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10 Dallas/Fort Worth Int'l Renovates Terminal A



16 Airport Services Facility is Latest Addition to Emerging Aerropolis at Edmonton Int'l



20 Orlando Int'l Adds Giant Common-Use Video Wall Behind Check-In Counters



26 Bag-Wrapping Services Gain Popularity in Canada



30 Evolving Requirements for Execs Underscore Growing Need for Employee Development



36 Halifax Stanfield Revamps Concessions Program



40 Aéroports de Montréal Uses Hybrid Approach for Runway Project at Mirabel



44 21 Airlines Relocate During Massive Terminal Swap at Los Angeles Int'l



52 Baltimore-Washington Int'l Digitizes Facility Data on Web-based Portal



58 Raleigh-Durham Int'l Adds New Routes With Support of Local Businesses



64 New Fuel Facility at South Texas Int'l



68 Laughlin/Bullhead Int'l Extends Runway in 15 Days

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72 Automated People Mover Sets the Stage for Less Curb Congestion, New Intermodal Connections at Orlando Int'l



76 Scottsdale Airport Opens New Operations Center



78 Charlotte Douglas Int'l Institutes Clear Bag Policy for 9,000 workers

columns

Publisher's Column
 See *You on Insta* or at *ACI-NA*

8 Industry Insider **82**
Rosemarie Andolino of MAG USA discusses ways to counteract the negative impact of ridesharing services on parking revenue

advertiser index

ACC	35	EJ	66	Parsons	49
ACI-NA	19	Ennis-Flint	70	Pond & Company	56
ADB Safegate	8	Fulfab	77	RS&H	32
Aerosweep	17	G&S	28	Ross & Baruzzini	80
Aeroterm	19	Gee	53	RPM	41
Airport Lounge Development	6,7	HNTB	51	Rubb	59
Alliance	13	Infax	39	Safe Bag	Cover
Arconas	15	Inter Airport	50	SEW	BC
Argus Consulting	67	International Display Systems	45	Ssi	12
Arora Engineers	55	JBT	48	Stantec	41
Asphalt Systems	71	JMT	53	Synect Media	25
Aviation Strategies	31	K2	79	TranSystems	37
Baker	63	Larue	43	Trinity	62
Becker505	21	LG	23	Tymetal	11
Boingo	4	Manchester Airport Group	29	United Rotary Brush	54
Burns Engineering	69	M-B Companies	83	Veoci	18
CHA	67	Mead & Hunt	61	VidTronix	45
Chrysalis	47	Metal Pless	42	Waterblasting Technologies	33
Coffman Associates	75	Mohawk	67	Werkmaster	46
Cyclone	60	Neubert	69	WSP	34
Daktronics	14	Off The Wall	74	Zoeflig	9
Delta Airport Consultants	73	Oshkosh	57		
dormakaba	81	Panasonic	2		

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When Facebook launched in early 2004, I wasn't one of its earliest adopters. (I'm simply not that trendy—just ask my family.) But as it gained traction, I joined and *Airport Improvement* did, too.

Fortunately, one of our writers was an enthusiastic participant in the new arena. Kristin Vanderhey Shaw, now our social media director, convinced me that a stronger online presence could improve our communication with subscribers and the industry. She launched a Facebook page and established our presence on Twitter, and we have steadily built an authentic voice in the market by offering information from our articles and other industry sources. Trade show coverage has been an especially popular online addition. All in all, social media has helped us develop an even closer relationship with airports, consultants and vendors.

If you haven't already, please follow us on Facebook, Twitter and our newest channel, Instagram. (Our handles are listed



KRISTIN VANDERHEY SHAW

below.) We'd love to hear from you on any or all of the channels! Our social media threads are a great place to post comments about the magazine and share news about your organization or company. In fact, we added a section to our website called Industry Headlines for the very purpose of posting press releases and disseminating news such as airport traffic statistics, personnel changes and consultant or supplier announcements. Your success is our success. Your content can be part of our content.

We're always looking for new ways to make *Airport Improvement* better, so please keep the feedback coming via tweets, posts, comments or good ol' email. And look for us at ACI-NA in Fort Worth and SWIFT in Halifax. We don't *only* want to connect virtually.

Cheers,

Paul



PAUL BOWERS, PUBLISHER



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Dallas/Fort Worth Int'l Renovates Terminal A



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FACTS&FIGURES

Project: Terminal Renovations

Airport: Dallas/Fort Worth Int'l

Location: Terminal A

Cost: \$650 million

Construction Manager: Balfour/Azteca/Russell/Carcon Joint Venture

Lead Design: Jacobs Design Team

Seating: Arconas

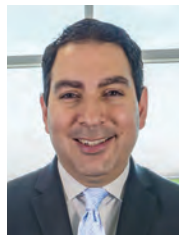
Key Benefits: Improving overall travel experience; accommodating current aircraft fleet & passenger volume; updating security checkpoints; improving passenger flow; increasing non-aeronautical revenues

Noteworthy Detail: Terminal A renovation is part of airport's ongoing \$2.7 billion Terminal Renewal & Improvement Program



Dallas/Fort Worth International (DFW) celebrated another milestone of its \$2.7 billion Terminal Renewal & Improvement Program (TRIP) in January, with the completion of renovations in Terminal A. The \$650 million Terminal A project kicked off in 2011 and, like the entire capital program, centered around improving the customer experience.

Terminal A now features an operational design that accommodates the current aircraft fleet, passenger volumes, current security mandates and the ever-increasing expectations of the traveling public, explains Khaled Naja, DFW's executive vice president of Infrastructure and Development.



KHALED NAJA

Although the overarching theme of the capital improvement program is enhancing the customer experience, various components address more specific goals such as cost and operational

efficiency, enhancing security, increasing non-aeronautical revenue and empowering customers and employees.

Like many other terminals throughout the country, DFW's Terminal A was "outdated and did not meet the needs of the modern traveler," Naja explains. Recent improvements, however, have completely renovated the more than 40-year-old facility.

"We essentially gutted the entire terminal to the structural concrete and steel," says Naja, noting that one of the primary goals was to provide customers with a seamless travel process. "We want to make sure they benefit not just today, but in the future."

Passenger flow was dramatically enhanced by turning the security checkpoints 90 degrees and expanding three of them by about 300%. The extra space made room for additional screening equipment and allowed for optimal configuration of equipment and queuing, he explains. Passenger recompose areas after the checkpoint were also expanded.

Other notable Terminal A improvements include renovations in two baggage claim



BY JODI RICHARDS

areas and more self-service check-in kiosks. On the airside, 26 gates were renovated.

Changing With the Times

The Terminal A renovation creates a more flexible facility, Naja relates—both in terms of technology and physical layout.

For example, when TRIP kicked off, American Airlines was flying turboprop aircraft, which have since been replaced by regional jets. During the Terminal A renovation, the airport reallocated holdrooms, restrooms and concessions space to accommodate the increased volume of passengers arriving on American's new fleet. Changes were also made on the ramp to accommodate regional jets.

Moving non-critical, non-operational support spaces off the concourse level provides additional flexibility with the terminal. In the future, the airport can change the function of these spaces without incurring the inconveniences



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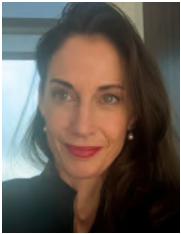
associated with rebuilding them. Non-critical functions removed from the concourse level were relocated to the ramp and mezzanine levels.

On the technology side, DFW upgraded to a centralized technology “backbone” to support the technology infrastructure within Terminal A. Redundant power feeds will allow critical systems to maintain operation even if the facility loses electricity during lightning storms.

Concessions

Overall, DFW has built or rebuilt more than 150 concessions throughout TRIP. Terminal A’s renovation allowed for 50% more concessions space.

“We kept what was working very well, and we also introduced new [concepts] that our customers were demanding,” says Naja.



CYNTHIA VEGA

Cynthia Vega, DFW’s manager of corporate communications, reports that Terminal A now feels lighter, brighter and more spacious. Open concept retail and food/beverage offerings, as well as café-style seating where travelers can keep an eye on their gates, have transformed the concessions areas.



New food/beverage options help convey the airport’s Texas pride.

The mix of retail and food/beverage offerings reflects DFW’s efforts to really know its travelers and meet their needs, she adds. “We want to highlight and bring to life the best of what Southwestern charm brings to the table, and at the same time, bring in international cuisine so we have a broad spectrum of offerings.”

Because today’s passengers must allow more time for security screening, they often have more time on their hands after clearing TSA checkpoints. “People want to resume their lives,” Vega explains. “They’re spending every minute valuably, and they want to continue their lives while in the terminal. We respect that and what you’ll see in this [concessions] program reflects that.”

New dining options in Terminal A include The Salt Lick Barbecue, Dallas Cowboys Club, Lorena Garcia Tapas y Cocina and Ling &

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Louie's Asian fusion restaurant. New retail offerings include Tumi, iStore, Teavana and Gepetto's Toy Store.

To further meet traveler needs, the airport added a food ordering option to its mobile application in mid-July. Now, customers can order from 26 restaurants through the DFW app.

"We recognize that our airport is bigger than the island of Manhattan, and that can be a little overwhelming," Vega relates. The opportunity to order food ahead helps ease some of the stress travelers might feel when beginning or ending their journey at the large airport.

Naja notes that DFW is improving concessions offerings *and* the way it engages customers. "It's the best experience you can have at an airport," he states.

Sustainable Systems

At more than 40 years old, Terminal A required mechanical, electrical and plumbing upgrades throughout. All systems were replaced with more energy-efficient options, which helped DFW achieve carbon neutrality for the year. Other environmentally conscious aspects of the renovation include an energy-efficient window wall system, a building automation system to control temperature and a daylight harvesting system that balances the amount of natural and artificial light.

"Sustainability is something we take very seriously at DFW," Naja says. "We believe in being fiscally responsible and a steward of the environment."

A strict recycling and waste separation program that covers all TRIP endeavors yielded environmental and financial benefits during the Terminal A project. Renovating approximately 3 million square feet of terminal space creates a lot of waste, comments one project official. In total, TRIP's proactive recycling and waste separation program has diverted more than 180,000 tons of material from going to landfills.

Wayfinding

As part of the larger TRIP initiative, Terminal A renovations included holistic enhancements to static and digital signage. "We took down every little sign, evaluated every little requirement and reestablished all signage throughout terminals A, B and E," reports Naja.

The project team focused on community engagement, working closely with American Airlines and a "very active" wayfinding program to reduce confusion for passengers throughout the renovation process. Every morning and night, personnel would navigate through the airport to ensure that the right signs were in place, and that they were clean and visible.



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DFW also dispatched public safety department personnel at pinch points to help people move through areas of congestion as they developed.

Artful Scheduling

Careful and controlled phasing of construction activity was critical to minimize the impact renovations had on operations. One project executive referred to the difficult phasing process as an art.

The project team worked with airline partners, primarily American Airlines, to outline multiple work phases and establish restrictions on the maximum number of gates that could be closed at any one time. Using those parameters, renovations proceeded through the terminal in a set order, with project officials keeping an eye on the balance of facilities that were open and operational to support the needs of airlines and customers.

Much of the construction work was completed in off-hours, to prevent it from encroaching on passengers and airline operations. According to traffic estimates, the equivalent of the entire population of Fort Worth traveled through DFW’s construction site every week during the renovation project.

On an annual basis, the airport serves 65 million passengers. So keeping the busy terminal operating while crews ripped

out the building systems and replaced infrastructure created challenging logistics.

Like the work inside the terminal, material movement was scheduled to minimize disruptions. Construction waste and debris was hauled away after hours to reduce the number of vehicles on the roadway with passenger traffic. “The airport almost came alive again in the middle of the night with all the construction activities and deliveries that would take place,” recalls one former project official.

Customer Care

Right on the heels of the Terminal A renovation, DFW was voted No. 1 in customer service for large airports in North America, according to Airports Council International. “It’s very visible that we listened to the customers, we adjusted to their needs and exceeded their expectations,” relates Naja.

Vega notes that the airport is “constantly talking to customers—doing research and asking them what they need and want and what will make their experience better.” DFW staff members routinely survey customers throughout all five terminals for feedback and suggestions.

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As the airport planned the Terminal A renovation, it sought input from customers about specific elements such as power outlets, generally a hot-button topic for travelers. To determine the best option for its customers, the airport asked five industry vendors to install their best products in a demonstration holdroom. Passengers were able to “test drive” the various options and vote for the one they wanted to see at DFW. The airport’s marketing team prepared a survey and used an outside agency to conduct an independent survey for the seating power selection feedback, Vega explains.

Not surprisingly, the No. 1 thing DFW passengers wanted in charging options was quantity. These days, it seems like everyone wants to plug in a phone, laptop or e-reader to charge while they wait. Options that prevented passengers from huddling around outlets along corridor walls or climbing over one another to plug in were high priorities. Based on customer input, the airport selected Arconas seating with built-in power outlets and USB ports.

According to Naja, active and early involvement from airline partners, 22 different airport departments and other stakeholders helped drive the success of the Terminal A renovation. “We’ve put in over 17 million man hours of construction labor on the program,” he reflects. “That is a significant volume of people that have contributed over the last five years, very safely and with great results.”



Based on input from customers, the airport added Arconas seating with built-in power outlets and USB ports.

In other TRIP news, the airport’s Terminal E renovation reached substantial completion in mid-July, and airport officials expect the Terminal B renovation to be completed by year’s end. A three-level parking garage project for Terminal A, also part of TRIP, was completed in 2015 for \$176 million. (See our May/June 2015 issue for more details.) Developed in conjunction with its airline partners, TRIP is designed to improve DFW’s aging infrastructure and allow the airport the flexibility to respond to changes in the aviation industry. ✈️

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Airport Services Facility is Latest Aerotropolis at Edmonton Int'l

FACTS&FIGURES

Project: Airport Services Center

Location: Edmonton (AB) Int'l Airport

Facility Size: 50,000 sq. ft.

Cost: \$10 million

Owner: Aeroterm

Construction: June 2016-May 2017

General Contractor: PCL Construction

Tenants: Gate Gourmet; Sky Café; Swissport; Airport Terminal Services

Notable Features: Vehicle maintenance pits; wash bays; clear-span warehouse; direct airside access; proximity to passenger terminal



The business world loves a company in growth mode and gets downright giddy when projects bring several growth-oriented companies together. That said, the recently completed multi-tenant complex at Edmonton International (YEG) could be a poster child for concurrent expansion by airport service companies.

The facility, which opened in May, is the latest phase in an ambitious long-term development plan at YEG, Canada's fifth-busiest airport.

The 50,000-square-foot building comes courtesy of Aeroterm, a private real estate developer that specializes in airport industrial projects. By many standards, it seemed to pop up overnight, with construction starting in spring 2016 and three of four tenants moving in about one year later.

The major tenant, Gate Gourmet, is scheduled to move in this September, after crews complete final details for its specific operational requirements as the world's largest independent airline catering, hospitality and logistics company. Gate Gourmet will occupy about half of the new facility's total space.

The tenants already in place are Sky Café, another airline caterer; Swissport International, a ground cargo and handling services company; and Airport Terminal Services, an international company that provides cargo services, fueling and other ground support and a variety of airport terminal functions.

The complex was fully leased before construction was completed.

Building a Business Hub

The Aeroterm facility is just one component in a diverse and large development project at YEG. Currently, the airport has more than 1.6 million square feet of development underway—a carefully planned mix of cargo and other airport services, retail, hotels, restaurants and entertainment, explains



GEOFF HERDMAN

Geoff Herdman, the airport's director of real estate and investment attraction. The strategy behind the "aerotropolis" concept is to build an entire metropolitan community around the airport, which functions

Addition to Emerging

BY PAUL NOLAN

as the development's commercial core. The full project will include a premium outlet mall; hotel and restaurant campus; and a horse racing track and casino.

"The airport city model really hasn't taken hold in the U.S., but it has taken hold in Europe and Asia. And it's something we're trying to develop," Herdman says. "The AeroTerm project is an important part of that. It's a real benefit to be partnering with them. For my money, they are the best in the business with this type of development."

Cargo plays an important role in driving airport-centric development, Herdman adds. Last year, cargo volume at YEG grew for the seventh consecutive year. Rosenau Transport took possession of its new 211,000-square-foot facility in September 2016, and YEG also welcomed Flying Fresh Air Freight, a perishables and specialty freight forwarder, to its Cargo Village.

Why Cargo Matters

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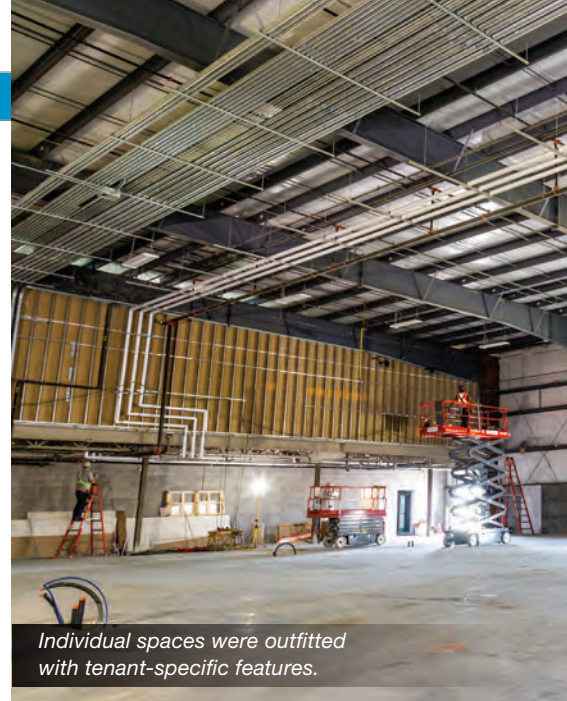
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regional market—Edmonton and Northern Alberta—to the world economy and to world markets. It's something that can drive trade and make our region more prosperous in the process."

Cargo revenue is also crucial for YEG, which operates as a not-for-profit corporation that is fully self-funded. "In Canada, we do not get government funding," explains Herdman. "We also do not get to tax people."

In 2014, YEG's economic impact on the city of Edmonton and Leduc County was valued at \$2.2 billion. In June, the airport, county and cities of Edmonton and Leduc signed an inter-jurisdiction cooperation accord. "This partnership provides an unprecedented collaborative opportunity to innovate and advance the region and YEG as a competitive global investment destination," said Edmonton Mayor Don Iveson in a press release.



Individual spaces were outfitted with tenant-specific features.

Herdman emphasizes that passenger transactions aren't the only commerce taking place when flights take off or land at YEG. "The belly of the plane isn't just full of luggage, it's full of cargo, too," he says.

As a specific example, abundant cargo shipments make direct service from YEG to Amsterdam viable for the Dutch airline KLM. On a broader level, the airport's cargo capabilities support its efforts to attract new carriers and routes. "We've got an airport that's a good size, but relative to the big North American players, we have to work harder to attract those flights," says Herdman. "Having good cargo volumes really helps with that."

YEG's Cargo Village sits on 160 acres, and about 60% of that land is still available for development, notes Herdman.

A Win-Win-Win

Erin Gruver, Aeroterm's chief development officer, wants his firm to be YEG's go-to provider for facilities leased by support service companies. The complex it built for Gate Gourmet, etc. is Aeroterm's third project at the airport. It also owns the FedEx facility and WestJet cargo hangar.



ERIN GRUVER

The company has plans to build a fourth facility at YEG, but Gruver could not provide further details due to confidentiality agreements with prospective tenants.

The ground lease agreement for its recently completed facility runs until 2072. Individual lease terms with Gate Gourmet and the building's other tenants average 10 years.

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The entire 50,000-square-foot building was leased before construction was completed.



During the design stage, Aeroterm worked closely with YEG officials and tenant representatives to make sure that facilities fulfilled everyone's specific expectations, notes Gruver. Space for Swissport, for instance, includes work pits to facilitate maintenance of ground support vehicles. Warehouse areas were designed without support columns so forklifts can maneuver easily.

Carole Pitre, general manager of Airport Terminal Services' YEG station, says her mechanics are excited to have a new facility with improved ventilation, reinforced concrete floors for heavy machinery and other workplace upgrades.

"We look at every detail with the tenant to ensure that the space meets their needs when the building is done," says Gruver. "We're trying for win-win-wins by creating solutions where Aeroterm can provide funding and development of new airport assets to improve not only the airport itself, but the operational performance of airport users. Tenants get new space with competitive lease rates, and that space enhances their ability to be efficient. The airport authority gets revitalization of areas that were not being used optimally, and we grow our relationships with airports and the tenants."

The airport helps market leased space throughout its campus to international companies by emphasizing its position on transpacific and transpolar air routes. It is also located on the CANAMEX corridor, which facilitates highway transport from Alaska to Mexico. In addition, the airport helps tenants secure Foreign Trade Zone benefits. ✈️

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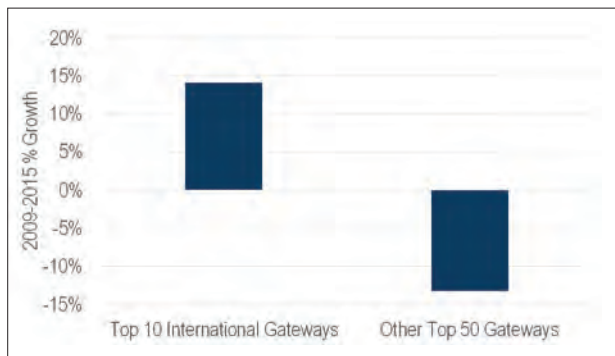
Shifting Air Industry Trends Require New Facility Designs

Freight volume at international gateway airports will continue to rise over the next twenty years, but competing uses and scarcity of land will limit the ability to dedicate land to new facilities towards cargo handling. As a result, air cargo buildings will need to handle this rising demand by more intense use of a limited footprint. Future properties may take the form of multi-story industrial buildings or properties with higher ceiling clear heights to accommodate automated racking. To date, this property design is largely absent in North America, but its emergence may be imminent.

Major shifts in the air industry are underway, and they are having a significant impact on the design of airport facilities. Competitive pressure to cut costs and identify new sources of revenue has led airlines to carry an increasing share of air freight in the bellies of passenger flights and rely less on dedicated freighter movements. At the same time, manufacturers have designed new fuel efficient planes capable of longer flights and much larger capacity reducing the amount of connecting traffic. Consequently, a growing share of cargo is carried on direct passenger flights between gateway airports. These trends will likely increase gateway demand for new facilities capable of handling a higher intensity of use than existing properties.

Between 2009 and 2015, aircraft movements (takeoffs and landings) at North America's ten largest international gateways increased by 14%, compared to a decline of 13% at the other top 50 airports. This concentration in gateways is likely to increase. In its 2016 Market Outlook, Boeing forecasts that North American passenger traffic with Europe, Asia, and Latin America will increase annually by 2.9%, 4.5%, and 5.6% respectively over the next twenty years. This compares with 2.6% growth expected for traffic within North America.

Figure 1 - Cargo growth concentrated in international gateways



Source: Airports Council International

Increasing passenger traffic has coincided with rising air cargo volume. Both Boeing and Airbus expect cargo volumes to increase by around 4% per year over the next two decades. This growth will be supported by the rapid spread

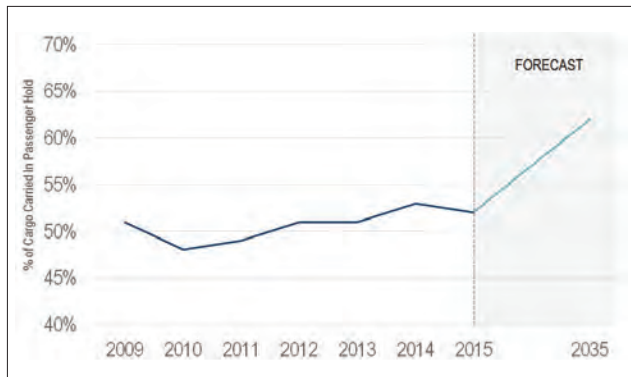
of e-commerce, and by trade with rapidly growing economies in Asia. The share of freight carried in the hold of passenger flights has been rising steadily. Although freighters still carry more than half of all air cargo, this share has been diminishing since 2003. In its 2016 air cargo forecast, Airbus forecasts that belly cargo will account for 62% of volume by 2035.

Although passenger flights are carrying a growing share of cargo, freighters are still a vital element of long-haul routes between major air hubs. In fact, both Boeing and Airbus expect these routes to account for up to 70% of the increase in freighter use by 2035. Meanwhile, ramp space required to service these freighters is limited. The emerging need for air cargo terminals to serve both freighters and cargo tugged from passenger flights, combined with a shortage of ramp space, will dramatically increase the value of facilities with an efficient layout and high handling capacity to allow faster and greater throughput of freight and aircraft movements.



Airports in major metropolitan areas are some of the most supply constrained real estate in world. They are often hemmed in by other commercial uses, with little capability to expand their footprint. Meanwhile, on-airport land available for cargo handling is squeezed by passenger traffic being a higher priority and better economic (or political) use. The scarcity of developable land means well-configured cargo facilities must increasingly be more vertical for automated handling, or possibly even multi-story industrial properties. The land they occupy must be capable of handling more cargo per square foot than existing properties. The ability to construct a high density-of-use property gives an experienced developer an outsized advantage in offering value to air cargo users and airport authorities.

Figure 2 - Passenger flights increasing share of cargo



Source: Boeing World Air Cargo Forecast

A single-story property serving freighter traffic (typically 747-8) typically has 60-80,000 square feet per loading position. However, this ratio does not provide enough space to accommodate the need to handle cargo tugged from passenger flights as well. A second story or additional vertical space for automation allows tugs to access the building without hindering freighter operations, satisfying this requirement. This higher utility

to the tenant is achieved without incurring a higher ground rent, improving cost efficiency.

To date, few of this type of cargo facility have been built at North American airports because of the high costs resulting from the engineering and administrative challenges they pose. Existing facilities have accommodated current users, though their utility is diminishing because of the above-mentioned trends. The mechanization required to move goods between floors, or providing vehicle access to a second floor, adds significantly to facility cost but is offset by labor savings. Demand for freight facilities from the rising traffic at major international gateways will generate sufficient demand to make these properties economically viable.



Nathan Kane

Head of Research

Mr. Kane has been Realterm's Head of Research since 2015. He is responsible for thought leadership, analysis of industry and economic trends, and communication of ideas and trends with clients. Prior to joining Realterm, Mr. Kane was responsible for LaSalle Investment Management's industrial research for twelve years. In this capacity, he developed client strategy, built industry forecast models, and participated in industry professional groups. He holds a Bachelor of Arts and a Master of Arts from Johns Hopkins University.

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- Multi-Tenant Facility



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Orlando Int'l Adds Giant Common-Use Video



FACTS&FIGURES

Project: Video Wall Display

Location: Orlando Int'l Airport

Installation Site: Behind Check-in Counters

Size: 1,500 ft. long

Cost: Less than \$10 million

Installation Status: More than half complete in late July; remaining portion expected to be finished in late 2017

Software & Content Provider: Synect

Project Management & Installation: SITA Com-Net

Display Screens: 700+

Pixels/Screen: 6.2+ million

Bezel Height: 1.8 mm

Display Mfg: LG Electronics USA

Content Management System: Cnario Digital Signage Software, from YCD Multimedia

Custom Mounts: RP Visual Solutions

Key Benefits: Flight info & airline branding can be changed quickly according to traffic; airport runs content to entertain customers on sections not in use by airlines

Fun Fact: When complete, the video wall will be longer than the Empire State Building is tall



When you hear the word “Orlando,” you probably think of vacation attractions: Disney World. Sea World. Beaches. Golf. Or perhaps you’ve attended an event at the Orange County Convention Center, the second-largest convention complex in the United States.

Given the area’s high concentration of tourists, conventioners and business travelers, Orlando International (MCO) strives to create an experience unlike any other airport in the world. The Greater Orlando Airport Authority has even trademarked a name for it: The Orlando Experience®. Last year, more than 42 million passengers “experienced” it.

In keeping with its own customer service standards and those set by local attractions, MCO is installing a giant video wall behind the check-in counters of its North Terminal that displays airline branding and flight information that changes according to traffic. When airlines are not using specific sections, the airport runs videos and a children’s game to entertain visitors.

As of late July, MCO had completed more than half of the wall; crews are expected to finish the remaining portion by the end of the

year. Total cost for the project is estimated at less than \$10 million.

When installation is complete, the new digital feature will span about the length of five football fields.

The Wow Factor

Authority execs found inspiration for the huge installation in 2015, when traveling to the Asia-Pacific region to scout emerging trends in airport technology and amenities. Chief Information Officer



JOHN NEWSOME

John Newsome and Director of Engineering Mark Birkebak toured several airports and were particularly impressed by South Korea’s Incheon International Airport (ICN), which has been named the world’s best airport by Airports Council International for the last 12 years.

Impressed by the quantity and variety of video displays at ICN, Newsome was inspired to consider how MCO could leverage more video content. Back home, a major capital renovation of the main terminal was already under way—including a complete redevelopment of the check-in process.



Wall Behind Check-In Counters

BY KRISTIN VANDERHEY SHAW

“Renovating our ticket lobby to make check-in faster and more enjoyable for more passengers is a key component of our capital improvement plan,” Newsome explains. “Our economy depends on visitors having a good experience. Often, this is a trip people have dreamed of or planned for a long time, and we want to provide a ‘wow factor’.”

Two years after initial project planning, the “wow factor” the airport wanted is taking shape, in the form of a display that will ultimately contain more than 700 screens and stretch more than 1,500 feet.

“We wanted a fun and interactive check-in experience for passengers who travel to and from Orlando International Airport every year,” says Newsome. “It’s very easy to find your airline when the entire back wall is illuminated.”

Selecting a Supplier

In April 2016, the airport authority invited three major display vendors to present equipment options to the Construction Committee. To ensure objectivity, the authority hired an independent contractor to perform a battery of tests at its lab in Seattle. Each manufacturer set up a seven-screen, 55-inch long video wall, and all three options displayed the same content for evaluation. The lab even simulated natural light to mimic conditions at the airport.

With authority personnel on hand to observe, testers scored the various screens on a myriad of factors, including color depth, accuracy, and consistency; brightness range and variations; and ambient light reflection and absorption. Lab personnel

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When panels are not in use by airlines, the airport runs content that promotes the overall Orlando area.



Orlando is known as "The City Beautiful" for its sunshine, climate and diverse natural environment. But the beauty of the region is also in its active lifestyle, vibrant cultural scene, dynamic business and exciting attractions.



also evaluated bezel width; heat generation and dissipation; monitoring functions, firmware updates and calibration; ease of installation and maintenance; failure prevention, responses and recovery; moisture, dust, heat and power protections; vendor support for installation, calibration, re-installation; and warranty terms and options.

LG Electronics USA ultimately won the contract to supply 1,126 screens.

"We had no idea going into the lab which company would be selected," relates Newsome. "It was a very rigorous, very open process; and every piece of information was available to the competitors."

All three contenders were also given the opportunity to review and comment on the process. "It was very above board and based on measurable factors," he adds. "There were no protests."

Thin Bezels, In-Plane Switching

Contrast ratio was a particularly important selection factor, because passengers must be able to view the screens from various angles and distances. As such, the authority chose units with in-plane switching, a technology for liquid crystal displays that resolves the limitations of the twisted nematic field effect matrix displays from the late 1980s—namely, limited viewing angles and low-quality color reproduction.

The new monitors also have ultra-thin bezels—1.8 millimeters, compared to the industry standard of 3.5 millimeters. Thinner bezels around the screens make the lines between the monitors barely discernible, even when viewed from just a few feet away. Although MCO's display contains more than 700 monitors, it looks like one large, uninterrupted screen.

The hardware that supports the technologically advanced displays is also noteworthy—and was performance-tested in the lab as well. The mounting system opens out, like a door,

to facilitate installation and removal. In addition, the displays are lighter than average, so they required two rather than three workers for installation.

Information & Entertainment

The airlines display information about specific services offered at each counter position, checkpoint wait times and even short videos. The screens are also fully integrated with the airport's systems that provide flight information, gate assignments, destination time and weather, security information and dynamic wayfinding assistance.

When counters are not in use by an airline, the airport runs more whimsical content, including local tourism videos and a game called *Find Fred the Fish*. Much of MCO's material is intended to engage and educate children about space and travel, a pervasive theme at the family-oriented airport. The content and the new video wall are designed to deliver the visual impact and entertainment value visitors have come to expect from the Orlando area, notes Newsome.

"Airports are starting to better brand their local community, and for us, the panels help do that," he explains.

The Common-Use Factor

From the airlines' perspective, the new digital canvas at MCO offers something that hasn't been available before: large-scale dynamic branding in ticketing/check-in area. In the past, carriers may have felt that their branding didn't begin until the gate.

"One reason some airlines have resisted common-use technology is that the counter space branding was not adequate," observes Newsome. "Now, some of them are seeing the benefits of moving to common use, and this branding opportunity makes that pretty attractive. We can eliminate this barrier to common use, because now airlines can take their brand along anywhere they go."



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When complete, the video wall will span more than 1,500 feet.

The airport's intention is to make the check-in area as flexible as possible.

"We have a strong mix of passenger profiles, and large volumes of children and conventioners," says Newsome. "The way we use our ticket counters reflects the diversity and volume of our passengers."

All of the counters are modular, with full connectivity and power. The baggage scales and service counters are of uniform width, which allows airlines to adjust quickly. Newsome notes that passenger processing technology is changing very rapidly, and the airport can reconfigure its check-in facility by moving counters on demand.

"The video wall is a perfect accompaniment to the modular counters," he comments. "It brands each counter, and it's all dynamic and can be changed to suit the airline as it evolves."

The number of display panels each airline uses corresponds to how many counters it leases. British Airlines, for example, currently has counter space that equates to 22 panels. The minimum per airline is about 12 panels.

"The benefits to the airport are flexibility and helping us manage passenger numbers," Newsome says. "The airlines get incredible branding opportunities they don't get anywhere else in the world, and they can request an update at any time."

Airlines design their own content, which is then submitted and reviewed by a committee to ensure it conforms with airport authority guidelines.

"In some areas, the panels are not reconfigured very often," notes Newsome reports. "In common-use areas, we can go through changes three times a day—and it only takes about a minute to change it."



In common-use areas, displays can be changed quickly to shift use among various airlines.

Enhancing the Experience

Newsome reports that the airport's new video wall has created a positive buzz among passengers and within the industry. "One of our four primary objectives is customer service, and we invest a great deal of money in innovation to give travelers a pleasant environment that is hopefully de-stressing and a little fun," he says. "We see the airport as an extension of the resorts: We offer an extensive Wi-Fi system, a mobile app that provides turn-by-turn directions for 1,500 different locations (both voice and visual), and now we use enhanced digital displays to give passengers information in a way that is fun and pleasant."

With crews still finishing the giant installation, some of the video wall's features have yet to be activated. "There is much more to come," notes Newsome.

Beyond the remaining portion of the video wall, future projects will include outdoor digital displays, self-service check-in screens and wayfinding video walls. ✈️



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FACTS&FIGURES

Project: Baggage Wrapping Services

Key Benefits: Additional amenity for customers; associated revenue stream for airports

Operational Details: Wrapping stations require small footprint in non-retail areas; professional services provide alternative to home-wrapping methods that are more likely to disrupt baggage handling systems



Location: Ottawa Int'l Airport

Vendor: Safe Bag

Test Pilot: 6 months (began in June)

Per Bag Cost to Passengers: \$12+tax (Can.) for basic wrap service; \$16+tax (Can.) for wrap & tracing service

Revenue Sharing Arrangement: To be determined

Points of Difference: Insurance coverage for delayed, damaged or lost baggage; bright red wrap material makes luggage easy to find at baggage carousels



Toronto Pearson
For You. The World.

Location: Toronto Pearson Int'l Airport

Vendor: Secure Wrap

Debut: Feb. 2016

Cost to Passengers: \$15/bag (U.S. & Can.); \$22/piece for irregular sized items such as golf bags & skis (U.S. & Can.)

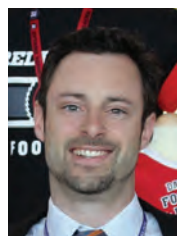
Points of Difference: Proprietary plastic doesn't stick to baggage handling systems; wrap material highlights attempts to breach protective covering; corporate guarantee matches airline payments up to \$2,000 for damage & \$5,000 for total loss; airport reimburses passengers for bags opened during secondary inspection



Bag-Wrapping Services Gain

Already commonplace in South and Central America, bag-wrapping services are gaining a foothold in the North American marketplace, with a high concentration in Canadian airports.

Ottawa International Airport (YOW), for instance, is currently testing the concept in Ontario. "Although we have a smaller international passenger volume, we are always motivated to innovate and offer improved levels and types of services to passengers, while at the same time growing non-aeronautical revenue," says Coleman Swartz, director of Commercial Development for the Ottawa International Airport Authority.



COLEMAN SWARTZ

In June, YOW entered into a six-month trial period with Safe Bag to confirm operational and financial viability of the new passenger service. The company's existing operations at airports in Montreal and Vancouver apparently helped "seal the deal."

Rudolph Gentile, founder and executive chairman of Safe Bag, explains that passengers gain peace of mind when their luggage and other checked items are securely wrapped in plastic film. Airports, in turn, generate revenue from a concession that requires a minimal footprint in areas not otherwise focused on retail. Facility operators gain



RUDOLPH GENTILE



Popularity in Canada

BY NICOLE NELSON

additional confidence that their baggage handling systems will not be disrupted by home-wrapped bags.

“Baggage protection services are very popular in Canada,” he reports, citing customer enthusiasm at major airports in Toronto, Montreal, Vancouver and Calgary. “Having seen the growing demand, Ottawa Airport wanted to offer this service to its international passengers as well.”

YOW personnel consequently consulted with several Canadian airports that were already offering baggage protection services. They also sought input from internal stakeholders such as airline partners and security agencies before searching for a specific vendor.

“Naturally, we wanted someone experienced—particularly within the Canadian airport context—who would stand behind and support the product offering and the technology being used,” Swartz explains. “Safe Bag appeared to stand out due to the sophistication of their machines, ancillary product and accessory offerings and their baggage insurance product, which allows for bag location in the event that a bag is reported lost.”

Safe Bag offers baggage tracking services through SITA WorldTracer, with refunds ranging from \$100 to \$4,000 for delayed arrival, damage and loss.

“We did advance testing with wrapped bags of different sizes, shapes and weights and tracked them all the way through the airport’s brand-new state-of-the-art baggage handling network,” Swartz notes, referencing the system YOW debuted last year.

With the six-month trial period still underway, it is too early to detect usage trends. “We are working to increase visibility and awareness, as this is a brand-new offering to Ottawa passengers,” he explains. “We are working hard to promote the service and will be constantly reviewing with our partners.”

YOW and Safe Bag personnel agree that the location of wrapping stations and proper promotional support are important factors.

“Because the majority of customers using the service are international passengers, and because many opt to purchase the service shortly prior to checking in their luggage, the physical location of the machines in international terminals is key,”

Gentile emphasizes. “As to marketing, we need to find ways to promptly inform passengers about the existence of our service and the location of our machines. In our experience, it is vital that passengers know where to find the service the moment they enter the airport.”

If YOW decides to continue offering the service after its half-year trial, the airport authority will negotiate specific license terms with Safe Bag based on the economic outcome of the pilot.

Officials are undoubtedly hoping for results similar to those at Canada’s busiest airport, Toronto Pearson International (YYZ).

That’s a Wrap

YYZ has been offering passengers baggage protection service from Secure Wrap for about 1½ years. The Greater Toronto Airports Authority added the option to its concessions lineup to fulfill passenger requests, explains Giovanna Verrilli, the authority’s associate director of retail and food/beverage programs.

In addition to providing a sought-after customer service and new revenue stream, the Secure Wrap service reduces the use of homemade wrapping options, which can cause backups in the airport’s baggage handling system, explains Verrilli.



GIOVANNA VERRILLI

“Our top priority was finding a vendor with a wrap material that would be safe in our baggage system and would allow for additional security screening where necessary,” she comments. “Secure Wrap came to the table with a new innovative wrap that was tested on site and passed with flying colors. They also provided a customer service plan that aligned with our vision: ‘passengers are our passion.’”

In developing a program for YYZ, Secure Wrap drew on its experience at several U.S. airports, including John F. Kennedy International in New York and Houston’s George Bush International. The company has worked hand-in-hand with TSA since 2003 to re-wrap any luggage opened for secondary inspection for no additional charge, notes Nicholas Valdespino, vice president of operations.



NICHOLAS VALDESPINO

In a broad sense, passengers purchase the optional wrapping service to protect their luggage and other checked items. Valdespino explains that specific motivations fall into two main categories: security—preventing theft of items inside as well as stopping others from placing contraband into baggage; and aesthetics—shielding bags from scuffs, tears and inclement weather.

As for the wrap material, Valdespino explains that it’s a proprietary plastic designed specifically for personal baggage and the airport equipment that handles it. “Our plastic was designed to prevent any cling on the exterior of the film,” he comments. “Baggage covered in our plastic is able to travel seamlessly from belt to belt.”

Because the special material cannot be resealed, it’s easy for travelers to tell if someone has tried to open their bag, notes Valdespino. In addition, the wrapping is an instant deterrent to those looking for bags to compromise. “They see the plastic and choose another bag that’s an easier target,” he explains.

Before signing a contract with Secure Wrap in February 2016, the airports authority required thorough testing, notes Verrilli. Working hand-in-hand with airport officials, the company test-wrapped and inducted over 100 bags on various belts throughout YYZ’s baggage handling system.

“We worked closely with the baggage team to ensure the material met their expectations by conducting extensive testing, which proved the material worked well with our systems,” Verrilli relates. Ultimately, the airport opted to open four bag-wrapping locations in pre-security areas—two in Terminal 1 and two in Terminal 3. Secure Wrap provided input on placement based on its experience with high-volume flights.

“We have had very positive feedback about the new service,” Verrilli reports. Secure Wrap personnel go “above and beyond” to provide exceptional service to rewrap luggage that has been wrapped at home for better protection and to ensure that it moves through the baggage system smoothly, she adds.

“Sales have increased,” reports Verrilli, noting a distinct increase over the busy summer months. “We are looking forward to continuing to work with Secure Wrap to market the service and build their business.” ✈️

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Evolving Requirements for Senior Airport Execs Demand Succession Planning & Employee Development

BY KEN WYSOCKY

A challenging management issue is emerging at many U.S. airports: As increasing numbers of long-time senior executives prepare to retire, their next-in-line successors typically don't have the business, management and leadership skills the top positions demand.

As a result, airports that aren't taking steps to update—or even develop—succession plans and employee development programs are finding it more difficult to hire managers and executives equipped to handle the rapidly changing business and technology dynamics they will encounter.

Wayne County Airport Authority, which oversees the operation of Detroit Metropolitan Airport (DTW) and Willow Run Airport in nearby Ypsilanti, is one of many organizations facing the new challenge. "At our airport, a lot of our people have extensive experience, which is a good thing in terms of retaining institutional knowledge," explains Rodney Williams, director of talent acquisition and inclusion. "But the downside is we don't have as many staff members with an outside perspective from other industries and cultures. So when we're looking for people with more business acumen and management and leadership skills, we sometimes have to go outside to fill some of our key upper-level positions."



RODNEY WILLIAMS

A similar situation is unfolding at Reno-Tahoe International Airport (RNO), reports Dan Bartholomew, manager of planning and environmental services for the Reno-Tahoe Airport Authority. He also serves on the academic relations committee of the American Association of Airport Executives (AAAE).



DAN BARTHOLOMEW

"We've had some difficulty hiring for planning positions—finding the right mix of backgrounds and experience," Bartholomew notes. "If you look at the airport world in general, things are accelerating from a technical standpoint so much faster than before. So in terms of background and experience, there's been a shift from what was needed in the past and what is needed in the future."

Wanted: More Planning

Aviation Career Services, a national recruiting and talent development firm, highlights the need for *active* succession planning. Although the industry as a whole has emphasized development of succession plans, they often aren't implemented due to lack of time and funding, says Eric Mercado, the firm's chief executive officer.

"There are at least two major East Coast airports that have had vacancies for six to nine months for executive-level positions,"

reports Mercado, illustrating the depth of the problem. The primary reasons: lack of proven leadership, technology and business/revenue-development skills—all traits that industry observers say next-generation airport executives will require to succeed. Diversity and inclusion issues also figure into the scenarios, he adds.



ERIC MERCADO

A survey that RNO's Bartholomew conducted last summer for the National Airports Conference supports that assertion. Questions focused on the desired background and experience for airport directors and other senior positions. Generally speaking, respondents indicated that they want job candidates with master's degrees in business administration *and* finance or planning; flight experience (either current or former pilot licenses); AAAE certifications—Accredited Airport Executive (A.A.E.) for top spots and Certified Membership (C.M.) elsewhere in the management ranks; superior people skills; political astuteness; and experience at multiple airports.

"That last one reinforces a saying in the industry: 'You've seen one airport, you've seen one airport,'" Bartholomew wryly comments.

Questions were posed to 100 attendees, with 77 responding, yielding a statistically significant response, he notes.

New Career Path

Previously, the typical route to an executive position included a military background and/or rising through the ranks of operations and maintenance departments. A bachelor's degree may or may not have been required. Now, a bachelor's degree is the minimum requirement, and master's degrees with a business emphasis are becoming the new gold standard, says Mercado.

Moreover, promotions typically were dictated by seniority. "Everybody feels like they're next in line (for promotion to senior positions) because they're been at an airport for so long," Williams says. "And in the past, if you were next up in line, typically you were a good fit for the job. But now, the people who are next in line are aging as well; plus millennials usually aren't interested in 10- or 15-year runs."

At conferences, Williams often asks colleagues how the industry can attract more millennials to ensure that there are enough future leaders. "We're just starting to feel this pinch," he says. "But 10 or 15 years down the road—if not earlier—we're really going to feel it."

"As a whole, the industry is requiring a proven track record of success, particularly in business, revenue and property development and air service development and finance," Mercado adds. "The most direct path to a C suite these days is through the business and finance realm."

Why the paradigm shift? Rising expenses, which prompt a need for more creative ways to raise revenue, play a key role. So do customer expectations for a more sophisticated airport experience that includes interactive wayfinding displays, ready access to technology and an array of restaurants, shops and even high-end lodging options.

“Airports have changed from a government-type model to a business model,” Bartholomew points out. “So for executives, we’re looking at a shift to more education and diversified backgrounds. The industry is moving away from an actual degree in aviation to a degree that has nothing to do with aviation.

“Instead, they want a degree in a related field, such as engineering, finance, planning and so forth,” he continues. “The shift makes sense because airports need to be financially viable, are utilizing more technology and need experienced planners that can view airports comprehensively. Moreover, airports are expanding, and engineers build things...so it makes sense why these criteria pop out.”

Airport officials are also trying to get a better handle on creating non-aeronautical revenue, Williams adds. “If you’re not going to get all your revenue from airlines anymore, then airports have to assume more of a business mindset and rely on business acumen. More and more airports now want to be a destination... when passengers arrive, they want to eat a decent meal and do a little shopping. Ten years ago, you were lucky to get a hot dog and a cup of coffee. Now it’s hard to find an airport without, say, a Starbucks or several good casual dining options.”

Bridging the Disconnect

Reasons vary for the disparity between what’s needed from future executives and the credentials most current candidates possess. Mercado says that in many instances, individual airports haven’t had enough money to invest in employee development. “To have active succession planning requires staff training. And with training comes dollars,” he explains. To help keep leadership development costs down, he recommends ACS, which offers aviation leadership education in various regions. “It

cuts down on the travel dollars and time away, which adds up,” he notes.

Others point the finger at universities—private institutions dedicated solely to aviation education and public colleges that offer aviation as one of many degree options. There’s a disconnect between what they teach and the skills required by next-generation leaders, Bartholomew explains.

“There’s a need to break down that barrier—bridge that disconnect between the academic world and the world we work in,” he continues. “How we do that is the million-dollar question...change in the academic world is not easy. But I hope it starts with things like our survey.”



BRIAN MOORE

In the meantime, airports like RNO are taking matters into their own hands by emphasizing professional development and succession planning. Because the airport is

in a constrained labor market, two options exist for attracting quality employees: “buy” them from outside the organization or grow them internally, says Brian Moore, the airport’s vice president of human resources.

RNO opted for the latter approach by implementing a succession planning program designed to give the airport more control over workforce planning. There is risk involved, Moore acknowledges: High-potential employees can always leave to take other jobs, negating the investment of time and money in career development.

“But if you’re doing things internally to grow your talent and have those kinds of departures, you still have a greater ability to be more nimble and anticipate those departures, and less opportunities for vacancies and talent voids,” he explains. “And if we don’t provide some clarity regarding career opportunities, as we do in our very transparent succession planning program, they’ll look for those opportunities elsewhere anyway. Plus, what if we don’t train employees and they stay?”

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Education is Key

The succession planning program at RNO places a strong emphasis on education, through internal training programs and AAAE certifications. To that end, the airport more than doubled its tuition reimbursement budget during the last three years, to \$35,000 from \$15,000. All 265 employees—including 11 senior managers and 47 middle managers—are eligible to participate in the program. “It percolates all the way down to the janitors,” Moore says.

Educational programs span everything from career development to resume writing and interviewing skills. Requiring all employees to formally apply and interview for new positions helps eliminate feelings of entitlement to promotions, he notes.

The renewed emphasis on succession planning seems to be working. Three years ago, employee turnover was about 12%. Now, it’s about 9%. “They’re staying because we’re better at defining opportunities for them,” Moore explains.

The airport also has accelerated its hiring cycle. Three to four years ago, it took RNO about 130 days to fill positions. Now, it takes an average of 56 days. “Imagine what that does for employees in terms of work/life balance and continuity of workflow,” Moore points out. “If it takes 130 days to hire a new employee, all

those duties fall on the shoulders of the people left behind who already have full plates. Then they get burned out and frustrated.”

Moreover, the airport is filling roughly half its vacant positions from within. Three years ago, that figure stood at 19%. Moore says 75% internal hiring would be even better, but anything higher than that could be detrimental, because it’s healthy to hire some employees from the outside to inject new points of view into the organization.

Better Branding Needed

About seven years ago, DTW established a talent-management/succession-planning program aimed at “high-potential employees.” The curriculum includes career development training and exposure to other jobs via job shadowing—help that employees need to take that next step in their career, Williams explains.

“We’re very systematic about it,” he says. “We basically develop employee profiles that identify their backgrounds, skills, training required or taken and career development plans—road maps that show them how to get from where they are to where they want to go. We note what skills they lack to get there...it may be as simple as training to use Excel spreadsheets or as complex as developing negotiating skills.”

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Aviation 101: Van Nuys Airport Teaches Local High Schoolers About Industry Careers

As many U.S. airports grapple with filling vacancies in their executive suites, Van Nuys Airport (VNY) in Los Angeles continues to help fill the other end of the pipeline. For 12 years running, the airport has hosted an annual career day for local students.

This year's event, titled *The Sky's the Limit*, included more than 1,200 high school students from the Los Angeles Unified School District. Students took a behind-the-scenes tour of the airport, browsed through interactive exhibits, viewed aircraft and met with personnel from the Los Angeles Fire Department Air Rescue Unit and the airport's police and operations departments.

The airport hosted the career day in conjunction with Nury Martinez, a Los Angeles city councilwoman, and Clay Lacy Aviation, an aircraft management and private charter company based at VNY. Major sponsors included Western Jet Aviation, a Gulfstream maintenance support firm, and Signature Flight Support, the field's fixed-base operator.

This year, VNY supplemented its usual curriculum with a panel discussion to share the personal experiences of professionals throughout the industry. Led by Curt Castagna, president and chief executive officer of Aeroplex/Aerolease Group, the panel included:



Students learned about the wide variety of careers available at airports.

Joe Barber, director of business development at Clay Lacy Aviation; Samantha Butero, sales director at Tronair; Christian Moreno, VNY's chief of Airport Operations; Niall Mulcahy, station manager for Signature Flight; Chris Nielsen, a pilot at Avalon Capital Group; Jason Price, owner of Mach 1 Aviation flight school; and Tony Russo, manager of Duncan Aviation.

"This event shows students the vast number of career opportunities in the field of aviation," says Jeffery Daar, commissioner of Los Angeles World Airports, which owns and operates VNY and Los Angeles International Airport.



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That said, Williams acknowledges that not every employee wants to move up the corporate ladder. He also recognizes that no matter how much the airport tries, some high-potential employees will leave for what they perceive as better opportunities. “The [era] of 30 years of employment and then getting a gold watch when you retire are gone,” he says. “If we can keep someone for five to seven years, that’s going to be considered good.”

On a broader level, Williams says that airports need to do a better job of branding to attract young employees. He consequently encourages industry peers to show them how exciting it can be to work at an airport. Too many young people think that the only jobs available at airports are being a pilot, baggage handler or TSA officer, he observes. What they need to know is that airports are like small cities that require everything from engineers, firefighters, police and operations people to maintenance workers, electricians, carpenters and plumbers.

“Unless they get an aviation degree, most kids wouldn’t know that we hire civil engineers at airports,” Williams says. “And the other piece is that parents don’t know, either. So a lot of it boils

down to just more exposure to and education about how airports work. We have to be more proactive about branding airports.”

Toward that end, Williams often visits high schools and college campuses to raise awareness about airport careers. The airport also periodically hires interns. Recently, it hired five students from a local aerospace and technology high school for eight-week internships. DTW also has hired 15 college students for part-time, 13-week internships in a wide variety of areas, ranging from public relations, public safety and maintenance to operations, finance and procurement.

“They get assigned a primary role and then rotate to other roles as well,” Williams explains. “It’s a pretty robust program.”

But is that enough to turn the succession planning tide at DTW? “It’s a good start,” he says. “Time will tell, but in terms of exposure and trying to get kids to understand what we do here at the airport, it’s a huge shot in the arm. You have to be proactive—get out on college campuses and develop partnerships, anything to get young people engaged in an airport environment.” ✈️

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Halifax Stanfield Revamps



People outside the industry sometimes think of airports as nothing more than places for airplanes to land and take off. Halifax Stanfield (YHZ) in Nova Scotia aspires to be much more—for passengers *and* its community.

The airport's multi-year capital improvement plan aims to upgrade facilities and expand current services to best-in-class levels.

Located on Canada's east coast, YHZ links the Atlantic region of the country with destinations across Canada, the United States, Europe, the Caribbean and Asia. Last year, the airport welcomed almost 4 million passengers and processed more than 33,000 metric tons of cargo.

"More than half of all the air passengers and air cargo that move in Atlantic Canada

pass through our airport, creating a tremendously positive impact on Halifax and the entire province as an economic generator and supporter of growth," says YHZ President and Chief Executive Officer Joyce Carter. "It's imperative that we continue to invest in and further advance this valuable community asset."

A concessions redevelopment program currently underway is a key part of the airport's ongoing evolution and long-term strategic planning. The project's goal is to bring more choice and new product offerings to passengers, visitors and the airport community.

Travel Global, Buy Local

Jo-Anne McLean, director of Air Service and Terminal Business Development for the airport authority, notes that the retail landscape at YHZ has changed

FACTS&FIGURES

Project: Concessions Upgrade & Long-Term Planning

Location: Halifax (NS) Stanfield Int'l Airport

Timeline: Multi-year project; 1st phase scheduled to be complete by 1st Quarter 2018

Concessions Management Consultant: Steven Baldwin Associates

Marketing Consultants: Sean Williams Marketing Group; m5 Marketing Communications

Project Scope: Adding & upgrading retail shops & food/beverage locations; re-branding campaign with new logo & tagline

Key Benefits: Increased non-aeronautical revenue; expanded concessions offerings; higher profile for local products & providers



Halifax Stanfield
connecting means the world



Concessions Program BY DAN VNUK

tremendously in the last number of years, and those changes will continue.



JO-ANNE MCLEAN

“We are working with our existing partners, along with new ones, to ensure we provide our passengers with fresh concepts and more choice during their travels,” explains McLean. “We are also committed to supporting local entrepreneurs and offering products that showcase and promote our region.”

The airport’s newest tenant, Amos Pewter, opened shop in July, selling handcrafted pewter jewelry and home décor designed with inspiration from Nova Scotia’s coastal surroundings.

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Clearwater Seafoods, located near the airline check-in counters, packages live Nova Scotia lobsters for passengers to take on flights as carry-on items.

Other retail stores and kiosks that highlight local products include Eastcoast Lifestyle, The Nova Scotia Store, Hudson News, New Scotland Clothing Company, Miller's Kettle Corn and Liquid Assets.

The local/regional focus is also guiding efforts to secure retail and food/beverage tenants for approximately 5,000 square feet of new concessions space recently constructed on the departures level.

Optimization Study

The ultimate goal is to make YHZ a catalyst for regional growth and transform it into a destination airport, explains McLean. Toward that end, the authority contracted Steven Baldwin Associates, an airport management consulting firm based in Albany, NY, to recommend ways to optimize all non-aeronautical revenue, particularly concessions.

Alex Hopson, an associate with the firm, explains that consultants performed a comprehensive review of all lease agreements to determine the best use of terminal space for concessions. "The analysis examined square-footage, food and beverage, retail, news and gift revenue performance and customer service," says Hopson. "We found that in certain portions of the departures area, the demand was higher than what the existing concessionaires were providing. Traffic flow as well as passenger and airline schedules were analyzed, and it was determined that more food and beverage options could be sustained."



ALEX HOPSON

With its consultants, the airport then examined the lease expiration dates of all vendors on the departures level and

compared the existing configuration to its concessions master plan. Space was subsequently re-allocated in a phased plan based on lease expiration dates. There was also a "green" space opportunity to build a new concessions area, and YHZ asked the consulting firm to provide advice about what types of layouts should be constructed to allow the concessions program to grow with the airport.

McLean explains that airport officials chose Steven Baldwin Associates specifically for its expertise in airport management and terminal concessions analysis. "We have been very pleased with the process and outcomes," she notes.

Other Changes

The airport also switched from a master concessionaire model to a hybrid model with further direct leasing of some areas. It will continue to implement the updated concessions plan gradually, as leases expire. In July, space was being built-out by the airport, and more retail and food/beverage options were appearing.

Upgrading concessions is a small portion of the airport's 10-year, \$400 million capital improvement plan. Major infrastructure projects include:

- airfield lighting upgrades;
- runway, taxiway and apron restoration;
- terminal expansion for passenger security screening and processing;
- utility infrastructure upgrades;
- replacing snow removal and emergency response/fire vehicle;
- expanding vehicle parking infrastructure and services;
- replacing central chiller plant; and
- information technology updates

The airport's top executives note that they are committed to providing the necessary infrastructure to support YHZ as a significant economic engine for the region. "Responsible, effective

management of the growth and development of the airport is essential to ensure long-term financial health,” says Carter. “These improvements demonstrate our continued focus on safety, security, reliability and customer experience, and are necessary to meet the needs of our current and future passengers and visitors.”

The capital improvement plan is also designed to support service development efforts. “Enhanced facilities and upgrades allow us to grow with airlines that are currently serving Halifax Stanfield while making us more attractive to prospective partners,” she explains.

Re-branding Campaign


To help convey the airport’s significance for the community and its economy, YHZ recently launched a rebranding campaign that included a new logo and tagline. “It was important that our new identity reflect the fact that Halifax Stanfield is not only a successful airport, but the backbone of business, the heart of a community and a place where anything can happen,” comments McLean, who led the marketing initiative.

The airport contracted two local companies, Sean Williams Marketing Group and m5 Marketing Communications, to perform initial research and help visually rebrand the airport.

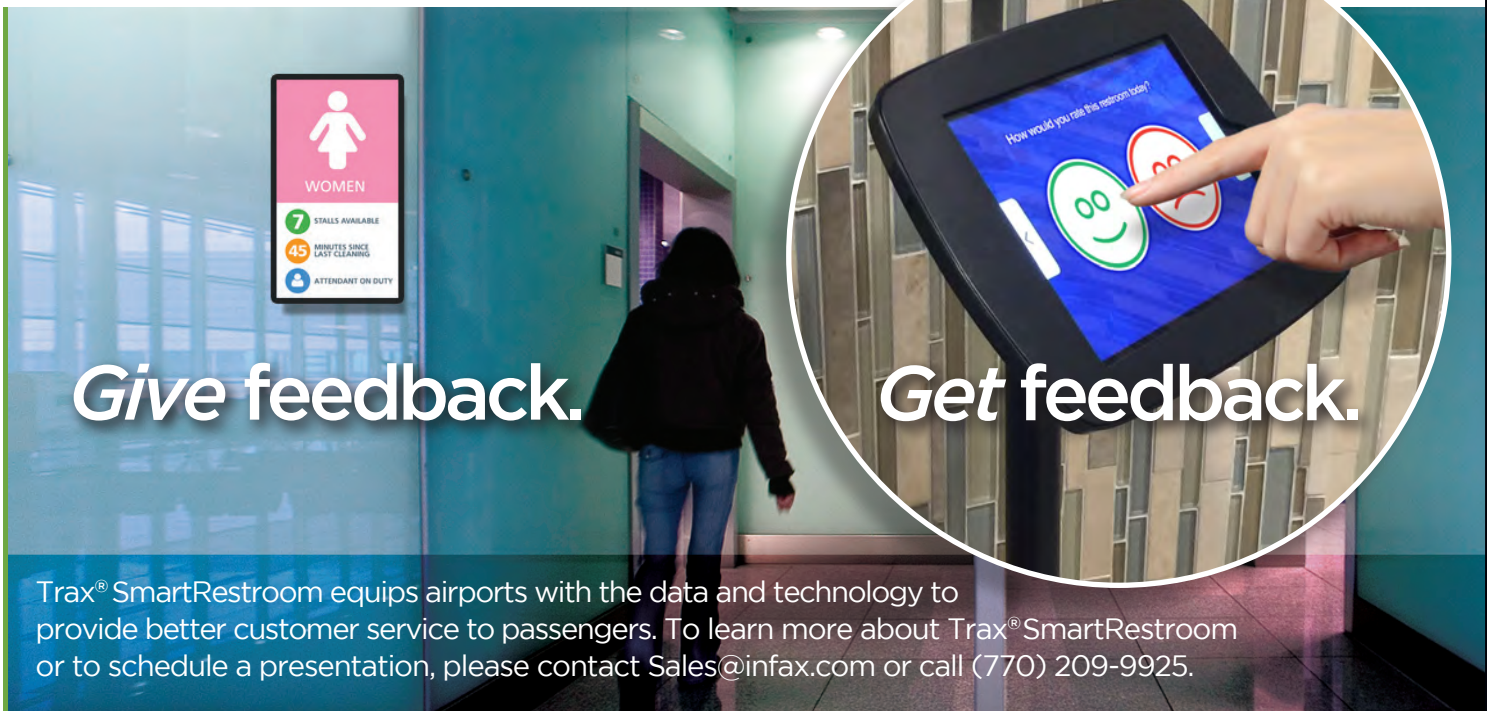
Interviews and meetings with stakeholders provided a clearer picture of how the public perceives the airport. The project team also studied benchmark airports throughout the world.

“Our research showed that in Europe and Asia, for example, airports are more than just a way to connect to a flight,” McLean says. “They’re also a destination where people show up a couple of hours early to eat a meal or even get a workout.”

The new logo was designed to reflect the passenger experience at YHZ. “It draws on inspiration from the region and aviation, communicating a sense of flow, ease and connection,” she explains. “It suggests an aircraft tail and runway, while revealing an ‘H’ for Halifax.”

The tagline, *Connecting Means the World*, was crafted to communicate the airport’s potential to transform lives and act as a catalyst for regional economic growth. For McLean, it means far more: “It also mirrors the essence of Halifax Stanfield—the people who create a positive, human and caring experience through the personal connections made with passengers and visitors each day.” 

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FACTS&FIGURES

Project: Primary Runway Rehabilitation

Location: Montreal-Mirabel Int'l Airport

Cost: \$57 million (\$43 million USD)

Funding: Aéroports de Montréal

Timeline: Preliminary planning/design work began in 2014; construction ensued in Dec. 2015; new runway opened in Nov. 2016

Civil Engineering & Design/Construction Management: Stantec

Geotechnical Laboratory Services & Quality Control: Englobe

General Contractor: Demix Construction

Electrical Engineer: SNC-Lavalin

Electrical & Lighting: Systèmes Urbains

Light Bases & Accessories: Jaquith Industries

LED Runway Edge Lights & Threshold Lights & Signs: ADB SAFEGATE

Other Lighting Suppliers: HELLA Induperm; Eaton

Demolition & Drainage: Excavation Loiselle

Landscaping: Construction C. Cusson

Joint Sealing: Forage St-Leonard; Groupe Lefebvre

Geotextile Membrane: Reflectex (Propex Operating Co.)

Noteworthy: Rehabilitated primary runway using hybrid approach to save money & time; largest concrete project in province history

Aéroports de Montréal Saves Money Using Hybrid Approach During Runway Project at Mirabel Int'l

BY ROBERT NORDSTROM



Aéroports de Montréal recently rehabilitated the primary runway at Montreal-Mirabel International (YMX), one of the three largest aeronautical centers in the world and a major hub for Quebec's economy that serves 24 cargo airlines and a host of corporate and military tenants.

Of late, YMX's aeronautics and industrial park has reached a critical mass regarding industry-related activities such as aircraft assembly; aircraft component manufacturing;

aircraft and component maintenance; and training and research/development operations. In fact, fully 80% of the approximate 4,000 jobs within the park are linked to the aerospace industry.

At nearly 3,660 meters (roughly 12,000 feet), the airport's primary runway had more than enough length for all types of cargo and tenant traffic; but time had invariably taken its toll. Built in the early 1970s, Runway 06-24—the second longest



ELIE ELHINDY

in Canada—was simply due for a facelift, explains YMX engineer Elie Elhindy. “We regularly do maintenance inspections and we had come to the decision of completely rebuilding the runway,” Elhindy elaborates. “In 2013, the runway showed a very low pavement condition index (PCI). To ensure safe operations, and meet requirements, it needed a major rehabilitation.”

Given the subsequent project’s scope—complete rehabilitation of paved surfaces as well as drainage and electrical infrastructure—many within the industry will be surprised by its \$57 million price tag (approximately \$43 million U.S. dollars), notes Elhindy. “The average cost to rehabilitate a runway with CAT II approach this big would be approximately \$95 million U.S. dollars,” he explains.

Hybrid Approach

The airport faced a very tight time schedule for getting the project done, Elhindy relates. With this constraint in mind, airport management worked closely with contractors and consultants beginning in 2014 to evaluate the existing pavement conditions in order to come up with efficient and cost-effective design alternatives.

Aéroports de Montréal hired Stantec to serve as the civil engineering consultant responsible for preparatory studies and tender documents; Englobe to provide geotechnical laboratory services and quality control; and SNC-Lavalin for electrical engineering work.

After thoroughly analyzing the condition of the existing runway and studying various rehabilitation solutions, Aéroports de Montréal engineer Elhindy finalized the design, which is based on a hybrid rehabilitation concept. The selected design met several key criteria, including a lifespan of 40 years, a limited budget and limited time for construction, he explains. The design is also based on past experience, particularly the 2004 rehabilitation of Runway 06R-24L at Montréal-Pierre-Elliott-Trudeau International, also designed by Elhindy.

Moez Gmach, project manager and design leader for Stantec, notes that cost and schedule considerations made it infeasible to consider complete demolition of the runway. “To determine the best approach, the runway’s current condition first had to be diagnosed,” he explains. “Based on geotechnical studies and surveys using laser remote sensing, a detailed portrait of the runway was created.”



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During the project, crews installed about 122,000 cubic meters of concrete and 22,000 tons of asphalt.

Overall, crews inspected 8,120 concrete slabs to record and analyze defects. Based on these evaluations, the final hybrid rehabilitation design divided the runway into several zones, and each received a different approach in terms of concrete strength and slab dimensions. The thresholds underwent complete reconstruction due to poor results of core samples. A rigid pavement overlay was confined to the center portions of the

runway, with replacement of shattered slabs and stitching of longitudinal cracks. Rapid exit taxiways B6, B5 and B4 received asphalt overlays on existing pavement.

This hybrid approach, with varied concrete strength for different zones, and the recycling of the old concrete kept costs to a fraction of the amount required for typical rehabilitation of a comparable runway, Elhindy emphasizes. The strategy

also made it possible to restrict complete demolition and reconstruction to specific portions of the runway.

Work Begins

Preparatory work for the project began in October 2015. Because YMX has only two runways, keeping secondary Runway 11-29 operational throughout the yearlong construction project was critical. To do so, the airport installed Instrument Landing Systems on 11-29 and transferred one of the arresting cables for F-18 aircraft from Runway 06-24.

The runway and taxiways were isolated and secured with fencing according to Transport Canada security standards, and contractors constructed an access road to provide easy access to the worksite for crews and equipment. They also built an onsite concrete batch plant to expedite work, and construction began Dec. 1, 2015.

The runway thresholds were demolished and completely rebuilt because of their pronounced degradation. Complicating matters, the aircraft arresting system used by the military had to remain in place. "The slightest change in levels on either side of the arresting cables would have automatically resulted in the complete reconstruction of this complex system," Gmach emphasizes. "This would have hampered the project by creating complications and delays."

Crews used recycled materials from the demolition of the thresholds to enhance the runway edges. And the central portion of the runway was raised after repairing damaged sites.

New 7.6-by-6.1 meter concrete slabs were laid over stable existing slabs. The new joints were carefully aligned with existing joints to control movement of the concrete slabs and reduce the risk of cracks. A special geotextile membrane studied in the laboratory by Englobe was applied between the new and old slabs to allow them to move independently.

While innovative, this hybrid approach presented many technical challenges, Gmach reflects. "Design parameters had to ensure an adequate transition between the different levels of the runway areas," he explains. "The optimal geometric elements for these transition zones had to be

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Because Aéroports de Montréal chose a hybrid approach, complete demolition and construction was limited to specific portions of the runway.



identified according to applicable standards. Moreover, given the projected traffic and the wide temperature differences of the region, it was also necessary to ensure that the structures of each zone behaved in a uniform manner in the short-, medium- and long-term so as not to create unevenness in the pavement surface.”

The tight construction schedule and cost considerations prompted Aéroports de Montréal to bring electrical engineering consultant SNC-Lavalin into the project planning phase in early 2014.



GABRIEL THERIAULT

Gabriel Theriault, an electrical engineer with the firm, notes that YMX leveraged its competencies and experience prior to the design phase. “The airport wanted us to study the whole project before entering into the details of the design phase,” Theriault relates. “We studied the project for a full year, which helped us to make significant decisions using the latest construction methods and technologies.”

For example, the airport decided against using manholes, which can be hazardous and require two people to enter with harnesses and gas protection equipment to pull and run cable. Instead, it opted for the can plaza method, whereby crews pull and install cable from a number of smaller hand holes.

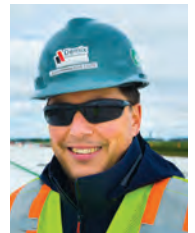
Electrical work had to be closely coordinated with the paving contractors, because both were occurring at the same time. “During the design phase, we had to consider carefully how to coordinate electrical and runway construction activities,” comments Theriault. “Communication was critical. At every step along the way, we had a person on the field to verify that installations were correct.”

Crews replaced the runway’s entire incandescent and halogen lighting system with LED lighting. More than 800 airfield lights and approximately 160,000 meters of cable were installed.

Improvements to the storm drainage system spanned all pavement grates. Workers replaced five type-D manholes, and adjusted and/or raised 90 type-B, -D and -F manholes in the concrete overlay sections. Approximately 2,000 meters of drainage ditches were profiled, 1,300 meters of ditches cleaned and 2,000 meters of drainage pipe replaced.

Touch of Green

All told, crews poured approximately 122,000 cubic meters of concrete and laid 22,000 tons of asphalt within a six-month time frame, informs Jean-François Coté, director of projects for general contractor Demix Construction. “It was the largest concrete project ever performed in Quebec Province,” he comments, adding that the firm recycled all concrete and asphalt demolition materials. “No materials were sent to an external dumpsite.”



JEAN-FRANCOIS COTE

In order to facilitate the redistribution of 60,000 cubic meters of demolished concrete (the equivalent of 16 Olympic-size swimming pools), the contractor installed a crushing facility onsite. A portion of the aggregates was used to upgrade the access roads during construction. The remaining material was used to raise the terrain along the runway, taxiway and service road edges. The materials were confined within a protective geotextile membrane to prevent toxic infiltration into the environment.

In looking back on the project, Elhindy believes that although the challenges were significant, the rewards are considerable. “The cold weather was especially challenging,” he reflects. “The summers are short here, and we had to lay a lot of concrete in a short period of time. But we got the runway open in November 2016—on time and within budget.” ✈️

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4

Vehicle Maneuverability

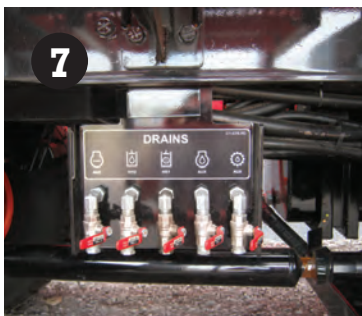
- Automatic Rear Steering (ARS)*:
 - Auto or manual mode
 - Crab or Crawl mode
 - Manual override on auto mode
 - Memory position on manual mode (red line) **5**
 - Rear wheel position on vehicle display (blue band) **5**
- Rear bumper cut at angle on both sides(Wrap around type) **6**
- High ground clearance; 16 in.
- Hitch lower arm parallel to chassis frame to maintain traction at the front wheels
- Optimized wheel base for perfect weight distribution
- Weight transfer system to maintain 50-50 load on axles



6



5



7

MAINTENANCE

- Maintenance free and self adjusting aux. transmission clutch
- Ease of Maintenance, easy access drain ports with valves in one location **7**
- Easy access to engines with tilting rear cowling and large side doors **8**
- Electrical input/output status visible in the display
- 30 gallons Deluge system with 2 inch filling cap and level sight glass **9**
- Both sides fuel cap
- Glass doors with two wipers per side
- Easy access underneath the cab with hinged fenders and electrical panel from cab rear doors **10**
- Automatic lube system*



8



9



10

ERGONOMIC CAB

Construction

- Quiet interior; sound level is 72 dBA in operation
- Curved and reverse ranked windshield to prevent ice built up.
- Great all around visibility:
 - Front high and low view ¹¹
 - Rear far view ¹²
 - Side low view ¹³

Controls and displays

- All operational controls are completed with the right hand ¹⁴
- Adjustable armrest and joystick support ¹⁵
- Windshield wiper controls on steering column ¹⁴
- Four programmable Displays ¹⁴
 - HD colored
 - Separated by functionality for quick reading
 - Auto-lift when reverse is engages for attachment , selectable
 - Automatic fast idle setting for engines, selectable
 - Pre-programmed electrical power outputs all around
 - Maintenance reset hour
- Multi-functional joystick: ¹⁶
 - All hydraulic functions
 - Automatic rear steering (ARS)
 - Auxiliary engine RPM up and down
 - Attachment engagement via display selection
 - Chassis automatic transmission F-N-R
- Moving direction of joystick corresponds to components direction
- The two 12-button illuminated key pads with LED confirmation
- Windshield Wipers:
 - Left Foot switch on footrest to wipe one time ¹⁷

Heating

- Heater/Defroster/AC* with constant temperature climate control ¹⁸
- Heated wiper blades*
- Heated windows* without obstruction lines
- Side glass doors with heated* sliding windows

Steering Column

- Infinitely adjustable, foot pedal activation ¹⁷
- Integrated carrier engine key switch
- Soft grip steering wheel ¹⁴

SAFETY

- Easy access to the shear bolt system from the top behind the cab; warm and dry area ¹⁹
- 3-point seat belt
- Seat switch stopping the attachment engagement or when no operator is present
- Attachment present switch, preventing engaging when PTO is not connected
- ISO symbols are used for instrumentation
- Wrap around handrails for 3-points of contact ²⁰

*Optional equipment



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21 Airlines Relocate During Massive Terminal Swap at Los Angeles Int'l

BY JODI RICHARDS

FACTS&FIGURES

Project: Terminal Swap

Location: Los Angeles Int'l Airport

Owner/Operator: Los Angeles World Airports

Primary Objective: Move Delta Air Lines to larger, more strategically located facilities

Preparatory Construction: 1 million sq. ft. of terminal space; 400,000 labor hours

Terminal 5 & 6 Investment: \$300,000

Terminal 2 & 3 Investment: \$1.9 billion

Funding: Delta Air Lines; American Airlines; Los Angeles World Airports

Timeline: Planning began in early 2016; preliminary moves started late Jan. 2017; final 3-night swap occurred in mid-May 2017

Project Manager: Satterfield & Pontikes/STV Joint Venture

Design Manager: Arup

Engineering/Program Management Support: PM Technologies

Move Consultant: Chrysalis Aviation Solutions

Architecture/Design: Corgan Associates; Gensler; HNTB; Smith Group

General Contractor: Clark/McCarthy (Joint Venture)

Project Management Office/IT: ARC Designs

Common-Use IT Systems: Amadeus Airport IT Americas

Displays: Samsung

Printers: VidTroniX



Los Angeles International (LAX) recently experienced a monumental shift that had nothing to do with seismic activity or regional fault lines. It was a self-induced shift to relocate Delta Air Lines that ultimately affected more than two dozen carriers.

After more than a year of planning, the project culminated in mid-May, with a three-night effort that rehomed 40% of the aircraft flying in and out of the world's busiest origination and destination airport. In order for Delta to move into its new facilities, the existing tenants needed to move out. This set off an extended chain-reaction that relocated 21 airlines and affected nearly 30.

The highly orchestrated—and by all accounts successful—effort was dubbed “LAX on the Move.” Keith Wilschetz, deputy executive director of airport operations and emergency management for Los Angeles World Airports (LAWA), describes the sweeping terminal swap as a “win-win for everybody.”



KEITH WILSCHEZ

Leading the swap was Delta, which moved from terminals 5 and 6 to terminals 2 and 3. In addition to needing more room for its growing

operations, Delta also wanted to be closer to its codeshare partners and easier access to the Tom Bradley International Terminal.

On the other hand, LAX needed facility improvements, primarily in Terminal 3. So the two organizations struck a mutually beneficial deal. “Delta got the terminals they needed and agreed to put money into those terminals and make them much better than they were,” Wilschetz explains.

In total, Delta plans to invest \$1.9 billion to modernize and connect terminals 2 and 3.

Rob Walker, managing director for Delta, notes that the airline's operations at LAX have more than doubled over the last five years. “It was clear that the operation Delta was running in terminals 5 and 6 wasn't as conducive as it could be in a new location,” he explains. “Delta was very happy with its facility in Terminal 5; it had spent a lot of money upgrading that facility. But ultimately, it wasn't going to be operationally the best thing for us long term.”



ROB WALKER

From an airfield perspective, terminals 2 and 3 had the most to offer in terms of gates and proximity to runways; but Terminal 3 needed extensive updates. “It looked like the

business deal was kind of writing itself,” Walker relates. “The building needed a lot of work, and you have a willing occupant here to do the work in exchange for making the move.”

Strategizing the Switch

Planning for the May 2017 swap began in early 2016. Under the agreement with Delta, airlines that were relocated from terminals 2 and 3 to terminals 5 and 6 were provided “like for like” resources such as gates, offices space, color schemes, etc. “Of course, the airport did step in to right-size some of these allocations,” says Viji Prasad, LAWA’s terminal operations manager. “It was done collaboratively and in agreement with everyone.”



VIJI PRASAD

LAWA’s investment is estimated at \$60 million.

To pull off the complicated exchange, Delta worked with each carrier to determine its specific facility needs and funded considerable construction, Walker notes.

Previously, Delta was the only carrier operating in Terminal 5; now that terminal is home to more than 10 carriers—each with its own support spaces for pilots, flight attendants, customer service agents, baggage offices and more. “Delta needed basically one of all of those things in the building,” he notes. “When you change a building that’s configured for one and configure it for many, it’s a very different level of space need.”

According to Wilschetz, Delta invested about \$300,000 to refurbish terminals 5 and 6 for their new occupants.

Early in the planning process, Delta determined that it needed to create an “empty chair” so crews could begin construction with minimal impact to operations. To that end, Delta moved its staff out of Terminal 5 and into a 15,000-square-foot trailer complex across the street. “That enabled us to create some room to move the first carrier, American Airlines, into T5,” explains Walker. “Then, we reconfigured American’s space in T6 and the dominoes were able to start falling that way.”

As space was remodeled and became available, more operations and airlines were relocated. Four American Airlines gates were moved from Terminal 6 to Terminal 5 on Jan. 31, 2017, and additional preliminary shifts continued for months.

The Big Move

When the project team slated the “big move” for May 2017, it also scheduled several evaluation points throughout the process to ensure that the transition would be successful, Prasad comments.

During the final stages of the relocation project, LAX and Delta used the airport’s incident command system to synchronize stakeholders and smooth out jurisdictional responsibilities while maintaining operations. “It helped us to play as one team, managing the event like an emergency,” Prasad explains. “We had the luxury of not having the stress of a real emergency behind our back, but we were able to use the same system effectively to bring the group together, stay coordinated and eliminate a lot of redundancies.”

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ANN THORVIK

Delta contracted Chrysalis Aviation Solutions to manage the final stages of the move. Chrysalis Director Ann Thorvik summarizes the firm's responsibility as "all things transition." That included everything from packing and moving boxes to scheduling coordination and ensuring construction and IT efforts aligned so tenants could promptly operate in their new spaces.

To prepare for the move, Delta developed a comprehensive structure of move managers. Every entity involved with the move was assigned a designer who met with them to understand what

their criteria would be to complete the move, explains Walker. Key subsequent steps included taking inventories of existing spaces, configuring new spaces virtually, and having Chrysalis point personnel systematically prep individual tenants and airport groups for their specific moves.

While the "big shifts" occurred on the nights of May 12, 14 and 16 with operational moves, lots of other activity happened before and after, Thorvik comments.

Prior to the big week, non-critical items were packed, labeled, loaded and relocated in careful coordination with stakeholders. "You need the desk, but you can live on folding tables for a few days," Thorvik explains. "That way, on the move night, all we're doing is picking up your computer and putting it on your already-relocated desk."

Countless meetings with all stakeholders ensured communication was strong, everyone was in synch and that nothing was being missed, she comments.

"There's no substitute for communication," Walker stresses. "The inventories and meetings and accomplishment checklists were reviewed with every carrier multiple times and iterated until the move took place."

Posting staff at the new *and* old locations as items were moved helped ensure that each piece of the puzzle was where it should be to accommodate the upcoming overnight shift. "You don't have time to go back to be an interior decorator," says Thorvik. "That plan has to be in place at that point and you're just executing a plan."

To guide movers, Chrysalis hung drawings on each door indicating how the room should look when complete.

"The big secret in all of this is that when you really get close to your customer, and understand what their needs are, the 80/20 rule comes into play," Walker states. "On the night of the big move, you only need to move about 20 percent, and the other 80 percent can be pre-staged or pre-moved."

Chrysalis hired professional movers to supplement teams from the airlines, airport and tenants. "They have the equipment and the bodies you need to execute a lot of activity in a short period of time," relates Thorvik.

Throughout the event, the transition consultant "rolled up its sleeves" to help keep everyone on task. "The objective is to not incur flight delays, and safely get people on and off planes on that first operational day," Thorvik summarizes. "And that was achieved."



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Related Tasks

The terminal swap required more than just moving furniture and boxes. Associated tasks included:

- installing new holdroom seating, flooring & kiosks
- updating flight/gate/lobby/baggage information terminal displays
- coordinating ramp tower & gate management
- activating modified baggage systems
- activating new/modified club space
- activating landside/airfield bus gates/service
- coordinating logistics for safety; wayfinding (roadway, curbside, interior & back-of-house sign changes); flight information services; airline go-live teams & corporate brand personnel (signage/brand, stanchions, floor mats, etc.); ground handlers & passenger services (boarding bridges, baggage handling system, above- & below-wing services, wheelchair services, skycaps, etc.)

Parallel IT Systems

Information technology systems played a critical role in the success of the terminal swap, Walker says. "People in the airline industry are incredibly resourceful—almost every day they are dealing with an unanticipated event somewhere in their network; so they are very adept at making do," he explains. "But the way the industry is configured today, you need your IT systems. You can't function without those."

The move involved two separate networks. The proprietary system Delta had used to process passengers in terminals 5 and 6 was replicated for use in terminals 2 and 3; and a new common-use platform from Amadeus Airport IT Americas was deployed for the carriers moving into terminals 5 and 6.

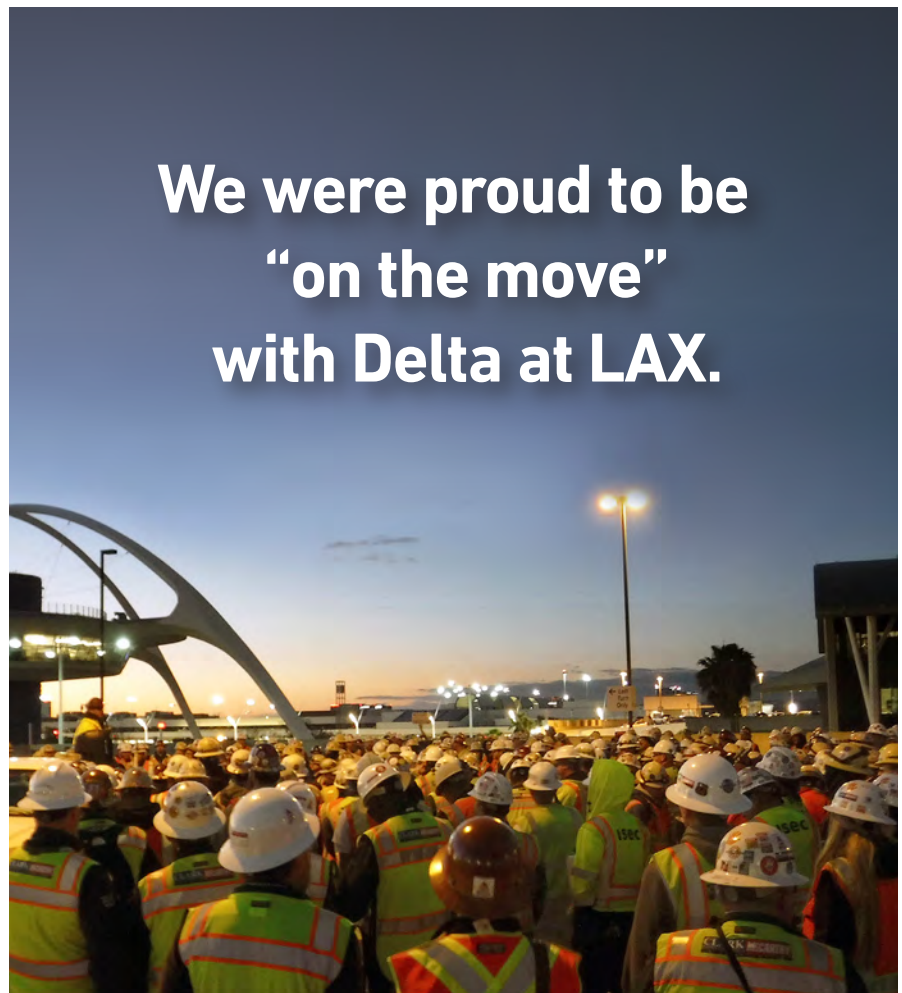


BETROS WAKIM

The Amadeus system allows airlines to "coexist, cooperate and use each other's check-in counters and gates without having to use different systems," explains Betros Wakim, president of Amadeus Airport IT Americas. "We

provide a playground where everybody can play on their own favorite toys and be happy about it."

Two technology labs, one in Terminal 6 and another in the temporary trailer complex, allowed carriers to acclimate to the new system before it was installed. Each carrier and its IT team was able to set up their "image" and make sure the common-use platform connected appropriately with the airline's proprietary system at company headquarters. The IT labs also allowed airlines to train and test employees so they were fully prepared to operate on the new system in their new locations.



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Leading up to the week of the big moves, Delta removed all of its proprietary equipment from terminals 5 and 6, replaced it with the new Amadeus system, and operated off the common-use platform until the final move. “We just couldn’t do all of that work the nights of,” Walker notes.

“Our technology facilitated a seamless transition overnight—which was key in this project,” adds Wakim.

The common-use aspect of the Amadeus system helped the airport and airlines continually update signage and branding throughout the move. As carriers moved and operations shifted, digital displays guided passengers with appropriate messaging and airline branding. “None of the airlines lost any branding ability,” Wakim notes. “We provide their resource planning, so they can plan all their gates, flight information displays, logos and display flight schedules.” Amadeus implemented 150 Samsung flight and gate information displays throughout the project.

Overall, IT changes involved about 3,000 new devices and required about 475 miles of copper cable and 26 miles of fiber.

On the Tarmac

The overnight moves were not just about shifting ticketing operations and offices. Crews also had to relocate airplanes and associated airside support equipment—a process that required close coordination with the FAA, TSA and Air Traffic Control Tower officials. Only eight aircraft were towed to their new terminal locations; most simply taxied to the new terminals after landing.



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The apron work that was needed to accommodate the swap was almost as complex as the IT installations, Walker relates. Because Delta's aircraft fleet differs from other carriers', all the apron striping at terminals 5 and 6 had to be completed and test-fit prior to the move. Each type of aircraft had to be towed up to a gate to ensure that it worked properly with the jet bridge.

Testing for A321s proved particularly challenging, because Delta does not fly that type of aircraft into LAX, and the carriers that do could not spare one for testing. To ensure that the airside swap went smoothly, Delta ferried in an A321 just for testing. "It was a huge, monumental effort," notes Walker.

Talk About a Challenge

Because the terminal shift involved so many stakeholders, communication

Get a Move On

The sweeping terminal swap that occurred at Los Angeles International this spring required about 170 professional movers and 50 helpers per night. Crews used 53-foot semis and 26-foot box trucks to haul equipment and roughly 9,200 boxes and crates. Key items they moved include:

- ticket/gate counter millwork & equipment
- stanchions for ticket & gate queues
- IT equipment
- 900 computers
- ramp/ground service equipment (tugs, carts, fire extinguishers, etc.)
- safety devices (cones, barricades, etc.)
- bag sizers
- boarding equipment
- break rooms (lockers, time clocks, microwaves, chairs, water coolers, water jugs, vending, tables, refrigerators, etc.)
- office furniture, filing cabinets, safes, artwork, whiteboards, bulletin boards
- pilot & flight crew lounges (sofas, recliners, desks, computers, chairs, tables, files, shelving units, crew uniforms)
- storage areas (paper & cleaning supplies, aircraft provisioning supplies, blankets, pillows, in-flight magazines, safety information cards, archived files, printer stock, seasonal decorations)
- tool rooms & parts stores (toolboxes & tool bags, specialty tools, shelving units, aircraft parts & maintenance supplies, replacement seat upholstery, seatbelts, etc.)

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was a critical component. Frequent stakeholder meetings were held to keep everyone informed and on task throughout the planning process and during the week of the big move, says Wilschetz.

Communicating with the traveling public was equally important, he adds. "All the hard work that we did for months would be worthless if the public didn't cooperate," he explains.

Walker describes the process to develop and execute the public information strategy as coordinated and systematic. "We met monthly and then biweekly, and then weekly starting from last winter all the way up to the move," he shares.

Delta leveraged its website and mobile application to communicate with passengers about the terminal changes. "We shared some of that information with LAWA to let them know what our plan was for that communication engagement, and that was mirrored in some regards by the airport and even some of the other carriers," relates Walker.

Prasad describes Delta's strategy as a well-defined stream of communication that hit every platform: social media, print and electronic media. "We were consistent in staying lock-step with Delta's efforts to maintain the communication plan and customer support/experience enhancement plan," she adds.

Shortly after the move dates were locked down, communications and advertising were kicked into high gear. "We went about letting everyone who would listen to us know that this was going to be coming down the pike," shares Wilschetz.

The campaign was designed to be focused and incremental. "It was determined that we didn't want to provide too much information too early," he explains. "That would just confuse and scare people... and [the terminal changes] may not even affect their travel."

Roughly 90 days out, notices were infrequent and had a general "heads-up" tone. As the big move got closer, however, they increased to what Walker calls an all-out blitz, with more urgent messaging at the airport, on the radio, etc. Coordinating with shuttle bus drivers, public transportation outlets, and other services that operate at the airport was also key, he adds.



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Having everyone at the table acting as a team proved invaluable, Wilschetz reflects. From the airlines and concessionaires to Uber, Lyft and hotel shuttle drivers, “it was one massive team effort that went beyond just this airport and our tenants. It really extended to the region.”

All Hands on Deck

Wilschetz continually emphasized that the terminal swap was all about the passenger. “That’s why we did this, and we couldn’t lose sight of that during that period,” he explains. “We had to make sure that the passengers’ needs were taken care of.”

Toward that end, the airport had support staff on hand to transport passengers who arrived at the wrong terminal. According to Prasad, about 8,000 passengers needed a lift during the big moves and the following week. “Considering that we support 200,000-plus on a daily basis, that was really a drop in the bucket,” she reflects.

Inside the terminals, extra employees and volunteers were on hand to assist passengers. LAX’s Guest Experience Members, Volunteer Information Professionals and Pets Unstressing Passengers were out in full force; and Delta brought in members of its Atlanta-based Peach Corps.

LAWA also did “little things” like distributing free water bottles to passengers during the changeover period. “They went a long way to mitigate any stressful situations passengers may have encountered,” says Prasad.

Outside, crews updated roadway signage each night—a task that required careful choreography and roadway closures. “We touched 1,000 signs, either created new or revised them, to make sure people knew what was going on,” Wilschetz notes.

Third Time’s a Charm

The three overnight moves were very different in scope and the effort they required to be successful, Walker relates. The team scheduled the harder moves for the first and third nights, so it could apply lessons learned during the first night to the second night, in hopes of making the third night—the most challenging of all—go smoothly.

“That is indeed what happened,” Walker reports.

One of the lessons learned was about coordination. Despite having a diverse group

of personnel on standby (everyone from IT specialists to painters), it was initially difficult for frontline staff to get the help they needed. To remedy that, the team created text groups to share information on the status of the moves and connect response teams in the field with additional resources. “Then everybody had common situational awareness, and we were able to react almost immediately,” Walker explains.

With the complicated move behind them, Delta and the other airlines have all settled into their new terminals. “Our business partners and the LAWA team were phenomenal,” Walker reflects. “It wasn’t always a lovefest, to be honest. We fought through a lot of issues together, and it was very stressful planning something that had never been attempted before.”

That said, the “win/win” LAWA officials were anticipating is firmly in place. ✈️



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TOP LEFT: San Diego International Airport Terminal, California | RIGHT: Salt Lake City International Airport’s End of Runway Deicing Program, Utah
 BOTTOM LEFT: Wichita Dwight D. Eisenhower National Airport Terminal, Kansas | RIGHT: United Terminal at LAX, California

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FACTS&FIGURES

Project: Improving Facility Data Management

Locations: Baltimore-Washington Int'l Thurgood Marshall Airport; Martin State Airport

Owner/Operator: Maryland Dept. of Transportation-Maryland Aviation Admin.

Technology Platform: ESRI ArcGIS & custom software

Major AIRPortal Contributing Firms: AECOM/URS; Airport Design Consultants; All About Pavements; Arora Engineers; Axis Geospatial; E2CR; Inframap; J.A. Rice; Johnson, Mirmiran & Thompson; Maryland Environmental Service; Michael Baker Int'l; Morton Thomas; RK&K; Thomas L. Brown; WSP USA

Timeline: New system installed 2012/2013; data transfer/cultivation is ongoing

Documents Cataloged: 130,000+ (as of mid-July)

Geographic Info System Features Captured: 550,000+

Registered Users: 575 (airport personnel & outside contractors)

Future Deployments: Building Information Modeling & Enterprise Asset Management System

Primary Benefits: Increased efficiency for storing, retrieving, sharing facility documents & geographic information system data

Associated Benefit: Better knowledge management; better design & contractor bids, due to more accurate bid documents from airport

Baltimore-Washington Int'l Digitizes Facility Data on Web-based Portal

BY JENNIFER BRADLEY

The Maryland Aviation Administration is transforming the way it manages the volume of facility documents and geographic information system data generated and used at its two airports.

The vast majority of information that Baltimore-Washington Int'l Thurgood Marshall Airport (BWI) maintains for design/construction projects and outside utility systems has been converted to a new Web-based technology platform. Martin State Airport (MTN) will soon follow suit.

Administration personnel say the project demonstrates good financial stewardship—in the same vein as keeping costs per enplaned passenger below \$10.

The platform selected for the digital conversion is Airport Information Retrieval

Portal (AIRPortal), a geographic information system and document management gateway designed to provide a better way to store, retrieve and share mass amounts of information.

Aviation Administration Chief Engineer Paul L. Shank, P.E., appreciates the system's core capabilities, but also acknowledges its associated benefits: "I would argue that we're getting better bids because the product we're putting out for bidding is now better referenced, and the contractor can do their takeoffs. Knowledge is power and power is efficiency. To me, this was an easy sell."

To date, the administration's new system houses about 130,000 documents and



PAUL L. SHANK



550,000 geographic information system features. Approximately 575 registered users (half aviation administration personnel, half outside consultants) access airport data through more than 40 purpose-specific applications.

Before the Changeover

Shank has seen plenty of disorganized airport records throughout his 30+ years consulting in the private sector and 12 years with the Maryland Aviation Administration. Rummaging through boxes for important files was like breaking into King Tut's tomb, he laughs. "Contractors were taking our paper plans and then building the project electronically. That takes a lot of time, and efficiency is low. So that was our purpose and need for AIRPortal."

Cost was another important factor. It's very expensive to document existing conditions when it's difficult to find out anything about them, he explains. Cataloging BWI's 3,600-acre property and MTN's 800-acre property would have cost an estimated \$40 million—the airport's entire annual capital budget

from the state. Instead, the airport opted to tackle the project incrementally with a new information management system. "It's good stewardship and sustainable, too," explains Shank. "We decided that if we take on a project, we document what exists in that area and capture it electronically. But in the meantime, we scanned every document we ever had."

Ali Logmanni, the administration's manager of Geographic Information Systems and Engineering Technology, was similarly aware of the need to digitize airport facility data. For the last four years, Logmanni has lead Johnson, Mirmiran & Thompson in gathering mountains of documents at BWI and MTN.

Julie Spangler, the firm's project manager, reports that the



ALI LOGMANNI



JULIE SPANGLER

About 575 registered users access airport data through the new system.

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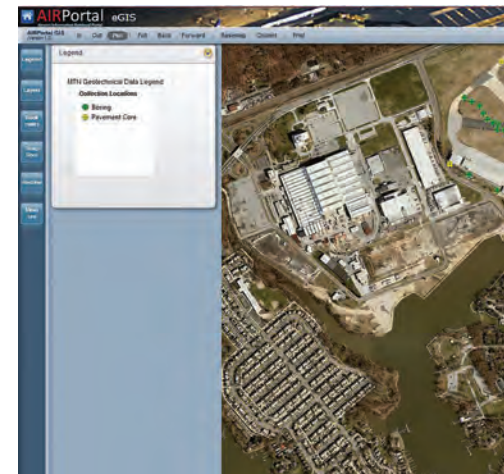
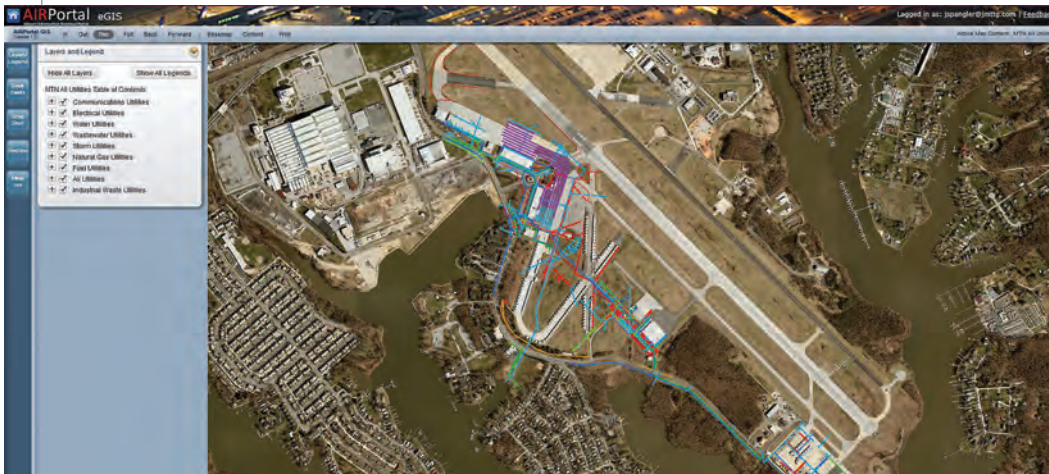
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Maryland Aviation Administration personnel are already reaping the benefits of ongoing efforts to digitize facility documents and geographic information system data at BWI and MTN.

implementation of AIRPortal has been very thoughtful, with careful attention to funding and gathering information from project contractors. With various project contractors borrowing records for years at a time, access control was an important issue to prevent data loss, she notes. The AIRPortal system helps ensure files are returned and project information is chronicled electronically, so institutional knowledge is not lost when key personnel leave or retire.

Previously, primary consultants began projects based on information from their own libraries versus the administration's data. "You can imagine what would occur without the comprehensive scope of all the work that had been going on," says Spangler. "Information was in inconsistent formats and inconsistently filed."

Eventually, it became a priority to ensure that Maryland Aviation Administration was receiving the appropriate deliverables in a manner that facilitated subsequent searches and retrievals. This is a challenge that permeates the industry, observes

Spangler. It's inevitable for people to leave and papers to get lost; but BWI now has a system that protects its records—and saves time and money, she notes.

"It's an asset management tool," summarizes Larry Bauman, vice president of Aviation at Johnson, Mirmiran & Thompson. "As an airport operator, you have billions of dollars of physical assets and you need to manage them. You need to keep them functional; keep the public safe and secure. That's what this tool does."



LARRY BAUMAN

Better Access

For Shank, it all comes down to organization. "Not only has this process been the beauty of taking paper and making it digital, but then organizing the digital so you can find it," he explains.

AIRPortal is completely online, using an internet (rather than intranet) portal that requires login credentials for access. Despite some initial resistance to change, BWI has successfully moved to the new digital format, Shank reports. Moreover, he expects the new system to grow and sustain itself for years to come.

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Shank links critical passenger satisfaction criteria such as restroom cleanliness and wait times at security checkpoints to the airport's digital data management system. "Those are the takeaways," he explains, noting that such issues depend on geographic information system data. "The system we built had to be user-friendly, modular and scalable."

Although the AIRPortal system was installed at BWI between 2012 and 2013, officials consider it an ongoing project. "We're adding to it every day," says Logmani. "We always have people taking documents and putting the geographic information system data into the applications."

When projects are completed, consultants and contractors are expected to provide data about affected areas for subsequent entry into the AIRPortal system. After years of individual entries, Logmani estimates that BWI's geographic information system database is now 90% complete.

Setting Standards

Before information is entered, each piece of data goes through a quality assurance/quality control process guided by nearly 400 pages of standards for geographic information systems, computer aided design and building information modeling. "We have documented processes, standards and guidelines that consultants have to follow, but people here within our shop check every document we receive through uploads," says Logmani. "Then, if it passes, we roll it into AIRPortal and make it visible."

It was initially labor intensive to standardize BWI's existing documents, but now the airport instructs consultants regarding how to submit deliverables so they can be loaded into the system.

Spangler considers the format specifications a reasonable request. "This is mission-critical, how we do business," she explains. "We're pretty fair in what we require. It's not a long list, but it's a really important list; so we don't bend

on it too frequently." The standards are also in the portal, in a searchable form, and no longer need to be printed.

"This becomes a very living document," notes Spangler.

Dianne Davis, design technology leader at Johnson, Mirmiran & Thompson, agrees



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about the importance of maintaining standards, noting that common data environments support the overarching lifecycle needs of the airport.

Shank echoes this sentiment, adding the old adage of “garbage in, garbage out” and emphasizing the need to be able to find data and documents easily.

In retrospect, Spangler feels that the work spent establishing AIRPortal was not in vain. “It’s worth every penny and comes back tenfold every time you find something you’re looking for,” she says. “You just can’t put a price on that, really and truly.”

Today’s Needs

It was critical for the aviation administration’s system to allow select users access to specific areas of information, says Logmanni. Rather than taking an all-inclusive approach, AIRPortal provides individual applications for individual systems such as water, gas, hydrant, fuel, stormwater, electrical communications, etc. “Instead of searching through all utilities, a person can get all the electrical information through that specific application,” he explains. “We didn’t build the GIS [geographic information system] in a way many others do.”

AIRPortal also needed to be interoperable, so it can “talk to” and work with other systems. In that sense, it is much like the travel reservation website Expedia, notes Davis. “You’re going in and you have a goal—you need information to make a decision,” she explains. “Expedia accesses databases all over, and at the end, you have your information. AIRPortal is an IWMS, an integrated workplace management system, that accesses a lot of information so people can get their work done.”

Spangler considers the built-in PDF viewer a particularly useful tool, and notes that current design standards are being written to facilitate the addition of 3-D models. Given Davis’ experience writing standards, the team started work on AIRPortal with that end in mind.

“We knew that eventually we’d want to pull building information modeling data into these various packages,” says Davis. “What’s interesting about the aviation administration is that early on, they developed a way to take all these pieces of information and begin to integrate them around the existing workflows. A lot of airports are doing building information modeling or geographic information systems, but the aviation administration started with the notion of integration.”

Tomorrow’s Potential

Personnel from Johnson, Mirmiran & Thompson note that AIRPortal was the result of collaboration among airport departments, consultants and frugal minds. In that spirit, the company plans to assist the aviation authority in evolving the system into the next generation. Items on BWI team’s to-do list include:

- deploying mobile applications;
- updating all geographic information system data and refining processes for that to be delivered as part of projects;
- expanding beyond the engineering core to integrate information from other offices and departments;
- training key personnel to be “data stewards”;
- integrating building information modeling system and Maximo;
- developing capabilities to map interior spaces;
- exploring support options for first responders; and
- developing smart analysis for estimating repair and maintenance costs.

Future improvements notwithstanding, the team agrees that BWI’s current system already provides a vital element: trust. Decisions are made with confidence when using AIRPortal, explains Lennertz. “You’re very much handicapped if you don’t have reliable data,” he elaborates. “It also creates a bigger mountain in terms of what you need to climb in order to get to that point of confidence in what you’re saying and your data is showing you.”

Logmanni characterizes AIRPortal as an outstanding platform that is attracting interest from other airports. That said, he notes that security and keeping end users top-of-mind will continue to be important aspects of the program.

“We want to be supporting everybody from the maintenance person changing a lightbulb to the executives making strategic decisions,” concludes Spangler. ✈️

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Raleigh-Durham Int'l Adds New Routes With Support of Local Businesses

BY THOMAS J. SMITH

FACTS&FIGURES

Project: Air Service Development

Location: Raleigh-Durham Int'l Airport

New Carriers (since 2013): Alaska Airlines, Allegiant Air, Frontier Airlines, Virgin America (service begins in Oct.)

Existing Carriers: Air Canada, American Airlines, Delta Air Lines, JetBlue Airways, Southwest Airlines, United Airlines

Current Incentive Plan: Up to \$2 million (for all carriers combined)

Internal Airline Planning Staff: 3

Outside Data Consultant: Barry Clark & Associates

Noteworthy Accolade: Best connected medium-sized U.S. airport—2017 InterVISTAS study

Master Plan Consultant: Ricondo & Associates

New Runway & Gate Upgrades: \$2.7 billion

Taxiway A Rehabilitation Portion: \$19.4 million

Contractor: Fred Smith Co.



In May, Raleigh-Durham International Airport (RDU) received a giant shot in the arm when it was named the best-connected medium-sized airport in the United States. Industry analyst William S. Swelbar cited 47 nonstop routes and a diverse group of carriers as major factors in the North Carolina airport's top ranking. (See sidebar on Page 62 for more details.)



MICHAEL LANDGUTH

RDU's climb to the top ranking traces back to 2013, when Chief Executive Officer Michael Landguth began revamping air service development efforts. Since then, RDU has landed 10 nonstop destinations, including Paris, and not one of the expansion routes has been dropped. The airport also added four new carriers—Frontier Airlines, Alaska Airlines, Allegiant Air and Virgin America—to its existing stable of six.

Now operating at record capacity, RDU is working to add more flights during non-peak hours and will soon embark on a \$2.7 billion plan to build a new runway and upgrade gate facilities.

The airport set its all-time high passenger count last year with more than 11 million travelers. Even during 10+ years as a hub for American Airlines, its record was 9.9 million passengers. These days, no single airline dominates the market at RDU. Delta Air Lines carries 28% of the passenger volume, followed closely by American with 26% and Southwest Airlines with 23%. United accounts for nearly 13% of the volume. (American de-hubbed the airport in 1996.)

RDU's 100-mile catchment area includes 6 million residents and the renowned Research Triangle Park. The academic and economic prowess of Duke University, North Carolina State University and the University of North Carolina at Chapel Hill have

attracted a high concentration of national and international firms to the 11-county region. It is said that 80 people move to the Triangle each day.

“The Triangle region was and still is growing in both population and wealth,” observes Landguth. RDU strengthened its carrier recruiting efforts in 2013 to capitalize on that momentum and potential, he explains. The game plan was to secure talent to help the airport build its business case with carriers, identify new routes and attract new airlines to further diversify its airline portfolio.

“Our strategy to build a great team and great relationships with our air carrier partners, has really paid off,” reports Landguth. “We are breaking passenger records nearly every month and travelers are really supporting the new routes and airlines.

“We feel very bullish about our region,” he continues. “We hope to attract more flights and airlines to tap into growing customer demand for both domestic and international flights in the years ahead.”

Encouraging Growth

“Magic does happen,” says Kristie VanAuken, the airport’s vice president of Communications and Community Affairs. “The community is strong enough that it will attract air service organically. However, we want it to come faster, and we want it to go to the cities that will benefit the community.”



KRISTIE VANAUKEN

VanAuken says that the airport’s role in organic (airline-driven) growth and airport-promoted growth is to be a partner that helps offset the start-up risks associated with new routes, while constantly working to understand carriers’ needs and concerns. Such partnerships may result in earlier-than-anticipated aircraft upgrades or earlier start dates.

RDU’s current master plan projects annual passenger growth rates of 2% to 3% for the next 25 years.

Like many airports, RDU has an air service incentive program; but VanAuken considers the incentives “just the cherry on top” to complete a deal. “It all starts with a strong business case,” she explains, “and that is where we like to start the conversation.”

Before approaching an airline, RDU’s service development team crunches the numbers from a variety of different data bases that slice and dice airline ticket purchase patterns, fares, itineraries and demographics. The research helps prioritize both business and leisure routes, and identifies the carriers most likely to fly the desired routes. “Years of conversations with the carriers thoroughly flesh out the details before we get into incentives,” she says.

Unlike many peer airports, RDU largely works without the aid of an air service development consultant. Typically, the three employees who recruit new airlines and develop additional routes with existing carriers turn to outside help only for deep data research. “The core relationship is not with an intermediary, but with the airport and the airline planning department,” explains VanAuken.

Currently, the team is working to add nonstop service to San Diego. Each day, about 185 passengers depart RDU on flights that ultimately connect with other service into San Diego. RDU is building

its case for a nonstop flight by assessing airlines profiles, fleet availability, potential fares, marketing options, etc. “We want to go in there with a strong business case that will be a winner right out of the gate,” explains VanAuken.

While San Diego is the airport’s top domestic pursuit, it is also targeting Kansas City, MO; Portland, OR; and San Antonio.

The airport’s track record bodes well for success. In March, Delta began flying to Austin, TX; and Virgin America, a new carrier at RDU, will begin flying to San Francisco in October. Allegiant, an incumbent carrier, will begin twice-a-week flights to San Juan, Puerto Rico, in December. (See list on Page 61 for other examples.)

As for the “cherry on top,” RDU’s current incentive program includes landing fee waivers for the first year and marketing funds. Waiver size varies according to the size of the new destination city. The airport will spend up to \$50,000 to promote a new domestic destination, \$100,000 to promote a new



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Marketing funds from the airport and a local business coalition help promote new service.



carrier and \$200,000 to promote a new international destination.

The airport board adopted the current incentive program in March, a year after the last program lapsed. The new program expires March 31, 2018.

Bon Jour Paris

In May, RDU marked its first anniversary of nonstop daily service to Paris. During the inaugural year, Delta's new flight attracted 75,000 passengers. As a measure of success and confidence, Delta now uses a Boeing 767, which offers 35 more seats than the 757 it initially used for the route.

The airport convinced Delta to add the Paris route with help from the Regional Transportation Alliance, a 10-county coalition of 23 chambers of commerce and more than 100 leading businesses. "You cannot go to the table as a medium hub airport empty-handed," VanAuken explains, noting that Delta had a \$50 million to \$80 million investment at risk the first year.

The airport's incentive package included \$1.25 million in landing fee waivers and \$500,000 in marketing funds. The Regional Transportation Alliance provided about \$250,000 in additional marketing funds. Support from the Alliance came in the form of paid advertising for billboards along major roadways and in-kind donations from members and partner organizations promoting the route within the region, explains Joe Milazzo II, the group's executive director. Ads ran prior to the May 2016 launch, and then again several months later after the initial buzz quieted down.

In addition to promoting the new Paris flight, the Alliance also spent tens of thousands of dollars boosting American's existing flights from RDU to London. "We wanted to show our commitment to both airlines for their service to the community," explains Milazzo.

American has since updated the daily London route with Boeing 777 service. Previously, it used a 767.

Beyond the marketing package provided by the Regional Transportation Alliance, prominent members of the local business community pledged contingency funds in case revenue from the Paris flight did not meet the carrier's expectations. Many of

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Air Service Wins

New Nonstop Routes at RDU (since 2013)

- Austin-Bergstrom Int'l (Delta)
- Paris Charles de Gaulle Airport (Delta)
- Cancun Int'l (Delta)
- Dallas Love Field (Southwest)
- Louis Armstrong New Orleans Int'l (Southwest)
- Punta Gorda Airport (Allegiant)
- St. Pete-Clearwater Int'l (Allegiant)
- Seattle-Tacoma Int'l (Delta)
- Orlando Sanford Int'l (Allegiant)
- Salt Lake City Int'l (Delta)

the companies that extended the “good faith” gesture are members of the Alliance, notes Milazzo.

Nĩ Hǎo China

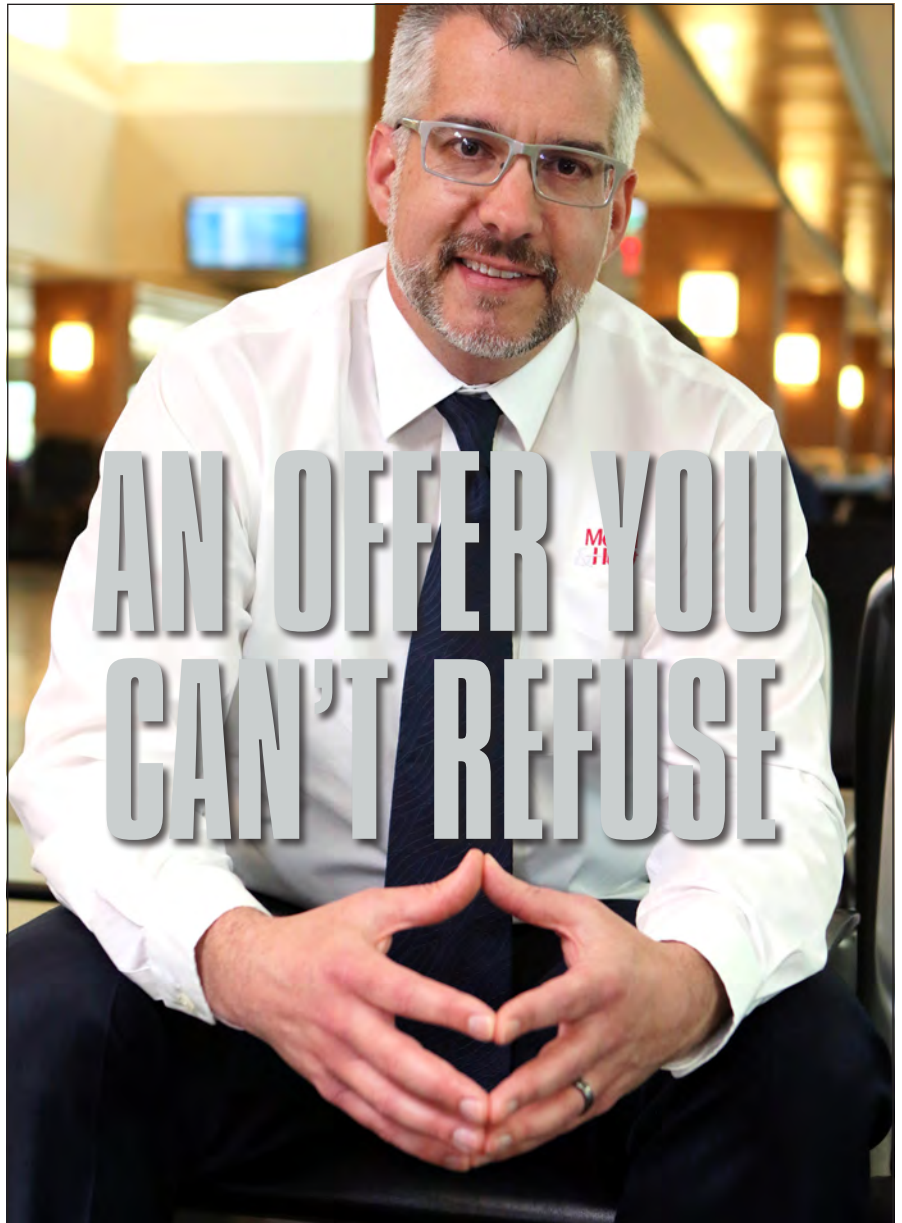
Looking ahead, RDU's international wish list includes additional flights to Mexico as well as new service to Latin America—perhaps via a new carrier for the airport, such as Mexico's Volaris or Panama's Copa Airlines. Currently, however, the airport is laying groundwork for service to Asia.

“We have demand to support a nonstop to China,” reports VanAuken. “It may not be daily, but we will pursue it more aggressively once the new airport in Beijing comes online in 2019.”

The service development team's research has found that 48 passengers make their way to China from the Triangle region every day. While those numbers may not support daily service, VanAuken says that the market can be stimulated to support three or four flights per week. RDU's catchment area includes the U.S. headquarters of Lenovo, a Chinese computer manufacturer; and Duke has a Beijing campus, she notes.

VanAuken estimates it will take three to five years, perhaps more, to secure a China route. Convincing Delta to add service to Austin, TX, was a four-year courtship.

RDU is looking to Asia for its next major international flight because another European flight could tax its international arrival facilities, which already handle the London and Paris flights during peak hours.



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Top 10 Best-Connected Medium-Size U.S. Airports

Rank	Airport	Airport Connectivity	
		Quality Index	2015-2016 Change
1.	Raleigh-Durham Int'l	185.2	7.0%
2.	St. Louis Lambert Int'l	175.1	0.4%
3.	Nashville Int'l	173.7	6.8%
4.	Austin-Bergstrom Int'l	152.8	2.0%
5.	Indianapolis Int'l	150.4	5.6%
6.	Kansas City Int'l	150.0	3.7%
7.	Pittsburgh Int'l	149.6	-1.4%
8.	Cleveland Hopkins Int'l	146.8	0.2%
9.	Louis Armstrong New Orleans Int'l	146.7	6.4%
10.	John Glenn Columbus Int'l	144.9	1.9%

Source: InterVISTAS

The Airport Connectivity Quality Index is a mathematical formula based on flight schedule data that assesses the frequency of flights, number of seats and the connectivity quality and quantity of each flight destination. The model weighs the connectivity value of each flight so a flight to a large hub airport ranks more than an additional flight to a small destination airport.

A Massachusetts Institute of Technology (MIT) research center introduced the index in 2013 as a new measure to assess the connectivity of individual airports to the global aviation grid. Earlier this year, InterVISTAS updated the 2013 report using the MIT research model and original data.

William S. Swelbar, a member of the MIT research staff, co-authored the original 2013 white paper, and also wrote the 2017 follow-up report as an executive president of InterVISTAS. Recently, Swelbar joined Delta Airport Consultants as chief industry strategist.

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Continuing its history of support, the Regional Transportation Alliance will be ready to help make the push for new service when the airport says it's time, says Milazzo.

Airfield Improvements in the Works

RDU's two terminals, with 41 gates, have either been newly constructed or extensively renovated within the last 10 years. Sometimes, however, they're crowded.

"At peak times, we are very full and there are pinch points," acknowledges VanAuken. Adding more flights during peak hours will cause delays and impact the customer experience; so the airport is working to add future routes in non-peak hours. Ultimately, the airlines set flight times, she notes.

The airport authority's 2040 master plan outlines \$2.7 billion in facility upgrades and identifies another \$2 billion in unfunded projects.

RDU's primary runway, 5L-23R, is 30 years old and at the end of its life. "The runway is literally the most important two miles of pavement in the Triangle," VanAuken muses.


The master plan calls for constructing a new 10,000-foot runway and converting the existing primary runway into a taxiway

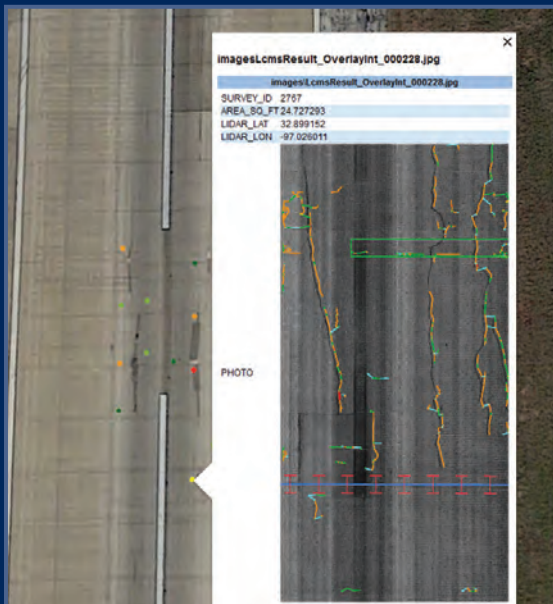
to free airfield space for additional gates at Terminal 2. RDU has initiated discussion with the FAA to obtain approvals and federal funding for the new runway.

Unlike many airports, RDU has common gates in Terminal 2 that allow the airport to shift carriers within the terminal. This flexibility is also slowing the eventual need for new gates, explains VanAuken.

True to previous form, the Regional Transportation Alliance plans to help the airport implement its 2040 master plan. "We have made this a top priority," Milazzo says. The group recently supported the airport authority's efforts to secure a \$52 million appropriation over the next two years from the North Carolina legislature to help fund elements of the master plan; those recurring state funds were approved in June. The Alliance also plans to make a case for complementary federal funding.

"We think the world of our partners at RDU and what they have done for the community," says Milazzo.

Clearly, the regional business community has embraced the mantra that guides Landguth and his team: "Air service development is economic development." 



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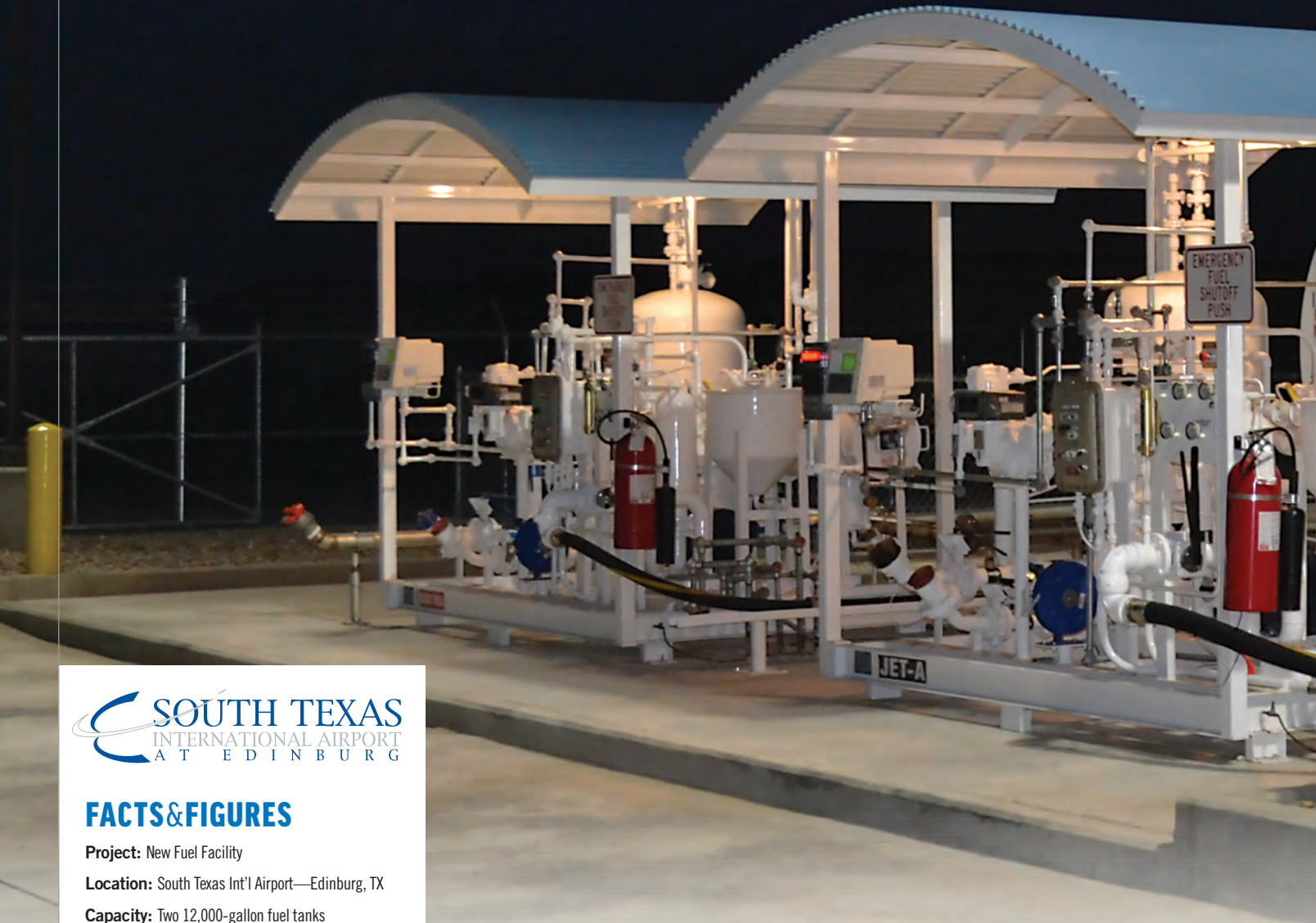
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New Fuel Facility at South Texas Int'l

BY VICTORIA SOUKUP



FACTS&FIGURES

Project: New Fuel Facility

Location: South Texas Int'l Airport—Edinburg, TX

Capacity: Two 12,000-gallon fuel tanks
(1 Avgas, 1 Jet-A)

Construction Timeline: July 2015-Dec. 2015

Cost: \$1.36 million

Funding: TX Dept. of Transportation (75%);
city (25%)

Design Engineering: Argus Consulting Co.

General Contractor: Seneca Companies

Project Management/Oversight: TX Dept.
of Transportation, Aviation Div.

Fuel System Skid & Tank Vendor: Fuel Tech

Self-Service Fuel Management System:
QT Pod

Primary Benefit: Meeting fuel needs of increased
traffic, especially State Police & U.S. Border Patrol

Key Improvements: Faster filling & dispensing;
24/7 self-service option; enhanced safety &
environmental features; new tank size allows airport
to purchase fuel at better cost

After a decade of surging traffic, South Texas International Airport (EBG) needed to upgrade its fueling operations to keep customers streaming in. So that's just what Airport Manager Debora Melvin did.



DEBORA MELVIN

"We could not continue the way we were operating if we wanted to maintain a competitive edge," says Melvin, who has managed the small general airport for about 10 years. "We worried that we'd have to send customers away if we could not dispense the fuel. Losing customers was not a viable option."

Located in Edinburg, TX, not far from the Mexican border, much of EBG's traffic comes from the Texas State Police and U.S. Border Patrol. Between 2006 and 2013, fuel sales skyrocketed—from 14,000 gallons to 430,000 gallons—taxing the airport's small and inefficient underground fuel system.

Pervasive operational strains led EBG to perform a \$1.36 million upgrade, installing two 12,000-gallon aboveground tanks—one for Jet-A and one for Avgas—with bulk loading and dispensing capabilities. In addition to significantly reducing the time it takes to fill the airport's refueling truck, the new system also allows pilots using credit cards to self-dispense fuel 24/7.



Construction spanned five months, from July to December 2015; and the new facility opened for business in early 2016. The Texas Department of Transportation (TxDOT) paid 75% of the cost, and the city of Edinburg paid 25%, through a non-primary entitlement grant.

Faster, Faster

The need for a new fuel facility didn't happen overnight. Melvin first saw the writing on the wall when the Texas Department of Public Safety's Aviation Division rented a hangar in 2008 to house one helicopter and then quickly added three more. A few years later, the U.S. Border Patrol and Texas Air National Guard started using EBG for its border operations as well.

"We were dispensing large quantities of fuel, and it took us three to four hours to reload a 3,000-gallon mobile refueler," Melvin recalls. "You can just imagine the ineffectiveness." Sometimes, employees had to work overtime just to meet the demand.

"This dramatic increase in traffic triggered the need to improve our fuel dispensing facilities," she explains. "The system was obsolete, ineffective and undergoing repeated repairs. With the new system, we can reload the mobile refueler in about 10 to 15 minutes, dispensing at 200 gallons per minute compared to the old 11 gallons per minute."

Argus Consulting, design engineer for the project, based the facility design on specifications provided by TxDOT. The new system sits near the northeast side of the apron, about 420 feet from where the former system was located. "Airport administration wanted to relocate it away from the aircraft maneuver area on the ramp," explains Garrett Gjerstad, PE, project manager with Argus.

The facility's base includes a concrete foundation that is curbed on all sides. "If a valve is left open or a tank ruptures, all of the fuel would go into a storm inlet and then into the concrete containment system," explains Gjerstad.



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Two pump skids—one for Jet-A and another for Avgas—were also installed. The bulk loading/unloading skid has a 200-gallon-per-minute pump and filtration skid with recirculation capabilities. The combined over-wing dispensing skid can pump at a rate of 30 gallons per minute and includes a 24/7 self-service credit card reader manufactured by QT Pod. The pump and dispensing skids were pre-manufactured by Fuel Tech and shipped to the airport for installation.

Seaside Considerations

Because EBG is located so close to the Gulf of Mexico, project designers needed to make allowances for the salty sea air. “We had to modify the coatings on the equipment to protect it from the elements,” Gjerstad says. “All of the aboveground pilings needed to be stainless steel, and the skids and tanks needed a protective epoxy exterior coating to protect it from corrosion and rust.”



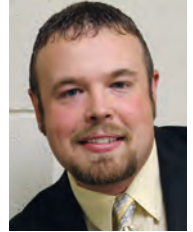
GARRETT GJERSTAD

Landside tanks are located in a 10,500-square-foot area surrounded by security fencing. Aboveground piping leads to the airside dispensing station about 150 feet away.

“The distance minimizes the collision risk with planes,” explains Rowdy O’Grady, project manager for general contractor Seneca Companies. A new road allows for easier offloading of tanker trucks.

Opting for 12,000-gallon tanks has proved to be cost-effective for the airport, which now lays claim to the lowest fuel prices within 65 nautical miles. “Twelve thousand gallons is a magical number,” explains Melvin. “Now, we can place an order for a full load every time, which brings down the unit price per load.”

Avgas is delivered from Houston and/or Louisiana about once every two months. Jet-A fuel arrives from San Antonio about four times a month.



ROWDY O'GRADY

O’Grady agrees about the significance of tank size: “It is important to make sure you have enough capacity to take a full tanker load so you can lower your costs.”

No Time to Spare

TxDOT Project Manager Edward

Mayle notes that the EBG project is one of the largest fuel system upgrades in the state. “It was fairly complex with the number of systems it included,” he says. “Coupled with the poor condition of the existing system, we were really rushing to get it completed before they had something go wrong with their existing system.”

One of the new facility’s major advantages is speed, notes Mayle. “This



EDWARD MAYLE

particular system can pump fuel out of the tankers at a very high rate, and it can also pump fuel into the mobile refueler at a high rate of speed. The mobile refueler can be filled in minutes. It is state-of-the-art.”

Crews decommissioned the airport’s 22-year-old underground fuel facility without any problems, reports Melvin. Removing the old system created more ramp space and enhanced traffic flow. Now, EBG’s ramp is large enough to accommodate Gulfstreams.

“We are very thankful for the support of TxDOT Aviation and the city of Edinburg for providing the necessary resources to complete this crucial project,” she notes. “Its long-term benefits include not only a strong economic impact but also position the airport for continued growth and business attraction.” ✈️

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Laughlin/Bullhead Int'l Extends Runway in 15 Days

BY BRIAN SALGADO

FACTS&FIGURES

Project: Runway & Taxiway Extension

Location: Laughlin/Bullhead (AZ) Int'l Airport

Approximate Cost: \$18 million

Funding: FAA (92.4%); AZ Dept. of Transportation (3.8%); local passenger facility charges (3.8%)

Initial Planning: 2005

Design Phase: Began Sept. 2013

Construction: Nov. 2015-March 2017

Project Scope: 1,000-foot extension of Runway 16-34 & Taxiway A; site preparation; grading; drainage; construction paving; electrical improvements

Sponsor: Mohave County Airport Authority

Planning & Environmental: Coffman Associates

Engineering & Design: Stantec Consulting Services


Phase 1 General Contractor: FNF Construction

Phase 2 General Contractor: McCormick Construction

Lighting Supplier: ADB Safegate

Lighting Installation: Rural Electric

Striping: Pavement Marking Inc.

 Completing airfield construction around the hustle and bustle of fully operational commercial service is challenging enough. But the margin for error is almost nonexistent when flights are grounded right before Christmas and the work window is just 15 days.

The team that performed the recent runway extension at Laughlin/Bullhead International Airport (IFP) in Bullhead City, AZ, pulled off that very feat.

"One of the challenges we had was the selected dates were right in the middle of winter and right up against Christmas and the holidays," says Jeremy Keating, director of IFP and the Mohave County Airport Authority. "There was a lot of concern and worry going into this project about the weather." Specifically, crews needed the right temperatures to lay asphalt.

The primary element of the \$18 million project was a 1,000-foot extension of Runway 16-34 and parallel Taxiway A. The first phase spanned from November 2015 to September 2016, and included site preparation, grading and drainage

improvements. The second phase, which concluded this March, entailed substantial paving and electrical improvements.

Although construction broke ground in 2015, Keating notes that the project had been in the works for more than a decade. The lag largely was due to the environmental assessment, which took about seven years to complete. Once the airport authority received a finding of no significant environmental impact from the FAA, the project team fit the design and two construction phases into IFP's capital improvement plan. The design phase then began in September 2013.

The first phase of the project cost about \$7 million, with 92.4% coming from an FAA grant, 3.8% from an Arizona Department of Transportation grant, and another 3.8% from local passenger facility charges. The price tag for Phase 2 was about \$9.5 million, with the same funding sources and cost sharing.

Stantec, the airport's on-call engineer for about 30 years, designed the extension to improve safety and aircraft stage length. Mark T. Koester, a principal at the firm, notes that the area's summer weather played an important role, with high temperatures regularly topping 120 degrees.



JEREMY KEATING

Runway length at IFP used to be a limiting factor when, for instance, an airline wanted to fly to Buffalo, NY, in 110-degree weather, fully loaded with fuel and 160 passengers. (Ambient temperature, aircraft weight and runway length are key factors affecting an aircraft's range.)

Because many of IFP's flights are casino charters that fly from specific destinations just once a month, the airlines can't simply remove luggage or put passengers on other flights to lighten the load. The only thing they can do is limit the fuel, which then requires a refueling stop and additional cost due to airport fees for aircraft servicing.

"A runway extension was justified to relieve air carriers from these high-density altitude penalties," explains Tim Bannon, assistant airport director for the Mohave County Airport Authority.

2-Week Playbook

Despite having a yearlong schedule for the project, the bulk of the primary work took place over a 15-day period in December 2016. From Dec. 6 to Dec. 21, IFP shut down the runway to give general contractor McCormick Construction and its subs a small, but uninterrupted, window to do their jobs. During the 15-day window, crews:

- obliterated the existing striping;
- graded shoulder areas;

- installed an asphalt overlay on the original 7,500 feet of the runway;
- performed full-depth paving of the extensions;
- installed edge lighting the full length of the runway and on the taxiway extension;
- added taxiway connectors;
- restriped the runway and taxiway; and
- ensured that precision approach path indicators were in place and certified for use.

"There was just a lot of coordination and a lot of work that had to get done in that timeframe," reflects Andre Roen, project manager for Phase 2 general contractor McCormick Construction. "It took a lot of gearing up on everybody's part to get it done on time."



ANDRE ROEN

Even with the most exhaustive planning possible, no construction team can control the weather. Cool winter temperatures restricted paving operations, which delayed progress by about a day, explains Roen. "There's always something to do, so we moved on to things we could do until the weather was back in our favor, and proceeded on," he adds.

To complete the 1,000-foot asphalt extension in time, and allow time for electrical work and painting, McCormick set up two

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Earthwork crews moved about 340,000 cubic yards of material during the first phase of the project.



asphalt plants and used two paving machines. The company could not pave 24 hours a day because it was too cold in the evenings; but crews paved from sunrise until about 10 p.m. most days.

As the paving operations neared the end, crews applied temporary airfield markings to enable IFP to open operations for commercial aircraft.

The runway closure was closely coordinated with stakeholders—specifically Harrah's Laughlin and Riverside Casino and Resort, the two resorts with casino air charter programs. Bannon notes that the airport began coordination meetings with the resorts and airlines almost a year in advance to help select dates that everybody could agree upon.

Before and after the two-week airport closure, IFP implemented nightly runway closures to perform some work while remaining open during the day for operations by Sun Country Airlines and Elite Airways—

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the airport's two carriers at the time. (American Airlines joined the airport in February.)

Wash Worries

During the environmental assessment, concerns emerged about an adjacent dry river basin, also known as a "wash." The design team assumed that a large box culvert would adequately fill the wash. However, the U.S. Army Corps of Engineers determined it would be less harmful to the environment to leave part of the open wash in place.

"We ended up with an open channel, which is easier to maintain and a little friendlier to the environment," Koester explains.

Because the wash in question was located on the south end of the airport where the extension was being built, significant fills were required. Further complicating matters, the wash channel sloped from east to west at a 4% natural grade in erodible soils.

FNF Construction built a new embankment for the runway and taxiway extension, raising the ground level 10 to 40 feet for the extended runway safety area. Crews used soil cement, a fine-aggregate mix that contains about 7% cement, in areas that required the most fill. FNF Project Manager Mike Lynch explains that soil cement is a cost-effective alternative to concrete, and is



Engineers specified soil cement in select areas of the new embankment to help prevent erosion.

often used on bridge projects on both sides of a wash to protect the bridge from erosion.

"The soil cement allowed us to build steeper embankment slopes that were not erodible," adds Koester. "We built the soil bank protection from the bottom to the top in successive layers."



MIKE LYNCH

Because this portion of the project included work in "jurisdictional waters," it required a special permit from the U.S. Army Corps of Engineers.

Throughout Phase 1, earthwork crews moved approximately 340,000 cubic yards of material. ✈️

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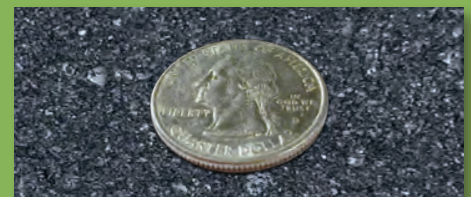


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FACTS & FIGURES

Project: Automated People Mover & Associated Station

Location: Orlando Int'l Airport

Operator: Greater Orlando Aviation Authority

Primary Goals: Connect North Terminal to future South Terminal, associated parking garage & regional rail lines; relieve curb congestions at North Terminal by offering new parking & check-in options at South Terminal

South Airport Automated People Mover Complex & Intermodal Terminal Facility: \$684 million

General Complex Funding: Revenue Bonds, Passenger Facility Charges

Intermodal Terminal Facility Funding: State of Florida

Debut of People Mover Service: August 2017

Projected Debut of South Terminal & Expanded Garage: 2020

Prime Architect: SchenkelShultz Architecture

Civil & Transportation Engineer: Atkins

Intermodal Terminal Facility Construction Manager at Risk: Turner Kiewit

APM Station & Parking Garage Construction Manager at Risk: Hensel Phelps


APM Supplier: Mitsubishi Heavy Industries America

APM Operations & Maintenance: MHIA; Sumitomo Corp.-Crystal Mover Services

Remote Check-In: Bags, Inc.

Automated People Mover Sets the Stage for Less Curb Congestion, New Intermodal Connections at Orlando Int'l

BY NICOLE NELSON

 Orlando International Airport (MCO) is on track for continued growth and increased intermodality with the debut of its South Airport Automated People Mover System early this fall.

"We are excited about the opening of the people mover system because it is not only a new generation of people movers, but it is the beginning of a new era for Orlando International," says Phil Brown, executive director of the Greater Orlando Aviation Authority. "We are at the cusp of really being able to accommodate planes, trains, and automobiles."

The system itself features six state-of-the-art passenger cars from Mitsubishi Heavy Industries America. In July, the cars were being tested on the 1.4-mile dual-lane guideway that connects MCO's

current North Terminal Complex to its future South Terminal Complex, which includes a new parking garage and state-funded intermodal center.

Each car is designed to carry up to 44 passengers and travel at speeds of up to 42 miles per hour. The system is scheduled to be operational in fall 2017.

"We started this project off to relieve congestion," Brown explains, noting that the main North Terminal was facing curb crowding on all three levels: commercial, passenger arrivals and passenger departures. "We needed to get a solution where we could move some of the traffic off the roads and into a different location."

Per the airport authority's master plan, MCO is expanding its terminal facilities to the south, with a 16-gate South Terminal that is scheduled to open in 2020. The new automated people mover will not only connect the existing North Terminal with the new facilities, a new \$684 million South Airport Automated People Mover Complex will provide travelers using either terminal



PHIL BROWN



new parking and check-in options. And if all goes according to plan, it will eventually connect travelers and employees to multiple rail lines.

Automobile Component

The new 2,400-space parking garage at the South Terminal Complex is a welcome addition for passengers and the airport authority alike, because parking facilities at the North Terminal are often full.

“Unfortunately, we are in a situation where the parking garage is closed at the North Terminal Complex three to four days a week,” reports Brown. “That is revenue lost for us, but it is also an inconvenience for the passengers, which is what we are most concerned about.”

Brown predicts that MCO travelers will be pleased with the new array of options, including remote check-in. “You can check in your bag at the garage, take the people mover up to the North Terminal, and after you disembark, you will walk right out into the main terminal and Hyatt lobby, with convenient access to any one of our four airside to catch your plane,” he explains.

When the South Terminal opens in 2020, the new garage will also allow ready access to it.

“We have \$3.5 billion in capital investment underway, and the bulk of that is \$2.15 billion related to a South Terminal Complex that we have under design,” Brown explains. “We have already started some horizontal site work out there and we will be in construction with other elements including roadway and taxiway access, as well as vertical construction of the landside and airside of the terminal.”

In July, the South Terminal design was 60% complete and had received board approval for completion of the full design.

Train Component

In addition to connecting travelers to more gates, the people mover system supports the airport authority’s longstanding plans for an intermodal facility with connections to passenger rail systems.

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Ultimately, the South Terminal Complex will include a 1.3 million square-foot Intermodal Terminal Facility, which will serve as a hub for an intercity passenger rail line from Miami that is in the works but experiencing delays.

Shortly after the airport authority started planning its people mover project, officials were approached by representatives of All Aboard Florida, a project to establish a passenger rail system from Miami to Orlando—the first privately funded intercity train system in the United States, notes Brown. “We spent several years negotiating agreements, and they are in the process of trying to get permits and get through some litigation to be able to construct a 35-mile spur from Cocoa to Orlando International

Airport to allow intercity passenger rail from downtown Miami to Orlando International.”

The original timeframe the authority negotiated with All Aboard called for rail operations to begin servicing MCO at the same time the airport unveiled its new people mover system and intermodal facility. While that will not happen due to railway-related factors, Brown reports that All Aboard—recently rebranded as Brightline—is still committed to the project. Based on current information, he anticipates Brightline rail service to debut at MCO in 2020.

In addition to Brightline’s projected regional service, SunRail plans to provide commuter rail services into MCO’s Intermodal

Terminal Facility. Plans call for SunRail passengers to arrive at the airport’s intermodal facility from the south, and then take a three-minute ride to the North Terminal complex on the new automated people mover or simply walk to the new South Terminal (after it opens in 2020).

Eventually, authority officials hope that the airport will also be served by a light rail system running to and from the Orange County Convention Center in Orlando. “The challenge there is that the Florida Department of Transportation, which operates SunRail right now, has re-estimated the cost of the connection to the airport. It has gone from \$100 million to \$250 million, and there is no funding in place for that.”

Federal funding is being pursued to overcome this major impediment, he adds.

“We are working as closely as we can with SunRail,” Brown relates, noting that commuter service would benefit airport workers as well as passengers.

Plans dating back to the 1980s included four modes of rail at MCO: regional, intercity commuter, light rail to the convention center and intra-airport.

“I think we have been pretty fortunate in that we have been able to execute along our original timeframe,” reflects Brown. “When we started the project, we said that we would be operational in 2017; and we will be.”

The entire project, however, has underscored the importance of contingency planning. “We have learned that when it comes to rail projects, funding and timing is critical—and if you have an aggressive schedule, you better have a backup plan in case it doesn’t come to fruition, which is what we’re seeing now with both SunRail and Brightline.”



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Despite delays from outside entities, Brown reports that the airport authority is cautiously optimistic about the addition of external rail service.

“We will have the airport people mover system, the parking garage and the people mover station, which is what we originally anticipated would relieve congestion,” Brown explains. “The others are sort of icing if we can get them.” ✈️

Overall, the airport has more than \$2 billion of capital investments under way related to its South Terminal Complex.



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Scottsdale Airport Opens New Operations Center



FACTS&FIGURES

Project: New Airport Operations Center

Location: Scottsdale (AZ) Airport

Opening Date: July 2016

Cost: \$4.9 million

Planning/Environmental Consultant:
Coffman Associates

Contractor: Danson Construction

Engineering: Stantec Consulting

Architect: August Reno Architects

Key Benefits: Centralizing operations & maintenance staff; reducing energy costs

Noteworthy Detail: Building received silver certification for Leadership in Energy & Environment Design

 This spring, Scottsdale Airport (SDL) in Arizona received good news about its new Operations Center. The U.S. Green Building Council awarded the building silver certification for Leadership in Energy and Environment Design (LEED).

The sustainably built facility benefits the city-owned airport in many ways, notes Aviation Director Gary P. Mascaro. "We have now consolidated operations and maintenance at one location," he says. Previously, staff and equipment were spread among six separate buildings at the general aviation airport.

The two-story, 10,000-square-foot structure is steel-framed, with a rusted steel panel façade and bonderized metal siding. In addition to containing offices for SDL's 10-person operations staff, the new Ops Center houses numerous vehicles: a tractor, backhoe, sweeper, golf carts and tugs.



GARY P. MASCARO

The airport is especially proud of the facility's high environmental standards. Mascaro explains that the airport would have received gold-level LEED certification, but it didn't want to install solar panels due to the dangerous glare or reflections they could have created for pilots.

"Not only is it a modern and sleek building, but it was designed to meet this high level of sustainable standards," notes Mascaro.

Notable environmental features of the building include:

- roofing that does not contribute to the heat island effect;
- low-flow plumbing fixtures;
- daylighting for interior spaces;
- no chlorofluorocarbon-based refrigerants;
- preferred use of locally sourced building materials;
- preferred use of building materials with high recycled content;
- interior materials and finish products with low or no volatile organic compounds;
- designated parking for low-emitting, fuel-efficient vehicles; and
- bicycle racks



BY MIKE SCHWANZ

Savings Ahead

Because the new building hasn't been occupied long, it is still too early to know how much electricity and water the airport will save. "Since all energy costs are now limited to only one building instead of six, I am certain that we will eventually see significant savings," says Mascaro.

"We had one of the hottest summers here in many years, but tinted windows, roll shades and the modern, energy-efficient central air conditioning system have kept this building nice and cool," he adds. "Our operations people love it."

Financing is another point of pride, as the entire \$4.9 million project was designed and built with aviation enterprise funds. "Fortunately, we did not have to solicit funds from any outside agency," Mascaro says. "The money was already in our budget."

Consulting Continuity

Initial planning for the project started back in 2011, with the help of Coffman Associates, an airport planning company

also based in Scottsdale. "Gary [Mascaro] first started discussing with us the need for a new Ops Center and his vision for a potential location. We were already under contract to the city of Scottsdale, so we worked with all the major stakeholders on this project for more than two years," says Jim Harris, the consulting firm's president.

"One of our main responsibilities throughout all stages of the project was working closely with the FAA to ensure that the project complied with all FAA requirements and standards," Harris adds. "We revised the airport layout plan (ALP) to reflect the location of the proposed facility, and coordinated with the FAA to obtain the new ALP approval."



JIM HARRIS

Deciding where to locate the building proved to be a challenge. "There were height restrictions and setback requirements," explains Harris. "SDL is very compact, with a single runway. Based on input and direction from the airport's staff, we located the new building on an older parking lot, on the western side of the airport, right near the northern edge of the main apron."

Coffman Associates also prepared the required FAA environmental documentation and obtained environmental approval for

construction of the new facility. "This was an excellent example of a collaborative partnership between the airport, their consultants and the FAA, which resulted in a very successful project," says Harris.

More to Come

The new Ops Center is just one part of SDL's master plan, which was updated by Coffman Associates in 2015. Work is already underway on the airport's \$27 million Terminal Area Redevelopment Plan. This project, which was recently approved by the Scottsdale City Council, will require demolition of the existing airport terminal building and aviation business center. In their place, the airport will add a modern office complex, redesigned restaurant and two executive hangars, all built to LEED standards for energy efficiency.

Mascaro is excited about this project, and believes it will be a game-changer for SDL. "This is one of the largest, most unique developments I have seen for a general aviation airport of our size," he exclaims.

Although airport staff will have to operate out of temporary quarters for several months, Mascaro is confident that the end result will be well worth the inconvenience. "This new project, when finished late next summer, will significantly improve our airport, and should meet the needs of our clients and pilots for many years to come," he predicts. ✈️

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Charlotte Douglas Int'l Institutes Clear Bag Policy at Employee Checkpoints

BY RONNIE GARRETT

In February, Charlotte Douglas International Airport (CLT) began requiring workers to carry their personal items in clear bags when passing through security checkpoints on their way to work. The new policy began just as the House Homeland Security Committee released a report titled *America's Airports: The Threat from Within*, which highlighted a lack of employee screening and vetting at U.S. airports.

CLT's policy, among the first in the nation, applies to approximately 9,000 airline workers, concession and aviation department employees at the North Carolina airport, which served more than 44 million passengers last year. McCarran International in Las Vegas has a similar program in place.

Officials at CLT say they enacted the policy to be proactive about the security threats identified in the report that came out at approximately the same time. The Congressional report mentions general examples of gun and drug smuggling, an attempted bomb detonation, willingness to smuggle in explosives, and links to terrorist activities overseas—all by employees at U.S. airports. Specific incidents cited include three employees at Minneapolis-St. Paul International Airport who were recruited to fight for ISIS; a Delta Air Lines employee who smuggled firearms on flights between Hartsfield-Jackson Atlanta International Airport and Kennedy International Airport in New York; and a Federal Aviation Administration inspector who was carrying a firearm in his baggage at LaGuardia International.

While CLT hasn't experienced any incidents of this magnitude, it is trying to make sure that it never does.

"The push for this was born out of the insider threat challenge that we have seen as an industry," says Jack Christine, CLT's chief operating officer. "We wanted to make sure we were doing everything we could to ensure the folks who travel through our airport, as well as the folks who work here, are as safe as possible. Clear bags are recommended by the TSA as a best practice. We see it as a move toward a positive, comprehensive approach to employee security."



FACTS&FIGURES

Project: Increasing Security at Employee Checkpoints

Strategy: Requiring employees to carry personal items in clear bags

Location: Charlotte (NC) Douglas Int'l Airport

Key Benefit: Improved security, due to better visibility of what employees are carrying into secure areas

Cost: Clear bags for 9,000 affected employees; marketing materials to educate workers about the new policy

Christine considers CLT's clear bag policy a good stepping stone toward 100% employee screening—something he predicts many airports, including CLT, will find difficult to achieve if it eventually becomes a federal requirement. "The clear bag policy is a good proactive step to help alleviate some concern about employees not being 100% screened, because now, as they walk through the building, anyone can see what they are carrying," he explains. It is part of a multi-layered approach and is a positive step as far as maintaining a secure posture from the employee side."



JACK CHRISTINE

Change Management

Airport Spokesperson Lee Davis explains that CLT began working on the new policy in 2016 to help tighten security in secured and sterile areas, while also balancing the need for employees to carry personal items. The policy, which took effect Feb. 1, does not cover all 20,000 people who work at the airport.

Unaffected employees include workers moving baggage and other items in non-sterile areas, airline flight crews entering through the Known Crew Member portal, badged employees who arrive on flights prior to their shifts at CLT, airline mechanics in uniform traveling for official business, law enforcement officers on official duty, employees transporting required medical devices, credentialed Transportation Security Inspectors, and limited one-time entries approved in advance by the airport security coordinator.



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The airport purchased clear backpacks for 9,000 affected workers.

“The clear bag policy took us awhile to complete because we were very deliberate about it,” says Christine. “We worked very closely with our partners in the TSA, concessionaires and the airlines, because that is who it was going to impact the most.”

He describes Initial response from airport partners as understanding, but not overly enthusiastic.

Change management was consequently among the first steps taken to implement the clear bag policy. CLT officials were very deliberate and had multiple conversations with stakeholders and affected employees, notes Christine. The airport also mounted a marketing campaign at employee entrances. Posters detailing the new policy explained why and when it would take effect.

“We gave them as much information as we could about the when, why and how,” he recalls. “We also purchased the first round of bags for everyone.”

The airport distributed clear backpack-style bags with mesh water bottle holders to every affected employee in mid-January. If the bags are lost, stolen or damaged, employees are required to replace the bags with acceptable clear bags of their own. Employees hired since the program launch are required to purchase their own bags—not to exceed 37 inches (length, width and height).

“Providing the bags to existing employees made it a little easier for folks to digest the change, because they didn’t have to spend money to buy the bag,” Christine explains. “Also, when they need to replace it, there is really no question about what the bag is supposed to look like.”

The airport eased employees into the change with a “soft start” during the first month. Personnel stationed at entry points reminded employees not carrying their personal items in clear bags that they had until March 1 to do so. “This is when we implemented the actual policy and started citing folks if they didn’t have their bags,” says Christine.

The citations did not carry a monetary penalty for the first two weeks, but fines were in play thereafter. “By taking a very deliberate approach to how we rolled out the policy, we minimized the consternation that employees had. We really didn’t hear a lot of negative feedback,” he reports. “There were a handful of employees who had the need for special circumstances, and we worked through those things with them.”

Clear Requirements

By design, the policy is very explicit: “Any employee accessing the Secure Area from the Public or Sterile Area MUST have a clear bag. Opaque (nonclear) bags will not be allowed, with the exception of the insulated lunch bag.” Plastic or paper lunch bags are not allowed.

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The policy further specifies that employees' clear personal bags cannot exceed 37 inches (length, width and height), and insulated lunch bags cannot exceed 32 inches (length, width and height). Clear roller bags are allowed if they meet all size requirements.

The policy then spells out procedures for infractions: "Those who do not comply will be denied access and will be required to return their unauthorized bags to their vehicle."

The policy also reminds employees that everything they carry must fit into their bag. Employees bringing medication or other personal care items must place them in a small cosmetic bag or privacy bag within the clear bag. Wallets, purses and handbags also must go into the bag. Per the airport's written policy, such smaller items are still subject to inspection.

Ideally, the goal is to have no opaque items in the clear bag so inspections take seconds instead of minutes. "Of course, prohibited and illegal items are still prohibited in the bags," notes the policy.

Employees who need certain tools to do their jobs can carry them in the clear bag if they fit, or they can pass through the employee checkpoint in the lobby for additional screening, notes Christine.

"We recognize we can't impede folks from doing their jobs," he says. "There are employees, who from a maintenance perspective,

need to carry certain tools with them to do their jobs. We recognized that on the front end, and have accommodated that within the policy."

The airport also frequently conducts random bag inspections with the help of TSA, security staff and the local police.

The New Normal

Airport officials continue to meet regularly with TSA to adjust this and other policies that are part of CLT's overall security program. "We are always looking at the things we do, and trying to make them better because the threat continues to evolve," says Christine. "We have a strong relationship with the TSA, and our police service, and we all work together to make the airport as safe as we can possibly make it."

On any given day, CLT's clear bag policy affects 7,000 to 8,000 workers. With several months under their belts, employees seem to have adapted to the change.

"We don't hear any real complaints, and we write a minimal number of citations," reports Christine. "Most employees have just started following the policy and have adapted to it very well. Those airports considering a clear bag policy need to know that once they get through implementation, it just becomes the new normal." ✈️



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The Impact of Ridesharing on Parking Revenue & How it Could Impact Infrastructure

Technology continues to impact many industries, and the airport industry is not immune. As a result of technological advances, customer behavior has shifted toward e-commerce, with \$395 billion of sales being made online in 2016 according to the U.S. Department of Commerce. In addition, it is estimated that smartphone and tablet devices will account for nearly 50% of online sales by 2020, as mobile wallets such as Paypal, Apple Pay and Android Pay provide customers with more streamlined consumer experiences.

The technology age has also witnessed the introduction of innovative ridesharing services that have disrupted the ground transportation market. Companies such as Uber and Lyft have resulted in significant declines for taxis, and they pose considerable threats to airport parking revenues. Not only is parking one of the most significant revenue streams at U.S. airports, it also plays a fundamental role in funding facility infrastructure projects that enable airports to meet future demand from ever-increasing passenger traffic.

These companies also pose a considerable threat to airport parking revenues. Not only is parking one of the most significant revenue streams at U.S. airports, it also plays a fundamental role in funding facility infrastructure projects that enable airports to meet future demand from ever-increasing passenger traffic.

Combating the threat to parking revenues requires a change in approach. U.S. airports must embrace technology and evolve their parking journey with new commercial parking products to address the challenges they face.

Common issues include:

- full occupancy in some parking areas; spare capacity in others



ROSEMARIE ANDOLINO

MAG USA CEO and President Rosemarie Andolino oversees the development of MAG's North American airport services business. MAG's ultimate aim is to become the 'go-to' organization for delivering market-leading commercial solutions that transform the customer experience at U.S. airports, including P3, retail and terminal developments; car parking services; and Escape Lounges. MAG USA is a subsidiary of Manchester Airports Group, which operates four U.K. airports—Stansted, Bournemouth, East Midlands and Manchester—that collectively serve more than 55 million passengers per year.

- the high cost of building garages for increased terminal parking
- off-airport competitors capturing revenue and market share
- lost revenue due to popularity of TNCs such as Uber and Lyft
- overly rigid pricing structures for daily rates
- rates that are too cheap for short stays and too expensive for longer stays

To overcome these challenges, airports need to develop a technology-based parking ecosystem with multiple solutions that interface seamlessly. Because no two airports are the same, there is no one-size-fits-all solution for their parking challenges. A technology-based parking ecosystem essentially provides a variety of tools to address varying challenges. A flexible system can offer solutions that differ by airport, parking product, day of the week and time of year.

Examples of innovative solutions include:

- pre-booking and dynamic pricing
- introducing original products and creating a product hierarchy
- creating a distribution network enabled by flexible software solutions
- leveraging online advertising analytics
- leveraging valet operation analytics
- analyzing turn up rates and evolving approach accordingly

Pre-booking facilitates dynamic pricing and yield management through

occupancy-based pricing—principles that are fundamental in the airline and hotel industries. The introduction of a reservation system is only one small part of a parking ecosystem. To be effective, it must be supported by systems based on data analytics. Being responsive to the market is fundamental to success, and using data analysts is the only way airports can know which tools to deploy.

Off-airport parking operators and ridesharing companies are gaining market share, especially amongst passengers traveling for longer than three days. Airports can win back these customers by offering them more attractive pricing and products. Using analytic-based parking ecosystems, airports can make their parking options more attractive to travelers than other modes of getting to the airport, such as taxis and TNCs. Deploying techniques to convert long-stay passengers away from alternative modes of transport and back to on-airport parking is key.

If airport infrastructure is to keep pace with forecasted demand, airports will need revenue for facility improvement projects. Airports must protect their largest source of non-aero revenue with more advanced technology-based solutions. Growing parking revenues with a dynamic parking ecosystem that relies on technology and analytics is the smartest approach. ✈️

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