FAA Approves Federal Funding for Full-Depth Reclamation with Cement at Humphreys County Airport in Waverly, Tennessee

The Humphreys County Airport is a General Aviation airport located in Waverly, Tennessee. The county-operated airport serves about 15 locally-based aircraft with around 120 operations per week. The airport consists of a 4,000 feet by 75 feet runway with a partial parallel taxiway and apron, a terminal building, two storage hangars, and one eight-unit T-Hangar. Around the T-Hanger, the asphalt surface was the oldest pavement at the airport.

Due to the limited area to develop the apron and hangar complex, the T-Hanger had been sited on a location with very poor sub-grade soil. Over the years the pavement settled, cracked and failed, allowing water to enter the pavement section wetting and softening the sub-grade. Humphreys County found itself in the position of needing to reconstruct the apron to replace the failing pavement and correct the surface and sub-grade issues. The county received a matching grant funded by the Federal Aviation Administration (FAA) and the State of Tennessee. PDC Consultants, of Franklin, Tennessee, was responsible for the design and construction management of the project.

During the design phase, the geotechnical investigation of the site indicated the sub-grade issues were more extensive than were visually apparent. The initial project was bid utilizing FAA Standard Specifications and following the standard practice of removing unsuitable materials and replacing with good material. The bids came in more than the available grant funds by a considerable amount. As a result, PDC began looking for an alternate design that would bring the project within budget while also providing strength and durability. While other design techniques were considered, PDC felt the best solution would be Full-Depth Reclamation with cement (FDR).

PDC worked with the Southeast Cement Association and the State of Tennessee to apply to FAA for a “Modification of Standards” (MOS) based upon the use of TDOT’s Special Provision for Full-Depth Reclamation. This was a substantial hurdle to overcome as the FAA had not approved a MOS for the use of FDR anywhere in Tennessee. The coordination effort began in Washington DC, and the MOS submittal request was coordinated with the Tennessee Aeronautics division and ultimately approved by the Memphis FAA Airports District Office (ADO). In November 2016, construction began and the FDR portion was completed in two days.

PDC’s Project Manager Rick Hudgens said, “At the beginning of the site construction, equipment and trucks were sinking into the ground up to their axle hubs. Within hours of the FDR process, the sub-grade stiffened up to the point that all equipment was riding up on top of the material. The site was graded to final elevations and compacted. The following morning the site was as hard as any typical stone base and ready to accept the new asphalt surface.”

The airport project consisted of 1,600 square yards of FDR and was performed by Roadworx, of Knoxville, Tennessee. The mix design called for a FDR depth of 14 inches with 6% cement due to the high moisture content of the area. “FDR was an excellent choice for this project due to the extremely poor subgrade soils, with the only other option being undercutting 2 to 3 feet. Even though this project was relatively small, it will be a large stepping stone for FDR at other regional airports in Tennessee,” said Roadworx Owner Barry Wilder.

This project was significant as it was the first FAA approved project in Tennessee using the FDR process. While future projects will still require a MOS on an individual basis, the “ice has been broken” to allow the use of federal funding for FDR on other airport projects.

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