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Their Point Has Nothing to Do With Facts

The Hill, which reports on Congress and Capitol Hill, recently released its picks for Top 10 lobbying victories of 2013. Care to guess who logged in at #4? It was Airlines for America, for helping spur Congress to compel the FAA to keep control towers operating despite mandated sequestration cuts — a move that diverted vital funds from the Airport Improvement Program.

In December, the same group focused on the new two-year budget deal and mounted a campaign to eliminate increases in passenger fees for security enhancements. One of the tactics it used was distributing air sickness bags printed with the message "Are high taxes on air travel making you sick?". Brilliant! The campaign hit a home run by using an attention-grabbing medium to convey a simple, clever message.

Sadly, the group's point has nothing to do with the facts. Airlines for America contends that increased fees — which it refers to as "higher taxes" — will adversely impact demand, jobs and our economy. Yet, recent statistics indicate that the industry's rise toward greater profitability continues. According to the U.S. Department of Transportation, U.S. airlines netted $3.2 billion of profits during the third quarter of 2013 — more than twice their net profits during the same period the previous year.

The true double-whammy is that those profits were pumped up by $879 million in bag fees and $735 million for reservation change fees. And because such fees are not included in the ticket price, the airlines don't pay tax on them — and therefore also don't provide associated funds to the FAA for crucial airport infrastructure improvements.

The exponential rise in airline fees has done little to dampen the appetite of air travel, yet Airlines for America argues that an increase in existing passenger facility charges would deliver a debilitating blow to the industry.

Sadly, great lobbying and clever marketing are trumping the truth and what's good for the wellbeing of our industry. Arguing louder and smarter, however, has proven effective at getting the airlines what they want while denying airports similar fee adjustments, such as needed changes to the PFC program.

On the airport side of the house, our logic is sound; but our marketing simply hasn't been as effective.

Cheers,

Paul

HOUSTON AIRPORTS

factsfigures

Project: New Concourse

Location: George Bush Intercontinental Airport

Terminal B, South Concourse

Owner: Houston Airport System

Tenant: United Airlines (30-year lease)

Facility Size: 225,000 sq. ft.

Gates: 30

Cost: $149 million

Funding: United: special facility bond; Houston Airport System: passenger facility charge

Of Note: United funded the $97 million vertical structure; Houston Airport System funded the $52 million apron, ramp & utilities infrastructure work

Concourse Team

Architect, Interior Design, Civil Engineer: PGAL

Construction Manager: Skanska USA

Structural Engineers: Henderson + Rogers; Walter P. Moore

MEP & Fire Protection Engineer: Jacobs

Telecommunications: Ferguson Consulting

Security & Access Control: Derek Consulting

Vertical Transportation: Lech Bates

Life Safety: AON

Acoustical Consultant: HFP Acoustical

Sound System: Meyer Sound Laboratories

Seating: Zoeftig

Restaurant Operator: HMSHost

Swing Gate Ramps: Keith Consolidated Industries

Swing Gate Flooring: Safeguard

Ramp, Apron & Infrastructure Team

Prime Consultant: Atkins

General Contractor: SpawGlass Civil Construction Co.

Concrete Paving: Austin Bridge & Road

Concrete Structures: Martinez Steel

Aircraft Fueling: Kinley Construction

Quality Control: JRB Engineering

Trucking: Jomar Silva Trucking; Panther Creek Tucking

Materials: H&E Aggregate

Houston Intercontinental & United Wrap Up First Phase of $1 Billion Terminal Project

By Robert **Nordstrom**

The Houston Airport System and United Airlines have taken their public-private partnership to a whole new level with construction of a new concourse at George Bush Intercontinental Airport (IAH). At a total cost of nearly $150 million, the South Concourse of Terminal B was completed in two distinct, yet interrelated, projects: United funded the $97 million vertical structure; and the Houston Airport System funded its $52 million apron, ramp and utilities infrastructure work. Together, the projects create a 30-gate facility that allows United to consolidate the majority of its regional jet operations and upgrade customer amenities.

The new South Concourse is also the first phase of a three-phase Terminal B redevelopment that is projected to span the next seven to 10 years and cost $1 billion. Terminal B will now function as the primary facility at IAH for United Express flights operated by ExpressJet, SkyWest, Trans States and Shuttle America. Together, United's regional partners operate more than 300 flights a day out of IAH. The new concourse accommodates regional aircraft with capacities up to 76 seats.

With extensive connecting traffic, IAH is a "premier international gateway and a key hub in United's network," says Jim Compton, United's vice chairman and chief revenue officer.

Lance **Lyttle**

In contrast, the previous concourse, built in 1969, was outdated and inefficient, says Lance Lyttle, IAH's chief operating officer. "With only 19 gates, we had limitations on the number of RJs (regional jets) we could fit in there," Lyttle elaborates. "Now, United is able to put in all of their RJ operations on the south side and consequently manage its fleet much more efficiently."

Flight information displays were sized and positioned to keep customers outside gate areas informed.

Listening to the Customer

The South Concourse project is United's first new terminal facility since merging with Continental Airlines in 2010. As such, the IAH facility will serve as a prototype for future construction/renovation of United terminals.

"Terminal B South was built with more of the features our customers tell us they value: more seats, more space, more concessions, more power outlets and Wi-Fi," details Kate Gebo, United's vice president of corporate real estate.

The 225,000-square-foot facility is nearly four times the size of the previous concourse and features a single, open holdroom that serves all 30 gates. The terminal also includes 17 food/beverage and retail options spread over 15,000 square feet — 500% more concessions space than the former facility.

Cheryl **Gajeske**

To reach the holdroom, passengers traverse a 90-foot-wide pedestrian bridge over the main roadway that circles the central terminal facility. With 15 concessionaires on each side of the bridge, passengers are treated to a "mall-like experience," says Cheryl Gajeske, principal of PGAL, the project's architect of record. There are also two concessions inside the 1,056-seat holdroom.

Several restaurants specializing in Texas cuisine are making their airport debut, including 3rd Bar Oyster & Eating House, the creation of Chef Bryan Caswell and Food and Beverage Director Bill Floyd. In 2009, Caswell was named one of *Food & Wine* magazine's Top Ten Best New Chefs; and in 2008, *Bon Appetit* named Reef, Caswell and Floyd's midtown Houston location, the best seafood restaurant in the United States.

Other airport firsts include Barcuterie, Bullritos, Texas icon Whataburger, and Chef Johnny Hernandez's The Fruteria.

Shopping options include an iStore Boutique (the first airport retailer authorized to sell Apple products), Relay, Brookstone, The Body Shop, Ice Currency Exchange, Johnston & Murphy, Natalie's Candy Jar and Nuance Duty Free.

"The food court has been jammed with people since the new concourse opened," Gajeske reports. "Travelers are treated with a shopping experience before they even get to the holdroom."

"Everything is visible from the holdroom," Gebo adds. "The line of sight was very important to us. If customers can't see it, they won't visit it."

The bridge opens into the open-design holdroom, which features a 40-foot floor-to-ceiling expanse at its highest point and a 28-foot glass wall with dramatic views of the tarmac and Houston skyline.

Kate **Gebo**

"People walk in, stop, look up and go 'wow,'" Gebo relates. "Then, they kind of get involved with the space. People don't just sit in one place; they move around, interact with the space. It really has a different feel and removes a lot of travel stress. It's all about letting people relax before they get on their flight."

Large screens allow travelers to track flight information while remaining seated. "People don't have to get up to ask an agent, 'Where am I on the standby list?' or 'What are the amenities on this flight?' Gajeske explains. "It's all displayed where they are sitting; so it prevents them from getting nervous and anxious, then crowding the boarding area for answers."

Service centers were also designed to facilitate self-service, because that's what customers have said they want, Gebo reports. Kiosks allow travelers to adjust their own itineraries if, for example, a flight gets cancelled. "In many instances, they are able to resolve travel issues at a kiosk without having to see an agent," she explains.

With its large, new consolidated holdroom, United focused particular attention on seating arrangements, selecting various configurations to suit various customer categories. "We don't have just the traditional bench seating," Gebo explains. "We also have cluster seating for business travelers who like to have a table between them and other travelers. We put in bar seating similar to the Apple iBar concept for our younger travelers who love to plug in while sitting at a bar-like table. We've tried to provide something for everyone. (Free) Wi-Fi is available throughout the facility, and over 50% of seats have outlets for travelers to plug in and charge their devices."

More than half of the seats in the new concourse have built-in power outlets.

At boarding time, passengers descend escalators to the ground level and enter a walkway to their flights. Swing Gate Ramps, by Keith Consolidated Industries, were designed with stop marks at different locations to operate in multiple locations and accommodate various regional aircraft (ERJ-145, CRJ-200 and CRJ-700).

Continuing the airline's move toward self-service efficiencies, United planned to test self-boarding gates in Terminal B by the end of 2013.

Keeping it Green

In addition to engineering the South Concourse to be open and customer-friendly, designers also focused on making it sustainable. The facility is projected to consume 19% less energy than a conventional building, and team members expect it to earn silver certification for Leadership in Energy and Environmental Design.

"The 'green' aspect is very important to us," emphasizes Gebo. "The building features a cool roof system, so it actually reflects 76 percent of the heat gain from sunlight."

The holdroom's 28-foot, high-efficiency glass wall uses exterior louvers and a roof overhang to shade the glass from direct sunlight. Inside, light fixtures with daylight harvesting sensors turn lights off and on based on the amount of natural light present in the space. High-efficiency HVAC equipment is zoned to save energy and maximize utilization.

The project is also on track to recycle more than 95% of its construction waste. "We had to demolish hundreds of tons of existing 40- to 50-year-old buildings to make room for this project. Everything was sorted and tracked to ensure the highest repurposing of materials," reports Jim Clemens, executive vice president and general manager of Skanska, the project's construction manager.

Two Projects, One Goal

The United team began vertical construction on the concourse facility in January 2012; and the Houston Airport System team broke ground on the infrastructure work outside the terminal envelope later that year in May. With two separate teams, each working on its own project, airport officials stressed the importance of focusing on one goal: building a modern terminal facility with as few disruptions to customer service and flight operations as possible.

Lyttle describes the challenge: "Even though we had two different designers and two different general contractors, we had to manage the two projects as one project. The first thing we had

With separate stop marks for Embraer and Bombardier regional jets, swing gate ramps increase efficiency at the new South Concourse.

to do was to establish guiding principles that would enable our two teams to function as one team. If United failed, we failed; if we failed, United failed. The outcome had to be a win-win."

To facilitate workflow, major players from both projects met weekly to discuss and coordinate activities.

"Effectively, the project had two owners, two designers and two contractors, all of whom were converging on a relatively small piece of real estate with active aircraft operations," relates Harold vandeMeerakker, Aviation Group Manager for Atkins, the design consultant on the outside infrastructure and flatwork. "Project coordination was complex and constantly changing, but the efforts of all stakeholders allowed changes to the project to be incorporated smoothly."

"The logistics on this project were incredibly demanding," says Clemens. "We took a multi-phase approach in order to take as few gates out of service as possible, while building a very large and complex structure in the midst of airport operations. Aircraft were moving in and out within 15 feet of our fence line."

Their efforts, however, bore fruit. The building became operational within 12 to 13 months, Clemens proudly reports. At the peak of construction activity, more than 275 workers from about 70 subcontractors operated simultaneously, 24/7.

Clemens describes the multi-company group that pushed the project forward as "the most integrated team" with which he has ever been involved. "All of the stakeholders on this project team left their egos and individual agendas at the door," he explains. "We worked through challenges and developed solutions in a comprehensive and collaborative manner that, I believe, sets the standard as to how an integrated project should be delivered in an aviation environment."

"The successful completion of this project is a credit to the entire team," agrees vandeMeerakker. "As aviation engineers, we live for this kind of project and its challenges."

One Down, Two to Go

With the last 15 gates of the new South Concourse slated to open in January, attention was shifting to the remaining portions of the $1 billion Terminal B redevelopment plan. During Phase 2, crews will reconstruct the North Concourse; in Phase 3, they'll focus on the Central Terminal area.

According to Gebo, design work on Phase 2 is scheduled to begin later this year. In the meantime, United plans to make cosmetic improvements to "diminish the stark differences between the new facility and other areas of the terminal."

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Sound Design

Given the open floor plan and high ceilings of United Airlines' large new holdroom at George Bush Intercontinental Airport, finding an intelligible sound system was a high priority. Keeping travelers informed as they wait for their flights helps keep them relaxed, planners reasoned.

Airport officials consequently contracted Houston-based HFP Acoustical Consultants to design the audio system for the new Terminal B South Concourse.

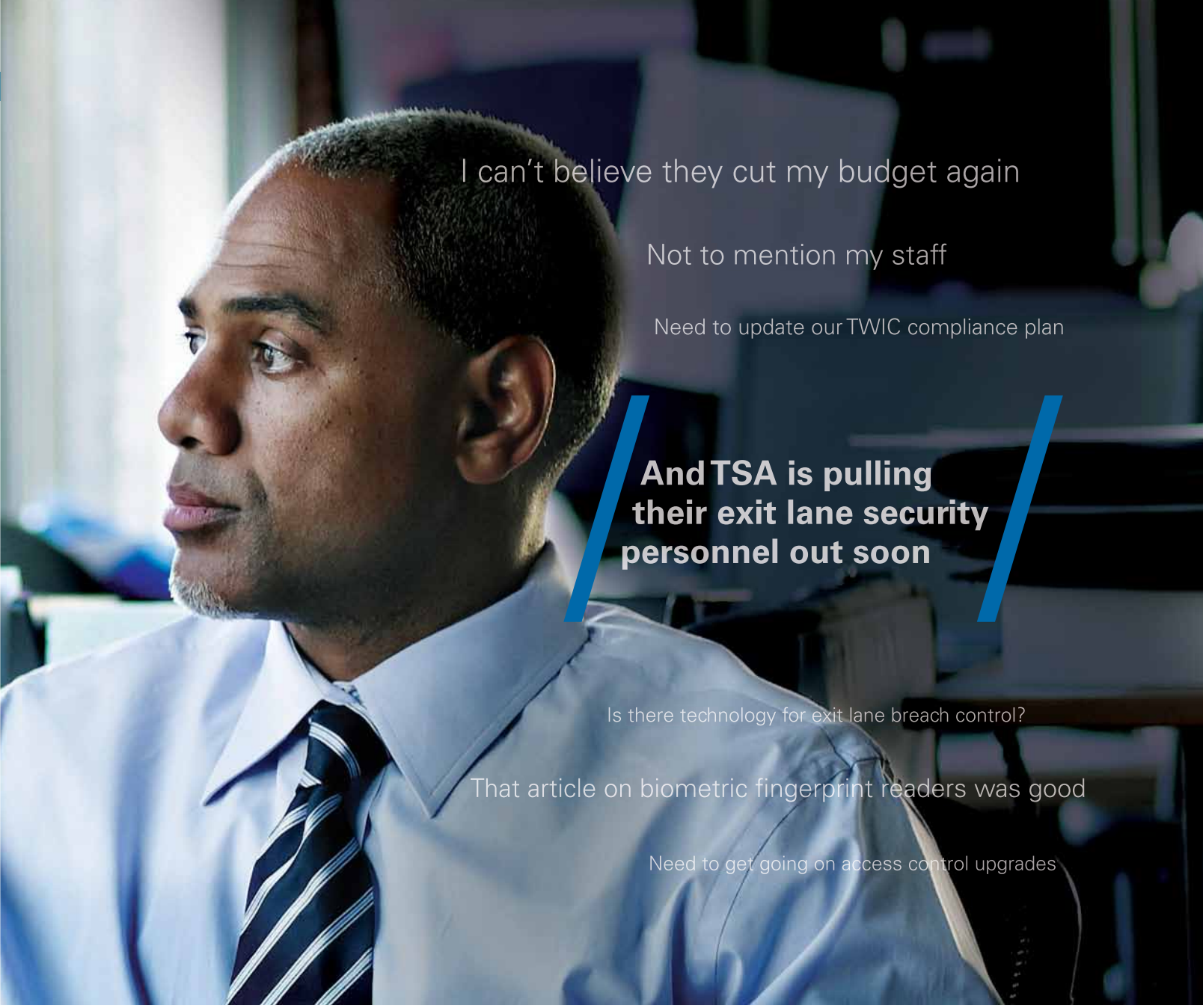
With 28,000 square feet of floor space and ceilings soaring up to 40 feet, HFP focused on high speech intelligibility and excellent coverage. The goal was to help airport guests hear and understand flight announcements and other important information — no matter where they are sitting or walking in the concourse.

Meyer Sound Laboratories loudspeakers are stationed strategically throughout the facility. The low-voltage equipment is specially designed to deliver highly intelligible speech and music in acoustically challenging settings such as airports, notes Bill Schuermann, HFP's senior associate design consultant.

"The self-powered loudspeakers, with amplification and signal processing inside the cabinet, provide inherently better audio reproduction," Schuermann explains. "Without the transformers and long cable runs typical of airport systems, they provide flatter frequency and remarkable intelligibility, with a natural voice quality and far superior musicality."

The system also dovetails with the project's focus on sustainability, because it uses less copper wiring and floor space, and requires less energy to operate.

"I spend a lot of time in airports and rarely do you have high intelligibility in the newer open architecture of today's airport designs," Schuermann observes. "Airports do not typically address the acoustical side of the building. They do not install enough devices of the proper type in the proper location, and the system is not calibrated to provide maximum intelligibility within the space. The reason this system sounds so good is we followed the rules. We used the right speaker in the right location at the right power level, then calibrated the system to do its job."



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Buffalo Int'l Boosts Website Visibility to Push Back Parking Competitors

By Kristin Vanderhey **Shaw**

Airports have a new tool in their arsenal to keep off-airport parking providers at bay: search engine optimization (SEO), a method of improving an airport's website performance by improving the order in which it pops up during "natural" or unpaid Internet searches. Generally speaking, appearing as early and as often as possible increases an airport's chances of potential customers clicking on its website instead of a competitor's.

SEO specialists work to improve an airport's position in Internet search results by analyzing how specific search engines work and learning what travelers search for, the specific keywords they use, and which search engines they prefer. The consultants then "optimize" an airport's website by tweaking its content, HTML and associated coding to match the most commonly used search words and to eliminate obstacles to search engines' indexing processes.

Buffalo Niagara International Airport (BUF) in New York is using the relatively new Internet marketing process with the help of its parking management contractor, SP+ (formerly known as Standard Parking).

"Organically, the website has done well on its own, but adding SEO capabilities was a smart move for us," reports Pascal Cohen, the airport's senior marketing manager. "Standard helped us direct our online strategy to streamline our site, and allowed us to easily translate to a mobile platform, which is important to travelers."

The geography of BUF's customer base helped drive the decision to improve how the airport interacts with customers via the Internet. "A lot of our customers are Canadian, and many don't come to the airport often," notes Cohen. "So it's very important for us to be as highly-ranked from an SEO standpoint as possible."

With Toronto, the largest city in Canada, only a 90-minute drive away, BUF is an attractive option for Canadians looking for low fares and fewer government-imposed fees for travel to and through the United States. Almost one out of four Canadians lives within 90 minutes from BUF, notes Cohen.

"Over 40% of our customers are Canadians, so they come from across the border; and we want to make it as easy as possible to park at our airport," he explains. "We have a section about border crossings (on the website), and we want to ensure we are easy to understand."

BUFFALO NIAGARA INTERNATIONAL AIRPORT

factsfigures

Project: Search Engine Optimization

Location: Buffalo (NY) Niagara Int'l Airport

Parking Operator: SP+ (formerly Standard Parking)

Strategy: Increase parking revenue by improving position airport website appears when potential customers perform Internet searches

Related Initiative: Online parking rewards program

With flight prices as a primary factor driving Canadian travelers to BUF, airport officials extrapolate that they are also attuned to parking costs. "Our competition has been trying to promote specialty and promotional rates to show that they are cheaper; but we have a seven-day specialty rate, (two days free after five)," relates Cohen. "Many regional travelers park for a week or more, and our weekly rate is better than the off-airport competition. They are trying to use our daily rate against us. The off-airport sites charge a fee that they don't advertise; with our site, we illustrate those fees in an easy-to-read table."

SEO Specialist


Pam **Brown**

Pam Brown, vice president of airport business development for SP+, is keenly aware of the role websites and search engines play in the competition between on- and off-airport parking operations. SP+ has 40 employees in its airport services division and serves more than 80 airport clients.

"The way we got information 10 years ago is so different than we do now," Brown explains. "Traveler patterns have changed significantly — the airlines have effectively trained air travelers to look to the Web for information."

New Internet dynamics inspired Brown to study SEO in detail, and now she advises airports about how to re-tool their websites to increase parking revenue and compete more effectively. According to Brown, off-airport parking operators are ahead of the curve when it comes to boosting website visibility to capture customers.

SP+ consequently developed a new strategy to help its clients produce parking guides — websites with multiple pages designed for organic and paid search traffic. Market by market, they evaluate search activity and look at website key words, search volume, top search words, and develop a custom plan for individual airports.

"We take many of the retail tactics and techniques in the marketplace and use them for airports, because the competitive nature of airport parking is similar to retail, where it is critical that these tools be mastered," explains Vincent Raguseo, senior vice president of marketing for SP+. "Airports compete with aggregators and off-airport parking companies that understand SEO; so we're helping them fight fire with fire. We can demonstrate what is going on in their market and show them where they are losing market share and the ways competitors are intercepting customers and stealing them away.

"We also focus on the destination," adds Raguseo. "We understand that people don't go someplace to park; they go someplace to attend an event in their life. In other words, people begin their search with information on the destination, and then extend that search to include parking. It's a natural add-on. That is why we're focused on user behavior and understanding the user experience."

Site Strategy

At BUF, Cohen describes SEO as a way to keep on-airport parking options on top. Parking accounts for about one-third of BUF's total revenues — far more

than car rentals, concessions and other all other non-aeronautical sources — so it can't afford for off-airport competitors to capture market share, he explains.

So far, Cohen has been pleased with the results: "On the SEO side, it's relatively new — less than a year, but we think it's a sound defensive strategy."

It's also spurring related refinements. "We're working toward a fully automated parking rewards program, in which people will be able to earn points and see everything online," Cohen reports. The official launch is scheduled for December 2013, pending the installation of new servers and activation of security measures.

Brown is encouraged about the impact SEO is having for clients such as BUF and T.F. Green Airport in Providence, RI. "We know a well-informed traveler is a happier and more efficient traveler; and if we can help our airport clients be the source of the information travelers need, that benefits all of us," she explains. "The airports count on parking revenue, and they need to continue to focus on it. Using their websites and SEO to their maximum capabilities brings passengers to their doorstep and leads them in with keyword searches that (direct) them to the site and applicable coupons. It's critical to their market."

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Building a Better Website

Pam Brown, vice president of airport business development for SP+, analyzes websites and search engines to help her company's clients increase parking revenues and compete with off-airport operators.

Here are a few of her top tips for effective airport websites and improving search results:

- Ensure that your website is "above the fold"; 70% of viewers are lost if they have to scroll down to find your link.
- Search engines closely guard their algorithms and constantly rewrite their code. They even send "crawlers" to gather data about which websites are most utilized.
- "Click-throughs" are what count. Every click builds your prominence on the Web.
- It's easier for potential customers to click than scroll. Offer a way to click back to the home page on every page.
- Don't bury your most important information (parking lot maps, availability information, pricing, comparison to off-site parking, coupons, reservation links, etc.).

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How Austin-Bergstrom Int'l Readies for Race Day

By Kathy **Scott**

factsfigures

Project: U.S. Grand Prix Preparation

Location: Austin-Bergstrom (TX) Int'l Airport

Renovation/Expansion of Customs & Border Protection Area: $325,000

Construction of Additional Security Checkpoint: $283,000

Engineering & Architectural Services: $380,000

Engineering Design Consultant: RW Armstrong (now CHA)

Architectural Services: Gresham, Smith and Partners

Statewide Revenue Generated by 2012 Race: $547 million

Additional State Sales Tax Collected: $30 million

Of Note: In addition to modifying Security & Customs processes/infrastructure, airport added help kiosks & recruited 75 volunteers for the special event.

When Formula 1 racing returned to the United States in 2012 after a five-year absence, it drew 265,000 fans to the Circuit of the Americas complex in Austin, TX — a new 1,500-acre facility built just two miles from Austin-Bergstrom International Airport (AUS). Needless to say, the Class-C international airport located in Texas' capital was central to the global event and its unique travel logistics.

To prepare for the passenger influx associated with the mid-November U.S. Grand Prix, AUS contracted engineering design firm RW Armstrong (now CHA). Its consultants proposed facility modifications and changes to passenger processing procedures engineered to make traffic associated with the premiere race run smoothly. Before a single crewmember or race fan ever set foot in the airport, AUS spent nearly $1 million — $608,000 on construction costs for structural modifications and $380,000 on engineering/architectural services.

Understanding the economics of Formula 1 racing helps put the investments in perspective. The $300 million facility in Austin was designed and built specifically for Formula 1 racing (although it also accommodates other race and concert events). And that's just pocket change compared to what the overall industry's outlay. According to *AutoWeek* magazine, Formula 1 is one of the most expensive sports to compete in, with teams spending $5.4 million to $13.5 million per race. With nearly 20 stops on last year's schedule, the costs multiply quickly.

In addition, Formula 1 is a serious brain game, and some of the world's most brilliant scientists are tapped to channel the power of aerodynamics in analyzing speed, fuel load and tire wear to determine the precise moment to boost acceleration through kinetic energy recovery. Research and development for each car is expressed on a multimillion-dollar sliding scale, with tire rotations, speed, weather, and car weight analyzed endlessly — all in an effort to out-think opponents and surge past the crowd to cross the finish line first. It is a battle of wills, wit and a lot of money.

In 2013, there were 19 races in 19 different countries, making travel and logistics an important part of the series. The United States Grand Prix was number 18, just after the Abu

Dhabi Grand Prix and just before the series' final event in Brazil. With one dozen teams participating in the winding 5.5-kilometer race at Circuit of the Americas' inaugural event in 2012, travel was precisely organized and calculated down to pinpointed arrival times. Similarly, all 12 teams had firm departure times, just three hours after the race end, to facilitate timely arrivals in Brazil for the next race.

Get Ready, Get Set

AUS was the initial gateway to the U.S. Grand Prix — an important cog in the overall Formula 1 machine. As the first point of entry into the United States for most of the race teams and fans alike, its ability to clear high volumes of passengers through Customs in a timely manner was crucial. Because the United States does not have a Formula 1 team, all of the teams would clear Customs at AUS unless they flew into the States earlier at a different point of entry. Each of the 12 teams typically brings as many as 70 people. Add in a cadre of support personnel for the event itself and throngs of fans who come to watch it, and AUS' usual processing rate of 90 to 110 passengers per hour was not nearly fast enough. Modifying the airport's U.S. Customs and Border Protection (CBP) area to ensure a positive first impression to travelers was a high-priority objective


Jim **Halbrook**

"RW Armstrong was useful and had experience in managing special events," reflects AUS spokesman Jim Halbrook. Mike DeVoy, now senior vice president of CHA, led the firm's efforts, capitalizing on his inherent understanding of race culture as a resident of Indianapolis.


Mike **DeVoy**

DeVoy and his team worked closely with AUS' design, construction, operations and security departments on planning, cost estimates, permitting, bidding assistance, engineering and construction administration. Gresham, Smith and Partners provided the architectural services.

"The goal was to provide a positive impression of Austin and its airport to race fans from across the world," Halbrook relates.

Modifications to the CBP area nearly doubled the airport's throughput of international passengers, enabling the airport to clear 160 to 180 passengers per hour. Changes were completed November 9 for the November 18 race, Halbrook reports.

"Enlarging the area allowed CBP to streamline the process," he explains. "Passengers were able to pick up their luggage and proceed through Customs with their passport and declaration form, streamlining the procedure to one step. That change was able to nearly double the number of travelers processed."

Modifications were also needed to bring a Boeing 747 aircraft directly to Gate 2 — a first at AUS.

Race Day

AUS reconfigured and restriped its apron to accommodate extra traffic during the U.S. Grand Prix.

"Convenience for race-goers was a top priority for Austin," emphasizes DeVoy.

Byron Chavez, DeVoy's colleague who served as deputy manager for the project, devised a strategy to reconfigure the apron and restripe Gates 2 to 4 to accommodate the 747 along with heavier-than-usual traffic from smaller aircraft. "The change did accommodate the B747-400 aircraft at Gate 2 and passengers were routed through Baggage Claim and Customs effectively," reports Chavez.

By November 18, AUS had nearly 500 private and commercial jets on its airfield, ready to depart right after the race. At the peak of commercial activity, the airport had four times its usual amount of traffic, recalls Halbrook.

But AUS went beyond accommodating extra aircraft on the tarmac; it strove to deliver the "full Austin experience." To do so, it recruited 75 volunteers to act as airport and event ambassadors. Each wore a "Welcome Race Fan" button pinned to the front of a bright yellow t-shirt featuring the airport and racetrack logos.

Halbrook describes the ambassadors as "aviation enthusiasts who are thrilled to participate in area events." Volunteers and employees alike viewed a 10-minute customer service training video that stressed the importance of being fast, friendly and clean. AUS created the curriculum especially for Formula 1 events.

The facility itself was festooned with banners welcoming race fans and special kiosks were positioned strategically throughout the terminal to maximize passenger touch points, notes Halbrook. In total, nearly 4,750 guests visited the airport's Information Center and help kiosks.

Airport guests were even serenaded as they exited the terminal. "Providing a true taste of Austin, race fans were treated to live music with additional shows added specifically during peak arrival and departure times," adds Halbrook.

AUS also created a dedicated website with airport-specific information for the event.

In June, the airport's Grand Prix efforts were recognized with a first place award for customer service initiatives from Airports Council International - North America.

Typical Day

Exit Strategy

Anticipating more than 200,000 out-bound travelers, AUS reorganized its ground transportation network to avoid congestion and confusion. Hotel shuttles and taxis were separated onto different levels, and rental car returns were rerouted. To manage the return flow, intakes were redirected to respective brands' lots, where on-site staff accepted returns and shuttles stood ready to transport travelers to the airport terminal. In total, the agencies processed more than 5,000 rental contracts throughout the event.

Despite numerous successful modifications and accommodations, all of AUS' goodwill could have been negated if travelers got stuck at security checkpoints while trying to depart. So the airport tasked RW Armstrong to work with its staff and TSA to prevent such problems. Together, they opened an unused corridor of the airport and created a fourth security checkpoint for use during peak travel times.

The additional four-lane checkpoint opened on November 13 and increased the airport's passenger screening capabilities by 36%. According to Halbrook, waits during most of the Grand Prix event were less than 20 minutes. At 6:30 a.m. the day after the race, line times extended up to 35 minutes, but dropped back to 20 minutes just before 7 a.m., he notes. Prior to opening the fourth checkpoint, wait times had stretched well over an hour during other large events, such as Austin's South by Southwest music festival.

TSA officers set a new daily screening record at AUS by processing 21,725 passengers after the first U.S. Grand Prix, then promptly broke it after the 2013 race by more than 1,000 passengers. Most days, they screen 10,000 to 14,000 passengers.

With this year's race spanning Halloween weekend, TSA and airport officials are undoubtedly already making plans to accommodate more record-breaking crowds.

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Construction Projects Abound at Paine Field

By Robert **Nordstrom**

factsfigures

Project: Runway reconstruction, roadway work and tenant construction activity

Location: Snohomish County Airport, Paine Field, Everett, WA

Cost: Runway reconstruction, $8 million

Funding: $7 million Airport Improvement Program grant; $1 million local match

Engineering, Design and Construction Management: Reid Middleton Inc.

General Contractor: IMCO General Construction

Electrical Engineering: Elcon Associates

Geotechnical Engineering: GeoEngineers

Quality Assurance Materials Testing: Mayes Testing

Electrical Contractor: Sail Electric Inc.

Lighting Manufacturer: ADB

Paving Contractor: CEMEX

Striping & Thermoplastic Markings: Apply-a-Line

Roadway Barrier: Peterson Brothers

Of Note: Airport completed public & privately funded projects totaling about $80 million throughout 2013, including runway reconstruction, roadway work & Boeing-related facilities

The recent $8 million reconstruction of the general aviation runway at Snohomish County Airport, aka Paine Field (PAE), is not the facility's largest project by a long shot, but it was important nevertheless.

Located about 30 miles north of Seattle in Everett, WA, the airport houses flight departments for the Boeing Company and a number of its key subcontractors. But 650 other entities and individuals base aircraft there as well.

"While the (general aviation) runway reconstruction is a smaller project, relatively speaking; it is, quite frankly, of great concern for the bigger percentage of airport users," explains Superintendent of Operations Bruce Goetz. "Half of the airfield activity takes place on our general aviation runway. Boeing represents a small percentage of flight activity, but generates a huge percentage of the revenue that allows this airport to exist."

Bruce **Goetz**

The rehab was also the latest project in one of busiest construction periods in the airport's storied history. Between 2009 and 2012, PAE spent $27 million reconstructing its main 9,010-foot runway. Last year, it built and leased a $35 million facility that supports Boeing's Dreamliner production. (See sidebar on Page 22 for more details.)

It's been a very busy period at PAE, notes Deputy Airport Director Bill Dolan. In addition to completing the runway and building projects, crews constructed/reconstructed seven roads, upgraded the airport's stormwater drainage system, re-roofed three buildings, built nine acres of new ramp, laid one mile of new pipeline for jet fuel, and constructed 300,000 square feet of new tenant buildings.

Bill **Dolan**

Problem Solved

With more based aircraft and hangar space than any other airport in the state of Washington, PAE was more than ready for a new general aviation runway. Runway 16L-34R was not only experiencing age-related asphalt deterioration, it also had another, more unique, issue that needed to be corrected.

The issue was borne out of original design compromises made when the runway was constructed in 1986. "In the 1980s, we had a relatively short air traffic control tower — about 90 feet tall," explains Dolan. Designers consequently elevated the central section of the runway to allow controllers to see aircraft over the roofs of storage hangars. The compromise worked for years, but created some "tricky grades coming off the runway that were less than ideal," recalls Dolan.

In 1999, a new 181-foot tower was constructed, which eliminated the line-of-sight problems for controllers. But there was still a problem: The hump was tall enough to create line-of-sight problems for aircraft operating between 9 p.m. and 7 a.m., when the tower shuts down.

"Aircraft moving from the central ramp to the east ramp couldn't see each other when entering the runway," explains Dolan. "They could see each other when they got to the top of the runway and they should be announcing their intentions on the common traffic advisory frequency. We never had an accident, but, bottom line, we were less than thrilled about the situation."

The recent reconstruction of Runway 16L-34R presented PAE with a valuable opportunity to remove the hump. By lowering the central section of the runway four feet and raising the north end two feet, designers measurably improved visibility for aircraft on the parallel taxiways, Dolan reports.

Approximately 53,000 square yards of asphalt were demolished and stockpiled for later use on airport road projects, and 75,000 cubic yards of soil were removed to lower the runway profile. Nearly 30,000 cubic yards of materials were imported for the new runway subgrade, and 10,000 tons of P-401 asphalt paving were set in place. Crews also installed 30,000 linear feet of underground drainage pipe, 18,000 linear feet of conduit and wiring, 277 LED taxiway lights, 43 LED runway edge lights and 10 LED mandatory airfield hold signs.

In addition, a section of PAE's east perimeter road was lowered about seven feet to resolve ongoing problems with vehicle height restrictions in the runway's protection zone.

Underground Surprise

PAE closed its general aviation runway on May 20 and moved traffic to its main runway, 16R-34L, to facilitate reconstruction. Reid Middleton, the project's design, engineering and construction management firm and general contractor IMCO General Construction had 46 calendar days to complete all of the runway work.

"The timeframe to remove the old runway and replace it was extremely tight," reflects IMCO Senior Project Manager March Rocha. "Normally, for a project like this, we would easily be at 180 calendar days."

Project planning was key to meeting the deadline, Rocha emphasizes. "One of the biggest challenges was getting all of the import materials staged ahead of time," he recalls. "On Day One, when the runway closed, we had 25 trucks and trailers hauling 12 hours a day to stockpile materials. It took us three weeks to import and stockpile, and one week to complete full demolition of the old runway."

With construction on schedule to meet the July 18 runway opening, the project hit a snag. When IMCO crews ground pavement off to lower the east perimeter road, they found fiber optic cable just beneath the surface. Although the existence of the cable was not a surprise, its shallow depth was. Project designer Reid Middleton knew that a large bank of fiber optic cables servicing the Boeing facilities lay under the road and had asked the local utility company to specify the depth of the conduit. The utility dug three 13-foot exploratory holes, found nothing and gave crews the go-ahead.

Boeing is Big Business at Paine Field

Built in 1936 as a Depression-era Works Progress project, Snohomish County Airport/Paine Field (PAE) in Everett, WA, has been home to the Boeing Company since 1966. In October, the company expanded its on-field presence once again with a new $35 million facility for its four Dreamlifters, the giant aircraft that land at PAE and unload assemblies for the production of 787 Dreamliners at the company's nearby plant.

The new Dreamlifter Operations Center sits on approximately 18 acres and includes a 26,000-square-foot pre-engineered building that serves as an equipment shelter. It also houses a three-story 31,600-square-foot maintenance complex with 11,600 square feet of office space. Airside, the center includes 13 acres of airfield pavement and hydrant fueling locations for three wide-body aircraft.

In addition to acting as home base for the four Dreamlifters, the new facility also provides maintenance services to the "racks" that hold the Dreamliner parts while in transit. With the new facilities, Dreamlifters are able to land, unload, refuel and depart in less than two hours.

The four-engine Dreamlifter, which is a converted Boeing 747-400, provides 65,000 square feet of cargo space — one of the largest cargo aircraft in the world by volume. The aircraft transports Boeing 787 fuselage sections to PAE from the company's facility in North Charleston, SC. It also ferries wings from Japan to North Charleston and PAE; and flies fuselage subsections from Italy to North Charleston.

In June, B/E Aerospace, a Boeing subcontractor that manufactures passenger cabin products for commercial and business jets, opened a new $30 million facility at PAE. The company leases the facility from Capstone Partners, which built it on a 15-acre ground lease with the airport.

Aviation Technical Services, the largest third-party aircraft inspection and repair facility in North America, is based at the airport as well.

The airport is also a tourist destination that draws about 250,000 annual visitors to the Future of Flight Aviation Center & Boeing Tour, the Flying Heritage Collection, the Historic Flight Foundation and the Museum of Flight's Restoration Center.

An economic impact study conducted by Washington's Department of Transportation found that the airport and its tenants have a $19.8 billion economic impact on the region and state. In addition, the airport and its associated businesses generate $79 million in tax revenue to the local and state governments.

The recent $8 million reconstruction of PAE's general aviation runway followed the $27 million reconstruction of its 9,010-foot main runway.



The utility company had dug in the wrong spots, explains Reid Middleton Project Manager Karla Kendall.


Karla **Kendall**

Lowering the cable to the proper depth was not an option, because that would have required shutting down service to Boeing for three to four weeks. So Reid Middleton went back to the drawing board and devised a new solution. Designers separated the northbound and southbound lanes, and created a concrete meridian to contain the fiber optic cables.

"It added to the cost and delayed the completion of the project considerably," Kendall recalls. "Although the runway work was completed on time, we couldn't open it until August 29, when the road work was done."

On the upside, the reworked design allowed the airport to protect its largest tenant — without disastrous financial consequences. "We were very fortunate to have a great working relationship with the people in the FAA's district and regional offices," Dolan explains. "They worked with us and came up with additional funds for much of the added costs we incurred.

"We had a contractor with a lot of expensive equipment on site and needed to offer a direction; and that direction couldn't be 'cut the cable.' In hindsight, it felt like everything was moving in slow motion. But everyone worked together to resolve the problem and get us a finished product."

The team's lemons-into-lemonade perseverance moved the project forward, he reflects, and the new 3,004-foot runway has been getting a workout ever since.

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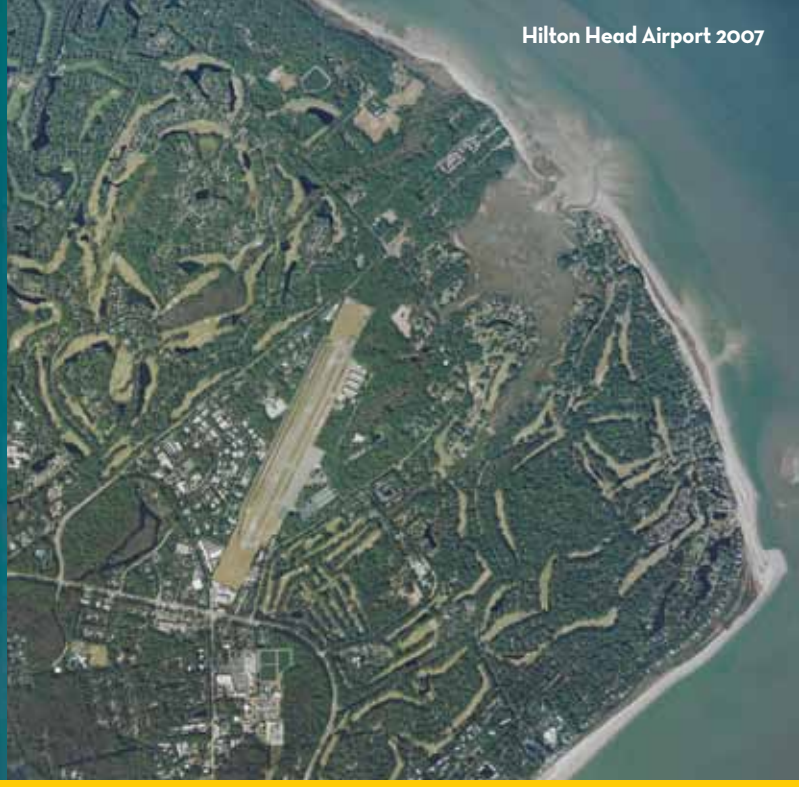

South Carolina Creates Software to Facilitate

factsfigures

Project: Land-Use Compatibility Software

Developed For: Local planners & developers

Developed By: South Carolina Aeronautics Commission

Cost: $500,000

Funding: 90% FAA, 10% SC Aeronautics Commission

Components: Geographic Information System platform integrated with existing hardware

Airports Affected: 68 public-use facilities

Availability Target: June 2014

Software Design: Woolpert

Software Testing: Montgomery Consulting Group

Criteria Development: Mead & Hunt

Airspace Surface Development: Capitol Airspace Group

Benefits: Preventing commercial & residential developments from encroaching on airport operations & expansion plans; improved safety

The South Carolina Aeronautics Commission (SCAC) is developing a software program to help local land-use planners assess whether proposed commercial and residential developments are compatible with airport operations and safety zones.

A law enacted last year by the South Carolina legislature spurred the $500,000 project. Title 55, as the law is known, effectively requires local planning agencies to involve state aviation authorities in decisions about development around airports. SCAC led the push for the new legislation.

If the software program is successful, it could serve as a national blueprint for airport officials in other states who want to protect airports from adjacent developments that threaten to stifle growth plans and/or pose safety hazards.

The land-use assessment software, which will be accessible via the SCAC website and use the agency's Geographic Information System (GIS) platform, is expected to be operational by June. The software is designed to help local planning and permitting agencies comply with the law, which requires them to ensure that proposed developments don't interfere with South Carolina's 68 public-use airports, explains Mihir Shah, lead aviation planner for the state aeronautics commission.


Mihir **Shah**

FAA is funding 90% of the software project via an Airport Improvement Program grant, and SCAC will pay for the balance, Shah reports.

"In general, development around airports has become a problem in the last 15 years or so, especially during the housing boom," he notes. "These airports are engines in their local economies, and to encroach on them with incompatible land use reduces their utility. We're basically eroding the economic value of our airports."

Inconsistent Enforcement

Although most counties in South Carolina have standard height and hazard ordinances that limit the elevation of trees and other structures near airports, local officials don't always apply them, notes Shah. Additionally, land-use planning projects performed by third-party consultants are sometimes inadequate, he adds. In rare cases, structures are erected without building permits.

Inconsistent enforcement has backed many South Carolina airports into untenable positions and blocked their expansion plans, observes Shah. In short, it's hard to extend a runway when there's a 500-home subdivision in the way.


Mount Pleasant Regional Airport 1995


Mount Pleasant Regional Airport 2007

Airport-Friendly Development

By Ken **Wysocky**

"In some cases, we've seen airports close down and build new facilities (elsewhere) because the development around them got out of control," says Paul Akers, senior associate and geospatial aviation project manager for Woolpert, the design, geospatial and infrastructure-management firm that's quarterbacking the software project. "Some communities are effectively shooting themselves in the foot by approving bad developments."


Paul **Akers**

Shah points to Hilton Head Airport (HHH) as a facility that demonstrates the need for Title 55. An aerial photograph taken in 1973 shows the airport surrounded by vast swaths of green, undeveloped land; a photo of the same area in 2007 shows the airport beset by developments on nearly all sides.

"It's essentially now shoehorned into its location," he relates. "In 1973, there was almost nothing around it."

Aerial photos taken of Mount Pleasant Regional Airport (LRO), just outside of Charleston, demonstrate that development also squeezes general aviation airports. Photos from 1995 and 2007 show a similarly dramatic increase in residential development around the once-rural airport.

"There used to be nothing but forests around it, then subdivisions popped up," Shah notes. "God forbid if a plane ever veered off course."

Compatibility Questions

According to Shah, SCAC hopes Title 55 will "put more teeth" in height-and-hazard standards and land-use ordinances. The new statute also requires local planning and building departments to notify the aeronautics commission of developments proposed within specified zones around the airport.

"We developed a template of airport safety zones and airport land-use zones," he explains. "The county or municipality in which the development is proposed has to notify us and, by law, we have 30 days to comment on whether it's compatible or not. Then, it's up to them to issue a permit."

The software currently in development will speed SCAC's turnaround time, adds Shah. Local governments who want to issue permits more quickly could receive a compatibility assessment in as little as seven to 14 days.

If an agency approves a proposed development but SCAC determines that it presents a clear and present danger to an airport, the commission has the right to take legal action to stop it from proceeding.

Any citizen or developer will have access to the SCAC website to perform a preliminary analysis on a prospective development's compatibility. If they decide to proceed, they can notify the local planning agency with jurisdiction, which then logs into the system and creates a case file and begins the official assessment. Akers compares the process to using on-line tax-preparation programs, which walk users through a series of questions, and each answer prompts further analytical questions.

"Basically, they start by picking a point on a map," he explains. "Then, it starts asking them a series of questions, such as the height of the structure, for example. Each answer is evaluated against certain criteria.

"If the height is okay, it proceeds to land-use issues – for example, is it residential or commercial, high or low density and will it include storage of fuel or hazardous materials. After all the questions are completed, the program comes up with a scorecard and tells the agency if the project is compatible, conditional or incompatible with land-use zones around the airport."

Surrounded: Why Do Incompatible Developments Plague Some Airports?


Mihir **Shah**

The passage of legislation that requires local planning agencies in South Carolina to work with the state aeronautics commission raises an interesting question: How and why do airports get surrounded by incompatible developments?

The reasons vary in South Carolina, says Mihir Shah, lead aviation planner for the state aeronautics commission. Based on years watching South Carolina's airport scene, he offers the following food-for-thought observations about how political clout, policies and public perception affect development around airports.

- Management — especially at general aviation airports — often focuses on day-to-day operations at the expense of long-term planning. "It takes a broader, proactive perspective for airports to be successful partners in local land-use management," explains Shah.
- Commercial-service airports are typically more successful than general aviation facilities in partnering with local governments to manage land-use compatibility, as they have the in-house expertise and resources or are better able to hire specialized consultants. "But (commercial airports) can still run into occasional permitting challenges," he notes.
- An active real-estate development industry — especially in coastal regions and around major metropolitan areas — sometimes wields a disproportional amount of influence in local development issues. "Airport-compatible land use unfortunately can fall through the cracks without an equally vocal champion," cautions Shah.
- Sometimes the general public does not look favorably on its local airport. Such sentiment can result in energized groups that stop airport expansion instead of focusing on effectively managing the land around it in a compatible manner.
- Airports and their consultants often prefer to lay more pavement than manage surrounding land. Economically and politically, it's far easier to extend a runway on existing airport property than to change zoning ordinances or obtain new land and/or easements — especially in states where private property rights are highly valued. "A runway extension gets a ribbon-cutting and a press release, while obtaining an aviation easement or enacting a zoning ordinance does not. In fact, it may receive negative press instead," he explains.
- The criteria in FAA grant programs and policies often make it easier for airports to invest in construction projects, rather than implement land-acquisition and management programs.
- FAA land-use compatibility guidance, standards and metrics are largely limited to height, noise and wildlife-attractant issues, with less-specific guidance about density of developments (as measured by occupancy or persons per acre). This poses a challenge for local governments — and state airport commissions — to develop tools for land-use standards, as there aren't always national FAA standards to apply.

If a proposal is compatible, the local agency can issue a permit. If a development is judged incompatible or conditional, the local planning agency can suggest that the developer move the project to a more compatible spot on the property, find another location or perhaps change the project's design by altering the height of a building, for instance. A local planning agency or developer that receives an incompatible or conditional finding can also ask for an additional SCAC review.

In addition to Woolpert, three other consultants are helping the state aeronautics commission develop the software. Land-use planning consultant Mead & Hunt is refining and documenting the various airport zones and compatibility criteria; Capitol Airspace Group is developing the airspace surfaces for individual airports; and Montgomery Consulting Group is testing the software.

"We're using an agile development approach to develop the software and the maps … the contractors can deploy them and play with them and make changes as needed," says Akers.

Setting an Example

South Carolina officials see Title 55 as breaking important new ground. Kansas and Washington offer developers an airspace-analysis tool that evaluates project-elevation data, but it doesn't include mechanisms to assess land-use compatibility or regulate development permits.

"So developers there can still build a high-density residential development next to an airport, as long as the height is okay," Akers explains. "Nothing out there compares to South Carolina's more comprehensive approach to this issue."

Akers consequently foresees other states emulating South Carolina's approach. "I think it will start a trend and get people thinking about all the implications (of incompatible development)," he predicts.

So far, local planners in South Carolina appear responsive to the Title 55 requirements. According to Shah, the commission is already fielding e-mails from planners who want to know what SCAC thinks about potential projects.

"The dialogue has already started … and we're developing relationships with local planners," he observes. "Historically, we haven't worked closely with local land-use planners, who are the eyes and ears on the ground. This (website) technology is cool and fun, but if we can't get trust and buy-in from planning officials, they may not make it a priority or will do it grudgingly and it won't be as effective as it could be.

"We want them to feel good about sharing information," he adds, noting that local planners typically support home rule and sometimes resent state-government intrusion. "We want to ensure they're our partners fairly early in the process. And we're not just talking about always saying no to things. We want to say, 'You can put a mall or a factory here, just not over here.' We want to collaborate with these folks, not throw another statute at them."

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Private/Public Partnership Building New Terminal at Iqaluit Int'l

By Jodi **Richards**

factsfigures

Project: New Terminal; Support Services Building; Airfield Improvements

Location: Iqaluit Int'l Airport (Nunavut, Canada)

Terminal: 10,000 sq. meters

Maintenance Building/Fire Hall: 45,000 sq. meters

Runway & Apron Improvements: 400,000 sq. meters

Development Mechanism: Public/Private Partnership

Contract Term: 30 yrs.

Owner: Government of Nunavut

Private Consortium: Arctic Infrastructure Partners, comprised of Bouygues Building Canada; InfraRed Capital Partners Limited; Sintra; & Winnipeg Airports Authority

Operations & Maintenance: Nunavut Airport Services, a subsidiary of Winnipeg Airports Authority

Design: Stantec

Construction: JV BBV-Sintra

Geotechnical: EBA

Snow & Wind Modeling: RWDI

Located in the unforgiving Canadian Arctic on Baffin Island, Iqaluit International Airport (YFB) is literally a lifeline to residents of Nunavut, Canada's northernmost territory. As such, a private/public partnership has been established to develop a new terminal and airfield to meet the current and future needs of the region. Nunavut officials estimate improvements at $250 million to $300 million.

YFB's 20,000+ annual operations serve needs that are both diverse and critical. Because of its location at the intersection of the High Atlantic and Polar air routes, the currently government-owned airport serves a strategic role in both military and civilian aviation.

On the local side, YFB is the only all-season transportation link for Nunavut, a territory of 25 communities spread over 2 million square kilometers, with no roads connecting them. On a broader scale, the airport is also important for trans-Atlantic air navigation, wide-body medical diversions, North American air defense, search and rescue operations, and resupply/support to North Warning System, Canadian Forces Station Alert and Thule Air Force Base in Greenland. Additionally, the International Civil Aviation Organization and Transport Canada have designated YFB as an international alternate use airport (refueling only), and it is a designated port of entry under the Canada Customs Act.

Private/Public Partnership

Improvements at YFB are being designed, financed and operated under a private/public partnership (P3). On the public side, the project is partially funded by PPP Canada, a federal Crown corporation. The government of Nunavut selected the private partner, via a request for proposals process. It contracted Arctic Infrastructure Partners to finance, design and build the project, as well as operate and maintain the airport for 30 years. Arctic Partners is consortium of Bouygues Building Canada, InfraRed Capital Partners Limited, Sintra and the Winnipeg Airports Authority (WAA).

Currently, YFB is operated by Iqaluit International Airport Division, Department of Economic Development and Transportation. But on July 21, 2014, Nunavut Airport Services, a subsidiary of WAA, will take over day-to-day operations and maintenance.

"Strategically, it's a great fit for us," says Michael O'Gorman, vice president of operations at WAA. Winnipeg International has direct flights to YFB and recently completed its own terminal improvement program.

P3 projects are attractive to governments for several reasons, including cost certainties, schedule certainty and value for money, explains Stanis Smith, senior vice president at Stantec, the architectural firm for the project. The P3 process also encourages innovation, adds Smith.

A 2010 feasibility study performed by PricewaterhouseCoopers indicated that the airport was appropriate for P3, notes Noel Best, principal at Stantec.

Improvements at YFB will include three main components: a new terminal building; a new combined services building to house maintenance and the fire hall; and runway and apron improvements, including a new taxiway and the resurfacing of the runway.


Michael **O'Gorman**


Stanis **Smith**


Noel **Best**

Construction is expected to begin in the spring, with the new facility becoming operational for the public in August 2017. According to Best, it was important for the government to have a very clean transfer of operational responsibilities. "They felt it would be better if the consortium was actually running the existing airport and was responsible wholly for the transfer, rather than having the new start-up day also being the transfer day," he explains.

Arctic Logistics

With construction beginning this spring, planning, coordination and pre-construction work have been underway for a long time. Nunavut's extreme climate not only limits the construction season to four or five months, at the most; it also complicates logistics, because the local bay is frozen for about eight months of the year.

"Everything has to come in by ship; and if you miss a shipment, you have to fly parts in at great expense," Best says. "The preplanning for getting material up there is a major part of both the design of the building and the construction. Right now, there is material that has been shipped up already for this project, and we have to accelerate all of our steel design so that it is complete within the next two months so we can do the shop drawings and

Design of the new terminal will take into account the local culture and climate.

have all that steel constructed down south and on a boat before the freeze-up next fall."

As soon as construction crews are able, likely in April, the steel will be erected in an all-out effort to beat the next freeze.

The Arctic weather also affected the facility's design at an elemental level. Because the terminal would be built on permafrost, it was crucial for Stantec to ensure that heat would not escape from the building and cause settlement problems by thawing the permafrost. To combat this, designers employed a thermosiphon system — a passive series of looped pipes that disperses heat radiating from the building away from the structure itself, so the ground below the system of pipes remains frozen at all times. "We're actually cooling the ground," remarks Best.

Improvements at Iqaluit

YFB's new terminal, which will be built on a Greenfield site, is slated to be just shy of 10,000 square meters — three times the size of the existing facility. The air traffic control tower will remain on the existing terminal building, but the building itself will be repurposed. According to Best, the existing terminal is in "fine shape" but is too small for the airport's operational needs. "[The government] wanted an airport terminal building which would meet the demand over the term of the contract, which is 30 years," he says.

Best notes that there were three "guiding principles" behind the design of YFB's new terminal: to leverage new technologies and systems; to be responsive to the extreme local environment; and to make it culturally sensitive and appropriate to the region.

The referential design presented by the government for the bid process was a two-level concept. Even though the airport authority could not afford bridges at the time, it wanted the new terminal to be capable of accommodating boarding bridges at a later date.

Drawing on experience from a previous project, Stantec specified ground loading bridges instead of a conventional bridge that transfers passengers from a second floor down to the aircraft — thus, changing the design of the passenger portion of the terminal from a two-level to a single-level layout. In so doing, the walking distance for passengers is cut in half and the need for escalators/elevators is eliminated, explains Smith.

"We were able to come up with a scheme that was more efficient — from a design point of view, from a volume point of view, from an area point of view — and a scheme that was much more passenger-friendly," he relates.

The overall terminal structure will still be two levels, but the upper level will only be used for mechanical and office space. A single-story approach is prudent for the passenger portion, given the extreme local weather, notes Best. "By keeping the public on the one floor,

we were able to minimize both the volume of the building area and the surface area of the building," he explains.

Local Inspiration

According to Smith, the new terminal will have a "unique and distinctive sense of place and really celebrate the art of the region."

The design of the overall building form accounts for Nunavut's prevalent wind and drifting snow with an upper floor that is considerably smaller than the lower level. A curved roof reduces the potential for snow drifting on the roof and also gives the building an expressive form and profile of an igloo. "That's where the culture and technology and sensitivity of the environmental issues all come together," Best explains.

The public space in the center of the terminal is like a village square, but is circular in shape. While there are no overt references to igloos, the circular form relates back to the environmental and cultural form that is common in the region, notes Best.

Daylighting is particularly important for buildings in Nunavut, because of its cold climate and high energy costs. The new terminal is designed to be predominantly daylit for about two-thirds of the year, which, in turn, required precision regarding the efficiency of the terminal's envelope. "Getting the balance right between the quantity of windows, where they're located, with the insulation values of the overall envelope is a very fine balance," he notes.

Displacement ventilation was incorporated to provide heating and cooling at passenger level, rather than from the ceiling. This saves energy costs by only conditioning space that is occupied, Smith explains.

An innovative system of generators within the building not only provides heating, but also generates electricity. It will provide a degree of independence from the local grid, which is not completely reliable, and also save energy costs, says Best.

Overall, YFB's new terminal is designed to a "high degree of sustainability," reports Smith. Designers anticipate that it will receive certification from the U.S. Green Building Council for Leadership in Energy and Environmental Design.

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Photo Credit: Robert Pepple, Pepple Photography

New Terminal Shines at Southwest Georgia Regional

By Jennifer **Bradley**

ABY
Southwest Georgia Regional Airport

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Project: New Terminal & Parking
Location: Southwest Georgia Regional
Total Cost: $18 million
Terminal Cost: $10.8 million
Funding: 72.2% FAA; 27.8% local
Terminal Size: 26,000 sq. ft.; 34,800 gross sq. ft. under roof
Ground Broken: March 2012
Facility Occupied: Aug. 2013
Engineer/Architect of Record: Michael Baker Jr.
Local Architect: Maschke Associates
General Contractor: Walbridge
Flight Info Displays: Infax
Manufactured Stone: Arriscraft
Design Details: 2 drop-off canopies; 2 covered porches; manufactured stone facade; metal wall panel system; 8 different roof materials

Yvette Aehle never dreamed she would be so enthused about bathrooms. But after running Southwest Georgia Regional Airport (ABY) for years without any facilities past the TSA security checkpoint, her excitement is completely understandable.

Yvette **Aehle**

New post-security restrooms are just one of the noticeable upgrades in ABY's $10.8 million new terminal, a contemporary building unlike any other in the region. The new facility is also the showcase project of a three-phase $18 million redevelopment plan nearing its end.

A new terminal had been high on Aehle's list of missions to accomplish ever since she began her tenure at ABY in the summer of 2004; but multiple airfield projects needed to be addressed first. After the airfield work was completed in 2008, she promptly began discussions about a new terminal. Because the project had been on the airport's capital improvement plan for years, the FAA was not at all surprised to hear Aehle's intentions to move forward.

"We had done the best we could to keep it going and looking viable," she says of the previous 1958 terminal. "It did not make a good impression of the city of Albany at all, however."

Michael Baker Jr. Inc., the airport's general consultant for 28 years and engineer/architect of record for the terminal project, began the planning process by debating whether to build the new terminal on a separate airport quadrant or adjacent to the original terminal. While building onto or near the existing facility would provide operational challenges during construction, a more remote site would require the extension of utilities. Ultimately, the airport decided to build its new terminal where airplanes were parking and extended the apron further onto the airfield.

Walbridge, general contractor for the project, broke ground for the new

Photo Credit: Robert Pepple, Pepple Photography

26,000-square-foot facility in March 2012, and the two-gate terminal previously used by Delta Air Lines was displaced. In August 2013, ABY moved into its new facility.

Mike **Reiter**

The Next Generation

Mike Reiter, senior project manager with Michael Baker Jr., describes the new terminal as the inverse of the old one: modern, cheery and bright rather than dated, dark and dingy.

The new design speaks to the progressive culture of aviation across the country, adds Aehle. "It's quite shocking — not what you would see in Albany, GA," she explains.

While most of the local architecture is classic Williamsburg, with red brick and white columns, the airport is sleek stone, with a roofline that resembles the curve of an aircraft.

Creating an atmosphere that would attract passengers to fly from Albany, rather than trek three hours to fly from Atlanta, was an important objective of the project, notes Aehle.

As for highlights, she cites the new terminal's "stunning amount of natural light," the 28-foot ceiling in the main corridor and the terrazzo flooring used throughout. Neutral colors provide a palette that won't go out of style, as the previous terminal's teal/gray combination did, she adds.

Free Wi-Fi is now available throughout the building, and electricity is provided in 25% of the post-security seating.

Even the music played in the new terminal was handpicked. "When we open at 4 a.m., it's a spa/New Age feel, and it gets progressively faster throughout the day," says Aehle. "It's another way to create a welcoming atmosphere."

Together, the various aesthetic upgrades make a world of difference, notes Reiter. "The energy and impact that having a new look brings to a community can't be overvalued," he emphasizes. "You can't put a price on how you appeal to your customers."

Mike **Leath**

Mike Leath, construction services manager at Michael Baker's Columbia, SC, office, is similarly pleased with the transformation at ABY. "It's like going from the Old Woman in the Shoe to Cinderella's castle," he says with a laugh.

Wants vs. Needs

Aehle knew upfront that a project of this magnitude would be difficult to fund. And about the same time she began discussions with Michael Baker, President Barack Obama issued a round of stimulus money for "shovel-ready" projects.

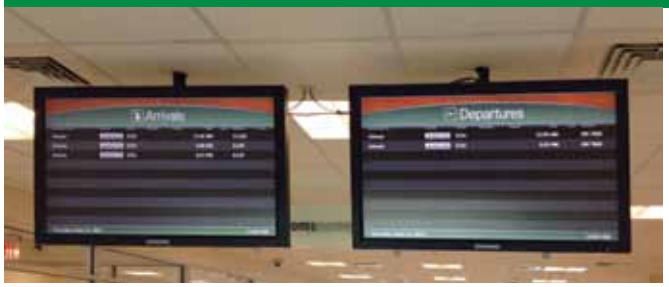
"We set a very aggressive schedule to go for it," recalls Aehle.

Ultimately, the airport did not quality for stimulus funds, but the FAA still strongly supported the project, she explains. Each year, the airport received discretionary funds to make the new terminal a reality.

"Phasing complex projects enables airport sponsors to facilitate project scheduling, effective project management and promotes project quality," says an FAA representative. "Phasing also allows the FAA to provide funding for projects at many airports each year." It is not uncommon, adds the representative, to provide Airport Improvement Program funding for airport projects over the course of several years.

In the end, FAA funded 72.2% of the $18 million redevelopment project, and 27.8% was funded with proceeds from a local option

The new terminal includes 11 new flight information displays.



sales tax. The citizens of Albany approved the funding via a special referendum. The Georgia Department of Transportation also contributed $269,900 to the building construction. "They were very helpful during the process, giving us every bit they could with their budgetary constraints," says Aehle.

In retrospect, Aehle says that working with a firmly fixed budget was the biggest challenge of the project. Making numerous change orders was not an option, she recalls, noting that the airport relied on the "skilled teams" at Michael Baker and Walbridge to ensure the project was completed as planned, within budget. "We had one change order for $64,000 in the entire project, which is unheard of in a project this size," she relates.

Luke Frey, assistant project manager with Walbridge, says that the company's value analysis/value engineering process helped ABY get the terminal it wanted at a price it could afford.

Luke **Frey**

Overall, Walbridge identified roughly $564,000 in value-added savings to the airport, 99% of which were accepted. The biggest was changing the material used on the building's façade from natural limestone with marble accents to an Arriscraft manufactured stone.

"We found places where we could save money to pay for overages in other places," Frey explains. Value-engineering notwithstanding, the airport contains a lot of high-end material such as tiling, stainless steel, terrazzo and extensive windows, he notes. "The whole thing was high-quality," adds Frey. "Their aim was to build a facility that's going to last for many years."

When all was said and done, the project came in $3,000 under budget, reports Leath. "We had a good relationship with Walbridge," he recalls, noting that a willingness to consider alternate strategies made it possible to finish under-budget.

It was a continual battle of wants versus needs, Leath recalls. While lights in hanging installations were eliminated, terrazzo flooring remained in the plans. New flight information display

monitors were on the list of definite "must haves." Installation of 11 new Infax monitors lasted three days.

According to Reiter, detailed planning was a major factor in the financial success of ABY's project, and he strongly urges other airports not to be stingy with upfront planning. "That advance time of identifying and logically sequencing each of the overall project elements pays dividends further down the road in the design and construction process," he explains.

Working with TSA and the airlines — reaching understanding and compromise during operational changes — was an important part of the planning phase, he elaborates. Everyone came to appreciate the efforts and help each other, Reiter adds.

A lot of coordination and conversations between the design team and contractor helped problem solve issues ahead of time, agrees Leath.

Albany's New Storefront

Like many airports, ABY experienced design strains after 9/11. "The security checkpoint had grown out into the lobby, and we had to remove passenger seating to accommodate it," explains Aehle. "I knew something had to change."

Lack of restrooms and access to refreshments post-security proved to be a major problem. But today, ABY has "joined the modern age."

With its new post-9/11 layout and updated look, Leath considers ABY's new terminal a "showpiece for the area." Frey agrees, adding that the airport now has a "high-end South Beach appeal" more typical of larger airports.

"It's a really impressive building and a beautiful new gateway to the community," says Reiter. In retrospect, he realizes that he didn't really appreciate how uninviting the previous facility had become until the new one was built. "This is what I want people's first impression to be when they land in my community," he says.

Reiter considers it important to breathe life into airport facilities frequently, because they serve as the "storefronts" to entire communities.

With its new storefront complete, ABY is beginning work on the third and final phase of its $18 million redevelopment — demolition of the previous terminal and construction of new rental and short-term parking lots. Airport officials expect Phase 3 to be finished by August.

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Self-Service Passport Readers Reduce Wait Times at O'Hare Int'l

By Nicole **Nelson**

In an ongoing effort to improve the arrival process into the United States, the recent installation of Automated Passport Control (APC) kiosks has proven to be a "game-changer" at Chicago O'Hare (ORD) and a handful of other international hubs embracing the relatively new technology.

The expedited customs entry process was first activated for U.S. passport holders at Vancouver International Airport, where the system originated and was debuted last May as a substitute for the traditional paper-based declaration card route. Prior to U.S. Customs and Border Protection approving the Vancouver Airport Authority's innovation in the States, the Chicago Department of Aviation took a gamble on the touch-screen kiosks in February 2013, when it committed to pioneering the APC system on U.S. soil to reduce wait times that Rosemarie Andolino, commissioner of the Chicago Department of Aviation, deemed deplorable.

Rosemarie **Andolino**

"We had a terrible summer the previous year – just like most airports around the country – and we had to figure out a solution, because it was just unacceptable," Andolino relates. "We wanted to improve our customers' experience for the upcoming summer travel season because we couldn't continue to welcome our international guests that way, nor our U.S. guests that were coming to our airport."

A meeting with ORD stakeholders that included air carriers, Customs and Border Protection, two Illinois senators and Chicago's Congressional representative validated a $2 million investment in passport-reading equipment. ORD was approved to activate 32 APC kiosks for eligible U.S. passengers in July 2013; and the subsequent results have been resounding.

Shorter Wait Times

"Automated Passport Control takes the U.S. passport holder out of the main line, and allows us to use our Customs agents for our international guests, while our U.S. passport holders basically self-service," explains Andolino. "By doing that, we have reduced our processing times dramatically. Wait times during peak arrival periods have been reduced by 3%."

All passengers arriving on international flights are still routed to a Customs and Border Protection officer, she adds, but the total time to finalize processing for U.S. passport holders is minimized.

MIAMI INTERNATIONAL AIRPORT

CHICAGO CDA DEPARTMENT OF AVIATION

factsfigures

Project: Automated Passport Control Kiosk Installation

Location: Chicago O'Hare Int'l Airport

Airport Authority: Chicago Dept. of Aviation

System Provider: Vancouver Airport Authority

Project Timeline: Feb. - July 2013

Cost: $2 million

Key Benefit: Wait times during peak arrivals have decreased 33%; wait times of more than 1 hour have decreased 60%; frequency of missed connections has decreased dramatically

Since the APC debut, the number of passengers waiting more than one hour for Customs processing has been reduced by nearly 60%, and the incidence of passengers waiting over two hours has been nearly eliminated, reports Andolino.

Beyond improving customer service, the kiosks have also delivered compounding operational benefits.

"The big eye-opener apparent immediately was in the misconnecting passenger volumes," says Andolino. ORD's two major hub carriers, United and American Airlines, saw misconnects decrease by 62% and 76%, respectively. "We have had much happier customers as well as airlines, and that equates to real money, and real time," she adds.

Milton Uribe, Chicago station manager for Iberia Airlines of Spain, had a front row seat for the introduction of automated passport readers at ORD, and he considers the self-serve kiosks a positive catalyst for change. Uribe estimates that in 2012, up to 40% of the airline's passengers missed their original connecting flights. "We were having a pretty good downfall," he recalls. Since the implementation of APC in 2013, Uribe says that misconnections are down to about 8% or less. In addition to reducing customers' frustration about rebooking, the airline is also saving a substantial amount of money previously spent on hotels and meal expenses for passengers stranded overnight, he notes.

"We took a huge gamble," says Uribe, of the decision to install APC equipment. "But we knew that it was going to work. We knew that it was going to be a game-changer; and it is. Now, every airport would like to follow through with what Chicago is doing."

The success of automated passport readers at ORD has consequently paved the way for its use at Chicago Midway International, where six kiosks are expected to be operational by early 2014. Other airports have also taken notice of Chicago's success with APC and are following suit. In October, John F. Kennedy International in New York debuted 40 kiosks purchased by Delta Air Lines.

New Options

As the product that was quickest to market and first approved as a trusted product by U.S. Customs and Border Protection, Vancouver Airport Authority's APC unit has also sparked competition. Just before Thanksgiving, SITA premiered 36 of its APC kiosks at Miami International's North Terminal.


Ken **Pyatt**

Ken Pyatt, deputy director of the Miami-Dade Aviation Department, notes that the SITA/Vision-Box units can self-adjust to the height of each passenger and include biometric technology that the airport may deploy in the future to further enhance security.

Bells and whistles aside, Pyatt says APC kiosks have been effective in segregating the backlog of incoming passengers. "In general, our 36 kiosks collectively do the work of nine inspectors," he reports. "That is a real benefit."

As more APC units are deployed at U.S. airports, the program continues to expand. In addition to eligible U.S. passport holders, Canadians holding a B-1/B-2 visitor visa for business, pleasure or medical treatment may now use the automated kiosks.

"APC is a game-changer, as you can tell by (our) numbers," says Chicago's Andolino. "Now, with the addition of the Canadian passport visa holders and more to come, it really will continue to improve our facilities for international guests, and our local guests, people coming home, too."

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Runway Rehab Paves the Way for Awards at Tri-State Airport

By Rebecca **Kanable**

HTS HUNTINGTON TRI-STATE AIRPORT

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Project: Runway Reconstruction

Location: Huntington (WV) Tri-State Airport

Owner: Tri-State Airport Authority

Runway: Runway 12-30

Size: 7,016 x 150 ft.

Cost: $9 million

Project Engineer: Kimley-Horn & Associates

Prime Contractor: West Virginia Paving

Electricians: Barnes & Powell

Excavation, Sub-grade & Base Course Preparation for Shoulders: Mountaineer Contractors

Crack Repair: Affordable Asphalt Maintenance

Asphalt Milling: Boca Construction

Site Security: Cherokee Enterprises Corp.

Pavement Marking: Mid Atlantic Maintenance

Runway Grooving: Cardinal Grooving

Asphalt Coring for Runway Lights: Diamond Concrete Cutting

Lighting (in new paved shoulders): ADB Airfield Solutions

Transformers & Connector Kits: Integro

Fiberglass Reinforcing Mesh: Tensar Int'l

Security Fence & Gates: All Quality Fencing

Seeding & Mulching: Instant Growth Hydroseeding; Massie Reclamation

Subcontractors: Mountaineer Contracting; Boca Construction; Mid-Atlantic Maintenance; Affordable Asphalt Maintenance; Barnes & Powell; Sunbelt Rentals; Walker Express; The Cat Rental Store; Foster Supply

Key Improvements: Mitigation of existing pavement cracks; updated lighting; paved shoulders

Reconstruction Timeline: mid-April to Oct. 2012

Highlights: Project phasing limited closures affecting aircraft operations to 54 hours; flight operations continued on milled runway during part of project; pavement reinforcement system was used to extend life of severe crack repair

Awards: AAAE Southeast Chapter 2013 Commercial Airport Project of the Year; Nat'l Asphalt Pavement Assoc. 2012 Quality in Construction Award

The $9 million rehabilitation of the sole runway at Huntington Tri-State Airport (HTS) in West Virginia was completed without any big surprises — just the way Airport Director Jerry Brienza likes it. The airport's airlines and cargo operator agreed to a single weekend shutdown; various contractors and crews finished multiple stages on time; and even the weather cooperated.

Jerry **Brienza**

In turn, the nearly half-year rehab was named 2013 Commercial Airport Project of the Year by the Southeast Chapter of the American Association of Airport Executives (AAAE). In addition, prime contractor West Virginia Paving received a 2012 Quality in Construction Award from the National Asphalt Pavement Association.

Project engineer Kimley-Horn developed the plan to pave the 7,016-foot-long runway in one weekend, and complete other construction during 120 individual nighttime closures.

The severe cracking that led to the runway rehabilitation was generating loose material that potentially could have damaged aircraft engines, explains Bob Jones, the firm's project manager. And the "Band-Aid fixes" the airport had been using for about five years could no longer take care of the problem, adds Brienza. Even with multiple overlays on the concrete, reflective cracks were still coming through the previous work about every 30 to 40 feet. The rehab consequently included the installation of a pavement reinforcement system to mitigate future damage from existing cracks.

Bob **Jones**

With one runway and a mix of commercial, cargo, military and general aviation customers to serve, an extended runway closure was not an option; nor was milling down through the full depth of the cracking.

For Brienza, there were two basic approaches to consider: close down the runway for a short time to create an uninterrupted work period, or pave the runway in short sections during a longer series of six-hour nighttime closures.

According to Jones, most single-runway airports opt for the latter strategy. "The problem with that is that small sections of paving are completed each night; and the next night, tapers need to be removed, so there's a lot of waste and excess," he explains. The approach also produces multiple cold joints, which generally don't perform as well as a continuously placed material.

Based on concerns about smoothness, quality and cost, HTS opted for a single weekend shutdown rather than a longer series of shorter nightly work windows. Construction ran from April to October 2012.

Weekend Shutdown

Closing the runway for a little more than two days in June was not without its challenges — especially with commercial airlines, cargo carriers and military and general aviation customers to accommodate. In 2012, HTS accommodated more than 211,000 passengers.

"The biggest challenge was the timing, making sure we had everything in place," Brienza recalls.

Prior to the weekend shutdown, prime contractor West Virginia Paving repaired cracks and micro-milled the runway surface, taking off just a half-inch of the existing asphalt. The prep work took place during a series of six-hour closures starting in May. Each night, crews went to work shortly after the last FedEx plane landed.

"We couldn't get on the runway until 11:30 p.m., and we had to be off of it by 4:45 a.m.," recalls West Virginia Paving Project Superintendent Joe Donohue. "We worked alongside our subcontractors to make sure they had everything they needed to complete their work, including electrical and lights, dirt work and stone on the shoulders, micro-milling, crack repairs, grooving and painting. The subcontractors on this job were outstanding."

Joe **Donohue**

Crews not only had to be off the runway by 4:45 a.m., they also had to make it look like they were never there by cleaning and vacuuming the site. If the pavement they milled off included paint, they had to repaint markings before the runway opened in the morning.

Brienza recalls putting a lot of trust in his personnel to inspect the runway before it opened. "They did an absolute fantastic job helping the contractors get it ready for the airlines and cargo carriers in the morning," he relates. Brienza himself often went onto the airfield late at night or early in the morning to double-check conditions.

"To say I wasn't nervous at all would be a lie," he muses. Each morning, the first FedEx flights scheduled to land were already in the air before HTS officials definitively knew whether the runway would be open. Fortunately, it was ready to open on time, after each nightly closure.

The weekend shutdown was scheduled six months in advance — with a provisional rain date. In total, just three flights were canceled in advance to facilitate the work.

West Virginia Paving was given 54 hours to complete the paving work and finished in 48. The company had three paving teams working side by side to place about 22,300 tons of P-401 asphalt concrete, explains Brienza. About 70 equipment operators, laborers, construction supervisors, quality control/assurance personnel, electricians, painters and engineers were on site. "Literally, it was an army of people out here," he recalls.

Two mix plants produced more than 900 truckloads of asphalt concrete, and backup paving equipment was ready to spring into action if needed.

Like Brienza, Jones was struck by the efficiency of the process. "They had all of their equipment and crews on the job for that one weekend continuously paving," he explains. "One paver was only about 100 feet in front of the next. Only two joints in the entire runway were cold joints; that never happens."

When West Virginia Paving finished the work early, "we were very impressed," notes Brienza.

With only two cold longitudinal joints and no transverse joints, Donohue predicts that the rehab will last 15 to 20 years.

Micro-Issue

One of Brienza's biggest concerns about the rehab was pushback from the airlines about the micro-milling portion of the project. In addition to preparing the runway for paving, micro-milling removes the grooves that helps facilitate braking and directional control for aircraft. Brienza was consequently worried that the airlines would refuse to land on a runway without grooves.

With help from the project engineer and contractor, however, airport officials explained the strategy and obtained buy-in from HTS' three airlines and its cargo carrier. After also securing FAA approval, the project proceeded; and for two weeks in May, planes landed on a non-grooved surface.

According to Jones, micro-milling saved 10 to 12 hours of closure time.

Pavement Reinforcement

Prior to the micro-milling, nearly 26,000 linear feet of severe transverse and longitudinal cracking needed to be fixed. Crews repaired the damage by milling cracks down 4 inches and placing a 1.5-inch lift of asphalt concrete followed by fiberglass pavement reinforcement fabric to prevent reflective cracking. On top of that, they installed a 2.5-inch layer of asphalt concrete to match the existing pavement surface.

The reinforcement system — GlasGrid® from Tensar International — is a geogrid matrix of fiberglass strands coated with an elastomeric polymer that is designed to spread out

the stress and strain generated by cracks below. Bill Tiltman, area sales manager for Tensar, notes that GlasGrid's pressure-activated adhesive coating on the underside makes it one of the fastest interlayer systems to install.

According to Tiltman, the system is particularly effective on runways, taxiways and aprons where transverse thermal cracking or Portland Cement Concrete joint cracking is prevalent on the asphalt overlay surface. While HTS was a spot repair project – the product was only installed over joint cracks — it can also be used on the full width of runways.


Bill **Tiltman**

According to Tiltman, the GlasGrid System can save up to 30% on the total cost of airport pavement rehabilitations.

At HTS, Jones expects the product to prevent cracks from reflecting through the new surface for 10, maybe 15, years.

Final Touches

With the paving finished during the weekend closure, night closures continued to complete the rest of the project. A temporary lighting system was installed around the runway so the existing lighting system could be removed while crews paved the previously dirt runway shoulders. With 20 feet added to each side, the runway is now 150 feet wide.

Before the shoulders were paved, crews installed edge light conduit and light bases. The new fixtures will reduce maintenance, as crews no longer have to mow and cut weeds around the lights.

The final step, pavement marking, was completed in late October.

Finishing the runway rehab ahead of schedule and slightly under budget left Jones proud. And he's also confident that the runway will serve the airport for a long time with minimal maintenance and repairs.

"Working with Tri-State Airport on this project was about as good as it gets," Donohue reflects. "We listened to their concerns and ideas; they listened to ours; and we worked together to make this project the best it could possibly be.

"Just because something is not your idea doesn't mean it's a bad idea," he adds.

With the right strategy and execution, it might even be award-winning.

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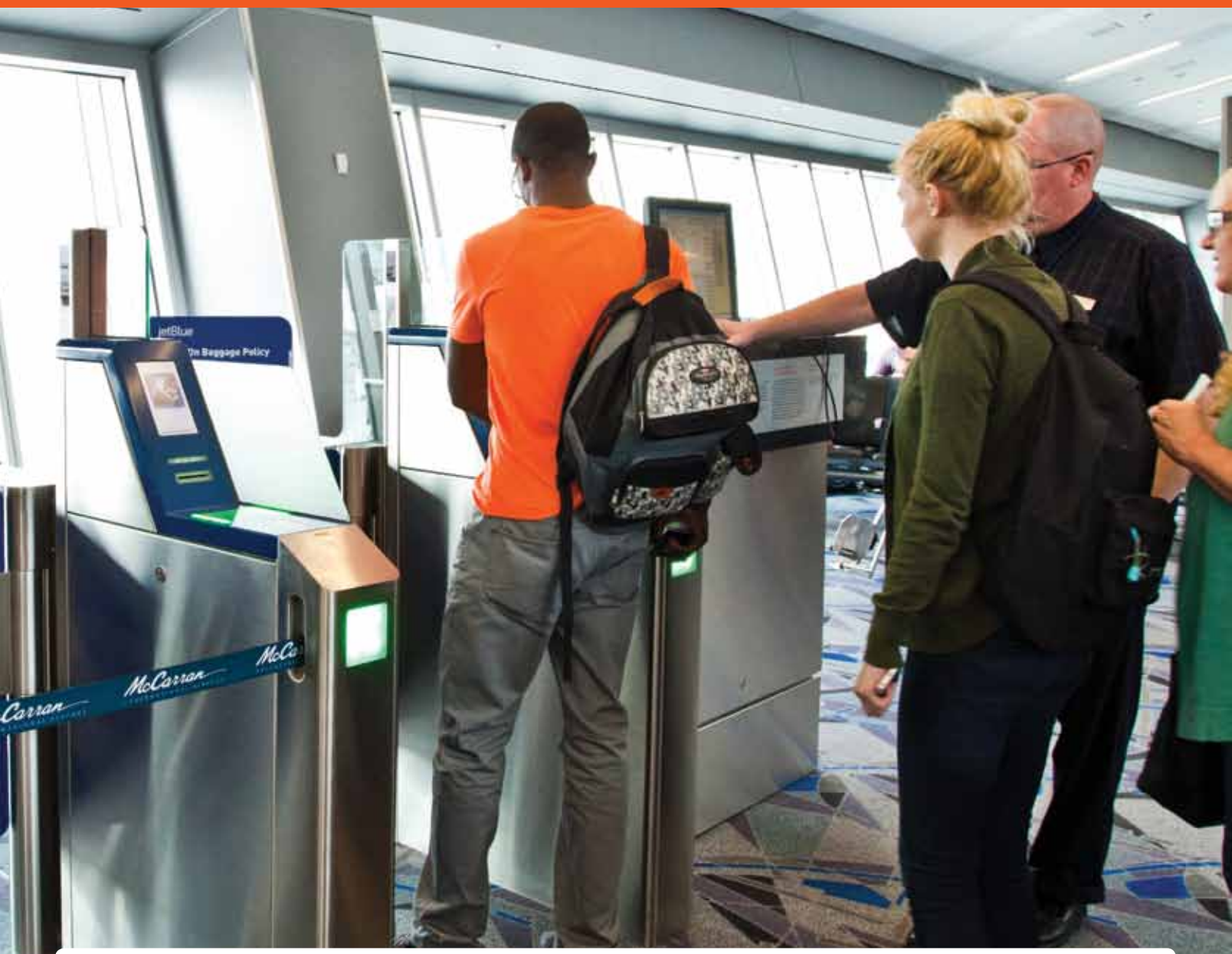
Self-Boarding Gates Garner Positive Reviews



McCarran INTERNATIONAL AIRPORT

factsfigures

Project: Self-Boarding Gates

Location: McCarran Int'l Airport, Las Vegas, Terminal 3

Number of Gates: 14 (2 machines per gate)

Est. 2013 Traffic: 42 million passengers

Key Benefits: Speeds boarding process; frees gate agents for higher-level customer service

Of Note: Airlines & passengers appear to be embracing the new technology

After approximately 18 months with new self-boarding gates operating in Terminal 3 at McCarran International Airport (LAS) in Las Vegas, sources there report that the state-of-the-art machines have been well received by both airlines and passengers.

Travelers using the new gates scan their own boarding passes, instead of handing them to gate agents.

The self-boarding machines, by Kaba Access and Data Systems, were installed at all 14 gates in the new terminal, with two machines per gate. The equipment accepts paper passes and passes on customers' smartphones. The setup and placement of the machines was taken into account when the new terminal was being designed, notes Samuel G. Ingalls, assistant director of aviation, information systems at LAS. "The layout needed to be well-planned, with plenty of space and room for a straightforward flow," Ingalls explains.


Samuel G. **Ingalls**

The new self-boarding system allows gate agents to spend more time assisting passengers who really need their help, he notes. "There is a false impression that self-

Photo Credit: Henri Sagalow Photography

at McCarran Int'l

By Mike **Schwanz**

boarding gates are unattended. This is not true," clarifies Ingalls. "In fact, we designed it so the gate agent is actually much closer to the self-boarding machine, perhaps 5 feet away instead of 20 feet away. If a passenger has a problem, he or she can simply move one step to the side and talk to the agent, and then get back in line, without having to go to the back of the line."

The cutting-edge equipment allows airlines to better utilize their gate agents' skills, he adds: "These agents get a lot of training, and are capable of doing many more things besides simple scanning."

In or Out?

At LAS, airlines can choose if and how they want to use the self-boarding gates, depending on their particular needs. Terminal 3 serves international and domestic carriers, and is equipped to accommodate both narrow and wide-body aircraft.

JetBlue Airways was one of its early adopters. Alaska Airlines did a pilot trial, and is currently reviewing the results. In the meantime, other airlines are continuing to monitor the viability of self-boarding.

"Delta did a trial, and I watched several planes board during that period," Ingalls reports. "People were interested; they liked to try something new. Any frequent traveler would embrace it."

He also gained the passenger perspective last year: "I was going through Houston, on the way back to Las Vegas, and United was doing a self-boarding trial. It worked very well. I also know that Continental was doing a lot of trials, before they merged with United."

Other airports, including Mineta San Jose International in California, are also testing the new machines.

At LAS, international carriers have been slower to adopt the technology, because of the challenges involved with checking passports, visas, etc. Pilot trials, however, are scheduled for the first half of the year.

So Far, So Good

As of early December, LAS had not experienced any security issues associated with its new self-boarding gates. "I believe they can actually enhance security," says Ingalls. "Gate agents can make mistakes boarding several planes a day. Sometimes, after checking hundreds of passengers a day, they may miss the red warning light that comes on with a faulty boarding pass. And every day, people continued to get on the wrong plane."

While some passengers may lament the lack of human contact, representatives of the equipment manufacturer contend that self-boarding gates actually improve customer experience. "Gate agents will be able to provide better customer service," explains David Wurtz, Kaba's director of business development. "Just last month, I got stranded in Milwaukee due to an ice storm in Dallas, and could not get home. I was lucky and got a good gate agent to help me. But if she were busy scanning boarding passes, I would have had to wait much longer."

David **Wurtz**

According to Kaba studies, its machines can cut boarding time in half. "It takes 25 minutes to board a 737 — the workhouse of the industry," Wurtz notes. "With self-boarding, it can take just 12 minutes."

Company research also shows that 85% of passengers surveyed prefer the self-service option. "I am an executive platinum member with American," comments Wurtz. "I fly a lot, and really don't need a gate agent."

Although some unions have expressed concern about job loss, he does not believe that will be the case. "I have not yet heard of anyone losing a job over this new system," he reports. "You will always need a gate agent. Some people will need help, such as those in wheelchairs, or elderly people. Airlines also want to continue to cater to premium customers, who want to board first to get overhead bin space. So gate agents are needed for that."

Photo Credit: Henri Sagalow Photography

Passengers flying out of Terminal 3 at LAS can now scan their own boarding passes.

Mary **Tabacchi**

Mary Tabacchi, a professor with Cornell University School of Hotel Administration, is another self-boarding advocate. "In general, anything to speed up the boarding process is good," says Tabacchi, who has taught an airline management course for several years. "It saves airlines and the airport time and expense."

According to Tabacchi, self-boarding is the wave of the future. "Lufthansa and several international airlines are doing it," she notes.

Passenger acceptance, she adds, will largely depend on the age of a given traveler. "People under 40, like my students, will be thrilled," she explains. "They grew up in an electronic age. But as people get older, they prefer more human interaction. McCarran still has people at the gate to help passengers."

Tabacchi also expects the cultures of various airlines to influence deployment trends. She expects self-boarding gates to be a good fit for JetBlue Airways, because of its "certain hipness."

"Many people print out their boarding passes from their office or home printers, and are doing that more and more. We will all get used to self-boarding," she predicts.

Ingalls shares Tabacchi's perspective. "When self-service kiosks first came out in 2003, it took people awhile to accept them," he recalls. "Now, 10 years later, some 75 million people have used kiosks at McCarran to get their boarding passes."

Self-boarding gates are well established at several European airports, and Wurtz believes it is only a matter of time before they become more popular in the United States. "The larger international airlines, such as British Airways and Lufthansa, are big advocates of self-boarding gates," he reports. "Also, with passengers needing to get to airports farther in advance than ever, anything to get them on board faster will be appreciated."

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Outagamie County Airport Builds Net Zero Fixed-Base


Photo courtesy of John Koton.

factsfigures

Project: New General Aviation Complex

Location: Outagamie County (WI) Airport

Fixed-Base Operator: Platinum Flight Center

Project Cost: $3.6 million

Terminal: 8,000 sq. ft.

Hangar: 12,000 sq. ft.

Designer/Engineer: Mead & Hunt

Building Contractor: SMA Construction

Outagamie County Regional Airport (ATW) in Appleton, WI, significantly raised the industry standard for sustainable design and construction when it opened a new general aviation terminal last fall. Those involved with the project predict that the $3.6 million facility will be the nation's first net zero energy airport building. Currently, it's undergoing a full year of measurement and verification.

"The GA (general aviation) terminal design is projected to consume approximately 54,000 kilowatt hours of electricity annually, which is less than one-third the energy consumption of a similarly-sized, traditionally-designed building," explains Matt Dubbe, an architect with project engineer/designer Mead & Hunt. "The terminal will produce the majority of its electricity on-site with a 25-kilowatt solar photovoltaic panel system."


Matt **Dubbe**

To qualify as an official Class D Net Zero Emissions Building, a facility must produce or purchase enough emissions-free renewable energy to offset the emissions from all the energy it uses annually. Net zero buildings must also perform 70% better than code requirements; but ATW's new facility was designed and built with a target goal of more than 80% total energy savings, including the offset provided by on-site renewable energy systems. The remainder of the building's energy needs will be purchased from off-site renewable sources.

The terminal is also expected to earn platinum level certification for Leadership in Energy and Environmental Design — the highest designation awarded by the U.S. Green Building Council. Aptly, the new 8,000-square-foot facility is home to Platinum Flight Center, ATW's fixed-based operator.

The energy-efficient structure includes geothermal heating and cooling, a highly insulated exterior with high performance glazing, rooftop solar panels, natural ventilation and abundant daylighting. An advanced building automation system monitors daylight and occupancy and adjusts the building systems accordingly.

Building its south-side GA terminal to such lofty sustainability standards fits with the airport's overall green goals: By 2030, ATW

Photo courtesy of John Korom.

Photo courtesy of John Korom.

Operation

By Dan **Vnuk**

hopes to be completely carbon neutral.

The east-central Wisconsin airport is already garnering national attention for its efforts in implementing sustainable design practices. Currently, it is one of 10 airports selected by the FAA for a pilot program about developing a sustainable master plan.

Officials from the airport and Mead & Hunt hope the energy-saving methods used at ATW spread throughout the industry. "My goal is that our solutions are scalable, so larger airports can use the lessons learned and work towards carbon neutrality," says Dubbe.

Divided We Stand

The new terminal and associated 12,000-square-foot hangar are part of the airport's 2003 master plan to relocate the private terminal, charter activities and flight training away from the main terminal. Previously, the general aviation terminal was located near the control tower, separate from the general aviation hangars.

"It's really making a synergy for all the general aviation at Outagamie County," says Pat Heil, general manager at Platinum Flight


Photo courtesy of John Korom.

Center. “One of the neatest improvements is that once we moved to the south side of the airport, there was a lot more interaction between us and the tenants that are renting hangar space there. It just makes it that much easier for us to continue to grow those synergies and make a vibrant general aviation airport active again.”

The terminal has 8,000 square feet of floor space, divided between the main level and partial second floor that includes a conference room overlooking the runway.

Outagamie County officials were on hand to celebrate the grand opening of a new, more upscale facility that replaced the original Platinum Flight Center, which was built in 1963.


Abe **Weber**

“We’re excited that this facility will be able to provide that first impression to the Fox Valley that (customers) may not have gotten in the past,” says Outagamie County Airport Director Abe Weber.

The Fox Valley is the group of 14 interconnected communities located along the Fox River and Lake Winnebago. ATW is its commercial and business transportation hub, providing support for the region’s world-renowned leader paper industry and serving as the main base of privately owned regional airline Air Wisconsin. ATW

The Flight Department that Paper Built

Kimberly-Clark Corp., makers of Kleenex tissues, Scott paper towels, HUGGIES diapers and many other mainstay household products, plans to build a new aviation facility on the south side of Outagamie County Regional Airport in Appleton, WI. The move comes on the heels of numerous general aviation infrastructure upgrades made there over the past five years.

The Outagamie County Board authorized former Airport Director Marty Lenss and the county executive to enter into a land lease with Kimberly-Clark for about 1.7 acres for $17,679 annually over 20 years. The agreement also gives the company the right of first refusal on an adjacent 1.1-acre lot for potential future expansion and two 10-year renewal options.

Construction is expected to begin soon on a new hangar and office for its flight department. The facilities will be located next to the airport’s new $3.6 million general aviation terminal and $650,000 hangar.

“It’s certainly an important investment by the private sector into the airport,” Lenss comments. “The airport has made significant investments, including access roads, parking lots, utilities, taxiways, hangars and a self-serve fueling station for private pilots and businesses that own or lease planes.

“This addition by K-C tells us that we’re doing some things out at the airport that are right. The fact that they would seek to invest at our airport is a good thing.”

Airport officials hope that the three new facilities will inspire additional private investment. “We want it to be very much a corporate feel, a corporate campus,” he explains.

Fox Valley Technical College plans to open a new public safety training center on the south side of the airport later this year.

SMA Construction, which recently finished the airport’s new general aviation terminal and hangar, was contracted to build Kimberly-Clark’s new facility.

Photo courtesy of John Korom.

was also the original home of Midwest Airlines, which began as a corporate carrier for Kimberly-Clark, the papermaking giant founded in nearby Neenah, WI. (See sidebar on Page 48 for information about Kimberly-Clark's recent investments at ATW.)

Charting the Uncharted

Constructed over a 12-month timeframe, the new GA terminal was completed on schedule and within budget. An unusually difficult winter required certain trades to adjust their schedules and use temporary heaters to protect weather-sensitive materials.

"This was unchartered territory for everyone," notes Dubbe. "From a design perspective, all decisions were performance-driven, so the process was very hands-on."

Weber looks to the future: "As energy costs rise, we want to make sure we're keeping our expenses as low as possible to make us financially sustainable into the future. If there's enough daylight, you won't even be able to turn the lights on."

Because the building has windows that open, occupants can take advantage of natural ventilation, capitalizing on Wisconsin's cool spring and fall weather, he adds. "If the windows are open, you can't turn the air conditioning on. And, conversely, you wouldn't be able to turn the heating on if the windows are open," Weber explains.

According to County Executive Tom Nelson, there's more to ATW's recent project than cost savings. The new facility is also intended to give a positive first impression of the Fox Valley to business travelers. "It shows we're a cutting edge, progressive community," says Nelson. "It makes sense from the spending side, but it's also the right thing to do."

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Putting Big Data to Work for Airports

The airport industry has its priorities. Managing operating costs, avoiding potential disruptions and improving passenger experiences all land at the top of the list. But it may be missing a critical player in its operations: big data.

The amount of data worldwide has been increasing exponentially each year. Fully 90% of data ever created has been generated in the past two years alone, and 30% of it potentially contains valuable information. Despite this, less than .5% of data collected is actually being analyzed and monetized. Most ends up dormant and unused.

Big data methods — analyzing and monetizing these "sleeping giant" data sets — may be the key to creating more efficient and productive airports. This allows businesses to generate fact-based, individualized, real-time answers rather than relying on the intuitive, general, retroactive realizations of traditional research.

While the idea of using big data for monetization may be relatively new, it's already helping companies enhance their quality of information, generate insights into their customer bases, implement "private label" capabilities and create new data and products.

Other industries are already making strides in taking advantage of big data insights. UPS and other parcel delivery companies use big data methods to provide real-time, in-transit service offerings for customers. Consumer credit cards such as American Express, Visa and MasterCard leverage big data to generate new business via customer acquisition and marketing campaigns. Insurance companies like Progressive use big data to create new pricing models based on customers' driving habits. And Citi has created new products — macro economic indexes — based on transactional data.

Companies in a variety of industries have been reaping the benefits of using big data. So how can the airport industry learn from these examples and take advantage of its own big data opportunities?

Health Management Associates, a healthcare facilities company, provides a relatable example. It leveraged data to address a common personnel problem: understaffing clinicians jeopardizes patient care, but overstaffing increases costs. The company analyzed its historical trends to identify visit patterns and combined that information with external data from local hospital communities. By doing so, it was better able to match staff supply with service demand — and lowered costs while still maintaining a high level of patient care. In the airport industry, this same big data method could be applied to optimizing maintenance and customer service staffing — offering similar benefits for airports and travelers.

These methods can also increase productivity, as was the case with Bosch. Big data allowed the engineering and electronics company to increase the maintenance efficiency of its industrial facilities. Similarly, by analyzing data from ground and baggage handling equipment, airports can identify patterns of activity and preplan for fluctuations — reducing downtimes and, as a result, increasing productivity.

The benefits big data can offer the airport industry are clear. The next step, then, is executing a plan to achieve what we call "big data maturity." Our approach involves three steps: evaluate, establish and evolve.

First, evaluate. Assess what and how big data is relevant to your specific airport, and then prioritize the opportunities. Baseline your data capabilities, project future business demand for data and analytical services, identify gaps and determine how to address them, and build a business case for implementation.

Second, establish. Detail a pilot business opportunity; define the pilot approach and team; and develop metrics to measure its success. In this stage, you may want to identify and implement technology solution partners to aid this effort. Then measure the success of the pilot and create a long-term agenda based on the results.

Finally, evolve. Based on the pilot results, review business opportunities, identify changes to the operating model, define the roadmap, implement any necessary changes, and continue to monitor the plan's progress.

The time to act on big data is now. In the next decade, data will grow by a factor of 40. There is an immediate opportunity to learn from the big data successes in other industries, and a need to harness the information that's available to address what matters most for airports: managing costs, avoiding disruptions and improving passenger experiences.

Andrew Schmahl

Andrew Schmahl is a principal with Booz & Co. who focuses on air, road and rail clients. Most recently, he has worked with several global airports on operational resilience, technology enhancement and organizational improvement projects.

Schmahl holds a B.A. in Economics from the College of William & Mary and an M.B.A. in Finance & Strategy from the Kellogg School of Management at Northwestern University.

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The Conference will be held March 10-12, 2014 in the majestic mountains surrounding Tucson, Arizona at the Loews Ventana Canyon Resort and Spa.

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The EVOLUTION Airport & Air Carrier Industry

Harnessing the Power of Partnerships

Monday, March 10

5:00 p.m.- 7:00 p.m.	Registration
6:00 p.m.- 7:30 p.m.	Opening Reception *(hosted by the Tucson Airport Authority)*

Tuesday, March 11

7:00 a.m. - 3:00 p.m.	Registration
7:00 a.m. - 8:00 a.m.	Continental Breakfast with Exhibitors
8:00 a.m.	Welcome and Conference Overview
8:00 a.m. - 9:00 a.m.	Harnessing the Power of Partnerships
9:00 a.m. - 10:00 a.m.	Airport Evolution - What Makes an Airport a Preferred Airport of Choice by 2025?
10:00 a.m. - 11:00 a.m.	Coffee Break with Exhibitors
11:00 a.m. - 12:00 p.m.	Changing Face of Air Carrier Alliances and Outside Partnerships
12:00 p.m. - 1:00 p.m.	What Makes an Airport a Destination of Choice for Connecting Passengers?
1:00 p.m. - 2:00 p.m.	Lunch (with Possible Aviation Industry Guest Speaker)
2:00 p.m. - 3:00 p.m.	Partnerships Within and Outside of the Aviation Industry
3:00 p.m. - 4:00 p.m.	Coffee Break with Exhibitors
4:00 p.m. - 5:00 p.m.	Beyond the Borders - A Shared Vision
7:00 p.m. - 10:00 p.m.	Tuesday night event (TBD)

Wednesday, March 12

7:00 a.m. - 3:00 p.m.	Registration
7:00 a.m. - 8:00 a.m.	Continental Breakfast with Exhibitors
8:00 a.m. - 9:00 a.m.	Future of the Air Carrier Industry by 2025
9:00 a.m. - 10:00 a.m.	Digital Data
10:00 a.m.	Coffee Break
10:00 a.m. - 11:00 a.m.	Social Media
11:00 a.m. - 12:00 p.m.	Development of a Green Airport
12:00 p.m. - 2:00 p.m.	Lunch
12:00 p.m. - 2:00 p.m.	IAAE/IAAE-Canada Board Meeting and Lunch
2:00 p.m. - 3:00 p.m.	Airfield Safety
3:00 p.m. - 4:00 p.m.	Coffee Break with Exhibitors
4:00 p.m. - 5:00 p.m.	Leadership in an Ever More Complex & Demanding Industry
5:00 p.m.	Closing Remarks and Conference Adjournment

Registration

To register as an attendee, you may register online (events.aaae.org/sites/140302/index.cfm) or download a registration form and fax to 703.797.9018 or via email to aaaemeetings@aaae.org. Registration fees includes welcome reception, two continental breakfasts, two lunches, refreshment breaks and conference handouts.

** Only ONE one-day pass may be purchased per person; multiple one-day passes are prohibited.*
***Includes one conference registration*

Registration Fees

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