The Sky’s the Limit
Concrete Extends Life of Airport Runway

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The Sky's the Limit
Concrete Extends Life of Airport Runway
By Sheryl S. Jackson

Grand Strand Airport in North Myrtle Beach, South Carolina is one example of an emerging trend—concrete runways for general aviation airports. The new 6,000-ft-long, 100-ft-wide runway is a 7.5-in. unbonded concrete overlay that uses the previous asphalt runway as a base.

“The Grand Strand runway is the one of the oldest runways in the state and was built in the 1940s as the Wampee Flight Strip, used as an auxiliary landing airfield for Myrtle Beach Army Airfield,” says Breck Dunne, director of airport development for Horry County Department of Airports, which operates four airports. “Grand Strand has one runway, a parallel taxiway, eight hangars and a fixed-base operator (FBO) that supports the 52 fixed-wing aircraft and a few helicopters that use the airport.”

Following a condition report on the runway in 2017, the decision was made to construct a new runway at the small, but busy airport. “We’ve had good luck with concrete in projects at other airports, and it is a good pavement for the heat and climate of the southeast,” says Dunne. In fact, a large concrete taxiway rehabilitation at Myrtle Beach International Airport is planned for the next several years, he says.

After considering increases in volume or type of traffic that the airport will experience in the future, the design engineer recommended a 7.5-in. concrete overlay. “There were no subgrade issues with the existing asphalt, so we were able to use it as the base,” says Dunne.

“We are noticing the use of concrete overlays in general aviation more regularly in recent years,” says Jeff Pike, P.E., operations manager, Holt Consulting Company, the design engineer for the Grand Strand project. “The main difference in design formulation from a road/highway project is the design software itself.” Federal Aviation Administration (FAA) software known as FAARFIELD, was used to design the runway pavement section. “As the acronym suggests, it is an ‘iterative elastic layered design’ computation platform set up specifically for wheel patterns and tire pressures of aircraft,” he adds.

“We had a few challenges during the construction, with a late start on construction due to a hurricane, and record-setting rainfall throughout the duration of the project,” says Edward T. Wessel, president of Hi-Way Paving. “The county also wanted to stay open during construction, so we had some minor work to make the existing taxiway a temporary runway that was used by most of their clients.” In fact, the county wanted the airport to be accessible to about 90% of existing traffic.

“The main difference when paving an airport runway versus an interstate highway is the need to follow FAA specifications versus DOT specifications,” explains Wessel. “The thickness of concrete differs with a typical interstate highway at 10 to 12 in. and a full reconstruction of a runway at 18 in. or more depending on the type of aircraft handled by the airport.”

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Because the airport stayed open, there were a few safety concerns that had to be addressed, says Derek Johnson, project engineer for Hi-Way Paving. “We were able to set up a large concrete batch plant on airport property after obtaining the required permits. “We also had a gate close to the batch plant that we controlled, so all of our traffic came in and out that gate,” he says. “Because the airfield remained operational, we also had to be vigilant in preventing construction debris from getting into areas that planes were active.” Although there was no need to badge employees, the company was responsible for maintaining airport safety by monitoring people and activities onsite.

Minor milling of the asphalt was needed to prepare the base for the overlay and there was some work to produce a uniform cross-slope of 1.5%, especially at the points where the runway met taxiways and crossing lanes, says Wessel. The paving was performed by a four-track, stringless slipform paver and was completed in eight days, he adds.

Feedback from Grand Strand clients has been positive, says Dunne. “They comment on the smoothness of the runway, but they also like the brightness of the new, white concrete,” he says. “Pilots can see it from a long way.”

* ACPA member