



INDOT Airport Pavement Management System

INTERACTIVE APMS TOOL - IDEA

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Presentation Overview

- Public Law and Grant Assurance Requirements
- Airport Pavement Management System (APMS) Process
- Indiana's APMS
- Indiana's Interactive Data Exchange Application (IDEA)
- Questions



Public Law and Grant Assurance Requirements

- Public law 103305 and Grant Assurance 11 has some minimum requirements for accepting federal money (NPIAS)
- Required for airports in the National Plan of Integrated Airport Systems (NPIAS)
 - Pavement Inventory
 - Pavement Inspections
 - ◆ Detailed
 - ◆ Drive-by
 - Record Keeping
 - Information Retrieval
 - Program Funding



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APMS Process

- Systems Inventory
- Network Definition
- Condition Assessment
- Database Development
- System Customization
- Data Analysis
- Results
- Training and Outreach



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APMS Process – Condition Assessment

- Assessed pavement conditions through visual inspection using the pavement condition index (PCI) procedure
- PCI is the most commonly used method for obtaining airport pavement conditions
- Involves identifying the type, severity, and extent of distress visible on the pavement surface
- Distresses observed give an indication of the underlying cause of deterioration
- Distress data are used to calculate an index, which ranges from 0 (failed) to 100 (new)
- The methodology is described in AC 150/5380-6C and ASTM Standard D5340



APMS Process – Condition Assessment

ASPHALT SURFACE DISTRESS TYPES

Distress Type	Severity Level	Recommended Maintenance Action	Distress Type	Severity Level	Recommended Maintenance Action
Alligator Cracking	Low	Monitor	Oil Spillage	N/A	Partial Depth AC Patch
	Medium	Full Depth AC Patch	Patching	Low	Monitor
	High	Full Depth AC Patch		Medium	Monitor
Bleeding	N/A	Monitor		High	Full Depth AC Patch
Block Cracking	Low	Monitor	Polished Aggregate	N/A	Monitor
	Medium	Crack Seal	Raveling	Low	Monitor
	High	Crack Repair		Medium	Resurfacing
Corrugation	Low	Monitor		High	Resurfacing
	Medium	Partial Depth AC Patch	Rutting	Low	Monitor
	High	Partial Depth AC Patch		Medium	Full Depth AC Patch
Depression	Low	Monitor		High	Full Depth AC Patch
	Medium	Monitor	Shoving	Low	Monitor
	High	Partial Depth AC Patch		Medium	Partial Depth AC Patch
Jet Blast	N/A	Monitor		High	Partial Depth AC Patch
Joint Reflection Cracking	Low	Monitor	Slippage Cracking	N/A	Full Depth AC Patch
	Medium	Crack Seal	Swelling	Low	Monitor
	High	Crack Surfacing/Repair		Medium	Full Depth AC Patch
Longitudinal and Transverse Cracking	Low	Monitor		High	Full Depth AC Patch
	Medium	Crack Seal	Weathering	Low	Monitor
	High	Crack Repair		Medium	Surface Treatment
				High	Surface Treatment



APMS Process – Condition Assessment

ASPHALT SURFACE DISTRESS TYPES



L&T Cracking



Alligator Cracking



Raveling



APMS Process – Condition Assessment

PORTLAND CEMENT CONCRETE SURFACE DISTRESS TYPES

Distress Type	Severity Level	Maintenance Action	Distress Type	Severity Level	Maintenance Action
Blow-Up	Low	Full Depth PCC Patch	Popouts	N/A	Monitor
	Medium	Full Depth PCC Patch	Pumping	N/A	Monitor
	High	Slab Replacement	Scaling	Low	Monitor
Corner Break	Low	Monitor		Medium	Monitor
	Medium	Full Depth PCC Patch		High	Slab Resurfacing
	High	Full Depth PCC Patch	Settlement/Faulting	Low	Monitor
LTD Cracks	Low	Monitor		Medium	Grinding
	Medium	Crack Sealing - PCC		High	Slab Replacement
	High	Slab Replacement	Shattered Slab	Low	Monitor
Durability Cracking	Low	Monitor		Medium	Slab Replacement
	Medium	Full Depth PCC Patch		High	Slab Replacement
	High	Slab Replacement	Shrinkage Cracking	N/A	Monitor
Joint Seal Damage	Low	Monitor		Low	Monitor
	Medium	Joint Seal (PCC)		Medium	Partial Depth PCC Patch
	High	Joint Seal (PCC)	High	Partial Depth PCC Patch	
Small Patching	Low	Monitor	Spalling (Joint and Corner)	Low	Monitor
	Medium	Monitor		Medium	Partial Depth PCC Patch
	High	Partial Depth PCC Patch		High	Partial Depth PCC Patch
Large Patching	Low	Monitor	Alkali-Silica Reactivity (ASR)	Low	Monitor
	Medium	Monitor		Medium	Partial Depth PCC Patch
	High	Full Depth PCC Patch		High	Slab Replacement



APMS Process – Condition Assessment

PORTLAND CEMENT CONCRETE SURFACE DISTRESS TYPES



Spalling



LTD Cracking

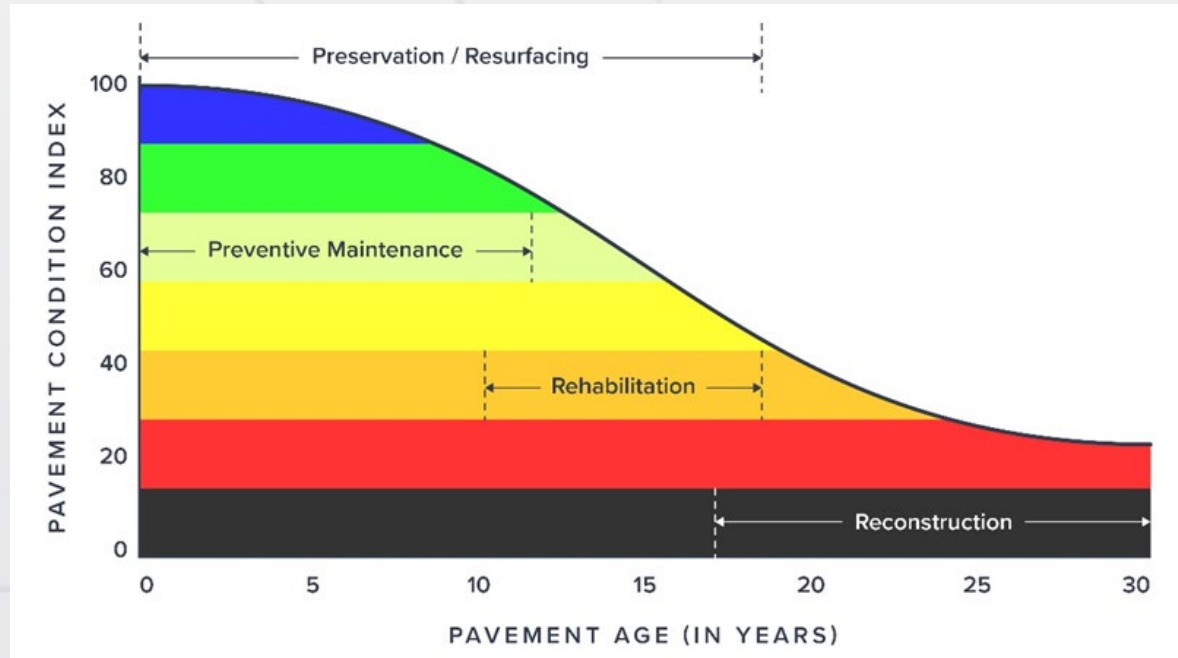


Corner Break



APMS Process – Data Analysis

- Assess current and project future pavement condition throughout an airport or system of airports
- Develop plan to address immediate “reactionary” needs, preservation needs, and long-term rehabilitation needs



APMS Process – Data Analysis (continued)

- Analysis parameters for the Indiana system
 - Minimum condition thresholds (Critical PCIs) used

Pavement Use	Primary	Large GA >4500' Rwy	Small GA <4500' Rwy
Runway	70	60	55
Taxiway	60	55	50
Apron, or Less	55	50	50

- Five (5) year analysis period
- Inflation rate of 3 percent used for future costs
- Unlimited funding is included in individual airport reports
- Identifies a level of what is needed, when it is needed, and approximately how much it will cost



Indiana's APMS

- Dates back to the early 1990s
- Includes the inspection of 67 airports over a 3-year cycle
- A new 3-year update started Fall of 2022
- APTech is joined by CHA Consulting and CAD Vantage Inc
- Results are provided an interactive website
- Fulfills a majority of Grant Assurance 11 and Public Law 103 305 requirements for NPIAS airports



APMS Results - Overview

- Statewide Executive Summary
- Individual Airport Executive Summaries
- Interactive Project Results Website Includes:
 - Statewide Summarized Results
 - Individual Airport Results, including:
 - ◆ Pavement Inventory and Work History
 - ◆ PCI Results
 - ◆ Inspection Comments
 - ◆ Photographs
 - ◆ Condition and Needs Analysis



APMS Results – Interactive APMS Tool - IDEA

Indiana Department of Transportation

Aviation

Aviation is an integral part Indiana's transportation infrastructure and is vital for business, agriculture, and tourism as Indiana is home to 127 public-use aviation facilities. Indiana's aviation mission is to encourage, foster, and assist in the development of aeronautics in this state while also encouraging the establishment of airports, landing fields, and other navigation facilities.

Hoosier airports are the lifeblood for hundreds of companies across the state, allowing them to compete in a global economy while supporting jobs and economic growth in small communities across the heartland. These public-use facilities have an economic output of more than \$14 billion including actively creating or sustaining 69,000 jobs and providing for the movement of people and goods to anywhere in the world.

We would encourage you to visit these facilities to witness first-hand the dedication of these aviation professionals as they strive to take Indiana to the next level.

- FAQ
- Airport Pavement Condition Index Interactive Database
- 2022 Indiana State Aviation System Plan (ISASP) & Airport Economic Impact Study (AEIS)
- Contact Us

Instructions for Updating the Airport CIP for 2023-2028

- [Airport Capital Improvement Program \(CIP\) Update Letter \(2024-2028\)](#)
- [Airport Priority & Funding Summary](#)
- [CIP Data Sheet](#)
- [CIP Data Sheet Instructions](#)
- [CIP Template](#)
- [EAA Revenue-Generating Facility Eligibility Evaluation Form](#)
- [Highlights for updating the 2024-2028 CIP](#)
- [Pavement Maintenance/Management Program on Airports 2023-2028](#)

Related Links

- [Airport Pavement Maintenance Presentation, June 2018](#)
- [Airport Development Fund Grant Program](#)
- [Indiana Public Use Airports](#)
- [Runway Crossing Procedure Change Safety Advisory](#)
- [INDOT's Aeronautical Functions](#)
- [2020-2021 Indiana Aeronautical Chart](#)

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The efficient and effective movement of people and goods requires a balanced transportation system offering a variety of transportation modes, including highways, air, rail, pipeline and water. INDOT's Multimodal Planning and Programs division includes the offices of Aviation, Freight, Public Transit, Rail, and Passenger Rail. Our goal is to develop and improve transportation modes in a seamless system that is more

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<https://www.in.gov/indot/div/aviation/index.html>



Additional Resources

- FAA Advisory Circular 150/53806C - Guidelines and Procedures for Maintenance of Airport Pavements.
- FAA Advisory Circular 150/53807B - Airport Pavement Management Program (PMP).
- ASTM- Subcommittee E17.42 Pavement Management and Data Needs (various standards including D5340 on PCI)
- Airport Cooperative Research Program (ACRP)
<http://www.trb.org/ACRP/ACRP.aspx>





Thank You

Questions?



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