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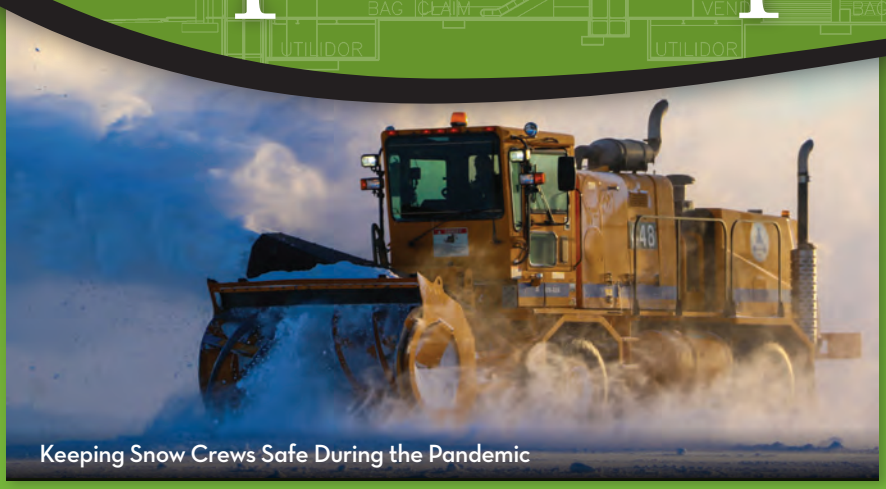
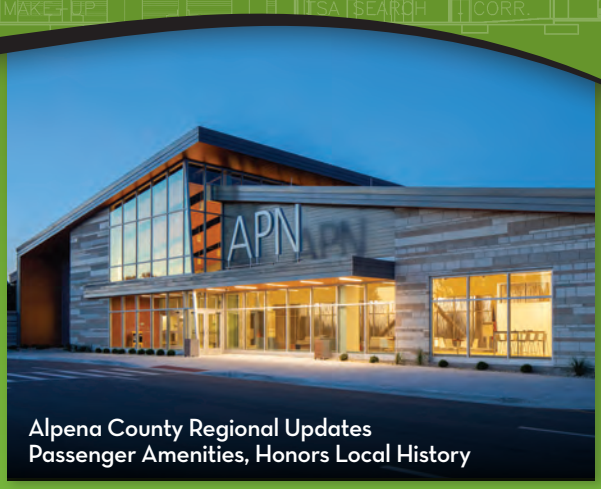


Keeping Snow Crews Safe During the Pandemic



Alpena County Regional Updates Passenger Amenities, Honors Local History

O'Hare Moves Deicing to High-Tech Centralized Facility

AIRPORT STORIES INSIDE: ALB | APN | DFW | GCM | LGA | MEM | MHT | MIA | MSP | ONT | ORD | SLC | STS | YJT | YWG

Passenger Growth Expected to Outpace Terminal Expansion at Sonoma County Airport

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Publisher
Paul H. Bowers
paulbowers@airportimprovement.com
262.510.7832

Editorial Consultant
Rebecca Douglas
rebeccadouglas@airportimprovement.com
815.621.4525

Social Media Director
Kristin Shaw
kristinshaw@airportimprovement.com

Creative & Production Director
Becker 505, LLC – Chad Becker
chad@becker505.com

Circulation Director
Lisa Monday
lisamonday@airportimprovement.com

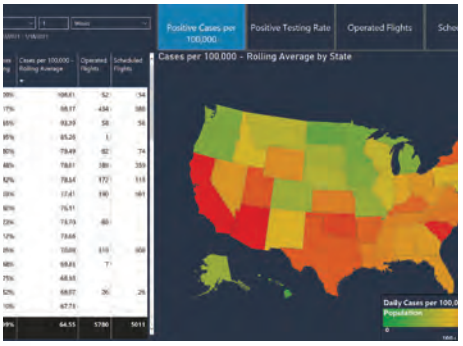
Webmaster
Matt Tews
matttews@airportimprovement.com

Contributing Writers
Scott Berman, Kimberly Gibbs, Paul Nolan, Jodi Richards, Mike Schwanz, Kristin V. Shaw, Thomas J. Smith, Victoria Soukup, Ronnie Wendt, Jennifer Daack Woolson, Ken Wysocky

Advertising
Paul H . Bowers
paulbowers@airportimprovement.com
262.510.7832

Adrienne Gibson
adriennegibson@airportimprovement.com
262.844.4368

Vicki Jensen
vickijensen@airportimprovement.com
414-331-9768



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We'll Get There

PAUL BOWERS, PUBLISHER

It has been a little more than a year since our industry hit a major bout of turbulence. I'm not sure how many of you would have predicted how things would look one year later, but there's no doubt that we've changed.

No, there wasn't an apocalyptic crash of our airport system, or our economy, for that matter. On the other hand, passenger traffic and airport revenues have taken a substantial hit. As is typically the case, the take-home summary is not a simple black-or-white conclusion.

So, what are some takeaways from the past pandemic-filled year?

For starters, governmental funding made a pivotal difference. The CARES Act, supplemental AIP dollars and other relief payments were huge factors that are helping buoy U.S. airports. Not only did this money prop up payrolls and operations, it provided valuable funds for infrastructure projects. Conversely, Canadian airports, without federal aid, were left to fend for themselves; and reduced headcounts and operations were much more common.

On a related front, airport improvements continued at a terrific pace. Sure, some projects were delayed or scaled back. But overall, they are still happening at a rate needed to continue long-term industry growth. In fact, project rates follow the trends we've experienced over the last decade more than they reflect the realities of depressed passenger counts from 2020 and early 2021. Just look inside in this issue for examples. There is a plethora of stories about airports expanding their facilities and services to meet tomorrow's growth, not stuck in pandemic-induced stagnation.

Lastly, we all "made do" with Zoom calls and virtual conferences while travel restrictions were in place, but they, too, will fade from prominence. Just as customers are eager to dine at restaurants rather than outside in tents outfitted with propane heaters, passengers will choose to fly for business and pleasure rather than settle for virtual communications. I, for one, can't wait for that day.

Paul

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O'Hare Moves Aircraft Deicing From Gates to High-Tech Centralized Facility

BY JENNIFER DAACK WOOLSON

FACTS&FIGURES

Project: Centralized Deicing Facility

Location: Chicago O'Hare Int'l Airport

Size: 835,000 sq. ft.; 10-position composite pad with 10 staging positions

Maximum Capacity: 60 aircraft/hour

Funding: Chicago Airlines Terminal Consortium

Timeline: Facility opened in winter 2018; computerized system went live Dec. 2020

Facility Management: Chicago Dept. of Aviation

Service Providers/Facility Planning Partners: United Airlines; American Airlines; Integrated Deicing Services

Primary Deicing Agent: Neat fluid, blended in application trucks

System Design: JCAI Inc.

Surface Guidance System: SmartPad

Web-Based Deicing Management System: Icelink

Independent Performance Evaluation: Frost & Sullivan

Of Note: Largest centralized deicing facility in the U.S.

Key Benefits: Improves safety & efficiency; helps decrease flight delays; provides valuable operational data for planning & analysis

Chicago is widely known as the Windy City, but it's also snowy and icy. That creates challenging conditions at Chicago O'Hare International Airport (ORD), said to be home of the busiest sustained winter airport operations in the world. This past season, for instance, it processed more than 1,200 flights per day.

For decades, deicing aircraft was a gate-based operation at ORD. Then, in December 2018, the airport opened a new 835,000-square-foot centralized deicing facility with 20 bays (10 for treatment, 10 for staging). And that was just the beginning of even more improvements.

Even as COVID-19 brought air travel to staggering lows in 2020, the Chicago Department of Aviation continued talking with United Airlines and American Airlines about ways to completely modernize the deicing system at ORD. Discussions and planning included a wide variety of disciplines: deicing, ramp control, flight operations, ground safety, corporate real estate, continuous improvement and the airlines' station operations control and network operations control.

The collaboration resulted in a system that the project team categorically refers to as the most technologically advanced and safest deicing approach in the world. The new automated deicing facility and gate system, which went live in December 2020, coordinates all of ORD's deicing resources with a single point of control and analysis. Moreover, it provides instantaneous data to inform real-time decision-making and also archives real-time operational data for up-to-date analysis that facilitates planning.

The new system leverages a combination of deicing technologies from JCAI Inc. (JCAII), primarily an enterprise resource planning platform hub and a traffic management and process treatment platform. The system connects United, American and Integrated Deicing Services, which are all housed in the same control tower.

Pilots use an iPad app to interact with deicing personnel on the ground.

Another instrumental player during planning was Franco Tedeschi, American Airlines' vice president for Chicago, Europe and Asia Pacific. "From the beginning of our partnership, JCAII has been receptive to our needs as an airline, and they have delivered infrastructure according to those detailed requests," says Tedeschi. "Together, we created an industry-leading deicing system for American, specific to Chicago, which extended to include a partnership with the city of Chicago and the utilization of the central deicing facility."

FRANCO TEDESCHI

Jeff Campbell, president of JCAII, says the initiative represents an opportunity for ORD to achieve economic sustainability and maximum profitability in all weather conditions while also benefiting the airlines' global operations.

JEFF CAMPBELL

A Long Wish List

Campbell credits the Chicago Department of Aviation and ORD airlines for pushing his company to create the patented one-of-a-kind system. "O'Hare had unique and sophisticated requirements, and they really stretched us to meet this challenge," he says. "They were extremely competent and knowledgeable, and they knew what they wanted."

Gene Herrick, American's deicing manager at ORD, says that the wish list his team developed included increased automation, in-ground lighting, fluid collection, record keeping capabilities and a system to monitor the deicing process live. The common theme for all the requests was increasing safety and decreasing delays.

GENE HERRICK

Kelvin Williamson, chief operating officer of JCAII, says the new system provides all that and more. "It gives the airlines, the airport and service providers an accurate and transparent window of data recorded for review, auditing and training," he comments.

KELVIN WILLIAMSON

Michael Fox, United Airline's managing director of Station Ops Control at ORD, emphasizes the need to balance safety while maximizing the facility's throughput. "Specific attention was given to automating the safe and efficient transit and parking of aircraft, allocations of deicing bays and critical CDF [centralized deicing facility] tower-to-pilot communications," Fox specifies.

MICHAEL FOX

After a series of strategic meetings augmented by scenario modeling and validation testing, the development team opted for a software and operational control system powered by SmartPad and Icelink.

SmartPad is a surface guidance system powered by pad-management software that is designed for user-friendly operation. Its electronic message boards and inset lighting provide clear

visual commands that guide aircraft into place for deicing and reduce the need for radio communications to mitigate the risk of miscommunication. The system's surveillance and metering features allow remote management and provide real-time graphic representation of activity at the deicing pad.

Icelink is a web-based deicing management system that provides real-time operational data to the airlines, the airport, deicing service providers and other pertinent stakeholders. Pilots use an iPad app to interact with deicing personnel on the ground, and all transactions are recorded and time stamped so data can be leveraged for planning, training and auditing.

The integrated system allows the airlines and the contracted deicing provider at ORD to keep tabs on their resources—even remotely via a smartphone app. The increased functional visibility helps the airlines measure key performance indicators to properly manage operations and control costs.

Tech at Every Turn

Aircraft move through the new facility much like patients move through a hospital triage system. A specific deicing protocol is initiated for each aircraft based on equipment type, route, weather conditions and historical data.

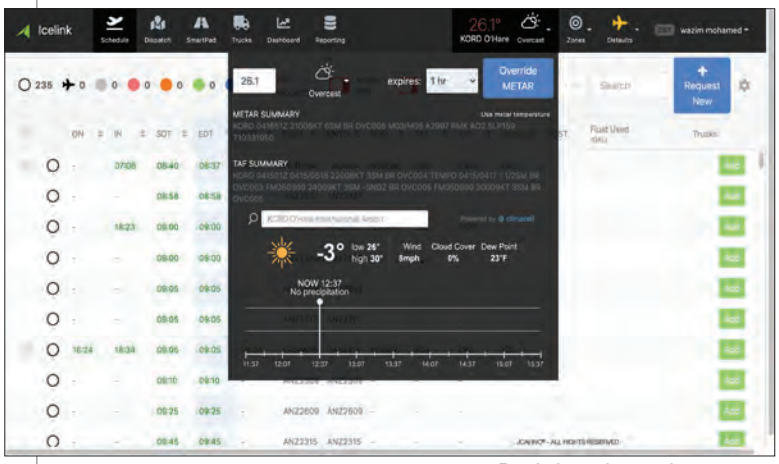
For pilots, using the facility is similar to driving through an automatic carwash. Lights and electronic message boards guide each pilot into a specific deicing pad. Once an aircraft is at the centerline, the system scans aircraft and guides the pilot to the park position. Commands are sent through the pad manager to the electronic message boards and are confirmed by pilots via radio or Icelight flight, an iPad flight deck tool.

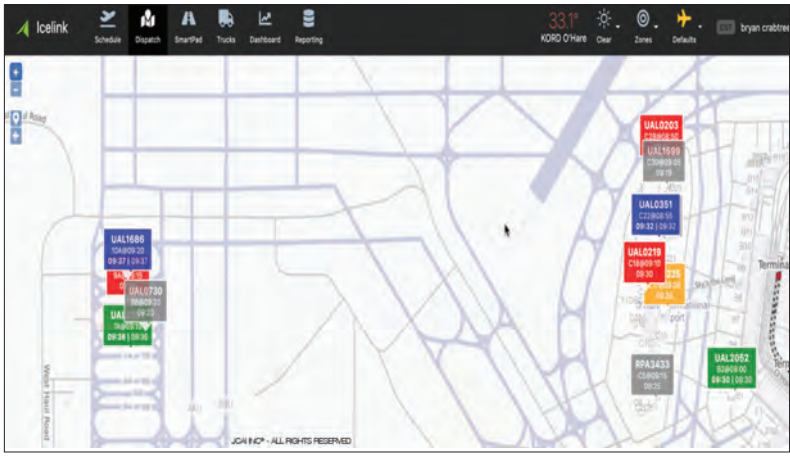
While an aircraft is in the bay, the deicing truck operator takes control from dispatch and completes the deicing treatment assigned through Icelink. After the treatment is complete, control is transitioned from the deicer back to the controller. The pilot then receives guidance via the electronic message boards and flight deck tool that treatment is complete and it's safe to exit.

When deicing at the gate makes more sense, the system coordinates that, too. Campbell notes that American, United and Integrated Deicing Services still have full control and visibility over the entire operation to ensure that the right truck with the right inventory and personnel arrive at the correct scheduled flight.

On an airport-wide level, a live dashboard gives management personnel a real-time window into operations, thus arming them with information to make important decisions in real time based on developing trends in the operation.

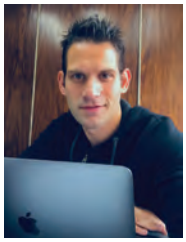
The new automated deicing system went live in December 2020.





Real-time data enhances coordination among pilots, controllers, deicing crews and airport personnel.

The project team hired research and consulting firm Frost & Sullivan to provide a third-party evaluation of the system's performance, and feedback was notably positive. Jonathan Norman, the firm's global head of airports and airlines, was struck by how the facility manages to make a complex process simple for everyone involved. He was similarly impressed with the meaningful data it supplies.

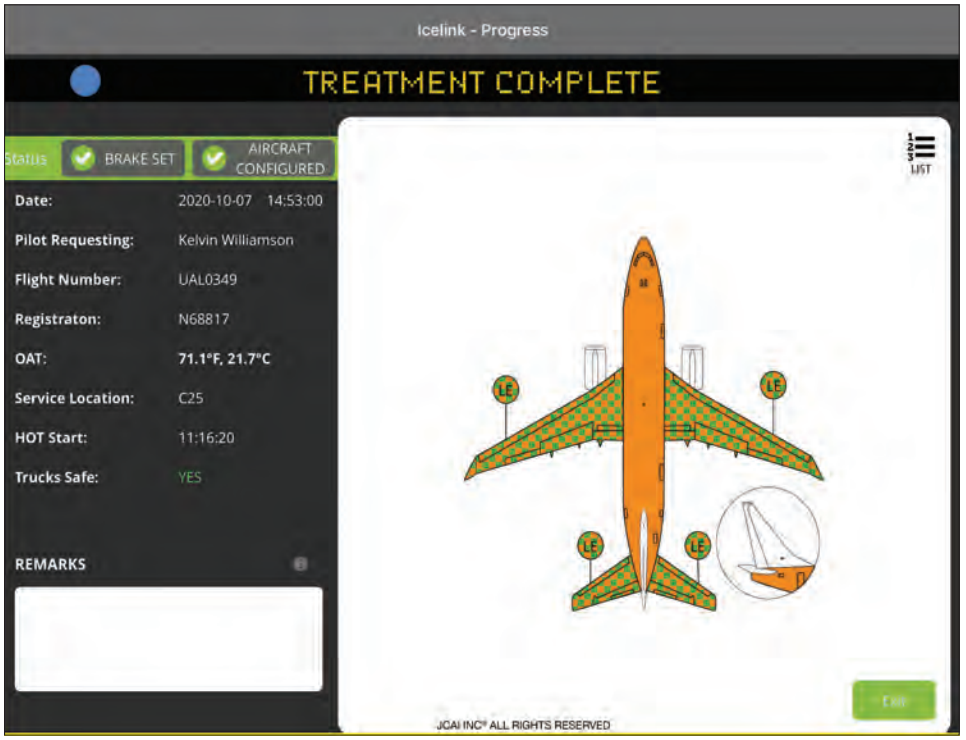


JONATHAN NORMAN

He was more impressed, however, with the collaboration among American, United and Integrated Deicing Services.

Even though Norman predicts that the system JCAII has created at ORD will disrupt the global deicing industry, he still considers the cooperation exhibited to be the real headline. "The uniqueness of the audit that I did was how the stakeholders managed to work together," he emphasizes.

Norman still remembers Tedeschi's philosophy on everyday airport operations— that once passengers enter the terminal,

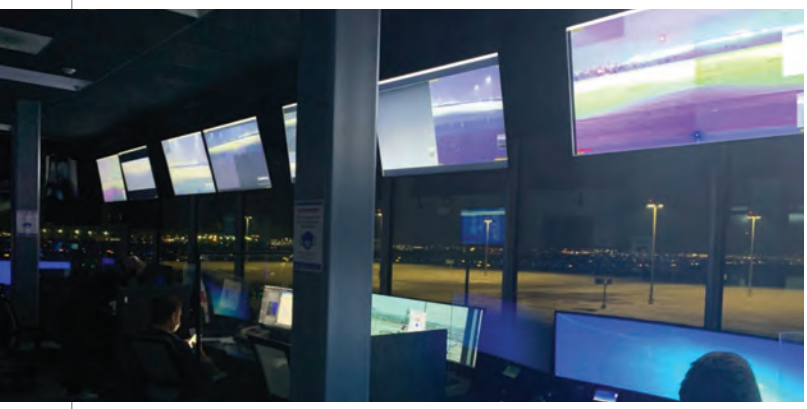


they've already made their choice businesswise. Beyond the terminal doors, everything is about health and safety.

"That mentality takes the concept of operations to a whole new level," he reflects. "Everyone is working together in the same room. This collaboration and cooperation that you have at ORD, this doesn't normally happen in aviation; but it's where the industry *should* be."

The collaboration during deicing operations is evident in the system's very structure. One controller works inbound aircraft and another controls outbound aircraft. Herrick, from American, notes that controller duties rotate daily between personnel from American and United so both staffs are familiar with each position and the entire process.

United's Fox adds that having a common JCAII platform between United and American provides a highly efficient operating structure for aircraft movement. "The unified approach to surface movement also extends to the FAA Air Traffic team



Personnel from United and American rotate duties in the deicing control tower.

at ORD, creating a strong level of trust and partnership in tackling the complexities of one of the world's busiest airports," he adds.

Both of the airline representatives report that a significant level of coordination occurs in the centralized deicing facility control room.

Increasing Data, Decreasing Delays

When it comes to winter operations, every minute counts. Stopping the domino effect of flight delays can save huge amounts of overhead for airlines.

Herrick says that the new centralized deicing facility at ORD helps American and other carriers capture data and meter aircraft through the deicing process more efficiently to keep flights on schedule. "We've seen the speeds pick up out there without sacrificing safety," he reports.

He also notes that radio traffic—between flight crews and deicers, and between deicers and the control center—has decreased about 75%, creating a less stressful and less confusing work environment.

For Fox, the focus is on safety and the ability to increase gate utilization. "The CDF [centralized deicing facility] has delivered greatly, easing the congestion and pressure a winter operations environment typically creates in and around the terminals," he explains. "The efficient taxi flows now available for aircraft, especially those arriving with connecting customers, has been a game-changer from the CDF's inception. As the facility evolves, we expect longer-term benefits in deice truck utilizations, glycol fluid management and all-important flight throughput capacity gains."

The system's dedicated lighting systems allow snow removal crews to skip several clearing cycles at the deicing pad and focus on taxiways and runways. Even with several inches of snow on the pad, lights still guide pilots into the facility and sensors determine the aircraft type to initiate the associated deicing protocol.

In addition to facilitating ground operations at ORD, data gathered by the deicing system has global implications for carriers.

"Our airline is dependent on supporting a network, and in Chicago, we are one of the airline's key strategic hubs," Tedeschi says. "So it's important that we're able to indicate real-time performance metrics, especially during cold weather operations, to evaluate how the airline is performing. Technology that allows operational visibility to any remote location—like our Integrated Operations Center in Dallas/Fort Worth, for example—allows the airline to see what's happening in Chicago and plan strategically and accordingly. That ensures that we plan for the sequence of arrivals and departures, protect connectivity and maintain operational excellence while upholding safety and compliance in the deicing process."

Rather than arbitrarily cancelling flights, airlines can select which specific flights make the most sense to cancel—economically and from a customer service point of view. "Airlines and airports today are operating in very tight margins, and they have responsibilities to customer rights," Campbell comments. "Those things dictate the need for an operation that's extremely precise and efficient."

The precision and visibility of deicing operations at ORD are key for Fox, because they provide a solid foundation for United's station operations control and network operations control to execute critical operational decisions for both the airline and its customers. "As a key hub, many of the aircraft treated at the CDF not only flow back to ORD but also throughout our expansive network," he says. "Clear visibility on performance during a winter event adds a level of accuracy and precision to our strategic planning and tactical execution."

Elusive Global Standards

MIKE HUME

Mike Hume, vice president of business development for JCAII, stresses the importance of consistent deicing standards throughout the world. "If you go to one airport, then you go to another airport, it should be like going to a McDonald's. If you get a Big Mac, you know what to expect. And with this system, the pilot knows what to expect," says Hume. Consistency is especially important for pilots who don't operate in winter weather conditions often enough to become proficient in deicing requirements, he adds.

Achieving consensus, however, is a tall order. JCAII executives have watched eight committees of the SAE G-12 Aircraft Ground Deicing Steering Group work diligently to develop global standards for nearly three decades. Williamson points to pilots flying from Frankfurt to Toronto to New York as a prime example. "It makes their job a lot easier and a lot safer if everybody is working off the same standards," he says. "What the Icelink platform and SmartPad have done is helped achieve that global standardization."

As more cold weather airports add centralized deicing facilities and follow global environmental practices, Fox predicts that the adoption of universal standards for aircraft deicing could lead to significant returns on investment for operational efficiencies. "This is inclusive of throughput goals, flight crew procedures and, most critically, ensuring the highest levels of safety for ground personnel, flight crews and the strict adherence to the Clean Aircraft Concept," he says.

The new system at ORD is a substantial step toward standardization. "We're really proud of the work that's gone in, by both the airlines and the city of Chicago," says Herrick. "We're seeing the amazing things that we're able to do that we had only dreamed of before."

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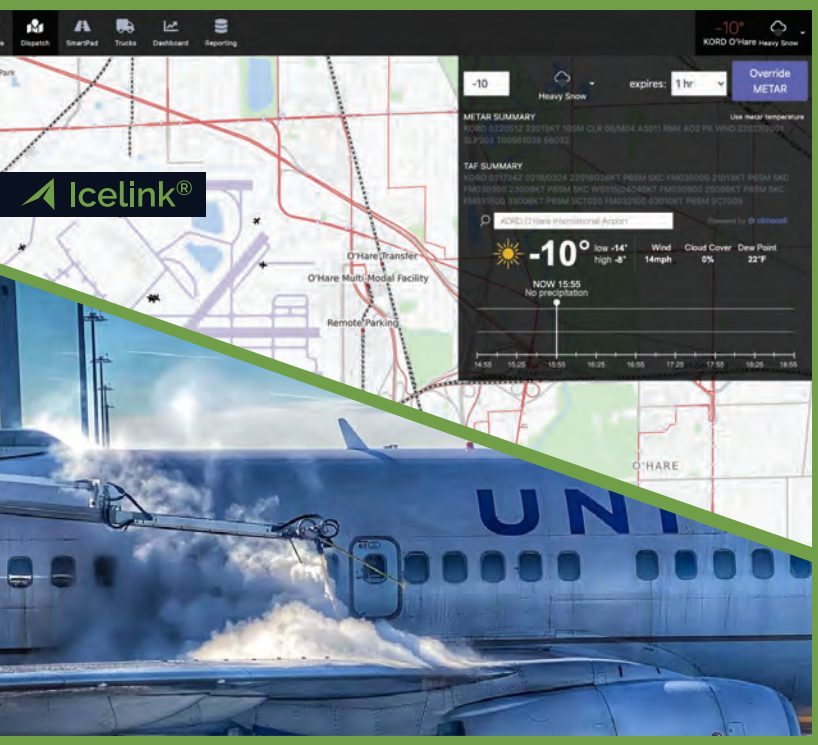

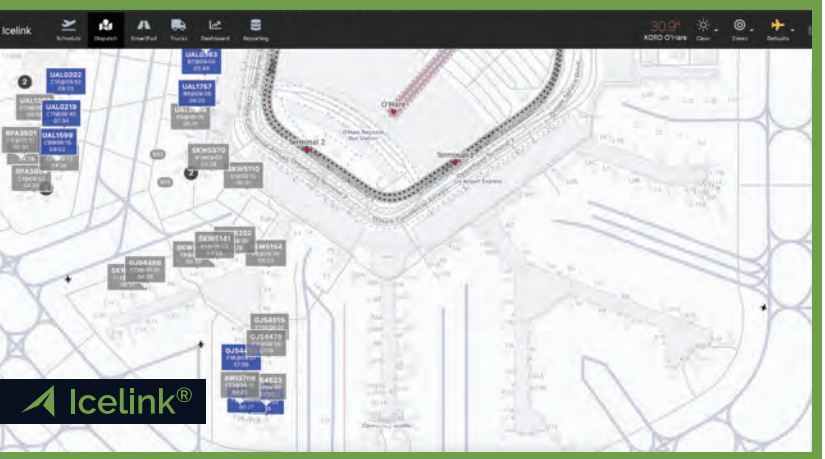

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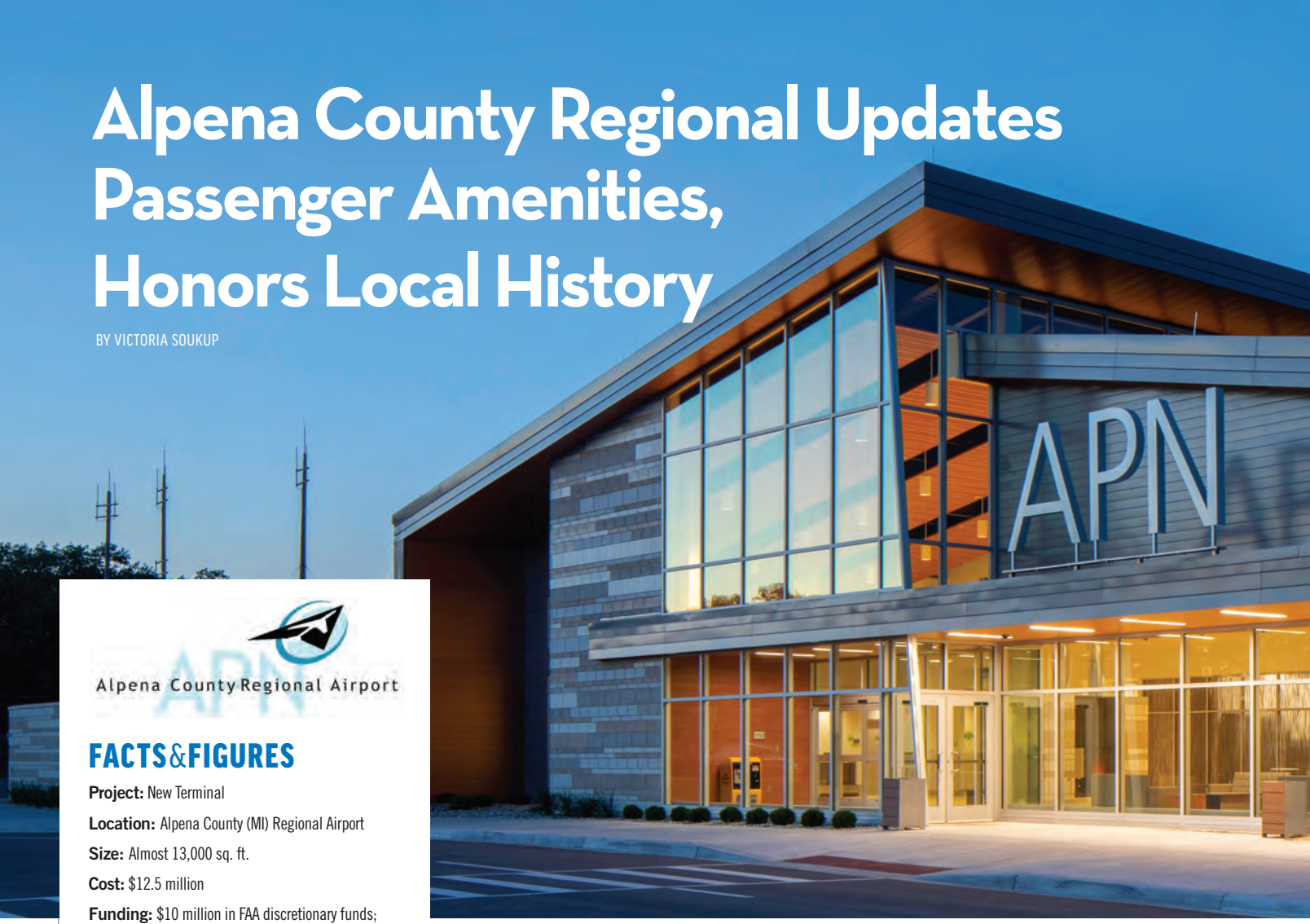
Alpena County Regional Updates Passenger Amenities, Honors Local History

BY VICTORIA SOUKUP



Alpena County Regional Airport

FACTS&FIGURES

Project: New Terminal

Location: Alpena County (MI) Regional Airport

Size: Almost 13,000 sq. ft.

Cost: $12.5 million

Funding: $10 million in FAA discretionary funds; $1.5 million bond approved by county voters; $1 million from county's general fund

Key Features: Updated/expanded TSA checkpoint; automated baggage system; larger holdroom; airside restrooms; passenger boarding bridge; fireplace in lobby; 200-space parking lot

Construction: Nov. 2018 - March 2020

Architect/Design Consultant: RS&H Inc.

General Contractor: Spence Brothers

Cost Estimator: Vistara Construction Services

Acoustical Consultant: AVANT Acoustics

Baggage Handling System: RS&H Inc.; Spence Brothers; Innovative Handling; Daifuku Airport Technologies - Jervis B. Webb Co.

Signage & Wayfinding: Apple Design

Curtain Wall System: Kawneer 1600

Glazing: SunGuard SuperNeutral 68, by Guardian Glass

Seating: Arconas

Flooring: Shaw; Crossville

Restroom Fixtures: Bradley; Kohler; Sloan

Passenger Screening Equipment: L3

Flight Information Displays: Samsung

Boarding Bridge: Ameribridge

Heat Trace Wiring: Delta-Therm

What do Great Lakes shipwrecks, a wildlife sanctuary and concrete blocks have in common? They all provided design inspiration for the new terminal at Alpena County Regional Airport (APN) in northeast Michigan.

Replacing a dated and inefficient building, the new terminal includes more space, updated security and several firsts for APN: a passenger boarding bridge, an automated baggage system and airside restrooms. While adding the new amenities, the airport and design team also managed to pay homage to the region's rich industrial background, storied maritime history and rustic Northwoods surroundings.

"There is no comparison between the old and the new terminal," says Airport Manager Steve Smigelski. "Our old terminal was about 6,000 square feet and was the flower of 1950s design technology. After Sept. 11, when a passenger holdroom had to be constructed, the terminal took on less of an open floor plan and began to resemble a rat's maze. It was terrible for passenger flow, it was terrible for checking bags and there was no efficient movement. The new, nearly 13,000-square-foot terminal is such a tremendous improvement for the airport and the entire Alpena County community."

STEVE SMIGELSKI

Construction took 16 months and was completed last spring. As an Essential Air Service airport, APN draws passengers from four counties and is located more than 60 miles from the nearest main highway. The closest commercial field is Cherry Capital Airport in Traverse City, MI, about 110 miles away.

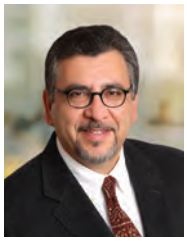
Prior to COVID-19 emerging, APN logged approximately 13,000 annual enplanements and was gaining about 1,000 new passengers each year. With traffic down due to the pandemic, it still offers two round-trip flights per day to Detroit Metropolitan Wayne County Airport.

Needs & Wants

Airport and Alpena County officials began discussing the need for a new terminal with the FAA a full decade ago. After touring the facility, FAA personnel deemed the airport's previous terminal "woefully inadequate," and the agency offered nearly $10 million in discretionary funding to improve it. Voters subsequently approved a $1.5 million bond issue, and Alpena County contributed $1 million to the project.

As part of its disbursement, FAA required the airport to renovate a taxiway connector that was too wide to meet current design guidelines. Airfield engineers remedied the situation by splitting the taxiway into two different connectors. The associated work was bid out separately but funded through the same grant.

Because APN built its new terminal adjacent to the old one, the vast majority of airside apron was already in place. Only 10 to 15 feet of new pavement was needed to facilitate safe operations.



FRANK GRATTON

Designing the terminal building was considerably more involved. "Before we put pencil to paper, we did quite a bit of research on the community," says Frank Gratton, design director of Aviation Architecture at RS&H. "We wanted to discover the uniqueness of Alpena County. The approach we took was a community-inspired design. The community vision is a combination of all stakeholders, and at the end of the day, we're called to reinterpret that."

During several visits to Alpena, the design team learned how important the concrete industry is to the community. Quarries, cement plants and the Center for Concrete Technology are all located there, as is Besser Company, which invented the machinery needed to massproduce concrete blocks. RS&H designers also visited the nearby shores of Lake Huron, toured the Thunder Bay National Marine Sanctuary and Alpena Wildlife Sanctuary, and explored local estuaries and woodlands.

Designers used statement lighting, sofas and a fireplace to create a homey feel in the lobby.

ANDREW NELSON

Several impressions stuck with the team. "We wanted to tie the concrete industry into the terminal design to cherish the industry's history and showcase it to the community," says Andrew Nelson, an RS&H aviation architect. "And the Northwoods region has a lot of natural beauty. Given its location on Lake Huron and Thunder Bay, Alpena has a rich history of maritime shipwrecks. Those were our inspirations."

When creating the terminal exterior, designers opted to use various colored concrete blocks of different sizes to resemble the limestone rock striations they observed at local quarries. "We patterned the concrete masonry units to pick up on the natural rock formations," says Gratton. "It's an economical approach, but it also ties into the community. A lot of people looking at it from a distance might think, 'Wow. This is a really nice stone.' But it was an economical decision based on aesthetics and history."

The structure itself has two offset sloping roofs creating a south-facing clerestory, and glazed facades on the east and west sides. "Alpena is pretty far north," Gratton advises. "We wanted to bring natural daylight into the lobby space, on the airside and landside."

In the summer, when the sun travels higher, the overhang allows less direct sunlight into the space. In the winter, when the sun is lower,

more sunlight streams in. "People appreciate the sunlight and the warmth in the winter months," says Gratton.

The soffit that runs around the building exterior could be considered an "Easter egg" (a meaningful visual detail that takes hunting to find). Smigelski explains that the soffit's copper color references a local maritime tragedy that occurred in the 1800s, when a ship laden with nearly 200 tons of copper sunk to the bottom of nearby Thunder Bay. Despite the depth of the wreck, the valuable cargo inspired numerous salvage attempts over many years, and at least five people died trying to recover the ship's contents. "The soffit is just another example of how detailed the design team got," he relates.

"Hearthwarming" Details

Just inside the entry/exit doors is a fireplace surrounded by chairs, sofas and casual seating with low tables. "It gets a little chilly up here in northern Michigan, and a fireplace is just such a welcoming touch," says Smigelski. "And again, the twin stacks that go up from the fireplace to the ceiling are a nod to the area's industrial base."

RS&H's Nelson explains that designers worked to make the lobby look and feel homey. "Because this is a smaller regional airport, we had the opportunity to create an intimate setting—almost treating the area as a living room or lounge where people could say their hellos and goodbyes. We wanted to make this super-comfortable with plush seating all revolving around the fireplace hearth. And we added dynamic and playful lighting (large round fixtures) overhead as well."

The translucent wall that separates APN's landside and airside areas is both functional and artistic. The 10-foot-high, 56-foot-long wall includes large acrylic panels filled with natural grasses and reeds that represent varieties found at the nearby Alpena Wildlife Sanctuary.

"We had a lot of exciting natural inspiration we could pull from," Nelson remarks. "What we wanted to do was bring some of that inspiration into the terminal. It's a unique feature to pull in from the natural elements."

21st Century Touches

The terminal's new baggage system, designed by RS&H, is a vast improvement for employees and passengers alike. Previously, passengers gave their luggage to ticketing agents, who handed it off to other employees, who took it to the luggage trailer for screening and delivery to aircraft on the ramp.

Now, an automated conveyor system transports checked bags from behind the ticketing counters to the TSA check-in area for screening. Another conveyor then carries them to the baggage makeup room in the garage.

Because the project team economized, APN was able to afford its first baggage carousel. Previously, employees left baggage on the floor between the TSA station and ticketing counter for arriving passengers to claim.

Seating capacity in the holdroom increased from 30 to 90, finally resolving the inherent space crunch associated with Delta Air Lines flights that use 50-passenger CRJ200 aircraft. "When we were busy, TSA would actually have to shut down screening until they could let some of the passengers board the aircraft and then open screening back up again," recalls Smigelski. "This also sets us up beautifully for the future, when larger aircraft will start replacing the CRJ200s."

The airport tripled its holdroom capacity and added power outlets to seating.

All seats—in the holdroom and in landside areas—now have power outlets for charging electronic devices. In addition, APN installed two new flight information displays—one in the passenger holdroom and one behind the ticketing counter.

Passengers are particularly pleased to have restrooms in the hold area. The airport added two gender-neutral restrooms, complete with family-oriented amenities such as changing tables. "That was a vast improvement," Smigelski says. "Previously, if someone needed to use the restroom, they would have to leave the holdroom and go back through screening again."

The new TSA checkpoint has twice as much room, with a separate area for private screenings and a recomposure area for passengers to put their shoes back on, repack liquid items removed from carry-ons, etc. But the real showpiece is a full-body scanner from L3.

"That's huge for us. Our TSA regional contacts worked hard on our behalf," says Smigelski. "Previously, everything had to be done with hand screening. If you had someone with an artificial hip or an older veteran with shrapnel, they would set off the magnetometer, and they would then have to go into the secondary checkroom, which was quite inconvenient. With this new scanner, you simply step in it, raise your hands, get scanned and go."

Airline and TSA offices are located on the secure side of the checkpoint. Airport administration offices remain next door in the building that housed the former terminal.

Easier Boarding


RYAN HALL

Another new amenity proving popular with passengers is a boarding bridge. Ryan Hall, aviation architect and project manager at RS&H, explains that adding a bridge was very important because APN serves an older population, and many passengers had challenges using stairs to enter and exit aircraft at the previous terminal.

Finding the *right* bridge, however, was crucial.

For one thing, the airport's budget did not allow for a new bridge. Beyond that were practical issues. Hall explains that most passenger boarding bridges require several feet of foundation to support a pedestal below the rotunda. To accommodate this at APN, the design team would have had to substantially raise the new terminal's floor or install a costly ramp system to provide the required height.

"Luckily, Ameribridge checked both of those boxes by offering a refurbished radial boarding bridge that utilizes a pedestal that can be supported by the apron pavement alone," says Hall. "This allowed us to leave the finished floor at grade and simply slope the apron pavement slightly to accommodate the bridge."

Passengers also appreciate APN's new parking lot, which has 200 free spaces. The old terminal had one lot with 60 spaces shared by passengers, visitors, employees and a rental car company. Now, employees and the rental car company have their own 30-space parking lot.

Sequel Projects

The new terminal and other recent additions are just the beginning of improvements at APN. The airport received $17.9 million in CARES Act funding from the federal government last year, and APN officials plan to use the money for several other construction projects when approved by the FAA. RS&H has already completed the land use study for the building project, and construction is slated to begin in two to three years.

PHOTO: ALB

Post-Pandemic Vision at Albany Int'l Includes More Parking, More Technology

BY SCOTT BERMAN

FACTS&FIGURES

Project: New Parking Garage & Terminal Renovations

Location: Albany (NY) Int'l Airport

Size: 5 stories; 398,600 sq. ft.

New Parking Spaces: 1,050 (bringing total to 7,000)

Cost: $45 million

Funding: $22.1 million award from Upstate Airport Economic Development & Revitalization Competition; $22.9 million from airport

2019 Parking Revenue: $6.2 million

Project Construction: Oct. 2018-April 2020

Prime Designer/Engineer of Record: CHA Consulting

Architectural & Structural Sub-consultant (Pedestrian Bridge): Bergman Associates

Architectural & Structural Sub-consultant (Garage): Desman Inc.

Construction Management: Turner Construction Co.

Prime Contractors: Unistress Corp.; LaChase Construction

Parking & Revenue Control System: Amano McGann; Park Assist

Equipment Supplier/Coordination: Access Technology Integration

Digital Wayfinding: Park Assist

Project Scope Included: Relocating terminal road; constructing vehicle bridge & pedestrian bridge

Sometimes a parking garage is more than just a place to park vehicles. A case in point is the five-story structure at Albany International Airport (ALB). The new garage and associated terminal upgrades completed last spring signal important changes unfolding at the eastern New York airport. Other changes include a new state-funded interstate exit that serves ALB.

PHOTO: ALB

PHILIP CALDERONE

Chief Executive Officer Philip Calderone notes that the $45 million spent building the garage and renovating the adjacent main terminal are investments in the region's most valuable economic development asset. "We continue to provide a convenient and safe experience for the modern-day traveler, and look forward to coming out of the COVID-19 pandemic stronger than before," says Calderone.

The new 1,050-space parking structure does more than provide much-needed covered parking near the main terminal. It also demonstrates management's confidence in future growth and commitment to adding more technology to the airport. Calderone, a former city and county official who joined the airport team after the garage was under construction, explains that a key goal of building it and improving the terminal is to make ALB a "smart airport."

The new parking structure, which includes ticketless entry and automated space detection, opened in June 2020 while traffic was very light due to the pandemic. With volume still down earlier this year, about 150 vehicles are parking daily for $10 per day. In contrast, almost 643,000 vehicles parked at the airport in 2019, for a daily average of about 1,760. Officials estimate that the airport logged 600,000 total enplanements in 2020—vs.1.5 million in 2019. ALB's seven airlines have operated throughout the pandemic.

Recent traffic trends notwithstanding, a shortage of parking spaces during peak travel times had been an issue at ALB for years. The financial means to remedy the situation came in 2018, when the airport won a $22.1 million award from the Upstate Airport Economic Development and Revitalization Competition, led by New York Governor Andrew Cuomo. ALB funded the rest of the $45 million project.

Ready, Set, Go!

The state money was a boon. However, it came with a stipulation: The garage had to

be substantially completed by March 31, 2020, only 18 months after the awards were announced—a "very ambitious timeline," as Calderone puts it.

To meet the deadline, ALB's leadership assembled and worked closely with a project team that included CHA Consulting as prime designer/engineer of record and Turner Construction Company as construction manager. CHA brought in Bergmann Associates and Desman Inc. as architectural and structural sub-consultants. The team that developed the parking access and revenue control system consisted of Amano McGann and Park Assist, with Access Technology Integration supplying equipment and coordinating with CHA Consulting and the airport.

Together, the companies created a five-level, 398,600-square-foot precast concrete structure with 200 parking spaces on each level, and a heated and enclosed pedestrian bridge that links the new facility to the main terminal. Customers no longer need to pull paper tickets when they arrive, and those who forget where they park can enter all or part of their license plate numbers into a kiosk that uses Find My Car software from Park Assist.

Building the new garage and updating/expanding the terminal were ALB's largest and most complex projects in 25 years. For example, the construction site for the new garage—an existing 200-space surface lot—was sandwiched between the airport terminal road and a security identification display area. Working in the tight and busy area required precision logistics and careful scheduling because all construction occurred while the airport operated as usual. Moreover, technicians had to relocate a tangle of underground utilities and drive 484 structural beams into the ground to create the building's foundation.

Other significant project elements included repositioning a terminal road, constructing a vehicle bridge that passes over the road and enters the garage's third level, and building the pedestrian bridge, which is topped with a 4-kilowatt solar array.

During the peak of construction, about 45 workers were on site. The airport and contractors required all crewmembers to follow COVID protocols for masks and social distancing.

Garage Features


PHOTO: CHA
RICH LAROSE

Aesthetically, the new building blends historic references with contemporary features. For example, the predominantly concrete exterior includes sections of corner and water table brick that allude to the region's celebrated Shaker architecture. Rich LaRose, project manager for CHA Consulting, notes that this historic reference is juxtaposed with ribbons of color-changing LED lighting on each level to create a bright, appealing façade. Inside the pedestrian bridge, the lights take a circular form. Recently, ALB programmed the lights to create a glowing blue display as a tribute to healthcare professionals working throughout the pandemic.

The LED system also hints at the modern conveniences and automation found within the garage, adds Jeremy Martelle, an associate vice president at CHA Consulting. First, the parking access and revenue control system has automated space detection, real-time monitoring, electronic signage and license plate readers to facilitate ticketless entry and help guide customers to available spaces. Other new enhancements: The system accepts EZ Pass, credit card or smartphone payments, and the building uses motion detection and daylight harvesting to save energy while providing appropriate lighting.


PHOTO: CHA
JEREMY MARTELLE

Smart technology in the garage dovetails with similar initiatives inside the terminal, prompting some partners to refer to ALB as a "burgeoning digital incubator." During recent renovations, officials took the opportunity to boost internet connectivity. And in November 2020, ALB became the first airport in the world to use a new app from GE Aviation that provides travelers with real-time information about cleaning cycles within the terminal. Passengers using the app can scan barcode stickers with their mobile devices to receive instant updates about when a restaurant, restroom or other specific area or object was most recently cleaned. Not surprisingly, ALB has received inquiries about its three-month trial of the app from airports around the world.

Also in the works: The airport has contracted CHA to help develop a new master plan that is scheduled to be unveiled in 2022.

Between recent terminal renovations, the new garage and future master plan projects, Calderone and his colleagues are clearly focused on what lies ahead. “In the post-pandemic world, ALB International has an exciting future for growth and development,” he remarks.

When passengers return en masse, they’ll automatically be guided to open parking spots and remain protected from inclement weather during their short trek to the nearby terminal. Once inside, they’ll find new post-checkpoint concessions, updated restrooms, faster internet service and several other improvements ALB made while they were away.

Words to the Wise

Key stakeholders in the recent construction of a five-story parking garage at Albany International Airport (ALB) came away from the project with a few reflections to share with their industry counterparts.

Philip Calderone, ALB’s chief executive officer, stresses the importance of collaboration throughout the entire project. He feels that it’s important for airport management to be readily on hand and participate as integrally involved team members to help address real-time budgeting decisions, construction protocols, weather delays and other everyday issues. At ALB, the project team met at least once a week.

Jeremy Martelle, an associate vice president with CHA Consulting, notes that master planning is a huge component to securing FAA authorizations and funding. “Having that vision is probably the first thing to focus on,” says Martelle.

Rich LaRose, a project manager with CHA Consulting, says that airports should expect to spend $25,000 to $30,000 per parking space when building a new garage. While Martelle acknowledges some airport officials may be deterred by the cost, he encourages them to consider their long-term needs. “Don’t undercut yourself when developing a project like this,” he advises. “You can always scale it back to fit budgetary or funding constraints.”

Martelle also cautions airports against underestimating future passenger demand.

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Pandemic-Era Snow Strategies: Keeping Pavement Cleared & Workers Safe

BY PAUL NOLAN

FACTS&FIGURES

Project: COVID Measures for Winter Maintenance

Location: Minneapolis-St. Paul Int'l Airport

Snow Removal Team: 100 full-time workers; 40 seasonal workers

Vehicles: About 300

Personnel Management: Increased from 3 to 4 shifts, with staggered start & end times to avoid personnel overlap; divided workers into 30-person pods

Facility Modifications: Created separate break areas for each pod, with 1 person/table

New Cleaning Policy: Crews disinfect each vehicle at start & end of each shift using kits in backpacks issued by airport

Project: COVID Measures for Winter Maintenance

Location: Manchester-Boston Regional Airport (NH)

Snow Removal Team: 25 full-time airfield workers; 12 landside workers supplemented with seasonal workers as needed

Maintenance & Emergency Response Vehicles: 60

Personnel Management: Established 4-person work pods with staggered shift & break schedules; 1 worker/vehicle

Vehicle Cleaning: Transitioned from disinfecting wipes to electrostatic sprayers to CleanRide UV-C disinfecting units

By January 2020, health officials were aware that a deadly coronavirus could evolve into a global pandemic, but air travel wasn't significantly affected until two months later. By the second week of April, U.S. air traffic was down nearly 60% from the same period the previous year.

Knowing that late-spring snowstorms can be among the heaviest and hardest to clear, airport operations managers in cold-weather cities like Manchester, NH, and Minneapolis implemented plans to keep their maintenance crews safe while also remaining ready to clear away snow. Thankfully, most of North America was spared significant snowfall for the remainder of the season. The challenge of keeping workers safe increased in late spring as COVID-19 cases rose, but the concern about getting socked with a major snowfall subsided.

Looking Ahead

As airport snow crews transitioned to warm-weather duties, operations managers strategized about the upcoming winter. As with the general population, some COVID risks for airport maintenance teams decreased in warmer weather when workers could remain outdoors and distance from one another. But operations managers knew that keeping their airports open when the weather turned cold again in a matter of months would require keeping their crews healthy.

Some had safety measures already in place. When COVID cases were first reported in the U.S., Mark Rudolph, planning manager of field maintenance at Minneapolis-St. Paul International Airport (MSP):

MARK RUDOLPH

- divided his approximately 100 full-time workers and 40 seasonal workers into smaller pods;
- shifted from teams of two to one person per maintenance vehicle;
- increased from three shifts to four with fewer workers on each shift;
- staggered starting times, so shifts no longer overlapped;
- created multiple makeshift break areas in expansive vehicle bays;
- instructed workers to sit alone and to wear provided masks at all times except when eating or drinking; and
- outfitted each worker with a "to-go" kit in a backpack for mandatory vehicle cleaning before and after use and between each shift.

Similar steps were taken at other airports, including Manchester-Boston Regional (MHT) in New Hampshire. Carlton Braley, the airport's assistant director, began last year by working through countless "what-if" scenarios. "We can't have all of our snow fighters at home either sick or with COVID symptoms," Braley explains.

CARLTON BRALEY

Vital Frontliners

As much of the country and world transitioned to working from home and relied more on deliveries, the importance of air shipments quickly became obvious. Although MHT's passenger traffic dropped by 90% last summer, cargo boomed. Braley notes that personal protective equipment for medical workers was among the goods being shipped through the northeastern airport.

"The number of flights per day hardly changed at all," he observes. "But now you have to deal with COVID, with social distancing and with the fear that somebody brings the pandemic into your organization."

When Braley attended the American Association of Airport Executives (AAAE) Issues Conference in January 2020, COVID-19's impact on air travel and life in general was the hot topic. He brought back information to maintenance department leaders, and MHT immediately stocked up on extra cleaning supplies and personal protective equipment that would later become difficult for hospitals, airports and other frontline work teams to obtain. When electrostatic sprayers became a recommended way to clean the air in enclosed spaces early in the pandemic, MHT had already purchased three units and was using them to clean its fleet of about 60 field maintenance vehicles.

Braley notes that from the very onset of the coronavirus crisis, MHT leadership understood that a full-on effort was needed to keep employees and the airport itself as safe as possible. Moreover, management understood that anything less could impede the airport's ability to survive such a drastic hit to the entire industry.

"Early on, our pandemic response was going to be as robust as our response to 9/11," he explains. "Security was always important, but it became the first line of defense after 9/11. With COVID-19, sanitation became the new security. The level of focus and resources we put into our airports to become more secure after 9/11…we're doing the same thing now to make our airports more sanitized."

Specific efforts at MHT include upgrading the terminal's heating, venting and air-conditioning system to make it more virus-resilient, and using new technology and new cleaning systems to disinfect bathrooms and other public spaces. Braley and the airport were also early proponents of CleanRide UV-C, a portable disinfecting system for the cabs of maintenance vehicles, which became available late last summer. (See sidebar on Page 30 for more details.)

"It was clear we were going to be proactive," says Braley. "As soon as I brought [CleanRide] to the attention of the director of our airport and suggested ordering five, he said to get 10. It's all about knowing what a risk is and being willing to mitigate that risk."

Communication & Coordination

At MSP, crews initially used bleach to clean vehicles between shifts, but switched to alcohol wipes when they discovered that even a diluted bleach solution was too hard on the vehicle interiors.

By the time this winter kicked in, maintenance teams had established enhanced communication and coordination strategies with airlines employees and air traffic control personnel to help determine plowing priorities.

"We do a good job preplanning and coordinating with the airlines when a snow event is forecasted," says Rudolph. "For example, airfield maintenance personnel gather information about the number of flights expected, peak volume

MSP created makeshift break areas in large vehicle bays to facilitate social distancing.

times, what taxi routes aircraft will use, and more. This allows us to formulate a comprehensive plowing plan before a snowflake hits the ground. During the event, our teams are fluid and work with our Airside Operations Department to address plowing requests that may have materialized. We call it 'on-demand plowing.' We're not going to plow everything if there isn't a need for it."

Landside, MSP closed the top levels of its parking lots because the space isn't needed while traffic is light. Crews only plow the top levels when there is a concern about weight load.

Shift beginnings and ends are now staggered to facilitate social distancing. The new strategy is particularly helpful during significant events that require a full-crew callout, because more people require more coordination. "We try to get our teams in about an hour before it starts snowing, but we don't want all of them

coming in at the same time, so we stagger the times that each pod enters the facility," Rudolph comments.

The airport still provides catered meals to crews working long shifts during extended snow events. But instead of using self-serve buffets as in pre-pandemic times, MSP distributes individual boxed meals. Conference center staff employed by the Metropolitan Airports Commission prepare and deliver the meals, which provides cost savings to the department.

Lasting Effects

Some changes airports have made to protect workers during the coronavirus crisis will have lasting effects. For instance, upgrades to heating, venting and air-conditioning systems will continue improving air quality long after the pandemic is over. Thoroughly cleaning maintenance vehicles between shifts makes long-term sense, especially during cold and flu seasons. Rudolph and Braley both plan to make some of their recent changes permanent.

Rudolph notes that many workers at MSP have expressed gratitude for the airport's investment in helping them stay as healthy as possible.

Braley, who serves as president of the Northeast Chapter of AAAE, fosters communication among the chapter's 500+ members to share helpful insights on maintaining safe environments for airfield and landside maintenance workers. During the pandemic, the chapter increased its quarterly meetings to monthly virtual summits. Members listen/watch presentations from specialists, and share what's working and what isn't at their particular airports.

For Braley, it's all about keeping the airport operating. Founded in 1927, MHT takes pride in having never closed due to weather. Braley has been at the airport for 27 years, and has headed winter operations for 26.

As this winter neared, Braley and other airport executives factored in pandemic-related health risks to employees when discussing flights that don't generate significant revenue for the airport.

"We made a promise that we were going to stay open and operational to the extent we could—to achieve an airport condition that is no worse than wet as expeditiously as possible," he explains. "When it comes to getting this industry back on its feet, anything we're learning at Manchester we are sharing. At the end of the day, airports are designed to stay safe and operational regardless."

A New Tool To Keep Maintenance Vehicles Safe

Ever since researchers found ultraviolet-C (UVC) radiation to be effective killing the coronavirus that causes COVID-19, many hospitals, hotels and other organizations have added it to their disinfecting routines.* Airlines began using UVC lamps last year to clean their airplane cabins, and several airports have invested in them for their terminals.


BEN McKEOWN

But UVC technology was initially not available in a compact unit for use in tight spaces such as vehicles. That frustrated Ben and Sam McKeown, brothers who work for Team Eagle Ltd., a Canadian-based dealer of snow removal equipment and software for airfield management and maintenance. So the McKeown boys started contacting UV companies to learn more about the technology.

"We discovered there was nothing on the market incorporating UV light to clean fleets, and we knew there was a market for it," says Ben, Team Eagle's commercial business manager. "When we realized that airports would be open to it, we knew we were going down the right path."

In April, Team Eagle connected with Lind Equipment, a global leader in UVC-LED decontamination technology. By June, the snowplow dealer had prototypes of mobile units containing Lind light boards housed in protective casings. Engineers simply moved the on/off switch from the side of the board to a cord that's long enough to extend outside the cab of a maintenance vehicle, added an LED timer, durable case and fans.

Team Eagle calls the new disinfecting tool CleanRide UV-C and sells them for about $1,900 each. The devices plug into vehicles' standard DC outlets for power and adhere to vehicle windows with suction cups. According to Team Eagle, one unit can completely disinfect the cab of a pickup truck or snowplow in four minutes.

The ImPakt laboratory at Western University in Ontario, Canada, tested the product and found that the system kills at least 99.9% of SARS-CoV-2, the virus that causes COVID-19.

McKeown reports that the U.S. Air Force bought the first five CleanRide UVC units, and Team Eagle had sold approximately 200 by the end of last year, mostly to U.S. airports. Interest has grown as more operations managers learn about the product, he adds. The product has also attracted attention from police forces, fire departments, rental car companies and other businesses and organizations that operate fleets.


CleanRide UV-C uses ultraviolet-C light to disinfect vehicle cabs.

Because UV light can be harmful to skin and eyes, Team Eagle stresses the importance of using CleanRide to disinfect vehicle cabs when they are empty. UV light does not escape the vehicle when the windows are up. Multiple units can be used for vehicles with large cabs.

McKeown reports that some large airports have sought quotes for hundreds of CleanRide units.

Manchester-Boston Regional Airport (MHT) currently owns 10 of the disinfecting devices. Assistant Director Carlton Braley says that CleanRide will be a permanent part of the airport's safety measures even after the COVID-19 pandemic subsides.

** Editor's Note: Information available from the FDA in mid-February indicates that there is "limited published data about the wavelength, dose and duration of UVC radiation required to inactivate the SARS-CoV-2 virus."*

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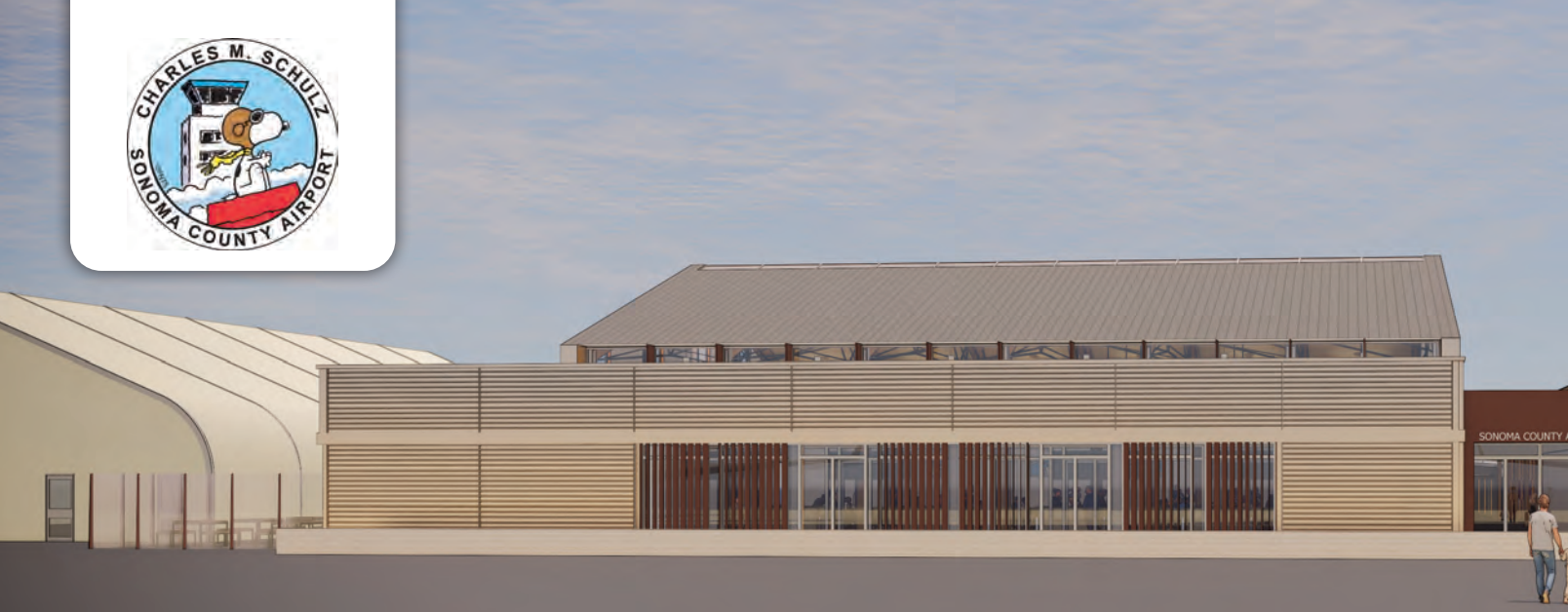

Passenger Growth Expected to Outpace Terminal Expansion at Sonoma County Airport

BY THOMAS J. SMITH

FACTS&FIGURES

Project: Terminal Expansion

Location: Charles M. Schulz–Sonoma County (CA) Airport

Owner: Sonoma County

Project Scope: 30,000 sq. ft. of new construction; 10,000 sq. ft. of renovations

Cost: $31 million

Funding: $22.5 million federal grants; $8.5 million airport loan backed by $4.50/ticket passenger facility charge and airline rent & fees

Construction: Nov. 2020-Oct. 2022

Key Components: Expanded holdroom with additional seating; new restrooms; updated security checkpoint; new ticket counters; new baggage claim

Design Consultant: Mead & Hunt

Owner's Representative: C&S Companies

Special Counsel: Orbach, Huff and Suarez

Construction Manager at Risk: Q&D Construction

Electrical Contractor: Northern Electric Inc.

Excavation: Ghilotti Bros. Inc.

Concrete Work: Concrete North Inc.

Heat/Venting/Air-Conditioning: Peterson Mechanical Inc.

Roofing: Kodiak Roofing & Waterproofing Co.

Metal Stud Framing & Drywall: Stockham Construction

Structural Steel: True North Steel

Baggage System: G&S Airport Conveyor

Temporary Tensile Facility: Sprung Structures

Ever feel like the finish line keeps moving farther away? Jon Stout, airport manager at Charles M. Schulz–Sonoma County Airport (STS) in Santa Rosa, CA, knows just what you mean.

JON STOUT

Stout and his team are in the midst of a $31 million terminal expansion and renovation that began in November. But even when they cut the ribbon in fall 2022, STS will only have 70% of the recommended space to handle its peak passenger volume.

Despite much work still ahead, Stout is optimistic about the improvements that will come from renovating the airport's 1960s era terminal and adding 30,000 square feet of new space. "It will still be a huge deal for customer service and amenities and the overall experience," he says.

Prior to the coronavirus pandemic, STS was on track to post its 11th consecutive year of passenger growth. In 2019, it served 488,179 passengers out of a single 4,200-square-foot holdroom with just 200 seats.

"Imagine, five airlines working out of the same area with two or three flights at the same time," says Tim Dacey, Mead & Hunt's project manager for the expansion/renovation. "It was a red-line situation. The airport was well beyond capacity on a number of fronts."

TIM DACEY

For three years STS accommodated Alaska Airlines, Allegiant Air, American Airlines, Sun Country Airlines and United Airlines in just one small holdroom. With traffic down considerably due to COVID-19, the airport currently has three daily flights on Alaska and one American route. In 2020, passenger volume was off by 60%.

Stout is hopeful that traffic will have already returned to pre-pandemic levels by the time the project is completed.

Classic Challenges

Two main constraints—space and money—make it difficult for STS to build a terminal large enough to fully meet its projected passenger growth. As planning progressed for the current expansion project, the airport increased the size of the new building in hopes of getting ahead of the passenger numbers. But the new terminal will likely still be crowded.

"The biggest complicating factor was the speed that we added air carriers and frequencies, and the resulting growth," says Stout.

In 2015, Alaska Airlines was the airport's sole carrier with four destinations. By 2019, STS had four carriers with 11 destinations.

As for space constraints, the terminal area is boxed in by a private hangar, fixed base operator, control tower and aircraft rescue and firefighting (ARFF) station. "There is no room to do a green site build," Stout explains. "We had to look at what we could do for additions while still continuing operations with a minimal impact."

The terminal will net 30,000 additional square feet from the current expansion.

The bulk of the project is being funded with a $20 million federal Airport Improvement Program grant specifically earmarked for terminal projects. A loan, backed with proceeds from a $4.50 per ticket passenger facility charge and airline rent and landing fee payments, will cover the balance of the tab.

Looking ahead, the airport's latest master plan envisions removing the existing ARFF station to enable an 80,000-square-foot terminal expansion to the north. A site selection study for the new station is now underway, and construction could potentially be complete in five years. Stout foresees planning for another terminal to begin in earnest in five years.

However, STS will not be eligible for additional federal terminal grants for another 20 years. And passenger facility charge proceeds are already committed through 2042.

Years of Making Do

After a six-year gap without any commercial service, STS introduced Q400 turboprop service from Horizon Air in 2007. That prompted the airport to install a 2,400-square-foot modular structure to house a new TSA-compliant security checkpoint, restrooms and a 1,400-square-foot holdroom.

"It worked when there was a single flight of a 76-seat aircraft," recalls Stout. "But when Allegiant's MD-80s arrived, it became a 'get-to-know-your-neighbor' situation because 160 people in 1,400 square feet was pretty tight."

Over the next 10 years, STS tinkered with ways to make the space more efficient. It created a post-security patio, added a second smaller modular unit for ticketing and built a 5,000-square-foot addition to use the space between the original terminal building and modular units.

The airport's 2012 master plan called for a runway expansion that would enable the airport to handle mainline aircraft and help recruit additional carriers. The master plan also included a terminal expansion to handle the associated new passengers.

Work began in 2013 to extend the 5,200-foot runway to 6,000 feet with required safety zones. "It took a long period to get through the approval process," Stout recalls, noting that the runway project was completed in 2014.

In 2015, the first full year the new runway was active, STS' passenger traffic count was 238,320, and planning began for a new terminal. By the time work began last March, just as the pandemic hit, passenger traffic was growing at a rate of 36% more than the 2019 peak.

A tensile structure added in 2017 provided space for four gate podiums and seating for 150 passengers.

Early on, it became apparent that the airport would need an interim provision. "We knew we would have to do some phasing in an expansion," Stout explains. "We did not want to keep the triple-wide modular, as that is where the addition would go. We began to look for temporary solutions."

STS chose a tent-like option sold and manufactured by Sprung Structures in Canada. Work on the tensile facility began in December 2016 and was completed by June 2017. The building included four gate podiums, four doors and seating for 150. The airport used $1.5 million of passenger facility charge funds to pay for the building.

Design work for a terminal expansion began in earnest in 2018. The initial design was for a 19,000-square-foot building addition. As passenger traffic continued to grow, however, the drawings were revised to add 25,000 square feet…then 29,000 square feet…and finally 30,000 square feet of new construction.

"During the design process, the airport had been adding airlines at a rapid pace," Dacey explains. "The growth curve has been increasing and increasing, so we tried to get as much building as we could within our limited site and budget."

Stout adds, "I don't think we can add anything else with the constraints we have."

As Mead & Hunt revised the drawings, designers added more holdroom space to handle peak departure traffic, a second TSA checkpoint and a second baggage claim belt.

While working with the FAA to update the project, airport executives realized that a traditional design-bid-build process would not work and decided to use the construction manager model instead. Because STS would be the first Sonoma County project using this model, it took 18 months to finalize the approach and secure the necessary county approvals. In September 2019, the county issued a request for proposals seeking a construction manager/owner's representative for the project. Q&D Construction was eventually selected as the construction manager at risk.

To enable crews to clear the site occupied by the older modular building, Mead & Hunt designed a 4,500-square-foot addition to

the Sprung structure. Adding new rafters to the tent-like facility extended its length by about 25 feet. The building now houses the relocated and expanded TSA checkpoint, a larger holdroom with 150 additional seats and new permanent restrooms. Once traffic returns, there will be two security lanes instead of the one. The airport handled the $3.9 million addition, which will eventually be integrated into the main terminal building, as a separate project and funded it with passenger facility charges.

Federal funding, however, was the key to the $31 million terminal expansion/renovation. The team divided that project into phases based on the projected flow of federal grants. Scenarios were predicated on receiving the $20 million of requested funding over one, two or three years. “We had to change each phase dramatically because we would have to break up the work, and the FAA wanted to know what it would be getting in each phase,” says Stout.

Although the airport was fairly confident about obtaining the first $10 million through supplemental funding, there was no guarantee of the second $10 million installment. “We knew they understood our need as we have one of the smallest commercial terminals in California,” says Stout. “They have made many visits to the airport and have seen our constraints.”

In early 2020, FAA approved $12.5 million in discretionary and entitlement grant funds for STS. Because the two grants were provided in one funding cycle, the airport was able to execute the project in one funding phase.

What’s Next, Locust?

To date, the airport has had to endure a global pandemic and nearby wildfires during its terminal project.

Crews began the 4,500-square-foot expansion of the Sprung building in March, just as California began its COVID-19 lockdown. With only 1,400 passengers in April—a drop of 90% from April 2019—construction crews had the flexibility to finish the interior of the building without working around many passengers.

“Unfortunately, we were not able to maximize this potential savings because we had problems with COVID and the fires,” Stout notes.

The airport and passengers are making do with a temporary baggage claim during the expansion project.

Neither the airport nor its construction contractors reported any cases of COVID-19, but some employees were subject to precautionary quarantines. The biggest issue, however, was material delays as manufacturers struggled to implement social distancing protocols.


DUANE BOREHAM

Maintaining safe distances affected onsite progress, too. "We were able to accelerate our schedule somewhat due to the drop in overall passenger traffic," says Duane Boreham, vice president of Q&D Construction's Aviation Group. "However, our work was not quite as efficient as in the past because of the social distancing guidelines."

In late summer, wildfires in the hills just five miles from the airport delayed the project. Q&D's project manager and superintendent as well as several subcontractor employees missed work when they were forced to evacuate their homes due to the growing fires.

In another case, equipment needed by the sprinkler installer was in the fire zone and not accessible for a full week. How's that for irony?

Boreham notes the fire caused "adjustments on the fly," but the impact was not significant since the expansion of the tent structure was not labor-intensive.

In fact, crews completed the tent expansion in October as originally scheduled.

New Facilities

With funding cycles settled, the team is executing the project in four phases designed around the operational needs of the airport.

Crews began the first phase in November and are expected to complete it by May. First on the list was remodeling existing space to create a new baggage screening area with room for a second screening device. There will also be space for a "proper baggage make-up area," as Dacey calls it. A temporary baggage claim housed in a tent to facilitate construction phasing was completed in January.

The second phase, which will begin in March, focuses on new construction. Key components include relocating the triple-wide modular structure to create 20,000 square feet of new space for a new gate, a holdroom with seating for 300 passengers, a new baggage claim with two carousels, four rental car counters and additional restrooms. The airport plans to complete phase two in June 2022.

The project team is already anticipating a tight squeeze while building the new space. As the modular unit is removed, crews will need to rebuild the exterior of the 1960s metal frame terminal.

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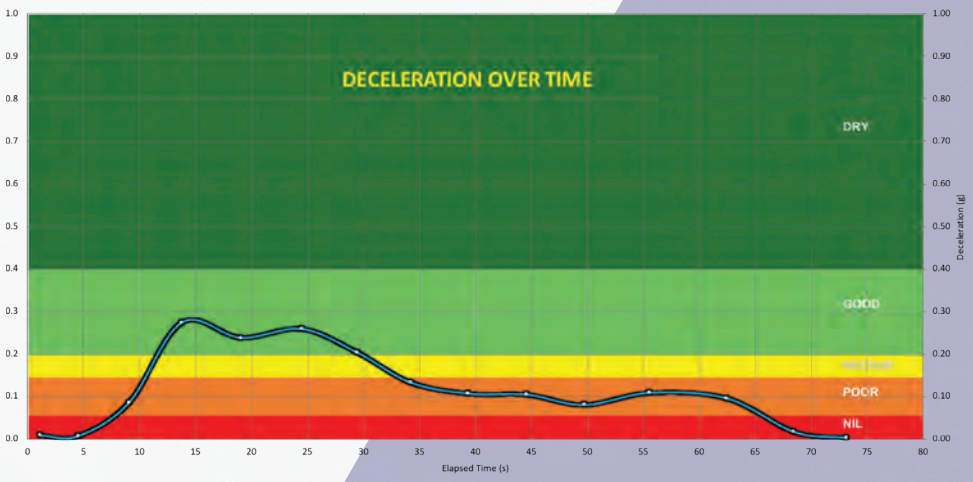
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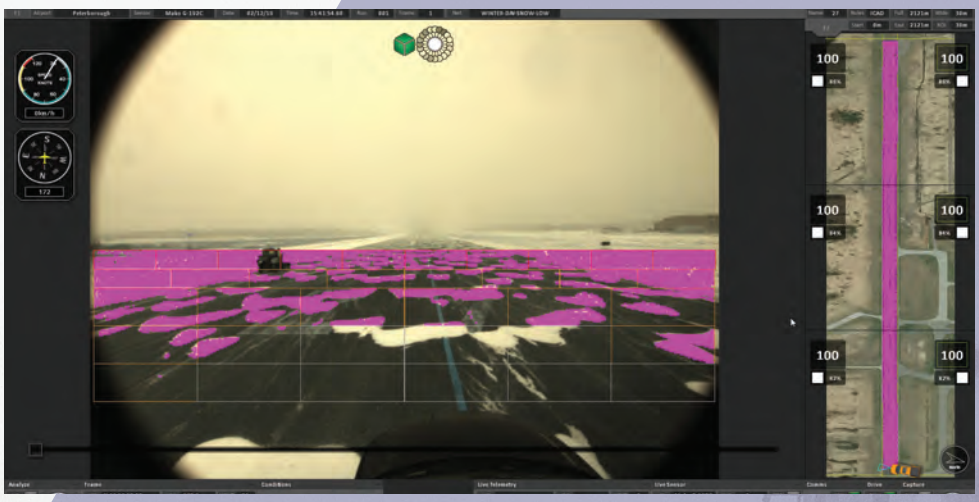
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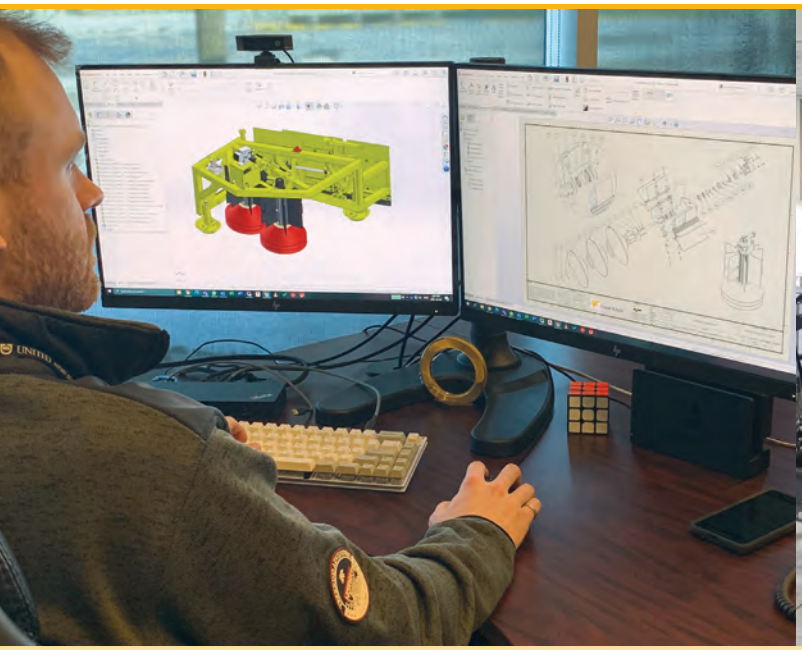

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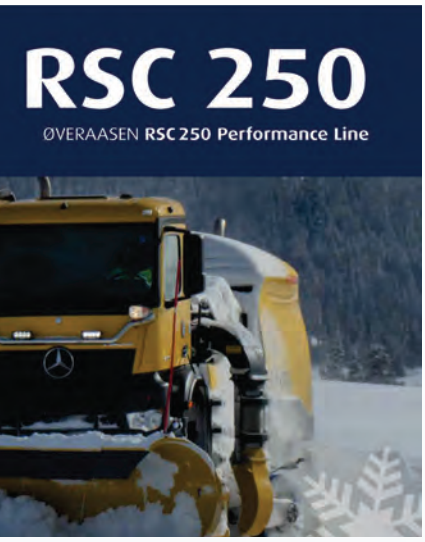

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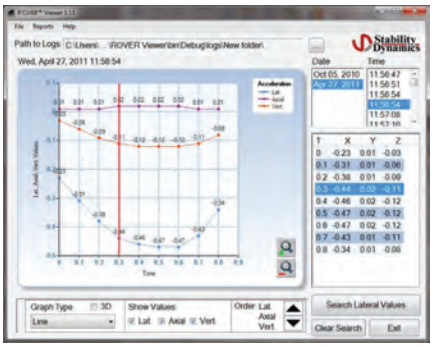

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Work is underway to construct a new space with seating for 300 passengers.

But building codes preclude erecting a new common wall for the new and old buildings. As a fix, crews will pour a new foundation and construct a new exterior wall 4 inches from the current building. "We have spent quite a bit of time figuring out how this will be built and still look like one seamless building," says Boreham.

Sense of Place

The design of the new terminal reflects the airport's location in northern California wine country. In fact, Sonoma County has more vineyard acres than its more famous neighbor, Napa.

Stout notes that the terminal's exposed wood trusses are more typical of an "industrial" winery than a chateau-style vineyard. The terminal design is open and airy to take advantage of the area's great weather, he explains.

Dacey notes that the scale is more intimate than many large commercial terminals.

Adding to the sense of place, characters from the *Peanuts* comic strip (created by airport namesake and longtime Santa Rosa resident Charles Schulz) will be recurring elements in the terminal decor. For instance, designers used Charlie Brown and Lucy as gender identifiers for restrooms. Stout also anticipates that the new terminal will include some type of public art installation telling Schulz's story.

Final Phases

Phase three is scheduled to run from May to July in 2022. Key components will include new ticket counters and office space, and a facelift for the vestibule. A canopy installed over the front walkway and drop-off zone will add cover for guests. "It will also obscure much of the existing building, which does not have a lot of curb appeal," notes Dacey.

During the fourth and final phase, crews will update finishes in the Sprung structure to match the new construction, and complete back office spaces for airlines.

Finally, the airport will connect the newly expanded/renovated terminal and Sprung structure with an enclosed corridor. The connecting structure will feature a new outdoor patio and an outdoor pet relief area on the airside.

Once completed, the new terminal will have more concessions. The current restaurant, Sky Lounge Steakhouse & Sushi Bar, and its pre-security outdoor dining area will remain in place. In addition, the airport plans to open a new limited-service restaurant in the new terminal space, and a grab-and-go kiosk will re-open in the renovated Sprung structure. The main terminal space will also have two kiosk concessions. Stout envisions turning one of the kiosks into a wine tasting counter operated on a rotating basis by various local wineries.

With COVID work practices firmly established, Boreham anticipates gaining some time at the beginning of phase one due to low passenger traffic. During the second phase, contractors plan to separate work areas from daily passenger traffic for safety and efficiency. When work transitions into the third phase, night shifts may be needed for some tasks.

"We are hoping to see some savings in our schedule," Boreham remarks. "But we wish for the passenger traffic to come back more than what we wish for saving time on the schedule."

Owen Roberts Int'l Completes Airfield Improvements During Pandemic

BY JODI RICHARDS

FACTS&FIGURES

Project: Airfield Upgrades

Location: Owen Roberts Int'l Airport (Grand Cayman)

Owned & Managed By: Cayman Islands Airports Authority

Cost: $45.7 million

Funding: Passenger Facility Charges

Key Component: Runway rehab & extension

Associated Elements: New airfield perimeter road; new parallel taxiway & taxiway turnaround; filling ponds on airfield; expanding aircraft parking ramp

Construction: Nov. 2019–Sept. 2020

Design Consultant: Stantec

Construction: Joint venture of Island Paving, Decco & IDL Projects

Surface Drainage System (Slot Drains): BG-Graspointer

Jet Blast Protection: Blast Deflectors Inc.

Sweeper Truck: TYMCO

Key Benefits: Accommodate traffic growth; enhance airfield safety & efficiency

March is usually a very busy month at Grand Cayman's Owen Roberts International Airport (GCM), with tourists streaming in to enjoy beaches, coral reefs and other western Caribbean attractions. After years of tremendous growth in passenger traffic, officials were looking forward to a record-breaking March last year. And then COVID-19 effectively closed the entire island, including its airport.

At the time, GCM was just months into $45.7 million of airfield upgrades. Rather than shutter the project, airport officials consulted their project partners and made the bold decision to stay the course and make the most of the airfield downtime.


ALBERT ANDERSON

"It was a bit of a give and take," notes Albert Anderson, chief executive officer of the Cayman Islands Airports Authority. "But overall, I think the decision to continue with the project was a good one. We were able to work pretty much unrestricted."

The Cayman Islands Airports Authority owns and operates GCM and also manages Charles Kirkconnell International Airport on Cayman Brac. Located in George Town, GCM serves as the main point of entry and exit to all three Cayman Islands: Grand Cayman, Cayman Brac and Little Cayman. It has a single runway, 08-26, and is the main base of Cayman Airways. GCM also has service from Air Canada, American Airlines, British Airways, Delta Air Lines, JetBlue, United Airlines, Southwest Airlines and WestJet.

Between 2013 and 2018, passenger volume at GCM increased by 45%; and the busy island airport served more than 1.5 million passengers in 2019.

The $45.7 million airfield improvement program completed last fall was part of GCM's 2013 master plan, with specific measures developed to keep pace with its growth. The first part of the plan expanded


PHOTO: GAA

the terminal, which was originally designed to handle 500,000 annual passengers but was processing twice that amount. As the terminal expansion wrapped in 2017, GCM proceeded with airfield improvements to meet its continuing traffic growth.

As early as 2016, the airport had begun to experience airspace, terminal and ramp parking challenges because of increased operations, Anderson notes. And in 2018, GCM had already reached its forecasted passenger numbers for 2028, prompting officials to move ahead with the airfield project designed to improve efficiency and safety. In addition to rehabilitating and extending GCM's sole runway, the comprehensive program included an apron extension, a new airfield perimeter road, new parallel taxiway and taxiway turnaround, filling ponds on the airfield and expanding the aircraft parking ramp.

Efficiency & Safety

The airfield improvement program was designed by Stantec and awarded to a joint venture of Island Paving, Decco and IDL Projects. Work began in early November 2019 with the apron expansion, followed by the relocation of pond wildlife in January 2020. The runway rehabilitation, parallel taxiway construction and runway extension kicked off in February 2020.

The 264-meter runway extension includes a 90-meter runway end safety area and additional pavement for takeoff and landing. "We took the opportunity to extend the runway as far as we could toward the fence," notes Chief Airport Operations Officer Wayne DaCosta. The new parallel taxiway facilitates more efficient aircraft movements, and the apron expansion provides room to park four Code C or two Code E aircraft.


WAYNE DaCOSTA

Crews milled 1 inch off of the existing runway pavement and overlaid the existing asphalt pavement with about 7 inches of new pavement containing three separate lifts. While the pavement itself needed to be refurbished because of its age, a change in aircraft serving GCM also prompted the upgrade. "We were having regular flights from British Airways with 777s, and the strength of the runway was not appropriate for large widebody aircraft used for long-haul flights," explains DaCosta.

The runway was also grooved to increase friction coefficients and enhance safety for aircraft landing during heavy rains. Due to the island's climate and heavy aircraft the runway accommodates, project designers specified a specialized pavement mix that includes a polymer to both strengthen the pavement and extend its life. Additionally, painted markings on the rehabilitated runway are enhanced with reflective glass beads to increase visibility.

The new parallel taxiway makes the landing and takeoff sequence much more efficient, and also allows for increased operations, reports DaCosta. For example, aircraft arriving from the west can now exit off the runway after landing, leaving the runway open for other aircraft. Previously, pilots had to backtrack and taxi about halfway down the runway to exit.

Because the runway extension puts aircraft much closer to a perimeter fence line, the airport erected a blast deflector to protect pedestrians, cyclists and vehicles using the nearby road. The structure mitigates jet blast from aircraft taking off by deflecting air upward and away from the road. Painted orange and white for easy identification, the panels are mounted on a lightweight steel frame and fastened to a monolithic concrete foundation.

The structure, designed and supplied by Blast Deflectors Inc., contains two different components: an end-of-runway blast deflector designed for high-breakaway and transient takeoff thrust from aircraft up to a Boeing 777, and a taxi-breakaway-rated blast deflector required to protect the nearby roadway from jet exhaust produced by aircraft using the new taxiway turnaround. The continuous end-of-runway deflector spans about 348 feet and adjoins the taxiway deflector, for a total of 1,146 feet of protection that extends from the north side of the runway and continues around the west perimeter fence line.

In light of Grand Cayman's weather, the blast deflector is made of robust powder-coated galvanized steel and is designed to withstand jet blast and hurricane-level winds. Matt Anzai, sales manager for Blast Deflectors Inc., notes that the need to observe an obstacle limitation landing surface on GCM's airfield added a design challenge. "Blast Deflectors worked closely with Stantec to determine the optimal jet blast deflector geometry that would protect the area from jet blast without exceeding height restrictions," explains Anzai. "While the deflector has effectively remained clear of the runway safety areas and obstacle limitation surfaces, the design does incorporate elements of frangibility for maximum safety."

Due to COVID-19 travel restrictions, Blast Deflectors Inc. was unable to have a field representative onsite to oversee the installation, as it typically would. Instead, the company relied on clear communication protocols and local partners. Anzai notes that the successful outcome at GCM is prompting the company to consider using the same remote techniques for future installations at other airports that require site support during COVID-19 travel restrictions.

Pandemic Had Mixed Effects

Continuing the airfield improvements while Grand Cayman was locked down by COVID-19 not only allowed contractors to complete their work with little impact to operations, it also prevented the airport from incurring extra expenses to stop and restart the project. Such costs would have been significant, notes Anderson.

"Traffic was cut by 95%, so there was a real opportunity to get work done during the day that would have only been able to have been done at night," DaCosta adds.

Although commercial traffic was halted, the airport still had to coordinate construction activity with general aviation traffic, particularly medical evacuations. "Managing those flights along with the work being done almost continuous, that was a bit of a challenge," DaCosta recalls.

In retrospect, he is grateful that the team took time before the project started to brainstorm about things that could go wrong and how to address them. While personnel could not foresee the challenges of a global pandemic, their pre-planning proved priceless throughout the project, he notes.


LEIGH BARTLETT

Because GCM is a single-runway airport, the project had to be carefully phased and planned to minimize impact to operations, says Leigh Bartlett, principal with Stantec's Airports Group.

Originally, much of the work was slated to be completed overnight, to avoid interfering with daytime flights. But with the airfield effectively empty, crews were able to work during daylight hours. "We were able to work when the rest of the island was shut down," Anderson says. "That was good in the sense that we didn't have the air traffic to deal with."

"The pandemic was a big curveball throughout the project," Bartlett adds. "But we had the dedication of the staff to be flexible and help each other out and people willing to go the extra mile."

That doesn't mean the project was without challenges. Pandemic travel restrictions delayed the arrival of off-island construction supplies and work crews, and quarantines were required once they arrived. Additionally, Grand Cayman received an unusually heavy amount of rain during the second half of the project. "We had probably more rain last year than we had in the previous five years," Anderson muses. Combined, the weather and pandemic delayed the project by about two-and-a-half months.

Fortunately, many of the project materials were delivered at the front end of the project, pre-COVID. "That was a lifesaver at the end of the day," he reflects.

Bartlett agrees that preordering materials was crucial to the project's ultimate success because it was difficult to get materials to the island once the pandemic began. COVID-19 also put the press on two of Stantec's resident team members. When the government announced it was closing the border, they were given the choice of leaving immediately or staying on-island for the duration. "They showed great dedication and decided to stay on," says Bartlett. One stayed for six months, the other for a full year. "Everyone did a good job of getting through and making the project a success," Bartlett emphasizes.

As for the airport authority, it is already looking ahead. "We hope that we will eventually return to the levels of traffic that we were seeing in 2019," Anderson says. "This project enables us to handle the traffic that we're forecasting up to 2032."

Consulting Subsidiary Supplements & Diversifies Revenue Stream for Winnipeg Airports Authority

BY KIMBERLY GIBBS

WINNIPEG AIRPORTS AUTHORITY

FACTS&FIGURES

Project: Airport Consulting

Service Provider: Winnipeg Airport Services Corp.

Subsidiary of: Winnipeg Airports Authority

Staff: 50

Focus Areas: Operations; safety

Core Services: Airport operations; airport management; facility maintenance; technical solutions

Pricing: Varies with service & location

2019 Revenue: More than $12 million

Bellwether Client: Iqaluit Int'l Airport (NU)

Total Clients: 37 throughout Canada

Key Benefits: Winnipeg Airports Authority augments & diversifies its revenue stream; client airports gain experienced operational support without the added cost of on-site employees

When Winnipeg Airports Authority (WAA) went searching for ways to diversify and increase its revenue sources, it didn't have to look far.

Leadership decided to parlay the organization's experience operating and managing Winnipeg James Armstrong Richardson International Airport (YWG), Canada's seventh busiest airport for passenger traffic and the busiest for air cargo, into a consulting firm for other Canadian airports. Executives felt that the strategy would not only support WAA's financial well-being, but also allow the organization to "give back" to the airport community.

MICHAEL O'GORMAN

In 2014, WAA launched Winnipeg Airport Services Corp. (WASCO) as a wholly owned subsidiary. "We found that we had the talent in our team to manage operations and safety for other airports," explains Michael O'Gorman, managing director of WASCO.

The organization's mission is to provide innovative and cost-conscious options to airports. O'Gorman notes that the airports WASCO counsels often grapple with many of the same challenges that YWG has tackled, but do so with fewer resources at their disposal.

TYLER MACAFEE

"It can be frustrating for a town council to not know all the rules associated with running an airport," explains Tyler MacAfee, vice president of Communications and Government Relations for WAA. "We find that municipal governments that also operate airports immediately see the value in WASCO.

Developing comprehensive safety management programs and establishing plans for various aspects of operations and security processes can be daunting for smaller airports, he adds.

"The key for WASCO is that we're already in the business of operating airports," says O'Gorman. "We have seen before the challenges that these airports face, and that is what has been integral to our success."

Consultancy Launched

WASCO's first foray into consulting was a public private partnership formed in 2014 with the Nunavut government regarding

Iqaluit Int'l Airport was the first client for Winnipeg Airport Services Corp.

Iqaluit International Airport (YFB), a remote facility on Baffin Island northeast of Hudson Bay. The original 30-year agreement encompassed the design, construction, finance, maintenance and operation of YFB, and was the first of its kind in Canada. Construction of a new terminal that opened in August 2017 was a pivotal component. Ultimately, WASCO's work at YFB bloomed into an agreement for it to provide safety management systems and quality assurance programs to 24 airports in Nunavut.

To date, WASCO has provided consulting services to 37 airports throughout four provinces and one territory in Canada. Many are located in northern and remote communities, where airports are crucial links for everyday supplies and medical support.

MacAfee explains that WASCO taps into its deep well of in-house resources for each airport client. Depending on the contract, its management team can assist with overseeing day-to-day operations, the commercial team can provide support and long-term strategic planning for concessions, and members of the facility maintenance group can offer advice about airport upkeep and implementing new technology. While pricing varies according to airport location and the support required, WASCO characterizes its rates as competitive. Personnel note that their consulting services can save communities 50% compared to the cost of adding on-site employees. In exchange for handing over the proverbial keys to its airport, a community can gain a diverse and experienced team of aviation professionals working on its unique circumstances.

"It is a win-win situation for all," says MacAfee. "We help the airport by building capacity and adding new expertise, and we help the communities by hiring local and having a positive presence."

The model WASCO developed has yielded impressive results. With nearly 50 staff members, the consulting group earned more than $12 million in 2019 and accounted for 9% of WAA's total earnings. In 2020, with passenger traffic depressed across the globe, it was responsible for nearly 20% of the authority's revenue, reinforcing its earlier decision to diversify into consulting.

WASCO prides itself on being different from most consulting firms. Instead of simply providing services and moving on to the next client, it strives to become part of each airport and local community, creating aviation programs specific to its needs and goals.

Reviewing safety policies and procedures can be particularly challenging for airports without the funding for full-time on-site employees. Stephenville Airport (YJT) in Newfoundland fits squarely into that category.

"Having WASCO oversee safety and management systems at Stephenville Airport positions us for growth in our transportation sector," says Tom Rose, the town's mayor. YJT draws on the consultancy's knowledge of safety standards and airport management to help navigate complexities of Canada's air traffic standards, Rose adds.

WASCO provides YJT with a dedicated coordinator who acts as its "safety concierge"—writing documents, performing audits and reviewing pertinent regulatory requirements and manuals.

"We want to help airports to be able to focus on their operation instead of all of the paperwork that happens behind-the-scenes," O'Gorman explains.

Pandemic Push

WASCO plans to continue serving smaller airports and communities throughout Canada and even abroad. Company leaders, in fact, feel that the global COVID-19 crisis may spur demand for the company's services.

"As airports come out of this pandemic, they are going to look for innovative and cost-effective ways to do business," says O'Gorman.

In the meantime, WASCO is helping WAA weather the significant disruption the entire industry is experiencing. Moving ahead, the team is hopeful that nearly 50 airports will look to WASCO for assistance navigating the challenges in the ever-changing aviation industry.

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Memphis Int'l Builds Mission Control Center to Consolidate Operations, Boost Efficiency

BY KEN WYSOCKY

PHOTO: AERIAL INNOVATIONS SOUTHEAST

Memphis International Airport (MEM) recently addressed several separate, but related, facility issues in one deft move. By constructing a new nerve center for operations and maintenance, the Tennessee airport not only substantially increased its own efficiency, it also accommodated the expansion needs of its largest tenant, FedEx.

MEM's 121,000-square-foot Mission Support Center, completed in December 2020, consolidates seven crucial divisions into one centralized location. The new building houses Airfield Maintenance, Police, Emergency Response, Communications/Dispatch, Operations, Snow Command and Procurement.

"Two out of every three employees of the airport authority now are housed there, so the center provides us with centralized operations and organizational efficiencies, as well as improved team work," Terry Blue, vice president of Operations.

TERRY BLUE

"Furthermore, its central location on the south side of the airfield [between the center and west runways] will improve our response time for things such as snow removal and general airfield maintenance. That site was one of a handful of plots left on the airport ground that provided excellent landside and airside access."

The new building also enabled MEM to move emergency operations and communications centers from inside its terminal building, which usually isn't the best location for those functions, adds Blue.

MEM funded the entire $55 million project with general airport revenues.

Domino Effect

FedEx will expand its already immense World Hub operations at MEM by moving into the 91,934-square-foot Ned W. Cook Airfield Maintenance Facility, which the airport no longer needs.

"Vacating the Ned Cook building allows us to accommodate some of FedEx's plans for growth and modernization," Blue says.

Helping FedEx secure enough space to expand was no small matter. Its operations at MEM employ 11,000 people and account for the majority of the company's daily volume in the United States. Currently, the shipping giant operates roughly 400 flights per day at MEM, making it the busiest cargo airport in North America and the second-busiest cargo airport in the world.

In 2019, FedEx announced that it will invest an additional $450 million to enhance technology and increase automation at its World Hub. According to published reports, that brings the cargo carrier's total long-term planned investments at MEM to $1.5 billion.

More Efficient Maintenance

JAMES HAY

James Hay, director of planning and development at MEM, notes that the maintenance department in the new Mission Support Center is a significant step up from the airport's previous facility. Six large drive-through lanes, each with two service bays laid end-to-end, are one of the chief improvements. The bays feature wider doors on each end that can accommodate snow-brooms, which keep evolving into bigger and bigger machines. The Cook facility had only eight smaller bays, and none were drive-

through. That meant drivers had to back out large pieces of snow-removal equipment after they were serviced.

"The overall layout of the bays is much more efficient now," Hay explains. "And having everyone in one facility adds a tremendous amount of value and efficiency. Our operations managers can communicate directly about airfield conditions and can accommodate requests immediately."

The central location of the new facility really shines during snow events, because equipment no longer has to travel from the east end of the nearly 4,000-acre airport. As a result, crews can begin cleaning taxiways and the airport's four runways sooner.

"Plus snow-removal crews can quickly pull into the facility, swap out crews and get right back on the field," Hay adds.

The snow fleet maintained and stored at the new facility includes:

- six 18-inch snow brooms (Sweepster and M-B Companies) mounted on Oshkosh truck chassis;
- seven Freightliner and Mack dump trucks with 20-foot snowplows made by Wausau Equipment Co. Inc. and M-B and two brooms made by M-B;
- six M-B multi-function vehicles with 24-foot plow/22-foot broom rigs;
- four New Holland tractors—two with 14-foot brooms made by M-B and Sweepster, two equipped with 10-foot Wausau plows; and
- two wheel-loaders—one Volvo, one Caterpillar.

"As we've modernized our snow fleet over the last few years, it's grown bigger," Blue notes. "Building a new facility gave us an opportunity to right-size our fleet maintenance and maintain much larger snow-removal equipment—multi-function machines that can sweep, blow and plow."

Complex Design Effort

The new facility was designed by Horrell-Self-Tucker, a joint venture created by Horrell Group Architects and Self + Tucker Architects Inc. Rob Horrell, a principal at Horrell Group, notes that it was a complex endeavor and Juan Self, a principal and founder of Self + Tucker, played a key role.

"The real challenge was capturing all the various functions that take place in all these various departments," Horrell explains. "The needs of one space are totally different than the needs of another space."


ROB HORRELL

Furthermore, the design had to accommodate unsecured landside operations and secured airside operations. Integrating them together with a common lobby and facilitating efficient circulation of employees and delivery of goods and materials from a nearby warehouse area proved to be tricky.

"We had to organize the relationships between various departments so they didn't conflict with one another, while at the same time be mindful that they still share some common areas, such as the lobby and bathrooms," Horrell explains. "With a security line running through the middle of the building…we wanted to keep things as orderly as possible and minimize daily inconveniences and disruptions.

"So as much as possible, we tried to minimize the need for airside employees to move to the landside and vice versa."

In the end, the design team opted for a spine configuration, with a break room, restrooms and office-based functions such as management, police, communications and emergency operations located on one side of a corridor (the spine). General maintenance facilities are located on the other side of the corridor.

Another important site-design goal was minimizing traffic conflicts between police and operations vehicles, snow-removal and maintenance equipment, etc.

Challenging Construction Conditions

The weather and COVID-19 complicated matters for general contractor Chris Woods Construction Company.

When site work began in September 2018, Memphis was experiencing a particularly rainy fall. In fact, crews were socked with 212 weather days throughout the project—most during the first half of the schedule.

"Getting it completed and ready for building foundations was a challenge, given the wet and cold conditions," recalls Bryan

TAKE OFF WITH US
Memphis
INTERNATIONAL AIRPORT

FACTS&FIGURES

Project: Mission Support Center

Location: Memphis (TN) Int'l Airport

Owner/Operator: Memphis-Shelby County Airport Authority

Departments Housed: Airfield Maintenance, Police, Communications/Dispatch, Operations, Snow Command, Emergency Response, Procurement

Size: 121,000 sq. ft.

Additional Facilities: Equipment storage building; bulk material storage building (snow-removal chemicals, mulch, sand, etc.); canopy to protect parked equipment; employee parking lot; kennel for police dogs

Approx. Cost: $155 million

Funding: General airport revenue

Architect: Horrell-Self-Tucker, joint venture of Self + Tucker Architects Inc. & Horrell Group Architects

Construction: Sept. 2018-Dec. 2020

General Contractor: Chris Woods Construction Co. Inc.

Civil Engineering: Pickering Firm Inc.

Structural Designer: Jamnu H. Tahiliani & Assoc. Inc.

Mechanical Engineering Consultant: Barham/Cain/Mynatt Inc.

Data & Security Systems Engineer: Faith Group LLC

Electrical Engineering Consultant: Depouw Engineering LLC

Concrete Contractors: JRY Co. LLC; Delta Industries Inc.; Memphis Ready Mix; Custom Curbing & Edging Inc.

Asphalt Paving: Gibson Paving Inc.

Earthwork: Browning Construction Co.

Fences/Gates: Memphis Fence Co. LLC

Snow-Removal Equipment: 6 snow brooms (Sweepster; M-B Companies Inc.) mounted on Oshkosh truck chassis; 7 dump trucks (Freightliner; Mack) with snowplows (Wausau Equipment Co. Inc.; M-B) & M-B broom; 6 M-B multi-function vehicles with 24-foot plow/22-foot broom rigs; 4 New Holland tractors (2 with brooms from M-B & Sweepster, 2 with Wausau plows); 2 wheel-loaders (Volvo; Caterpillar)

Key Benefits: Consolidating several functions into 1 building increases inter-departmental efficiency; central location facilitates faster response from snow & airfield maintenance crews; FedEx can expand into facility formerly occupied by airport

Everything From Deicer to Dogs

In addition to housing seven critical support departments, the new Mission Support Center at Memphis International Airport (MEM) includes several other important facilities:

- a 47,800-square-foot building for storing equipment and machinery;
- a nearly 14,000-square-foot building for bulk storage of snow-removal chemicals, mulch, sand and other materials;
- a 4,800-square-foot canopy to protect parked equipment;
- an 83,000-square-foot employee parking lot; and
- a 900-square-foot kennel that houses drug- and bomb-sniffing police dogs during the day

Campbell, senior project manager for Chris Woods. “But we were able to meet that challenge with an aggressive schedule and working long hours, and were able to get the site ready for foundations in line with the schedule.”


BRYAN CAMPBELL

Campbell credits good working relationship with subcontractors for contributing to the project’s success. “There were a lot of complex systems in the building, and working together, we were able to get the materials ordered and delivered and installed in a timely fashion,” he explains.

Measures to keep crews safe amid the coronavirus pandemic affected the entire project. “We followed the CDC guidelines with regard to social distancing, masking and hand washing,” says Campbell. Chris Woods also added extra restroom facilities and hand-washing stations throughout the site, and assigned workers to clean them continually. “This allowed our teams to continue to work on site safely during this difficult time of combating the coronavirus,” remarks Campbell.

Because MEM was eager to occupy the building, the general contractor readied individual building sections as the project moved close to completion. This allowed various airport departments to move into the new building one a time. “The challenge was to get a section of the building substantially complete, including all life safety systems in place and running, so that the building officials and fire department would grant temporary occupancy and allow the airport to occupy each section as we completed it,” Campbell explains.

Small Aesthetic Flourishes

The facility was built using tilt-up concrete panels. Workers poured the panels on site, then tilted them up into place. Hay notes that it is a relatively inexpensive and fast construction method commonly used in the region.

To prevent the structure from looking too austere, designers had concrete workers use forms with a corduroy-like rippled finish on one side to add texture and dimension to the exterior walls. “It’s a nicer finish than just flat concrete or faced aggregate,” Horrell remarks.

“Additionally, we used suspended white triangular acoustic forms, which resemble paper airplanes, in the break room and main corridor to provide a visual connection to aircraft operations.”

Inside the building, windowed cupolas introduce natural light wherever possible, he adds.

New drive-through bays enhance efficiency for crews.

"We didn't want to build a Taj Mahal," explains Blue. "But we also wanted to provide employees with more than just the minimum, as well as fulfill operating needs that we've observed over the years. A lot of things have changed (since the Cook building was built in 1988), including our processes. This building incorporates all of the things we need to accommodate all of those changes."

Blue is pleased with the project's timing, as well. Moving multiple departments into the new Mission Support Center provides FedEx with the additional space it needed; and relocating the airport police during MEM's $250 million Concourse B renovation made way for consolidation of all airline, retail and concession facilities.

"Plus, we needed a new building, which gave us a start-from-scratch, do-it-right-the-first-time opportunity," he concludes. "The old building was nice, but this new one really is something special. Our employees are over the moon about this facility."

Pandemic Ushers in New Safety Measures at Dallas Fort Worth Int'l

BY KIMBERLY GIBBS

When COVID-19 first began lashing the United States last winter, Dallas Fort Worth International Airport (DFW) initiated a multimillion-dollar response effort within weeks. As early as January 2020, the airport increased its cleaning/disinfecting frequency and rolled out strategies and procedures specifically designed to address the emerging global health crisis. New tools it is leveraging include high-tech sanitizing equipment for frequently touched surfaces, ultraviolet light technology to clean the air and an updated queuing strategy to encourage social distancing at TSA checkpoints, ticketing counters and other line-prone areas.

KEN BUCHANAN

Ken Buchanan, the airport's executive vice president of Revenue Management and Customer Experience, explains that DFW's commitment to safety and security has always been a top priority. And, as traffic volumes were plummeting throughout the industry due to the pandemic, DFW's top focus became finding a proactive and targeted response to meet the new needs of the traveling public. "We made the decision to enhance our cleaning and sanitization efforts and reinforce the customer experience," says Buchanan.

Toward that end, the management team created a multidisciplinary group called the Readiness Task Force. It's comprised of employees focused on customer service as well as personnel from support departments such as procurement, risk management, human resources and public safety. Together, task force members analyzed and enhanced safety measures in an effort to rebuild customer confidence in air travel. They also worked closely with public health agencies at federal, state and local levels.

DFW's Innovation Team reviewed emerging coronavirus safety practices from across the world to identify new tools that could be used in its facilities. As a result, the airport established a 165-member cleaning strike team that supplements traditional custodial staff in cleaning high-touch areas more often. It also invested in Clorox® Total 360 and Victory electrostatic sprayers to sanitize frequently touched surfaces such as door handles, elevator buttons, holdroom seating, etc., and ultraviolet technology to kill airborne germs.

Buchanan notes that the effort to overhaul cleaning and sanitization procedures was not easy, even with strong collaboration and widespread support from airport partners. "There were many difficulties along the way, especially at our airport, which has the potential to see upwards of 100,000 customers a day," he remarks. "We noticed that just when an intensive cleaning process was completed, it was time to start it all over again." There were also hurdles in finding innovative and effective solutions without losing sight of the real mission, the need to make this transformation under a truncated timeline.

But the goal of maintaining a safe, secure environment for travelers and airport workers kept the response teams resolute. In the end, their efforts yielded results that garnered recognition from multiple organizations, including the Global Biorisk Advisory Council (GBAC). In fact, DFW became the first airport in the world to earn GBAC STAR Accreditation for stringent disinfection techniques and rigorous practices to combat biohazards and infectious disease. Its concessionaires and lounge operators earned the certification, too.

"The cross-functional team's work in earning the GBAC certification demonstrates to the public that DFW is a safe airport to travel through, starting at the curb, to the airport lounges and concessions," summarizes Buchanan.

Even with this new feather in its cap, DFW continued to make additional improvements.

Tech Tools

As restroom maintenance took on even more importance than usual, management felt the need to track cleaning progress throughout the day. So the airport hired TRAX Analytics to provide real-time data about supply usage and maintenance metrics in all 156 restrooms throughout its five terminals and a new terminal currently under construction. In essence, DFW wanted to take the smart technology it had already installed to the next level.

"We had the tools available to monitor the soap dispensers, paper towels, toilet paper usage, throughput and stall occupancy for every restroom where the technology was utilized," says Tracy Davis, president and chief executive officer of TRAX.

TRACY DAVIS

The next step for DFW, now underway, is training teams of custodians to log details on iPads about when they arrive at each restroom and how long they spend cleaning it. Additionally, display screens outside restrooms will inform customers when crews are cleaning and guide them to the nearest available restrooms.

"Through the use of this cutting-edge technology, we not only support cleaning efforts but also the optics associated with them," Davis says. "These tools help support a cleaner and safer environment and give confidence back to customers that we're taking this seriously."

She notes that TRAX has many customizable tools and technology options that can be installed in just two weeks. The project at DFW, which added nearly 5,000 sensors, took four months and cost about $3 million.

Maintenance crews armed with iPads will log details about when each restroom is cleaned.

Another tech-oriented initiative spearheaded by the Innovation Team involved modifications to the airport's heating, venting and air-conditioning systems. Responding to research indicating that short-wave ultraviolet light (UV-C) is effective at eliminating airborne COVID-19 germs, DFW became one of the first airports worldwide to embrace the technology. Incorporating the Manhattan Construction Group of Dallas's UV-C technology into four terminals and the Rental Car Center cost $5.4 million.

"We didn't put a dollar value on the lengths we would go to for safety at DFW," Buchanan remarks. "We would provide this high standard for our customers in this new environment with COVID no matter the amount."

Passengers Return

With many of the changes fully implemented and more in the works, DFW was ready for passengers to return to its facilities. When states loosened travel restrictions and COVID fatigue set in among the public, some travelers were eager to hit the skies once again.

Tracking the frequency of restroom maintenance has taken on new importance since the pandemic began

In June 2020, DFW rocketed to No. 1 in passenger volume and temporarily became the world's busiest airport. However, as passenger volume increased, so did lines at security checkpoints. This prompted the airport to consult an existing supplier, Lavi Industries, for guidance about keeping customers properly distanced. The company, which already had stanchions in place at DFW's 15 security checkpoints, updated queuing plans to help keep travelers safe at checkpoints that were configured before COVID-19 was a consideration.

JONATHAN JENNINGS

"We developed a comprehensive airport solution for when people started traveling and waiting in line at the security checkpoint and in other areas," says Jonathan Jennings, Southwest account executive for Lavi Industries.

The company tapped into its own 40-year history and worked with airport management, engineers, the local fire department, TSA and others to revamp the strategy for managing lines and ushering passengers through the airport. Modifications included installing acrylic panels to minimize germ spread while passengers wait in lines, adding signage about COVID prevention and broadcasting safety messages within the intra-airport train system.

"We demonstrated that the Lavi product worked well in this COVID-19 environment, and we were able to use as much of the equipment already on hand at DFW to keep them within budget," Jennings notes.

Initial conversations about revising queue strategies began in June 2020, followed by several walking tours of the facilities by Lavi and airport personnel. By early November 2020, COVID-specific queue strategies, 600 acrylic guards and other new components were in place at all 15 TSA checkpoints.

"Every airport has unique configurations and needs," says Jennings. "We know no one wants to spend money in the middle of a pandemic, but we work within perimeters and budgets to provide an affordable and great product."

A New Standard

Quick response from DFW, its contractors and partners has been well received by the public. Buchanan reports that customer surveys indicate that travelers trust DFW's decisions and new coronavirus protocols. The airport also earned high marks for facility cleanliness.

These two areas are not only important to customers, but to the DFW team as well. "We didn't take these safety measures to just flaunt them," says Buchanan. "The actions we've taken will be a way of life for us and will be the standard our customers expect now and in the future."

Meanwhile, airport personnel continue to research and test new COVID-19 response measures.

Combating Coronavirus

Dallas Fort Worth International Airport (DFW) is taking action on a number of fronts to prevent the spread of COVID-19. Measures it is using include:

- Face covering requirements for everyone inside the facilities and on airport property (customers, employees, partners, etc.)
- Enhanced cleaning/disinfecting protocols; increased cleaning frequency; additional staff for extra attention in high-touch areas
- Increased sanitization measures in restrooms, holdrooms, inter-airport train cars, etc. and on door handles, elevator buttons, kiosk screens, bins at checkpoints for carryon items, etc.
- Contact-free faucets and soap dispensers in restrooms
- Clear shields and guards to separate passengers from each other and airport workers
- Signage and audio announcements about prevention measures
- New queuing strategies to facilitate social distancing in passenger lines
- Electrostatic sprayers, ultraviolet C light technology, etc.
- On-call decontamination contractors

FedEx Expands at Ontario Int'l to Support Growing E-Commerce Demand

BY KRISTIN V. SHAW

FACTS&FIGURES

Project: Cargo Facilities Expansion

Location: Ontario (CA) Int'l Airport

Facility Owner/ Airport Tenant: FedEx Express

Funding: $28 million from airport authority for enabling projects, moving other tenants, staff time, etc. $330 million from FedEx Express for building construction, 250,000+ sq. ft. of new airside pavement, etc.

Timeline: Crews broke ground in April 2018; leases signed in June 2018; construction began in Sept. 2019; project completed in Nov. 2020 (1 month ahead of schedule)

Construction Contractor: The Walsh Group

Architect/Engineer of Record: FSB

Civil Engineer: Kimley-Horn

Permitting Agencies: Ontario Int'l Airport Authority; city of Ontario Building & Safety Dept.; Municipal Utilities Co.; San Bernardino County Flood Control District; CA Fish & Wildlife Dept.; CA Water Board

Cargo has been an important bright spot during the COVID-19 pandemic for many U.S. airports—especially Ontario International (ONT), located just 35 miles from downtown Los Angeles. With passenger traffic down about 50% from 2019 to 2020, ONT experienced double-digit increases in commercial freight volume almost every month last year. And 2021 may be even better. In January, ONT handled more than 70,500 tons of freight—a 15.6% increase over the same month last year.

Much of cargo is flowing through a new $330 million FedEx Express complex that was completed in November 2020. In retrospect, the initial planning that began for the project around 2015 to 2016 now seems almost clairvoyant. After operating at ONT for more than 33 years, the shipping giant more than tripled its footprint just in time to accommodate a surge in demand created as record numbers of consumers shopped online to avoid potential coronavirus exposure.

"Even before the pandemic, FedEx Express has been preparing its networks to manage the rising volumes in e-commerce shipments," Tim Wertner, senior vice president of the Western Division for FedEx Express U.S. Operations. "In just a matter of months, we saw e-commerce accelerate to levels that weren't expected for another three years. The opening of the new facility at Ontario International Airport better positions our operation to efficiently handle this growing e-commerce volume coming out of the Southern California area and enhances our competitive position in the market."


TIM WERTNER

The new facilities, located on 50.1 acres in the northwest quadrant of the airfield, nearly triple the footprint FedEx Express previously occupied on the south side. To facilitate the move and expansion, ONT spent $28 million on enabling projects, new facilities for key tenants, demolition and Taxiway C.

FedEx, in turn, spent $330 million developing the site by extending water and

utility services, constructing new intersections and building facilities for its specific needs. Key components include:

- a 204,000-square-foot sort building (one of the company's most advanced in the U.S.),
- a 12,500-square-foot vehicle maintenance building,
- 110 parking stalls for truck trailers and 35 for tractor units,
- a 366-space employee parking lot,
- a main trunk ramp to accommodate six MD-11 and two B-777 gates and associated ground support equipment,
- a feeder ramp that accommodates operations for three ATR-42s and up to 11 Cessna 208s,
- 7.5 acres of remote and static rack ground support equipment, and
- 2,500 linear feet of ADG-V parallel taxiway designed for surface movement guidance and control (SMGCS) operations.

Offsite improvements on an adjacent arterial street included:

- traffic signals for all three entrances,
- turn-pocket modifications,
- 2,500 linear feet of new 16-inch water main,
- 4,500 linear feet of 8-inch recycled water pipe, and
- 5,000 square yards of concrete pavement.

Multi-Decade Commitment

Agreement terms for the expansion indicate a long game, including options that could extend FedEx Express' presence at ONT for up to 50 years. Ontario International Airport Authority kicked the onsite portion of the project off by demolishing existing hangars and other buildings on the 50-acre plot and grading the surface for new construction. The airport authority also led efforts regarding permitting and environmental impact reports/analyses. FedEx Express was responsible for vacating the 18.5 acres on the south side where it had been operating, and heading up facility construction and associated infrastructure improvements, including 170,000 square yards of new concrete for aircraft ramp and trucking operations.


KEITH OWENS

FedEx Express bid out the project in 2018 and hired Walsh Construction to lead the project. As with other projects at ONT, the airport authority provided oversight during the design and other preliminary stages to ensure that the new facilities would be compatible with the rest of the airport. Keith Owens, program management director at ONT, compares the process to a homeowners' association approving a new fence or shed built by an individual homeowner. After the shipping giant signed a lease and secured approval for the development plans, it was free to kick off construction.

"FedEx decided to go with design-build, because it's faster," says Owens. "One of the reasons more companies are going with design-build is because it avoids the divide of having the designer on the owner's 'team' and the contractor on its own. In this case, they're on the same team and working together, which theoretically eliminates conflicts."


TIAGO PINA

Walsh Senior Project Manager Tiago Pina was in charge of the construction schedule, finances, safety programs, quality control and stakeholders. Day to day, much of his time was spent managing up to 72 subcontractors. And building the sorting facility was a massive job on its own with even more subs, Pina adds.


BRIAN SAUER

Having worked with FedEx Express before, the Walsh team understood the way the carrier worked and what was needed to stay on track. The first order of business was hiring an architect. Walsh selected FSB Architects + Engineers to lead the building design, and it tapped Kimley-Horn and Associates for civil engineering.

"Kimley-Horn was the clear-cut choice from the start," says Brian Sauer, an FSB principal. "I think all of us, Walsh included, know how to work with FedEx and understand the

needs and stakeholder requirements. There's no replacement or substitute for experience working with a particular client. There is no cookie-cutter solution, and we made a good team."

From the very beginning of the project, all three companies knew that FedEx Express would be ready to hit the ground running.

"FedEx has a very well-thought-out, well-planned way to do things like this," Sauer explains. "When they give you a playbook, they've experienced these kinds of projects and they know what they like. Working with a client who has built facilities like this all over the country was really a benefit to us, because they already have a successful playbook. It makes things a lot easier when you're working with a client who knows a facility as well as FedEx does."

The shipping giant not only proved to be prepared and experienced, but driven as well.

"One of the very critical components of this was that they already knew their opening date," explains Pearse Melvin, the project manager from Kimley-Horn. "They had to have 100% confidence in the team that they could meet that date."

PEARSE MELVIN

Juggling Existing Operations With New Construction

Preventing disruption to other tenants while readying the 50-acre site for FedEx Express required great care and diplomacy, notes Melvin. ONT's efforts to relocate Southwest Airlines and Amazon Air/Majestic Terminal Services to new facilities took one year longer than expected, and ultimately required new design work. Naturally, that put pressure on all parties involved. (Details about the new facilities are available in the May/June 2020 issue of *Airport Improvement*.)

Water management was another big challenge. "We had to keep the fire system active while demolishing the rest of the site, which required a temporary water line," Melvin explains.

The team also had to divert Amazon trucks, which were been using an entrance earmarked for the FedEx Express facility, to a new perimeter gate. Weekly meetings occurred for a full 1½ years to make sure everyone knew exactly what was going on, Melvin notes.

The sheer volume of permitting was another hurdle for the project team. In addition to complying with FedEx design criteria and standards, the project was subject to permit requirements from the Ontario International Airport Authority, city of Ontario

The airport worked to minimize disruptions for other cargo tenants while readying a 50-acre site for FedEx Express.

Building and Safety Department, Municipal Utilities Company, San Bernardino County Flood Control District, California Fish & Wildlife Department, and the state water board.

Walsh often felt like the governmental permitting processes moved at a snail's pace, but adjusted accordingly. At least one subcontractor attributed delays to the political climate in California making it unfriendly to business.

"We were the first major building project that fell under the jurisdiction of the city of Ontario," says Melvin. "I think the city was trying to learn with this project how to handle that. There is a new 'smart review' process they were working through; it was a learning process for everyone."

Coordinating multiple stakeholders and project components proved complicated. While one team headed demolition and moving existing tenants, another prepared the site for new construction. Because of this juggling act, Walsh had to begin working with a 28-acre parcel instead of the full 50 acres as originally planned.

Fortunately, COVID restrictions had very little impact on the project. Melvin reports that it was relatively easy to maintain

proper social distancing because most construction occurred outdoors. However, some material deliveries were delayed due to manufacturing shutdowns.

Another unusual aspect of the project was an Airport Operations Area security design that allowed for an Exclusive Area Agreement, which placed security responsibilities for a portion of the Part 139 airport on FedEx and required the design to be fully TSA compliant.

Despite all of the extra challenges, Sauer is not only enthusiastic about the outcome, but also the way the team achieved it. "Any project will have challenges you have to overcome," he says. "We had to have a sense of teamwork. When confronted with a challenge, we had to work together to overcome it."

Communication Was Critical

Weekly meetings were conducted with contractors, subcontractors, FedEx Express, its project representative, the city and ONT to coordinate phasing. The regular meetings were also the main venue for Walsh to secure needed approvals for drawings and documents.

"Everyone was focused on getting the project done and providing the best value to FedEx," says Pina. "Everyone had the same mentality of working through challenges together to get the job done."

Owens recalls that it was easier to move contractors and subcontractors along than the city's planning, engineering and building and safety departments. "We got them up to speed by inviting them to the weekly meetings so they'd hear things at the same time we were," he says. "So if we needed to move a water line, they would hear it directly from us. And that avoids the old game of 'Operator,' [which shows that messages usually change when passed from person to person]."

FedEx Express, which places a premium on communication and timeliness, was pleased with both aspects of the large ONT project.

"This project involved many different and diverse vendors as well as multiple city, county and airport oversight departments," says Wertner. "It also involved close coordination with our operational team at Ontario. If there isn't strong communication and coordination between all the contractors, vendors and stakeholders throughout a project of this scope to ultimately deliver a facility that meets everyone's needs, it could pose a challenge. However, I'm proud to say this was ultimately met by an effective and efficient team of motivated individuals on all sides with a common goal."

Will There be a Phase 2?

ONT anticipates a ripple effect of more improvements at the airport following its investment in the new FedEx Express development. And the shipping company demonstrated its commitment to the airport by expanding its footprint and building new facilities.

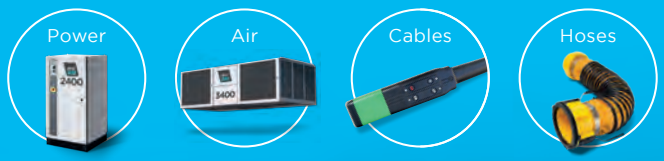
Ultimately, the project finished one month ahead of schedule, and the FedEx Express team is pleased with the results and process.

"Team members, stakeholders, contractors and vendors with the right attitude, and passion mean everything to a project of this size," Wertner remarks. "Without fostering a team of passionate individuals that communicate effectively, a project will not be as successful as the one in Ontario. There were hundreds of contractors and countless FedEx team members that facilitated this project from start to finish in order to complete it on time, just before the busiest holiday shipping season in our company's history."

Walsh personnel are similarly positive. "This is a major facility for FedEx and for the airport," Pina says. "I think other companies might see this airport as a place to do business in terms of air cargo. This is a much bigger facility than was there before. And especially now, with the pandemic, it's helping the airport a lot. I think that will help the airport in the long term, and we might even see a phase two due to the growth of e-commerce."

While FedEx Express isn't talking publically about more phases, it will likely keep its eye on ONT when mapping out what's next.

ITW GSE



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Create the perfect lineup

Salt Lake City Int'l Supports New Terminal with New Enterprise Asset Management Software

BY JODI RICHARDS

FACTS&FIGURES

Project: Enterprise Asset Management System

Location: Salt Lake City Int'l Airport

Cost: $2.5 million

Deployment: July 2020-end of 2021

Technology/Process Consultant: The JW Group

System Deployed: Maximo

Supplier/Implementer: Electronic Data Inc.

Testing, Training, Post-Deployment Support: Electronic Data Inc.

Key Benefits: Increased ability to track maintenance/inventory, maximize lifecycle costs & utilize staff effectively

Of Note: Key components of system went live less than 90 days after purchase, in time for opening of new terminal

When Salt Lake City International (SLC) opened the first phase of its $4.1 billion redevelopment program to passengers in mid-September, airport officials understood the importance of making the most of that investment. So they took the uncommon opportunity of having a fresh, new facility to simultaneously implement a fresh, new approach to asset management.


EDDIE CLAYSON

Director of Maintenance Eddie Clayson explains that a $2.5 million technology upgrade is allowing SLC to collect and manage data that helps it track inventory and maintenance records more accurately. The airport is also gleaning valuable information about ownership costs and reducing the time and resources spent maintaining a wide variety of assets—everything from large air-conditioning systems to individual holdroom seats.

In all, the new facilities encompass more than 4 million square feet filled with a myriad of equipment and systems to maintain. The first phase of SLC's redevelopment project replaced three aging terminals with one central terminal and two linear concourses connected by a passenger terminal. Even before the recent changes, though, Clayson and his team had been eyeing a new enterprise asset management system. "I've been trying to get this system in place for a while because I knew the need," he remarks. Last year, SLC allocated funding for software and implementation.

Clayson notes that the previous asset management system was good at performing

basic functions, but the airport needed a more robust system with mobility features to keep pace with the facility's growth. "We have more assets and a lot more users," Clayson explains. "We needed something that was easier to upgrade."

In 2019, SLC served 26 million passengers with facilities designed to handle just 10 million annually.


RANDY NEWCOMB

Randy Newcomb, technical systems program manager at SLC, adds that the new system provides a clean slate and helps the airport proactively "right the ship," whereas the previous system and processes provided a look in the rearview mirror to see what had already happened. "It didn't go into a whole lot of depth or provide useful information that would help us determine lifecycle costs," he explains.

Due Diligence

The airport began the transition by working with a consultant to outline the functional and technical requirements for a new enterprise asset management system. "Clearly defining those before making a decision is key," Clayson advises.

The JW Group helped the maintenance team delineate its processes, explore new technology options and determine how an upgraded system would be of benefit. "You can't possibly know the things that you don't know," Clayson points out. "If it was left up to us, we probably would have kept the system we had because that's all we knew. It was a benefit to have an outside consultant."

Ultimately, SLC chose the Maximo system.

Understanding the airport's own procedures and policies before rolling out a new system was crucial, Clayson adds. "I think that upfront time saved us a lot of work as we implemented this. Time was of the essence—we were opening a building and needed the system running."

Having launched the previous system on its own, SLC wanted a partner with experience implementing asset management systems at other airports to lead its upgrade. After considering multiple options, the airport contracted Electronic Data Inc. for planning, configuration, testing, training, deployment and post-deployment support.

The project kicked off in late July 2020 with workshop discussions, and some aspects of the new management system were live as SLC opened its new terminal. "We actually had a working version of Maximo running for our 'trouble call' work orders in mid-September," Newcomb reports.

"It was a pretty aggressive schedule," Clayson acknowledges. But it was critical to have the new asset management system in place so management could ensure that components and equipment in the new terminal would be properly maintained from the very beginning, he adds.


SCOTT YATES

Scott Yates, chief operating officer of Electronic Data Inc., considers it a major victory for SLC to have the new system operational just three months after the purchase contract was signed. "The airport didn't lose the opportunity to get good maintenance history about this new facility," he explains. "Had we not done that, they'd be keeping a lot of paper records and might never get the data into the system."

Deployment is expected to continue through the end of this year, with SLC continuing to integrate more of its operating systems into Maximo and populate it with additional data.

Systems Integration

Even though Electronic Data Inc. customizes Maximo for specific locations, Yates has noticed that many airports' systems end up looking similar. Over the last 20 years, he has found that crews can deploy the preconfigured system fairly quickly and then evaluate for gaps based on each airport's individual requirements. At SLC, that involved adding specific buildings and subsystems that were not covered by the previous system.

Clayson notes that starting fresh with Maximo for the new facilities provided a clean transition because assets tracked by the previous system are no longer in service and many were torn down. SLC uses its new system to track components throughout the airport—from snow removal equipment to air handlers, and electric panels to baseboard heaters…even a transmission line for waste oil from restaurants.

Many recordkeeping tasks that were previously manual and involved a lot of paper are now automated via Maximo. The new system allows SLC to manage its assets, organize processes and procedures, maximize lifecycle costs and utilize staff in the most effective way, Clayson summarizes.

Depending on the work group and its needs, processes such as general inspections and work orders can be scheduled and logged in Maximo to ensure functionality of assets and, ultimately, customer satisfaction. "We will be able to perform tasks quicker

Elements of the new asset management system went live in time for opening day of the new terminal.

and when they need to be performed; not just based strictly on a schedule," Clayson explains.

For example, holdroom seating with built-in electronic charging typically takes a lot of abuse from baggage and passengers over the years. Now, inspections are logged and tracked through Maximo to ensure safety, functionality and customer satisfaction.

Previously, recordkeeping was performed solely on desktop computers located in offices. But a mobile application is scheduled to roll out in March and SLC will distribute mobile devices throughout the work groups to facilitate quicker response to work orders. Having information at employees' fingertips in the field will help SLC be more efficient—especially in the larger new facility, notes Newcomb.

"With our former system, we were almost all paper," recalls Clayson. While a completely paperless system isn't possible, the mobile application will allow SLC to greatly reduce its paper consumption related to maintenance.

Currently, Computerized Maintenance Management System Administrator Nathan Bolander and his team are working on integrating assets and equipment with geographic information system (GIS) data. This new strategy, especially when paired with mobile devices, will prove particularly valuable for performing airfield inspections. Crews will use GIS technology to accurately mark locations of areas needing lighting or pavement repairs noted during regular inspections. "Instead of having to search for a pavement defect, they will know right where it is," Bolander explains.


NATHAN BOLANDER

User-accepted testing for this aspect of the system was expected to be completed by the end of February.

Maximo also helps SLC provide feedback and updates on work orders to various stakeholders. Timestamps document when a call comes in, when it is dispatched to personnel and when work begins and ends; and whoever initiated the request receives updates.

Clayson foresees considerable benefits regarding training and customer service. "We will better understand where our weaknesses are and where we need to focus our attention," he relates.

Cautious, Ongoing Implementation

Newcomb reports that deployment of the enterprise asset management system went well despite challenges posed by COVID-19. Training employees to use the new technology was more difficult because of limitations on large group gatherings to stop the potential spread of coronavirus infections. In March 2020, the airport modified employee shifts to minimize overlap for similar reasons.

Electronic Data Inc. still provided in-house training, but in smaller groups than usual. "That added a level of difficulty to the implementation," notes Clayson.

The new system and procedures also involved a significant culture shift. "Employees were used to paper in their hand and that process," says Newcomb. Despite the changes, he says that most are willing participants and understand why the upgrade was necessary after hearing discussion about it for years.

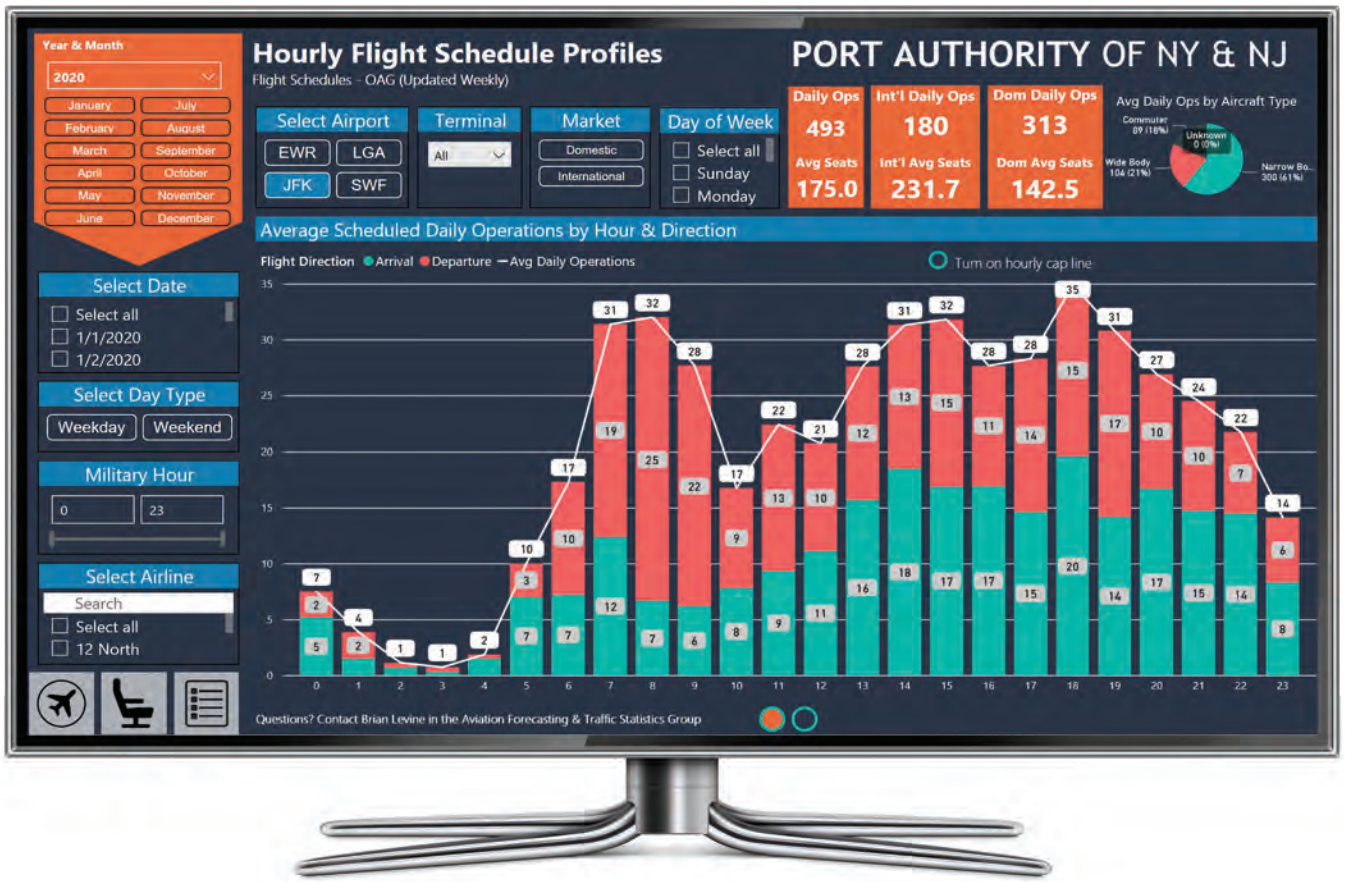
Yates notes that the biggest reason the initial deployment was such a success is because SLC prioritized its objectives and understood that the rollout is a marathon, not a sprint. "Most important was that their system was up and running with the new terminal for maintenance history and cost data," he emphasizes. "This is the first step in evolving toward robust enterprise asset management."

Much of the remaining work will involve tying existing warehouse inventories into the system and adding new stock from the new construction, which is expected to be complete in early June. Clayson notes that inventory control and tracking were two of the previous system's biggest weaknesses. In contrast, Maximo is designed to automatically update the system as work orders are completed and personnel remove inventory from the warehouse.

Phase 2 of the deployment, which is expected to be complete by the end of the year, will integrate the airport's finance module, real estate module, fleet and automotive maintenance tracking program and safety management system.

Ultimately, SLC will be able to tie smart assets around the airport into Maximo. For example, sensors can be placed on baggage handling equipment, people movers or passenger boarding bridges to gather usage information that will drive maintenance decisions. Yates explains that such information will help SLC proactively head off failures, optimize preventative maintenance and provide better operational metrics.

Newcomb adds that once Maximo is integrated with the building automation system, the need for labor-intensive manual inspections will be reduced, saving even more time and labor costs.



Enterprise Data Warehouse Centralizes Operational Info for Key PANYNJ Airports

BY RONNIE WENDT

PORT AUTHORITY NY NJ
AIR LAND RAIL SEA

FACTS&FIGURES

Project: Information Management

Locations: John F. Kennedy Int'l; LaGuardia Airport; Newark Liberty Int'l

Airport Operator: Port Authority of New York & New Jersey (PANYNJ)

Cost: Undisclosed

Strategy: Establish cloud-based enterprise data warehouse & business intelligence system to centralize & coordinate information from several different data streams & units

Developed By: PANYNJ; REVISION Inc.

Key Benefits: Provides authorized users ready access to single source of consistent information; boosts efficiency of decision making & operational execution; enhances passenger experience by better managing flight delays & assuring amenities are cleaned & ready for incoming passengers

In a flash, the information that airports routinely collect about arrivals, departures, passenger counts, etc. has become more important than ever. Records detailing where each passenger originated, for instance, are crucial in light of COVID-19 travel restrictions and advisories.

But accessing or analyzing such information can be a tedious process. Too often, airports collect data from a variety of sources, and then it sits in separate silos with restricted access. When personnel need information, they must ask a specialist to retrieve and analyze it. Sometimes the process can take weeks or even months—costly and unacceptable delays when passenger health is at stake.

The Port Authority of New York and New Jersey (PANYNJ) recently found itself in an enviable position to navigate the pandemic's unprecedented information technology challenges. About one year before the novel coronavirus emerged in the United States, the Port Authority had added a new cloud-based enterprise data warehouse and business intelligence system, known in the tech industry as Aviation Data Analytics Warehouse (ADAW) and Business Intelligence (BI), respectively. The centralized system coordinates information collected from multiple data streams and departments and allows authorized users to easily access the data.

As a result, John F. Kennedy International (JFK), Newark Liberty International (EWR) and LaGuardia Airport (LGA) have all experienced dramatic benefits.


AI YAMANAKA

"Instead of the operations team working off one set of data, the maintenance team off another, and the customer service team working off yet another, everyone sees a single version of the truth," explains Ai Yamanaka, data analytics program manager for the Port Authority's Aviation Strategy Unit.

The improved data management system has been invaluable during the pandemic, adds Aviation Director Huntley Lawrence. "These technology advancements ensure a more effective way to collect, analyze and forecast data, which has proved critical for our response to the COVID-19 pandemic," Lawrence explains. "The Aviation Department relies on our ability to gather and analyze data to coordinate daily operations with the airport community and develop predictive models for future passenger activity to provide the best experience possible."

Rohun Iyer, senior data scientist from the Aviation Strategy Unit, created a custom dashboard that estimates and predicts how many passengers will arrive from states with travel advisories. Iyer's new tool combines information from multiple data sources and information within the Port Authority's data warehouse with updates from the COVID Tracking Project, an effort launched by *The Atlantic* that collects and publishes data about the deadly pandemic.

"The dashboard helped our operations team understand changes in passenger demand because of spiking COVID cases by state," Yamanaka reports. "Our leadership uses the dashboard to inform data-driven decisions, such as how and when to deploy New York State Department of Health officials at our airports to survey incoming passengers in accordance with travel advisories."

Skilled data warehouse users such as Brian Levine, PANYNJ's manager of strategic analysis and forecasting, cross-analyze TSA data, flight schedules, operations information from individual airports and other key data to yield new insight. During the pandemic's early months, Levine compiled weekly presentations that informed Port Authority leadership about expected changes in flight schedules and travel trends that accurately forecasted traffic and revenue, notes Yamanaka.

Iyer continues to refine the COVID dashboards and scripts to incorporate real-time hourly passenger data. The changes will allow airports to predict passenger flows and better manage COVID-19 protocols such as social distancing and enhanced cleaning procedures.

This success story is just a snippet of what PANYNJ can achieve with its new data management system, notes Yamanaka "Our ultimate goal is to improve the entire customer experience," she says.

Program Development

The genesis of PANYNJ's enterprise data warehouse and business intelligence system dates back to 2018, when Lawrence began his tenure as director of Aviation for the Port Authority. One of his original goals was to build a robust data analytics team to advance decision-making across the Port Authority and its airports.

His vision inspired PANYNJ personnel to solicit advice from leading data teams at the Metropolitan Washington Airports Authority, San Francisco International Airport and Los Angeles World Airports. The insight they shared helped PANYNJ craft a blueprint for a centralized data warehouse and platform—the first foundational step toward a more comprehensive data infrastructure system.

"We got a sense of their best practices and how each team started, then developed our own strategy," Yamanaka explains. "Our system was a little different in that we wanted to create a centralized team to coordinate information across different airports and different airport teams. We have three commercial airports, and each has its own culture and operational channel. That also applies to how we gather information and the different information channels we use."

To help pull off a project of such magnitude, PANYNJ partnered with REVISION Inc., the consultancy that built Denver International Airport's Enterprise Data Management Platform and Adoption Program.

PANYNJ launched its new data management and analytics program in 2019.

Evolution vs. Revolution

Seeking to produce quick results on its initial investment, the Port Authority focused on adding as many production-ready data streams into the system as the budget allowed rather than immediately building an integrated and governed data warehouse. REVISION first built the back-end infrastructure of the data program as a series of data marts joined by a connecting key, database to database.

The work started with airside- and landside-focused datasets. The airside initiatives included information about flight delays, cancellations, on-time flight performance and other operational measures. The landside efforts included real-time customer survey data. The major initiatives driving the need were poor on-time performance, predictive flight activity to better manage LGA construction schedules and improving customer survey scores.

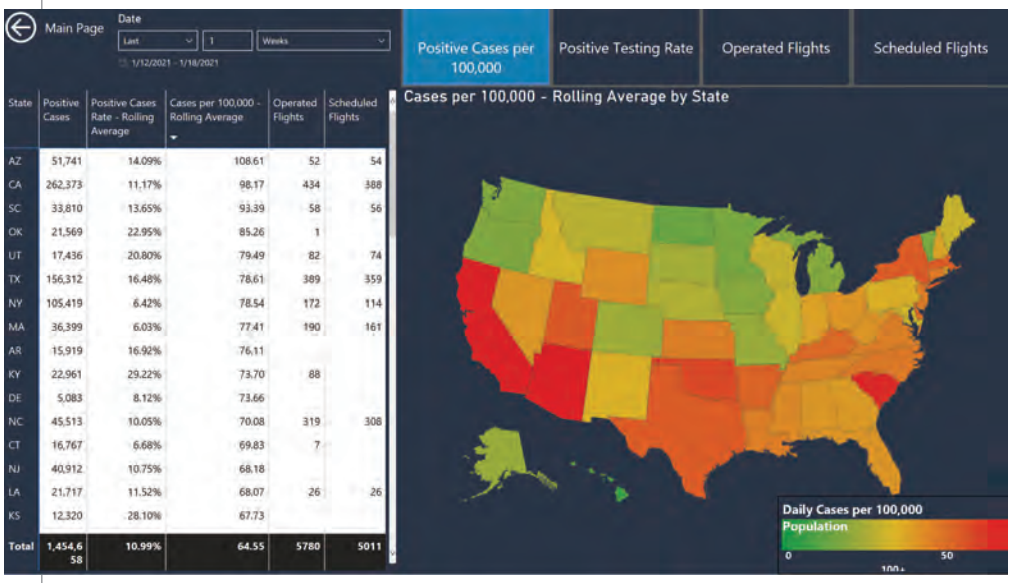
In the program's first year, the data team integrated more than 10 new data streams into individual data marts. "We prioritized based on need and usability across departments," says Iyer. "Some datasets were a bit more challenging to bring into the warehouse and others made sense to bring in."

Yamanaka explains that before adding datasets, the team needed to understand where the data originated and how to migrate it to the new database. Some datasets were hidden behind firewalls and access restrictions, while others resided on airport desktops or in the cloud.

Analytics teams from REVISION and PANYNJ cleaned and vetted data before importing it into the new warehouse system to engender trust from subsequent users and avoid squandering time analyzing invalid data.

Yamanaka reports that initial efforts immediately showed a return on investment by helping teams produce dashboards from a common platform. Now, authorized airport users can pull any data stream housed within the warehouse into an automatically refreshing customized dashboard, report or Excel file.

Proving value early in the project allowed PANYNJ to build a back-end governed data warehouse—adding even more data streams—in the second year. All data streams are designed to share and map to a few key common tables within one database



State	Positive Cases	Positive Cases Rate - Rolling Average	Cases per 100,000 - Rolling Average	Operated Flights	Scheduled Flights
AZ	51,741	14.09%	108.61	52	54
CA	262,373	11.17%	98.17	434	388
SC	33,810	13.65%	93.39	58	56
OK	21,569	22.95%	85.26	1	
UT	17,436	20.80%	79.49	82	74
TX	156,312	16.48%	78.61	389	359
NY	105,419	6.42%	78.54	172	114
MA	36,399	6.03%	77.41	190	161
AR	15,919	16.92%	76.11		
KY	22,961	29.22%	73.70	88	
DE	5,083	8.12%	73.66		
NC	45,513	10.05%	70.08	319	308
CT	16,767	6.68%	69.83	7	
NJ	40,912	10.75%	68.18		
LA	21,717	11.52%	68.07	26	26
KS	12,320	28.10%	67.73		
Total	1,454,658	10.99%	64.55	5780	5011

The new system alerts airport leaders about expected changes in travel trends due to COVID-19 cases.

to allow for seamless integration across data streams.

Yamanaka uses the analogy of a large mansion to describe how it works. "Instead of having to open various doors to get in and out of various rooms, a governed data warehouse allows for one large loft with partitions, so users can move from one portion of the room to the next," she explains. "This back-end governance work is in line with Airports Council International's Aviation Community Recommended Information Services (ACRIS) best practices and is a key improvement that will provide our users with connected, governed and clean data."

Though the rollout does not include all data streams, personnel can access the warehouse regardless of whether their team contributed data. "We taught them how to manage their data, create dashboards and generate insights from the other data streams," Iyer says. "Even if their data isn't in the warehouse, they can structure their information and connect it through a local connection to our front-end tool, giving them a way to leverage data analytics."

Empowering Users

The analytics department used group classes, targeted education and one-on-one sessions to train various users.

Training on the front-end dashboarding platform included group lessons offered in-person and virtually by department. Employees can also view training session videos, presentations and "quick guides" on the team website.

Advanced training followed to foster even more independence. "Our data team cannot do everything itself. We cannot do all the reporting for every request," Iyer explains. "The goal of our training is to empower folks to feel comfortable accessing the information, interpreting it, and only coming to us if they spot any discrepancies."

After holding sequential training sessions for a full year, the team worked with "power users" from each unit who applied the skills they learned to their unit's data streams and routine work. "We are focused on getting folks to understand the information and use the data in day-to-day decision making and operations," Iyer remarks. "It's a culture shift. We encourage the teams to use information for their decision making and have their staff own that information."


ZANE SHULTS

That's the main goal for any data management project, adds Zane Shults, senior vice president of BI and Analytics and Program executive with REVISION. "The program was designed to provide PANYNJ an industry leading self-service Enterprise Data Platform and the educational foundation to enable self-service analytics. The objective of this program is to get good, accurate and governed data into users' hands and give them the ability to use it."

Already, the strategy seems to be working. "A lot of dashboards are now being created by the users themselves, and they have become self-sufficient in their use of analytics," Shults reports.

This culture shift frees up the data analytics team to work on more advanced analytics, such as developing predictive models from machine learning, and exploring new tools to address other challenges.

Leveraging Data

PANYNJ is measuring staff engagement, use and adoption to assess the program's effectiveness. Now in its third year of use, the new data management system is proving to be a valuable asset, reports Yamanaka.

For example, the customer service team uses dashboards to analyze data from Airport Service Quality surveys and then presents its findings to terminal operators at JFK, EWR and LGA. "By analyzing the data, the customer experience team understands the pain points that matter most to our customers and can track trends of improved customer experience in those areas," Yamanaka explains.

Airport Operations Center (AOC) teams use customized dashboards to coordinate daily traffic. LGA, for example, leverages flight schedule data to develop passenger flow estimates and better manage demand at its terminals and frontages. "Knowing how many passengers are coming in helps them to prepare," says Phil McDonough, senior vice president of Transportation at REVISION. "It allows them to be proactive instead of reactive in their operations, both airside and terminal."

Such data is especially valuable when airport officials must align operations with ongoing construction efforts, he adds. For

instance, the data team helped LGA's operations team develop a dashboard that tracks delayed flights and how their arrivals align with construction schedules. Operations personnel meet every afternoon to review traffic, see when flights will arrive, and determine whether they need to divert them. "They used our dashboards to work with terminal operators and airlines to mitigate customer experience impacts by deciding which flights to accommodate and how best to optimize the construction schedule," Yamanaka says.

An Eye Toward the Future

In general, the goal of most data programs is to introduce business insights that can help teams realize operational efficiencies and increase customer service. As PANYNJ's data program matures, Yamanaka sees teams shifting their focus from reporting to analytics.

"As our business users become more comfortable using data in their day-to-day operations and work, the use-case questions have evolved from reporting on past performance to leveraging historical and real-time data to make decisions and operate more strategically," she explains. "For example, the Air Service Development manager now uses [enterprise data warehouse] information when meeting with potential entrants into the airports. This gives a potential carrier insight into untapped markets and route demand based on our origin-destination pairs and bookings, using data to spur competitive air service development at our airports."

New uses continue to crop up every day, adds Iyer. Currently, he is working with the financial services team and comptroller's office to develop a dashboard that will help project upcoming takeoff and landing fee charges. The goal is to streamline monthly revenue projections across teams and to help anticipate the need to change airline rates and charges.

Overall, PANYNJ has found that having a central place to collect, analyze and forecast data is critical for timely response to operational issues. "One of the hardest things about data analytics is making sure people are telling the same story with the data," says McDonough. "The Port Authority's new system ensures that no matter how they slice and dice the data, the story stays the same."

PHOTO COURTESY OF METROPOLITAN AIRPORTS COMMISSION

Let There Be Light

Minneapolis-St. Paul International Airport (MSP) has its very own slice of the Northern Lights, and it's a doozy.

The Aurora is an interactive light sculpture by new media artist Jen Lewin that spirals down from the ticketing lobby of Terminal 1, through an opening in the floor, to the baggage claim area on the ground floor. Named for the aurora borealis, the 29-foot-tall, 740-pound sculpture combines artistry and engineering to celebrate the colorful lights that periodically appear in Minnesota's northern sky.

The honeycombed helix form, inspired by wind patterns, is covered in hand-blown bulbs with more than 8,000 LEDs, which receive real-time weather data that makes them change color and intensity as the local weather changes. Beneath the hanging sculpture, glass platforms on the floor of the baggage claim area loosely depict eight of the many lakes in the Twin Cities area. When airport visitors stand or move on the platforms, they trigger light and color changes on the floor, and wisps of color and light migrate up through *The Aurora*. By encouraging guests to interact with the artwork, Lewin underscores the dynamic connections between people, technology and nature.

The new signature piece for Terminal 1 took months to install. Time-lapse videos that show crews cutting an opening in the floor and hoisting the massive metal and glass sculpture into place are available on the airport's social media channels. Search "MSP airport art" on YouTube and "arts at MSP" on Instagram.

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Miami Int'l Joins DHS Campaign Against Human Trafficking

Human trafficking is a crime that is often hidden in plain sight. Most people cannot identify victims, even when they encounter them in person. A man, woman or child sitting right next to you can be a victim, and it's very hard to tell. Awareness campaigns that train and educate travel industry workers and the public to identify potential victims of this heinous crime are essential in helping us rescue these victims and putting traffickers behind bars.

With those facts in mind, Miami International Airport (MIA) announced a formal partnership with the U.S. Department of Homeland Security (DHS) to fight human trafficking through the Blue Lightning Initiative on Jan. 11, in recognition of National Human Trafficking Awareness Day.

MIA is the first airport in Florida to join this training initiative to help ensure that our employees and the millions of Americans who travel each year, even during these new normal circumstances, are better informed and able to assist in this fight.

Airports are uniquely positioned to help raise awareness and train their employees to properly identify and report suspicious behavior. MIA joins a growing list of over 50 aviation partners working to combat human trafficking through the Blue Lightning Initiative.

While travel is down significantly due to the pandemic, human trafficking remains a constant threat, regardless of overall passenger volume. Approximately 96% of all visitors to Miami-Dade County come through our airport, and MIA continues to be one of the country's busiest airports for international passengers. Major tourism events are known to attract human trafficking as well, which makes our initiative even more important.

MIA first partnered with DHS and the U.S. Transportation Department in November 2020, building on a collaboration forged earlier in the year in preparation for Super Bowl LIV, when the agencies held training sessions for MIA employees on indicators of human trafficking.

MIA has already provided the Blue Lightning training to nearly all of our 1,400 employees, and new employees will receive the training as part of their onboarding process. There are also plans to expand the training to the entire airport workforce (concessions workers, ground handlers, etc.) in the coming year. Some airlines operating at MIA already participate in the program.

Travelers will also see Blue Lightning Initiative messages in new locations throughout their journey, particularly in pre-security areas of high concurrence near the TSA checkpoints and at passport screening areas. Awareness materials will also be made available to the traveling public at our information counters.

***Lester Sola**, director and chief executive officer of the Miami-Dade Aviation Department, oversees operations at Miami International Airport and four general aviation airports in the Miami area. Together, these airports generate $31.9 billion in business revenue and support more than 275,000 direct and indirect jobs.*

We are deeply grateful for the guidance and partnership of DHS and U.S. Customs and Border Protection in launching the Blue Lightning Initiative program at MIA.

We also thank Miami-Dade County Mayor Daniella Levine Cava, Chairman José "Pepe" Diaz and the Board of County Commissioners for their support of this cause throughout the years, and for approving legislation for a countywide awareness campaign last May.

When human trafficking is suspected, MIA employees have been instructed to follow the Blue Lightning Initiative reporting protocol and expeditiously report tips to the DHS Tip Line at (866) 347-2423.

Other airports wanting to join this important initiative can contact bluecampaign@hq.dhs.gov.

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— Driving the World —

DRIVING BAGGAGE HANDLING EFFICIENCY

Partnership leads to industry benefits

As airports seek technological improvement and operational efficiencies in baggage handling systems, NORD DRIVESYSTEMS, a global leader in drive technology for mechanical and electronic solutions, plays an integral role in delivering high-performance baggage handling systems to some of the world's busiest airports. NORD is represented in 98 countries and its customers benefit from a global production, assembly service, and sales network.

MIA Upgrades BHS

In 2017, Miami International Airport (MIA) upgraded the Checked Baggage Inspection Systems (CBIS) for the South and Central Terminals. Under a contract with Jervis B. Webb (Daifuku) as installer and integrator, the entire Central Terminal system was replaced and the South Terminal system was modified and enhanced with newer technology. According to Adonis Schmidt, project engineer with Daifuku, a primary goal of the project was to improve throughput over the old system to keep up with projected passenger growth at the southern Florida airport.

Daifuku was heavily involved in redesigning portions of the system as well as phasing revision following changes in MIA's design team, Schmidt reports. The firm also provided months of pre-construction design assistance prior to executing the $102 million project, which included the installation of 12 CTX 9800 explosives detection (EDS) machines and more than 1,200 conventional belt conveyors. In partnership with Daifuku, conveyor systems were outfitted with helical bevel gearmotors, motor-mounted SK200 series inverters (variable frequency drive control units). The more than nine miles of new and rerouted conveyor belts at MIA allow TSA to scan and transport some 7,000 bags per hour, effectively doubling baggage capacity.

MIA's baggage handling system upgrade included baggage handling conveyor technology as well as a checked baggage reconciliation area (CBRA), which was designed with 102 mobile inspection tables (MIT). MITs use magnetic tape guided vehicles to deliver baggage to Transportation Security Administration (TSA) agents, which greatly reduces the need for TSA to lift and carry bags, reducing injury potential and increasing efficiency, says Schmidt. "It's an automatic guided vehicle that delivers the bags that need further inspection to TSA directly," he explains. TSA searches the bag and then the MIT takes the bag to the appropriate conveyor for re-introduction back into the baggage handling system.

Schmidt says he and his team were pleased with the performance of the NORD components as well as the partnership with the sales and project engineering teams on the extensive MIA project. "We worked closely with NORD during the design phase so the technicians could analyze the conveyor system to ensure we had optimized selections," he notes.

Daifuku presented NORD with the conveyor system specifications, including conveyor lengths and motor horsepower, while NORD technicians analyzed the data and presented the properly sized VFD and breaking resistor and ensure that the combination was capable of handling the system's maximum weight. "The willingness and ability of NORD to work closely with us as far as getting the technical specifications and overcoming any challenges was critical," he adds.

DTW Re-control

At Detroit Wayne Metropolitan Airport (DTW), Daifuku lead a full system re-control (requested by Delta Air Lines) of the existing baggage handling system, which Schmidt says was technologically outdated. In parallel with the existing system, Daifuku installed and integrated new NORD VFDs and motors to optimize 600 conveyors in DTW's McNamara Terminal. This recapitalization required installation to occur at night so that operations could carry on during daytime hours at the busy facility.

Daifuku established a test loop at the NORD facility in Wisconsin to prove out the DTW network through detailed testing. "Kudos to NORD for working with us to set up that test loop and working closely with us to make sure everything went smoothly," Schmidt remarks.

James Chandler, key markets manager at NORD, points out that the many conveyor belts are equipped with high-efficiency right angle or inline gear motors, many with distributed drive controls. The integrated electro-mechanical drive solution equipped with quick connectors allows for preassembly at Daifuku's assembly shop, which minimized assembly and field wiring costs. Additionally, this preassembly saved on installation time and commissioning the system.

According to Schmidt, Daifuku purchased NORD ethernet internet protocol (EIP) modules and networked all new VFD units to collect additional information beneficial to the maintenance and operations group to potentially identify motors/VFDs in need of replacement.

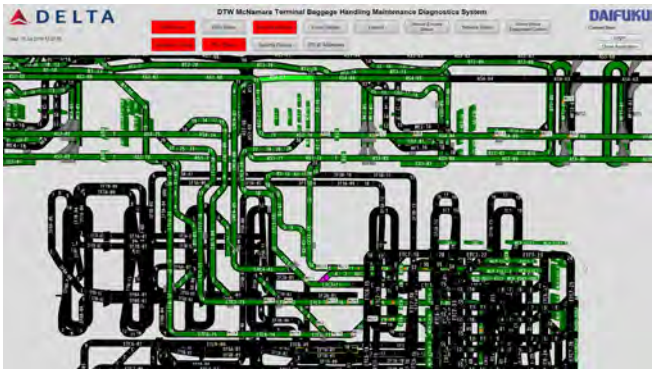
"We were able to make use of the NORD ethernet internet protocol for networking the VFDs together, which enabled us to gather information from the VFD on what kind of performance it was at," Schmidt explains. "That is definitely a nice feature."

Another stand-out features of the NORD VFDs, Schmidt notes, is the hand-held NORDAC ACCESS BT programming tool that plugs into each VFD. This allows installers to copy and paste parameters from one VFD to another, which facilitates the overall installation and commissioning of the system. "Having a hand-held device to plug directly into the VFD to change parameters speeds up the process considerably," he relates.

For DTW's project, Daifuku also built out new control room operations and installed a Sym3 graphics package, which allows operators to view live bags in the system and better route baggage around system failures, replaced existing control technology with fully redundant Allen-Bradley controls and replaced existing clutch/brake pusher unit controls designed to allow maintenance to easily and quickly change out malfunctioning units and minimize system downtime.

SEA Multi-phase Improvement

At Seattle International Airport (SEA), a baggage optimization project was designed to upgrade and reconfigure an aging conveyor system in the outbound baggage handling system that has become inefficient as operations increased at the western



United States airport. When complete, all outbound bags will be transported to a single, centralized screening area. Bags that are collected at any ticket counter or curbside can be sorted to any section of the airport.

Phase 1 of the project, completed in May 2020, included 600 NORD high efficiency C-FACE helical inline and helical bevel right-angle gear motors, which features a compact, space-saving design, quiet operation, high axial and radial load bearing capacity and torsionally rigid, high-strength cast iron housing, to run the ten miles of redundant conveyor track.

As Phase 2 moves forward at SEA, the entire project plan calls for a total of 4,000 drives. According to Chandler, these complete systems consolidate the six separate systems previously used to drive these conveyors. Additionally, Schmidt notes that NORD motors were ordered and delivered with pre-wired connectors to mate with the plug and cable concept of the controllers.

Innovation Commitment

As part of Daifuku's commitment to continuous improvement, and in concert with its industry-leading partners, the company has created an Innovation Center at its lower Michigan headquarters which houses a variety of baggage handling systems to showcase the technology it can provide to customers, Schmidt says. NORD motor-VFD combinations will play a role in the Innovation Center, based on Daifuku's relationship and past experience with them. The Innovation Center is slated to be operational mid-2021.

NORD Gear Corporation
T: 888-314-6673 | info.us@nord.com

Waunakee, WI
800 NORD Drive
Waunakee, WI 53597

Corona, CA
1180 Railroad Street
Corona, CA 92882

Charlotte, NC
300E Forsyth Hall Drive
Charlotte, NC 28273