TXDOT PAVEMENT MANAGEMENT SYSTEM
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25 Districts
254 Counties
Approximately 197,548 lane miles

Map Produced by:
CST-MatPav, PMIS ver. 3.511
March 10, 2010
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<tr>
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<th>ACP</th>
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<th>JCP</th>
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History of PMIS in TxDOT

- PMIS development began in May 1990 in response to a Federal mandate that every State have a Pavement Management System in place by February 1993.

- PMIS was an expansion of the existing Pavement Evaluation System (PES), PES used 2-mile rating sections instead of the 0.5-mile sections now used in PMIS.
### Process Each Year

<table>
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<th>Month Range</th>
<th>Task Description</th>
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<tr>
<td>August</td>
<td>Build PMIS database for new fiscal year</td>
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<tr>
<td>September – December</td>
<td>Rate pavement distress</td>
</tr>
<tr>
<td>September – February</td>
<td>Measure ride and rut data</td>
</tr>
<tr>
<td>March</td>
<td>Finish up ride and rut data</td>
</tr>
<tr>
<td>April</td>
<td>Begin analysis and reporting</td>
</tr>
<tr>
<td>April-August</td>
<td>Skid Measurements</td>
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<tr>
<td>July – August</td>
<td>Train raters for new fiscal year</td>
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</table>
Types of PMIS Data

- Visual Distress Ratings
- Ride/Rut Measurements
- Skid Measurements (ASTM-type)
- Deflection Measurements
System Frequency

**Pavement Distress:** 100 percent per year
   - September – December
   - Statewide rating contract

**Ride Quality / Rutting:** 100 percent per year
   - September – February
   - District ride/rut equipment operators

**Skid Measurements:** 50 percent IH, 25 percent non-IH
   - April – August
   - District Skid equipment operators

**FWD Measurements:** As needed (for projects)
   - September – August
   - District FWD equipment operators
Who Does What?

MNT Division:  
- Certify contract raters for distress data
- Process invoices for distress ratings
- Repair and calibrate ride/rut equipment
- Certify ride/rut equipment operators
- Analyze and report data

Districts:  
- Audit distress ratings
- Approve invoices for distress ratings
- Operate ride/rut equipment (some districts)
Pavement Distress Types — CRCP and JCP

- **Spalled Cracks**
- **Punchouts**
- **Asphalt Patches**
- **Concrete Patches**
- **Average Crack Spacing**

- **Failed Joints and Cracks**
- **Shattered Slabs**
- **Concrete Patches**
- **Apparent Joint Spacing**

- **Failures**
- **Slabs with Longitudinal Cracks**

Footer Text
Data Collection Sections (DCS)

Usually 0.5-Mile (but not always!)

Data Collection Sections are Arbitrarily-Defined in PMIS
PMIS Scores

**Distress Score**

- 100: Very Good
- 90: Good
- 80: Fair
- 70: Poor
- 60: Very Poor
- 0: Very Poor

**Ride Score**

- 5.0: Very Good
- 4.0: Good
- 3.0: Fair
- 2.0: Poor
- 1.0: Very Poor
- 0.1: Very Poor

**Condition Score**

- 100: Very Good
- 90: Good
- 70: Fair
- 50: Poor
- 35: Very Poor
- 0: Very Poor
Objective Pavement Management Plan

- Develop a comprehensive and uniform pavement management plan which is roadway specific to the greatest extent possible, and is fiscally constrained.
- Generate Pavement Condition Projections based on a financially constrained plan, which can be used to assess the impact of the appropriated funding.
- Assure maintenance resources are directed towards pavement operations and roadway related work.
- Provide a reporting mechanism for District Engineers, Administration and Commission to utilize in briefing elected officials.
- Allow districts and regions to appropriately allocate resources through long term planning in order to accomplish the plan.
Projects Analyzed

- DCIS (Construction Projects)
  - Maintenance & Rehabilitation
  - Safety Projects
  - Mobility Projects
  - Discretionary

- COMPASS (Maintenance Projects)
  - In-house projects
  - Contracted projects.
4-Year Pavement Management Plan
(FY2016 – FY2019)

Analysis Report

Texas Department of Transportation

4-Year Pavement Management Plan Work Group
Texas Department of Transportation

November 2015
Pavement Management Plan

Figure 4. State-wide Treatment Plans for FY 2015-2018
Figure 5. State-Wide District FY 2015-2018 Lane Miles Treated for Each Pavement Condition
Figure 6. State-Wide Overall Pavement Performance for FY 2002-FY 2019
Objective: to establish a modern pavement management system for the State of Texas

- An Integrated system including PMIS and Mapzapper functionality and more (e.g., 4-year plan).
- From Mainframe to Windows-Based (user-friendly)
- GIS-based
- Web-accessed
- Enhanced analytical capability

Project contractor: AgileAssets®, Inc.

Project duration: 2 years (1st year go-live, 2nd year testing)
SIX MODULES

- Database: PMIS data and more
- Analysis: performance and network analysis
- Reports: annual report, detailed reports, etc.
- Setup: to support database and analysis etc.
- Utilities: dynamic segregation
- GIS: mapping functions
Performance Models

Model Tree

Model Attributes

Models and Expressions
## Analysis Module – Example (Optimization)

![Analysis Module Example](image)

### Constraints
- **Objective Column**: Condition Score, Treatment Cost
- **Type**: Weighted Avg, Total
- **Limit Value**: 5,000,000.00

### Decision Tree Set
- Production Trees
- WORK PLAN TYPE
- COMMENTS
- Percent Gap

### Yearly Financial Parameters
- **Year**: Discount Rate, Inflation Factor
## Optimization Detailed Results

### Results

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<th>PLAN YEAR</th>
<th>BUDGET GROUP</th>
<th>TREATMENT</th>
<th>ESTIMATED COST</th>
<th>SIGNED HWY AND ROADBED ID</th>
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Statewide and District Good or Better Comparison

Year

Good or Better Score (%)

- PARIS District Good or Better Score (%) - Statewide Good or Better Score (%)
Analysis Module

- Determine how much money is needed to achieve a specific target.

- Determine the future pavement condition based on current spending levels.

- Ability to run different scenarios and evaluate the impact.
GIS MODULE - EXAMPLE

COUNTY_NAME = 102 - HARRIS

FY2016 CONDITION SCORE CLASSES

- VERY GOOD 80-100
- GOOD 70-80
- FAIR 60-69
- POOR 50-59
- VERY POOR 1-49

Source:
Base Maps Compiled, Developed and Maintained by the Transportation Planning and Programming Division.
PMIS data is maintained by the Maintenance Division, Pavement Preservation Branch.

Map Projection: OCS WGS 1984
Datum: D_WGS_1984

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Footer Text
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