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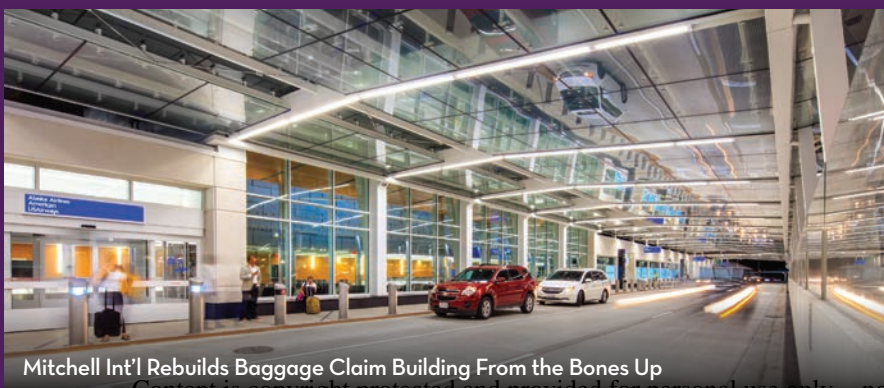


Old Crow Airport Shares Community's New Fuel Depot

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State Test Program Fully Funds Runway Project at Gainesville Regional

By Mike Schwanz

factsfigures

Project: Runway Renovation

Location: Gainesville (FL) Regional Airport

Primary Component: Reconstruction of Secondary Runway 7-25

Other Elements: LED airfield lighting; surge suppression system

Total Cost: \$2.8 million

Funding: Florida Dept. of Transportation

Engineering Consultant: AECOM

Local Contractor: V.E. Whitehurst & Sons

Airfield Lighting: Astronics DME

Isolation Transformers & Complete Kit: Integro

Airfield Lighting Arrestors: Surge Suppression Inc.

Noteworthy Detail: Airport received 100% funding from state by serving as a test site for alternative asphalt mixtures and paving methods



It's often a challenge to secure partial funding for major projects, but Gainesville Regional Airport (GNV) in Florida received full funding from the state for its recent \$2.8 million runway renovation. Typically, the Florida Department of Transportation (FDOT) will pay up to 50% of construction expenses at state airports. However, it pays up to 100% of the cost for special demonstration projects.

To qualify for the highest possible state funding, GNV had to install several different mixtures of asphalt and use innovative products or construction methods throughout its runway project. Pavement specialists will check test sections periodically throughout the next several years to determine which perform best.

The failing condition of GNV's secondary runway made it easy for the airport to accept FDOT's conditions for extra funding. Allan Penksa, the airport's chief executive officer, explains that Runway 7-25 hadn't been

rehabilitated in about 40 years, and it was originally constructed during World War II. Several sections were in various forms of disrepair, which presented problems because the runway accommodates about one-quarter of GNV's traffic.

"The soil was not ideal, and there was a high water table," Penksa explains. "The runway had been overlayed over the years and had a lot of cracks, creating opportunities for water seepage. There were lots of inconsistencies beneath the surface."

After considering several alternatives for improving the surface of Runway 7-25, Penksa and other airport personnel embraced the idea of GNV serving as a demonstration project for FDOT — and the associated funding it would provide.



Allan Penksa



Barbara Cloud, aviation administrator for District 2 of FDOT, explains that safety and preserving airport infrastructure are key factors in allocating state funds. Each FDOT district receives a pool of money that can be used to support its commercial and general aviation airports.

"We decided to fund the Gainesville airport project because different types of surfaces can be tested," Cloud comments. "This information will be helpful for not only airports, but for road construction projects as well."

GNV agreed to install a variety of asphalt mixtures and use innovative products or construction methods. It also consented to periodic pavement testing after the project was complete.

The airport's engineering consultant, AECOM, created several construction strategies to help secure final approval from FDOT for the runway renovation. Bill Prange, the company's project engineer, describes the multi-step process: "We first had to collect geo-technical data, measure thickness of the underlying layers, and establish a design pavement section. From that data, we developed a number of reconstruction alternatives."

Engineers had to specify FDOT asphalt mixes rather than those commonly required by the FAA. "We used two different asphalt binders on the project," Prange reports. "PG 76-22 is a high-end polymer modified asphalt used in the top layer. The underlying asphalt used a PG 58-22 binder, which is more moderately priced."

On a more general level, the rehabilitation design included 1 inch of asphalt milling (cold planing); sealing cracks with hot rubber sealant; correcting grade and profile deficiencies with asphalt leveling courses; and installing 3 inches of new structural asphalt.

Pavement Plus

During the project, crews also replaced Runway 7-25's edge lighting system. A patchwork of direct buried cable was replaced with new FAA-approved cable in conduit and a new counterpoise ground system. Older quartz runway light fixtures were replaced with FAA-approved LED medium-intensity edge lights that will consume less

energy. In total, crews installed 56 L-861 lights by Astronics DME. The design included strategically placed surge suppressors to protect cable, transformers and fixtures during Gainesville's frequent lightning storms. (See next page for more information.)

To fulfill FDOT funding requirements, AECOM consulted with three of the agency's offices and research facilities to identify alternative construction products and methods not commonly used at Florida

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Surge Suppressors Installed to Prevent Power Outages

Located in a hotspot of Florida thunderstorms, Gainesville Regional Airport (GNV) installed a series of airfield lightning arrestors in the new lighting circuit for its secondary runway, 7-25.

"Lightning is a real problem here," explains Allan Penksa, chief executive officer at GNV. "We are the lightning capital of the world, and anything that can prevent power outages is very valuable to us."

The devices, supplied by SSI (Surge Suppression Inc.), are designed to protect airfield lighting cable and fixtures from damage during electrical storms. Rick Stevens, senior business development manager for the manufacturer, notes that the suppressors will protect against power surges up to 20,000 volts.

As recommended, GNV placed the lightning arrestors underground every 1,500 feet along the airfield's main power loop.

The ability to test SSI's lightning arrestors without removing them or turning off power to the lighting system is a major advantage, particularly at busy airports, emphasizes Stevens. "It only takes about 10 minutes per suppressor to check their status," he details. "Other products have to be removed from the circuit, taken out of the ground, tested and resealed, then returned to their place underground. This makes a huge difference for the workers, especially during super-hot weather or in freezing temperatures."



airports. Ultimately, engineers incorporated the following into the design to GNV:

- Echelon paving to increase the performance of longitudinal cold joints;
- Three different pavement interlayer products to prevent or delay the reflection of pavement cracks to the surface (Cidex 100 SB, by 6D Solutions; Grid Bit, by Pluvitec; and STAR Grid G-PS, by Luckenhaus);
- High-tensile aramid fibers to control cracking and rutting in the asphalt (Forta-Fi HMA, by Forta Corp.);
- Maltene-based asphalt rejuvenator to improve pavement longevity (Reclamite);
- Maltene-based asphalt rejuvenator to improve density and longevity of longitudinal joints (Joint Bond);
- High-performance asphalt binder (PG 76-22 PMA) to protect the pavement from oxidation and loss of flexibility;
- Airfield lightning arrestors to protect runway lighting circuit components from lightning strikes. (See left for more details.)

The FDOT State Materials Office approved the final recommendations for products and procedures AECOM specified for the project, and its engineers scrutinized the project during construction. "They were on-site for most of the process, and closely monitored each step," Cloud recalls.

The same office will continue to evaluate the effectiveness of the various products and methods over a five-year period. The agency's hope is that some will prove superior to current pavement rehabilitation options.

Business As Usual

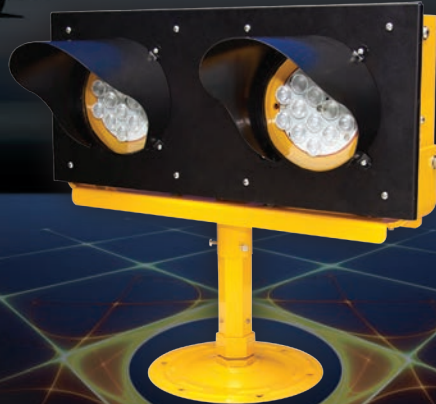
Before construction began earlier this year, GNV focused on preventing service disruptions to its carriers: American Eagle, US Airways Express and Delta Air Lines.

"We have a solid community here, and it is a busy airport," Penksa remarks. "We have scheduled regional airline flights beginning just after 5 a.m. and continuing throughout the day until almost midnight. Canceling or disrupting any of these flights was not an option for our community."

Beyond airline service, the airport accommodates charter, military and air ambulance traffic, as well as flights by the University of Florida's 757s and 737s. "There

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State engineers will monitor the performance of test sections for five years.



also are nightly blood flights operated by Life South,” adds Penksa. “We needed to maintain enough operational capability 24/7.”

In 2014, the airport logged roughly 59,500 operations.

To maintain the airfield’s typical pace, runway renovations were divided into six phases. While each phase included three or four different test products and methods, workers used traditional options in areas where Runway 7-25 intersects the airport’s main runway and taxiways. “We just wanted to make sure that the demo materials would not interfere with the main runway traffic in any way, and the FDOT was OK with that,” Penksa relates.

Crews performed most of the runway intersection work at night to minimize operational disruptions, but project planners still encountered other complications. GNV’s main runway (11-29) had to be shortened 1,000 feet, because part of the secondary runway was in its safety area. “It was a very elaborate process,” Penksa recalls. “Each night, we installed temporary threshold lights, reshuffled distance remaining signs, shut down our localizer, PAPI (precision approach path indicator) and various portions of the edge light system, etc., in a very short amount of time so we could keep the main runway open all night.”

Some nights, GNV had to limit its primary runway to takeoffs only. Other times, officials asked the control tower to remain open longer, and workers set up lighted variable messaging signs in key locations to remind pilots of changes as they taxied.

“We worked closely with the FAA throughout the duration of the project,” Penksa comments. “We also regularly communicated with pilots via email, our website and the NOTAM (notice to airmen) process concerning our daily timetables.”

Construction took about 165 days, with rainy weather causing minor delays. “There were a lot of cracks that had to be filled and interlayer leveling course that had to be placed. But we opened the reconstructed runway on August 31 this year,” he reports.

Total cost to repave the 4,158-foot runway and install new LED lighting and surge suppressors was \$2.8 million.

For the next several years, personnel from the State Materials Office will evaluate pavement conditions at least once a year. Demonstration sections were clearly marked during construction to facilitate subsequent friction testing and pavement imaging.

Data collected at GNV could prove highly beneficial. “The FDOT Central Office is very keen to watch the results of this,” Cloud says. “In five years, we should have a better idea about the best asphalt mixtures and processes to use for other runways and taxiways at other airports. Eventually, this should save the state money for future construction projects.” ✈️

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