FAA PAVEAIR Update & Future Improvements

Presented to: ALACPA 2016
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Welcome to FAA PAVEAIR

FAA PAVEAIR is a public, web-based application designed to assist organizations in the evaluation, management, and maintenance of their pavement networks. PAVEAIR is designed to fulfill the requirements of an Airport Pavement Management System as identified in Advisory Circular (AC) 150.5380-7A.

The FAA is pleased to announce the release of FAA PAVEAIR v2.0. This version includes several important new features, such as: an updated M&R module, Life Cycle Cost Analysis (LCCA) module, and MicroPAVER e65 support.

Details on the improvements made to FAA PAVEAIR are available in the Change Log.

For news and upcoming events, please visit the News and Events page.

FAA PAVEAIR Version 2.5.0 build 2013.09.20 - View Change Log
FAA PAVEAIR Status

• 2016 Visits: Approximately 450,000
• Databases Created since release: 772
• Registered Users since release: 1956
Prediction Modeling

- Assign pavement sections with similar construction and traffic patterns into a family model
- Plot PCI deterioration curve
- Prediction Modeling Library – On going
- Support multiple databases – finished
- Update the curve fitting algorithm – finished
- Create an algorithm to calculate Critical PCI – ongoing
- Create a Family Assignment Tool - ongoing
Feature Improvements

• Migrate the Life Cycle Cost Analysis to a web-based environment.
• Update Inspection: Improved the keyboard-only entry of data.
• Users should be able to easily see how many inspections were performed and the data from each.
• Provide compatibility with e70 files - Ongoing
Climate Module and Traffic Module

- Investigate adding a Traffic and Climate Module

- Currently FAA PAVEAIR uses Distresses for PCI calculation, Prediction, and M&R

- Distresses are caused by Climate and/or Traffic, but Climate and Traffic data is not used in PCI, Prediction and M&R

- Investigate feasibility of directly using Traffic and Climate data in PAVEAIR calculations

- Traffic feasibility analysis is done

- Next step is to program a traffic module
LCCA Review

LCCA: A REVIEW AND CRITIQUE

by

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Report 2601
Project 2601

Performed in cooperation with the
SRA International
and the
Federal Aviation Administration

November 2013

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Final Report
AAPTP 06-96
LIFE CYCLE COST ANALYSIS FOR AIRPORT PAVEMENTS

Prepared For:

Airfield Asphalt Pavement Technology Program (AAPTP)
377 Technology Parkway
Auburn, AL 36830

Prepared By:

ARA
100 Trade Centre Drive, Suite 200
Champaign, IL 61820

January 2011

FAA PAVEAIR Update
1 December 2016
Improve Life Cycle Cost Analysis

• Review of FAA PAVEAIR / AirCost by a Pavement Engineer and Engineering Economists – completed

• Elaborate on key elements of LCCA for both asphalt and concrete paving materials

• Comparison with other LCCA programs / algorithms - completed
Improve Life Cycle Cost Analysis

• Elaborate on issues, differences, and problems / deficiencies – completed

• Report of findings and proposal for further development – completed
Add Materials, Construction, and Cost Functions to FAA PAVEAIR

• Collect airport pavement inventory, thicknesses, inspection, and work history data – more databases to be acquired.

• Also collect material type, material unit costs, M & R strategies, and traffic and climate considerations.

• The intent is to create and populate a database repository of US airport pavements.
Add Materials, Construction, and Cost Functions to FAA PAVEAIR

• In conjunction with the traffic and climate feasibility studies, the data repository will allow users to create pavement families for Prediction Modeling.

• Follow on work will include design of Data Warehouses for data reporting and data mining and analysis.
FAA Software Integration

ProFAA
Roughness Evaluation

BAKFAA
Structural Evaluation

COMFAA
PCN/Load Rating

FAA PAVEAIR
Web-Based PMS

Output: Optimal 40-Year Design

AirCost
Life-Cycle Cost Analysis for Airport Pavements

New LCCA Procedures

FAARFIELD
Thickness Design

Federal Aviation Administration
1 December 2016
Proposed FAA Software Integration

• **Software programs to be integrated:**
  – PAVEAIR with Life Cycle Cost Analysis (LCCA)
  – COMFAA (ACN/PCN Determination)
  – FAARFIELD (Pavement Thickness Design)
  – ProFAA (Airport Pavement Roughness)
  – BAKFAA (Pavement Structural Evaluation)
  – ProGroove (Pavement Groove Evaluation)
Pavement Software Conversions

- Upgrade Visual Basic (VB6) to more current Windows Presentation Foundation (WPF)
- Ensure compatibility with latest Microsoft Windows OS
- All FAA applications to be run using the same technology
- Prepare for future data sharing between applications
- All source code under source control
- Change logs
Software Conversion Status

- All programs have been converted.
  - BAKFAA - converted
  - FAARFIELD - converted
  - FEAFCAA - converted
  - ProGroove - converted
  - A WPF version of ProFAA already exists
  - Evaluate differences between VB6 version and WPF version - ongoing
Software Conversion Status

• Testing of the converted programs is ongoing by CSRA International.

• Pending testing completion and acceptance by the FAA, determine the best method to integrate the programs.
COMFAA Before and After Results

COMFAA VB6

- Fonts, button design, spacing, shading slightly different
- Calculated results are the same

COMFAA WPF
FAARFIELD Before and After Results

- Fonts, button design, spacing, shading slightly different
- Calculated results the same
Field Capable Handheld Devices

- Motion F5t Rugged Tablet PC
- Trimble JUNO 3 Series
- Trimble GeoExplorer 6000
PA40 Organization Concept

Network

AIRPORT

Branch

RUNWAY

Section

SECTION OF RUNWAY OR SHOULDER

Level

Data Type/File

Index

Climate Zone

Annual Rainfall

Mean High/Low Temperatures

Freezing/Thawing Degree Days

Weather Data

Local Work Type/Cost Data

Traffic Data

Friction Index

Friction Data

BBI CA Profilograph

Straight Edge

Profile Data

Mean Groove Depth

Laser Images

Crack Density, Other?

Profile Data

Profile Data

FWD File

ISM

Traffic Data

BBI CA Profilograph

Mean Groove Depth

Friction Data

Crack Density, Other?

Profile Data

Geotechnical/Design Data

FWD File

ISM

Field Core Data

PCI

As-Built Structure

Work History

Inspection Data

Shaded area: Functionality in current FAA PAVEAIR

Functionality being added
THANK YOU