WSDOT Aviation Division:
Airport Pavement Management Study

Eric Johnson
Construction & Grants Program Manager
Airport Pavement Management Study Project Manager

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What Is Pavement Management?

• Pavement management is a tool to
  – Maintain pavement inventory
  – Monitor pavement condition
  – Identify pavement-related needs
  – Prioritize pavement-related work
  – Select most cost-effective repair strategy
  – Communicate pavement-related needs
WSDOT APMS

• Established in 2000 (83 airports)
• Updated in 2005 and 2012/2013
  – 95 airports inspected and analyzed
  – 5 airports had APMS data that were incorporated into WSDOT’s APMS
    • Boeing Field, Seattle-Tacoma Int’l, Spokane Int’l, Tri-Cities, and Yakima Air Terminal
• Data used to calculate overall inventory and condition statistics
Project Scope

• Pavement Inventory and Condition Data Collection
• PAVER™ Update & Calibration
• Data Analysis
• Pavement Management Program Compendium and Outreach
• Data Access Program
Systems Inventory

• Identify pavement work completed since last update
  – Where was work conducted (physical location)?
  – What work was conducted (cross-section)?
  – When was work completed?
Network Definition

- Network (individual airport)
- Branches (facilities)
- Sections (features)
- Sample Units
Pavement Evaluation Using Pavement Condition Index (PCI) Procedure

- Visual signs of distress are identified and measured.
- Documented in AC 150/5380-6B and ASTM D5340.
PCI Scale

Pavement Condition Index (PCI)

100
Routine Maintenance

85
Pavement Preservation

55

0
Major Rehabilitation

Washington State Department of Transportation
Type of Deterioration
PAVER™ Database Update

- Inventory
- Condition
System Customization

- Database User Fields
- Performance Models
- Prioritization Rules
- Repair Alternatives
- Unit Costs
Data Analysis

• Inventory Statistics
• Condition Assessment
• Needs Assessment
• Localized Maintenance Projects
• Major Rehabilitation Projects
Report Generation

• Statewide Detailed Report
• Executive Summary
• Pavement Management Manual
Why Bother?

• Investment
• Safety
• Compliance
Investment Issues

Excellent

Cost-Effective Time for Preventive Maintenance

Cost-Effective Time for Rehabilitation

Failed

Costly Time for Rehabilitation

Age
Safety Issues

- Hydroplaning
- Loss of friction
- FOD
- Tire damage potential
- Loss of steering control
- Pavement drop-offs
Compliance Issues

• Safety (FAA Grant Assurance 19)
• Pavement Maintenance Management (FAA Grant Assurance 11)
• Sponsor fund availability (WSDOT Grant Assurance 4)
• Pavement Preventive Maintenance (WSDOT Grant Assurance 12)
• Operation and Maintenance (WSDOT Grant Assurance 21)
Project Findings

2013 EXECUTIVE SUMMARY
Washington State Airport Pavement Management System
Non-Primary Airports Funding Analysis

• No funding
  – PCI drops to 66 by 2020 (from 75)

• Unlimited budget analysis
  – 2014 to 2020: $217 million of need
  – Projected PCI of 84 by 2020

• Constrained budget analysis
  – Maintains current funding level of $4.5 million annually ($31.5 million total)
  – Yields a backlog of $257 million in pavement projects by 2020
  – PCI drops to 71 by 2020
Overall Condition by Use

<table>
<thead>
<tr>
<th>Branch Use</th>
<th>All WA Airports</th>
<th>Excluding BFI, GEG, PSC, SEA, &amp; YKM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>77.0</td>
<td>75.0</td>
</tr>
<tr>
<td>Apron/Helipad</td>
<td>74.2</td>
<td>71.7</td>
</tr>
<tr>
<td>Runway</td>
<td>79.6</td>
<td>76.5</td>
</tr>
<tr>
<td>Taxiway</td>
<td>77.2</td>
<td>76.4</td>
</tr>
<tr>
<td>T-hangar</td>
<td>81.1</td>
<td>81.1</td>
</tr>
</tbody>
</table>
2012 Condition Distribution

All Airports

- Reconstruction: 10.8%
- Major Rehabilitation: 18.3%
- Preventive Maintenance: 70.8%
2012 Condition Distribution

Primary Airports

- Reconstruction: 12.7%
- Major Rehabilitation: 13.0%
- Preventive Maintenance: 74.3%

Non-Primary Airports

- Reconstruction: 9.4%
- Major Rehabilitation: 22.4%
- Preventive Maintenance: 68.2%
## Pavement Condition Trend

<table>
<thead>
<tr>
<th>Year</th>
<th>All Airports Area-Weighted PCI</th>
<th>Primary Airports Area-Weighted PCI</th>
<th>Non-Primary Airports Area-Weighted PCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>77</td>
<td>72</td>
<td>80</td>
</tr>
<tr>
<td>2012</td>
<td>77</td>
<td>80</td>
<td>75</td>
</tr>
</tbody>
</table>
Interactive Data Exchange Application - IDEA

This interactive data exchange application (IDEA) presents the results of the 2012 update of the WSDOT Aviation pavement management system. During this project, the runway, taxiway, apron/helipad, and T-hanger pavements at ninety-five selected airports in Washington were assessed by Applied Pavement Technology, Inc. (APTech). The pavement condition data collected as part of independent APAMS projects for five additional National Plan of Integrated Airport Systems (NPoIAS) airports (Boeing Field [BFI], Seattle-Tacoma International Airport [SEA], Spokane International Airport [DEC], Tri-Cities Airport [PSC], and Yakima Air Terminal [YKM]) were also incorporated into the database. Information on these five airports is only shown in the 'Summary Information' section of the IDEA.

This IDEA is organized into the following modules accessible from the tabs above:

Summary Information
View a summary of pavement area, age, and condition information at the statewide level.

Airport Details
View detailed inventory information, condition data, work history information, photographs, and the proposed 6-year maintenance and rehabilitation plan for individual airports.

Maintenance Guidelines
View general recommendations for pavement maintenance at Washington airports as well as FAA guidelines for pavement maintenance.

Pavement Inspection
Review background information on the PCI survey method used to assess pavement condition, and access the Washington pavement inspection report form.

General Info
View definitions of abbreviations used throughout the IDEA, and learn about this program as well as Applied Pavement Technology.
Questions?

For more information please contact:

**Eric Johnson**
Construction & Grants Program Manager
(360) 651-6303
(360) 651-6319 Fax
(360) 708-8970 Cell

[johnsel@wsdot.wa.gov](mailto:johnsel@wsdot.wa.gov)
[www.wsdot.wa.gov/aviation](http://www.wsdot.wa.gov/aviation)