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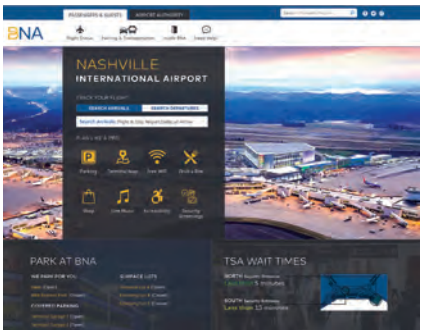

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Action is the Antidote

A lot of people have COVID fatigue. And who can blame them? It's been a drain. This pandemic has dragged on far longer than America's typical attention span.

Lately, TV news reminds me of the movie *Groundhog Day*. Every day we hear the same story about the coronavirus pandemic and the economy. The hotspots may be in different cities or states, but the story remains the same. It goes on and on and on. People are not only sick from coronavirus, they're also sick of it. But, until a vaccine(s) is approved, and enough of the general public is vaccinated, we remain locked in this weird dance between freedom and safety.

As a viewer, I long for more variety in the news. But as a publisher, I'm happy that coverage in *Airport Improvement* hasn't changed all that much. It still focuses on infrastructure improvements, innovative project techniques and new ways to better serve passengers efficiently and safely. And we still interview the airport executives, consultants and suppliers who make the good ideas work. The difference is that COVID is now an important part of the equation, and will be for a while.

For instance, our story about PIT and SJU (Page 30) provides an inside look at technologies and processes that can help keep airport construction projects moving even with staff working from home.

From LAX, we have an article about an airport and its consultants working together (most working pro bono) to test equipment that screens passengers for fevers. Check out Page 18 for more details.

And we also discuss marketing programs that help teach passengers, some who are leery, how to travel safely during the pandemic. See Page 66 for creative examples from LAS and ABE.

PAUL BOWERS, PUBLISHER

Despite a lack of leadership from Washington, airports and airlines are doing a remarkable job dealing with the current circumstances while also preparing for an undefined future of air travel. Their efforts to elevate cleaning standards, enforce mask mandates and develop innovative ways to enhance the travel experience are impressive.

It's clear that our industry isn't just waiting and hoping for things to return to "normal"—or holding out for Washington to provide guidance. I see an industry that's working together to make things happen. That's the perfect antidote for COVID fatigue.

Cheers,

Paul

Pedestrian Bridge Facilitates Construction of New Arrivals & Departures Hall at LaGuardia Terminal B

BY JENNIFER DAACK WOOLSON

New York is the city that never sleeps. That's the level of energy brought by the private consortium that recently redeveloped the Terminal B Arrivals and Departures Hall at LaGuardia Airport (LGA), one of the largest airport construction projects in the world.

The driven team finished the mammoth project on time and on budget despite the coronavirus pandemic hitting during the final five months of construction. The airport officially opened the new facility to the public in mid-June and moved one giant step closer to completing its comprehensive $4 billion overhaul of Terminal B.

New York Governor Andrew Cuomo, who was on hand for the ribbon cutting, called the new Arrivals and Departures Hall the biggest milestone to date in the $8 billion effort to transform LGA into a world-class transportation hub.

The firms behind the successful Arrivals and Departures Hall project are part of the largest public-private partnership in U.S. airport history. The Port Authority of New York and New Jersey hired LaGuardia Gateway Partners to design, build, operate and maintain LGA's new Terminal B from 2016 through 2050—with Vantage serving as the airport operator, Skanska-Walsh serving as the joint venture design builder, and WSP and HOK providing design services via another joint venture. The private consortium is composed of Vantage Airport Group, Skanska USA, Meridiam and JLC Infrastructure (see Facts and Figures box on Page 9 for companies' respective roles).

One of the project's most distinct elements is a pair of pedestrian bridges that span active taxi lanes and connect the newly opened arrivals and departures hall (also known as the headhouse) to the terminal's two concourses. The dual

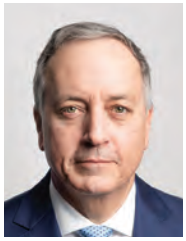
PHOTO: VANTAGE AIRPORT GROUP/LAGUARDIA GATEWAY PARTNERS

bridges—one complete, one currently under construction—are impressive architectural features, but their true purpose is much more practical.

The bridges allow contractors to build over the top of the existing terminal, which saves significant construction time and minimizes impact to ongoing airport operations.

Thomas Nilsson, vice president at Skanska USA and a lead partner in the Skanska-Walsh joint venture, reports that the pedestrian bridge allowed the team to cut the project's major phases from 11 to six and knock *years* off the construction schedule. Plus, the airport never had to close more than one of the terminal's 35 gates at a time, even during the peak of construction.

Soon, LGA will be the only airport in the world with two pedestrian bridges, which is ironic since neither was part of the original redevelopment plans. The concourse layouts changed considerably, too. The reference design the Port Authority provided when it released the project for bid in 2011 was much more conventional than what is being built. But Port officials were open to changes; and changes they got.


GEORGE CASEY

George Casey, chair and chief executive officer of Vantage Airport Group, says the joint venture consortium developed a different approach to minimize the project's impact on existing operations, streamline the construction process to provide more certainty for the design builder, and mitigate any material impact for LGA's airlines. The team also wanted to improve key elements of the passenger experience such as clearing the security checkpoint.

When the consortium assumed active control of the project in June 2016, it raised $2.4 billion of debt to finance the project all at once. "One of the keys to getting this project off and running on schedule," says Casey, "was

LaGuardia
GATEWAY PARTNERS

FACTS&FIGURES

Project: New Arrivals & Departures Hall

Location: LaGuardia Airport, Terminal B

Cost: Part of $4 billion Terminal B redevelopment initiative

Size: 4 levels; 850,000 sq. ft.

Construction: June 2016–June 2020

Airport Owner: Port Authority of New York & New Jersey

Facility Design, Construction, Operation & Maintenance: LaGuardia Gateway Partners, a consortium of Vantage Airport Group, Skanska USA, Meridiam & JLC Infrastructure

Design Build Joint Venture: Skanska-Walsh, with VRH as local sub general contractor

Terminal Planning, Development & Operations: Vantage Airport Group

Design Joint Venture: WSP (lead & engineer of record); HOK (architect of record, info technology & electronic systems engineer of record)

Development & Equity Investment: JLC Infrastructure

Equity: Vantage Airport Group (lead investor); Skanska USA (lead investor); Meridiam (lead investor); JLC Infrastructure (investor)

Fire/Life Safety Engineering: Arora Engineers

Checkpoint Security: L3; Smiths; Rohde & Schwarz; K2 Security Solutions Group

Baggage Handling: Daifuku Webb; Brock Solutions; SEW

Common-Use Passenger Processing & Self-Service Kiosks: SITA

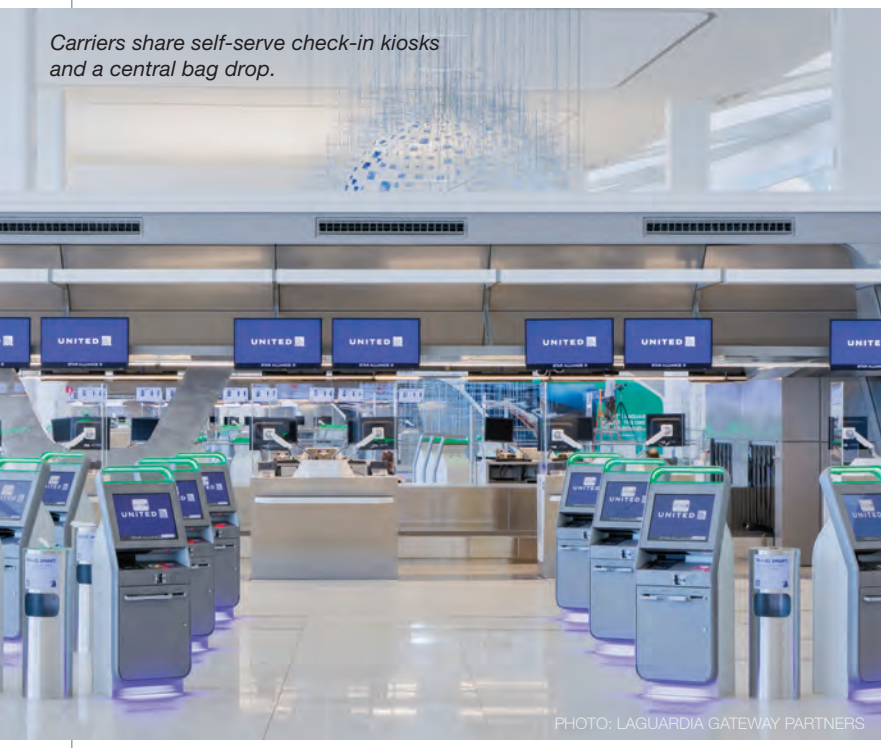
Integration of Terminal Data for Situational Awareness, Planning & Analysis: Airport Management Solution, by SITA

Digital Passenger Communications: Synect

Other Key Elements: New common-use passenger processing systems & self-service kiosks; passive optical network that supports all systems & terminal operators' facilities; fiber-to-antenna public safety/live safety distributed antenna system; full redundancy of all airport terminal systems

Interior Features: Ceilings up to 60 ft. tall; site-specific commissioned artwork; TSA checkpoint with latest available technology; hotel-style restrooms & nursing rooms; pet relief areas; water feature; new concessions; 420-ft. pedestrian bridge connecting to new Eastern Concourse

Associated Projects: Eastern Concourse & 7-story parking garage opened in 2018; 8 miles of new roadways, continued construction of Western Concourse, 2nd pedestrian bridge & additional taxiway space to be completed later this year



Carriers share self-serve check-in kiosks and a central bag drop.

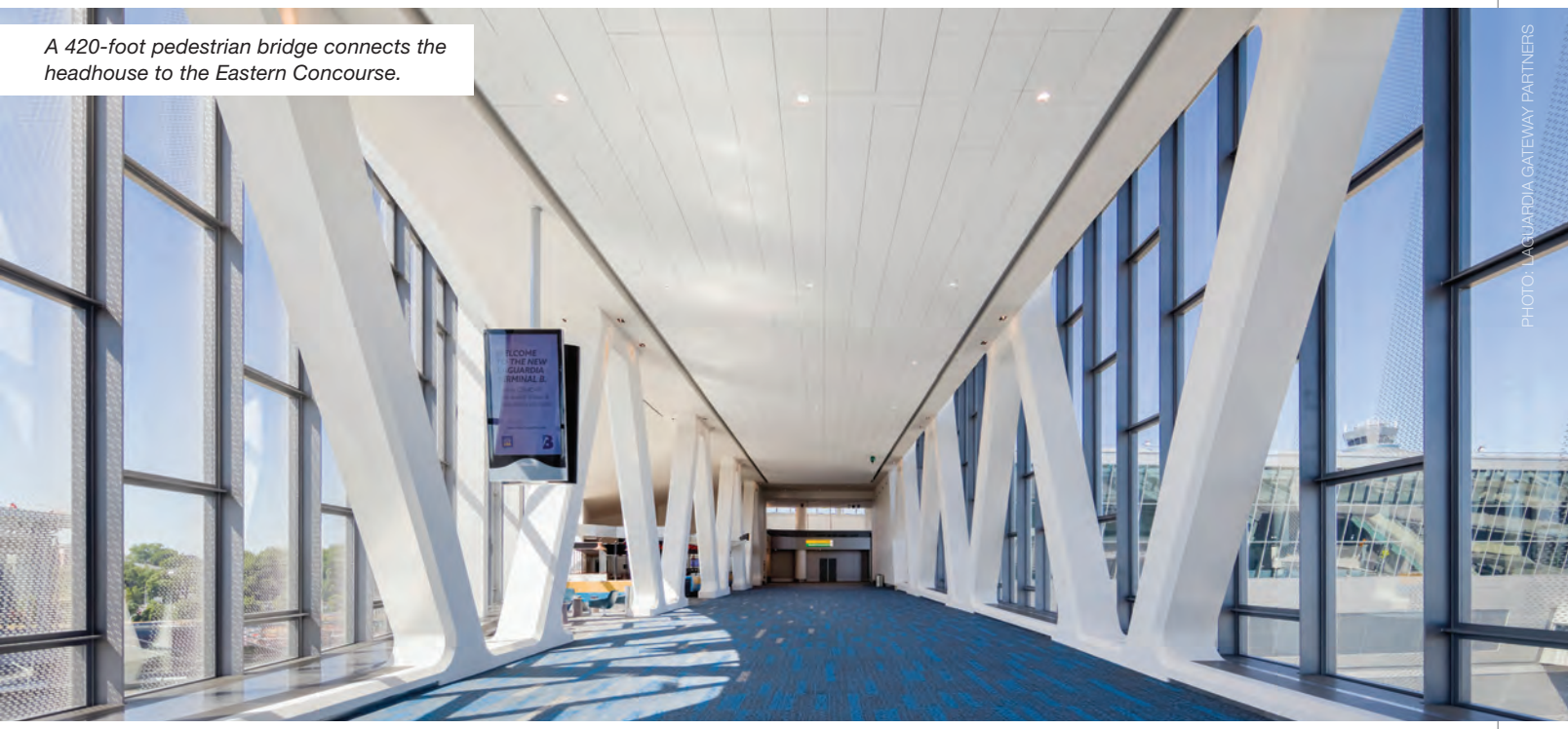
PHOTO: LAGUARDIA GATEWAY PARTNERS

that we got airline buy-in and approval of the approach In a very short period of time to get that financing done."

STEWART STEEVES

Stewart Steeves, chief executive officer of LaGuardia Gateway Partners and a Vantage senior executive, acknowledges that overhauling the design strategy was a bold move. "I think the Port Authority expected incremental changes or enhancements," he explains. "So when we came forward suggesting we might want to look at the whole concept all over, I think they were surprised, given that the procurement process was only about nine months."

But the Port Authority approved the new design, including the dual pedestrian bridges. Building in, around and over the top of the existing terminal meant that crews could complete construction in far fewer phases and save time. "By getting construction done quickly, it allowed us to go and seek the financing all in one shot up front, without having too big of a negative interest carry given the quick deployment of funds into the project," Steeves adds.



A 420-foot pedestrian bridge connects the headhouse to the Eastern Concourse.

PHOTO: LAGUARDIA GATEWAY PARTNERS

PHOTO: LAGUARDIA GATEWAY PARTNERS

Designers infused the baggage claim area with natural light.

Another big design change was moving the terminal building about 600 feet closer to the Grand Central Parkway. This allowed LGA to expand its airfield by about 500 feet and provide more room for maneuvering aircraft on the tarmac. Moving the terminal and the pedestrian bridges facilitated construction of 2 additional miles of aircraft taxi lanes, which helped relieve airfield congestion, reduce aircraft idling time and decrease the taxi time from runway to gate.

Focus on Amenities

The new four-level Terminal B headhouse is home to Air Canada, American Airlines, Southwest Airlines and United Airlines. Common-use technology allows the carriers to share four check-in islands with staffed ticket counters, 105 self-service kiosks and a central bag drop. The carriers also share use of nine new baggage claim carousels.

Project designers focused on improving passengers' travel experience with everything from commissioned public art to an island configuration for the concourses. The efforts yielded many enhancements, such as hotel-style restrooms and less time spent inside aircraft taxiing from the runways.

Bernie McNeilly, managing principal of the WSP-HOK joint venture, notes that Vantage Airport Group brought valuable perspective, and two decades of experience developing airports throughout the world, to the project. "They completed the circle because they had not only financial expertise, but also operational expertise," says McNeilly. "That became a key element for the team because they were providing us with advice and guidance from a maintenance and operations perspective in light of their 30-year lease agreement."

BERNIE MCNEILLY

The main consortium players from New York City contracted space at One Penn Plaza to create a war room even before the project was awarded. "That became the nucleus of the think tank," McNeilly recalls. "That's where the meetings took place, where we incubated a lot of the things that happened early on."

George Casey, chair and chief executive officer of Vantage, explains that his firm helped the redevelopment team look at the project through the lens of travelers, employees, commercial concessionaires, airlines and regulatory agencies. "We don't

just design things and plan things and then leave," he explains. "We actually operate them, so we have this tactile, real-world experience in understanding them." Steeves agrees that experience helped drive particular areas that were especially important to Vantage, such as construction phasing, operational impact to airlines, the location and concentration of security, moving commercial concessions behind the TSA checkpoint, passenger flow and intuitive wayfinding.


REBECCA ASHTON

Rebecca Ashton, project manager for the WSP-HOK joint venture, appreciates the value that perspective brought to design decisions. "Vantage and LaGuardia Gateway Partners were representing the user and owner. In every conversation, the focus was on ensuring that the design was able to achieve what they needed from an operations perspective—like making sure there was easy access to valves if something might have to be switched on or off manually—but also making sure the user experience was considered."

That focus prompted the team to build working mock-ups of restrooms to test out design elements such as fixtures, cleaning supply storage and stall size. The full-size models helped designers determine what would work best for passengers and maintenance staff.

Security Innovations

Terminal B's centralized TSA security checkpoint, designed in collaboration with TSA and assistance from K2 Security Solutions Group, leverages some of the most advanced passenger screening technologies on the market. In fact, LGA is one of the first U.S. airports to use Credential Authorization Technology, which scans the driver's licenses and passports of passengers to help detect fraudulent boarding passes. The new system is in place at eight of 24 podiums at the new Terminal B checkpoint.

The checkpoint includes 16 lanes, three times the space for screening and large overhead signs that provide estimated wait times for various queues. It also uses eight Advanced Imaging Technology QPS 201 body scanners from Rohde & Schwarz, widely considered to be the most advanced passenger screening system currently available. The new equipment is faster than conventional screeners and eliminates the need for passengers to raise their hands over their heads. It also features a larger area to stand in during screening, which makes it easier for passengers to enter and exit.

Terminal B is also the first in the world to use a technology called Smart Pad ASL from L3, an automated tub-handling system. As trays pass through X-ray equipment, they are classified according to assessed threat level and sorted into associated lanes on the conveyor. The system also features a camera in the bin return area to flag forgotten items. If it senses something in one of the bins, a flashing light alerts passengers and TSA officers.

Designers specified acoustic materials, including carpeted floors, to keep the area quieter than a standard checkpoint, and large windows to add a sense of openness.

A Better Baggage System

The project team's high-tech focus is also evident in the new baggage handling system from Daifuku and Brock Systems. It's faster, quieter and more energy-efficient.

The new system includes 55 mobile inspection tables, one of largest deployments at a U.S. airport. Each bag is automatically placed on an inspection table, which then rolls itself to a TSA officer, who manually inspects it on the table. The equipment eliminates lifting and pulling by TSA officers, and increases the overall speed of the bag screening process.


VINCENT PISCOPO

Vincent Piscopo, vice president/ building group leader for Skanska-Walsh, reports that it takes a typical bag six or seven minutes to travel through the system's 2 miles of conveyors. "So first, it's a much faster system," he says. "But more importantly, while most systems are constantly running, ours has sensors that, after a certain amount of inactivity, put that section of the system into 'sleep' mode."

That saves energy—about 37% over traditional systems. When combined with 1,200 variable-speed magnetic motors from SEW, it also greatly reduces noise for personnel working in the baggage handling area.

Sustainable Design

In addition to the energy-efficient baggage handling system, the facility's sustainable measures include generous non-glare daylighting, passive shading, LED lighting, natural local materials, reductions in outdoor water use and improved rainwater management, advanced energy metering and storm resiliency. The headhouse also has solar systems on the roof that augment the hot water supply for restrooms.

LaGuardia Gateway Partners is optimizing the performance of heating and cooling with its own computer-based building management system, which controls and monitors the facility's mechanical and electrical equipment such as ventilation, lighting, power and fire systems.

Once the full Terminal B project is complete, the project team expects to achieve LEED Gold certification.

The Institute for Sustainable Infrastructure has already awarded the headhouse Envision Platinum Certification, the association's highest sustainability credential. The designation recognizes the project team for going above and beyond to deliver improvements to the social, economic and environmental conditions of LGA's community.

That New York State of Mind

Although the design goal was to make the Terminal B headhouse a world-class facility, LaGuardia Gateway Partners, who set the vision on this point with Vantage, didn't want it to be a world-class facility that could be located anywhere in the world. "It had to be New York specific," Ashton emphasizes. "We are a vibrant city—always moving, learning, developing, growing. So we needed to make sure the airport reflected that."

Just like the city itself, LGA expanded its facilities by growing up rather than out. "We are constrained horizontally, so we had to go vertically," Ashton explains. Designers used soaring 60-foot ceilings, floor-to-ceiling glass and skylights to give passengers a sense of openness.

The terminal's retail and dining space is now behind the TSA checkpoint, with 21 shops and restaurants that provide the flavor of New York City. Brands include Brooklyn Dine, Eli's Essentials (from Eli Zabar) and Mulberry Street, from local chef Marc Forgione. The facades for restaurant and storefront were inspired by the architecture of various Manhattan neighborhoods, including Fifth Avenue, Rockefeller Center and SoHo.

Artwork was developed specifically for the new Arrivals and Departures Hall

The new Arrivals and Departures Hall includes several pieces of commissioned artwork.

PHOTO: LAGUARDIA GATEWAY PARTNERS

in partnership with the Public Art Fund. Permanent commissioned works that celebrate New York were created by Jeppe Hein, Sabine Hornig, Laura Owens and Sarah Sze.

Some of the facility's most beautiful artwork is completely organic: panoramic views of the New York City skyline, which are particularly impressive from the second pedestrian bridge currently under construction. Ashton considers the bridge itself an important part of the passenger experience. "You're not contained inside a building waiting to get on a plane," she explains. "You're actually part of the operations. It's a huge part of the feel and vibe of the airport."

Construction in the Age of Coronavirus

The Arrivals and Departures Hall was nearing completion in mid-March when COVID-19 hit New York City hard. Deemed an essential project by state officials, the mandate was to keep working. Skanska-Walsh reacted by quickly creating a small "champion team" to define new protocols and practices regarding safe distancing, face coverings, hand washing, cleaning and other safety measures.

"Communications was so important with our subcontractor community, so we spent a lot of time communicating and ensuring that our subcontractors and team members understood that," recalls John Novak, chief of staff for the design build joint venture.

Ashton says that was particularly important because the team wanted to give local residents an emotional boost by opening the headhouse as originally scheduled. "I think New York City needed something to show that we are continuing to move forward, even in a really dire situation," she explains.

LaGuardia Gateway Partners put numerous measures in place at the new facility to enhance safety for passengers and airport workers. In addition to Plexiglas barriers at check-in counters, distanced queuing and enhanced cleaning protocols, the headhouse has restrooms with contactless fixtures, and select restaurants have contactless ordering through Grab via a QR code. At Your Gate delivery service is available near the gate areas.

Success Stories

Despite a few setbacks, including the need for last-minute approval from FEMA for an updated flood plan, the project came in on time and on budget with a nearly perfect safety record.

Along the way, it also surpassed an important social/economic objective.

Early on, the team set a goal of spending 30% of the total headhouse budget on services and products from minority or women-owned business enterprises. That would have amounted to roughly $687 million. As of mid-July, it had spent nearly $750 million with such businesses.

An outreach program called Building Blocks undoubtedly helped the cause. It provided training for minority and women-owned companies about jobsite safety, quality assurance, project management, cost containment and other key topics.

Notably, every major player on the project included significant female leadership and participation across the project. Ashton's role with WSP-HOK is just one example.

In total, more than 14,000 individuals have had a hand in the Terminal B redevelopment project since it began in 2011.

Coordinating such a massive project was no easy feat, but Novak attributes the team's success to one of Skanska's core values: Be Better — Together. "From the outset, we established our culture, our way of working and our expectations," he says. "We don't take shortcuts, and we work in a safe way."

PHOTO: LAGUARDIA GATEWAY PARTNERS

Retail and food/beverage concessions were moved behind the TSA checkpoint.

Many consider the recently completed headhouse to be one of the most complex airport projects ever, anywhere. The facility's large scale and small footprint, combined with the need to build right on top of an active operating terminal, significantly increased the project's level of difficulty. Steeves takes particular pride in the finesse it took to complete the work with no service disruptions, and also in the project's minority participation. "That's a testament to our team and our engagement with the partners and community stakeholders making it happen," he reflects.

With the new Arrivals and Departures Hall open, the overall redevelopment of Terminal B is about 86% complete. Phases still to come include the Western Concourse, which is slated to open its first seven gates (of 17 total) later this year, and the second pedestrian bridge that links the Arrivals and Departures Hall with the Western Concourse. Construction of the remaining gates and demolition of the original terminal are expected to continue through 2022.

Los Angeles Int'l Expands Pandemic Protocols with Pilot of Thermal Imaging

BY NICOLE NELSON

FACTS&FIGURES

Project: Pilot Use of Thermal Imaging Cameras

Location: Los Angeles Int'l Airport

Airport Authority: Los Angeles World Airports

Objective: Identify passengers with elevated body temperatures to detect possible carriers of COVID-19

Pilot Duration: 12 weeks

Initial Equipment Installation: June

Cost to Airport Authority: $0 for technology consulting, equipment & installation; 80$/hr for medical support contractors, not to exceed $150,000

Funding: Authority is using operational reserves to pay for medical support & will apply for reimbursement from FEMA

Primary Contractors: Carlyle Airport Group; Schneider Electric

Technology Support: Faith Group; Atkins

Digital Signage & Totems: Synect

Equipment Mfrs: Electro Optical Industries; Intellisite; Omnisense Systems

Contracted Medical Personnel: Concentra

Other Contributors: TSA; CDC; LA County Dept. of Health

Key Benefits: Help prevent guests infected with COVID-19 from spreading it to other guests & staff

Strategy: Thermal imaging cameras allow airport to take passengers' temperatures as they pass through entrances, without asking them to stop or interact with/touch staff

From the very onset of the COVID-19 crisis, Los Angeles World Airports has been aggressively pursuing new processes, protocols and technologies to keep Los Angeles International Airport (LAX) clean, healthy and safe for employees, tenants and passengers.

Armed with information from the Los Angeles County Department of Health and the Centers for Disease Control and Prevention (CDC), the Airport Authority immediately upgraded sanitization procedures in response to the novel coronavirus outbreak. More frequent deep cleaning of high-traffic areas is now complemented by focused cleaning of high-touch areas such as handrails and elevator buttons.

Throughout the terminals and concourses, stations with hand sanitizer are dispensing hundreds upon hundreds of commercial-size drums of product; and ultraviolet technology silently sanitizes the air flowing throughout the airport's state-of-the-art ventilation systems.

"We are always looking for ways to make our facilities cleaner and healthier," says Justin Erbacci, chief executive officer for Los Angeles World Airports. "We just keep adding more and more layers as we find something new that we can do."


JUSTIN ERBACCI

Signage and media announcements help keep passengers informed about the airport's rapidly evolving response measures, including a policy instituted in May that requires them to wear a face covering in all LAX terminals. Masks, bandanas, scarves and T-shirts held in place are all considered acceptable. The requirement for passengers and visitors was an extension of an earlier policy mandating face covering for Airport Authorities employees and tenants.

Temperature Screenings

More recently, LAX began the pilot use of thermal imaging to detect guests with fevers over 100.4 degrees Fahrenheit—a common symptom of COVID-19. The airport is testing three different thermal cameras to identify the best technology, associated secondary screening methods and operational procedures.

Thermal imaging allows LAX to conduct wide-scale temperature checks as passengers and other guests enter the terminal.

Erbacci explains that Los Angeles World Airports has been on a quest to prevent people who may have the virus from entering its facilities and interacting with those who are not infected. Although a growing number of LAX tenant airlines and other businesses conduct individual temperature checks with handheld digital thermometers, the Airport Authority wanted a more comprehensive and standardized method to screen for symptomatic guests at the world's third-busiest airport. Health authorities strongly recommend that people with a fever not travel.

"We cannot test every single person individually before they walk in," Erbacci says, noting that more than 44 million passengers departed LAX last year. Administering individual temperature checks, much less actual COVID-19 tests, is simply not possible given the scale, time and capacity that effort would require.

"But we have tried to find something that would allow us to add another layer of protection," he adds.

Thermal imaging, the extra layer LAX is testing, is just one technology that can be used to identify enhanced body temperature. Airport personnel researched several options, but honed in on thermal cameras because they allow LAX to conduct wide-scale temperature checks without touching passengers or asking them to wait in line.

The models being tested are the Mobotix Camera System from Intellisite, the HGH Spynel camera from Omnisense Systems and another Omnisense unit with analytics support through S2 Global.

In June, crews installed one of the cameras inside the main entrance of the departures level in the Tom Bradley International Terminal. The other cameras will be rotated for testing in that terminal or another terminal entrance. Each camera will be tested according to FDA recommendations for accuracy, range, field of view and other metrics. Testers will also compare the cameras' user interface and their ability to produce meaningful reports of the summary data.

The 12-week trial, known as the LAX Terminal Wellness Pilot Program, has engendered notable in-kind support from several companies within the industry.

Pro Bono Partners

Los Angeles World Airports is executing the pilot program in collaboration with the Carlyle Airport Group through Schneider Electric, which is providing the cameras and also assisted with installation. The equipment being tested, worth about $400,000, is on loan at no cost. Faith Group is evaluating the technology and providing signage, also at no cost.

Carlyle Airport Group, an airport infrastructure investment firm headquartered in Washington, D.C., was inspired to participate because its executives saw the need for "extraordinary cooperation and decisive response to retool and rebuild passenger confidence in air travel."

AMIT RIKHY

"As the leader in public-private partnerships, Carlyle Airport Group felt it was our duty to assist the industry in recovering from the pandemic by providing support, guidance and resources to adapt to a new normal in the post-COVID environment," says Amit Rikhy, the company's president and chief executive officer. "As one of our core values, investing in our community is simply the right thing to do. So we contacted Los Angeles World Airports in late March with the idea of a partnership–based on the need for quick action, effective technology and revised operational procedures. LAWA had independently identified this need, and we joined forces to develop a concept of operations and technology plan to implement screening within the highly complex terminal environment…We contributed technical expertise to work hand in glove with LAWA management and staff."

Contracted medical personnel and airline staff use handheld thermometers for secondary temperature screenings.

Asian Influence

While Erbacci does not consider thermal imaging a panacea for maintaining safe operations during the coronavirus pandemic, he is encouraged by the performance of similar technology deployed at Asian airports during the SARS pandemic of 2003. Many of the cameras generated detection results that justified permanent installations, he notes.

While Asian airports primarily use thermal imaging to screen passengers who arrive from a foreign destination, Los Angeles World Airports is applying the technology to all passengers, both domestic and international.

"We wanted to do something before people come into the terminal to try to make our terminals islands of wellness where people can feel safe," Erbacci explains. "So, we looked for a way to use the latest technology and apply that to an entrance to one of our terminals, as a pilot, to see how it would actually work both from a technology and a process perspective."

Executing the Plan

With no precedent of thermal cameras being used at an airport entrance, Erbacci is thankful that Los Angeles World Airports has Carlyle Airport Group and Schneider Electric as principal consultants in the pilot program.

GINGER EVANS

Ginger Evans, chief strategy officer for Carlyle Airport Group, explains that Carlyle offered its services pro bono to help combat the negative effects airports throughout the world are experiencing.

"It is so clear that the industry needs to come together," Evans emphasizes. "Some parts of how we respond to COVID have to be standardized so there is a confidence in that system. If we don't have uniformity, we won't have a good result. So we have to develop enough data on the technical capabilities and the procedural protocols to give airports the confidence to adopt and implement a standard so we can rebuild passengers' trust in traveling."

Evans explains that the LAX pilot addresses the important need to have some level of personal monitoring for passenger wellness at terminal entrances. In fact, she predicts that collecting body temperature information may one day be as commonplace as TSA passenger screenings.

"The idea is to capture people at the broadest point, as upstream as possible, and no one has really done this at the terminal entry before," she remarks. This is consistent with guidance issued jointly by Airports Council International and the International Air Transport Association.

Optimism aside, Evans is quick to mention a few technical and procedural caveats. For instance, the LAX team quickly realized that it would need more sophisticated technology—namely bigger cameras capable of broader sweeps and systems to capture and analyze positive readings. Each individual camera will be tested and verified with a secondary handheld thermometer for several weeks to ensure rigorous data collection.

Faith Group, the lead engineering firm for the project, was responsible for vetting thermal scanning equipment, developing operational parameters, determining equipment layout, providing onsite support for installation and testing the installed equipment.

FAITH VARWIG

"The challenge that you have with any technology is what the manufacturer tells you vs. reality," says Faith Varwig, the company's namesake principal. "There are also a lot of adjoining environmental considerations that you can't always see on paper. This is so specialized, you have a very limited field of view and you have to be very flexible to move things around."

Atkins developed the initial concept of operations that described how the thermal cameras should be embedded within the airport.

Andy Yates, the company's aviation technical director, stresses that enhanced body temperature devices should be viewed as one part of a layered approach to creating a "health-secure" airport environment. "By themselves, they are not a foolproof way of detecting those passengers suffering from COVID-19," he advises.

That said, their practical advantages are noteworthy. "Getting the right type of tech for a given scenario is important, such as the difference between screening passengers at pace vs. more [hands-on] instrumented checks," says Yates.

He also encourages airports to consider associated issues, such as the impact on operational flow, staff members' ability to use the systems, the need to obtain the proper field of view, and cybersecurity/privacy concerns.

Lastly, he suggests using secondary layers of screening and medical assessments in conjunction with equipment to detect elevated body temperatures.

Medical Backup

At LAX, up to four medical personnel contracted from Concentra are on hand weekdays from 8 a.m. to 4 p.m. They interpret the real-time body temperature readings and follow up when an individual enters the terminal with a body temperature above 100.4 Fahrenheit, the federal guideline for a possible fever.

If an elevated body temperature is indicated, Concentra personnel ask the individual to step aside for voluntary secondary screening. They then perform a handheld temperature screening to verify the accuracy of the initial reading from the thermal camera and use CDC screening criteria to try to determine whether or not the fever or other symptoms may be related to COVID-19.

For the purposes of the pilot, individuals with elevated temperatures are simply informed of prevailing recommendations for people with fevers. "We have that scripted, if you will, with what the CDC and (L.A.) Department of Health have told us," Erbacci notes.

Guests with fevers are advised, but not required, to take additional precautions or chose not to travel. "We are not stopping anybody from traveling in this pilot program," he reports. "But ultimately, if we were to implement this in full force, we would have to determine how we would prevent that person from entering the terminal or from flying."

Airlines, however, do have the ability to stop someone who is potentially sick from flying, and many are checking passenger temperatures at the gate.

Grander Vision

In addition to consulting experts at the CDC and L.A. County Department of Health, Los Angeles World Airports sought input about its trial from TSA and comparable-size airports such as San Francisco International.

"We are doing this for us, but our intention also is that we want to provide this information to the government agencies, and to other airports and airlines," Erbacci explains. "We want to help get these 'learnings' and drive for standardization of temperature checks across the U.S."

He adds that LAX is remaining flexible so it can make changes based on the results of the pilot. "We're learning a lot and gaining new insights," Erbacci reports. "But this has never been done before, so we're kind of writing the book here."

If accuracy rates of the cameras being tested prove high enough to justify a wide-scale deployment, the next phase would be a massive rollout of fever screening systems throughout the domestic departures and arrivals areas, and also at employee entrances.

In the meantime, LAX is also experimenting with using ultraviolet light to clean restrooms and escalator handrails, and is testing antibacterial surface coatings and touchless kiosks for airline check-in and Global Entry travelers.

Erbacci directed a review of every terminal process to respond to the increasing occurrence of infectious diseases such as COVID-19.

New Orleans Int'l Brings Janitorial Management In-House

BY KIMBERLY GIBBS

FACTS&FIGURES

Project: In-House Janitorial Management

Location: Louis Armstrong New Orleans Int'l Airport

Owner: City of New Orleans

Annual Passengers Traffic: 13 million

Facility Size: 972,000 sq. ft. terminal with 3 concourses, 35 gates

Annual Costs: $518,000 consulting fees; $4.1 million janitorial labor

Transition Period: Dec. 2019-Feb. 2020

Consultant: Confluence Solutions

Staffing: Henry Consulting

Key Benefits: Improved cleanliness in terminal; increased productivity & reduced turnover of janitorial crews

When Louis Armstrong New Orleans International Airport (MSY) officially opened the doors of its new terminal in November 2019, the facility gleamed. The concourses and updated finishes literally transformed the way nearly 25,000 passengers traveled through the airport each day.

But shortly after the grand opening, cleaning challenges emerged that threatened the image and reputation of the city's flagship airport.


KEVIN DOLLIOLE

"We recognized almost immediately that the level of service that was being presented was not sufficient or satisfactory for our brand-new terminal," says Airport Director Kevin Dolliole. "We decided that we wanted to provide janitorial services at the airport in a different manner that would not only be best for our customers, but also allow us the opportunity to be more hands-on."

In December 2019—just one month after cutting the ribbon—Dolliole and other airport leaders began reshaping the status quo. Questions regarding the established strategy of outsourcing janitorial services to a third party prompted the airport to engage Confluence Solutions, a consulting firm that develops janitorial and other facility strategies for airports. The airport selected Confluence earlier to provide janitorial management consulting services. Working with its new consultant, MSY officially started the process of moving the management of janitorial services under the airport's purview.


SCOTT MURRAY

"The airport made a complete commitment to improve their janitorial services," says Scott Murray, founder of Confluence Solutions. "I saw firsthand that the airport leadership was personally and financially committed, and willing, to make the investment to change the labor and training to get the results they wanted."

A Clean Sweep

In January 2020, the New Orleans Aviation Board voted to end its existing $2.9 million annual cleaning contract within 30 days and switch to in-house management of janitorial services. The vote formally launched the plan developed with Murray to meet MSY's cleaning needs by contracting with Henry Consulting, a temporary staffing firm, for janitorial labor. The airport was already using the company for some of its clerical and administrative staffing needs and simply increased the budget to include janitorial duties.

Confluence Solutions worked closely with Michelle Wilcut, MSY's deputy director of aviation heading customer service, to develop a new cleaning plan for the still-new terminal. Specific details included desired staffing levels, cleaning standards and training initiatives. The project partners also established an overnight deep-cleaning crew to test for cleanliness and address areas that are deemed to need more attention, like TSA screening checkpoints and ticket counters. New training initiatives include a buddy program that has new hires working side-by-side with seasoned employees.


MICHELLE WILCUT

"We asked Confluence Solutions to take on a stronger role in the training and leadership of our janitorial team," Wilcut explains. "Their knowledge and expertise was important—not just knowledge of janitorial services, but *airport* janitorial services."

She reports that the switch to in-house management, which officially started in February 2020, was a success for the airport and the workers who clean the terminal. Many were hired by Henry Consulting from the previous janitorial contractor's workforce and received a pay raise and health benefits—a first for many of the workers and their families. The transition has improved productivity and reduced turnover, which had been a problem in the past, she adds.

"We saw a marked improvement and a better overall product in the airport by bringing the management of cleaning in-house and having airport janitorial professionals leading us through this transition," says Wilcut.

COVID Clean

The airport was just beginning to operate under its new maintenance structure when the coronavirus pandemic struck the U.S. Naturally, the focus quickly shifted from having a terminal that looked clean to providing a COVID-healthy environment for employees, airport partners and the few travelers still using the facility.

With heightened sensitivity about cleaning measures, MSY adjusted its janitorial training program to emphasize the importance of having a safe, healthy facility for customers and staff. The airport also increased the frequency that high-traffic areas are cleaned. For instance, before COVID-19, crews typically cleaned gate areas two to three times per day. Now each gate is cleaned every hour, with extra attention applied to high-touch areas, such as seating arm rests, counters and handrails.

As airport director, Dolliole was keenly aware of specific changes. "We increased the level of cleaning, added functions and changed chemicals to provide a higher level of cleanliness and sanitization," he says. "COVID caused budget reductions, and we had to make adjustments in a number of areas; but we didn't want to touch our janitorial budget."

Although MSY's traffic dropped by 80%, janitorial staffing was only adjusted by about 20% because of the increase in cleaning frequency and additional areas of focus. Expenditures for supplies increased because more cleaning agents and disinfectants are now needed to sanitize the facility.

Changing Strategies

When reviewing their janitorial options, Dolliole and other airport leaders focused on finding a solution that included the right staff to help improve their customers' experience at the terminal.

"Any airport that wants to bring these types of services in-house should consult with a trusted facilities specialist to help them to delve deeper to better understand their needs and how they can best meet those requirements," Murray advises.

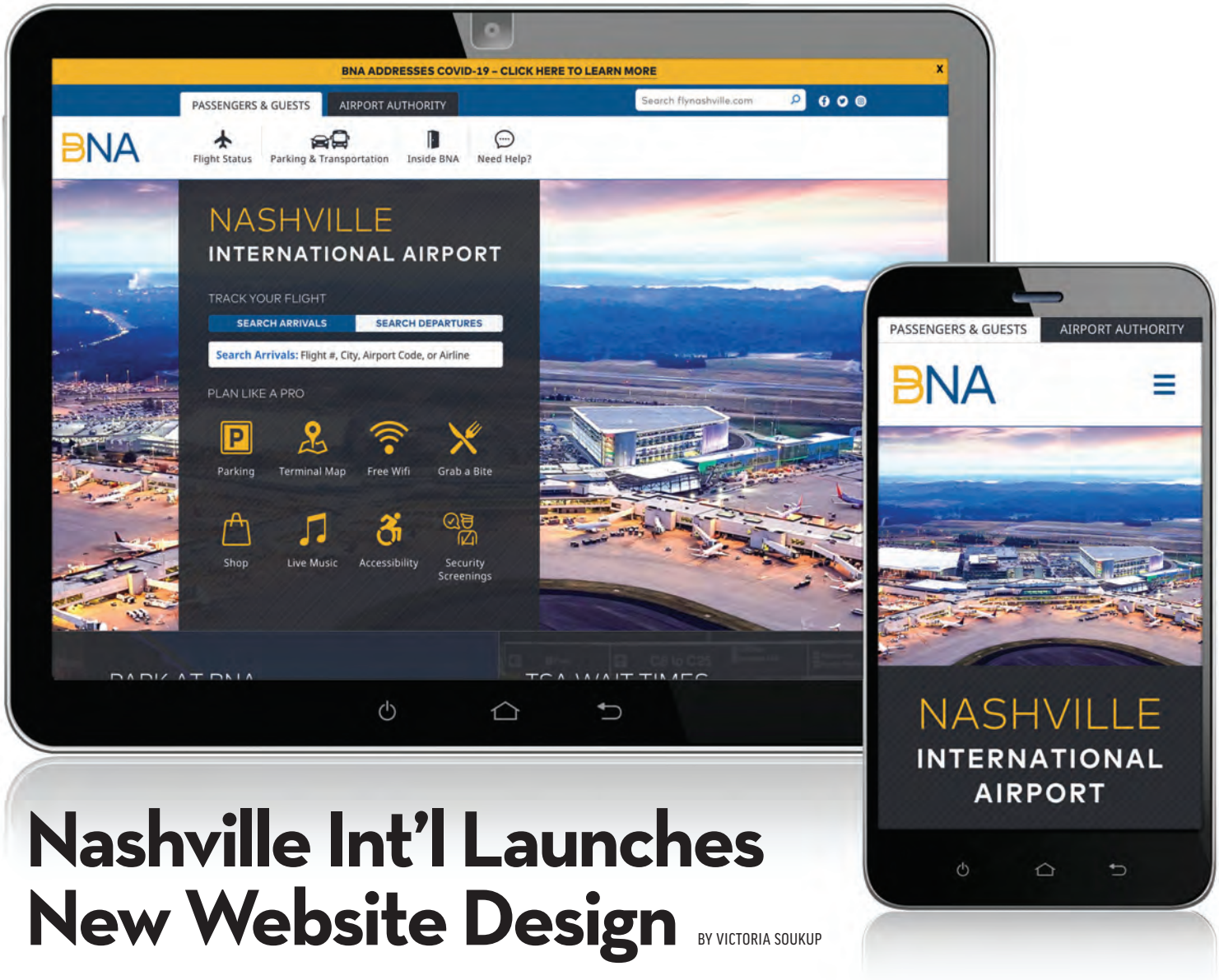
MSY outsourced its entire janitorial program for decades before making the transition. Now, the airport plans to continue the move to in-house by adding airport staff to supervise its janitorial services.

"Our decision to work with an industry consultant and make the change to in-house management of our janitorial team has proven to be the right and best option for the airport," Dolliole concludes. "We're very happy with our decision, the consulting support and end result."

Evolving Perceptions

Consumer research by GP PRO, a division of Georgia-Pacific, indicates that attitudes about cleaning professionals have recently shifted.

When COVID-19 hit, management increased the frequency that crews clean high-traffic areas.



Nashville Int'l Launches New Website Design

BY VICTORIA SOUKUP

BNA Nashville International Airport

FACTS&FIGURES

Project: Updated Website

Location: Nashville Int'l Airport

Site Address: flynashville.com

Cost: $356,800

Development Timeline: 1 year

Site Launched: April 2020

Website Development: Horton Group

Mapping: LocusLabs Inc.

Of Note: New website has 2 homepages: "Passengers & Guests" and "Airport Authority"

Nashville International Airport (BNA) has completed numerous brick-and-mortar improvements in recent years to keep pace with the region's booming economy and population growth. And now, BNA has an improved online presence as well.

A new website, launched in April, provides detailed information for travelers and those looking to understand the business side of the airport. One of the site's key features is an interactive map of the terminal that provides guests with updated information about key features such as airline counters, concessions and services. The new interactive map is a marked upgrade from the static PDF image the airport used to provide. Now users can simply click on images or words for more information and greater detail.

DOUG KREULEN

"The redesigned website is a dynamic, fresh representation of all that Nashville International Airport has to offer," says Douglas Kreulen, president and chief executive officer of BNA. "It is designed to provide convenience and assistance to our passengers and guests and all others interested in the airport experience."

The new website design replaces a version created seven years ago. "It was time to do a complete overhaul and develop an entirely new site," remarks Shannon Sumrall, the airport's assistant vice president of Brand Experience.

From the outset, Sumrall made it clear that she didn't know the ins and outs of website design and technology. She did, however, know what BNA wanted: a new site that was fast-loading, customer-friendly, interactive and functional on all browsers.


SHANNON SUMRALL

"We had identified key elements we wanted the site to have, but we didn't want to put our website team in a box with strict parameters," she explains. "We wanted a firm to come to the table with ideas on how best to provide us with what we were looking for."

A request for proposals generated strong response, and BNA ultimately selected Horton Group, a website development firm located right in Nashville. Total cost for the project was $356,800.

The first item on the agenda was to develop an internal stakeholders committee with representation from airport groups that use the website frequently. Key departments included human resources, air service, parking, public safety, business diversity and procurement.

"Members of the committee provided feedback throughout the entire process," Sumrall relates.

The committee also reviewed other airport websites to determine what features and capabilities were important for BNA's new website. "They came up with some pretty creative ideas that we all really liked," she recalls.

Dual Homepages

Due to the wealth of information BNA wanted to include on its site, the design team opted to create two separate homepages: "Passengers & Guests" and "Airport Authority." The initial landing page for www.flynashville.com is for the general public. Users looking for business information about BNA can click on the Airport Authority tab to switch to that homepage.

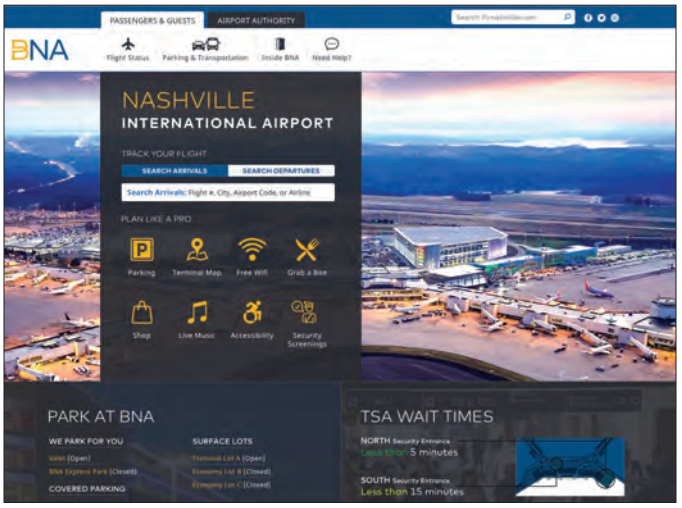
"We're like a small city, and there's so much that BNA covers," Sumrall says. "But we know that the people who most often visit the website are passengers. They may not want to see information about career and business opportunities or our latest board minutes. Passengers want to know where to park, where to eat and information about their flight. We wanted to make sure that information was easy to find and easy to navigate."

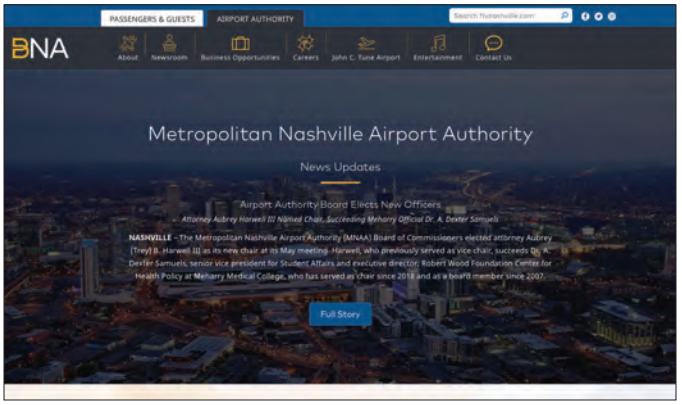
Conversely, a click on the Airport Authority tab takes visitors to information about leadership, board meetings, procurement processes and employment opportunities, among other topics.

"Having two homepages made it a real passenger-focused site," Sumrall explains. "Before the new website, everything was in one place. Now, we have airport business information front and center on its own homepage. It's very helpful for both our passengers and our business partners."


PAIGE ALLEN

Paige Allen, chief operating officer of Horton Group, notes that the company used its own propriety software to develop BNA's new website. The software integrates data about aircraft departures, arrivals and ground traffic from OAG's FlightView system, and also incorporates a calculator that connects to BNA's parking system to provide information about rates, availability and other real-time data about its garages, surfaces lots and valet options.





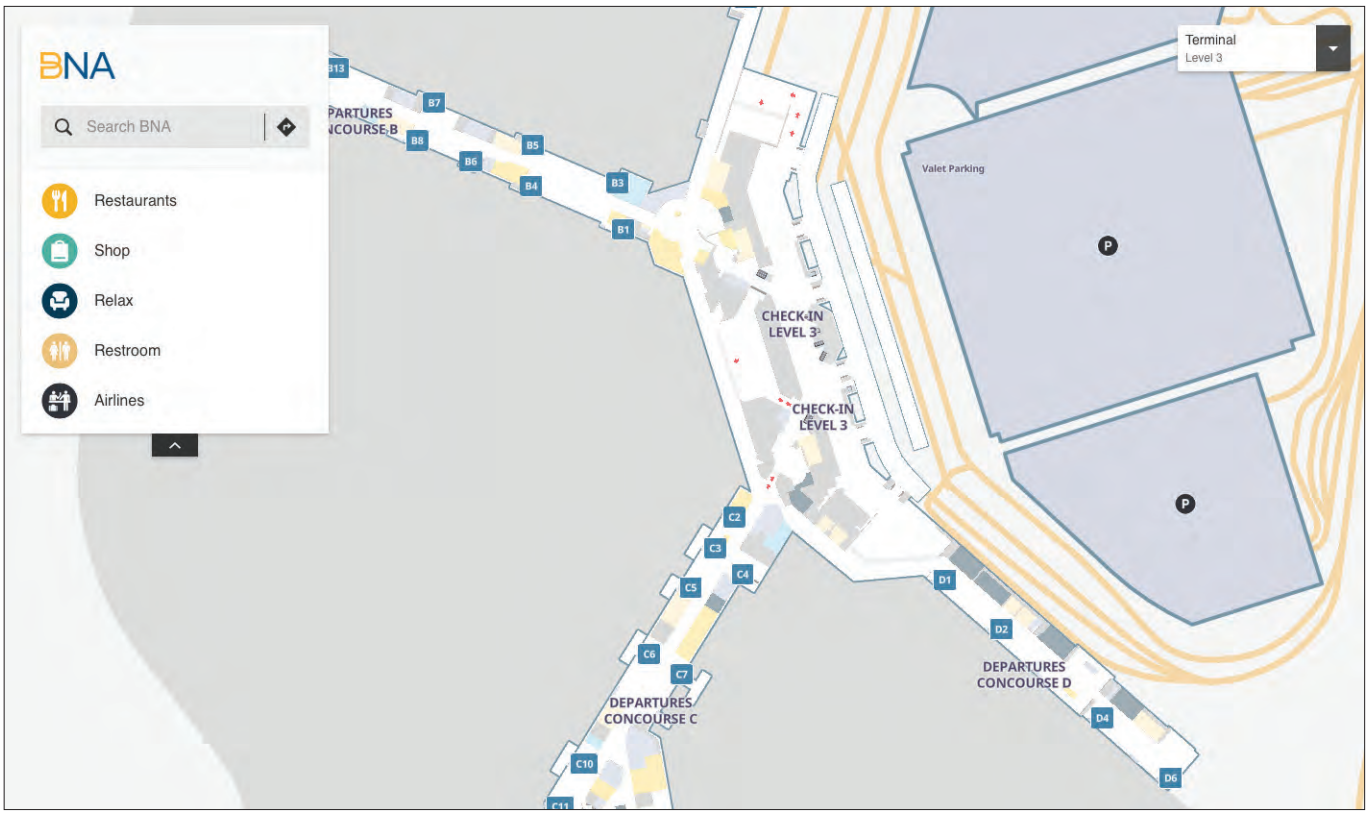
The new site includes separate sections for passengers and those looking for information about board meetings, job postings, etc.

"Under Passengers & Guests, you'll see a mega menu navigation," says Allen. "It's not your standard navigation; it drops down to different links so you can navigate throughout the site. We felt that was the best way to capture the amount of content the airport had."

Refining Content

Both Sumrall and Allen say that the biggest challenge of the project was deciding what information to use. "There was a lot of content to be delivered," explains Allen. "Some of what was on the old website was outdated. We worked carefully to determine if information was relevant, and then reformatted some to exist within the site's new design."

Sorting through the content was sometimes overwhelming. "We went through files and files and pages and pages and had to decide what was staying and what was going," Sumrall recalls. "We realized that not everything needed to be on the website." In addition, a significant amount of content needed to be updated to make it fresh and current.



A new interactive map provides updated details about concessions and other areas of interest for guests.

The website designers focused on accommodating mobile users since they generate the most activity on BNA's site. "It was designed with the passengers in mind and built mobile-first," Sumrall says. "We wanted all content and features to display nicely on mobile devices, as well as load quickly and be easy to navigate. This meant putting critical information in multiple locations sometimes, so that if you missed something in the header, it might also be easily found in the body of the homepage or footer."

Click for More Info

The new interactive mapping tool provides passengers with information and directions about food/beverage concessions, retail outlets and other important airport resources. "You can search for the nearest bathroom and it gives you an approximate distance to that location and the best route to take," Allen explains.

The interactive map makes it easier for passengers to navigate the airport terminal, adds Zachary Spencer, account executive at LocusLabs, the firm that created BNA's mapping tool. "Providing passengers with a tool that lets them

access information from their telephone or tablet regarding available amenities and services provides a lot of comfort," Spencer says. "In addition, it drives traffic to the awesome services and amenities at the airport."


ZACHARY SPENCER

Campbell Kennedy, co-founder of LocusLabs, a part of Acuity Brands Inc., explains that the company's reality capture system used existing floor plans and drawings, LiDAR and cameras to create the airport model. It took an onsite technician one day to map the airport terminal, and then about two weeks for LocusLabs to transform that data into an interactive map.


CAMPBELL KENNEDY

"It is very dynamic in terms of points of interest and has a rich database that backs up all of that information," Kennedy says. "It's 3-D and provides the detail and experience of the airport."

The mapping also matches BNA's branding for wayfinding signage, logos and color palettes. "We worked hard to make the map an accurate digital representation of the physical space," he comments. "Anything we could do to match the airport and their color scheme was incorporated into the deployment process."

The map is searchable through key words, brands and images (both stock marketing photos and images of actual storefronts). "We communicate information to the user in real time," Kennedy notes. "And BNA has our Venue Management System, which allows airport officials to make easy detail changes, such as if a retail or food/beverage outlet changes hours or locations."

By opting to include airlines in the project, BNA helps its carriers offer passengers the same interactive map and airport information in their applications. "Everyone is seeing the same picture," Kennedy explains. "It's win-win—the airlines get the most up-to-date maps for their passengers, and the airport gets a larger digital footprint and consistent messaging across more digital channels."

Spencer considers the mapping tool a phase-one application. "We can also extend the same map experience across all other digital channels and touch points as well—mobile applications, interactive touchscreen kiosks and fixed non-interactive signage."

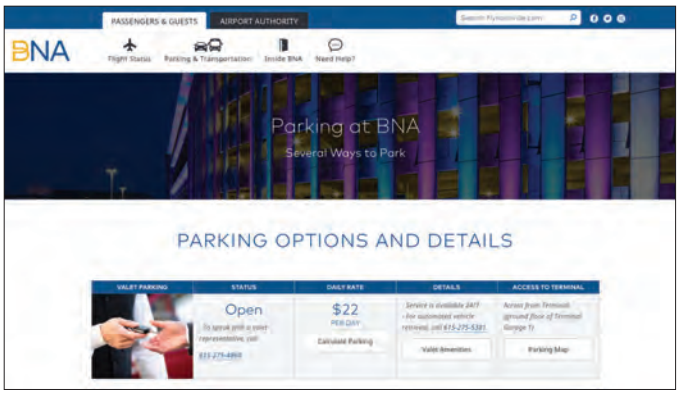
Best Practices

It took the team a little less than one year to complete the new website. In retrospect, Allen strongly recommends using an internal steering committee like the one BNA created.

"Making sure you have a good team to work with is essential," agrees Sumrall. "The internal committee was so important. Even though I was running point, I am not the only one who uses the website. Having everyone's buy-in helped move things along."

Allen also advises thinking about the end users when making each and every decision.

"You need to ask yourself if the content is important, if it is displayed properly and how it is reaching the user," she specifies.



Customers can access real-time data about parking rates and availability on their phones.

"Thinking that way and always putting the end user first helps significantly in the overall design strategy."

Creating a calendar and sticking to deadline dates also proved important. "We wanted to launch this site as quickly as we could," Sumrall recalls. "We didn't want this to just drag on, because things like this can. I wanted it to be a year or less, and we came in just shy of the one-year mark. We stuck hard to our deadlines because there was an end goal we wanted to hit."

Consulting Teams Working Remotely Keep Projects Moving Despite Pandemic Shutdowns

BY RONNIE WENDT

FACTS&FIGURES

PITTSBURGH INTERNATIONAL AIRPORT

Project: Terminal Modernization Program

Location: Pittsburgh Int'l Airport

Program Cost: $1.1 billion

Main Components: New consolidated landside terminal; new multi-modal complex parking garage/rental car facilities

Consultants: Gensler + HDR in association with Luis Vidal Architects; Michael Baker International; Burns Engineering; PJ Dick-Hunt; Turner Aviation

Software for Design Review: Bluebeam

Cloud Technologies: Panzura; Microsoft Azure

Virtual Desktop Platform: VMWare

Videoconferencing Systems: Skype; WebEx; GoToMeeting; Microsoft Teams; Zoom

AEROSTAR AIRPORT HOLDINGS LLC

Project: Taxiway Reconstruction

Location: Luis Muñoz Marín Int'l Airport, San Juan

Design & Engineering: Kimley-Horn

Videoconference Platforms: Microsoft Teams; Skype

Cloud Technology: Microsoft Azure

As the general public continues to shy away from commercial air travel during the ongoing COVID-19 pandemic, airports are finding new ways to keep their important infrastructure improvements on track.

Teams supporting projects in Pittsburgh and Puerto Rico, for instance, learned how to keep projects moving during shutdowns in March. Leveraging remote technologies that allowed personnel to work from home proved pivotal in both cases.

PIT Pushes Ahead

Progress continues on the $1.1 billion Terminal Modernization Program at Pittsburgh International Airport (PIT), thanks to the flexibility of key project participants. Even with design and management teams working remotely, the terminal and multi-modal complex parking garage/rental car facilities reached 60% design completion in March and May, respectively.

ALYSON WALLS

"Having the right technology to continue working remotely and advancing our projects has been indispensable to the entire airport team and our partners, many of whom are spread out across the country," says Alyson Walls, communications manager at Allegheny County Airport Authority, which oversees PIT. "Developing advanced technology and creating seamless connectivity for employees, passengers and visitors is a primary goal at PIT. The pandemic thrust that goal into overdrive, and our entire team responded to the challenge."

As COVID-19 concerns escalated and traffic decreased, PIT officially entered a period of irregular operations on March 12. Just one day later, the entire Terminal Modernization Program design team began working remotely. That

included project leaders from the airport and several external consultants: Gensler + HDR, Luis Vidal Architects, Michael Baker International, Burns Engineering, PJ Dick-Hunt and Turner Aviation.

Airport officials knew that opening their new and renovated facilities in 2023 as planned would be difficult, if not impossible, if the pandemic shutdown slowed progress early in the project schedules. However, the teams maintained momentum by using Bluebeam software to review the 60% design sets, which represent 6,000 pages of specifications and drawings for the terminal and multi-modal complex.

"The Pittsburgh project moved along without missing a beat," reports Matthew McCloskey, director of information technology at Burns Engineering.

After the management team received the final design set for each project (March 9 for the terminal and May 6 for the multi-modal center), program managers uploaded the drawings, specifications and design analysis onto the Bluebeam Cloud Server, where all reviewers could access them and markup documents in live sessions. The Airport Authority first asked subject matter experts to review the documents for two to three weeks, and then opened the Bluebeam sessions to designers.

The size of documents involved taxed some of the team's home systems, so adjustments were made accordingly. "For the Pittsburgh job, we were working with 8 terabytes of drawings; you cannot get 8 terabytes of data down to somebody using an older PC," explains McCloskey. "We established protocols so that when teams remote in, they're on our architecture and don't rely on the power of local machines."

Engineering and design teams worked in Panzura, a cloud-based system that caches data in local spots. "Doing so allows personnel in remote offices to access data much faster," he says.

One vision for the new arrivals area includes tall trees and soaring ceilings.

Teams "came together" on Skype and WebEx calls to answer questions and resolve issues. Designers organized the virtual meetings by discipline—architectural, civil/site, mechanical/electrical/plumbing, information technology/special systems, baggage handling system, etc. The team also used videoconference platforms to provide presentations to senior airport leaders and various stakeholders.

"After the review period, we organized comment reconciliation meetings by discipline to discuss open comments and look for resolutions," Walls says. "We compiled over 2,000 comments for the terminal, and almost the same amount for the multi-modal complex, into spreadsheets. We arranged several conference calls via GoToMeeting, Microsoft Teams and Zoom, by discipline, to discuss open comments and find a resolution or follow up action."

It also became essential to manage collaboration remotely. McCloskey notes that creating teams by discipline in Microsoft Teams kept work focused and on track. "Project managers knew their assignments and others on the team and could communicate quickly using instant messengers and other tools to work on documents at the same time," he says.

When the time came, Airport Authority personnel developed and used an electronic process to secure bids for switchgear and preconditioned air units for passenger boarding bridges—important enabling projects that needed to stay on schedule.

Conference calls, cloud servers, collaboration and an extra dose of flexibility kept teams communicating and projects moving forward. "The airport put construction on hold because of the pandemic and economic downturn, but design work on the terminal and multi-modal complex continued virtually," says Walls.

As the projects continue, ongoing spread of COVID-19 is requiring changes on the fly. "The design and program management teams, along with construction managers, are engaged in a series of post-pandemic design workshops to consider how current and future airport operations and facilities may need to change to address new public health standards and post pandemic realities of air travel," she explains.

The airport is seeking ways to make more portions of the passenger journey touchless, incorporating new cleaning protocols and adding technology for check-in and security to ensure social distancing and limit face-to-face interactions in the terminal.

Projects Press On in Puerto Rico

Meanwhile in the Caribbean, major airfield improvements are progressing at San Juan's Luis Muñoz Marín International Airport (SJU).

Aerostar Airport Holdings LLC, the company that operates SJU for the Puerto Rico Ports Authority, managed to juggle the preliminary design stages of its Taxiway H reconstruction project in order to meet crucial FAA funding deadlines.

Pablo Auffant, P.E. Planning & Development director at SJU, notes that partnering with Kimley-Horn and using remote technologies helped the important project stay on track during the airport shutdown.

"Because of the team effort, Aerostar met the aggressive FAA schedule for the FY2020 grant applications based on bids," says Auffant. "Meeting the FAA schedule puts us in an excellent position to receive a grant for the full amount of the project as part of the CARES Act."

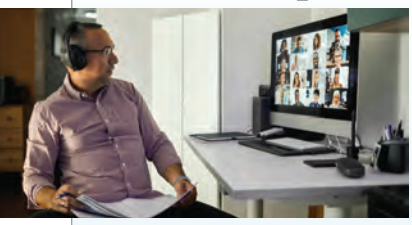
Aerostar began accepting bids from potential prime contractors for the taxiway project in late April. Design and engineering partner Kimley-Horn had to adjust quickly when SJU was ordered to shut down just a few weeks later.

Continued on Page 36

Preliminary onsite work paid dividends after the airport was required to close in mid-March.

PHOTO: KIMLEY HORN

10 Tips for Virtual Success



Like any new skill, working on airport projects remotely often includes trial and error. Consultants supporting projects for Luis Muñoz Marín International and Pittsburgh International share some of the tricks they've learned along the way.

1. REMAIN FLEXIBLE

Office hours must change to keep projects moving ahead. Many employees navigating COVID-19 shutdowns are also caring for or homeschooling their children. Some spouses split the workday, with one working 8 a.m. to 5 p.m., and the other working 5 p.m. to 1 a.m.

"We had to adapt our hours to reflect this," says Matthew McCloskey, director of information technology at Burns Engineering.

It's also important to consider the schedules of single and childless employees. With many grocery stores, dry cleaners, etc. abbreviating their operating hours, some team members may need to run basic household errands during the standard business day.

2. ADJUST YOUR TECHNOLOGY

Wi-Fi bandwidth quickly becomes an issue when two people work from home and kids are taking part in virtual classes or other online activities. "We had to get creative," McCloskey says. "We had people get up at 1 a.m. to download large files to work on during the day. Everyone had to adapt."

Eileen M. Vélez-Vega, vice president of Kimley-Horn Puerto Rico, learned to always have a backup presenter lined up to take over in case her Internet connection failed.

3. INVOLVE HR

Some people will work constantly when supporting important deadline-oriented projects from home. McCloskey recommends having human resource managers remind employees to "turn off" every now and then. "The tendency is to keep going and going, and never have an end to the workday," he explains. "While it's true that you no longer have a commute, that doesn't mean you should work 15-hour workdays. That's just going to cause everyone to burn out."

That said, some employees find it difficult to self-motivate and stay on task. Making sure that everyone pulls his or her own weight is crucial to establishing and maintaining a collaborative team culture.

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SNOW BLOWER

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4. WORK WITH VENDORS

Before the coronavirus pandemic, "zoom" was just a word bubble in comic books. Now we think of it with a capital Z, and use it to videochat with work colleagues.

Whatever systems are being used to support projects (Zoom, VMWare desktops, the Panzura cloud, WebEx, Microsoft Teams, etc.), make sure to maximize their effectiveness. "Vendors can help you uncover ways to make virtual work easier," says McCloskey.

5. SHARE RESOURCES VIRTUALLY

With many people working toward the same goal, it's essential to share resources and critical information across the entire team. "Sometimes we get it in our heads that we need hard copies of everything, but we can share documents virtually and get the job done just as well," says Vélez-Vega.

6. THINK OUTSIDE THE BOX

Mandated shutdowns may eliminate physical access to airport construction sites, but they don't preclude virtual access. Teams can leverage video and virtual reality technology to help consultants and contractors visit worksites without ever stepping out of their homes.

7. TRACK PROGRESS

Vélez-Vega suggests using spreadsheets as a tool to document various project steps and quickly track their completion. She also recommends sharing this information with the entire team, so everyone can see progress happening and remain mindful of remaining steps.

8. APPOINT A PROJECT COORDINATOR

Airport projects typically involve multiple phases and large teams of people from many different disciplines. With lots of moving pieces and team members, it is vital to have one person monitoring progress to keep everyone and everything on task.

9. CHECK THE TIME ZONE MAP

When scheduling calls and online meetings, take into account the location of team members, and remember that some are stretching their work days to participate. Meetings should be conducted as efficiently as possible to minimize the inconvenience of working odd or extra hours.

10. MAXIMIZE VIDEOCONFERENCES

Vélez-Vega found it helpful to assign someone to help presenters answer questions and address comments submitted via instant messaging. For especially large groups, she suggests taking attendance to ensure everyone is getting the information they need. She also advises taking screenshots of key material, downloading the meeting files and continually saving information for subsequent reference.

Continued from Page 32

"The shutdown was a shock for everyone, and it required us to change the way we do things," shares Eileen M. Vélez-Vega, vice president of Kimley-Horn Puerto Rico. "Normally, we work from an office and hold meetings at the project site."

With beginning project design milestones on the various airport projects in March, Kimley-Horn planned to fly in personnel from offices in Fort Lauderdale and Chicago to meet with airport stakeholders and the local design team. "Everyone was set to arrive on March 16, and the executive order to shut down happened March 15," Vélez-Vega recalls. "No one could travel, but we still had to get our projects done. We had a deadline of May 15 to submit everything to the FAA."

EILEEN M. VÉLEZ-VEGA

FAA had specific timetables for various design submittals, she notes. "We already had strict design schedules to meet deadlines, and we were working with several teams to finalize and review production," she continues. "The March 16 week was one of our critical milestones to finalize the design."

The need to coordinate schedules of team members in different time zones quickly emerged as a challenge. Virtual client workshops—long calls with engineering and planning staffs—had to be scheduled well in advance.

"We did everything remotely either through Microsoft Teams or Skype," explains Vélez-Vega. "We had four to five meetings a day with different team members, and they lasted for hours at a time because we had to coordinate on the final design."

In all, there were more than 55 employees from more than 10 Kimley-Horn offices working on the projects with dozens of airport stakeholders. Because most team members outside Puerto Rico were in different time zones than the local team, some team members began their workdays at 2 a.m. and others ended at midnight to be on hand for videoconference meetings.

"We could have five separate calls on the same project for different project design elements," she says. "It was challenging to get everyone on a call at the same time, but we made it work. We had a 24-hour workday."

A master schedule became crucial to ensure meetings and milestones occurred on time. Additional meetings were added to the schedule that airport stakeholders had helped the design team develop earlier in the year. "Because we were not meeting face-to-face, we needed to meet more often to get through everything," observes Vélez-Vega. "I appointed a team leader to keep track of these meetings and relied on everyone to watch the schedule on their virtual calendars. If something slipped, it meant we had to make up the time, because the deadline would not change."

One of the first steps was to create a workable quality control review process. Airport officials received and reviewed design plans first and provided comments to the

design team to get everyone on the same page. Then, the design team met to incorporate recommended design changes into the plans.

"We could not meet face-to-face at all, not even in a conference room with one or two people," she says. "Technology was a lifesaver."

Fortunately, Kimley-Horn was accustomed to holding virtual meetings. "We normally go to airports to meet with them," Vélez-Vega explains. "Instead, everyone set up their Microsoft Teams and other virtual platforms."

The large number of people attending virtual conferences—sometimes up to 40—required extra finesse. "We needed to take attendance to ensure everyone was there," she notes. "We also learned to take a lot of screenshots and save information continually during the meeting to refer to later."

Airport officials asked questions by clicking on the hand-raising button in Microsoft Teams, and questions were

PHOTO: KIMLEY-HORN

Funding for taxiway reconstruction remains on track, thanks to the project team meeting key FAA deadlines.

answered on screen or via the chat function. Like so many other aspects of the project, monitoring questions required a team effort.

"Having that many people on a call is very challenging," reflects Vélez-Vega. "I needed help monitoring chats and hand raising as I presented. And because Puerto Rico has occasional power outages that cause interruptions to the internet connection, I always needed a backup presenter from our team in case I lost my internet connection. Everyone learned that they needed to be redundant and have several people ready to present in case someone lost their connection."

Securing construction contractors during the mandated shutdown was difficult, so Aerostar and Kimley-Horn held a virtual workshop for local and U.S. companies to increase participation. They followed up the workshop with online pre-bid conferences and bid openings for interested companies. The first pre-bid conference for the Taxiway H Reconstruction project had more than 30 participants including airport officials, design team members, contractors and subcontractors.

"These meetings took several hours, but we had to do it this way because we couldn't see each other in person, and the projects' bidding process had to be completed," says Vélez-Vega.

Normally, an onsite project tour follows such contractor meetings, but the project team had to get creative because the contractors could not visit the project site. Kimley-Horn field engineer Alberto Matta recorded footage of project areas, and Stan Russell from the Marketing Department edited the recordings into a professional project video. The video presentations provided contractors with a virtual site tour of project areas to help them understand existing site conditions.

Hustle and collaborative effort enabled the airport to submit an FAA grant application by June 15, and put it on track to receive a CARES Act grant.

"Even with the shutdown, we completed the design and construction plans," reports Vélez-Vega. "The next phase is construction after the grants are received."

Like SJU and PIT, airports throughout the world are finding alternative ways to accomplish previously rote project tasks. The COVID-19 pandemic is quite literally creating a new normal for managing airport construction. "The new 'normal' will probably be a hybrid between virtual and on-site work," Vélez-Vega predicts. "The process will look a little different than it did before."

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Lexington Blue Grass Airport Adds New Fire Station During Airfield Upgrades

BY ROBERT NORDSTROM

Blue Grass Airport
LEXINGTON, KENTUCKY

FACTS&FIGURES

Project: New Aircraft Rescue & Firefighting Facility

Location: Lexington (KY) Blue Grass Airport

Size: 3 stories; 23,196 sq. ft.

Cost: $15 million

Funding: Airport Improvement Program grant (72%); airport funding (28%)

Construction: Aug. 2018 – Aug. 2020

Master Plan & Prime Project Consultant: Crawford, Murphy & Tilly Inc.

Architect: CR-architecture + design

Construction Administrator: HDR Inc.

Program Manager: Connico Inc.

General Contractor: The Walker Co.

Interior Design & Furniture: KPC Architectural Products Inc. with CR-architecture + design

Access Control: Matrix Systems

Crash Phone System: Forum Communications

Of Note: New ARFF station is part of airport's $66 million taxiway safety enhancement program, completed in 5 phases

Lexington Blue Grass Airport (LEX) is on pace to open a new three-story aircraft rescue and firefighting (ARFF) facility in August. Completion of the $15 million ARFF station moves the Kentucky airport one important step closer to finishing its five-phase program to enhance taxiway safety. The final phase—reconfiguring and reconstructing a 1,000-foot connector taxiway—is scheduled to conclude this November.

MARK DAY

Mark Day, development and facilities director at LEX, notes that the five-phase, $66 million initiative required careful phasing over the last eight years. "The endgame was reconfiguration of our parallel Taxiway A and primary connector Taxiway C," Day explains. "Being a small airport, we don't have a number of taxiways, and we were experiencing some head-to-head traffic issues during congested times of the day. Additionally, one of the taxiways was positioned in a blind spot for air traffic controllers. One of our airlines must call for gate pushback because its aircraft have to back onto an active taxiway."

To resolve the taxiway issue, the airport had to tear down its existing ARFF facility, which was built in 1979. An FAA site-selection study determined the preferred location for a new firehouse was several hundred feet to the southwest, where the maintenance facility was located. The airport consequently removed that building in 2015, reconstructed a new maintenance center on the south side of the airfield, and filled in the valley where the new ARFF station would be built.

"All these dominoes had to fall in the right order to achieve our ultimate goal of reconfiguring our taxiways," Day summarizes.

Fortunately, the genesis of LEX's five-phase plan helped secure federal funding for the new ARFF facility. In 2013, LEX and its master plan consultant, Crawford, Murphy and Tilly, identified airfield geometry and operational complexity in the core taxiway and aircraft movement areas near the

passenger terminal as priority concerns. During this same period, the FAA was focusing heightened attention on these issues.

The airport subsequently hired Crawford, Murphy and Tilly as prime consultant for the taxiway safety enhancement program, including construction of the new ARFF facility.

BRAD HAMILTON

Brad Hamilton, the firm's senior vice president and director of Aviation Services, notes that planning and coordination with FAA allowed the airport to address its airfield priorities within a single program. "This freed significant federal dollars for a new ARFF station because it could be included as part of an enabling project for a larger taxiway safety enhancement program," Hamilton explains.

The overarching goal for the ARFF facility project was to provide optimal access to the airfield and terminal while leveraging existing infrastructure to minimize costs. When choosing a location, planners prioritized response times to the airfield and passenger terminal, and considered overall site development challenges. Ultimately, the location selected required deep foundation and soil stabilization, ground water and stream resource protection, consolidation of nested utilities, a secondary collection area for terminal ramp deicing effluents and a multilevel fire station design to address significant differences between landside and airside pavement elevations.

Site Prep

JIM CHANDLER

The Walker Company, general contractor for the project, had to perform extensive excavation and fill work to ready the site for the new ARFF station. Jim Chandler, the firm's project manager at LEX, notes that portions of the new building sit on 55 feet of engineered materials. All of the engineered fill was quarried on airport property, and materials excavated from the site were used for taxiway extension work during phase five, adds Chandler.

The location that was selected according to FAA advisory circular guidelines was basically a valley that needed to be filled, explains Day. Rather than waiting years for the fill to settle, engineers used H piles driven into solid bedrock to anchor the building and prevent associated foundation cracking.

Construction of the new ARFF station began in August 2018. "Specifications for the project were quite stringent," recalls Chandler. "Driving piles and placing concrete for grade beams and walls required precise planning and coordination. For example, piles could not be driven within 200 feet of freshly poured concrete for a minimum of seven days. Given the building's footprint, this was next to impossible."

To work around this conflict and stay on schedule, crews drove piles on days when other contractors would not be working due to inclement weather. "We adjusted the number of piles driven per day, and opened up more footings than usual in order to drive piles and still adhere to specifications," says Chandler. "Structural reinforcements were installed and concrete was poured in massive amounts. Concrete pump trucks were set up to pour concrete on one side of the building, then moved as needed."

One portion of the taxiway had to be shut down for four consecutive months, which required aircraft to back-taxi on the runway. To avoid associated conflicts, work was often scheduled between midnight and 5 a.m. "We were trying to compress an eight-hour day into a five-hour shift," Chandler recalls.

Although aircraft traffic slowed during winter months, operations continued throughout construction. Contractors used admixtures to prevent the concrete from freezing, and kept the subgrade warmed to a specified temperature. "While pouring concrete and driving piles during winter months were challenging to say the least, we were able to rise to the challenge with the help of our suppliers and subcontractors," says Chandler.

All told, crews installed 320 H piles, 47,055 square yards of concrete pavement, 37,500 square yards of cement base, 56,280 square yards of crushed aggregate base and 2,200 cubic yards of structural concrete for the ARFF building.

Strength & Comfort

The sloped terrain of the building site influenced how the 23,196-square-foot facility is organized. Public spaces are located on the lower level, primary ARFF functions are housed on the airfield level, and observation/operations space is on the upper level. As

a whole, the building itself also serves as part of the airfield's perimeter security. Fencing extends off the new structure to the north and south.

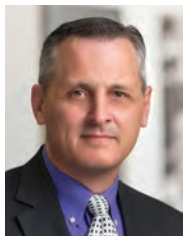
The lower level contains a large training/conference room, which is also designed to serve as an emergency operations center. Maintenance spaces and a fitness center for on-duty public safety officers are also located there.

The first floor, located at the airfield level, includes four bays for firefighting apparatus (two back-in and two drive-through), administrative spaces and residential facilities. A tool room, hose drying/training tower, supply room and areas for storing foam and chemical firefighting agents sit behind the back-in bays. This arrangement helps maximize use of space, notes Director of Public Safety and Operations Scott Lanter.


SCOTT LANTER

The two-story apparatus bay has a mezzanine with a stairwell and window that will be used for training purposes. Crew members can rappel over the mezzanine railing and move gear up and down the stairwell.

"If public safety officers have to go offsite for training, it costs money for travel, room and board and replacement crews while they are gone," explains David Sweeney, senior project manager with CR-architecture + design. "Our goal with this project was to design spaces that are flexible and useful—for example, a training room that can be turned into an emergency operations center."


DAVID SWEENEY

The living area includes six one-person suites surrounded on all sides by a hallway, offices space and interior walls to help minimize noise in the sleeping areas. The large, open kitchen is stocked with commercial appliances; and expansive windows let in abundant natural light and overlook grassy areas outside. A roomy patio off the kitchen provides safety officers a private area with fresh air and views of rolling hills in the distance.

The upper level offers prime views of the runway and taxiway areas. In addition to its current role as a radio communications and airfield observation room, the space was designed with the goal of moving airport operations there within the next couple of years, informs Lanter.

One of the primary design elements of the structure is a massive 42-foot concrete spline wall that runs through the center of the building. “It is designed to anchor the building and offer a highly visible interior and exterior presence,” explains Sweeney. “It helps organize the building’s interior functions, with the apparatus bay on the east side of the wall and the residential/communal functions on the west side. The 18-inch-thick wall rises above the roof of the building; it grounds and anchors the building while serving as a visual icon.”

Sweeney notes that architects and designers had to walk a fine line to make the new ARFF station feel solid and architecturally secure, but also approachable and welcoming. “We don’t want the building to feel like a fortress. We want it to feel like a place where you want to go to work,” he explains. “The building not only provides shelter for equipment, it is designed to enhance the health and well-being of the crews that work and live there for extended periods.”

To that end, designers incorporated an abundant amount of windows to draw as much light as possible deep into the interior spaces. Ivory and cream wall colors with warm reddish doors soften the interior spaces to help counteract mental/physical stress and promote health and wellness, he adds.

The new station includes lots of windows to provide crews as much natural light as possible.

Lanter is not surprised that crews and airport officials alike are pleased with the final product. During the initial concept stage of the project, project planners asked public safety officers to make a wish list of what they wanted in the new station; and the team used that list as a starting point in the design process. “We are proud of the fact that we have a station that is basically designed by our public safety officers,” he reflects. “I’d say it meets 95% of what they requested.”

FACTS&FIGURES

Project: Point-of-use Ground Power

Location: Newark (NJ) Liberty Int'l Airport

Terminal: C

Project Owner: United Airlines

Scope: 54 of 67 total gates completed

Ground Power Units: ITW GSE 2400

Timeline: Phased delivery & installation, beginning in 2015

Of Note: Electrical infrastructure needed to be upgraded to facilitate transition from centralized ground power system

Ground Power Upgrades in the Works at Newark Int'l

BY JODI RICHARDS

Change is happening on the tarmac at Newark Liberty International Airport (EWR) as United Airlines decentralizes its aging ground power systems in favor of new point-of-use ground power units (GPUs). The move is designed to improve the efficiency of ramp operations by providing more flexibility, reliability and redundancy.

"The existing centralized systems weren't working well for us, and we felt the point-of-use was a much better support structure," says Andrew Alexander, the airline's senior manager of facilities engineering and fleet strategy.

The transition is occurring in concourses 1 and 2 of Terminal C, where most of United's EWR flights arrive/depart. Overall, the New

Jersey airport is one of the carrier's most compact hub operations. COVID-19 dip aside, it's also usually very busy. Last year, the airport served more than 46 million total passengers, breaking its previous record.


ANDREW ALEXANDER

"It's a very small area and there's a lot of activity in the region with Newark, JFK and LaGuardia," explains Alexander. "We pack them in there from early morning to late at night."

Ongoing fleet changes and updates prompted the legacy carrier to rethink its ground power arrangements at EWR. The addition of Boeing 787s, which require a specific type of ground power, was a particular driver; but United also needed a system that could serve its diverse fleet, which ranges from Embraer 145s up to Boeing 787s.

Alexander notes that flexibility is critical at all the airports United serves, not just EWR. As a result, he and his team work closely with the carrier's corporate real estate group to determine what type of ground power is needed at various locations.

Central System Challenges

United initially explored the possibility of installing a new centralized system at EWR, but that strategy did not prove to be cost effective. "It would require a great deal of upgrading," Alexander explains. "And by the time you upgrade it, the aircraft fleet may change again, and then the system is obsolete."

One of the major challenges with centralized power is that if the system goes down, it simultaneously affects multiple gates. At EWR, United would sometimes lose ground power at half of its Terminal C gates. Not surprisingly, redundancy and reliability were huge factors when the project team explored other options. The new ground power arrangement also needed to integrate with the airline's building management system that monitors the equipment.


DORON MILBAUM

Ultimately, United contracted with ITW GSE to deliver and install 44 of the manufacturer's model 2400 GPUs under an initial contract. Doron Milbaum, a regional sales manager for the company, describes the 400 Hz point-of-use units as compact, user-friendly, reliable and robust. He also highlights their "plug-and-play" ease and notes that airport/airline personnel can update the system or add new capabilities by transferring the company's latest software from a USB stick or flash drive.

Users can also gather service log files and maintenance data for analysis to ensure efficient operation and effective asset management. ITW GSE units include access portals that allow operators to monitor the GPUs from a control center, notes Milbaum.

In addition, he notes that the 2400 model is smaller than conventional GPUs, consumes less power because it only draws what each specific aircraft needs, and includes an intuitive user interface. Despite such features, Milbaum considers 99% reliability the unit's biggest advantage.

Infrastructure Upgrades

The transition from centralized ground power to new point-of-use units began in late 2015 and is expected to continue to year 2021. Due to the age of the existing facilities (about 30 years), electrical infrastructure upgrades were needed to support the new point-of-use equipment. "There's a lot behind it," Alexander comments. "In most cases, the infrastructure costs more than the hardware you're buying."

Phasing the infrastructure upgrades and deployment of new GPUs was especially critical before the current pandemic dramatically slowed flight activity at the busy airport. Milbaum considers the entire effort a partnership with the Port Authority of New York and New Jersey, which owns and operates EWR.

The majority of work is scheduled overnight to minimize the impact on ramp traffic and aircraft operations. Occasionally,

The transition to point-of-use ground power units is nearly complete.

however, work runs into the morning hours, and temporary gate closures have been necessary. "It's tricky," Alexander acknowledges. "Best case scenario, your infrastructure upgrades are going on while the operation is working; and once you get everything where you need it to be, you down the gate overnight, remove the old unit, install the new unit and power it up, which takes at least 20 hours before it's ready to operate."

The changeover process could be completed in less time if the entire terminal was shut down, but that's impractical at EWR, he adds.

Naturally, the newer equipment is more sophisticated, with touchpad controls rather than buttons and levers. "There is a bit of a learning curve that goes along with it, but we have a pretty robust training system," says Alexander. The airline is using the initial instruction ITW GSE provides during start-up and commissioning to develop its own training program for use after the transition is complete.

The deployment is ongoing, as United plans to transition all 67 of its C Terminal gates at EWR to point-of-use.

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O'Hare Int'l Renovates & Expands Restrooms in Terminals 1 & 3

BY JODI RICHARDS

FACTS&FIGURES

Project: Restroom Renovations

Location: Chicago O'Hare Int'l Airport

Owner/Operator: Chicago Dept. of Aviation

Project Scope: Refresh 22 restrooms in terminals 1 & 3

Cost: $9.6 million

Timeline: 2017-2019

Designer: Epstein

Construction Management: Care Plus

Contractor: FH Paschen

Sinks, Faucets, Soap Dispensers: Sloan

Wainscoting: Dupont Corian

Acoustic Ceiling Panels: Navy Island

As part of its ongoing commitment to customer service, Chicago O'Hare International Airport (ORD) refreshes its restroom facilities on a rotating three-year cycle. "They get a lot of traffic, so the goal, with the support of our airline partners, is to keep a nice, updated, uniform design throughout our terminals," explains Alex Leon, deputy commissioner of design and GPS for the Chicago Department of Aviation.

The most recent refresh—22 restrooms in terminals 1 and 3—began in 2017 and ended in 2019. Renovations cost about $9.6 million and were rolled into the $8.5 billion "ORD21" capital improvement project, a plan designed to "meet the evolving needs of the traveling public through the 21st century and beyond."

Providing larger restroom stalls was a key objective—and a direct response to feedback from passengers. "They have luggage and other stuff with them, so size is a challenge," Leon says.

But expanding the size of individual stalls required creativity, because the overall footprint of most restrooms could not be expanded. (Footprint sizes vary from 990 square feet to 1,775 square feet.) "We definitely lean on our designers to bring best practices, but we also look at other airports to see what they're doing well," Leon says. "It's a combination of many different sets of expertise."

Epstein, the Chicago-based design and construction firm hired for the project, scoured working restrooms and designer showrooms throughout the Windy

New Touches

Restrooms in terminals 1 and 3 now include sinks with integrated soap, water and air dryers at each station. The new arrangement helps reduce use of paper towels and minimizes the amount of water that guests drip onto the floor. SoundPly micro-perforated wood ceiling panels made by Navy Island help dampen the noise created from hand dryers; touchless faucets and other Sloan fixtures notify maintenance workers when they need service.

Designers also incorporated energy-efficient lighting and exhaust systems, and specified durable finishes designed to withstand the heavy traffic that ORD terminals regularly experience. Frosted glass allows borrowed, natural light from the concourse to filter into the restrooms.

The airport added several family restrooms and nursing facilities, with fixtures and amenities tailored to increase their functionality and accessibility. For instance, lower-height lavatories help young children use the restroom and wash up with less help from a mother who is nursing their sibling.

Restroom stalls in all of the renovated facilities are wider and deeper to improve circulation and comfort for guests. There's even room for rolling luggage, which became much more ubiquitous when airlines increased fees for checked baggage.

In many cases, designers gained space for the increased stall depth by reducing the width of toilet plumbing chases and eliminating all other plumbing chases in the lavatory. This strategy also helped create room for additional mothers' rooms, family rooms, additional stalls and larger aisles between the stalls and sink areas.

Where possible, ORD expanded the overall footprints of restrooms. In areas where the surrounding spaces allowed, walls were bumped out as much as possible—without making major infrastructure moves or investments, notes Leon.

Stalls with extra room for rolling luggage and baby changing stations with diaper dispensers in all restrooms (not just women's) are just some of the upgrades that reflect changes in passenger needs, he adds.

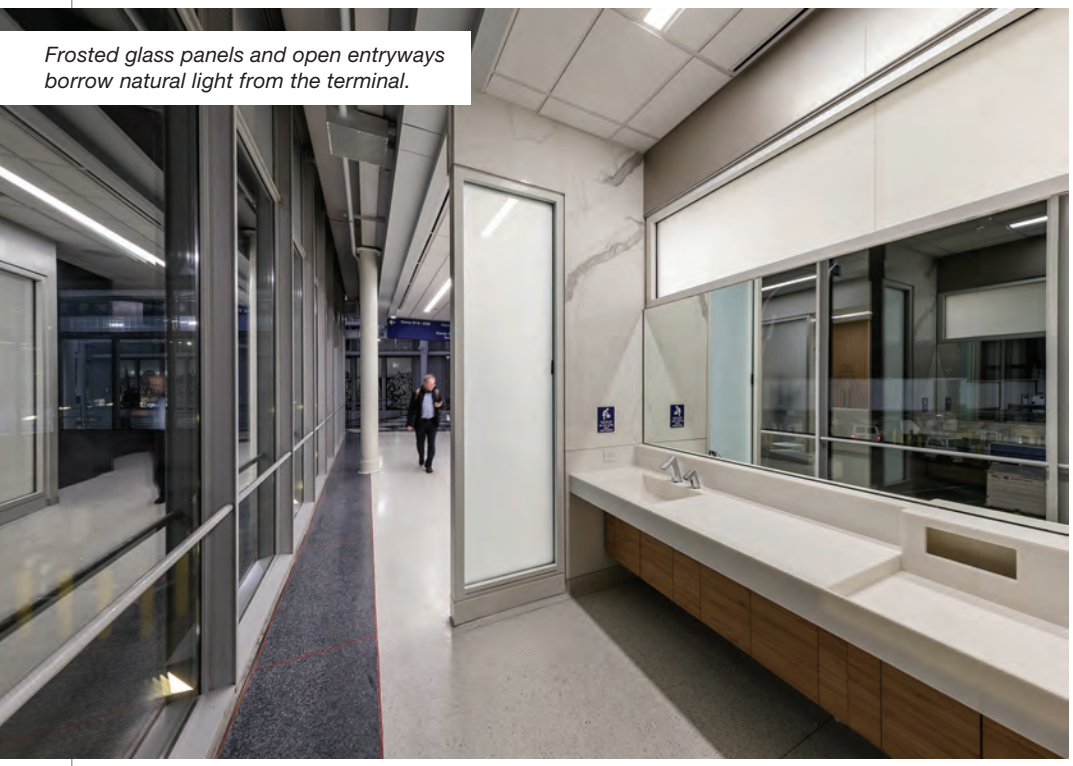
The refreshed restrooms feature a white and gray color scheme with accents of wood and frosted glass, white wainscoting and thin large-format porcelain tile. Wainscoting solid surface by Dupont Corian was seamed together

City for ideas. Within the industry, it drew inspiration from airports such as San Francisco International and Minneapolis-St. Paul International.

Beyond assembling updated options for restrooms in terminals 1 and 3, Epstein also collected ideas for subsequent three-year cycles.

LAURA REBBE

Laura Rebbe, senior project manager at Epstein, advises airports to keep the design process simple. "Try to envision yourself as a passenger just coming off a red-eye flight," she suggests.



Frosted glass panels and open entryways borrow natural light from the terminal.

JEFFREY MCQUISTON

onsite with solid surface counter materials from Sloan to eliminate cracks and simplify the cleaning process. "Durability was a major factor, but we didn't sacrifice the look of the restroom," remarks Jeffrey McQuiston, senior project architect at Epstein. "With newer construction technologies, a finish can be both durable and visually appealing. Airports do not need to limit themselves to stainless steel and plastic."

Minimizing Disruptions

Completing restroom renovations at the busy airport was a challenge, but Leon notes that cooperation from the airlines, contractor, designer and Chicago Department of Aviation helped minimize

the impact to passengers. "Airlines within the various locations have a better sense of how they operate in terms of moving passengers," he explains. Gate utilization was shifted based on usage to accommodate construction, while messaging—both static signs and audio announcements—alerted passengers to restroom closures and provided instructions to help them find the nearest available facility. A two-phase construction plan ensured that multiple restrooms were not closed within the same terminal at the same time, Rebbe adds.

When removing walls, contractors encountered unexpected infrastructure, such as wires and pipes that were not detailed in terminal documents. Although this could have easily delayed the schedule, Leon credits close coordination among project stakeholders for enabling quick adjustments in the field. "From a construction standpoint, that was one of the lessons learned," he states. "For the next refresh, we will do a lot more verification to make sure that the as-built drawings are correct—that utilities and other things weren't moved over the years without us keeping inventory."

Next Round

As ORD looks ahead to future restroom renovations, the project team continues to study best practices at airports and other facilities that regularly accommodate large groups of people. Between ORD and Midway International, the Chicago Department of Aviation processes more than 105 million passengers annually.

Taking the current COVID-19 pandemic into consideration, Leon notes that ORD's next restroom project might incorporate technology and amenities specifically selected to help slow the transmission of viruses. For example, the recently completed refresh includes hand dryers, because they were considered to be more sanitary and environmentally friendly than paper towels at the time. New information, however, could favor disposable paper towels, because automated hand dryers may cause viruses to become airborne. "We designed it with a different mindset," Leon reflects. "So while we think those were good features and ideas then, there may be different guidelines in the future."

More than 20 restrooms were recently renovated in terminals 1 and 3.

San Francisco Int'l Installs First Tote-Based Baggage System in U.S.

BY JODI RICHARDS

FACTS&FIGURES

Project: New Baggage Handling System

Location: San Francisco Int'l Airport

Site: Harvey Milk Terminal 1

Cost: $180 million (including interim system used during construction)

System Provider: BEUMER Group

High Level Controls: Brock Solutions

Tote System: CrisBag, by BEUMER Group

Baggage Mezzanine: KPFF

Seismic Engineering: Huntington Design Associates

Electric Designer: Redwood Electric

Terminal 1 Center Design-Builder: Hensel Phelps/ Gensler/Kuth Ranieri

Boarding Area B Design-Builders: Austin Commercial & Webcor Builders Joint Venture HKS/ WoodsBagot/ED2 International/KYA

Noteworthy Detail: First installation of a tote-based baggage handling system in the U.S.

San Francisco International Airport (SFO) is turning heads with the architecture and art in Harvey Milk Terminal 1, but the rebuilt facility also includes some important less visible features. The new baggage handling system is one of its hardest-working hidden gems.

Airport officials report the $180 million investment is already helping meet several of SFO's overarching goals, including increased functionality, greater flexibility, reduced cost of ownership and revolutionizing the passenger experience. The project is also putting SFO on the map as the first U.S. airport to install a baggage handling system that carries each bag in a separate tote that can be tracked through the entire system.

When SFO began planning its Terminal 1 redevelopment program, updating the baggage system was a given, explains Project Manager Greg McCarthy. What *wasn't* immediately apparent, however, was the type of system that would best meet the busy facility's needs. That required considerable research.

GREG MCCARTHY

At the time, the 1960s-era terminal had several airline-owned systems dotting its landscape. With six independent systems and 15 CTX checked baggage screening machines, the operation lacked function and was expensive to operate and maintain, notes McCarthy.

"The idea was to consolidate it into one centralized screening system that is airport-owned and have the airlines drive off of that, as opposed to having the airlines handle the project and take the risk of it not working with

our building or other systems," he explains. A consolidated system allows the airlines to share the cost of using a single system, and also provides more efficient and flexible operations for the airport, airlines and TSA screening. As a common-use terminal, flexibility was critical.

The airport used a competitive selection process to find a design build partner, and chose BEUMER Group in 2015. The project team also engaged airport officials, airlines and TSA to help outline the needs and goals of the terminal's new baggage handling system.

BEUMER analyzed the features, benefits, technologies and cost of multiple baggage handling options and presented the project team with two primary options: a conventional belt-based system and a tote-based independent carrier system. Airports throughout Canada, Europe, Asia and the Middle East have used tote-based systems for about 20 years, but they are a relatively new concept in North America.

Stakeholders at SFO identified safety, reduced energy usage, tracking capability and total cost of ownership as key attributes. And based on that list, a tote-based independent carrier system stood out, says McCarthy. Ultimately, SFO chose the CrisBag® system from BEUMER.

Multiple Enhancements

McCarthy explains that moving to a single baggage handling system improves the efficiency of operations throughout Terminal 1, allows greater flexibility for the airlines and delivers a consolidated and optimized process for screening checked bags. Moreover, the CrisBag system allows SFO to track and trace individual bags throughout the entire handling system.

With a typical airport-owned handling system, airlines don't know where their bags are in the facility. "That's difficult," McCarthy remarks.

But when multiple airlines manage their own individual systems, operations, maintenance and systems integration can be problematic. That's not ideal either.

"How many times have you gotten off a plane and waited for bags? Or checked a bag and then had no idea where it was?" asks McCarthy.

SFO's strategy is designed to offer the best of both worlds: a single, airport-owned system used by all airlines that allows them to know where their passengers' bags are at all times.

Tracking is a tremendous advantage of the new system in Terminal 1, stresses McCarthy. Now, each inbound bag remains inside its own individually controlled tote—from off-loading at the gate to a claim device inside the terminal. A radio frequency identification (RFID) technology device on each tote provides 100% tracking once a bag enters the system, explains David Delaney, a project director with BEUMER. "You're not losing bags, and there are no bag jams," he notes.

DAVID DELANEY

The airport provides tracking information from the RFID-equipped totes to its airlines and lets them chose whether or not to pass it along to passengers. "At least at our level, we know where that bag is," says McCarthy. "So it solves that problem."

He notes that operational improvements *and* customer service implications were both super critical issues when choosing a new system for Terminal 1.

Moving to a system that carries each bag in a separate, traceable tote provides flexibility for the airport to manage its gates and capacity—especially during

peak travel times, notes McCarthy. Because bags are sorted and tracked in totes, airlines can use any of the system's inputs, and bags can be delivered to any of the 11 claim units in the arrivals hall. "It's totally universal," he explains.

Positioning input points closer to the aircraft reduces the time baggage spends in the handling system. "From the input points into the terminal is an average of five minutes," reports Delaney. "And the outbound system is the same way—it's very quick."

Many U.S. airports have separate systems for inbound and outbound baggage. "This system handles all aspects: inbound, outbound, screening, sortation and transfer bags," he remarks.

On the outbound side, the new system helps reduce tug traffic because bags are moved from the terminal to drop points closer to the aircraft. "Any time you're reducing tug movement, it's safer, with less congestion and quicker return times," McCarthy relates.

Project designers elevated Boarding Area B to allow baggage tugs to travel underneath the terminal building.

Overall, individual lines in the new system have higher capacity than the terminal's previous system, and there is more redundancy built into the layout. That means if a line "goes down," the terminal should not experience a major disruption in service.

It is also designed for expansion, including earmarked space for a future connector to the International Terminal.

From a high level controls perspective, SFO wanted a common platform across the airport terminal's baggage handling system. Delaney notes that Brock's experience with SFO helped the Terminal 1 project have a consistent high level controls platform.

Greener Operation

Airport officials are looking forward to the energy savings the new baggage handling system is designed to deliver. While conventional systems have motors that run continuously, SFO's new tote-based system employs a start/stop function with electric motors that only turn on when a tote arrives. This ensures a higher level of energy efficiency and low operational costs, explains Delaney.

In addition, its carbon footprint is less than a conventional system's, which falls in line with SFO's ongoing commitment to sustainability. The entire Terminal 1 reconstruction project is expected to achieve Gold-level Leadership in Environmental Energy & Design (LEED) certification.

The new CrisBag system aligns with SFO's overall sustainability goal in several ways, starting with the process load reduction. In general, baggage handling systems are one of the biggest process loads to be accounted for at an airport, Delaney states. With the CrisBag system, there was a considerable reduction of this process load, thereby making the facility more energy efficient.

From a materials perspective, BEUMER is one of the first baggage handling system manufacturers to offer an Environmental Product Declaration and a Health Product Declaration supporting product lifecycle disclosure and material transparency. The considerable low use of materials and energy makes the system a low carbon footprint option.

The new system's electric conveyor motors only run when bags need to be moved.

While tote-based baggage systems are generally more expensive to install than traditional belt-based systems, Delaney notes that reduced energy consumption and longer system life makes them more attractive in terms of total ownership cost.

TSA Certification

The CrisBag independent carrier system is the first tote-based baggage handling option to receive TSA approval for both design and operations. BEUMER collaborated closely with the federal agency through workshops and design submittals, and received certification for its totes in March 2017. When used with Morpho's CTX 9800 DSi explosives detection system, CrisBag totes meet TSA standards for detection and false alarm rates.

Delaney explains that TSA tested the system across a wide range of real-life conditions and situations at its Transportation Systems Integration Facility. Specific elements that were assessed included tracking, throughput, imaging, sorting and detection of missing, unknown and oversized bags. Testers also recorded how quickly the CrisBag system associated specific bags with the individual totes.

Coordinated Construction

Planning, design, construction and commissioning of the new baggage handling system occurred in close concert with SFO's Terminal 1 Center and Boarding Area B projects. Working on all three together was critical to the success of the baggage system project, notes McCarthy. "If you're locked in on your structure and then do the bag system later, you have to fit it in; and you don't get the full benefits," he explains. "This was like a holistic view of how construction of a baggage handling system could always be if you had a crystal ball."

Operators can track each bag through the entire system using the RFID device on its individual tote.

KRISTIN ALLEN

During construction of the new system, the airport built an interim baggage handling system to accommodate operations for Southwest Airlines and Frontier Airlines. "The first major phase of the T1 project required us to remove some of the existing bag system," explains SFO Project Manager Kristin Allen. "We needed to find a solution for those airlines while we tore down the building and before our new bag system was up and running."

Adding a separate design-build team for the interim system and another large project that intersected with the larger Terminal 1 reconstruction project could have fatally complicated the overall redevelopment program. But SFO officials were diligent about ensuring all stakeholders were involved early and often in the planning process, says Allen.

Coordinating with the building designers and contractors made installing the new baggage handling system "that much easier," adds Delaney. Officially, BEUMER was a subcontractor to the design-builder for Terminal 1 Center, Hensel Phelps/Gensler/Kuth Ranieri. But Boarding Area B's design-build contract was with Austin Commercial & Webcor Builders joint venture HKS/WoodsBagot/ED2 International/KYA. This arrangement posed a unique situation because the baggage handling system crosses both projects. "How many sites does that work out, where we can build this massive baggage handling system in a building by another contractor where we don't have a contract?" Delaney marvels. "It's a testament to SFO's partnering approach and culture."

Additionally, all core subcontractors—mechanical, electrical, plumbing, fire protection, special systems, etc.—were involved in the early design and constructability planning meetings.

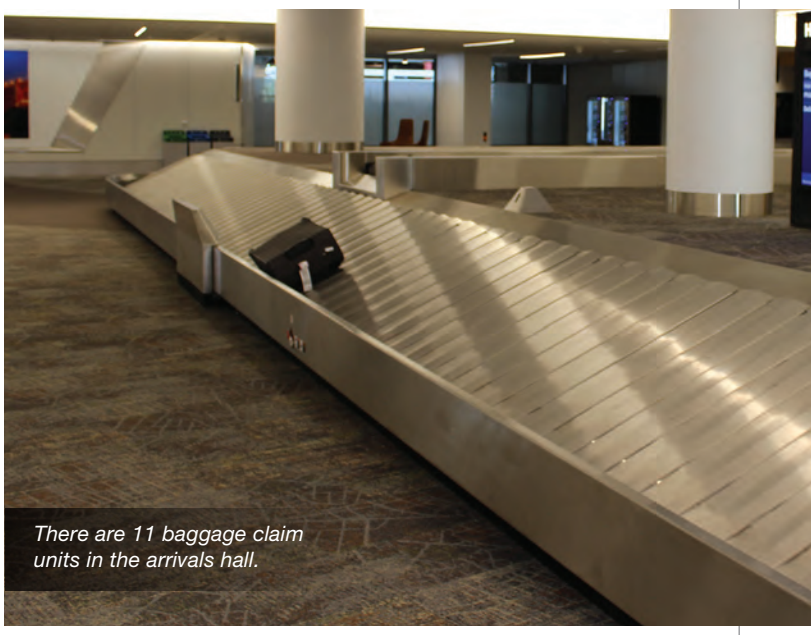
Building information modeling also figured prominently in the plan. "It really made a difference to make the baggage handling system part of the building, rather than an add-on piece," Allen says. "Everything was coordinated, and a lot was actually driven by the baggage system to make sure it all worked. If we had brought them in later, we might be redesigning elements of the building.

"Being able to coordinate all of that design utilizing the technology we have really made it work," she adds.

Because construction of the new baggage handling system and terminal occurred concurrently, the project team was able to begin the nearly yearlong commissioning process for the baggage system before the building was complete. "We had a sequence in place where right when commissioning was done, we were finishing up building elements and then we got beneficial use of the baggage handling system," McCarthy says. He credits all project partners for their flexibility to "retool" how they traditionally do things to facilitate early access so the baggage system could be installed and commissioned sooner than usual.

Delaney says that installing a baggage handling system in a fully constructed terminal can be tricky, but it's not impossible. "There are always compromises on the system performance and buildability."

He definitely prefers installing new systems in tandem with terminal construction/renovations. Being looped into SFO's plans so early was a unique and welcome experience, says Delaney. "In the typical model in the U.S., we're brought in quite late in the project," he relates. "In this case, we worked along with the design-build team the whole time."



There are 11 baggage claim units in the arrivals hall.

SFO is also glad it structured the installation that way. "The sooner you have the bag system contractor on board, the better off everything is going to be," advises McCarthy.

San Antonio Int'l Among Airports With New Checkpoint Scanners

BY KEN WYSOCKY

CITY OF SAN ANTONIO
AVIATION DEPARTMENT

FACTS&FIGURES

Project: CT Scanners for Carry-on Baggage

Location: 41 U.S. airports

Scanners Installed: CTiX, by Smiths Detection

Installations to Date: 123 of 300 purchased

Total Equipment Cost: Nearly $97 million

Funding: TSA

Timeline: Installations began in Dec. 2019 & are scheduled to continue for the next few years

Key Benefits: Better threat detection; faster passenger throughput; reduced false alarms; electronics can remain in passengers' bags; less contact between TSA officers & passengers due to remote operation; machines usually fit within existing checkpoint footprints & don't require major renovations

The same high-tech scanning technology that's used for medical imaging and screening checked baggage is gradually transitioning to passenger checkpoints at dozens of U.S. airports.

As of mid-July, TSA had installed 123 computed tomography (CT) scanners at 41 airports around the country, with even more installations slated in coming years. The upgrade represents a considerable step forward in the technology used to screen passengers' carry-on bags and other items.

Specifically, security officials say that the improved scanners enhance threat detection, increase checkpoint throughput and significantly decrease false alarms. In addition to slowing down the screening process and inconveniencing passengers, false alarms increase the need for TSA officers to touch baggage (and items inside) during rechecks. So decreasing their frequency amid the COVID-19 pandemic is especially important.

In March 2019, TSA awarded a nearly $97 million, five-year contract to Smiths Detection for 300 model CTiX scanners, plus associated ancillary equipment and services.

San Antonio International Airport (SAT) is one of several dozen airports already operating the new CT scanners. In mid-June, crews installed two at the Terminal B checkpoint and one at the Terminal A checkpoint. The Texas airport's six other scanners utilize older multi-view X-ray technology that has been a staple at airports throughout the country for about the last 10 years.

"The TSA asked if we wanted the new scanners installed, and we said yes," says Jesus Saenz, director of airports

JESUS SAENZ

for the San Antonio Airport System, which operates SAT and Stinson Municipal Airport. "They improve our overall security posture as passengers go through our security checkpoints. We expect all three scanners to be in full use by the end of summer."

Beyond improving checkpoint efficiency, the new scanners at SAT and other select airports provide an especially timely benefit: fewer physical touch-points and less congestion at security lanes, which facilitates social distancing. Eventually, TSA officers will be able to view scanned images from a remote location, further minimizing their interaction with passengers.

Better Detection Capabilities

Advanced technology CT scanners make it easier for TSA officers to detect threats because they provide highly detailed, three-dimensional views of bags as opposed to the static, two-dimensional images that standard X-ray scanners produce. The new CT equipment also automatically identifies and visually highlights suspicious items.

TSA officers use a computer mouse or keypad to rotate images 360 degrees for better views. This makes it easier to find prohibited items, explains Jason Hull, a capability manager for accessible property at TSA.

JASON HULL

Standard checkpoint technology uses a fixed projection X-ray that basically provides top and side views of each bag. In contrast, CT scanners employ a constantly rotating gantry that takes hundreds of pictures from many different angles, and then assembles them into a high-resolution three-dimensional image.

This allows TSA officers to make much more accurate judgments about items in bags, because the technology can clearly differentiate between threats such as explosives and other similar but benign items, explains Shan Hood, president of Smiths Detection's Americas business.

SHAN HOOD

Better images yield fewer false alarms and fewer bag rechecks, so throughput consequently increases, he adds.

Another benefit: The new scanners eliminate the need for passengers to remove laptops and other electronics from their carry-on bags. In the near future, that likely will apply to allowable liquids, too, Hull notes.

"Reduced manual baggage searches will help with COVID-19 because officers won't have to go through as many passengers' bags," he adds. "This reduces the risks to both passengers and our officers."

Hull says that even if people don't move through checkpoints significantly faster than before, there's no doubt the technologically advanced scanners will make the process more convenient.

Minimal Renovations Required

The CT scanners also can be integrated into automated checkpoint lanes. In these types of systems, which aren't as common, passengers still manually place their items on trays for screening. But after bags are cleared and subsequently removed by passengers, an automated retrieval system moves the trays back to the beginning of the security checkpoint for re-use by other passengers waiting to be screened.

In most cases, the new scanners easily fit within existing checkpoint footprints and don't require electrical upgrades, says Hood. As such, they can be installed with minimal disruption to ongoing operations.

Saenz reflects positively on the four-day installation at SAT. "The CT scanner is a little larger, but it's pretty much a plug-and-play unit," he relates.

"By and large, it appears that most major airports will not require any major renovations to use the new scanners," says Hull.

Hood adds that the monitors and keyboards specified for the new CT equipment are very similar to those used with existing scanners, so they don't present major changes or challenges for TSA officers. Furthermore, the scanners can be continuously upgraded with new software and detection algorithms. "We're effectively future-proofing the machines," he remarks.

Looking Ahead

Why switch to CT technology now? Hull says the timing is good because existing X-ray scanners are nearing the end of their useful life cycles. In addition, many airport officials have been asking TSA for better screening technology that can detect more sophisticated emerging threats.

In addition, some traditional threats seem to be rising. For example, TSA statistics show that the ratio of guns detected to the number of passengers boarding planes has increased significantly.

From March 22 to April 22, TSA officers found 58 guns, compared to 346 during the same time period last year. Although the total number is down, when the figures are adjusted for the steep drop in passenger traffic related to the coronavirus pandemic, the recent rate is one gun for every 80,000 passengers screened. In 2019, the rate for the same period was one gun for every 216,200 people screened—a nearly three-fold jump.

More In Store

Hull notes that passengers might not experience significantly faster processing through checkpoints right away, because there's always a learning curve when adopting new technology.

That has, in fact, been the case at SAT, where the new CT scanners are processing an average of about 100 bags per hour. But Saenz expects that figure to climb to 150 bags per hour when TSA officers become more proficient using the new scanners.

AIRPORTS WITH CT-EQUIPPED CHECKPOINTS

Albany Int'l Airport (ALB)
Albuquerque Int'l Sunport (ABQ)
Augusta Regional Airport (AGS)
Bill and Hillary Clinton National Airport (LIT)
Birmingham-Shuttlesworth Int'l Airport (BHM)
Bradley Int'l Airport (BDL)
Charleston Int'l Airport (CHS)
Charlotte Douglas Int'l Airport (CLT)
Chicago O'Hare Int'l Airport (ORD)
Cincinnati/Northern Kentucky Int'l Airport (CVG)
Dallas Fort Worth Int'l Airport (DFW)
Daniel K. Inouye Int'l Airport (HNL)
Detroit Metropolitan Wayne County Airport (DTW)
Dulles Int'l Airport (IAD)
Greater Rochester Int'l Airport (ROC)
Hartsfield Jackson Atlanta Int'l Airport (ATL)
Jacksonville Int'l Airport (JAX)
Kahului Airport (OGG)
Lihue Airport (LIH)
Los Angeles Int'l Airport (LAX)
McCarran Int'l Airport (LAS)
Memphis Int'l Airport (MEM)
Minneapolis-St. Paul Int'l Airport (MSP)
Newark Liberty Int'l Airport (EWR)
Norfolk Int'l Airport (ORF)
Palm Beach Int'l Airport (PBI)
Philadelphia Int'l Airport (PHL)
Phoenix Sky Harbor Airport (PHX)
Portland Int'l Airport (PDX)
Richmond Int'l Airport (RIC)
Ronald Reagan Washington National Airport (DCA)
Sacramento Int'l Airport (SMF)
St. Louis Lambert Int'l Airport (STL)
San Antonio Int'l Airport (SAT)
San Diego Int'l Airport (SAN)
San Francisco Int'l Airport (SFO)
Savannah/Hilton Head Int'l Airport (SAV)
Southwest Florida Int'l Airport (RSW)
Tampa Int'l Airport (TPA)
Tulsa Int'l Airport (TUL)
William P Hobby Airport (HOU)

Currently, 41 airports have CT scanners operating at passenger checkpoints. (See sidebar to the left for full list.) During the next several years, however, TSA plans to install the new technology in about 100 airports nationwide.

"Overall, it's a win-win situation—enhanced detection for TSA officers and faster processing time for passengers," Saenz summarizes. "Passengers are very happy that they don't have to remove electronics anymore. There are a lot more smiles on their faces because it's easier for them."

PHOTO: TODD DWYER OCEAN CITY AIRPORT

Ocean City Municipal Installs Artificial Turf

BY SCOTT BERMAN

FACTS&FIGURES

Project: Artificial Airfield Turf

Location: Ocean City (NJ) Municipal Airport

Scope: 54,000 sq. ft. of synthetic turf & 6,200 sq. yards of crushed stone installed at both ends & along one side of 2,972-ft. airstrip (similar materials will be installed on other side in final phase of project)

Cost to Date: $762,040 ($81,400 for design, engineering & permits; $680,640 for earthwork & installation)

Funding: $692,764 from pair of Airport Improvement Program grants; $69,276 from city

Design/Engineering: L.R. Kimball

Synthetic Grass Supplier: AvTurf

Installation: Act Global, AvTurf parent company

Timeline: Turf installed along bay side & in safety areas Jan.- March 2020; installation on other side of runway is pending

Key Benefits: Discourages birds from grazing near runway; erosion control; reduced maintenance

The Ocean City, NJ, area is known for beaches, boardwalks and unspoiled hiking areas. But some of the very features that make it attractive for tourists and outdoor enthusiasts make it difficult for the local general aviation airport. Located on a barrier island between the Atlantic Ocean and Great Egg Harbor Bay, Ocean City Municipal (26N) is prone to erosion problems from high tides and safety hazards from birds.

TODD DWYER

In response, the city-owned facility is using artificial turf to address both issues. Airport Manager Todd Dwyer explains that installing synthetic grass over a layer of crushed stone not only eliminates the birds' food source (which encourages them to relocate elsewhere), it also helps prevent water from undermining the structural integrity of the airport's sole airstrip, which is designated by approach as two runways, 6 and 24.

So far, the small 85-year-old airport has spent $762,040 on the three-phase project—90% from two FAA Airport Improvement Program grants and the remaining 10% from the city. In March, crews completed the crucial second phase—installing stone and AvTurf at both ends and along the bay side of the 2,972-foot asphalt runway. Work was performed from January to March, when traffic is extremely sparse at the airport. (During the busier summer season, it accommodates about 60 landings daily.) Additional stone and turf will be added to the other side of the runway during the third and final phase of the project, which is currently winding its way through the bidding and FAA grant application processes.

Dwyer notes that safety is one of two key issues driving the project. Nearby wetlands, which attract seagulls and Canadian Geese in

particular, create the right environment for bird strikes. Last year, the towerless airport served about 5,000 planes and experienced six minor wildlife incidents, all involving geese.

"Our runway butts up to the bay, so we also have erosion issues," he adds. "In fact, we are constantly battling erosion here on the island. When the tide comes up every 12 hours, and when we have high winds or bad swells or storms, the waters undermine the asphalt of the runway. The artificial turf is a way to address that."

Dwyer reports that good working relationships with the FAA are helping facilitate the project. The federal and district offices both provided insights on the airport's idea for bird and erosion control. The airport also worked with the FAA William J. Hughes Technical Center, located about 20 miles away in Atlantic City, NJ, on the issue back in 2003. The island airfield provided a rigorous place to test how well AvTurf would stand up to weather and tides.

The synthetic turf is manufactured from polyethylene fibers and is in-filled with sand to help secure the product to the ground, provide drainage and reduce its surface temperature in sunlight.

The Turf Landscape

DANIEL MCSWAIN

According to Daniel McSwain, vice president of sales and operations for AvTurf, about 30 airports around the world currently use artificial turf on their airfields. "They vary in size from small private airstrips like at Calhan, CO, to major hubs like Abu Dhabi, Chicago O'Hare, JFK, Dallas Fort Worth and Detroit," he relates. "The main reason airports consider artificial turf is to enhance safety in one way or another."

AvTurf is also environmentally friendly because it does not need to be watered, fertilized, treated with pesticides or mowed, notes McSwain. Company personnel estimate that airports save 55 gallons of water annually for every square foot of grass they replace with artificial turf.

This aspect resonates with younger airport operators, architects and engineers, and is increasing demand for the product, reports McSwain. "As expansions become more difficult, airports have to look at alternative ways to keep their runways open and operational," he adds.

Advantages notwithstanding, artificial turf is generally not an easy sale. "In my 22 years of aviation experience, I've always found airports to be very risk-adverse—and rightfully so," McSwain relates. "It takes open-minded regulators and airport operators to understand that new technologies and new ways of doing things aren't always 'risky'."

Artificial turf was installed at both ends of the runway and along the full length of one side.

PHOTO: TODD DWYER OCEAN CITY AIRPORT

Using experienced installation crews is key to minimizing risk, he emphasizes.

McSwain says that preparing the ground and installing the long rolls of turf is a fairly straightforward process, but it must be done just so. Crews from Act Global, AvTurf's parent company, performed the recent work at Ocean City Municipal. In total, they installed 54,000 square feet of turf and 6,200 square yards of crushed stone along the entire length of the runway's west/northwest side and in safety areas at both ends.

"Workers excavated down from the asphalt, backfilled with crushed stone, compressed the stone down, laid the turf, then spread a thin layer of sand over the top of the turf to help hold it down," explains McSwain. "Now, it's essentially a retaining wall for erosion control."

L.R. Kimball, the Pennsylvania firm that designed and engineered the project, provided consulting support throughout installation.

Dwyer was impressed by the crews' work—especially the extra measures they took to keep the turf in position despite punishing island winds and tides. Installers constructed lines of composite two-by-fours that meet in points at the edges of the turf—one line on the runway side at the edge of the asphalt, and another line at the other edge of the turf. Workers secured the composite into the ground with rebar and hot-glued the turf to the two-by-fours.

Although the project was relatively small in scope for the company, its crews had to endure cold weather and recurring worksite flooding caused by high tides. On the plus side, construction was not limited to nighttime hours because flight activity is very slow at the airport during winter, enabling the airport "to essentially shut down during construction", McSwain notes. The deadline, however, was still a pervasive factor because the airfield needed to be clear when traffic picked up in the spring.

To ensure consistency and facilitate installation of the new turf, crews removed the remaining section of AvTurf that had been installed 17 years ago during the FAA pilot project. (The other original test section was removed in 2010 to make way for a drainage pipe.) Dwyer reports that the synthetic turf had held up very well throughout the years, and topside weeds were the only evidence of its age. Tides had washed in sediment and seeds that grew into weeds, but the roots had not penetrated the turf.

Dwyer is also optimistic about the new AvTurf. "We are definitely seeing an improvement in terms of the erosion," he reports, adding that the airport has experienced several flooding and tidal events

since installation. Also, he has noticed that just two months after the turf project, birds were moving away from the areas where it was installed. So "there have been good effects with the birds," he notes.

In the meantime, the airport continues to leverage another key wildlife management strategy: border collies. Under contract with the city, a company called Geese Chasers brings dogs to the airfield two to five times daily to scare away geese and other birds. The dogs also patrol other local sites such as school athletic fields.

"We try to be as aggressive as possible to minimize safety hazards posed by birds," says Dwyer. Strategies such as dogs and artificial turf allow the airport to avoid using lethal means.

McSwain notes that birds aren't the only type of wildlife that AvTurf can help manage. In 2014, Orlando Sanford Airport installed the product to help deter gopher tortoises from burrowing in runway safety areas. The FAA also used the project to test how artificial turf acts if a plane veers off the runway and into the safety area, in wet or dry conditions. "AvTurf performed very well with zero concerns," reports McSwain.

The product can also be used to help identify taxiways with markings, per a 2007 FAA Engineering Brief, 72A. Such markings can be an important safety matter for airports with concerns about inadvertent landings on taxiways, notes McSwain.

An outside service brings in border collies to help drive away geese and other birds.

Rules of Thumb

While Dwyer recognizes that every airport has different challenges, he feels that most operators could benefit from considering artificial turf. "Get on board with your consultants, the FAA and your local ADO, and set a plan," he advises. "Ask plenty of questions. Those men and women are the experts, and they understand the needs of local airports. Talk with them and see what their thoughts are."

He describes the change at Ocean City Municipal as a "positive force" and notes that turf projects don't necessarily have to be complex matters. "It all starts with a simple conversation."

McCarran Int'l, Lehigh Valley Int'l Launch Coronavirus Response Campaigns

BY JENNIFER BRADLEY

FACTS&FIGURES

McCarran INTERNATIONAL AIRPORT

Project: Coronavirus-related Communication

Location: McCarran Int'l Airport, Las Vegas

Theme: LAS All In

Creative Development: Airport's Public Affairs & Airport Marketing Dept.

Material Production: In-house

Supporting Partners: Lamar Airport Advertising; Las Vegas Convention & Visitors' Authority

Cost: Nominal printing expenses

ABE

Location: Lehigh Valley (PA) Int'l Airport

Theme: Abe the Pilot

Dual Messages: Fly Safe With Abe; Work Safe With Abe

Format: A cartoon spokesman delivers tips & information to keep passengers & airport employees safe during the COVID-19 pandemic

Related Measures: NanoSeptic® self-cleaning surface skins on high-traffic touch points; Biospada® antimicrobial surface treatment/coating for luggage carts, wheelchairs, terminal areas, etc.; touchless features for future facility projects; enhanced cleaning protocols in areas where touchless systems are not an option

With air traffic down dramatically and the future of the COVID-19 pandemic still uncertain, this has already been a trying year for the entire industry. Many airports are tackling the need for additional communication with employees and passengers by developing public awareness campaigns to emphasize the importance of social distancing, stopping the spread and other key measures.

Here are two examples of U.S. airports from opposite sides of the country that are executing targeted, branded marketing campaigns to help everyone in their terminals feel safe and confident to be there.

All In

Since the initial onset of the coronavirus crisis, McCarran International Airport (LAS) in Las Vegas has been implementing special

messaging to help passengers navigate as guidelines and restrictions evolve. In April, Rosemary Vassiliadis, director of Aviation at the Clark County Department of Aviation, tasked the organization's Public Affairs and Marketing Department with developing a themed campaign to deliver a handful of core messages regarding the COVID-19 situation.

Betting on the appeal of the area's iconic casinos, Chief Marketing Officer Chris Jones and his team chose "LAS All In" as the unifying theme. Key messages include: "Cover Your Poker Face," "House Rules," "Don't Roll the Dice: Stay Six Feet Apart," "Bet Against the Spread" and "We're Doubling Down on Cleaning and Sanitizing." The red and black color scheme is based on a roulette wheel.


CHRIS JONES

"We focus on thanking people for their willingness to travel and emphasize what makes us uniquely Vegas," Jones comments. "We wanted to make it local, appropriate to our market and something the audience would respond to."

The primary message is that LAS is "All In for Your Health and Safety." The airport kicked off that portion of its campaign right before Memorial Day weekend to reach holiday travelers.

While gaming provided a ready theme for the airport's campaign, it also reminded Jones and his staff about the marketing challenge they face. "We're asking people to take a discretionary trip," he explains. "We want them to spend money to come to Las Vegas. So we have to reassure them and let them know that we're taking this seriously."

Execution

When marketing personnel presented the campaign to airline personnel and internal airport groups, Jones asked various stakeholders what unique messages they wanted to convey to specific audiences such as employees, passengers, visitors, etc.

He also made it clear that the marketing team would develop those messages for them, to ensure that they were presented in a consistent voice, design and theme. "It wouldn't work to have everyone just throwing the logo on their own signs," he explains. "It would diminish the effectiveness of the campaign."

Consequently, the entire campaign has been executed in-house. "There's no added cost other than when we had things printed, which has been nominal," Jones reports. Lamar Airport Advertising donated space on electronic displays inside the terminal that typically run paid messages from casinos, restaurants and local attractions. With air traffic nearly grinding to a halt because of the pandemic, most advertisers cancelled their orders. So Lamar opened space for the airport's COVID-19 campaign. "With their phenomenal partnership, we really have been able to blanket the airport digitally with these ads," says Jones. "Customers cannot help but see them."

When Nevada's governor announced that masks would be required in indoor public spaces, LAS' marketing department collaborated with a longtime partner, the local visitors' bureau. Together, they staged a promotional event in the baggage claim area, complete with showgirls passing out Vegas-branded masks.

A Vegas gaming theme permeates all of the airport's materials and messaging.

"We're just trying to hit consumers where we meet them, whether in person or digital, even reading in a magazine or newspaper," Jones says.

Naturally, the team included social media in its plans. When airlines post messages on platforms such as Twitter and Instagram, LAS marketing staff share them, adding "Our partners are all in" and similar taglines. COVID-related notices from other airports get shared, too, with add-ons such as "MKE is all in."

Jones says that it's crucial for passengers to be comfortable with the preventive measures that *both* airports of their journey are taking to address coronavirus concerns.

Like its own in-terminal audio announcements and ads, the messages that LAS shares and reTweets are designed to build "social confidence" in passengers and airport staff. "We want them to feel confident in leaving their homes, going to the store, getting on a plane, staying in a hotel and also coming to the airport," Jones explains.

It's important to let travelers know that LAS cares about their experience from beginning to end, he emphasizes. To make that message more personal, the marketing staff recorded short videos of airport employees talking about their particular duties during the COVID-19 pandemic. One shows a bike patrol of workers wiping down everything from elevator buttons to parking payment kiosks. "One man made the comment that if his friends or family were traveling, he would want them to know this is being done," Jones explains. "In this way, our employees also see their peers, not some director, talking to them. They are being recognized as a part of this."

A Year to Remember

The current public awareness campaign of Lehigh Valley International Airport (ABE) in Allentown, PA, began brewing all the way back in January.

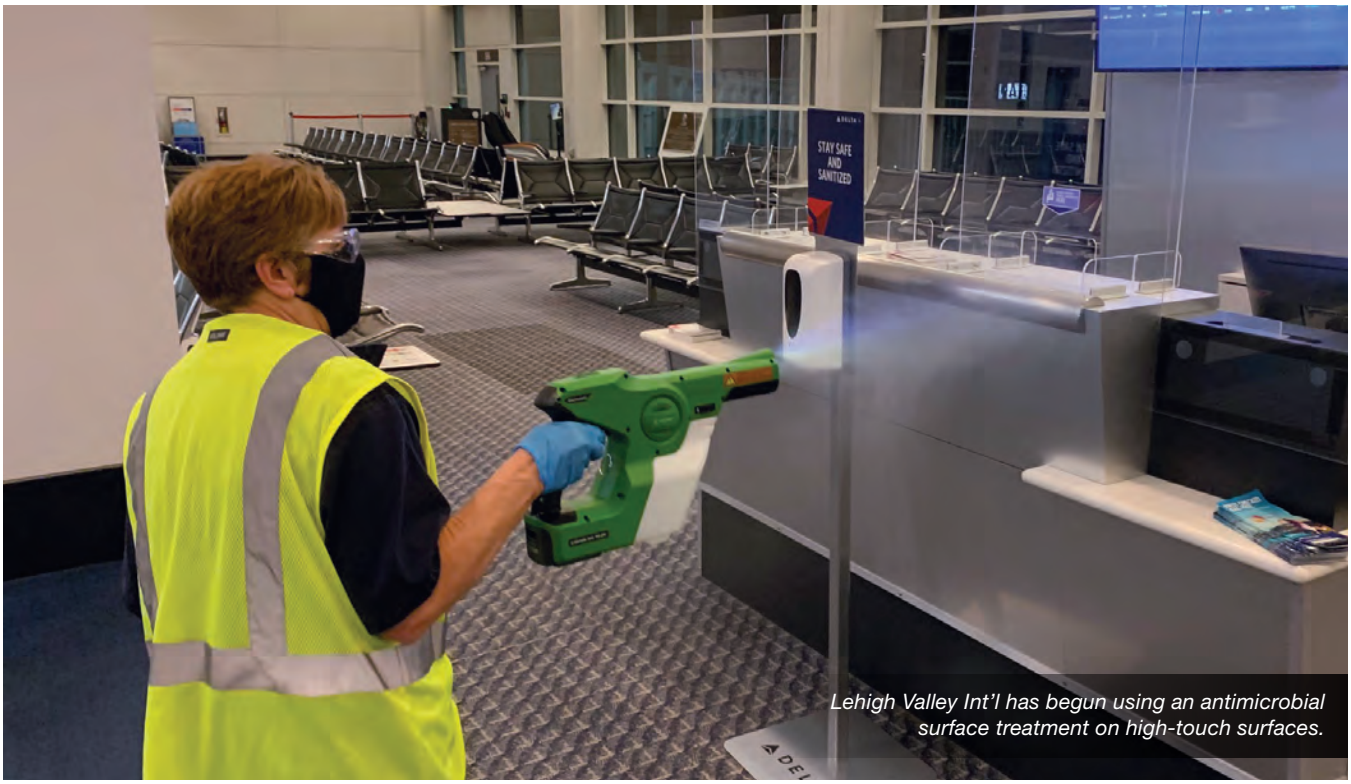
TOM STOUDT

"We were excited about the new year, with a lot of positive momentum going into a new decade," recalls Tom Stoudt, executive director of the Lehigh-Northampton Airport Authority, which owns and operates ABE and two other local airfields.

Then coronavirus changed everything, and Stoudt realized that the Airport Authority needed to communicate a substantial amount of new information.

"As we moved further into the pandemic and a stay-at-home issue was ordered, the need for more communication only increased," he notes.

Practicing social distancing themselves, the



Lehigh Valley Int'l has begun using an antimicrobial surface treatment on high-touch surfaces.

executive staff began convening daily calls to ensure that everyone had the latest information and the airport team's response was evolving accordingly. "There was no manual for an airport to figure out how to work through a pandemic," Stoudt reflects. "As so many other industries, we were learning on the fly and doing our best to respond."

Enter Abe, a Pilot From ABE

From the very beginning, the airport's objective was to keep people safe and healthy, and to keep staff working. Those two goals inspired Abe the Pilot, a cartoon mascot who serves as the spokesman for ABE's dual-focus coronavirus campaign. Abe encourages passengers to Fly Safe with ABE and employees to Work Safe with Abe.

Ironically, Abe was part of a marketing initiative that was scheduled to be unveiled later this year. But when COVID-19 turned commercial air travel upside-down, the airport's Restart Committee decided to debut him early.

"He helps communicate valuable travel information to our passengers," Stoudt explains. "We wanted them to know that when they see Abe, he'll have excellent advice, tips and other good information to share."

Abe even has a backstory, which can be found online at flyabe.com/abe-the-pilot/. Although he is not based on a real person, airport employees joke that Abe and Stoudt are both Embry-Riddle alumni. "We wanted to provide important health information, but in a way that was fun, interactive, eye-catching and would stand out from the traditional regulatory and wayfinding signs one sees at an airport," says Stoudt.

Consistency was essential to build trust with passengers and staff, he adds. The team produced all campaign materials in-house, and key executive staff members reviewed all correspondence to make sure messages had similar subject lines and were formatted to keep people paying attention.

"There was definitely a consistency in the look and feel, and how it was organized," says Stoudt. "As people dialed in, it was easy for them to digest and navigate."

Spokesman for Safe Practices

To understand what specific issues the airport needed to address, Stoudt walked the facility from parking lot and curb to the boarding gates and baggage claims, just as a passenger would.

"Experience what a customer will experience," he advises fellow airport execs. "This is a new travel experience. Do your research."

Stoudt's own research led to modifications in ABE's facilities and cleaning practices. Crews applied NanoSeptic® self-cleaning surface skins on high-traffic touch points such as door handles and elevator buttons. And custodians use electrostatic equipment to spray Biospada®, a long-lasting antimicrobial surface treatment/coating, onto luggage carts, wheelchairs, terminal areas, etc.

Looking ahead, the design of a future TSA checkpoint/terminal connector and the $1.7 million parking project the airport just started both include touchless features for passenger safety.

Abe the Pilot figures in prominently as the airport works to adjust its facilities and processes to new information about COVID-19 and how it spreads. Vinyl banners around the terminal feature Abe delivering messages about various elements of the passenger journey. For example, at security checkpoints, he addresses social distancing and provides other personal awareness tips.

Digital monitors and screens strategically positioned throughout the terminal also share best practices for travelers.

While passengers see "Fly Safe With ABE" messages, employees receive messages about how to "Work Safe With Abe." Both have been successful campaigns, Stoudt reports.

So far his biggest takeaway from the experience has been the importance of transparency. "We all know from emergency drills that most challenges occur on the communication side of things," he observes. "We wanted to be, above all else, as transparent as possible with our teams here, the employees, customers and our community."

In addition to providing information about stopping the spread of coronavirus, the airport is also addressing mental health aspects of the pandemic. One key message for employees is that management realizes the high level of stress that arises from working in such uncertain, rapidly changing circumstances.

"Airports have faced a lot of challenges in the past, but I think this one was very different," Stoudt reflects. "It had a much more severe impact on passenger traffic and finances than 9/11 did. Those things were visible. This has been such an invisible threat, and that's difficult to navigate…We provided resources for employees to speak with therapists and counselors…to help navigate this side of the pandemic, which we felt was a very important element."

Whether on the East Coast like ABE or in the West like LAS, airports nationwide have been asked to perform at levels never experienced before. The campaigns they are using to engage customers and employees not only provide crucial information about COVID-19, they also get to the heart of the matter and communicate true concern for "their people."

"We want them to know that we really genuinely care about their well-being—here and at home," Stoudt concludes. "We're all in this together."

Abe the pilot appears throughout the terminal with tips to prevent the spread of coronavirus.

The Original Aviators

A flock of 21 bird-like sculptures perpetually soar over the baggage carousels of Terminal C at John Wayne Airport (JWA) in Santa Ana, CA. The large-scale, multi-piece sculpture is suspended on an S-shaped square steel tubing structure that stretches 100 feet long. The birds' wings, which were created from aluminum and a high-grade polycarbonate Plexiglas, display enlarged portions of aeronautical charts.

Artist Beth Nybeck titled the sculpture *Flight of Ideas* because she was inspired by the minds of innovators and deep thinkers. "People who are willing to try new things, experiment, explore, learn and grow are the same people who have formed our world and will continue to do so in the future," says Nybeck.

Birds emerged as her form of choice as a reference to the first engineers who watched the flight of birds to determine what was needed for balance and structure.

"The graceful ability for birds to soar, dive and ride the wind have been the subject of daydreams for men and child alike," she says.

What a pleasant daydream for passengers to share as they wait to collect their checked baggage.

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The Opportunity Afforded by Opening

At long last, the day has arrived…your brand-new, state-of-the-art terminal is open. Thanks to hard work and a great team, Opening Day was smooth as silk. Congrats! Back to business as usual? No, unless you wish to forego the extraordinary opportunity in front of you. As they say, the best is yet to come!

Tell Me More

If this is your first airport opening (or even if it isn't), you may be tempted to call it a day once everything is up and running. Before you do, ask yourself: *What makes this moment in time special?* For starters, your facility will never be newer or cleaner than it is right now. You've got a great team in place that has already formed, stormed, normed and performed. And you have the closest thing to a blank slate you'll ever have. Now is the time to optimize! The sky is the limit, but first take a look at specific benefits just waiting to be gained through post-opening training, enhanced facility maintenance practices and keeping the project team intact.

Drinking From a Firehose Only Works for Burning Buildings

Here's the rub: Most homo sapiens can only absorb so much information at one time. A new terminal can include a hundred new systems and thousands of new pieces of equipment. Add to that procedural changes, wayfinding and where to use (ahem) the "facilities," and there's a lot to take in!

Because the goal of pre-opening training is to achieve operational readiness, end users are unlikely to have internalized the additional knowledge required to "take it to the next level." Enter *post-opening training and optimization*. Live operations give rise to questions like "How can I do this better?" Once staff members have developed a comfort level in their new surroundings, they are better able to hone their skills.

And remember, you'll see turnover during this transition. Some long-timers may opt out of the changes ahead, leaving you with newbies thrashing in the deep end. Post-opening training reinforces pre-opening learning, enhances methods and techniques, incorporates passenger feedback and provides an excellent forum for addressing problems and inefficiencies before workarounds become institutionalized.

Catalyst for Change

A new facility provides an ideal jumping-off point to re-envision facility maintenance, set tenant expectations and achieve new heights in operational efficiency and passenger satisfaction. For example, do current processes lend themselves to keeping your new crown jewel pristine? If not, hit "reset" and up your game.

Consider Airport X: In the months (well, years) preceding its new terminal opening, maintenance standards had slipped in deference to critical corrective action. Further, ownership of tasks had become inconsistent over time. The solution? Clear and consistent assignment of responsibilities with contract-prescribed standards and remedies.

All the planning that occurs prior to opening should be followed by new inspection processes (including detailed matrices for custodial and preventive maintenance) that are vetted and refined after an opening.

Suzanne Phelps *is managing partner for Chrysalis Global Aviation, a firm that specializes in managing smooth transitions for new and renovated airport facilities. She views operational readiness as a critical, yet often overlooked, component of airport capital programs.*

Inertia as Your Bestie

Newton teaches us that *an object in motion will remain in motion unless acted upon by an external force*. Similarly, your readiness team has achieved mind-blowing momentum leading up to opening. A cohesive team (like a mind) is a terrible thing to waste. This crew has a shared history, a common vocabulary and a collective head full of ideas that may not have been investigated in the rush to open the terminal. It will never be cheaper or more convenient than right now to boost efficiency and passenger satisfaction. Keep the band together!

I Can't Think About This Right Now

When you are staring down the barrel of a major opening, discussing anything beyond the Big Day may seem daunting. But the message here is an encouraging one: While ensuring uninterrupted operations on Day One is paramount, plenty of runway remains. The team that carried you across that Opening Day finish line already has a list of opportunities to explore. So…*what's next*?

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