDC had to ensure that no construction sediment would enter the stream; so crews created eight sediment ponds to collect water on the site.

"Engineers did a good job creating sediment basins throughout the 100-acre work zone," recalls Jason Rogers, project manager with Hinkle Contracting. "If erosion started to occur, they made sure the dirt was directed into those basins."

When the bulk of the earthmoving was complete, workers filled the basins with dirt and rock from other parts of the field. Sod was also placed around the full length of the runway to ensure dirt wouldn't blow across the pavement.

Leveling the Field

Paving contractor Hinkle Construction subcontracted the excavation of concrete pavement to Wright Brothers Construction. Shortly after officials broke ground for the new airport in late 2010, its crews moved 2.3 million cubic yards of dirt and other material to flatten the land and make it suitable for RZR's 5,500-foot runway. With no obstruction issues on either approach path, about 85% of all commercial jets can land at RZR. And plans are already underway to extend the runway another 500 feet — hopefully this summer, Fidler notes.

Wright Brothers crews also erected erosion control measures throughout the airport property. "Tennessee has one of the most stringent erosion control regulations of any state," says

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When designing Cleveland's new airport, architects solicited input from commercial pilots, chamber of commerce members, city officials and local tenants at the previous airport.

Rogers. "If you are going to move dirt in Tennessee, you better have your ducks in a row."

Officials are strict about the issue because of the state's agricultural base, explains Rogers: "(They) don't want silt or contaminants to make their way onto area farmland." The state's water resources are also tightly regulated to ensure farmers have adequate, quality irrigation for their fields, he adds.

"Wright Brothers installed three levels of silt fencing — miles of it — to help control erosion," reports Paslick. "They kind of

overdid the environmental protection, but everyone was pleased with the outcome."

With 2.3 million cubic yards of excavated material, crews didn't have to bring in fill from outside the airport for the "balanced site." They did, however, have to constantly lay down grass seed, recalls Rogers. State law requires construction crews to plant temporary grass if dirt is not going to be moved within 15 days; and because so much dirt was moved during colder winter months, grass wouldn't grow quickly enough to stabilize the ground. Hinkle consequently used multiple erosion control devices: blankets, flocculant logs, sod and hydroseeding, a seed/mulch mixture that stabilizes dirt and helps grass seed take root.

"We won several awards for the environmental aspects of the project that redirected the stream and implemented erosion control devices," says Paslick. "TDOT (Tennessee Department of Transportation) takes people out there all the time to show how we managed to control water flow on the property."

Another water source on the airport presented a different type of challenge when an 18-inch cast-iron water main serving nearby communities burst. "Fortunately, we were in the process of replacing it anyway and were able to reconnect the main the same day it burst," Paslick recalls.

A major rainstorm presented yet another water-related challenge; but like the burst pipe, the crews endured.

After workers finished the design work and grading in June 2012, Hinkle Contracting laid a 9-inch gravel sub-base for the runway, taxiway, ramp and 9-acre apron. On top of that, workers poured 11 inches of concrete — nearly 166 million pounds — to form the 5,500-by-100-foot runway and full-length



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taxiway. An on-site mixing plant helped facilitate the pouring of 150,000 square yards of concrete.

With the runway in position, crews built a 10,000-square-foot storage/maintenance hangar already being used by 35 based aircraft and dozens of recreational aircraft that visit RZR. In February, Paslick reported that a contract was underway to erect an even larger hangar for one of airport's major tenants, and another tenant was asking for a similar facility.

The airport is the first in Tennessee to use all LED airfield lighting, notes Fidler. "It's a spectacular system," he says, noting that at the lowest power settings, it emits the same intensity of light as a conventional system but uses 10% as much power.

Be Our Guest

RZR's 8,000-square-foot terminal building includes a dedicated pilot lounge with a kitchen, resting area, shower and two soundproof sleeping rooms that are accessible 24/7 with coded entry.

"A pilot who has a long break between flights can go jogging or exercise, shower and be ready for the next leg of the flight," notes Fidler.

The common area features a 70-inch high-definition television, and wireless Internet access is available throughout the facility. The meeting area has a 50-person conference room with three active video screens and automatic shades. Two smaller rooms, which can seat 12 and 14 people, make ideal breakout rooms, says Fidler.

The three conference rooms are all integrated with state-of-the-art audio and visual capabilities that enable customers to conference in other participants from around the world, he adds.

A full kitchen area off the conference room allows for catered meals, and RZR offers office space for short- or long-term leasing. Companies can fly people in for a board meeting, break for lunch, then break out into separate meeting rooms and never leave the facility, says Fidler.

"A lot of the commercial airports we visited had limited ability to do corporate meetings or to cater to corporate clients," notes Carroll. "Creating a corporate conference center was a huge benefit to the Cleveland community."

Enterprise and Thrifty provide rental cars for passengers, and RZR provides complimentary crew cars for corporate pilots.

"We have done everything we believe possible to make our guests feel comfortable when visiting us," says Fidler. "We want people to feel at home. Whether they are business people or recreational pilots, we want them to know they are welcome in Cleveland. By encouraging people to visit us, hopefully, they will decide to conduct business here."

Local Input

Carroll has worked on several architectural projects for the city of Cleveland, but he was extra excited about the RZR terminal. "My family has lived in the Cleveland area since 1840, so I

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A 5,500-foot runway with full-length taxiway accommodates a larger range of corporate aircraft than the previous airport's 3,300-foot runway.



was especially proud to be able to contribute to this project," he explains.

The Rardin & Carroll team assembled a design committee of commercial pilots, chamber of commerce members and city officials to visit four airports in east Tennessee and north Georgia for ideas about serving business customers. Local pilots with hangars at the existing airport were invited to submit wish lists of features they wanted in a new facility.

"We felt a lot of things were changing in the corporate and aviation world, and Cleveland didn't want to miss out on those trends," explains Carroll. "The pilots offered invaluable input about what we needed to provide and, more importantly, what we didn't need to provide. That helped us keep costs down by focusing on the most essential services."

User input and touring other recently constructed terminals gave his firm a clear and concise idea about what to include in the final design, he recalls. The team designed the terminal to be the front door for the Cleveland Chamber of Commerce and others who market the community and are involved in indus-

trial recruitment. The goal was to make the two-story building represent Cleveland's small-town culture while also projecting its forward-thinking ways, he explains.

The firm created several design iterations before the final plan was accepted. Carroll describes the terminal as a "high-class Tennessee mountain lodge with high-tech applications." Its metal roof and exterior accents of stone and stucco are indigenous architecture elements, he adds.

Visitors entering the main lobby are greeted with two banks of 14 integrated video screens mounted into stone and wood columns. The screens display advertising for local businesses and information about the region. Because they are digitally controlled by a vendor, content can be quickly changed to promote a special meeting or community event, Carroll notes.

"The video screens help to create an open marketplace that depicts the best that Cleveland has to offer," he says.

Internal & External Feedback

Fidler compliments Hinkle Contracting for "going above and beyond to ensure the project would be completed on time and within cost." He also credits the Tennessee Department of Transportation for "keeping the ball rolling."

He also praises the entire team: "Once everyone got working in earnest, the project was laid out so everyone knew exactly what needed to be done, and what their roles would be from one day to the next. They stuck to their plan, and it turned out to be a really exceptional experience."

The airport, in turn, received compliments during its dedication ceremony in January. "Visitors considered the terminal to be spectacular because it offers beautiful vistas of the local area," Carroll reports. "Pilots commented on how the positioning of the runways make the airport accessible from just about every direction."

Visitors, he explains, are impressed that a community of Cleveland's size could develop such a quality facility.

Paslick credits the architects for capturing the city's culture: "The downtown area looks like any small town in America. The community is spread out and dotted with these beautiful, older, renovated and well-kept homes. But, right outside the city, there are three industrial parks filled to capacity, and the city is planning on developing a fourth."

The new airport, he notes, conveys Cleveland's small-town culture with an industrial flair. 

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CDC Report Reignites Debate About Smoking in Airports

By Rebecca Douglas

factsfigures

Project: Secondhand Smoke Study

Sponsor: Centers for Disease Control & Prevention

Airports Tested: 9 (all large U.S. hubs)

Non-Smoking Airports: Chicago O'Hare Int'l; Fort Lauderdale-Hollywood Int'l; Orlando Int'l; Phoenix Sky Harbor Int'l

Airports with Designated Smoking Areas: Denver Int'l; Hartsfield-Jackson Atlanta Int'l; McCarran Int'l; Salt Lake City Int'l; Washington Dulles Int'l

Methodology: Researchers used air monitors to measure the level of respirable suspended particulates, a marker for secondhand smoke. The median time spent at each site was 30 mins. Tests were conducted sometime between 7 a.m. and 11 p.m.; Oct. 19 to Nov. 1, 2012. Airports were not notified the tests would be performed.

Results: The average particulate level in smoking areas was 16 times the average level in nonsmoking areas of airports that allow smoking & 23 times the average level in airports with no-smoking policies. The average level in areas adjacent to smoking areas was 4 times the average in nonsmoking areas at airports that permit smoking elsewhere & 5 times the average level in airports without smoking areas. Particulate levels in the gate areas of both groups of airports were not significantly different.

Complete Report: www.cdc.gov/mmwr

Smoking is not permitted anywhere inside the terminals at O'Hare International Airport in Chicago; but guests at Hartsfield-Jackson Atlanta International can light up in 12 designated smoking areas spread throughout all seven concourses. Tampa International takes a somewhat middle-ground approach by providing five outdoor smoking patios. The facilities on the sterile side of TSA checkpoints are enclosed by chain-link fencing for security and outfitted with electric lighters for smokers' convenience.

Ever since the FAA banned smoking on all commercial U.S. flights (a process that spanned from 1988 to 2000), the onus has been on individual airports to set policies that govern passengers on the ground. Customer input and public opinion, often expressed in hyperbole and desperate appeals or demands, simultaneously pulled airports in opposite directions.

Currently, the vast majority of U.S. airports ban smoking inside their terminals. Just five of 29 large hubs allow it (see list, left), and that number will likely continue to drop, as one of the five, Denver International Airport (DIA), is actively transitioning to a smoke-free environment.

Until recently, DIA had four smoking facilities. Three closed at the end of last year with cooperation from their operators; the fourth is scheduled to close in 2018, when the lease for its space expires. Smokin' Bear, the company that operates the fourth and final smoking lounge in conjunction with Timberline Steaks & Grill, was the only concessionaire that didn't agree to toss out its ashtrays — despite appeals from DIA and direct pressure from Denver's mayor.

Underscoring the health orientation of the airport's changes, one of the defunct smoking concessions previously operated by Airport Lounges will become a Jamba Juice stand. The company will turn its other previous smoking lounge into a full-service bar and barbecue restaurant called Aviator's Sports Bar.

An official from Airport Lounges told *The Denver Post* the new policy at DIA "was a long time coming" and that changes in attitudes toward smoking had caused a drop in business. Airport Lounges also operates Pour La France, a bar and restaurant/takeout location in Concourse B.

Quiz-DIA, which operates the Mesa Verde Restaurant and Bar in Concourse A, is transforming the smoking area inside its facility into a patio and additional seating.

Per usual, the concessionaires are paying for renovations to their airport spaces; DIA is extending the leases of the new non-smoking businesses.

Fueling the Flame

Until recently, domestic and international passengers had largely grown accustomed to different airports having different smoking policies, and operators began receiving fewer comments on the issue. Then a November 2012 report from the Centers of Disease Control and Prevention (CDC) reignited the topic faster than a Zippo lighting a Marlboro.

The report compared the indoor air quality at nine large U.S. hubs — five with designated smoking areas and four that ban all indoor smoking (see Page 60 for both lists). The “smoking airports” came under pressure when the report received national media attention and subsequent coverage in local markets.

CDC researchers found that the areas adjacent to smoking facilities (3¼ feet away) were, on average, five times more polluted than the air in nonsmoking airports. The results take direct aim at

the strategy of providing designated smoking areas to limit health risks only to willing smokers.

“Separate, ventilated smoking areas are not effective,” says Brian King, Ph.D., CDC epidemiologist and lead author of the study. “The only way to eliminate the health risk of secondhand smoke is to remove it completely.”

Headlines warned of “health risks at airports allowing smoking” and coverage focused on smoke leaking and seeping from airport smoking rooms.

“Significant secondhand smoke exposure is going on,” stresses Tim McAfee, director of CDC’s Office on Smoking and Health. “These are unnecessary dangers for airport employees and passengers.”

On average, pollutants inside various smoking areas were found to be 23 times higher than levels in gate areas of non-smoking airports. The air quality inside bars and restaurants that permit smoking was found to be even worse. Four such facilities that were tested averaged 34 times more contaminants than the nonsmoking airport group; the most polluted had 69 times more.

“These are not healthy environments for travelers or airport employees,” says King. He found the presence of children in some of the enclosed smoking areas particularly troubling.

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Source: Centers for Disease Control and Prevention

In contrast, the average air quality in non-smoking gatehold areas of “smoking airports” was found to be comparable to the air quality in gates at airports that ban indoor smoking. Contaminant levels were slightly higher, but researchers characterized them as “not statistically significant.”

The report implicates commercial forces in the more problematic results: “Certain tobacco product manufacturers have promoted and paid for separately enclosed and ventilated smoking areas in airports and have opposed efforts to implement smoke-free policies in airports.”

Documents chronicling the tobacco industry’s involvement with specific airports and airport organizations are posted on the website of The University of California, San Francisco, which maintains the Legacy Tobacco Documents Library. Americans for Nonsmokers’ Rights also provides summaries of and links to the documents.

Officials at the airports that were tested did not receive notice the researchers were coming — a standard CDC practice after subjects in early secondhand smoke studies of other industries modified facilities in an attempt to influence test results. As of mid-February, airport officials had not received results regarding the air quality in their facilities. The report listed specific readings for individual airports, but did not identify airports by name. (Tables refer to Airport A, B, etc.)

Together, the five airports that allow smoking boarded about 110 million passengers in 2011. The figure concerns CDC, given the documented health dangers of direct and secondhand smoke, including death and serious illnesses such as heart disease, lung cancer and Sudden Infant Death Syndrome.



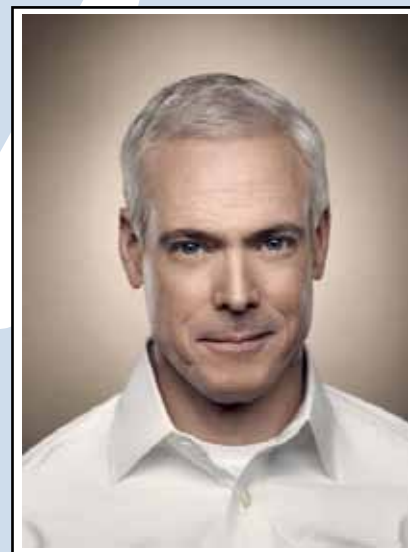
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Two Masters to Serve

As the world's busiest passenger airport since 1998, ATL holds a key position in the smoking/no-smoking debate; and Aviation General Manager Louis Miller is steadfast about the benefits of providing designated smoking areas. He considers them an important customer amenity — and not just for smoking customers.



Louis Miller

"It's a good approach to have separate areas for smokers," Miller explains. "It keeps nonsmokers from being exposed to smoke in restaurants and other areas."

ATL, he notes, gets positive comments about its smoking facilities from both factions: "The smokers really, *really* appreciate them; but the nonsmokers like them too, because they're not bothered by smoke in other places."

With heavy international passenger loads and fully 70% of its customers connecting to other flights, smoking areas are an especially hot issue at ATL. "If you have passengers coming in from Germany, connecting through to Chicago, they're going to smoke," relates Miller. "If you don't provide a separate area, they'll

end up smoking in restrooms and other places they shouldn't."

ATL's designated smoking facilities include two bar/restaurants and 10 enclosed smoking rooms. While all are used regularly, the facilities in the 40-gate international complex are used particularly heavily, notes Miller.

The smoking rooms include exhaust fans that move 6,000 cubic feet of air per minute, and equipment that maintains negative air pressure within the enclosed areas. "The HVAC system is very effective," Miller explains. "Even when the doors open, air is sucked into the rooms from the concourse instead of vice versa. That keeps smoke from washing out into the concourse."

In addition, the rooms are closed during maintenance to minimize smoke exposure for cleaning crews.

Even the airport's curbside spaces are separated, Miller adds. "By keeping the smoking areas away from the entrances, nonsmokers don't have to walk through a cloud of smoke to get inside," he notes.

The airport's record 95.49 million passengers in 2012 is a point of pride and achievement for ATL, but cause for concern at CDC, given the airport's smoking policy.

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Having run major airports as both a smoker and nonsmoker, Miller brings a unique personal and professional perspective to the issue. Although he kicked the habit nine years ago, Miller remains resolute about the advantages of ATL's smoking facilities.

Clearing the Air

Salt Lake City International Airport (SLC) has glass-enclosed smoking rooms in all five of its concourses. Maureen Riley, executive director of the Salt Lake City Department of Airports, considers the subject largely an issue of balance — specifically, balancing the needs of smoking and nonsmoking passengers.



Maureen Riley

"I'm not a smoker, and I don't promote smoking; but I acknowledge that there are lots of passengers using our facilities who do smoke," Riley explains.

The CDC estimates about 20% of people in the United States smoke cigarettes. According to data compiled by the World Lung Foundation and American Cancer Society, this places America right at the middle of the pack regarding worldwide cigarette consumption. International passengers at U.S. airports, however, are often accustomed to much less governmental regulation on the activity.

"This is an emotional topic," Riley reflects. "We want to approach it on as scientific a level as possible. We want *all* of our

passengers at Salt Lake City to have the best experience that we can provide — smokers and nonsmokers."

Riley readily credits the operational benefits of having smoking rooms in gatehold areas at SLC. Traffic in security screening lines would increase considerably if connecting passengers (nearly half the airport's total) were required to exit the terminal to smoke. "That's something we definitely want to be proactive about," she emphasizes. "Sending people outside the terminal may work for some airports, but with our footprint, it's just not practical."

Riley also recognizes the predicament that long flights present for smokers. "By the time they get here, some have been traveling for four or more hours," she notes. "Smoking is a powerful addiction. If we don't provide them with (smoking) facilities, they'll gravitate to restrooms or other areas not built for that purpose."

Employee logistics are another key factor. Airport workers who have to leave the building for a smoke break are simply less productive than those with closer options, explains Barbara Gann, public relations and marketing director at SLC. "We receive a lot of positive input about our smoking facilities from other employers, such as TSA, concessions operators and the airlines," notes Gann.

Like Miller at ATL, Riley doesn't foresee eliminating designated smoking areas any time soon. "I might feel more pressure to change if we had more complaints," she acknowledges. "But we

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Sojourner's Lounge is one of 12 designated smoking areas inside Hartsfield-Jackson Atlanta Int'l.



receive more thank-yous and testimonials from smokers than we do complaints (about secondhand smoke).”

The airport added doors to the smoking rooms that once lacked them, and each has a separate ventilation system that is cleaned and monitored daily, reports Gann. Routine maintenance and repairs cost about \$5,000 per year (labor and materials included).

“Other airports have relationships with tobacco companies that help pay for the smoking areas, but we don’t,” notes Riley.

While news reports about the CDC study focused on second-hand smoke leaking from airport smoking rooms, Gann considers another section of the report equally important: results that found similar air quality in the boarding areas of airports with and without smoking areas.

“The researchers found the difference to be ‘statistically negligible.’ Our interpretation of that finding is that the gate areas where passengers congregate are safe from secondhand smoke,” she explains.

The lack of specific test results also garnered Gann’s attention. “It would be helpful to have our specific results rather than the average from all of the airports tested,” she notes. “With those details, there may be simple alterations we could deploy.”

No Ifs, Ands or Butts

The smoking ban at O’Hare International (ORD) has been in place so long, recollections of the changeover are all but gone from the airport’s institutional memory. “No one really remembers it any other way,” notes Gregg Cunningham, spokesman for the Chicago Department of Aviation. “The no-smoking policy at O’Hare was in place long before the current city and state ordinances, so it’s been at least a couple of decades ago.”

Enforcement, reports Cunningham, is not an issue. Although airport police and aviation security officers have the authority to issue citations for smoking inside the terminals, the ORD Safety and Security Office characterizes such cases as “rare, if ever.”

“O’Hare is a busy, 24/7 operation,” explains Cunningham. “If someone tries to smoke, it wouldn’t necessarily take an officer to address it. Here in Chicago, no-smoking policies are so ingrained into our culture, a passenger or employee would be more likely to say something first.”

Regular announcements on the airport’s public address system also remind smokers not to light up inside the terminal.

Although the airport receives occasional requests for smoking areas, adding such facilities is not currently being considered, reports Cunningham. Doing so, he adds, would likely be a complicated process, given the city of Chicago’s Clean Indoor Air Ordinance and Illinois state law.

To Be Continued

Despite the dispassionate, pragmatic way airport officials explain their individual smoking policies, travelers will likely continue to have passionate feelings about the issue. Even the title of the journal that published the CDC airport study, *Morbidity and Mortality Weekly Report*, speaks to the issue’s gravity.

With no applicable federal law on the books, state or municipal governments and individual airport commissions continue to determine airport smoking policies. In limited cases, international airports in states with comprehensive no-smoking laws — Utah and Colorado, for example — are exempt from certain clean air regulations.

Denver International Airport presents an interesting case study: When Colorado’s indoor smoking ban went into effect in summer 2006, casinos and airports were exempt. Casinos voluntarily went smoke-free in 2008, and Denver International Airport is currently transitioning to a smoke-free policy — a process it began months before the CDC airport study was conducted or released.

Denver Mayor Michael Hancock crystallized the city’s official sentiment about DIA’s smoking lounges in a prepared statement: “While they are legally allowed, we believe the responsible decision is to eliminate these facilities in order to better protect the well-being of everyone who uses the airport.”

The airport recently issued a press release on the issue that contained the following statement: “DIA supports Denver Mayor Michael B. Hancock’s plans for creating a better, healthier Denver by moving toward becoming a smoke-free facility.”

While it’s too early to determine if or how CDC’s report about secondhand smoke in large U.S. airports will affect the industry, CDC is not involved with the enforcement or creation of smoking regulations. “We provide data on the subject,” King explains. “We hope that states and airports will use the data to decrease health risks for the traveling public; but the policies are up to them.”

None of the airports contacted for this article anticipated any changes to their current smoking policies. ✈️

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The Perfect Storm of Industry Retirements



A very large wave of retirements has recently been announced among our most experienced industry leaders.

The possibility of a “perfect storm” like this has been talked about at conferences for the past 12 months, but suddenly it’s upon us.

Executive-level changes are in the works at Dallas/Fort Worth International and facilities in Miami, San Jose, Sacramento and Reno. A host of other airports also have changes brewing but aren’t ready to make the news official.

The turnover also extends to the senior leadership of our trade organizations and several consulting firms. At the very moment I write this, an email arrived from Airport Consultants announcing that its executive director, Paula Hochstetler, will retire at the end of the year. A similar departure at the American Association of Airport Executives is widely expected before the end of the year.

We shouldn’t be shocked or concerned about such announcements. Leadership change is a natural part of any organization or industry’s lifecycle. New leaders bring new visions, updated agendas, fresh perspectives and their own network of relationships and trusted advisors. It’s just remarkable that we currently have so many key leaders stepping down at the same time. In my 25 years in the industry, I can’t remember so many people simultaneously deciding they were done.

With numerous airports and related organizations facing near-term change, what’s the right response: Panic? Talk the leaders out of leaving? Call a search firm? Run an ad? Post on a job board? Spread word on LinkedIn?

As a search firm principal, I advise organizations to survey industry changes when facing a leadership change. It’s essential to understand what’s happening to the demographics, economics and experience levels of candidates, because the pool of prospects is probably quite different than the last time they looked.

Everyone is being squeezed. In many cases, enplanements are flat or down; and if they’re growing, it’s certainly not to the degree they were five to 10 years ago. With shrinking flight schedules have come shrinking airport and FAA budgets — and shrinking family incomes. Many

of the people I interview daily are looking for stability as well as opportunity. One candidate I spoke with recently began our conversation with “Back when air travel was fun ...” For those of us with a passion for aviation, that’s certainly a bit of a bummer.

Today’s airport leaders have diverse educational training, work experiences and cultural backgrounds. MBAs are becoming more common, and AAAE accreditation is often a minimum requirement to lead an airport. But your next leader might come from an area that previously may have been overlooked.

It’s also crucial to consider the potential chemistry and cultural fit of various candidates. Being able to navigate the complicated world of airport politics is not for the faint of heart.

In an effort to attract and retain effective leaders, smaller airports and consulting firms have begun offering salaries and benefits on par with larger organizations. Many have realized it’s less expensive to keep a leader than to replace one. Compared to your last airport director or consultant, your next hire will likely be more expensive, more reluctant and have more competitive offers from other organizations.

Realize that whomever you hire will cause a ripple effect throughout the organization. Qualified internal candidates who are passed over will likely leave and inspire other departures; so looking inside is important. On the other hand, strategic outside hires often bring new talent with them.

Listing an open position online, however, will not magically bring in the best candidates. I suggest finding a headhunter who follows our industry full time but isn’t distracted by daily airport management responsibilities. It’s also helpful to have someone familiar with the search process tracking specific developments. A good search consultant will sell your organization to candidates who aren’t even interested in looking for a new position.

Airport professionals who are ready to move will have a lot of options available in 2013, and many rising stars will emerge from our current wave of retirements. The leader you want to hire may cost more than you hoped, but making the *wrong* hiring decision is far more costly. ✈️



Grice Whiteley

Grice Whiteley is founder and CEO of Grice Group, a consultancy that provides recruiting services exclusively within the airport sector. Since 1999, Whiteley has personally completed almost 150 successful personnel searches for airports, airport consultants and airport equipment companies. Previously, he served eight years as director of operations for Airport Consultants Council. Grice Group also consults on aviation marketing and merger/acquisition strategies.



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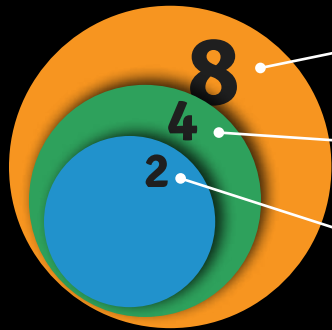
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