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RUNWAY & RAMP

SPECIAL EDITION

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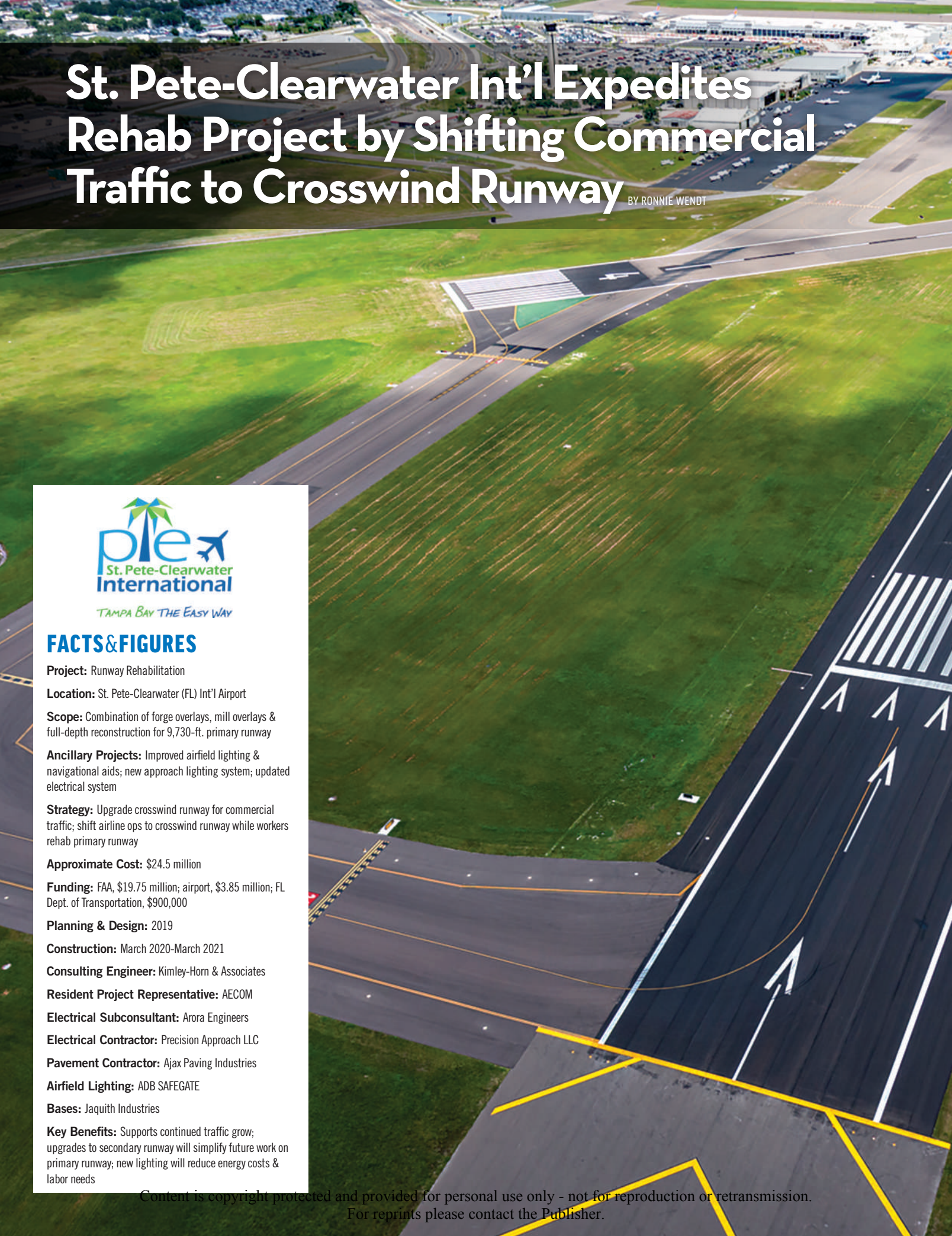
St. Pete-Clearwater Int'l Expedites Rehab Project by Shifting Commercial Traffic to Crosswind Runway

BY RONNIE WENDT



St. Pete-Clearwater International

TAMPA BAY THE EASY WAY

FACTS&FIGURES

Project: Runway Rehabilitation

Location: St. Pete-Clearwater (FL) Int'l Airport

Scope: Combination of forge overlays, mill overlays & full-depth reconstruction for 9,730-ft. primary runway

Ancillary Projects: Improved airfield lighting & navigational aids; new approach lighting system; updated electrical system

Strategy: Upgrade crosswind runway for commercial traffic; shift airline ops to crosswind runway while workers rehab primary runway

Approximate Cost: $24.5 million

Funding: FAA, $19.75 million; airport, $3.85 million; FL Dept. of Transportation, $900,000

Planning & Design: 2019

Construction: March 2020-March 2021

Consulting Engineer: Kimley-Horn & Associates

Resident Project Representative: AECOM

Electrical Subconsultant: Arora Engineers

Electrical Contractor: Precision Approach LLC

Pavement Contractor: Ajax Paving Industries

Airfield Lighting: ADB SAFEGATE

Bases: Jaquith Industries

Key Benefits: Supports continued traffic grow; upgrades to secondary runway will simplify future work on primary runway; new lighting will reduce energy costs & labor needs

PHOTO: AERIAL INNOVATIONS

When it came time for St. Pete-Clearwater International Airport (PIE) to rehab its primary air carrier runway, closing the airfield was not an option. Officials needed a plan to keep commercial aircraft flying in and out of the Florida airport.


MARK SPRAGUE

"We couldn't do all the work at night," explains PIE Deputy Director Mark Sprague. "We had to figure out how to let the contractor work on the runway during the day."

Airport officials brainstormed with consulting engineer Kimley-Horn and other project partners to devise a way to complete most of the work during daytime hours. The strategy temporarily shifted commercial traffic onto Runway 4-22, the general aviation runway, to provide construction crews with 24/7 access to improve 18-36, the airport's 9,730-foot primary runway.

"We could expedite the entire process and compress the timeframe from 24 months to 12 months. And the work was both achievable and safe," says Sprague.

Designing the plan was one thing; but making it happen was another. The airport had to extend Runway 4-22 to a workable length of 6,000 feet and work through safety-related issues with the FAA. It also had to apply temporary markings and install precision approach path indicators (PAPIs) so airlines could use the runway.


PAUL PIRO

"It is unprecedented for an airport to switch commercial traffic to a general aviation runway," says Paul Piro, lead designer for Kimley-Horn.

PIE Airport Engineer Scott Yarley agrees about the strategic nature of the plan. "This is one of those projects where close coordination, and some operational sacrifice, was needed to complete construction with minimal impacts to all. The stakeholders all worked together to make this project a success."


SCOTT YARLEY

Specifically, Yarley credits the FAA Orlando Airport District Office; PIE Engineering, Operations and Facilities; Kimley-Horn; AECOM; Ajax Paving Industries; Allegiant Air; the Coast Guard; and other airport tenants for making the unusual strategy work.

Time for Improvements

Officials explain that Runway 18-36 sorely needed the recently completed $24.1 million rehabilitation. The last time it had been repaved was 2009. Though shy of the average 20-year lifespan, longitudinal cracking, raveling and weathering riddled the runway, making repairs necessary.

PHOTO: AERIAL INNOVATIONS

A temporary lull in traffic due to COVID-19 made last spring an ideal time to perform runway work.

"In Florida, oxidation and sunshine deteriorates pavement faster," Sprague explains.

The airport abides by the Florida Department of Transportation Pavement Management Program, which classifies pavement distress to determine when runways need rehabilitation. Technicians assess the pavement condition on a scale of 0 and 100, with 30 or lower indicating a need for repair or replacement.

Visual inspections documented distress and earned PIE's pavement a low classification (as low as 52). More than 100 core samples and 20 borings indicated that some areas of the runway needed forge or mill overlays, while others would require full-depth reconstruction. "About 30% of the project was full-depth reconstruction, the rest was mill-and-overlay," notes Sprague.

On the positive side, PIE's low pavement condition classification freed up local, state and federal funds for the project. FAA earmarked $19.75 million, Florida Department of Transportation contributed $900,000, and the airport committed $3.43 million. The funds covered milling and overlay of existing asphalt pavement, reconstruction of the keel area, new centerline line and touchdown zone lighting, shoulder expansion and a new edge lighting system.

Recommendation for repairs came in 2019, just as PIE finished its ninth consecutive year of traffic growth. The airport was on pace

to break its record of over 2.2 million passengers in 2020 when COVID-19 disrupted the Florida travel market and entire airline industry. The associated lull, however, made March 2020 the perfect time for crews to begin work on PIE's airfield projects.

"The pavement is our greatest asset," says Sprague. "If we don't have safe pavements, we are out of business."

As planned, PIE's improved commercial runway opened this March. And 2021 passenger traffic is picking up steam as hoped. In April, Sun Country Airlines announced plans to begin scheduled service at PIE after operating charters there for years. Four flights per week between PIE and Minneapolis-St. Paul International are expected to begin this fall.

Out-of-the-Box Thinking

If crews had been limited to working around the airport's regular operating hours, engineers estimate that the runway project would have taken twice as long. So Kimley-Horn developed a construction plan that provided workers with around-the-clock access to the project site.

The construction plan called for alternating closures of Runway 18-36 for 12 months and rolling shifts of air carrier flight operations to the shorter crosswind runway, 4-22. But before work could begin, the project team needed FAA approval.

"The secondary runway was not set up to receive commercial traffic," Piro explains. "No one has ever shifted commercial traffic to a reliever runway. We had to think outside the box to get the work done."

First, PIE planners talked to air carriers, corporate pilots and U.S. Coast Guard officials to learn what they would need for takeoffs and landings. The common requirement was at least 6,000 feet of runway. This meant the airport needed to extend Runway 4-22 by 100 feet before construction crews could start work on the primary runway.

Next, the airport hosted an FAA Safety Risk Assessment Panel consisting of representatives from the Air Traffic Control Tower, FAA Tech Ops, the airport, air carriers, project consultants, the Air National Guard and the U.S. Coast Guard. The panel evaluated the proposed improvements, identified risks and discussed project phasing.

In the end, the project had eight phases. The enabling phase extended Runway 4-22 by 100 feet to provide the 6,000 feet needed for commercial aircraft. To address other safety concerns,

the airport staff worked with FAA to implement a temporary modification of standards for runway hold short markings. In addition, it provided full-time communication with the air traffic control tower to monitor vehicle traffic moving through Runway 4-22 safety areas.

The airport also had to install and flight check temporary navigational aids in two locations before work could begin on Runway 18-36. “Without navigational aids installed and approved by the FAA, we could not shift air traffic,” Piro says.

During the first phase, the team moved thresholds on the primary runway as far north as possible to provide a 6,000-foot runway mark on the north. This freed space in the southern part of the runway.

“The first phase of project happened in one night,” notes Piro. “With multiple people on site, we obliterated some runway markings and installed new ones. When the sun came up, we moved all activity to the north, freeing the south portion for construction. When crews finished the south end, they moved operations to the south and worked on the north portion of the runway.”

This type of work schedule kept the airport operational throughout the project, except for a few temporary closures when crews grooved and applied new markings to the “bullseye” where the two runways intersect.

“Any work we did there took a lot of coordination because it shut down the airport,” Sprague says. “When I say shut down, I mean *no one* could take off or land. We even warned critical medical aircraft to make other arrangements, including the U.S. Coast Guard operations.”

Keep It Down

Shifting traffic to the reliever runway prompted PIE to proactively step up its public relations efforts. Maintaining open communications with neighbors became even more important than usual as changing flight paths affected areas of Clearwater and six other nearby communities.

The airport launched an 18-month campaign to keep businesses and residents informed about when changes would occur and how long they were expected to last. Press releases detailing the project included pictures and maps.

“You will always have people who are not appreciative of extra planes flying overhead, but we lessened negative feelings by keeping people informed,” says Sprague. “They knew it was temporary.”

The airport also worked to engineer out noise issues by phasing the project to minimize use of Runway 4-22.

Turn Up the Lights

In addition to improving pavement, the project upgraded airfield lighting. Arora Engineers designed and provided construction administration support of the associated electrical engineering, lighting and navigational aids.

DAVID WILLIAMS

During the project, crews replaced traditional centerline and touchdown zone lights with LED fixtures, and upgraded high-intensity edge lights with new incandescent fixtures. “LEDs were not AIP-approved at the time of the grant,” notes David Williams, practice lead for Airfield Electrical at Arora Engineers.

But LEDs burn brighter for pilots and reduce maintenance for airports, adds Piro. “They do not burn out as fast, so you don’t have to replace them as often,” he explains.

Airport maintenance personnel will still need to conduct bolt torque checks and clean lenses, but the new LEDs will reduce time spent replacing lamps.

The airport also replaced centerline and touchdown zone 30-watt constant current regulators with 10-kW regulators, which will further trim energy use. “Just changing out lights doesn’t equate to energy savings,” explains Williams. “If you put in 30-kW regulators and you only need 10-kW regulators, you may still draw up to 30 kW. You must resize the regulators to achieve

maximum energy savings. With LEDs and the right regulators, we typically see an energy savings of more than 50%."

He adds that PIE is one of only 31 airports and one of only 49 approaches in the United States that have runways with displaced thresholds greater than 700 feet and centerline lights without high-intensity approach lighting systems. "This application required coordination with PIE Ops, their air carrier Allegiant's OpSpecs and the FAA," Williams remarks.

The airport, Arora and Kimley-Horn worked through challenges together, adds Williams. "This project was a success because of the continued communication between airport staff, designers and construction staff," he says. "It provided PIE with updated airfield lighting products and infrastructure that will help them continue to improve and maintain their airfield."

From a larger perspective, recent improvements to the crosswind runway are expected to pay dividends years down the road. "This project will simplify future rehabilitations when the current work nears the end of its service life," notes Piro.

PHOTO: AERIAL INNOVATIONS

Shifting traffic to the crosswind runway allowed crews to work on Runway 18-36 around the clock.