The Elizabeth City Regional Airport (ECG), located in Pasquotank County, North Carolina, is a joint-use facility with the United States Coast Guard occupying the northern portion of the airport and ECG occupying the southern portion.

The approximate 25,000 square yard asphalt ramp, located adjacent to the airport administration building, was in poor condition. The existing thickness had a high degree of variability due to prior modifications and rehabilitations. Portions of the ramp, used for parking a broad range of aircraft, were prone to ponding of water due to depressions in the pavement. Also, the section of the ramp that accommodated fueling operations did not adequately slope away from the administration building and thus did not meet FAA criteria.

During the preliminary design stage, the engineering consultant, Parrish & Partners, took into account vertical constraints and drainage and developed four (4) viable pavement design options for consideration. All the pavement sections were prepared in accordance with FAA requirements using FAARFIELD software. One of the pavement alternates included a 9” Portland Cement Concrete Pavement (PCCP) over an 8” Full-Depth Reclaimed (FDR) Base Course. Carolinas Concrete Paving Association and the Portland Cement Association, Southeast Region conducted training on the FDR with cement process. The training presented best practices and illustrated other case studies where FDR with cement had provided a homogenous and stronger base for general aviation pavements.

In the report prepared for ECG Airport Authority, four pavement alternates were scored on the following criteria:

1. Pavement longevity
2. Pavement fuel resistance
3. Compatibility with adjacent structures and pavements
4. Ability to withstand grade corrections
5. Cost
6. Environmental sustainability and ability to use recycled materials

Based on the analysis contained within the report and discussion with the North Carolina Department of Transportation (NCDOT)'s Aviation Department and the Airport Manager, the decision to use the combination of FDR for the pavement base and PCCP was made. The combination of PCCP and FDR scored the highest when compared to the other three pavement alternatives and represented the best overall value.

The project was bid in February 2015 and the first phase (slightly less than 1/2 of apron area) got underway in June. Like most projects, a strong project team was required to make adjustments to the original construction plan. The construction team included the general contractor, Barnhill Contracting; the full-depth reclamation contractor, Slurry Pavers; and the concrete paving contractor, McCarthy Improvement Company, who all worked closely with the consultant, Parrish & Partners, and the owner to ensure key schedules were met and operations continued at the airport.
“Due to the project location and limited local aggregate supply, it was apparent that FDR would provide an excellent option to reuse existing materials and provide the added strength of a cement stabilization. This also provided an excellent working platform to support the weight of construction equipment and allow anchoring of reinforcement and dowel baskets,” said Project Manager Tim Gruebel, Parrish and Partners.

After the first phase was opened in September, the construction team moved on to the second phase. Both phases used slipform paving equipment to consolidate the 650 flex concrete mix. The jointing plan, developed according to FAA guidelines, included panel sizes of 12.5 feet by 12 feet.

“Now that the apron rehabilitation project is complete we are starting to realize just how superior the concrete pavement performance is compared to our legacy section. We no longer worry about helicopter skids or Heavy aircraft nose gear shoving during high temperatures. We also appreciate the increased lighting reflectivity during night time operations. Faster storm-water sheet flow drainage and the ease of FOD removal due to a smoother surface was an unexpected added benefit as well. Knowing that the durability and service life will go on performing for many years makes the satisfaction complete. Compliments on the appearance keep rolling in as we relish in the wisdom of choosing the P-501 option. We truly appreciate and thank the entire planning, design and construction team for making this successful transition materialize before our eyes here in Elizabeth City,” said Airport Director Dion J. Viventi, PE, CFII, Elizabeth City Regional Airport.