Longer pavement life yields big savings for stakeholders

Design, construction, maintenance, and rehabilitation are all distinct components of a pavement’s service life cycle, each requiring technical and economic analyses of the alternatives available, and each with its own price tag.

As demands on pavement infrastructure continue to increase, so do the requirements for predicting just how long these runways, taxiways, and aprons can be expected to perform.

In 2011, the FAA’s Office of Airports committed to doubling the expected life of runways at large hub airports from the standard 20 years to 40 years. Large hub airports are those that accounted for at least 1% of the total U.S. enplanements during the last calendar year.

About 70% of the Airport Improvement Program (AIP) grants allocated each year are invested in airfield pavements. That’s over $2 billion of the $3.3 billion awarded to sponsor airports in Fiscal Year 2017. Research on pavement life, therefore, has become critical to saving stakeholders money.

Extended Pavement Life emphasizes value for the taxpayer dollar. Especially in high capacity airports, fewer interventions (rehabilitation projects) means lower capital costs, reduced delays, and less downtime for pavement reconstruction, which translates to life cycle cost savings for the FAA.

Longer pavement life also allows airports to serve greater numbers of passengers through unobstructed capacity. Simply put, it’s a win-win-win for all those involved.

The outcome of this research program will be an improved pavement design method incorporating long-term performance prediction models, extending the service lives of our nation’s airport pavements.
Since 2011, the FAA has collected data in support of extending airport pavement life on 28 runways at 22 U.S. airports. The data cover 17 of the 30 airports designated large hubs in 2017, as well as 3 medium hub and 2 small hub airports.

Design and as-built data have been collected for all runways studied, with historical traffic and friction records collected as available. Additional detailed field data, including Pavement Condition Index (PCI) distress surveys, Heavy Weight Deflectometer (HWD) testing, and profile, groove, and texture measurements, were collected from 12 of the 28 runways. Core samples and soil borings were also collected for characterization by FAA’s NextGen Materials Testing Laboratory.

Data collected under the Extended Airport Pavement Life project are stored in a database to facilitate data analysis and model development. This database has all the features of FAA PAVEAIR, FAA’s online pavement management system, but in addition, has links to remotely maintained databases containing detailed runway usage (traffic) and weather data.

The FAA is using real-world data to identify key performance trends and develop improved pavement life prediction models—models which are expected to form a comprehensive, and lasting, foundation for airfield pavements with cost-effective service lives.

Visit the ATR Website at www.airporttech.tc.faa.gov