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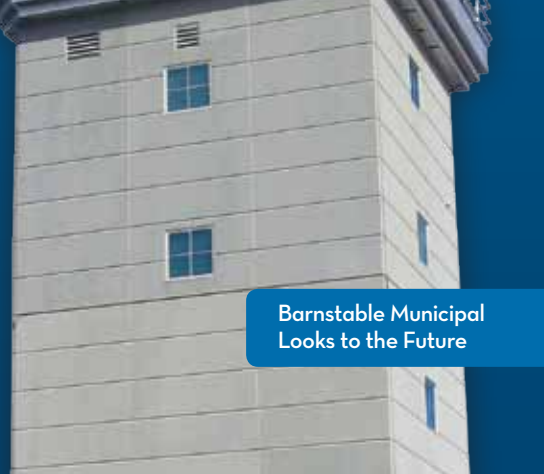

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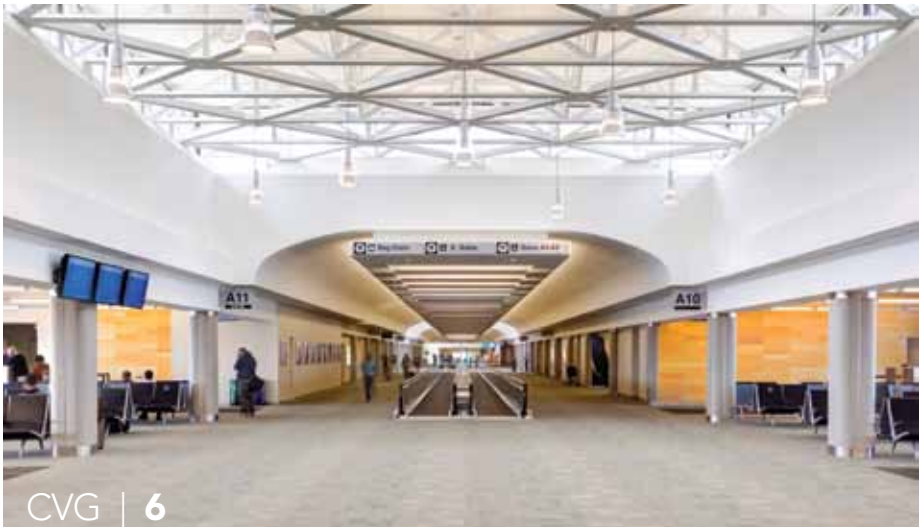

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Do 148 Years Really Make a Difference?

Between the November elections, multiple shootings and the fiscal cliff drama, 2012 was quite intense. Personally, I was more than ready to turn the calendar to 2013. But the holidays were a great respite from it all. I took the opportunity to enjoy some time with family and recharge my batteries. Seeing the movie *Lincoln* was a real treat. I love history, and the film does a marvelous job portraying President Lincoln's final months in office.

The parallels between then and now are quite striking. We keep hearing that our current Congress is more divided than ever, but today's bruising political landscape is nothing new. Passage of the Thirteenth Amendment was nothing short of amazing. All of the drama, party politics and self-interest that exist today were on full display back in 1865. The political divide was significant, even more so when you consider that the South was not even participating in the vote.

Sadly, there were shootings in 1865, and we certainly have had more than our share of brutal shootings in recent months.

So where's the upside? Is there one? Absolutely! Ultimately the process works, and we move forward. Despite our problems and the messy process of cleaning them up, we do make progress. Back in 1865, the Civil War ended and the nation became one. Slavery ended.

Today, we continue to tackle new problems. In our industry, we've weathered funding issues, airline deregulation and consolidation, 9/11 and multiple recessions. Despite the ups and downs, more people want to travel by air. And when adjusted for inflation, they do so at lower costs than 30 years ago. Our safety record continues to improve; we're offering more amenities to customers; and our facilities are capable of more and more.

Who knows what the rest of 2013 will bring? Certainly there will be challenges, both small and large. History shows us that growth is not always pretty; but at the end of the day — the end of the year— we continue to make progress. I look forward to working with you in this New Year.

Cheers.

Paul

Cincinnati/Northern Kentucky Int'l Reinvents Terminal & Market Strategy

By Rebecca **Douglas**

CVG CINCINNATI/NORTHERN KENTUCKY INTERNATIONAL AIRPORT

factsfigures

Project: Terminal Renovations

Location: Cincinnati/Northern Kentucky Int'l

Cost: $36 million

Est. Construction Costs: $19 million

Restroom Upgrades: $1 million

Strategy: Consolidate terminals following service cuts by Delta Airlines

Grand Reopening: May 2012

Prime Architect: MSA Architects

Conceptual & Schematic Design: Architectural Alliance

Construction Management: Quandel Construction Group

2035 Master Plan: Jacobs

The recently renovated terminal at Cincinnati/Northern Kentucky International Airport (CVG) is a literal bricks-and-mortar representation of the dramatic contraction and changes the airport has experienced in the last seven years. The $36 million facelift and reconfiguration updates facilities for operations that used to be housed in three different terminals. Now unneeded, the other two terminals are slated for demolition in the next few years.

A series of reductions in service by Delta Air Lines sent CVG's total passenger volume into a free-fall (see chart on Page 10) and prompted the terminal consolidation. Service cuts began shortly after the airline declared bankruptcy in 2005 and subsequently merged with Northwest Airlines. In 2008, Delta reduced capacity at CVG by 22%; another 17% decrease occurred the year after and yet another 10% drawdown occurred in June 2011. Once the airline's second largest hub and headquarters to its regional subsidiary Comair, CVG is now in the process of reinventing itself.

"What we *were* is not what we'll *be* in the future," explains Candace McGraw, who was named chief executive officer in July 2011 after serving as chief administrative officer since 2009. "We're transforming from a fortress hub, where most passengers never left the building, to an O&D (origin/destination) market."

Candace **McGraw**

Landside changes such as enhancements to rental car operations and roadway construction to improve terminal access consequently dominate the airport's new master plan.

Forging Ahead

Expanding cargo operations and building vacation charter business figure prominently into McGraw's more immediate turnaround strategy. "DHL has invested $105 million in capital projects here the last several years," she explains. "They've expanded from 1,600 to 2,300 employees and are now running more than 50 flights per night."

Already accounting for fully 40% of the airport's total landed weight (and also landing revenues), DHL is a valued business partner. "They're the cornerstone for our economic and business development strategy," says

Holdroom workstations and free Wi-Fi are two of CVG's new customer amenities

McGraw. "They lease land from us and create jobs within the community. It's a win/win."

CVG, in turn, is one of DHL's three global "superhubs." The others are located in Hong Kong and Germany.

Vacation charters by Apple and Vacation Express are another bright spot for the airport. Traffic on Frontier and Sunwing Airlines to destinations like Punta Cana, Cancun and Montego Bay actually grew while overall traffic plummeted.

But there's still the overall passenger service issue to face. Local businesses have been vocal about the damaging effects of high fares and schedule slashing by Delta. When Chiquita Brands announced plans to move its headquarters from Cincinnati, the company acknowledged it was looking forward to better international flight options in its new hometown, Charlotte, NC. In December, Ohio Governor John Kasich didn't mince words when he charged CVG with "holding (the area) back big time." He also fired a shot at Delta for holding the market "captive."

Airport officials stress their efforts to find a low-cost carrier to local media. While McGraw has characterized replacing lost domestic service as her "highest priority," she reminds the community that adding more international routes is a long-term process.

Rumors periodically swell and subside about the possibility of a new carrier, with Southwest Airlines and JetBlue Airways mentioned as likely suspects. One end of Concourse A stands ready for the to-be-determined tenant, complete with empty gates and new holdroom furniture.

"Traffic with Delta has stabilized, and we're even seeing some growth with other airlines," reports McGraw.

Last spring, US Airways added three daily flights to Reagan National Airport — a move that decreased fares to Washington D.C. by 16%, notes Larry Savage, chairman of the airport board's air service committee. An even larger increase followed in summer, when United Airlines added 17 flights a week to Houston and Newark, N.J. The uptick continued in December, when the airport announced that US Airways would add another daily nonstop to Reagan National in February.

The carrier's service expansion began after it moved from Terminal 2, notes McGraw. "Previously, they were facility-constrained," she explains.

Delta, which once occupied all of Terminal 3, now operates out of 39 gates in its B concourse. Notably, the airport expects "dramatic non-reductions" from the airline in the first quarter of 2013. Other carriers previously housed in Terminal 2 (Air Canada, American Airlines, Continental Airlines, US Airways and United Airlines) were moved into Delta's previous space in Concourse A. Ticketing and Security for all carriers were consolidated into Terminal 3, which is now simply referred to as "the Terminal." Terminal 1 currently houses the airport's executive and administrative offices.

Renovating Concourse A, which had been "mothballed" during the Delta cutbacks, was one of the renovation's major elements.

New Look, New Amenities

When conceiving the conceptual and schematic designs for the project, Architectural Alliance focused on updating the facilities and making the airport more user-friendly — especially to business travelers, notes McGraw. The airport added free Wi-Fi, installed new carpet and painted walls. Gates received updated furniture, with extra side tables and electrical outlets/USB ports.

"Now every seat is like an end seat," says McGraw. "We never want to see a passenger sitting on the floor just to use an outlet."

In addition, each holdroom now has workstations for passengers.

Designers modified the terminal's flow to improve the overall passenger experience and help increase revenue from concessions. New main entry doors eliminate a previous pinch point, flight information displays were relocated and reconfigured, and, most importantly, ceilings and lighting were completely revamped, notes Tom Hysell, principal with Architectural Alliance.

"The entire concourse is brighter, more open, and the passengers clearly know where to go," he relates.

Improvements to the underground pedestrian tunnel that connects Ticketing to concourses A and B were among the project's most dramatic enhancements, says Hysell. Once described by airport officials as "dark, foreboding and uninviting," the new space is lighter and brighter. "It was mostly transformed with lighting and graphics," he explains. "The difference is pretty amazing."

Previously, the majority of passengers rode the airport train to concourses A and B. Since the tunnel's makeover, however, most now choose to walk or use the moving walkways. "The renovations are actually changing passenger behavior," relates McGraw.

Other standout upgrades include the restrooms and Ticketing, notes Keith Hall, principal of with MSA Architects. "This was the first real improvement to Concourse A in more than 20 years," Hall explains. "Previously, everything was 'Delta blue' and heavily branded with the airline's logo."

Keith **Hall**

The new color palette uses natural tones — browns, greens and beiges. In addition, brightly colored screens "pump life" into the holdrooms and tunnel, he notes.

New lighting, paint and carpeting brighten the overall concourse.

McGraw describes the new ticketing area as "carrier agnostic," with airline branding achieved exclusively through monitors. "We operate the backbone system, and carriers plug their systems in," she explains. "Airlines don't want to have to invest capital, so we're making it easy for them to come in. We can add or contract space in a very non-capital intense way."

The airport also spent about $1 million upgrading its restrooms. "We completely gutted them and took everything to a whole new level," Hall explains. Marble partitions, new lighting and beautiful wall tile put CVG's restrooms on par with high-end hotels, he adds. New layouts place paper towel dispensers and hand dryers directly behind the sinks. "Hands dripping on the floor can create slip and fall hazards," notes Hall. "We kept everything close together to reduce that risk."

The Meaning Behind the Look

Hall and Hysell both credit Kolar Design for conceiving the bold color panels that may well become the airport's signature elements. "They did a great job developing themes about the region and translating them into interior finishes," says Hall.

The firm takes a multidisciplinary approach that encompasses architecture, interior/industrial design and graphics to create "branded environments," explains company founder/president Kelly Kolar. "We thrive on the challenge of helping organizations create meaningful, memorable and measurable experiences (for customers) by leveraging their real estate," Kolar elaborates. Cincinnati-based Proctor & Gamble, now known simply as P&G, is also a current client.

As a local, Kolar knows that CVG has experienced a "crisis of confidence" in the community. One of the challenges the airport faces, she notes, is the proximity of five strong competitors within a two-hour driving radius: Dayton International and Port Columbus International in Ohio; Louisville International and Lexington Blue Grass Airport in Kentucky; and Indianapolis International in Indiana.

"Consumers want low fares and lots of flight options," Kolar relates. "Many turned their backs on CVG because of Delta's decisions. We helped them leverage their real estate and built environment to help win back the hearts and minds of CVG passengers — and attract new ones."

When Kolar interviewed for the job, she was also helping develop overarching "story" themes about the region for a cooperative venture between the Greater Cincinnati Chamber of Commerce and Northern Kentucky's Vision 2015. "It was the perfect storm," she recalls. "We were able to leverage regional cooperative marketing efforts and concepts that had already been researched, and use them at the airport."

The Ohio River, which runs through all of the groups' constituencies, became the centerpiece visual/symbol. Historic "River City Mosaics," 20-foot long Art Deco murals from Franklin Roosevelt's New Deal era in the late 1930s, were consequently shipped from Cincinnati's Union Terminal railroad station for use at the airport. "They're monumental, invaluable pieces that depict local industry, planes, trains and riverboats — Cincinnati themes of the past," explains Kolar. "They illustrate the neighborhoods, people and diversity of the area beautifully and were woefully underutilized before."

The river theme also appears in the tunnel's carpeting — with contours and curves designed to encourage passengers to relax and meander, as if following the banks of the Ohio. The local newspaper, the *Cincinnati Enquirer*, provided photographs of the area's people and places. "It's an unbelievable collection," raves Kolar. "And since they're panoramic, they're perfect for the long tunnel."

Kolar used the artwork, interior finishes and graphics to help add "sense of place" to the airport. "We want CVG to reflect our unique topography; it's who we are at a DNA level," she relates.

Airside, Landside, Fun Side

Beyond aesthetic upgrades, CVG makes serious efforts to lighten the mood in the terminal with live performances by

ID Please

As Cincinnati/Northern Kentucky International Airport (CVG) reconfigures its facilities in response to dramatic service reductions by Delta Airlines, officials work to reinvent the organization as a whole. But it's not the first time the airport has faced identity issues.

Being located in Kentucky but largely sustained by business from Ohio creates unique local challenges, with some Kentuckians feeling like overlooked stepchildren. In addition, the airport was built in one county (Boone) but is owned and operated by another (Kenton).

There's even a twist to its three-letter identifier. CVG refers not to its hometown of Hebron, but Covington, the nearest sizable town when the airport was built in 1947. The marketing staff, however, prefers the explanation of astronaut and former CVG board member Neil Armstrong: Cincinnati - Very Good.

groups including the Cincinnati Ballet, an African drum ensemble, the Cincinnati Shakespeare Company and Irish dancers (a personal request for St. Patrick's Day by the airport's Irish CEO). "The live entertainment injects a flavor of what goes on the in arts around Cincinnati," McGraw relates.

And you won't hear any Muzak in the terminal. CVG's soundtrack is strictly classical music played by the Cincinnati Symphony Orchestra and "coffeehouse selections" from Northern Kentucky University.

"We like to showcase our local talent whenever we can," notes McGraw.

Toward that end, CVG is in the process of adding a kiosk program to its concessions lineup to feature the work of local artists and artisans.

On the less esoteric side, a video that instructs passengers on security procedures features the three Cincinnati Reds mascot characters. "Baseball is like a religion here," explains McGraw, "so the passengers really tune in to the video. It lightens the mood at the checkpoint, and TSA tells us that people pay more attention to the instructions." To view the video, visit www.cvgairport.com/about/news/vid.html.

No Time to Rest

Given its beleaguered past and the challenging local conditions that still prevail, predicting what's ahead is understandably difficult at CVG. In spring 2011, the airport hired Jacobs to support its master planning process.

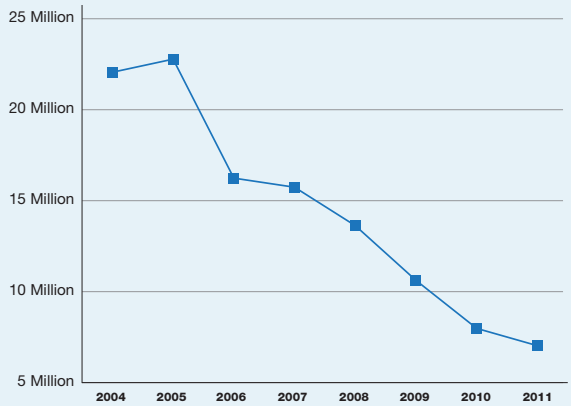
"Traffic forecasting was more of a challenge than usual," recalls Julie Kenfield, senior aviation planner with Jacobs. "We couldn't rely on typical methods like regression analysis of historical growth; we had to use pertinent socioeconomic data."

With such a volatile market, though, that didn't provide clear answers, either. "Despite growth in the community and a reasonable business climate, traffic hadn't grown the way the gross regional product and population had," Kenfield explains. "Passengers were obviously willing to drive for the lowest fare."

That led Jacobs to benchmark CVG against a group of peer airports, representing approximately 26 million passengers in 2010, to determine an endpoint of "what could be" for the airport. Planners then vetted the forecast data with the airport. "We had a whole lot of discussions with staff about how to recapture their market and what that performance might look like for CVG," she recalls.

Jacobs developed separate forecast scenarios based on slow growth and a bump in traffic associated with the introduction of a low-cost carrier. Forecasts of demand were coupled with projections about both capital and ownership costs of various systems and facilities. "We determined when the airport would have to make significant investments in existing facilities based on historic operations and maintenance data and industry (averages)," explains Kenfield. "That way, we were able to provide a picture of the total cost of ownership of various scenarios. We could project when they could use a capital investment in a new facility to offset major O&M (operations and maintenance) costs."

CVG Passenger Volume



Source: Cincinnati/Northern Kentucky International Airport

Given the recent terminal updates and an estimated 10 years of life left in the concourses, master plan elements proposed for 2016 to 2025 focus on landside improvements: a new consolidated rental car center, additional parking for increased local travelers, a stop for regional bus lines and access road enhancements.

Airfield projects are notably absent from the airport's plans, notes McGraw. "We have three parallel runways with good separation, plus another cross-wind runway," she chronicles. "Our airfield is a marvelous asset."

Shorter-term plans include revamping the food court and gateholds in Concourse B and adding a universal business lounge developed with Grey Cliffs.

Collateral commercial development is also being considered. "We have 7,500 acres — 4,400 inside the fence," McGraw explains. "We have great sites ripe for development."

In the meantime, CVG is enjoying its update. "The public loves it," reports McGraw. "We've had nothing but positive feedback."

Last year, CVG was named Best Regional Airport in North America for the second year in a row by SkyTrax. The airport also recently earned its best quarterly results in the Airport Service Quality survey. McGraw is quick to acknowledge the staff's role in the accomplishments: "Our employees are on board 100%. They have great esprit de corps and realize that the way we do our jobs affect how people out in the community do theirs."

As the airport evolves from a former Delta hub into an emerging O&D airport and DHL stronghold, employees will continue to be a critical factor, says McGraw. "We're reinventing the airport," she explains, "and that requires everyone."

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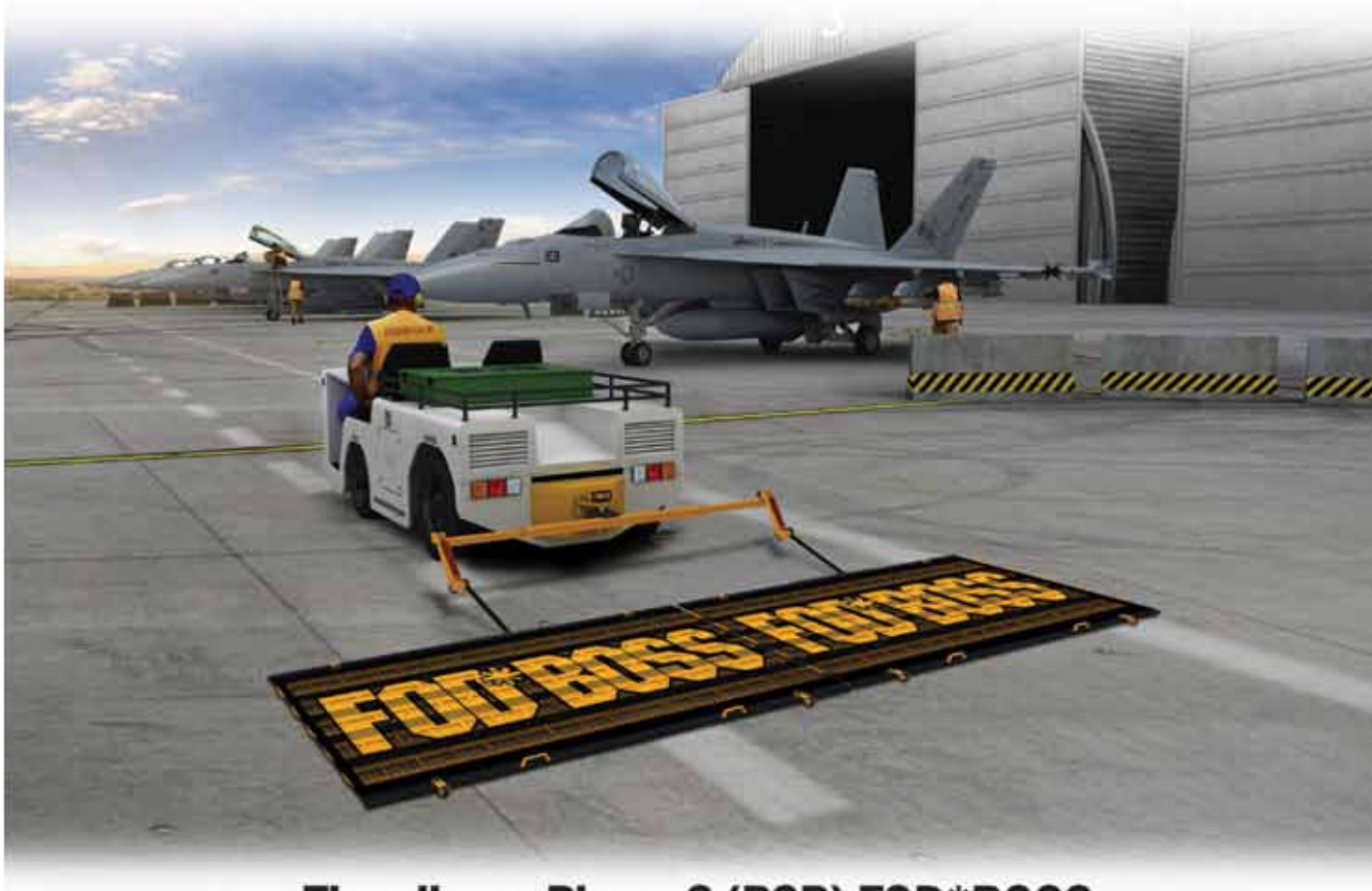

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Logan Int'l Builds Concrete Pier Over Boston Harbor to Support Runway Safety Area Extension

By Greg **Gerber**

bostonlogan massport

factsfigures

Project: Runway Safety Area Extension

Location: Boston Logan Int'l Airport

Size: 300 ft. wide, 600 ft. long

Overall Cost: $80 million

Environmental Mitigation Costs: $4 million

Funding: $65 million from FAA; $15 million from Massachusetts Port Authority

Construction: Summer 2011

Environmental Consultant: Vanasse Hangen Brustlin, Inc.

Project Management: Fay, Spofford & Thorndike

Engineered Materials Arresting System: ESCO-Zodiac Aerospace

General Contractor: J.F. White

Paving Subcontractor: Don Martin Corp.

Asphalt Supplier: Aggregate Industries

Electric/Lighting Contractor: J.F. White Division

Challenges: Lack of available land; environmental regulations restricted type of structure & construction timetable; damage to natural resources in Boston Harbor required mitigation

Strategy: Build pile-supported concrete pier to house an engineered materials arresting system

Benefits: FAA compliance; opportunity to resurface and upgrade to Category 3 systems while runway was closed

Surrounded on three sides by environmentally protected waters, Boston Logan International Airport (BOS) faced formidable challenges when complying with FAA-required runway safety area improvements.

"Any time someone talks about doing any work in Boston Harbor, it immediately attracts attention," says Stewart Dalzell, deputy director of environmental planning and permitting for airport owner/operator Massachusetts Port Authority (Massport).

The ultimate fix — constructing a concrete deck to support an engineered materials arresting system (EMAS) and other improvements for Runway 33L — cost $80 million and involved nearly a dozen local, state and federal agencies. Associated environmental mitigation expenses accounted for $4 million of the total cost — $2 million in permits alone.

The FAA funded 75% of the project, covering deck construction and EMAS costs; Massport bore 25% of the total expenses, paying for the pier and associated approach lighting upgrades.

The safety area improvements affected environmental elements that require the highest level of protection for any natural resource in the state, explains Lisa Standley, chief environmental scientist with project consultant Vanasse Hangen Brustlin. The end of Runway 33L, she notes, was built several decades ago near a submerged bed of endangered eelgrass — a critically important plant for fish breeding that supports a wide range of marine life. "Seagrass is in decline everywhere, and the shade that would be created by the runway safety area extension would kill the grass," Standley explains.

Carol **Lurie**

"The grass is protected because there isn't a lot of it around the Boston area anymore," adds Carol Lurie, principal with Vanasse Hangen Brustlin. "Handling it must be done carefully, because it is extremely susceptible to water quality and clarity changes."

The airport experienced similarly serious environmental challenges when it installed its first EMAS to Runway 22R in 2005. That runway is next to a salt marsh that supports the state's soft shell clam industry. Such areas are threatened by any rise in sea level, and therefore can't be altered unless authorities grant a very rare variance, Standley explains. Because commercial clammers harvest shellfish from the area, altering it required mitigation efforts to replace the lost salt marsh and compensate for both the environmental and economic value of the affected shellfish.

Reaching Out

Knowing the Runway 33L project would require myriad signoffs and attract keen interest, Massport officials began meeting with environ-

mental agency representatives in late 2007 to explain the need for runway safety area improvements required by 2015.

They explained that the FAA and a congressional mandate require safety areas to stop aircraft from undershooting, overshooting or veering off runway edges. Standard dimensions for such safety areas are 1,000 feet long, 500 feet wide. Because Runway 33L abuts Boston Harbor, there simply wasn't land available to add a safety area to the end of the runway. Shortening the runway to gain space for safety enhancements was similarly untenable, because that would have severely reduced the type of aircraft that could use the runway.


Kevin **Quan**

Building a standard deck to accommodate the runway safety area wasn't a viable option either, explains Dalzell, because it would have required Massport to add fill materials into the harbor, which would significantly damage aquatic resources. A special pile-supported concrete deck, however, helped avoid such problems. In addition, installing an EMAS provided an equivalent level of safety but required a 600- vs. 1,000-foot long area, explains Kevin Quan, director of sales and marketing for EMAS provider ESCO-Zodiac Aerospace.

"We looked at our existing natural resources and discussed what we could do to avoid environmental problems and minimize their impact if it came down to that," Dalzell relates.

Mitigation Implications

To mitigate the loss of salt marsh at the end of Runway 22R, Massport is restoring a previously filled marsh a few miles north of Boston. Mitigation for the eelgrass impacted by the Runway 33L project, however, took a more circuitous route. The original plan called for crews to transplant 103,000 shoots of eelgrass to two other locations in Boston Harbor at a cost of more than $500,000. But when much of the grass failed to survive the relocation, as is often the case in the region, a new plan required Massport to create sites two to three times larger for the affected plants farther away from the airport.

While it's always easiest to build a mitigation site right next to the affected area, a remote site was a better fit for BOS, notes Massport Director of Aviation Ed Freni. "These types of coastal resources attract birds and animals," Freni explains. "The last thing the airport wanted to do was attract more of them near the end of its runways."

Currently, the airport is investigating alternative plans that don't involve transplanting, he adds. One possibility involves funding an eco-mooring program that helps protect eelgrass throughout the harbor when boats are anchored in beds of the grass. The strategy involves replacing existing moorings with chains and anchors that float so they don't disturb eelgrass on the seabed during tide and current changes.

Delivery Decisions

The Massport Capital Programs Department, led by Director Sam Sleiman, chose to complete the project via the design-build method because it would facilitate competitive innovation among various marine contractors and expedite construction. Additionally, pile installation could begin as soon as all permits were in place and continue while design of the superstructure was still underway.

Fay, Spofford & Thorndike managed the project for Massport and developed the bridging documents. "We developed the preliminary design, then took it to the builder for input," says President Peter Howe. "Once construction began, we monitored the project to make sure it was built according to the required design criteria and the operational and environmental constraints outlined in the approved final design."

For years, a wooden pier that extended 2,400 feet from water's edge housed a series of approach lights for Runway 33L. The current project removed that pier and replaced it with a three-acre concrete deck structure that extends 460 feet over the water to support the deck with EMAS. It also added a 1,700-foot concrete pier that was significantly more substantial

To better protect the harbor, workers installed a silt curtain that floated around the structure to contain silt within the construction area.

than the wooden structure it replaced, which was close to the end of its useful life, says Freni.

Mother Nature recently confirmed the material and engineering choices. "Hurricane Sandy was about as good a test as we could get to verify the soundness of the structure," comments Dalzell. "The deck held up very well against the storm surge."

Navigational aides were also improved, which will facilitate an upgrade in the runway's designation from Category 1 to Category 3, meaning aircraft can land in all weather conditions – down to 600-foot runway visual range visibility. Airport officials expect Runway 33L to be fully operational as a Category 3 by March.

When the upgrade is complete, BOS will have a north-south *and* an east-west Category 3 runway, notes Dalzell. BOS moved up the list for Category 3 outfitting when airport officials convinced FAA officials to allow them to dovetail the project with the runway safety area enhancements.

Internal Watchdogs

As environmental project managers, Standley and Lurie worked with Massport staff to ensure the safety area enhancements complied with numerous environmental regulations.

"We made sure that the work performed for this project was consistent with what the airport had done in the past," Lurie explains. "We also served as a liaison with state, federal and local agencies to make sure we had a thorough and defensible process for addressing all the environmental issues the project posed."

Massport formed a working group that allowed regulators to weigh in on any jurisdictional issues they had regarding the airport's plan. Officials detailed the scope of the project to ensure that regulators understood the critical safety components it required. They also worked to show that the airport would avoid environmental disruptions and mitigate unavoidable disturbances to get the plan approved.

In some cases, permits required detailed analysis and planning. The Commonwealth of Massachusetts has issued only 30 wetland variance permits in its entire history, Standley explains. Typically, exceptions are granted only for projects, like BOS', that include overriding public safety benefits, she adds.

"This project involved work in a valuable environmental area that has a lot of local concern attached to it," says Lurie. "By bringing all the parties together to come up with a successful strategy to complete the project while protecting the environmental resources, I think we really sped up the approval process.

"Our job was to make sure the approval process didn't get caught up in the red tape of an inter-agency review cycle," she continues. "We accomplished that by having the right people at the right table at the right time."

By involving all pertinent agencies from the beginning, the team saved enormous time by not having to bring individuals up to speed individually. Plus, by giving regulators a chance to participate from the start, BOS secured greater buy-in to the overall project.

"I was surprised how willing the regulators were to come to the table with us," Lurie reflects. "They were very understanding and provided a lot of help in navigating the red tape."

She says FAA personnel, in particular, were "fantastic collaborators." They understood the environmental impact the project entailed, yet were conscious of the airport's budget and the costs associated with such a complicated plan, she explains.

"It was a huge challenge, and the FAA was a close partner in the endeavor," Lurie emphasizes.

The sheer number of agencies charged with protecting natural resources around the airport made the project innately complicated. Although some weren't happy with all aspects of the project, they cooperated because they understood the federal requirements to enhance the runway safety areas, Lurie explains.

Because of the design-build process, Massport secured all of the environmental permits at the preliminary design stage — about 25% completion. As the final design plans developed, minor changes required the airport to go back to the agencies several times to secure approval for the updated plans. Getting new plans approved was much easier because of the open communication airport staff had established with the agencies, notes Lurie.

One concern that arose mid-project involved the effects of disturbing silt on the ocean floor. To prevent harmful consequences in the harbor, workers installed a curtain that floated on the water to contain the silt within the construction area.

Now's the Time

BOS officials had wanted to extend the safety area for Runway 33L for years, but environmental concerns and a lack of available land prevented it. But once the FAA approved EMAS systems, equivalent safety standards could be achieved with shorter pier over Boston Harbor. BOS became one of the industry's early adopters when it installed its first EMAS system on Runway 22R in 2005. Upon completion, officials felt EMAS could be the ideal solution to the east-west Runway 33L, as well.

Massport's Engineering Project Manager Peter Austin notes that through close collaboration with the FAA, the airport was also able to reduce the width of the structure from the usual 500 feet to 300 feet, and still provide an equivalent level of safety.

"It was a pretty sizable project — one of the largest we have ever done," says Quan.

Constructing the EMAS required a 300-by-460-foot cement pad to be constructed starting 94 feet from the runway end. The deck had to be long and strong enough to stop a fully loaded Boeing 747 traveling at about 70 miles per hour.

After the deck was built, crews installed 125 rows and 44 columns of precast concrete blocks ranging in thickness from 6 to 26 inches. Once installed, some of the blocks were cored to accommodate 75 approach lights that would be permanently mounted in the EMAS bed.

All 5,500 blocks include jet blast protection and a durability coating to ensure a long life, notes Quan. After the blocks were trucked in from New Jersey, a forklift positioned each one into a specific location on the pad according to a grid drawn on the pavement showing the block size and its unique number.

Because the deck would shift slightly with tides, expansion joints were included to allow the concrete to move without cracking. The EMAS blocks sit on a plastic plate that moves as the concrete expands and contracts.

Even though project contractor J.F. White had never installed an EMAS system, its crews took only three weeks to install the blocks — a task Quan considers "exceptional."

Airport officials were also impressed with the feat, and with the EMAS' ability to crumble into gravel if an aircraft rolls over it. "Had this structure been installed in 1982, it would have stopped the World Airways jet that slid off the runway that winter and into the harbor," reflects Freni. "This system would have stopped that aircraft, and we strongly believe it will prevent a similar incident from happening again."

While We're At It

BOS saved time and money by repaving the entire length of Runway 33L when it was already shut down for safety area improvements, notes Dalzell. Previously, officials opted to split the 10,000-foot job over two years. But with the entire repaving complete, operations on the runway won't be impacted for many years to come. "(That) reduces the level of inconvenience our passengers and airlines need to experience," says Freni.

The project used warm-mix asphalt, which BOS pioneered the use of a few years ago on a different runway. The warm-mix product is environmentally friendly because it heats at a lower temperature and consequently reduces emissions and saves energy, Freni explains.

"The warm mix is safer and healthier for workers to use, and it is just as durable as the hot-mix asphalt we have used in the past," he notes. "Not only is it good for airport operations, it was a good benefit for the community. The fewer times we need to shut down a runway and divert aircraft, the better it is for the community."

BOS took advantage of a similar opportunity to group improvement projects last year, when crews installed LED lights in the parking garage at Terminal B while it was shut down for repaving.

Moving Target

Given its coastal location, BOS is often at the mercy of changing weather. During summer, prevailing winds typically favor use of the north-south runway. But when winter arrives, winds can shift overnight to the northeast. Consequently, the east-west runway needed to be ready for winter traffic by Oct. 1.

Environmental laws, however, prevented construction until after July 1, because the harbor is a spawning area for winter flounder. In addition, agreements designed to minimize noise disruptions for nearby neighborhoods restrict the time crews can work to weekdays from 7 a.m. to 7 p.m.; allowable work slots on weekends are even slimmer, notes Austin.

Because BOS officials are keenly aware of how well sound travels across water, they worked closely with contractors to reduce the noise associated with the project. One of the most innovative strategies was using concrete pilings instead of steel.

"Using concrete helped because we didn't have the noise associated with steel equipment pounding steel pilings into the bedrock," explains Dalzell. "We also buffered the equipment in a way that neighbors weren't bothered by constant pounding. In

fact, we had very few, if any, comments about project noise from our neighbors."

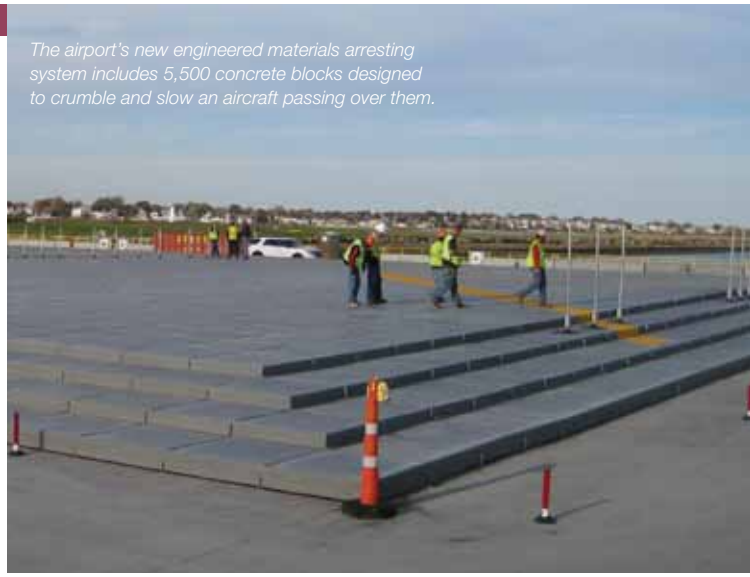
Further complicating matters, Runway 15R-33L is BOS' noise abatement runway, so it is the preferred runway for nighttime departures and arrivals over the harbor. That meant crews could only work on the runway between 7 a.m. and 7 p.m. from May until July, Austin explains. At the end of each 12-hour window, they had to move the cranes and barges so the runway could be used that night.

Once July 1 arrived and the environmental restrictions against working in the water passed, the runway was closed for three months and larger cranes and pile drivers were used. Work hours had to remain the same (7 a.m. to 7 p.m.), but the cranes did not need to be lowered every day.

At the end of the three-month runway closure, the work schedule reverted back to the 7 a.m. to 7 p.m. routine and workers, materials and equipment had to be moved each night once again.

"There were so many issues that came into play with this project that timing of each stage was critical," Howe says. "Noise mitigation prevented planes from going over neighborhoods during certain hours. Environmental mitigation prevented work from taking place between Feb. 1 and July 1 to protect hatching fish eggs. And weather conditions required the runway be open by Oct. 1 to accommodate winter winds."

All those conditions gave the airport a very narrow window over two seasons in which to complete the project, adds Dalzell.



The airport's new engineered materials arresting system includes 5,500 concrete blocks designed to crumble and slow an aircraft passing over them.

"A federal executive order required the airport to create a longer runway safety area by a specific time," Lurie explains. "Not only did we have to figure out how to protect many important natural resources before the project could begin, we had to keep one of the nation's largest airports operating while construction was underway."

Material delivery and logistics also proved to be crucial factors. To save time, money and fuel, and to avoid local roadway congestion, crews used barges to bring in and store supplies for the project. But active marine traffic in Boston Harbor made scheduling deliveries no easy matter.

Rewarding Results

"This was an extraordinarily challenging environmental project with many moving parts operating on a very fast timeline," summarizes Standley.

Airport officials, however, are pleased with the results. "The project turned out to be everything we expected," says Freni. "We turned a wooden pier into a concrete pier. We did not have to shorten our runway to get the safety area completed. In fact, we took advantage of the plan to upgrade the runway to a Category 3 instrument landing system, which now gives us redundancy to land at two runways with minimal visibility.

"It required tremendous coordination between our capital programs group, aviation operations, contractors, environmental agencies, airlines and the community," he adds. "But, by doing so, we kept the project on time and on budget."

The size and scope of the project was "simply amazing," Freni concludes.

"In the end, we have a good, solid runway, and we won't need to do any major work on it for years."

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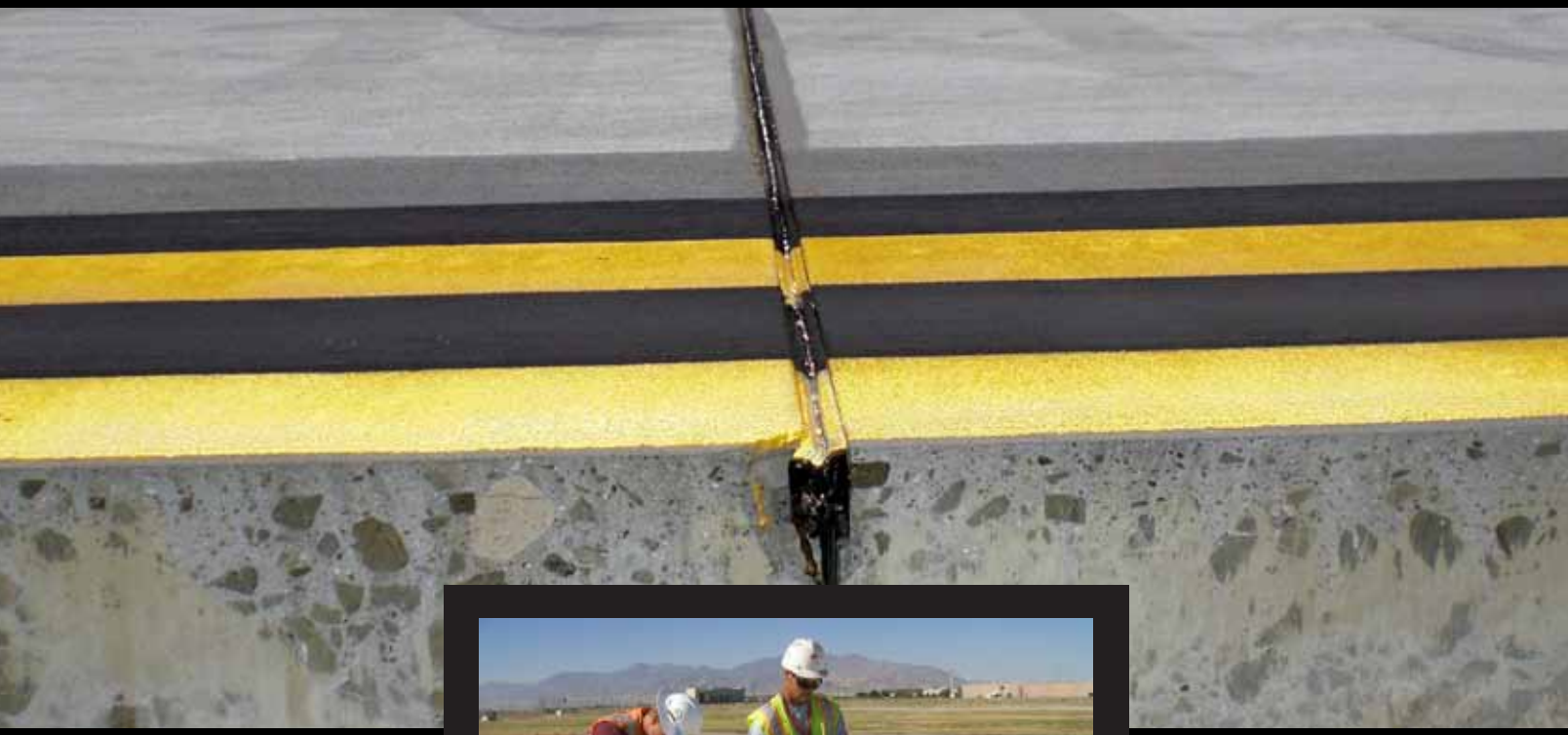

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Montréal-Trudeau Pioneers New Self-Service Technologies

By Nicole **Nelson**

From automated teller machines for cash to scan-it-yourself checkout lanes at the supermarket, consumers are accustomed to self-serve options. Montréal–Pierre Elliott Trudeau International Airport (YUL) is giving air travelers just that.

Christiane **Beaulieu**

"One day, it will be like going to the movies: You buy your ticket and then you just go and find your seat," predicts Christiane Beaulieu, vice president of public affairs and communications for Aéroports de Montréal.

Like moviegoers, YUL patrons may choose to stop for concessions (including popcorn in both cases), but screening by the Canadian Air Transport Security Authority aside, passengers need little-to-no assistance from airport agents to get from Point A at Check-in to Point B in their aircraft seats.

With self-service equipment for passenger check-in, baggage check-in, baggage drop and even clearing Customs (see sidebar on Page 21), YUL is fast approaching the cinema-like simplicity envisioned by the Montreal airports authority.

"Airlines and the industry as a whole are making the traditional check-in process as we know it disappear," says James Cherry, president and chief executive officer of Aéroports de Montréal. "Passengers will be getting checked-in by default (via automated technologies) and airports, therefore, need to focus on common-use, rapid bag drop options, which is the part of the process that will remain at airports. This is why (we are) part of the leading airports in terms of common-use, generic and self-service bag drop processes."

In 2011, more than half of YUL's departing passengers bypassed traditional check-in counters. Of that group, 35% obtained boarding passes at a self-service kiosk, followed by 25% via the Internet and 2% by cellphone. Fully 73% of departing passengers who used a self-service kiosk did not need an agent's assistance to complete the check-in process, and competency rates are expected to rise even higher with time.

Making check-in a one-stop, short-queue experience is clearly a priority at YUL.

Evolving Airport Protocol

Known as a pioneer of self-service technology, Aéroports de Montréal has been on the cusp of emerging trends since 2004, when it first unveiled common-use check-in kiosks at YUL.

James **Cherry**

"Aéroports de Montréal believes self-service is a trend that is here to stay," points out Cherry. "In our industry, as in many others, self-service allows the customer to take control, while at the same time improving flow and reducing infrastructure needs."

Market research drives the authority's technology-centric changes. In the second quarter of 2012, 95% of passengers surveyed said they were satisfied with the ease of use at YUL's 148 self-service kiosks. In addition to automating the check-in process, all stations are equipped with

AÉROPORTS DE MONTRÉAL

factsfigures

Project: Self-Service Technologies

Location: Montréal–Pierre Elliott Trudeau Int'l Airport

Airport Authority: Aéroports de Montréal

Initiated: 2004

Offerings: Self-service common-use check-in; self-tagging of luggage; self-service baggage drop; Automated Border Clearance

Self-Service Bag Drop System: Cofely Services

Self-Service Bag Drop Pilot Partner: WestJet Airlines

Benefits: Decreased wait times; improved passenger flow; reduced infrastructure needs

a luggage-tag printer that allows passengers to tag their own checked bags. Established in 2005, YUL was the first airport in the world to offer this feature in a common-use environment.

YUL braved new territory again in December 2011, when it became the first North American airport to offer self-service baggage drop. Aéroports de Montréal enlisted WestJet Airlines to participate in a pilot program that uses uDrop, a self-service baggage system from Cofely Services.

"WestJet was already using the Cofely product in an agent-facing role to support our self-service baggage tagging product, and (the airports authority) worked with Cofely to develop a guest-facing self-service baggage drop-off product," explains Trevor Clark, the airline's guest services innovation manager. "WestJet was very interested to offer the product to our guests through a trial when Aéroports de Montréal made the product available to us."

In about one year, WestJet has processed well over 30,000 guest bags using the two uDrop units, Clark reports. One out of five bags is now being checked in through self-drop units, he adds.

"Adding this feature to our self-service suite of products has provided our guests with an additional level of control over their journey — something that they continue to ask us for," says Clark, echoing Cherry's sentiments. "Additionally, it frees up our agents to interact with our guests in a much more meaningful way."

Like others within the airport and airline industries, Clark cites the success of such technologies elsewhere: "Self-service baggage drops are increasingly more common in other parts of the world, and this trial has been very successful for WestJet in Montréal. We will continue to assess this technology and incorporate it into our business model where and when it makes operational sense."

Pierre Loyer, director of airport services with Cofely Services, says the uDrop equipment used in the YUL trial can help airlines provide better customer service by liberating agents from behind their counters. Instead of passively waiting for customers to approach them, agents can simultaneously supervise multiple drop stations and be more proactive with customer service, Loyer explains.

The equipment also allows airports to process more passengers and bags within the same footprint, which decreases their capital infrastructure costs, he adds.

For some passengers, it's all about control. "As with all of the self-service products out there, the customer actually wants to be more and more in control of their process," Loyer emphasizes. "More and more, they are using the Web for check-in; more and more they are using the kiosks; and in Montréal, they can print their bag tag at the kiosk. It is just another step in the direction to give the passenger control through their journey of the airport."

Beaulieu concurs: "When additional items such as self-tagging and bag drop pop up on the screen, everyone says 'yes' for sure. It is very simple and much faster when you go directly to drop your bag. It reduces the number of steps usually done through an airline agent."

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Automating Customs?

Since the implementation of self-service check-in stations at Montréal–Pierre Elliott Trudeau International Airport (YUL) in 2004, officials at Aéroports de Montréal have seen evidence that the kiosks reduce wait times and improve passenger flow. They have also taken note of the floor space the passenger-driven technology frees up compared to traditional agent-manned counters.

In a complimentary follow-up initiative, the airports authority recently debuted Automated Border Clearance. Known as ABC for short, the program is an attempt to reduce lines and ease congestion while increasing passenger satisfaction with Canadian Customs.

In June 2012, 18 self-service kiosks were installed at YUL at a cost of $4 million (Canadian). Recent research shows that fully 60% of eligible passengers had used an ABC kiosk. And their feedback seems to bode well for the future of the program. A survey of 1,000 users found:

- 94.5% were satisfied with the overall automated process, including interaction with the agent
- 87.8% said their wait time was shorter than any previous experience entering Canada, regardless of the airport
- 94.1% said they would use a kiosk again

Greenville-Spartanburg Int'l Brings Luggage Cart Rentals In-House

By Ken **Wysocky**

When Smarte Carte departed Greenville-Spartanburg International Airport (GSP) in 2011, officials there took the opportunity to rethink the South Carolina facility's strategy toward luggage cart rentals. The question never centered on whether or not GSP should offer the common customer convenience, but rather on who should manage cart rentals: the airport or a third-party concessionaire.

"Going without carts was never an option for us," explains Rosylin Weston, vice president of communications for the Greenville-Spartanburg Airport District. "The only question was how we'd get the carts to our customers. We're a small airport, and our customers have other options — larger airports to both the north and south that offer more amenities than we do. So we're always looking for some sort of competitive edge."

That ongoing search led GSP to purchase a fleet of new luggage carts and eschew third-party concessionaires in favor of using existing staff to manage rentals. "We decided it made more sense to own the carts ourselves," Weston explains. "If you manage something in-house, you have more control … and if there's a problem, you don't have to wait to get it resolved. We felt it was more practical to avoid waiting on a third-party to handle whatever problems may arise."

The change is expected to gross the airport about $35,000 per year if 1% of the airport's passengers (1.755 million in 2011) rent carts. In contrast, GSP earned $1,138 from cart rentals in 2010, the last full year an outside vendor ran the program. Like many concessionaires, Smarte Carte collected 80% of the rental revenue, per its commission agreement with the airport.

With a total cost of $190,000 ($160,000 for new carts and installation; $30,000 for ancillary expenses), the project is expected to break even in 5½ years. After that, cart rental fees will produce a new and ongoing stream of non-aeronautical revenue for the airport.

Airport officials, however, don't cite revenue as the biggest factor for bringing cart concession in-house. Even with a substantial increase in cart usage, rental revenue will still be just a drop in the bucket of the airport's overall $22.7 million projected revenues for 2013, Weston notes.

"It is much more of a customer-service issue," she explains. "This airport is very focused on delivering good customer service."

Rethinking the Program

After examining equipment from several manufacturers, the airport ordered 80 stainless-steel carts and three cart dispensing units made by Wanzl Metallwarenfabrik GmbH. Officials based their initial inventory on previous utilization rates

GSP INTERNATIONAL AIRPORT
ROGER MILLIKEN FIELD

factsfigures

Project: In-House Luggage Cart Rental

Location: Greenville-Spartanburg (SC) Int'l Airport

Total Cost: $190,000

Equipment Purchased: 80 stainless-steel carts; 3 dispensing units

Cart Charge: $2 per rental, less a 25-cent refund for returned carts

Cart Mfg: Wanzl Metallwarenfabrik GmbH

Cart Vendor/Installer: Thompson Contract

Project Timeline: June – Nov. 2012

Benefits: Maintain customer amenity after departure of outside cart concessionaire

Projected Revenue: $35,000/year

and current passenger traffic. If more carts are needed, the system is easily expandable, Weston notes. Durability, cost per unit, caster replacement cycles, anticipated repair costs and delivery timeframes were key considerations, she adds. As airport district officials weighed their options, GSP kept a skeleton inventory of 35 to 40 luggage carts on hand.

Involving all affected departments was critical to arriving at a good decision, Weston notes. "We didn't operate in a vacuum," she explains. "When you're talking about installing something customers will use, teamwork and collaboration are essential. We had representatives from Finance, Information Technology, Customer Service and Facilities and Operations … so in the end, we made the best, most-informed decisions because we had input from all departments impacted by those decisions."

The new carts include a front panel that can be used for advertising, but the airport is initially using it for the GSP logo. Eventually, the airport district may sell advertising space there, but officials currently feel that the branding opportunity it offers is more important, Weston explains.

"There are four panels on the rails of the dispensing units that can be used for advertising, too," she notes. "They're empty now, but it's viable space for advertisers. There's revenue potential there, but this is a very new process for us … so we haven't priced them yet."


Justin **Thompson**

GSP purchased the German equipment through Thompson Contract, an airport infrastructure product provider that also quarterbacked the system's turnkey installation. Justin Thompson, sales manager for the intermediary company, says airports benefit from handling cart rentals in-house by capturing revenue that otherwise would go to concessionaires. In-house programs often allow airports to lower their rental fees, he adds, which can encourage additional business.

"You get more usage when the fee is below $3," he advises. "Above that, rentals take a big hit. Most concessionaires charge $5, because they have to generate more revenue from fewer rentals."

After bringing its cart program in-house, GSP opted to keep its rental fees steady at $2 per cart, less a 25-cent refund designed to encourage users to return carts to dispensers and minimize restaging.

According to Thompson, even if an airport has to pay janitorial or parking lot staff $18 to $22 an hour to collect carts, it's still better than paying 80% to 85% of rental fees to a concessionaire. By "kicking in some more dollars to their own bottom lines," airports can hold down increases in landing or operating fees for their carriers, he elaborates.

Although the payback cycle varies with the equipment selected (cart material, options such as brakes, number of dispensers), Thompson says airports can break even on cart investments in as little as 30 months. "And the equipment will last 15 to 18 years," he adds.

At GSP, employees use a software system to help manage cart rentals. The system allows them to monitor how each dispensing station is working, track how much money each takes in and change rental rates if needed. It also allows customers to pay for cart rentals with cash or a credit card.

Location, Location, Location

After consulting with Thompson Contract, GSP divvied up its 80 new carts between three spots: a double-row dispenser in Baggage Claim and two single-row units in the long-term, 1,600-space economy parking lot that is farthest from the terminal.

"At $4 a day, the economy lot is the least expensive parking option at the airport, and it fills up first," Weston notes. "So it made sense to have two luggage-cart dispensers strategically located there — one close to the front of the lot and the other midway through it."

The airport's customer service employees collect unreturned carts from its various parking lots.

"It's really all about customer service and being customer driven," Weston emphasizes. "At the end of the day, that's not to say there won't be some revenue associated with the project. But the driving factor for us is delivery of good customer service."

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No Reservations About Changing Parking Policies

In an effort to eliminate some of the stress associated with air travel, Greenville-Spartanburg International Airport (GSP) in South Carolina now offers advance reservations for nearly 100 parking spaces in three of its parking facilities. By charging $5 per reservation, the airport expects to net about $10,000 per year.

Rosylin **Weston**

"It was totally driven by customer convenience," explains Rosylin Weston, vice president of communications for the Greenville-Spartanburg Airport District. "Between talking to our customers at check-out and asking some parking-related questions on our monthly survey forms, we found customers were very receptive to the concept of parking reservations."

With overall passenger traffic up 38% from 1.268 million in 2010 to 1.755 million in 2011, airport personnel began fielding concerns from customers about not being able to find parking spots. In total, GSP offers more than 4,500 parking spots: 1,165 spaces in Garage A; 1,510 in Garage B; 1,506 in the economy lot; and 338 spots in the daily lot. Since last March, 90 spots are earmarked for customers with reservations: 50 in the economy lot and 20 on the top level of each parking garage.

Implementing the new customer convenience, Weston reports, was relatively easy, because ABM Parking Services, the company that manages the airport's parking facilities, already had a reservation system in place at other airports.

A parking reservations link added to the home page of GSP's website (www.gspairport.com) takes customers to an ABM landing page, where they can place "electronic dibs" on a parking spot for an extra $5. GSP debuted the reservation option last March, and by the end of November, more than 1,590 customers had elected to pay for extra parking peace of mind. Typically, about half of the spaces earmarked for reserved parking are occupied at any given time, Weston reports.

"We have a lot of repeat customers, especially business travelers who travel on a weekly basis and generally use the economy lot," she explains. Customers may make a reservation for a maximum of 30 days, although it expires once a car leaves a spot — even if time still remains on the initial reservation period.

The airport typically nets $4.80 or $4.90 for each transaction — the full fee less a credit card processing charge. During its first partial year (March through November 2012), GSP collected $7,955 in reservations revenue, reports Weston. Airport district officials expect this year's total to be around $10,000.

"While any new revenue stream is attractive, our decision to offer reserve parking was not driven by revenue," Weston clarifies. "We just want to rank up there at the top in terms of customer service, because that's a factor people consider when they decide what airport that they want to use. We're going to do everything we can to make our airport more customer-friendly."

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Orlando Int'l Gives the "All-Clear" to Private Registered Traveler Program

By Ronnie L. **Garrett**

ORLANDO INTERNATIONAL AIRPORT

factsfigures

Project: Registered Traveler Program

Location: Orlando Int'l, Westchester Co. Airport, Dallas-Fort Worth Int'l, San Francisco Int'l

Program Provider: Alclear

Service Name: CLEAR

Membership Fee: $179/year

Benefits: Expedited screening; individual customer service; airport receives portion of membership fees

For frequent business travelers, clearing Security quickly is just as important as on-time departures and arrivals. But all too often, it's a game of "hurry up and wait."

If they arrive at the airport two hours prior to departure as recommended, they might end up sitting in the terminal for an hour and a half if there's no wait at the screening checkpoint. But if they cut their arrival time too close and security lines are long, they risk missing their flights altogether.

It's a conundrum officials at Orlando International (MCO) and other airports have taken a hard look at after 9/11, when screenings became a more involved and lengthy process.

MCO modified its strategy in 2010, when it became one of the first airports in the nation to adopt a privately run registered traveler program. The CLEAR program vets frequent travelers' identification documents in advance, uses biometrics to verify their identity at the airport, and allows them to jump to the front of the line at security checkpoints.

Travelers pay $179 for an annual membership, a portion of which is shared with participating airports. MCO, for instance, receives $40,000 to $60,000 per month from the program, reports Jim Rose, deputy executive director of business services/facilities for the Greater Orlando Aviation Authority. The percentage of fees shared varies by airport.

Revenue aside, Rose says that the program supports the airport's goal of providing better customer service. "It provides convenience for the frequent traveler," he relates. "While we do gain a revenue stream by partnering with CLEAR, that's not the most important factor. The most important reason for this is to provide an easy process for our regular customers to pass through security."

Rose estimates that the entire security checkpoint process averages less than five minutes for CLEAR members at MCO.

Some consider CLEAR the private-sector cousin to TSA's Pre✔ program, which also pre-registers passengers for expedited security clearance. MCO, which participates in both programs, enthusiastically embraces the private alternative. "The CLEAR program has enhanced our passenger screening process," says Rose, noting that the service allows participants to move through security lines with ease.

Speeding Screening

MCO, which ranks as the 13th-busiest U.S. airport, screens 35.4 million passengers annually via two major checkpoints. Business and business/leisure travelers represent up to 40% of the airport's traffic, estimates Rose.

Adding a CLEAR checkpoint to the checkpoint on the east side of the terminal affords members quick and easy access to identification document checkpoints and X-ray screen-

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since 1978

ing, explains Rose. "CLEAR program passengers essentially move to the front of the line," he adds.

While CLEAR doesn't replace the need to go through TSA checkpoints, it speeds the overall process. Once a member verifies his or her identity, an attendant the company trains in hospitality service escorts the passenger to the line for physical screening by X-ray machines and magnetometers.

Second Chance

CLEAR is not a new service, but rather the resurrection of a previous program run by Verified Identity Pass. Steven Brill, who also founded Court TV, started the original passenger service in 2005. After enjoying initial success, amassing about 200,000 members and operating in 19 airports, the program ceased operations in 2009 due to financial problems.

In April 2010, Alclear bought the assets of Verified Identity Pass for $6 million and resumed the service at Denver International Airport and MCO the following month. Since then, more than 850,000 travelers have verified through CLEAR lanes, notes Ken Cornick, president and chief financial officer of the company.

In November, Westchester County Airport in New York became the fourth U.S. airport to adopt the CLEAR program. Dallas-Fort Worth International, San Francisco International and MCO are the other three participants.


Ken **Cornick**

"The revenue they receive is pure profit," Cornick notes. "It comes from subscriptions. We have paid out more than $2 million in revenue to our partners since we've launched."

CLEAR enticed old customers to return by lowering the annual fee $20 from the Verified Identity Pass rate and honoring the time they had left in their membership when Verified Identity Pass shut down. Most members had three to nine months of service left on their accounts, but a few had purchased 10-year plans, notes CEO Caryn Seidman-Becker. To date, more than 80% of the former customers have come back, she adds.

Members in Orlando got their first year free.

"Our members love this program," says Cornick. "We've gotten really positive feedback about it. When the previous company shut down, they really missed the service."

MCO is seeing membership climb, and officials there anticipate that growth to continue as more airports add the program. More than 17,700 passengers passed through CLEAR access points at MCO in September alone, reports Rose.

Working Out the Details

CLEAR uses proprietary software to provide security for member information. To enroll, passengers provide basic demographic data

online or at a CLEAR kiosk at the airport. Next, they validate their identity at the airport with two forms of identification, generally a passport and driver's license, and a kiosk attendant captures their fingerprint and iris images. Each member's biometric information is then encrypted and put onto his or membership card.

Once enrolled, program participants go to a manned CLEAR checkpoint, insert their cards into the kiosk and place their fingers on the fingerprint reader or look into the iris image reader. Members can select which biometric they prefer to use each time they fly.

The entire check-in process takes 10 seconds or less, and proceeding through security lines usually takes about five minutes, Cornick says, echoing Rose's estimate. "We provide the certainty that if you leave your meeting at a specific time and head to the airport, you have a predictable amount of time to get through Security," he explains. "You don't need to arrive at the airport two hours early just in case there is a long line at security checkpoints. In Orlando, members have told us they can arrive about 40 minutes before a flight instead of two hours."

Lost or stolen membership cards are not a cause for concern, notes Cornick. "There is no risk that their information will be compromised," he explains. "The card stores just ones and zeros, not actual identity information."

The program, he adds, is the only expedited traveler service to receive U.S. Department of Homeland Security Safety Act Certification. Although it took years to secure, CLEAR is now on the department's approved product list.

Elsewhere on the Airport

An exclusive partnership between CLEAR and Signature Flight Corp., a network of fixed-base operators and distributor of business aviation services, demonstrates the program's application to the general aviation sector. The agreement includes six-month free trials and discounted memberships ($99 per year) to Signature employees.

The service will help repositioning flight crews and commercial customers move through airports more quickly, explains Patrick Sniffen, vice president of marketing for Signature. When Sniffen personally tested the program's enrollment procedures, he received his membership card in the mail within four days of registering.

As additional airports and aviation entities embrace CLEAR's pre-registration and biometric system, "hurry up and go" may soon replace "hurry up and wait" for frequent business travelers in a variety of U.S. markets.

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Barnstable Municipal Builds New Terminal & Looks to the Future

By Jodi **Richards**

Roughly 20 years of planning culminated when Barnstable Municipal Airport (HYA) in Hyannis, MA, opened its new 35,000-square-foot terminal and 85-foot-tall air traffic control tower at the end of 2011. Airport Manager Roland "Bud" Breault says the $40 million in improvements were a long time coming, but HYA is now a modern facility ready for the future.


Bud **Breault**

Associated upgrades grouped with construction of the new terminal include aircraft apron improvements and a new ¾-mile vehicle access road.

Owned by the Town of Barnstable and managed by the Barnstable Municipal Airport Commission, HYA sits on 623 acres in Cape Cod and is the third busiest airport in the state. It is served by Cape Air, Nantucket Airlines and Island Airlines.

Planning for the recently completed improvements started nearly two decades ago with a commitment from the state to provide financial assistance. "And then it just suffered in limbo for a number of years," Breault recalls.

Both the former tower and terminal were more than 50 years old and suffering from deferred maintenance. With plans brewing to build new facilities, no one wanted to invest in fixing the existing structures, Breault explains. "That's a philosophy that lots of places use, and as a consequence, everything deteriorates," he says. "Nothing is improved, you don't maintain it and it just continues in a self-fulfilling prophecy."

In addition to being extremely dated, the facilities were not up to code — neither the tower nor the terminal had elevators, and both were full of asbestos.

Community Support

In early 2000, the planning and permitting process began again in earnest; and in 2007, the airport received permitting from the Cape Cod Commission, the local land-use planning agency. With that permission secured, the airport started preliminary design work; but it was still about two years before the project would come together. An unsuccessful lawsuit brought by one of HYA's neighbors also delayed the project.

"There were so many hurdles that had to be crossed," Breault relates. "And I don't think we had a whole lot of support from the community at one point in time."

Hiring a public relations consultant helped change that dynamic, he adds. Airport officials mounted a community outreach campaign, and conducted meetings, local presentations and media interviews about what they hoped to accomplish. Open communication and conveying that the modernization project would be an overall benefit, even amid an economic downturn, were the major objectives of the efforts.

Before the economic downturn, HYA enplanements were expected to increase to between 300,000 and 400,000 annual passengers. But the airport experienced a drastic decline, losing

nearly 50% of its enplanements over the last five years, Breault reports. In response, the terminal once planned to be 55,000 square feet was scaled back to a more modest 35,000 square feet.

Breault cautions other airport operators to be careful in such cases, so items critical to operations are not "downsized out." HYA learned that lesson the hard way with its emergency generator. After the large unit was eliminated during the value-engineering process, the airport failed to pass the emergency power test needed to move into the new facility.

"That was critical," Breault recalls. "I had to do an emergency procurement to get an emergency generator in here that would, in fact, power the whole terminal."

He estimates that the situation cost the airport about $500,000.

James **Kubat**

Officials at AECOM, HYA's civil engineer and terminal architect, agree that it is crucial to carefully review changes made throughout extended projects before proceeding with full construction. "When you go through a long project, players change over time," explains Principal Architect James Kubat, AIA, LEED AP. "As a team, you have to sit down and look at the long list over the last three to four years and make sure that [the changes] are all still valid."

Another important aspect of getting the community on board with the project was outreach regarding noise abatement. Since HYA installed an AirScene.com flight tracking system, which is accessible from its website, noise complaints have dropped considerably. "We were fielding a couple thousand reports (annually) at one time," Breault recalls. "Now we're down to about 50 per year. They've finally seen that we are, in fact, trying to do what we can to reduce noise in the community; and I think that helped get some of the community people behind us."

Breault's previous term as a town administrator and more recent duties as the assistant director of public works for the town of Barnstable provided him experience with municipal construction — something he says helped him with the airport's improvement projects. He is also a retired Coast Guard pilot.

Clean Slate

The airport commission wanted a more "state-of-the art" terminal capable of handling current passenger loads and future growth. AECOM's design consequently left room between the main building and new tower to allow the terminal to expand between the two or in the opposite direction if the rental car parking area is relocated.

Kubat originally considered renovating the aging facility, but decided that replacing it was more cost-effective and best met the airport's goals. The new terminal opened to passengers in December 2011.

Compared to the old "cave-like" terminal, Breault says the new 35,000-square-foot facility is "open, airy and bright," and "more welcoming to the community."

AECOM incorporated as many sustainable design elements into the terminal as possible, Kubat notes. A white roof, for instance,

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Project: New Terminal & Associated Improvements
Location: Barnstable Municipal Airport (Hyannis, MA)
Total Cost: $40 million
Air Traffic Control Tower: $7 million
Tower Funding: FAA
Terminal Cost: $17.6 million
Terminal Funding: $13.1 million from MA Dept. of Transportation grant; $1.7 million general obligation note by Town of Barnstable; airport reserves
Related Projects: New vehicle access road; aircraft apron improvements
Terminal Architect/Interior Designer/Civil Engineers: AECOM Technical Services
Terminal & Control Tower Construction: Suffolk Construction Co.
Control Tower Architect & Engineer: CTBX Aviation
Environmental & Civil Engineers: Horsley Witten
Mechanical/Electrical/Plumbing/Telecom Engineers: Syska & Hennessy
Structural Engineers: Lin Associates
Signage: Roll Barresi & Associates; Design Communications Ltd.
Landscape Architect: Brown, Richardson & Rowe
Acoustical Engineers: Cavanaugh Tocci Associates
Architectural Support: Brown Lindquist Fenuccio & Raber
Survey Work: Nitsch Engineering
Hazmat Engineers: Diversified
Geotechnical Engineers: ATC Engineering
Cost Estimating: Rider Levett Bucknell
Baggage System Design: Cage
Fireproofing: East Coast Fireproofing Co.
Fire Protection: AAA Sprinkler Co.
Waterproofing: Allied Waterproofing
Vertical Lifts: Associated Elevator Co.
Structural Steel/Misc. Metals: Capone Iron Corp.
Drywall: Century Drywall
Electrical: E.W. Audet & Sons
HVAC: General Mechanical Contractors
Plumbing: Harold Brothers Mechanical
Tel/Data Security: Interconnect Computer Cabling
Paint: John W Egan Co.
Acoustical Ceilings: K&K Acoustical Ceilings
Site Work: K.R. Rezendes
Access Flooring: Longden Co.
Concrete: Marguerite Concrete
Masonry: Marmelo Bros. Construction Co.
Tile: McLaughlin Marble & Tile Co.
Carpet/Vinyl Composite Tile: Merrimac Tile Co.
Glazing: Modern Glass & Aluminum
Access Road & Aircraft Ramp Design: Jacobs Engineering
Access Road Construction: Lawrence Lynch Corp.
Demolition: NASDI
Precast Concrete: Precast Specialties
Roofing: Stanley Roofing Co.
Canopies/Metal Panels: Sunrise Erectors
Millwork: Walter A. Furman Co.
Doors & Hardware: West Hartford Lock
Fencing: Premier Fence
Access Control Equipment: Wolen
Website Flight Tracking System: AirScene.com

Site planners left room between the new tower and main facility to allow for terminal expansion.

reduces the heat island effect; the storm water management system uses bioswales and retention ponds. High-efficiency mechanical equipment and lighting were specified to decrease energy consumption, and daylighting strategies including the use of clerestories further boost the effort. And materials with recycled content and low volatile organic compounds were used liberally.

A stained concrete floor is not only sustainable, but also more budget-friendly than the originally planned terrazzo and lends to the airport's sense of place, Kubat explains. In Ticketing, the floor features brown tones that are reminiscent of Cape Cod sand. As travelers move into the terminal, the floors become lighter and change to blues and grays, representing water and sky. "Sense of place was huge for the project," he adds.

The curved roof of the new terminal reflects HYA's history as a military base, which had many curved-roof hangars. "We really simplified the overall exterior and interior of the building, but wanted to maintain the square footage and the functions of the building," Kubat explains.

While HYA did not seek certification via the Leadership in Energy and Environmental Design (LEED) program, it is working toward Energy Star certification and was recently honored with an environmental award from the Cape Light Compact, the electrical aggregator on Cape Cod. In addition to recognition, the award included about $60,000 of subsidies from the Cape Light Compact. "We've tried to make it as energy efficient as possible," Breault notes.

Tables and wooden benches from the old terminal were repurposed in the new terminal among the new, more modern airport seating. Airport staff offices are also outfitted with furniture from the previous terminal. "We just can't afford to go out and buy all that stuff new," relates Breault. "And it works — it gives the terminal a different ambiance."

Breault says the airport was "very frugal" during its improvement project and essentially finished within budget and only slightly behind schedule. The "unbelievable" amount of asbestos that crews encountered during the demolition cost roughly $500,000 to remove, an unexpected expense the airport was able to cover out of its reserves and with help from the FAA for tower demolition.

"I don't think anybody was planning on anywhere near the amount of asbestos that we ran into," he reflects.

While the airport has limited retail and concessions space, Breault says travelers have enjoyed its new restaurant, the Mad Platter, which also provides catering service throughout the region. In addition, a local artist leases about 350 square feet in the terminal for her art studio, where she paints and sells her work. It's a unique partnership Breault was originally skeptical about, but now appreciates. "It turned out to be a wonderful opportunity, and (the studio) creates a warm ambiance in the terminal," he notes. "And if she can pay her rent, I'm happy with it."

The airport's new art program taps into the significant artist community on Cape Cod. Currently, HYA is in its second iteration of displaying the work of 15 local artists throughout the terminal.

One unique challenge with the new terminal, Kubat says, was its requirement for two separate holdrooms: one for screened passengers on commercial flights and one for those on air taxi flights, who are not required to go through TSA screening. "That created a challenge on how you separate those passengers, for both departures and arrivals," he explains. The resulting configuration positions the ticketing counters in the middle of the building, with the open holdroom and screened passenger area flanking each side.

Beyond the Terminal

The new air traffic control tower at HYA is a five-story, 85-foot-tall structure expected to earn Silver or Gold LEED certification. The $7 million tower, which was designed by CTBX Aviation and fully funded by the FAA, went into service in November 2011.

The switchover occurred overnight, and demolition of the old tower began immediately, reports Breault. Demolition of the old tower and terminal made way for the ramp project, which will

The airport hired a public relations firm to help gain local support for its modernization project.

eventually include a new deicing pad that ties into the sewer system through equipment that separates out the oily water. Currently, deicing is performed with portable units at three separate locations on the airfield, and crews vacuum up residue — a labor-intensive and not very cost-effective method, notes Breault.

Parking improvements included in the overall improvement effort are already complete. A larger, brighter and fully paved parking lot replaced a partial-dirt space with a single light. HYA also added access control. "After 10 p.m., anybody could drive in and out and not pay us," Breault recalls. "We have fixed that, and it's a really nice parking lot now."

For the first time, HYA implemented a passenger facility charge (PFC) of $2 to be able to repay its $1.7 million bond for the project. "And now we may have to go in and relook at that to use it for other projects as well," Breault says. It has been more than 20 years since the airport's runways have been repaved and he estimates there will be some $30 million in paving projects in the next six years. "So we may have to do something more with a PFC charge again in the future," he adds.

The airport also instituted a customer facility charge to help improve rental car operations in the terminal.

A new access road was primarily funded by the FAA and state Department of Transportation highway funds. Each town in Massachusetts is eligible for funds to help repave and maintain roads and bridges throughout the state, and the Town of Barnstable agreed to allow the airport to use some of those funds on the town-owned access road, explains Breault.

Work in Progress

One of the biggest challenges of the project was phasing, because the new terminal was built next to the existing one, Kubat notes. Phasing was a "team approach," he says, with frequent meetings between the architect, contractor and airport. Coordination was especially important in the summer and when special events on Nantucket and other nearby islands caused a spike in airport traffic, he adds.

Because of the new terminal's proximity to the old, Breault acknowledges that the airport was "a mess for a while," and the construction may have had a negative impact on passengers. To lessen the impact, HYA and its construction partners displayed charts around the terminal that illustrated the phasing for the project. As work progressed, signs provided guidance to help travelers navigate. "We worked really hard with our general contractor to try to lessen the impact of the construction project and the phasing," Breault relates.

A portion of the north ramp was temporarily used for employee parking, and another temporary lot for rental cars was located on another portion of the ramp to make room for customers. "I think we lost a lot of revenue in there, because we had all these temporary lots, and you really can't control the parking that well with temporary lots," Breault recalls. "I think that we have 'stopped the bleeding,' so to speak, by the completion of the project." Parking revenue accounts for 7% to 10% of the airport's annual budget.

During the project, HYA lowered its parking rates because the airport wasn't providing its typical level of service, Breault notes.

Watch the Water

Because of HYA's location on the peninsula of Massachusetts, the airport faced many special environmental considerations during its improvement projects. Not surprisingly, many involved water. For instance: The local area receives its drinking water from a sole-source aquifer, and the airport is in a water recharge area. "Everything we do is scrutinized heavily from an environmental impact aspect," Breault explains.

HYA has been very responsive and proactive with environmental issues and has not had an EPA-reportable incident in more than three years, he adds.

During construction, retention ponds were installed to control stormwater drainage. The airport also has a cap on the amount of hazardous materials that can be on the entire airfield.

On another environmental front, the airport is partnering with the Cape and Vineyard Electric Cooperative in hopes of installing a

ground-mounted 30-acre solar photovoltaic system. The system, explains Breault, would provide the airport with "a considerable amount of revenue" and allow it to become more carbon neutral. Currently, HYA is waiting for FAA approval to move forward with the inside-the-fence project.

Next on the Horizon

With its 20-year-old projects complete, the airport is looking forward and investing in the rest of the facility, Breault reports.

HYA is currently in the design process for a new fuel farm. The plan is to replace a 20,000-gallon underground jet fuel storage tank with an aboveground 60,000-gallon facility. In time, the airport may also try to consolidate all of its fueling facilities into one location, Breault adds. Two fixed-base operators (FBOs) on the field also have their own fuel storage facilities — one aboveground, one underground. Consolidating fuel storage would allow the airport to "reduce the potential impact of a spill," Breault notes.

The airport is also considering adding its own FBO. Currently, pilots and passengers who use the east ramp are accommodated in the Aircraft Rescue and Firefighting building. "We've tried to upgrade that a little bit, but I think we're looking at adding in a small FBO facility of our own so we can provide better service," Breault says.

Recently, the airport implemented a jet fuel discount program based on volume to solicit more sales from the general aviation aircraft that frequent HYA. The airport has signed a contract with NetJets, the large network of fractionally owned private jets, and is preparing to sign with another carrier, reports Breault.

In addition, the airport is considering adding roughly 150,000 square feet of additional hangar space, as well as ramp space for general aviation purposes. In the meantime, it continues to evaluate other airport lands to "perhaps reuse them in a better way to try to generate new sources of revenue," adds Breault.

Recent and future improvement projects seem to have spurred activity around the airport, he notes: "There have been (new) businesses that have popped up, and there are others that are making efforts to beautify and enhance their buildings." As an economic engine in the region, HYA is directly responsible for generating $133 million of annual revenue, with direct impact on the region from nearly 2,250 jobs and a payroll of $74.4 million. Its total economic output is about $228 million.

Breault estimates current enplanements at 105,000 annually. When he arrived at HYA nearly four years ago, they were close to 170,000. Five years earlier, they were more than 200,000, with projections to reach nearly 400,000 if the economy continued to grow. "We've sort of reached an equilibrium point," Breault reflects. "We've noticed that with air operations, that sort of bottomed out and it's starting to come back a little bit; and we're hoping that's a good trend."

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Vancouver Int'l Upgrades Its Airfield Lighting Control Monitoring System

By Carroll **McCormick**

VANCOUVER INTERNATIONAL AIRPORT
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Project: Airfield Lighting Control & Monitoring System, with Surface Movement Guidance & Control System (SMGCS) control

Location: Vancouver Int'l Airport

Project Budget: $2.5 million

Owner: Vancouver Int'l Airport Authority

Commissioned: July 2012

Prime Construction & Design Contractor: Liberty Airport Systems

Estimator: Liberty

System Elements Include: 11 controllable Stop Bars; 175 CCR Distributed Monitoring & Control Units

Benefits Include: Restored full SMGCS control in low-visibility operations

Of Note: Air traffic controllers use tablet PCs to operate SMGCS

In good weather and bad, air traffic controllers and airport maintenance personnel need an Airfield Lighting Control Monitoring System (ALCMS) that is highly reliable and inspires confidence. Vancouver International Airport (YVR) has found just that in its new $2.5 million ALCMS. In addition to providing improved monitoring, data collection and troubleshooting capabilities, the new system also includes four 10-inch tablet PCs, dedicated solely to the operation of the Surface Movement Guidance and Control System (SMGCS) by air traffic controllers.

YVR cites several reasons for replacing the entire ALCMS, which controls and monitors 4,000 or so airside lights. The old SMGCS did not communicate reliably with the 11 controllable stop bars, and the airport faced the crippling prospect of being restricted to having only one aircraft depart the gate at a time in low visibility conditions. In addition, repairing the system or expanding it to accommodate additional lighting was very time-consuming.

Don **Gordon**

The airport chose Liberty Airport Systems to design its new ALCMS. The company added the touch-screen tablets at the request of Nav Canada, the country's air navigation service provider. This addition is an industry first, reports Don Gordon, Liberty's vice president of sales.

"These dedicated displays, with custom graphics, support the high demand for stop bar control operations in low visibility conditions, while minimizing the burden on the busy controllers," Gordon explains.

In-House Advantages

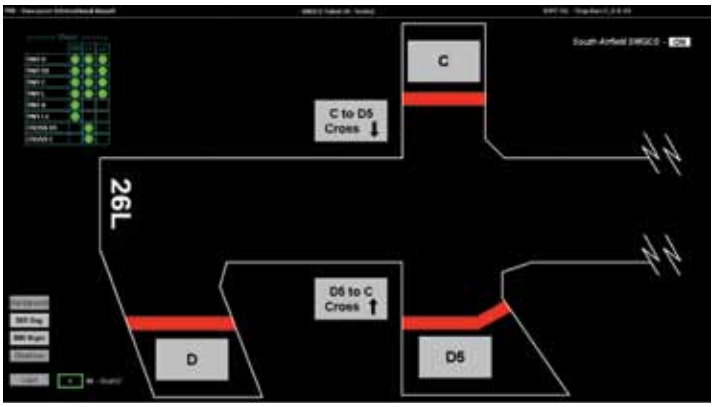
"Previously, if we had problems, we had to fly someone in to fix it," explains Christoph Rufenacht, manager, engineering projects, Vancouver Airport Authority. "Now our electricians can go into the system and do a lot of the troubleshooting themselves. In 95 percent of the cases, they can drill into the system without having to go into the field and open things up."

Christoph **Rufenacht**

The new SMGCS provides the airport with similar ease, continues Rufenacht: "Maintenance can go into it and see which light is giving the warning, then drill down to see if a lamp is burned out or if there is a control unit problem. If our guys can't fix it, we get Liberty to dial into the system to find out what is going on."

The company can remotely expand the system and screen graphics to accommodate additional lighting in hours, instead of months, he adds.


The airport's new ALCMS was commissioned last summer.



Controllers can monitor and control stop bars via PC tablets.

While Rufenacht acknowledges that it was a major project to switch to a new ALCMS, he also notes that the airport made the investment with the expectation of tangible returns. "A real focus of our airport over the last year has been how we can increase efficiencies and reduce operating costs to our stakeholders," he explains. "The new ALCMS makes sense on many different levels."

Liberty installed its FAA L-890-BD-rated *Freedom Series* ALCMS at YVR under a design/build contract. The new system provides air traffic controllers, the front line users of the system, with full monitoring and control of the airfield lighting equipment. Its other principal purpose is to provide maintenance and operations personnel with monitoring and data acquisition functions that allow them to view and diagnose all airfield lighting equipment, in particular the 170 constant-current regulators (CCRs) that power the airfield circuits.

Installation

Liberty customized the new system to YVR's specific airfield layout. Before installing the ALCMS, the company installed its FAA L-827 Distributed Control and Monitoring Units (DCMU) on the 90 CCRs in the north vault and the 80 CCRs in the south vault. As the physical interface between the ALCMS and the CCRs, the DCMUs monitor and/or calculate roughly 30 electrical parameters for each CCR they control and relay that information to the maintenance department's ALCMS workstations.

The DCMUs are networked to the ALCMS with redundant 100 MB Ethernet interfaces. Unlike the old system, which used discrete control wiring, the new system's Ethernet fiber optic cables are not susceptible to electrical interference. In addition, they improve reliability and can transmit far more information, explain Liberty officials.

YVR's new system includes three touch-screen workstations for maintenance personnel: one in the north vault, one in the south vault and one in the maintenance offices. Air traffic controllers have two 20-inch touch screens and the four 10-inch tablets — one per active controller. "We worked very closely with Nav Canada," Rufenacht explains. "This was very much about giving them a system they wanted."

"Nav Canada felt the dedicated stop bar control tablets would make the controllers more efficient and less distracted," adds Gordon.

Transport Canada requires that ALCMSs be able to monitor every light associated with the SMGCS. To effect this, Liberty modified and upgraded nearly 60 CCRs and replaced the 600 inset and elevated stop bar lights and taxiway centerline inset lights the SMGCS controls. "The intelligence to be able to tell if the LED is burned out is built into the Liberty system. We need to know the second one of these lights is not operating as it should." Rufenacht notes.

YVR continued to use its old ALCMS as Liberty installed the replacement. Stakeholders operated the new system in parallel with the old one for several weeks until they were satisfied that all was functioning correctly. On the day of the switchover, Liberty connected the redundant Ethernet cables (already in place) to take over control of the CCRs and de-energized the existing system. The airport has operated with its new ALCMS ever since.

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Boston Logan Embraces Specialty Concessions

By Victoria **Soukup Jensen**

As passengers adjust their arrival times to allow for post-9/11 security measures, airport operators are adjusting concessions programs to capitalize on that extra time. Gone are the days when travelers rush through the concourse, perhaps grabbing a quick cup of coffee or newspaper before running to their gates. These days, they have more time for browsing, relaxing and shopping, and airports are enjoying the additional sales opportunities the new norm creates.

According to the Airports Council International – North America, revenue from U.S. and Canadian terminal concessions rose 12% from 2010 to 2011, reaching a new high of $1.51 billion.


Leah **Teeven**

Boston Logan International Airport (BOS) is one of many facilities embracing the change by adding specialty retail and food/beverage options. "We have many unique stores in our airport terminals," says Leah Teeven, business manager for airport concessions at BOS. "The concession program has been growing. Every year, we are increasing. We are offering more stores, more businesses."

The last decade has seen "big changes" at many U.S. airports, notes Teeven. Gone are the days of only offering staples such as coffee and soft drinks, snacks and sandwiches, paperbacks and location-related trinkets. Concessions now include high-end wine bars, electronics stores and spa services – all of which have found a profitable home at BOS. And like other airports, BOS now concentrates most of its concessions post-Security to encourage more relaxed shopping and noshing.

Staples First, Specialty Second

Massachusetts Port Authority (Massport), which owns and operates BOS, uses surveys and demographic data to determine which businesses will suit BOS' customer base. It also works closely with AIRMALL Boston and Westfield Concession Management, which lease space to individual vendors and help administer the overall concessions program. Depending on a vendor's contract, the airport collects concessions revenue in one of three ways: a flat rental fee, a percentage of gross sales or a percentage of passenger traffic.

Before selecting specialty shops and services, Massport and its concession partners ensure that staples such as newsstands, coffee shops, "grab-and-go" snack vendors and other traditional concessions are in place.

"We are more targeted to the passenger on-the go," explains BOS' Teeven. "They want things quickly (and) we try to pair up the concessions with the traveler. Once those core necessities are met, we branch into specialty retail."

Having high-end and unique stores appeals to both business travelers and vacationing customers, says Karen Cavallo, director of

bostonlogan massport

factsfigures

Project: Specialty Concessions

Location: Boston Logan Int'l Airport

Vendor Management: AIRMALL Boston; Westfield Concession Management

Concessions Revenue: 3% of Total Income

Sample Vendors: Vino Volo wine bar; iStore digital electronics; XpresSpa nail, massage & facial salon

Vendor Requirement: Street pricing

operations for AIRMALL Boston. While business travelers look for products or services they are used to having and will spend money on them at the airport, leisure travelers in "vacation mode" are also ready to spend, Cavallo explains.

"Everything here is an impulse purchase, excluding food," she says. "People have time in the airports. Once they get through Security and they've eaten, they have some time on their hands. This is appealing to them. It's more convenient, and it's certainly different than it used to be."

At BOS, for instance, a wine bar has proved to be a popular addition. Vino Volo offers its signature tasting flights as well as wines by the glass or bottle from vineyards around the world. The concept was founded when the company's chief executive officer was looking for a place to enjoy a glass of fine wine with business associates while waiting for a flight.

"There was nowhere to go," says Carla Wytmar, Vino Volo's director of development. "There were a lot of business and leisure travelers who were looking for upscale options."

The first Vino Volo, which opened at Washington's Dulles International in 2005, was an immediate success, recalls Wytmar. "We dramatically outperformed the previous concept (a coffee shop and bar) during the first year," she explains.

Still in expansion mode, Vino Volo currently has locations at 15 North American airports. Each highlights hand-selected wines and food to pair with it such as artisan cheeses, dry-cured meats and smoked salmon and crabmeat crostini.

Locations also promote the Vino Chart, a patented process that helps customers understand wines and learn their individual preferences. "We try to take all the intimidation out of wine," Wytmar relates. "It's an oasis for a great glass of wine and delicious food along with the opportunity to pick up a bottle of wine and take it on the airplane."

According to Teeven, BOS' customers have been so pleased with Vino Volo that the airport is considering adding a second location. "It's been extremely successful — to the point that they have had wait times," she reports.

Vino Volo also recently opened its first non-airport location in Bethesda, MD.

Big-Ticket Offerings

Joel Teitelbaum, CEO of iStore, directly connects his company's April 2012 foray into BOS with the extra browsing time created by evolving security requirements.

Joel **Teitelbaum**

"In recent years, and certainly post 9/11, people find themselves spending more time at airports," explains Teitelbaum. "By the time they get through Security, they end up finding themselves with some extra time. And retail is all about finding consumers with time."

Flight delays can also work in concessionaires' favor by creating unanticipated shopping and eating/drinking opportunities. According to the federal Bureau of Transportation, more than 17% of all U.S. flight departures were delayed in 2011.

A Canadian creation, iStore describes itself as a "digital lifestyle destination" and features a variety of electronics and accessories, including Apple iPads, Amazon Kindles and Sony cameras. The company spread its focus beyond traditional street side stores after Apple redirected representatives from Montreal's Pierre Elliott Trudeau International Airport who inquired to the computer giant about the possibility of an Apple store at their airport.

"We realized we had a business opportunity here, given that Apple was not well represented in airports," Teitelbaum recalls, noting the company's status as an authorized Apple reseller.

Customer response was so strong, iStore opened locations in five other Canadian airports within three years through a partnership with LS Travel Retail North America.

Subsequently expanding into the U.S. airport market was an easy decision, Teitelbaum notes. "Sales are exceeding our expectations," he reports. "The performance at Boston has given us increased confidence with our national sales ideas." The company plans to be in at least six other U.S. airport locations by the middle of 2013, he adds.

The success of iStore and other specialty vendors is vital to officials at BOS. Besides wanting options that occupy and entertain customers, they also want to deliver healthy revenue to Massport. According to Teeven, concessions account for nearly 3% of BOS' total annual income.

Service Sector

BOS has also added service concessionaires designed to help customers relax. XpresSpa, which opened its first airport location at New York City's John F. Kennedy International Airport in 2004, now offers manicures, pedicures, massages and facials at numerous airports, including BOS. By the end of 2013, XpresSpa expects to have 60 locations in major U.S. airports as well as at Amsterdam's Schiphol Airport, reports Moreton Binn, the company's chairman and chief executive officer.

"Oftentimes, people are so busy, they don't have time to get their nails done (before a trip), so they get them done here," Teeven notes. "Some even plan ahead and call for an appointment. It's all about time management. People want these services and don't have time in their daily lives to get these things done."

Binn relates the company's success to the "difficult environments" some airports have become. "Planes continue to fly with fuller loads and less amenities, adding further stress to pas-

BOS uses customer surveys and demographic research to determine what specialty concessions to add.

sengers," he adds. "XpresSpa offers a healthy alternative to 'eat, drink, read' and provides airport operators with a revenue stream that complements and does not compete with other offerings."

According to Binn, the traveling public has welcomed XpresSpa and the opportunity to receive personal care services during their airport downtime. "XpresSpa's business model is a hands-on, on-demand, no-reservation proposal for travelers," he explains. "With an open look and feel, both spa regulars and first-time visitors can enjoy the pampering personal service and benefits that massage delivers."

Airports have evolved to the point where consumers appreciate finding familiar names and services, he adds: "Moving from generic offerings to well-known brands has improved travelers' experiences and provided airports with an important income stream."

No Airport Markup

Teeven credits much of BOS' concessions success to the airport's commitment to street pricing. All items sold at the airport – food, merchandise and services – must be priced the same as they are in nearby Boston or Cambridge malls, she explains.

"It's a very big challenge, but Massport felt it was important," Teeven notes. "Just because the traveling public is using our facility, we felt we should not overcharge them."

Teitelbaum says that he is pleased with iStore's move into BOS and believes the time is right for North American airports to move into specialty retail and dining. "In Europe and Asia, airport shopping has been a huge segment of retail for many years," he remarks. "North America is finally catching onto the trend of unique and upscale airport concessions."

Michael **Caro**

Michael Caro, vice president of AIRMALL Boston, agrees. He says that today's traveler arrives at the airport with different experiences — and expectations — than travelers had a decade ago. "Whether on a business trip or traveling on vacation, today's passenger knows this isn't the travel experience of the past," Caro says. "They are seeking high-quality, well-known shopping and dining options on the go. Today's passenger simply has a higher expectation for everything concessions-related."

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Grant County Regional Shares Terminal with U.S. Forest Service

By Robert **Nordstrom**

Grant County Regional Airport (JDA) in John Day, OR, is setting new standards for joint-use facilities. With space for general aviation functions, public events and the United States Forest Service, its new $5.3 million terminal includes out-of-the-ordinary architectural features including helipad facilities for the Forest Service. Additionally, the entire operation was designed and built to meet environmental certification standards.


Sally **Bartlett**

"It was the first time the Forest Service and an airport have agreed on building a shared-use facility," reports Grant County Economic Development Coordinator Sally Bartlett. As such, JDA's terminal is garnering state and national attention.

The Forest Service portion of the facility includes an office/administration area, operations center, sewing room for equipment maintenance, regional training academy with helibase administration, a large prep room for wildland firefighters to ready their gear, an exercise room, locker rooms and spaces for support activities.

The more traditional airport side of the terminal supports flights for doctors from Bend and Portland who regularly visit Blue Mountain Hospital. Emergency service providers and local businesses are also frequent users. That portion of the building includes a pilot lounge, administration office, county maintenance shop, training room and spaces for support activities.

The Forest Service, airport and general public share use of the third-floor observation deck, which offers a nearly 360-degree view of the airport and community. The observation deck is open to the public during the airport's regular business hours, and the Forest Service uses it to monitor operations, particularly during the fire season.

"For a community and airport this size, our facility is very unique," says Airport Manager Patrick Bentz. "Pilots who fly in tell me they are amazed we have a facility this nice."

Aching for Upgrades

The new 17,750-square-foot facility, completed in September 2010, is a dramatic improvement from the 1940s residential home that previously functioned as JDA's terminal. In the previous facility, customers and airport staff used a living room for meetings, and bedrooms served as offices and supply rooms.

Designing the new multipurpose building fell to architectural/engineering firm CSHQA. WHPacific was the project manager and provided civil and landscape architecture services.

In an uncharacteristic move, the Forest Service provided $800,000 for the new facility.

factsfigures

Project: Joint-Use Terminal

Location: Grant Co. (OR) Regional Airport

Cost: $5.3 million

Funding: $3.98 million from Connect Oregon II state grant; $800,000 from U.S. Forest Service; $198,700 from FAA; $29,700 from USDA Rural Development Grant; $300,000 Title 3 county grant

Prime Tenant: U.S. Forest Service

Prime Consultant & Project Mgm't: WHPacific

Civil & Landscape Engineering: WHPacific

Architectural Design: CSHQA

Mechanical, Electrical, Plumbing: CSHQA

Structural Engineering & Interiors: CSHQA

General Contractor: Kirby Nagelhout Construction

Of Note: Built to meet environmental certification standards

JDA's new facilities are a marked improvement over the 1940s residential home it previously used to receive customers.

Rainse **Anderson**

To secure the funding, the county negotiated a tenancy-in-common agreement with the Forest Service for the terminal and a 15-year lease for the helipad.

"The Forest Service doesn't typically fund facilities they don't own," notes Rainse Anderson, PE, project manager for WHPacific.

Before JDA's new terminal was built, Forest Service operations were housed in several modular units on airport grounds. The arrangement created congestion — particularly during the fire season, when outside firefighters and eight to 10 Forest Service helicopters and crews arrived for deployment. During peak season, 25 to 30 staff members, plus 30 additional vendor personnel, converged on the decentralized facilities.

The old modular buildings "were deteriorating and did not provide the fire and aviation programs adequate space," recalls Jeff Meyerholz, Forest Service airbase manager and unit aviation officer. Rising upkeep costs were also a factor encouraging change.

Now, Forest Service operations and offices occupy nearly the entire second floor of the terminal. The staff has expansive views of the airfield to oversee helicopter traffic. And firefighters prepare their equipment and gear packs for rappelling into burning areas in a 3,000-square-foot "ready room."

Educational sessions are held on the first floor, in a shared-use community room that can accommodate up to 80 people. During the early summer, 75 to 100 firefighters from around the nation attend the Forest Service's National Rappel Training Academy.

While the Forest Service and county agencies use the room free of charge, the airport also rents the room for public events such as meetings, weddings and receptions.

"The community has really gotten behind the facility," Anderson reports. "And the additional revenue is an added bonus."

A three-site RV pad with electrical and sewer hookups was built where the former terminal stood. Forest Service helicopter crews often park travel trailers there instead of staying in hotels about two miles away.

Green Design

One of the stipulations attached to the funds received from the Forest Service was that the terminal be built with the goal of achieving Leadership in Energy and Environmental Design Silver certification. As a result, the new terminal includes green technologies and environmentally friendly materials. Notable elements include:

- Low-flow plumbing fixtures to achieve 30% water-use reduction
- 10% of building materials originating from recycled content
- Recycling of 75% of nonhazardous construction and demolition debris

- 10% of building materials manufactured within 500 miles of site
- Lighting that is 25% more efficient than code
- Natural lighting in all regularly occupied spaces; direct outside views for 99% of occupants
- 37% improvement of energy performance via enhanced cooling tower, high-efficiency heat recovery units, a night purge system, occupancy sensors, daylight harvesting and photo sensors
- Biomass boiler that saves 38% energy costs during peak heating season vs. all-electric system
- Cement fiber siding; fiberglass window frames; metal roof


Steve **Wakeman**

"This was the chance in a lifetime to build a facility that will last, while considering the efficiency and environmental friendliness of the materials used," relates CSHQA Senior Project Manager Steve Wakeman.

The biomass boiler uses wood pellets instead of wood chips, because pellets burn cleaner and hotter and are very efficient, he explains. A silo across the street from the terminal feeds pellets into the furnace.

"We are located in a Forest Service area where they cut slag to prevent fires," Wakeman notes. "A lot of times the slag would just be burned. Now, they can remove it, take it to the pellet plant located here in John Day and manufacture wood pellets."

Biomass boiler systems installed at JDA, Blue Mountain Hospital and two area schools have injected new life into the local lumber mill industry, notes Bentz. Their business helped Malheur Lumber, the last remaining mill in the area, secure American Recovery and Reinvestment Act funding to help build a pellet plant.

"At one time, we had nine lumber mills in the area," he recalls. "We've been hit hard by all the closings. To secure funding for the pellet plant, Malheur Lumber had to guarantee the state that it would remain open for at least five years. It's been two years now, and it looks like they're going to be able to keep going."

The new terminal also appears to be attracting new business to the area. Enviro Board Corp., a California firm that manufactures environmentally friendly building panels and housing systems, recently made a purchase offer for seven acres of land in the nearby industrial park. If it comes to fruition, the project is expected to bring 70 to 100 new jobs to the community.

"The airport is strategically located next to the industrial park," Bartlett explains. "Executives are able to get in and out easily with a small jet."

Meyerholz agrees, noting that the upgraded terminal enhances the airport and Forest Service's ability to provide outstanding service to the community. "The new facility is the result of a truly collaborative effort," he reflects. "Both Grant County and the Forest Service are winners. We have established an infrastructure for the future growth of the community, the airport and the Forest Service fire and aviation program."

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Photo credit: Port of Portland

Portland Int'l Takes on Winter with New Deicing System

By Jennifer **Bradley**

Managing the residual chemicals from deicing operations at Portland International Airport (PDX) includes vexing challenges on two fronts: Portland's highly variable winter weather is unpredictable at best, and its local environmental regulations are predictably tough.

The airport's owner/operator, the Port of Portland, recently addressed both challenges with a new deicing management system that cost about $76 million. The system, now in its second season, features new flexibility to process and manage runoff according to varying concentrations of deicing fluid — an attribute that earned it high marks from airport officials during its first winter of operation.

The need to maintain stormwater discharge permits from the Oregon Department of Environmental Quality drove the initiative to upgrade the airport's previous system, which was less than 10 years old. In 2006, the agency mandated the Port to address its non-compliance.

The conditions of the permits are derived from years of study about the Columbia Slough, which until January 2010, was the only body of water that received stormwater runoff from PDX. As such, there is strong regulatory pressure and community advocacy to protect the integrity of the slough. Because the water flowing through the slough is controlled by a local agency for flood management purposes, the Port faces extra challenges in effectively managing the pollutant loadings allowed to enter it.

To resolve its unique challenges, the Port combined environmental research and technical expertise from airport engineering firms with input it elicited from PDX's carriers.

Susan **Aha**

Each airline's environmental experts were involved in the planning process and invited to all design meetings, including remote sessions and workshops with consultants, explains Port of Portland Project Manager Susan Aha. Throughout the design process, the Port and airline project team discussed and questioned assumptions — particularly those that affected construction costs, Aha recalls.

The meteorological dataset to be used for the analysis was a prime example. The initial plan entailed using the entire 50 years of meteorological data available for PDX, but the airlines questioned this assumption and hired a climatologist to perform an independent assessment of the data. The analysis was persuasive, and the Port consequently used 22 years of meteorological data instead.

"We were very open and transparent with (the airlines)," recalls George Seaman, an engineering project manager for the Port of Portland.

George **Seaman**

It's important for airport executives to develop relationships with their airline colleagues and make collaboration enjoyable, notes

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Project: Deicing Management System

Location: Portland (OR) Int'l Airport

Cost: $76.26 million

Budgeted Amount: $77 million

Funding: $46.71 million from passenger facility charge revenue; $17.7 million from Series 19 bonds; $7.6 million from Port of Portland; $4.25 million from state grant

Predicted Annual Operating Costs: $2 million (double previous system's)

Design Consultants: CDM Smith; Gresham, Smith and Partners

Operational: Winter 2011-2012

Efficiency: Removes 99.5% of deicer from stormwater

Storage Tanks: 3 million-gallon tank for concentrated water; pair of 6.5 million-gallon tanks for dilute water

Full-time Operators: 3

Online Monitoring Instruments: 15

PDX's new system includes three separate pump stations, 6 miles of pipeline and an onsite treatment plant.

Aha. Working with PDX's carriers so cohesively was a "huge success from a project standpoint," adds Seaman.

The benefit was revealed when Aha and the airlines' environmental representative joined forces to brief the Airport-Airline Affairs Committee about the project. It was extremely helpful having the airline representatives there, acknowledging that a new system was necessary and agreeing to the plan in lock step, recalls Aha. Such collaboration makes it much easier to convince the "money people," she adds.

Not So Fast

Forming the partnership, however, took time and trust. Aha says that the first mention of spending $70+ million on a new system was "not very palatable to the airlines" — especially since the Port had spent $36 million for a system that went into service at PDX in 2003. The news inspired the airlines to rigorously research the Port's claims about non-compliance, notes Aha. "They had to satisfy themselves, which they eventually did," she explains. Then, their focus turned to cost containment. Value-based engineering was key throughout the project design phase, and a process the airlines appreciated, she relates.

Obtaining feedback first and understanding what guidelines the body of water required made the approval process much easier, summarizes Aha.

Widespread community outreach was also an important factor, adds Seaman. Because the new system would create new outfall to the Columbia River, the team members braced themselves for controversy from environmental and neighborhood groups. Port and PDX officials consequently mounted a public education campaign, explaining the project to a dozen neighborhood groups, myriad environmental groups, Columbia River tribes and of variety governmental leaders. "That really enabled the job to go further very smoothly," says Seaman.

Teamwork was also essential, he notes: "Everyone focused on the project's success more than their individual success; and because of that, everyone was successful individually."

A New Approach

Tim **Arendt**

The Port hired two engineering firms to provide technical and environmental expertise for the project. CDM Smith and Gresham Smith and Partners (GS&P) worked together to develop a new and better way to manage deicer runoff. One of the main challenges the duo faced was designing a system to operate under a wide variety of circumstances. "There are times which would have very little flow with a high concentration of pollutants, and others with very high flow rates and lower concentration of pollutants, and all combinations in between," explains Tim Arendt, GS&P's principal-in-charge.

Engineers used GS&P's proprietary GlyCAST™ deicer management software to simulate responses for various weather conditions, which led to the design and inclusion of an anaerobic fluidized bed reactor biological treatment system. The computerized modeling system used 22 years of local hourly weather data to generate simulations for storage, pumping system, treatment systems, etc. The results provided insight about the most cost-effective ways to manage a wide variety of stormwater and deicing situations. This enhancement gives the airport flexibility, confidence in compliance and ensures the vitality of the water bodies it depends on, explains Arendt.

The nuts and bolts of the new system began with re-routing winter stormwater that would normally discharge to the Columbia Slough on the south side of PDX to the Columbia River located to its north. CDM Smith designed a processing component that controls flow through the three new pump stations, 6 miles of pipeline


Mark **Ryan**

that connects them to each other, the treatment plant and new outfall at the Columbia River. Online meters give real-time biochemical oxygen demand readings of the stormwater pollutant concentration in any area where they are located, says Mark Ryan, CDM Smith project manager. From that, he explains, pump stations are programmed to either pump to a certain area, certain tank or the treatment plant.

"I think this is pretty cutting-edge as far as having this number of pump stations around the airport, synchronized and working on an intelligent network to make the best decision of where to convey the water and treat it, or release it," relates Ryan.

While individual parts of PDX's system are used at other facilities, it is the system as a whole and the multiple technologies working cohesively that make it unique, he explains.

Biology in Action

When Aha traveled to other airports to survey their deicing systems, one message came through loud and clear: Build in flexibility and options to facilitate response to a variety of conditions. So that's precisely what the design team did.

Three new storage tanks were built to segregate water based on its deicer concentration, explains Arendt. One 3 million-gallon tank holds concentrated stormwater and two 6.5-million gallon tanks handle more dilute water. After separation, the discharge is sent to the slough, river, sanitary sewer or on-site treatment plant. Having its own treatment facility greatly reduces PDX's dependence on the local sewer system, he adds.

The onsite anaerobic treatment plant uses live bacteria to break down the deicer chemicals into methane and carbon dioxide — a process that required some initial tweaking. The first batch of bacteria used to seed the system proved to be too weak, but the second, procured from a fruit processing plant, got the plant up and running with ease, recalls Aha.

Operational readings from last winter, the plant's first deicing season, indicate that the process removes fully 99.5% of the biochemical oxygen demand, reports Arendt. Because the system must be maintained at 90F, runoff is heated by the methane captured as a byproduct.

"We were lucky on two accounts," says Ryan of the airport's experience with the new deicing management system. "The weather was mild, and the staff worked through glitches. They rolled with it and made everything work. They are the big success story in all of this."

For Aha, the bottom line is clearcut: The new system allows the Port to "keep the doors open" at PDX. "Without it," she says, "we couldn't comply with our permits, and wouldn't be able to deice."

The flexibility of the new system, however, goes well beyond regulatory compliance. The system's real-time analyzers help operators, licensed in Level III Oregon wastewater treatment, make timely decisions based on changing weather conditions. The ability to respond to Portland's wide-ranging weather in real-time, notes Arendt, is what truly sets PDX's system apart from the crowd.

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Aerospace Charter School Boosts Business at Lakeland Regional

By Kathy **Scott**

Lakeland Linder Regional (LAL) in central Florida has all the markings of a typical general aviation/small commercial airport: repair shops, refurbishment centers and shuttle flights in Cessna 172s that load directly on the tarmac. But it also has two other elements that make it unique: the year-round headquarters for Sun 'n Fun, the industry's second largest fly-in, and Central Florida Aerospace Academy, a satellite high school for students interested in aviation and aerospace.

Gene **Conrad**

Both enterprises have helped entice business to the airport, including two new flight schools, reports Airport Director Gene Conrad. "It is hard to even imagine how the existence of (Central Florida Aerospace Academy) will transform our airport community in the future, but what I do know is that the future of this airport and the future of the kids attending this school is extremely bright because of the dedication of the people that made it a reality!"

With tracks including pre-engineering, avionics and aerospace technologies, the academy offers students the opportunity to graduate high school with an Auto CAD certificate, private pilot's license or avionics certificate. Its Air Force Jr. Reserve Officers' Training Corps program ranks as one of the country's best and earns graduates who enlist an advanced pay grade.

Some students hope a diploma from the aerospace academy will help them secure a coveted spot at the United States Air Force Academy in Colorado; others see it as the ideal stepping-stone to Embry-Riddle Aeronautical University, Florida Institute of Technology or Polk State College, which recently added an aerospace program. Still others aspire for local careers sooner after high school.

Businesses deciding whether to locate on or off airport property appreciate the ready pool of skilled and enthusiastic graduates the school produces, notes Conrad. In turn, the academy enjoys the halo effect of local businesses recruiting employees directly from the school.

Preflight Planning

Gulf Coast Avionics President Rick Garcia proposed the idea for Central Florida Aerospace Academy to the Polk County School System back in 2008. As a former student of George T. Baker Aviation School in Miami, Garcia personally knew how inspiring such high school programs can be to young teens. By volunteering the use of Gulf Coast facilities at LAL for classroom space, Garcia helped convince the school system to launch the academy within a year of making the proposal. With an initial enrollment of 50 students and excitement spreading about the curriculum, the program quickly outgrew its original home. In late March 2011, the academy moved into a new 58,000-square-foot, three-story facility that was built on the southwest side of the airport with a $7.5 million grant from the James C. Ray Foundation. The larger facilities expand the school's capacity to 500 students.

In a generous show of support, Sun 'n Fun leases a portion of its property to Central Florida Aerospace Academy under highly unusual terms: Fully 90% of the school's $400,000/year lease

payments is deposited directly into a special non-profit account used to subsidize student flight fees. The additional 10% is used by Sun 'n Fun for general operations. Fully 75% of every student's flight fees is paid for with money from the lease payment fund, explains Sun 'n Fun CEO John Leenhouts. Students demonstrating financial need can apply for additional aid to cover the remaining 25%.

We Have Liftoff

With the academy recently graduating the first class of students who had completed its full four-year cycle, school system officials express confidence in the school's niche. "We know that many areas in the aviation workforce will be retiring over the next several years," explains John Small, senior director of Workforce Education for the Polk County School System. "Central Florida Aerospace Academy not only offers academics, but hands-on training and assists in giving our area airport businesses highly trained workers."

The U.S. Census Bureau categorizes aerospace and transportation as "high-growth sectors" in need of highly skilled employees to replace workers nearing retirement. According to its 2008 *Taskforce on the Aging of the American Workforce Report*, 55% of aerospace workers are 45 and older, and 46% of transportation workers are of similar age. For some, the shrinking workforce in such sectors is a matter of national security.

Although still in its infancy, the academy is already posting impressive results, including a 100% graduation rate (vs. a national average of about 75%). It's also helping the airport by attracting new tenants, including Civil Air Patrol, which officially opened a Composite Squadron at the academy last April.

"I believe that having the academy at the airport, integrated with the businesses, positions our airport positively for recruiting new businesses and industry, helping promote economic development," says Small. "This model involves the whole airport community strategically planning to meet current and future workforce needs, while providing high level academics for our students."

The development of the program is reminiscent of the airport's evolution during World War II, when the U.S. Army Corp of Engineers constructed training buildings and expanded LAL's runways on behalf of the War Department. Today, however, the airport is expanding more than its physical structures; it's expanding young minds and readying them for the next generation of aerospace and aviation careers.

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Beyond ADA: Increasing Airport Accessibility for All

Eric Lipp

Eric Lipp, founder and executive director of the Open Doors Organization, strives to enhance the quality of life for people with disabilities by improving their access into the larger domain of society. Lipp started the non-profit organization after a spinal cord tumor caused by von Hippel Lindau disease provided him with personal experience regarding the restrictions that people with disabilities face in everyday life. The two Open Doors/Harris studies he initiated are widely viewed as the definitive source for statistics on travel by Americans with disabilities.

Airports are constantly looking for new ways to increase revenue, but there are few strategies that boost profits while also filling a social need. Improving accessibility for travelers with disabilities is one of those rare opportunities. People with disabilities spend $6.5 billion annually at airports. Improving accessibility through proper planning, design, policy, procedure and training can allow airports to tap into this market *and* better the travel experience for customers with disabilities.

Today's age and attitudes allow for very limited resources for accessibility, so it's no wonder there is little understanding of its core values and characteristics. Often, airports feel lost without a map when faced with adhering to new regulations. Over the past couple of years, though, it has become apparent that the FAA and DOT are serious about every airport having a specified access coordinator or expert on accessibility.

There are so many things that need to be done, and the learning curve is so steep, that actually beginning the process can be quite daunting. So here are some simple ideas on how to get the ball rolling.

The first suggestion is hands-on planning. The best way to do this is the controversial "role play," where you actually mimic a disability while surveying your site — navigating it in a wheelchair, for instance, or wearing devices that block or limit vision. While some in the disability community are understandably not fond of such methods, they do offer legitimate benefits and can be very effective as part of a larger strategy. They can also be very convincing and effective at initiating change.

The second piece of low-hanging fruit is finding resources. Reach out to the carriers that service your airport. They likely have an access coordinator or head of disability who can familiarize you with how they handle access. These professionals can also familiarize you with the elements airlines may need to function smoothly, such as elevators to the tarmac and relief areas for service animals. Also reach out to Airports Council International, which has educational programs that Open Doors Organization helped create. In 2014, attend our Universal Access in Airport Conference (and other events like it), where you can meet with airports, airlines and equipment providers exclusively about accessibility issues. In addition, make sure to have at least one or two local disability organizations that you can rely on for support.

My third suggestion sounds harder than it is: Install a hearing loop. Many aging Americans, who do not self-identify as having a disability, wear hearing aids; yet they still often miss airport announcements. A hearing loop or induction loop can help more visitors for a relatively low cost than just about any other accommodation. Millions of travelers wearing hearing aids will no longer miss announcements about gate changes or emergency procedures. Hearing loops are already installed at Heathrow and other UK airports, as well as in all London taxis. Helping many travelers with a low-cost accommodation is a win-win situation.

Finally, but maybe most importantly, people with disabilities use technology a great deal. So have plenty of information on your website, including a copy of the Air Carrier Access Act and links to the DOT and Americans with Disabilities Act websites. Indoor Wi-Fi helps people with disabilities use smartphones to mark key places in your airport such as gate information displays and accessible bathrooms or water fountains for others to find later.

Overall, the industry has begun to evolve. Most airports have an access coordinator and have been part of an FAA accessibility audit; and others have instituted visual paging and family restrooms. These are steps in the right direction, but this is only the beginning. There is no end to what we can do. Ultimately, we hope *all* airports will weave access into their core principles.

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Poor	0.21	0.25
Medium To Poor	0.26	0.29
Medium	0.30	0.35
Good to Medium	0.36	0.39
Good	0.40	1.00

AVERAGE FRICTION:	0.31
1/3 Average Friction:	0.29
2/3 Average Friction:	0.33
3/3 Average Friction:	0.32

Average Ground Temperature:	26.00°F
Average Ambient Temperature:	32.00°F
Average Ground Speed:	39.8 MPH

		1000					2000					3000					4000	
	10	0.29	0.30	0.31	0.32	0.32	0.44	0.35	0.34	0.34	0.30	0.30	0.28	0.27	0.33	0.33	0.34	33R
	CL	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
15L	10	0.35	0.30	0.30	0.29	0.26	0.25	0.26	0.25	0.28	0.28	0.36	0.37	0.31	0.31	0.33	0.35	

DEMONSTRATION AND NOT ACTUAL DATA

This program is available in English, Spanish, Turkish, and Mandarin.

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