

Washington State Airport Pavement Management System

Eric Johnson, Construction & Grants Program Manager

Jefferson County International Airport Pilots Meeting - October 5, 2017

Roger Millar, Secretary of Transportation

Keith Metcalf, Deputy Secretary of Transportation

David Fleckenstein, Aviation Director

Washington Airport Pavement Management System (APMS)

What is an APMS?

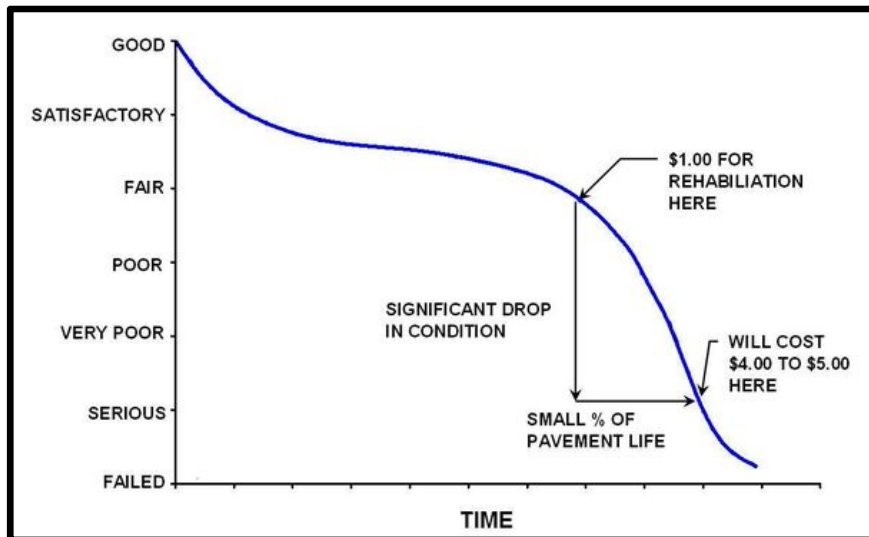
An APMS is a Tool to:

- Provide fact based data
- Maintain an inventory of the pavement system
- Assess the relative condition of pavements
- Monitor pavement condition
- Identify pavement-related needs
- Prioritize pavement-related work
- Assist in selecting the most cost-effective repair strategy, short- and long-term
- Track performance of selected treatments
- Communicate funding needs
- Measure system performance



Washington Airport Pavement Management System (APMS)

Pavement condition vs. cost of repair



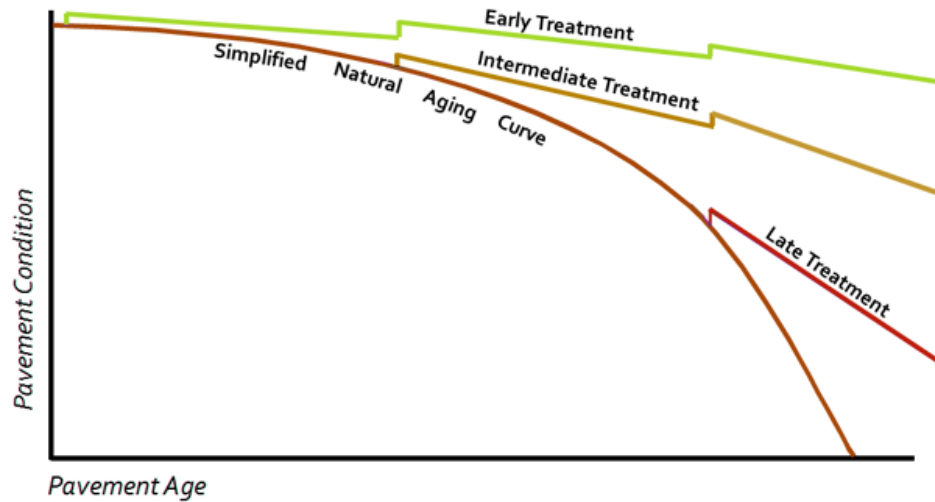
The pavement life cycle curve:

- Identifies appropriate type of repair at optimal time
- Illustrates rate of deterioration
- Results in lowest life-cycle cost

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Why is appropriate and timely preventive maintenance important?

LIFE CYCLE EXTENSION OF ASPHALT



Effect of maintenance at optimal time:

- Slows rate of deterioration
- Extends pavement life in a very cost-effective manner

Washington Airport Pavement Management System (APMS)

APMS Background

FAA Grant Assurance 11
...assures or certifies that
it has
implemented an effective
airport pavement
maintenance-
management program

WSDOT Grant Assurance 12
...assures or certifies to the
department's satisfaction
that it has implemented an
effective airport pavement
maintenance-management
program

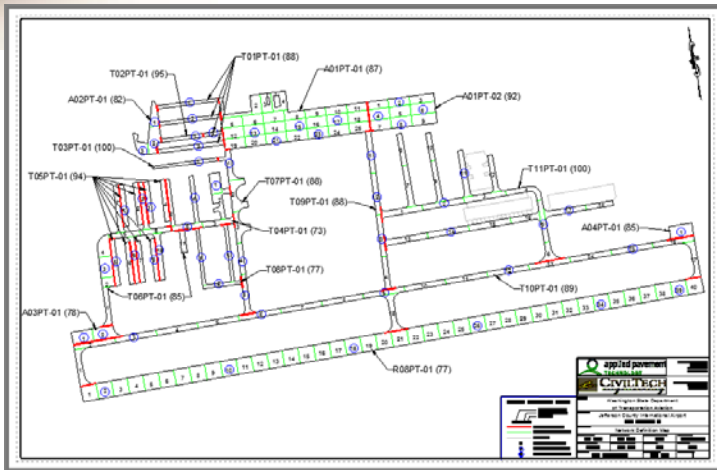
Public Law 103-305
Authorizes the Secretary to approve the
replacement or reconstruction of pavement
at an airport only if the sponsor has provided
assurances that such airport has
implemented an airport pavement
maintenance-management program.

Washington's APMS:

- Originally implemented in 2000 - updated 2005/2006 - 2012/2013 – 2017/2018
- Includes approximately 100 airports
- Assists airport sponsors in complying with state and federal grant assurances
 - FAA grant assurance 11 (NPIAS airports)
 - WSDOT grant assurance 12 (NPIAS and Non-NPIAS airports)
- Fulfills the requirements of Public Law 103-305 for NPIAS airports

Washington Airport Pavement Management System (APMS)

APMS process - first steps



Systems inventory and network definition:

- Review existing airport inventory information
- Records review of pavement work completed since prior study
 - FAA and WSDOT Grants
 - Construction records
 - Airport Layout Plans
 - Communications with airports and/or consultants
- Update pavement management database
- Network definition (network, branches, sections, sample units)
- Prepare network definition maps

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APMS process - next step

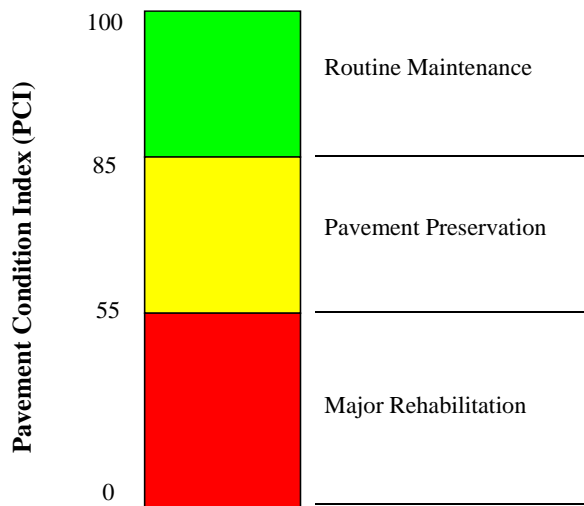


Pavement evaluation:

- Airports grouped geographically for logical site visits
- Airport sponsors contacted prior to inspection
- No lengthy facility closures
- Visual inspection – no destructive testing
- Pavement distresses documented (type, quantity, severity)
- Pavement section photographs, geo-referenced, and labeled
- Results entered into pavement management database

Washington Airport Pavement Management System (APMS)

What is PCI?



The PCI is:

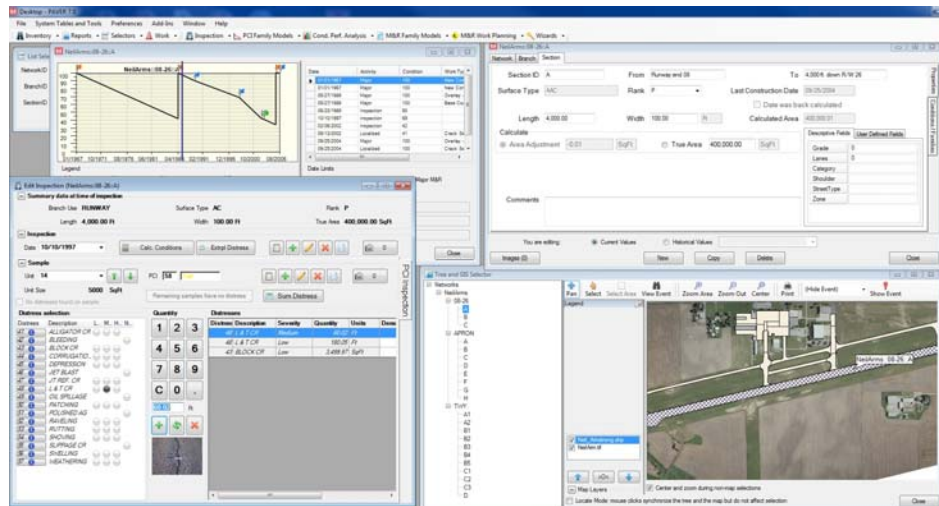
- Pavement Condition Index
- Aviation industry standard methodology used to objectively evaluate pavement
- Documented in FAA Advisory Circular 150/5380-6B / ASTM D5340-11
- Consistent, objective, and repeatable
- Characterizes pavement defects (distress)
 - Type / Severity / Quantity
- Composite index of overall pavement condition in numerical terms ranging from 100 (excellent) to 0 (failed)
- Indicative of the level of work required to maintain or repair a pavement
- Provides insight into cause of deterioration

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APMS process - next step

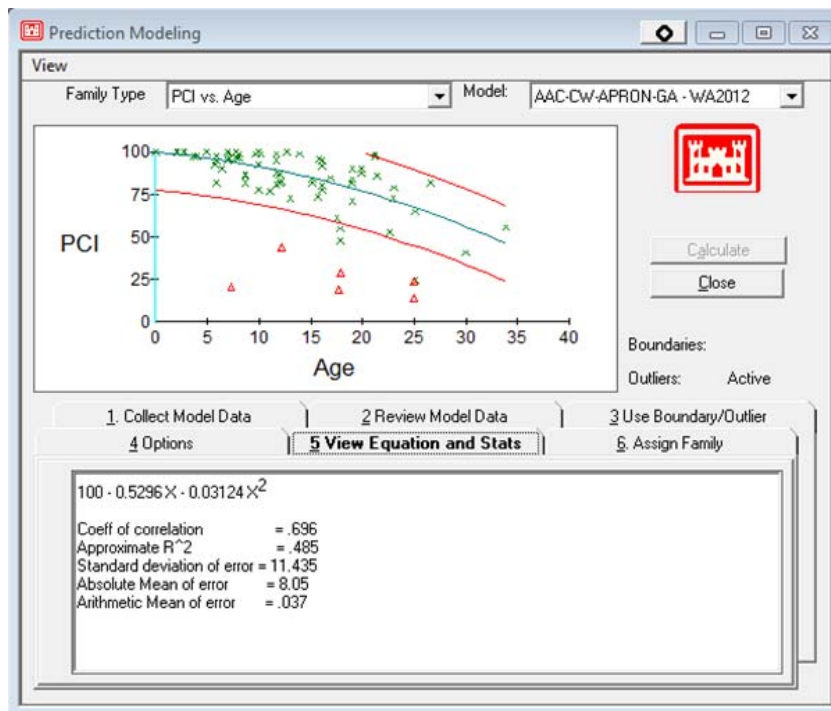
PAVER™ software implementation:

- Same software used in prior studies
- System calibration to reflect current conditions and FAA & WSDOT policies
- Data analysis
 - PCI calculated / section PCI values extrapolated
 - Analyze distresses
 - Evaluate deterioration rate
- M&R needs identification (based on unlimited budget)
- Statewide analysis
 - System PCI / budget scenarios / impact of scenarios / funding backlog



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PAVER™ system calibration



PAVER™ system calibration:

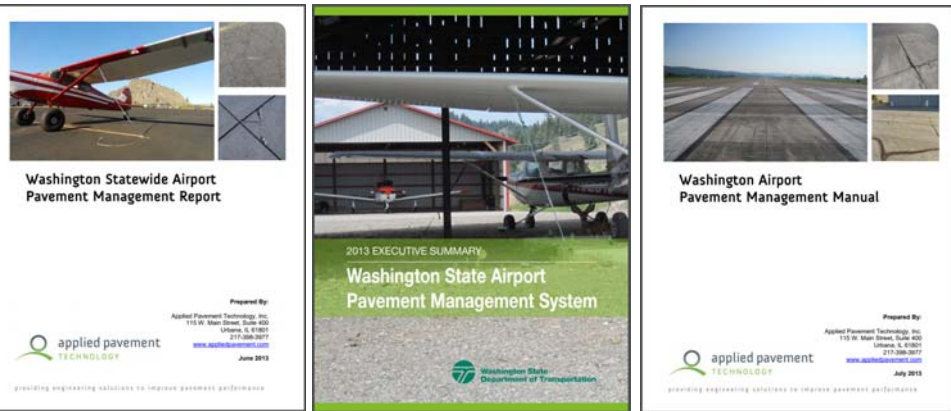
- Develop pavement performance models
- Establish prioritization guidelines
- Develop maintenance and rehabilitation (M&R) policies
- Unit cost information for M&R actions

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APMS process - final step

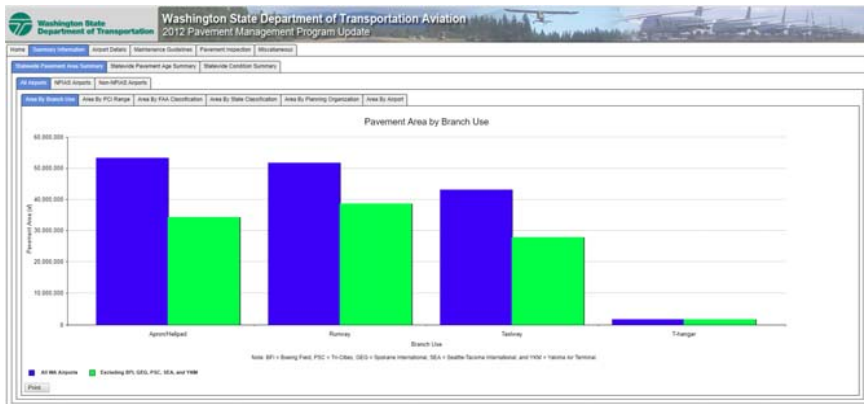
APMS reports and web application:

- Statewide Pavement Management Report
- Executive Summary
- Pavement Management Manual
- Interactive Data Exchange Application (IDEA)



Washington Airport Pavement Management System (APMS)

Interactive Data Exchange Application



IDEA:

- Statewide statistics
 - Pavement inventory
 - Current and future condition
 - Needs analysis and budget scenario comparisons
- Individual airport details and results
 - Pavement inventory
 - Work history
 - Inspection data
 - Pavement photographs and aerials
 - Predicted condition data
 - M&R analysis results
 - Completed work
- Project background information
 - Overview of project scope and identified goals
 - Overview of inventory data incorporated into database
 - Overview of PCI procedure
 - Discussion of parameters used during needs analysis

Washington Airport Pavement Management System (APMS)

Anticipated schedule



Study Schedule:

- October 2017 to February 2018 – Records collection and review, airport coordination, and review of pavement network
- Mid to late February to May - Pavement inspections
- March to August – PAVER™ customization, unit cost development, performance modeling, maintenance policy development
- August to October – Analysis and M&R program development
- November 2018 to February 2019 – Reports and IDEA development

Questions?

For more information contact:

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WSDOT Aviation

“Located on the Olympia Regional Airport”

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www.wsdot.wa.gov/aviation/Grants/AirportPavementManagement