

Condition of Texas Pavements



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Pavement Management Information System (PMIS)

Annual Report FY 2007-2010



Prepared by
Texas Department of Transportation
Construction Division, Materials and Pavements Section

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What's New in This Report?

- This report contains information about the statewide pavement condition goal (90 percent in “Good” or better condition) and other statewide pavement condition trends that used to be published in the following reports:

Status of Statewide Pavement Condition Goal — Full Version

Status of Statewide Pavement Condition Goal — Executive Summary

Condition of Texas Pavements, PMIS Annual Report — Full Version

Condition of Texas Pavements, PMIS Annual Report — Executive Summary

These four reports are no longer published.

- This report contains a discussion on present and future pavement condition.

How Data Was Analyzed In This Report...

- Data for this report is based on all PMIS sections, mainlanes and frontage roads, Condition Scores greater than 0, excluding sections under construction. Annual Reports published before FY 2009 used mainlanes only, so some of the results from those reports might not match values shown in this report.

Cover Photo:

U.S. Highway 62 Approaching Guadalupe Mountains National Park

Photo by Stan A. Williams / TxDOT.



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Condition of Texas Pavements Summary

PMIS Annual Report, FY 2007-2010

This report describes the condition of Texas pavements in Fiscal Year 2010 and during the four-year FY 2007-2010 period, based on analysis of Pavement Management Information System (PMIS) distress ratings and ride quality measurements. The report includes the percentage of lane miles in “Good” or better condition, trends for the major highway systems (IH, U.S., SH and FM) and pavement types (ACP, CRCP, and JCP), trends for pavement distress types and maintenance level of service information.

PMIS pavement evaluations are conducted during the fall and winter months of each fiscal year.

Percentage of Lane Miles in “Good” or Better Condition (Chapter 1)

86.97 percent of Texas pavements are in “Good” or better condition, up from **85.94 percent** in FY 2009. This is the first improvement in pavement condition percentage in the last three years and is the third highest in pavement condition percentage since FY 2002 when the Texas Transportation Commission established the statewide pavement condition goal.

Statewide Trends for FY 2010 (Chapter 3)

Overall Pavement condition in Texas got better in FY 2010 because of improved Ride Quality and Distress. The percentage of lane miles in “Very Good” condition (Condition Score 90 to 100) increased to 73.18 percent, up from 71.81 percent in FY 2009. This increase in “Very Good” lane mileage caused the statewide percentage of lane miles in “Good” or better condition to increase to its highest value in the last four years.

Highway System Trends for FY 2010 (Chapter 3)

IH routes improved in Ride Quality and Condition, but got worse in Distress, Shallow Distress and Deep Distress.

U.S. highways improved in all categories except for Shallow Distress. The largest improvements were Deep Distress and Ride Quality.

SH routes improved in Ride Quality, Condition, Distress and Shallow Distress, but got worse in Deep Distress.

FM roads got better in all categories, with the largest improvements being in Deep Distress and Ride Quality.

These trends are based on the percentage of lane miles “Good” or better.

Pavement Type Trends for FY 2010 (Chapter 3)

Asphalt Concrete Pavement (ACP) got better in all categories except for Shallow Distress.

Continuously Reinforced Concrete Pavement (CRCP) improved in Condition, Distress, Shallow Distress and Ride Quality, and got worse in Deep Distress.

Jointed Concrete Pavement (JCP) improved in Ride Quality and Condition, but got worse in Distress, Shallow Distress and Deep Distress.

These trends are based on the percentage of lane miles “Good” or better.



Pavement Distress Trends for FY 2010 (Chapter 4)

For ACP, Shallow Rutting, Alligator Cracking, Failures, Longitudinal Cracking and Patching improved. Deep Rutting, Transverse Cracking and Block Cracking got worse.

For CRCP, Spalled Cracks improved. Punchouts, Asphalt Patches and Concrete Patches got worse.

For JCP, Failed Joints and Cracks, Failures, Shattered Slabs, Slabs with Longitudinal Cracks and Concrete Patches all got worse.

These trends are based on the amount of distress rated or measured (that is, greater than zero).

Maintenance Level of Service Trends for FY 2010 (Chapter 5)

The overall “Combined” level of service maintained on Texas flexible (ACP) pavements got better because of improvements in Ride Quality. These improvements offset worsening Rutting and Alligator Cracking.

PMIS Total Lane Miles and Data Storage Sample (Chapter 6)

The total number of lane miles in PMIS continues to slowly increase. PMIS contained 195,287.4 lane miles in FY 2010, up from 192,530.8 lane miles in FY 2007. PMIS contained Condition Score data on approximately 97.50 percent of all TxDOT-maintained lane miles in FY 2010. This percentage is the highest since FY 2002.



Discussion

Present Condition

Overall pavement condition in Texas improved in FY 2010 as TxDOT increased emphasis on pavement maintenance and rehabilitation, and improved management techniques. TxDOT also applied one-time funding increases (Proposition 12, Proposition 14, and Federal economic stimulus programs) directly to pavements needing repair. Specific details about these efforts are provided below:

◆ Improved Pavement Management Practices

In FY 2008, TxDOT started requiring each district to produce a **Four-Year Pavement Management Plan** each year that includes all aspects of pavement-related work. These are project-specific and financially constrained plans which map out the pavement work needed, along with expected changes in pavement condition. This has had the immediate benefit of giving districts a tool to plan out the pavement preservation and maintenance work rather than being reactive to it.

TxDOT also implemented a **“Pennies to the Pavement”** initiative in FY 2008 that focused maintenance funding on pavements instead of on other areas, to get the greatest possible pavement benefit from limited funding. TxDOT districts have embraced this initiative and found innovative ways to “stretch” pavement dollars and improve overall condition.

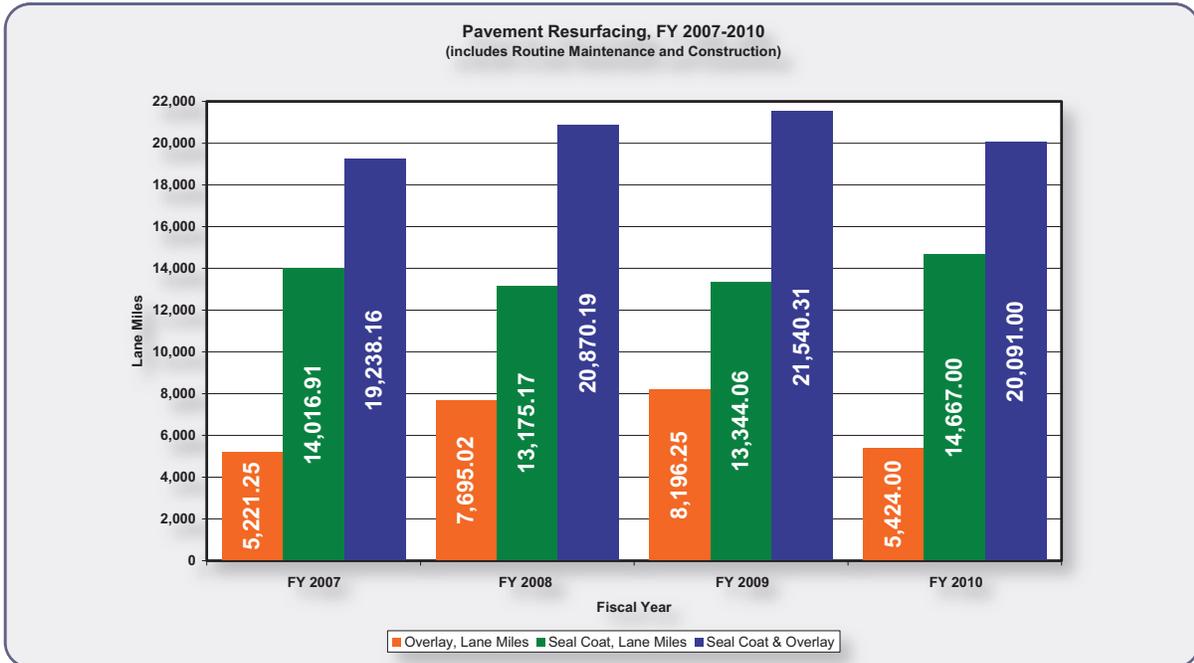
In FY 2009, TxDOT began a series of **Peer Reviews** of each district’s pavement maintenance program. These Peer Reviews have made it easier for districts to share “best practices” to use resources to improve the effectiveness of pavement maintenance.

TxDOT also worked with highway contractors to implement a series of **Cost Savings Measures** in FY 2009. These measures included alternate materials, bidding improvements and increased use of recycled materials. These measures, combined with the last few years of deflation in construction costs, have given TxDOT the ability to treat more mileage with the same amount of construction dollars.

◆ One-Time Funding Increases

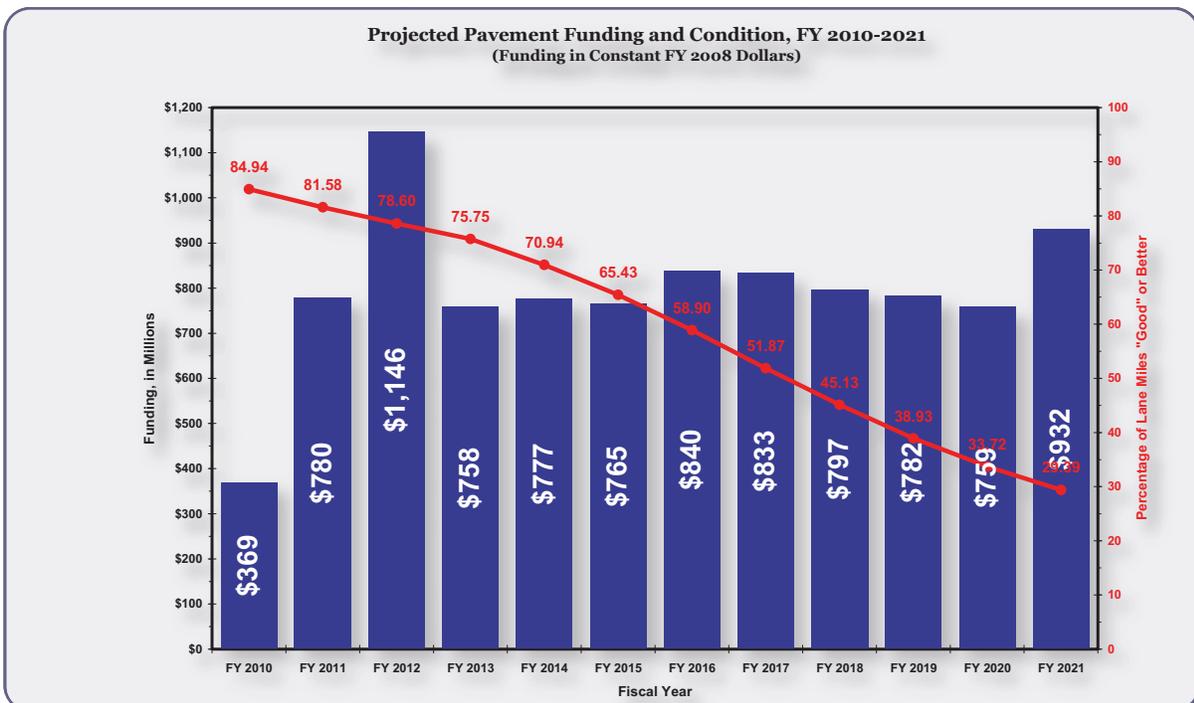
TxDOT received one-time funding increases for pavements in FY 2009 as part of the statewide **Proposition 12** and **Proposition 14** bond programs. TxDOT also received approximately \$800 million in **Federal Economic Stimulus** funds for FY 2009-2010. These one-time funding increases went specifically to pavements in need of repair and thus helped improved overall statewide pavement condition.

Figure 1 shows that these improvements allowed TxDOT to resurface more than 20,000 lane miles (about ten percent of the state-maintained system) in each of the last three years. This resurfacing helped improve overall pavement condition and kept good pavements good.



Predicted Future Condition

Projections of future pavement funding suggest that the improvement in pavement condition seen in 2010 from “Improved Pavement Management Practices” and “One-Time Funding Increases” might be short-lived, though. Figure 2 shows expected pavement funding and predicted condition for the next 12 years, FY 2010-2021, as furnished by the Center of Transportation, University of Texas at Austin. Please note that these funding levels are based on the 2009 TRENDS estimate; actual expenditures have been running higher.



Source: Center for Transportation Research, University of Texas at Austin.





Definitions

“Distress,” “Ride Quality” and “Condition” Definitions

Distress refers to various types of pavement deterioration (such as ruts, cracks, potholes/failures and patches). It can be subdivided into “Shallow Distress” and “Deep Distress.”

Shallow Distress refers to distress types which can usually be repaired by surface-type preventive maintenance. “Shallow” distress types are:

| Shallow Distress Types, By Pavement Type | | |
|--|------------------|--------------------------|
| ACP | CRCP | JCP |
| Shallow Rutting | Spalled Cracks | Failed Joints and Cracks |
| Patching | Concrete Patches | Concrete Patches |
| Block Cracking | | |
| Transverse Cracking | | |

Deep Distress refers to distress types which usually require sub-surface rehabilitation. “Deep” distress types are:

| Deep Distress Types, By Pavement Type | | |
|---------------------------------------|-----------------|--------------------------------|
| ACP | CRCP | JCP |
| Deep Rutting | Punchouts | Failures |
| Failures | Asphalt Patches | Shattered Slabs |
| Alligator Cracking | | Slabs with Longitudinal Cracks |
| Longitudinal Cracking | | |

Chapter 4 gives more information about pavement distress types.

Ride Quality refers to the smoothness of the pavement surface.

Condition is a mathematical combination of the “Distress” and “Ride Quality” data that describes perception of pavement quality.

PMIS Score Definitions

| Category | Distress Score | Ride Score | Condition Score |
|-------------|----------------------|------------------|-----------------------|
| | describes “distress” | describes “ride” | describes “condition” |
| “Very Good” | 90 to 100 | 4.0 to 5.0 | 90 to 100 |
| “Good” | 80 to 89 | 3.0 to 3.9 | 70 to 89 |
| “Fair” | 70 to 79 | 2.0 to 2.9 | 50 to 69 |
| “Poor” | 60 to 69 | 1.0 to 1.9 | 35 to 49 |
| “Very Poor” | 1 to 59 | 0.1 to 0.9 | 1 to 34 |

Please note that a pavement section with Condition Score of 70 or above is considered to be in “Good” or better condition.



History of PMIS Changes (FY 1993-2001)

- FY 1993: PMIS begins (uses 0.5-mile sections, 100 percent IH sample, 50 percent non-IH sample); first estimates of statewide pavement needs (lane miles and dollars).
- FY 1996: First automated rut measurements. PMIS Shallow Rutting and Deep Rutting values increased because the automated equipment was able to “see” ruts that raters missed.
Increased Shallow Rutting and Deep Rutting values; lowered Distress Scores and Condition Scores.
- FY 1997: Automated rut measurements much higher than FY 1996 because of “old” acoustic sensors that had been used in the previous year (sensors replaced every year afterwards because of this problem). Also, beginning of ride quality equipment conversion to laser profiler (IRI) that was completed in FY 1999.
Increased Shallow Rutting and Deep Rutting values; lowered Distress Scores. Conversion to laser profiler lowered Ride Scores. Mixed effect on Condition Scores.
- FY 1998: Second third of ride quality equipment converted to laser profiler (IRI).
Lowered Ride Scores and Condition Scores.
- FY 1999: Remainder of ride quality equipment converted to laser profiler (IRI).
Lowered Ride Scores and Condition Scores.
- FY 2000: CRCP Spalled Cracks definition changed to count only large spalled cracks (3-inch instead of 1-inch); Distress Score weighting factors (“utility values”) changed from percentage spalled to number per mile.
Definition change increased Distress Scores and Condition Scores. Weighting factor change decreased Distress Scores and Condition Scores. Mixed effect on Distress Scores and Condition Scores overall.
- FY 2001: Switch to distress ratings done by contractors; sample increased to 100 percent of all mileage, which raised the actual rating sample to about 95 percent (some mileage is not rated because of construction or other issues); rutting definitions changed (Shallow Rutting changed from $\frac{1}{2}$ -1 inch to $\frac{1}{4}$ - $\frac{1}{2}$ inch, Deep Rutting changed from 1-3 inches to $\frac{1}{2}$ -1 inch; Severe Rutting added as 1-2 inches; Failure Rutting added as greater than 3-inches; rut gap left from 2-3 inches); Texas Transportation Commission proposes statewide pavement condition goal (90 percent “Good” or better in ten years).
Minimal effect on PMIS distress data, Distress Scores and Condition Scores.



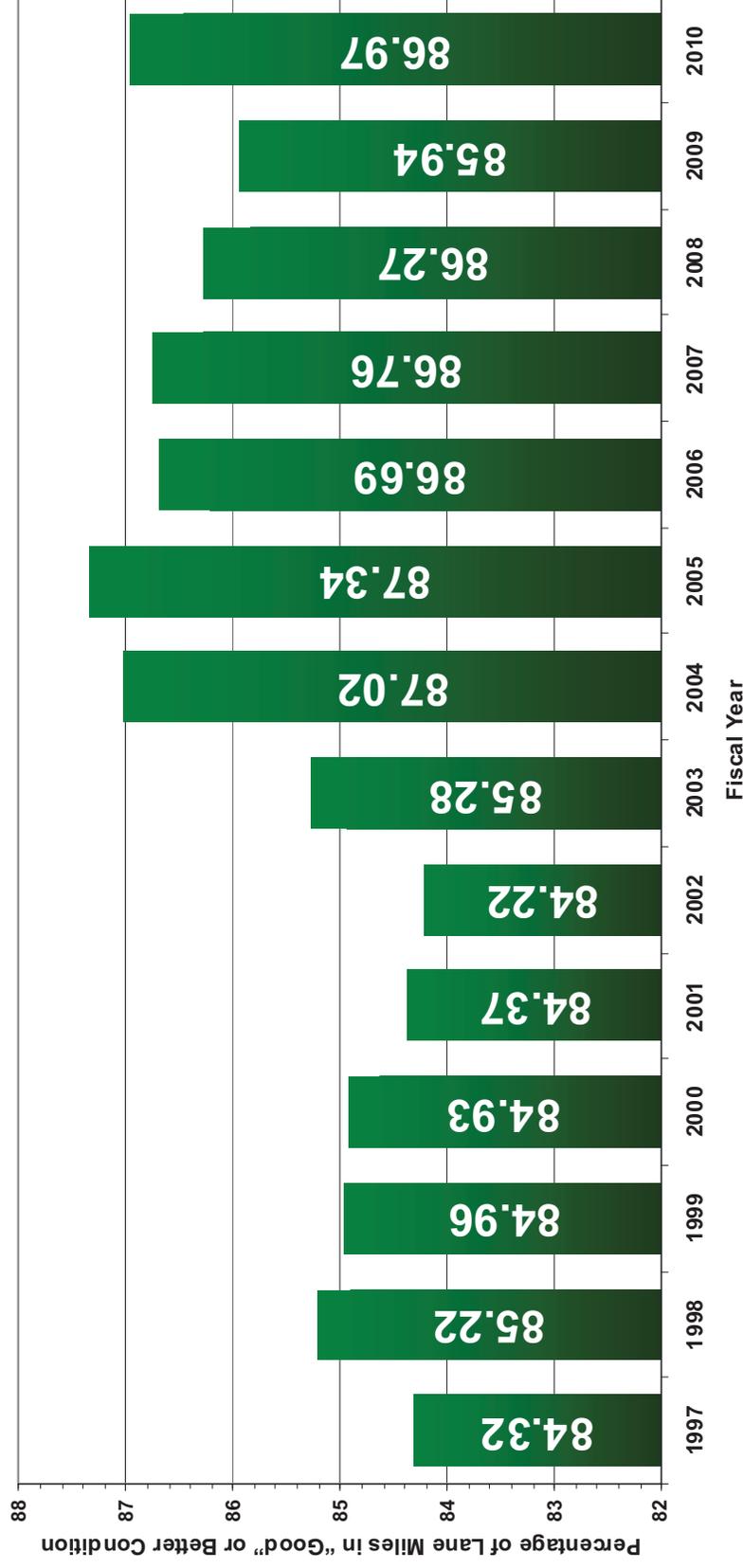
History of PMIS Changes (FY 2002-2010)

- FY 2002: Rut gap from 2-3 inches closed, Failure Rutting changed from greater than 3-inch to greater than 2-inch; Two- and ten-year district goals established to meet Texas Transportation Commission's statewide pavement condition goal.
Affected Failure Rutting results, but they are not used in PMIS Score definitions, so no effect on Distress Scores or Condition Scores.
- FY 2006: Changed Rutbar dynamic calibration procedure to produce truer "zero" rut depths on concrete at highway speeds, but then subtracted 0.1 inches from each rut depth measurement to reduce effects of signal noise.
Mixed effect on Shallow Rutting and Deep Rutting; minimal effect on Distress Scores and Condition Scores. Calibration procedure produced large increases in Shallow Rutting and Deep Rutting, but subtraction of 0.1 inches from rut depth measurements more or less cancelled out the calibration procedure increases.
- FY 2007: Changed maintenance level of service definition for Rutting to move 1 percent Rutting from the "Acceptable" category to the "Desirable" category to account for sensor "noise" typically observed in the acoustic sensors used to measure Rutting.
No change in PMIS Scores; but increases in the amount of "Acceptable" and "Desirable" Rutting.
- FY 2010: TxDOT certifies all of its laser profilers for use in the statewide smoothness (ride quality) specification.
Slight increase in Ride Scores and Condition Scores.

Chapter 1 — Status of Statewide Pavement Condition Goal

90 Percent of Lane Miles in “Good” or Better Condition by FY 2012

Statewide Pavement Condition, FY 1997-2010 Chart



Chapter 1 — Status of Statewide Pavement Condition Goal

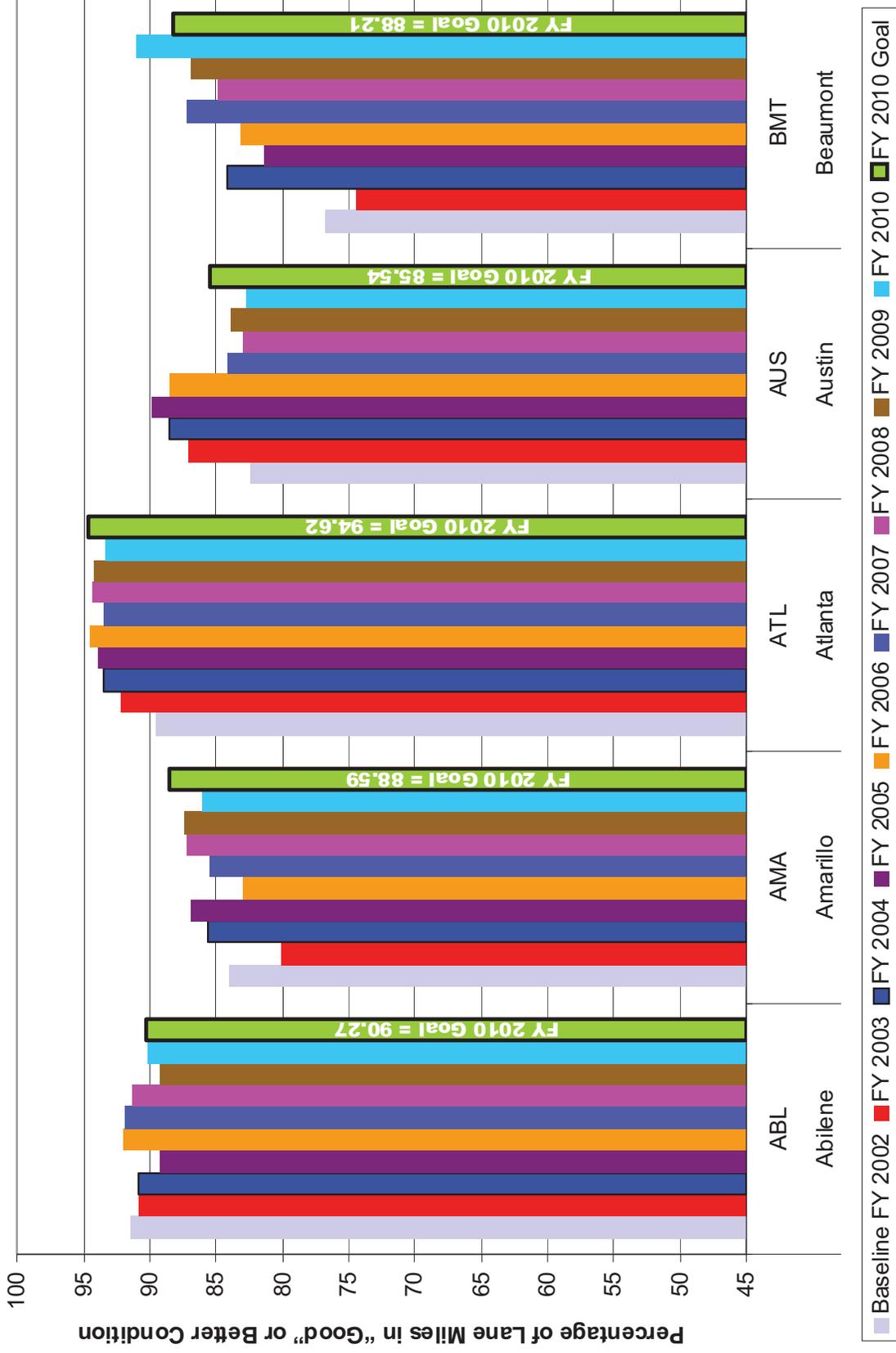
Status of Statewide Pavement Condition Goal, FY 2002-2010 Table

| District | Baseline FY 2002 | FY 2003 | FY 2004 | FY 2005 | FY 2006 | FY 2007 | FY 2008 | FY 2009 | FY 2010 | FY 2010 Goal | FY 2010 Goal Status | Change FY 2009-2010 |
|------------------|---------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------------|------------------------|------------------------|
| Abilene | 91.49 | 90.87 | 90.83 | 89.23 | 92.09 | 91.89 | 91.32 | 89.31 | 90.22 | 90.27 | -0.05 | 0.91 |
| Amarillo | 84.01 | 80.17 | 85.67 | 86.89 | 83.02 | 85.46 | 87.25 | 87.41 | 86.04 | 86.59 | -2.55 | -1.37 |
| Atlanta | 89.56 | 92.24 | 93.48 | 93.94 | 94.57 | 93.57 | 94.43 | 94.25 | 93.35 | 94.62 | -1.27 | -0.90 |
| Austin | 82.42 | 87.10 | 88.50 | 89.81 | 88.62 | 84.18 | 83.00 | 83.95 | 82.71 | 85.54 | -2.83 | -1.24 |
| Beaumont | 76.83 | 74.40 | 84.24 | 81.47 | 83.10 | 87.25 | 84.93 | 86.98 | 91.06 | 88.21 | 2.85 | 4.08 |
| Brownwood | 90.98 | 94.27 | 95.74 | 94.28 | 94.56 | 93.27 | 93.21 | 91.17 | 93.44 | 91.91 | 1.53 | 2.27 |
| Bryan | 83.36 | 86.09 | 84.42 | 84.50 | 81.85 | 86.80 | 86.10 | 87.57 | 86.38 | 88.73 | -2.35 | -1.19 |
| Childress | 92.95 | 90.63 | 90.62 | 92.17 | 91.33 | 92.59 | 91.69 | 91.48 | 89.53 | 92.18 | -2.65 | -1.95 |
| Corpus Christi | 80.01 | 81.14 | 82.24 | 78.15 | 81.48 | 80.68 | 82.02 | 83.57 | 81.58 | 85.20 | -3.62 | -1.99 |
| Dallas | 63.55 | 72.62 | 76.14 | 77.53 | 71.93 | 74.48 | 70.74 | 75.27 | 78.28 | 77.88 | 0.40 | 3.01 |
| El Paso | 84.66 | 85.03 | 87.99 | 83.36 | 83.76 | 90.17 | 87.12 | 87.35 | 89.01 | 88.54 | 0.47 | 1.66 |
| Fort Worth | 86.84 | 85.81 | 85.41 | 84.75 | 85.50 | 83.41 | 83.01 | 81.44 | 85.52 | 83.32 | 2.20 | 4.08 |
| Houston | 75.14 | 73.82 | 73.51 | 77.54 | 77.93 | 80.14 | 79.71 | 75.80 | 76.04 | 78.35 | -2.31 | 0.24 |
| Laredo | 82.73 | 80.42 | 83.43 | 83.30 | 84.60 | 86.89 | 85.37 | 85.37 | 85.69 | 86.79 | -1.10 | 0.32 |
| Lubbock | 84.18 | 86.13 | 88.68 | 89.82 | 90.03 | 91.39 | 88.83 | 86.40 | 87.36 | 87.70 | -0.34 | 0.96 |
| Lufkin | 83.12 | 85.99 | 86.21 | 87.25 | 88.65 | 88.26 | 88.94 | 87.87 | 89.30 | 89.00 | 0.30 | 1.43 |
| Odessa | 94.96 | 96.15 | 95.04 | 95.55 | 94.83 | 96.15 | 94.15 | 93.33 | 93.33 | 93.81 | -0.48 | 0.00 |
| Paris | 78.57 | 82.24 | 86.07 | 85.60 | 85.11 | 77.26 | 72.68 | 74.92 | 80.60 | 77.57 | 3.03 | 5.68 |
| Pharr | 89.44 | 90.66 | 90.26 | 88.43 | 87.93 | 83.77 | 80.95 | 80.38 | 84.07 | 82.39 | 1.68 | 3.69 |
| San Angelo | 92.35 | 94.10 | 95.27 | 95.93 | 96.42 | 94.89 | 94.63 | 94.58 | 95.23 | 94.91 | 0.32 | 0.65 |
| San Antonio | 83.69 | 84.94 | 83.64 | 82.98 | 85.08 | 81.76 | 87.27 | 83.03 | 84.82 | 84.73 | 0.09 | 1.79 |
| Tyler | 85.18 | 81.34 | 88.75 | 90.88 | 86.17 | 89.91 | 86.33 | 92.28 | 93.85 | 92.88 | 0.97 | 1.57 |
| Waco | 88.13 | 87.98 | 90.14 | 91.55 | 92.04 | 90.90 | 90.95 | 86.72 | 87.54 | 87.98 | -0.44 | 0.82 |
| Wichita Falls | 87.59 | 90.39 | 91.05 | 93.00 | 90.38 | 91.76 | 93.40 | 92.98 | 93.18 | 93.40 | -0.32 | 0.20 |
| Yoakum | 83.51 | 85.31 | 87.88 | 90.54 | 83.81 | 81.94 | 86.03 | 86.08 | 87.86 | 87.42 | 0.44 | 1.78 |
| Statewide | 84.22 | 85.28 | 87.02 | 87.34 | 86.69 | 86.76 | 86.27 | 85.94 | 86.97 | 87.29 | -0.32 | 1.03 |

Notes: "Good or better condition" is Pavement Management Information System (PMIS) Condition Score greater than or equal to 70.

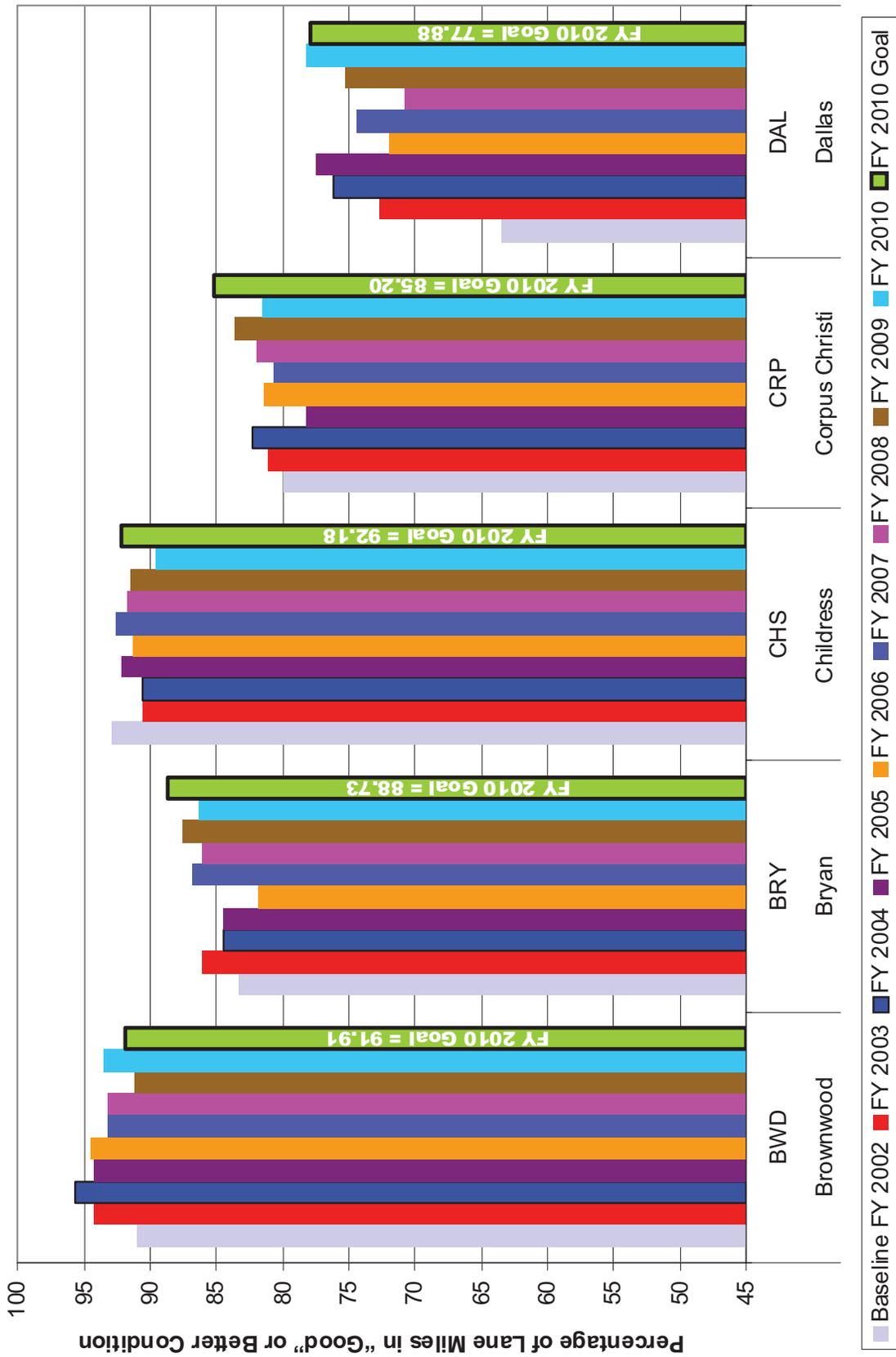
Chapter 1 — Status of Statewide Pavement Condition Goal

Pavement Condition Trends, by District, FY 2002-2010
(Abilene through Beaumont)



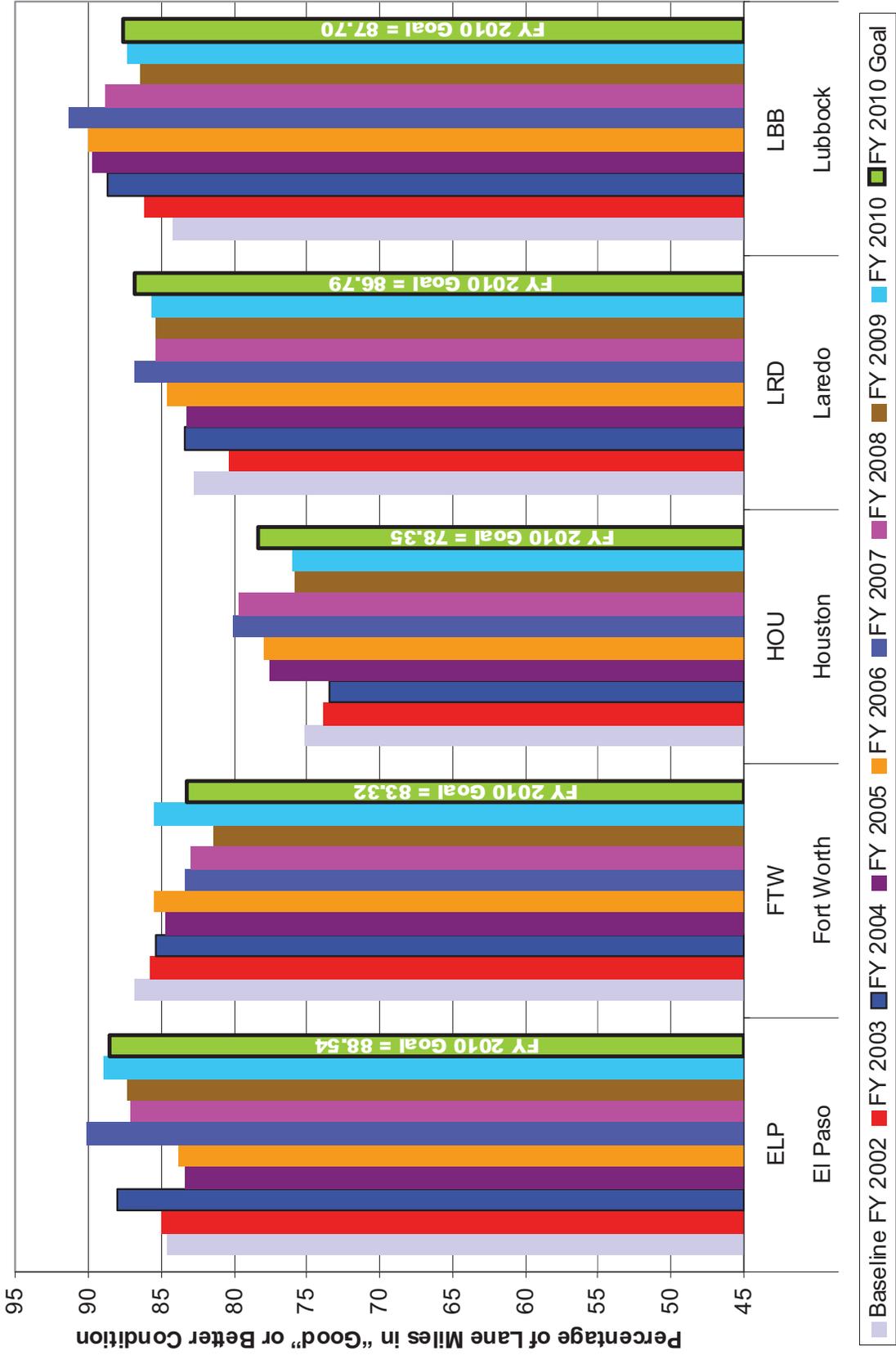
Chapter 1 — Status of Statewide Pavement Condition Goal

Pavement Condition Trends, by District, FY 2002-2010
(Brownwood through Dallas)



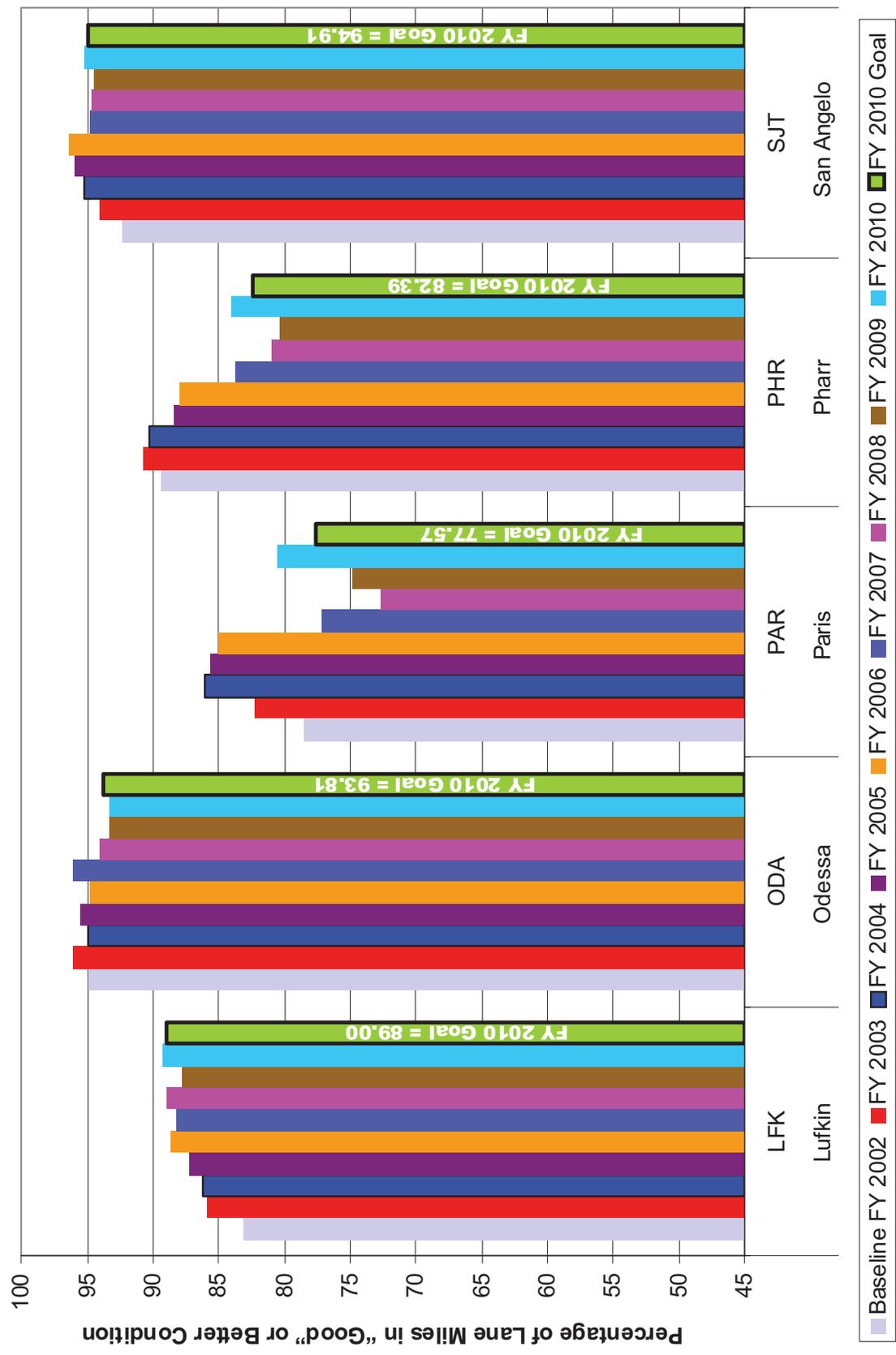
Chapter 1 — Status of Statewide Pavement Condition Goal

Pavement Condition Trends, by District, FY 2002-2010
(El Paso through Lubbock)



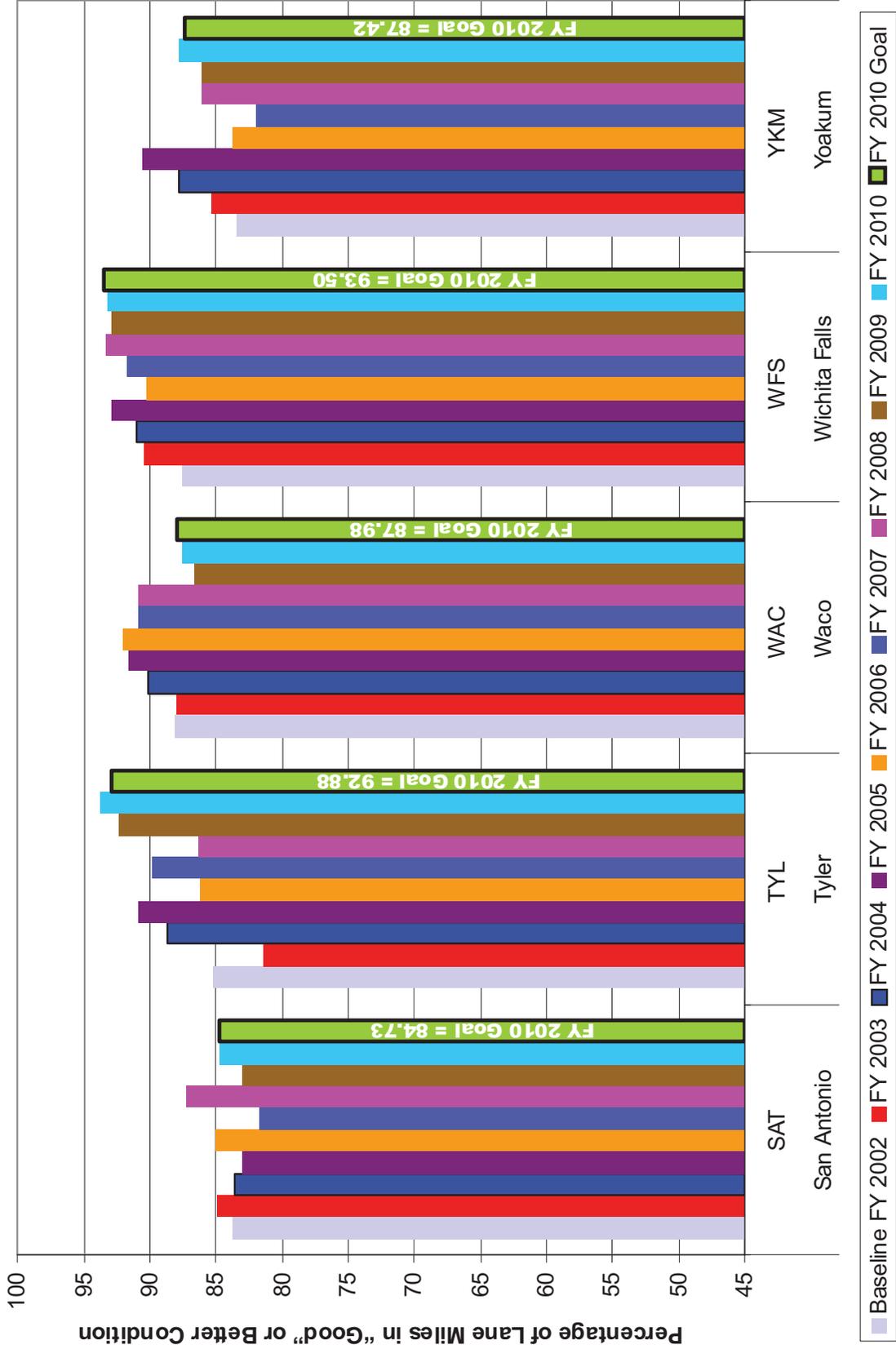
Chapter 1 — Status of Statewide Pavement Condition Goal

Pavement Condition Trends, by District, FY 2002-2010
(Lufkin through San Angelo)



Chapter 1 — Status of Statewide Pavement Condition Goal

Pavement Condition Trends, by District, FY 2002-2010
(San Antonio through Yoakum)





The first construction under the supervision of the Texas Highway Department was a 20-mile section of untreated flexible base 16 feet wide between Falfurrias and Encino. Work began in October 1918 and was completed in June 1920. The route was along present-day U.S. 281 in what is now the Pharr district.

Chapter 2 — Substandard Condition Scores



This chapter contains the FY 2007-2010 summary version of the Substandard Condition Reports that were used in previous *Status of Statewide Pavement Condition Goal* reports. The summary reports show distress types, in order of importance, that need to be fixed to increase the percentage of lane miles in “good” or better condition.

PMIS Condition Score of 70 or above is the “good or better condition” standard established by the Texas Transportation Commission in August 2001. We had 86.97 percent of pavements meet this standard in FY 2010. In order to meet the Commission’s goal to have 90 percent of Texas pavements in “Good” or better condition by FY 2012, the next step is to identify sections with distresses that need to be fixed. The summary version of the Substandard Condition report is created to serve this purpose.

The Substandard Condition report can appear overly complex at first glance. Therefore a brief explanation is given below.

A pavement section can have a PMIS Condition Score less than 70 because of too much distress or too much roughness or both. For example, an ACP section can have too much Deep Rutting or too many Failures; a CRCP section can have too many Punchouts; or a JCP section can be too rough. Each pavement distress type (and ride quality) has weighting factors which lower the Condition Score as the distress or ride quality worsens.

These weighting factors are known as “utility values” in PMIS. “Utility” may be thought of as the value of the service provided by the pavement in use with a particular level of damage. PMIS utility values range from 0.0 (least valuable) to 1.0 (most valuable). All other things being equal, whenever the utility value for one distress type or ride quality on a PMIS section drops below 0.7, that section will have a Condition Score below 70 and thus fall below the “good or better condition” standard.

The simplest approach is to search for any PMIS section that has a single distress type or ride quality utility value below 0.7. “Fixing” that distress type or ride quality will raise the PMIS section’s Condition Score above 70 and thus make progress towards the 90 percent goal. Fixing enough of these sections statewide (or in a district) will meet the pavement condition goal.

It is possible for a PMIS section to have multiple distress types – none of which have utility values below 0.7 – that combine to drop the Condition Score below 70. These reports do not consider “fixing” these sections. Usually these sections are less than ten percent of the total lane mileage, so the “90 percent good or better” goal can be met without fixing those sections.

PMIS Condition Scores are also influenced by traffic and speed limit, so those factors must be considered when estimating funding needs. It typically takes more expensive treatments to repair distress or ride quality under high traffic because of the increased traffic loading.

These detailed reports are developed using the simplest approach to show the distress types and their lane mileages that need to be fixed to increase the percentage of lane miles in “good” or better condition.

Chapter 2 — Substandard Condition Scores

Texas Department of Transportation Pavement Management Information System (PMIS)

Statewide District FY2007 PMIS Substandard Condition Scores (Less Than 70)

Highway Systems: All

Mainlane Roadbeds:

All Roadbeds: IH, US, SH, BR, FM, PR, PA

Construction Project Limits Used: No

ACP Patching Used: Yes

| Utility | Overall Utility Average | Substandard Utility (<0.70) Lane Miles | Traffic Utility Average (ADT * Speed Limit) | | | Highway Systems Utility Average | | | | | | |
|---------------------------------|-------------------------|--|---|-----------------------|----------------|---------------------------------|--------|--------|--------|--------|-------|--------|
| | | | 1-27,500 LOW | 27,501-165,000 MEDIUM | > 165,000 HIGH | IH | US | SH | BR | FM | PR | PA |
| ACP Ride | 81.24 | 6,230.9 | 86.32 | 82.58 | 78.02 | 84.95 | 87.38 | 79.12 | 68.12 | 80.16 | 61.94 | |
| ACP Patching | 87.95 | 4,615.8 | 84.09 | 86.36 | 90.84 | 90.45 | 85.88 | 90.32 | 95.59 | 86.78 | 94.39 | |
| JCP Ride | 58.24 | 1,218.3 | 89.84 | 65.35 | 56.46 | 64.31 | 56.38 | 58.21 | 58.05 | 46.78 | | |
| ACP Alligator Cracking | 90.64 | 3,223.3 | 92.41 | 91.94 | 88.90 | 89.54 | 87.66 | 88.92 | 89.95 | 92.57 | 93.01 | |
| CRCP Ride | 72.53 | 823.8 | 86.10 | 74.48 | 72.32 | 78.61 | 68.89 | 67.41 | 47.47 | 68.07 | | 43.23 |
| ACP Failures | 92.66 | 3,074.3 | 88.52 | 91.09 | 95.65 | 90.50 | 96.31 | 95.44 | 94.48 | 90.63 | 93.56 | |
| CRCP Portland Concrete Patching | 77.60 | 712.6 | 66.61 | 70.78 | 78.04 | 69.82 | 79.58 | 85.83 | 98.55 | 85.03 | | 99.45 |
| JCP Portland Concrete Patching | 76.29 | 598.2 | 89.49 | 79.56 | 75.51 | 78.04 | 76.55 | 72.63 | 86.01 | 86.79 | | |
| JCP Failures | 86.29 | 285.3 | 52.60 | 78.42 | 88.22 | 82.07 | 88.57 | 86.18 | 89.86 | 91.21 | | |
| ACP Longitudinal Cracking | 96.14 | 832.2 | 98.75 | 97.66 | 93.86 | 91.65 | 93.85 | 95.17 | 94.73 | 98.25 | 98.09 | |
| CRCP Punchouts | 90.37 | 209.2 | 83.35 | 83.46 | 90.77 | 88.96 | 92.12 | 90.84 | 100.00 | 91.29 | | 100.00 |
| ACP Block Cracking | 99.18 | 290.5 | 99.62 | 99.57 | 98.70 | 98.74 | 99.05 | 98.72 | 96.29 | 99.67 | 99.04 | |
| CRCP Spalled Cracks | 97.02 | 51.7 | 94.55 | 95.05 | 97.14 | 98.17 | 97.56 | 95.12 | 100.00 | 95.51 | | 99.86 |
| CRCP Asphalt Concrete Patching | 98.33 | 42.6 | 99.25 | 98.22 | 98.33 | 97.68 | 97.67 | 99.19 | 100.00 | 100.00 | | 100.00 |
| JCP Failed Joints & Cracks | 97.47 | 25.9 | 97.65 | 96.66 | 97.56 | 97.80 | 97.18 | 97.27 | 96.13 | 98.82 | | |
| ACP Transverse Cracking | 99.01 | 56.0 | 99.53 | 99.26 | 98.59 | 98.49 | 98.48 | 98.63 | 97.32 | 99.54 | 98.91 | |
| ACP Deep Rutting | 99.26 | 30.4 | 98.90 | 98.97 | 99.65 | 99.03 | 99.64 | 99.59 | 99.78 | 99.02 | 99.07 | |
| ACP Shallow Rutting | 98.82 | 0.0 | 98.70 | 98.58 | 99.05 | 98.94 | 98.89 | 99.09 | 99.41 | 98.63 | 98.54 | |
| JCP Longitudinal Cracks | 99.66 | 0.0 | 99.76 | 99.19 | 99.70 | 99.46 | 99.68 | 99.71 | 99.91 | 99.83 | | |
| JCP Shattered Slabs | 100.00 | 0.0 | 99.93 | 100.00 | 100.00 | 99.99 | 100.00 | 100.00 | 100.00 | 100.00 | | |

| Pavement Type | Lane Miles | | | | Percent Substandard |
|----------------------------------|------------|--------|-------------|--------|---------------------|
| | Rated | | Substandard | | |
| Asphalt Concrete | 170,709.0 | 92.47% | 20,941.9 | 85.71% | 12.27% |
| Continuously Reinforced Concrete | 9,908.0 | 5.37% | 1,762.9 | 7.21% | 17.79% |
| Jointed Concrete | 3,984.9 | 2.16% | 1,729.2 | 7.08% | 43.39% |
| Total: | 184,601.9 | | 24,434.0 | | 13.24% |

86.76 Percent of Lane Miles in "Good" or Better Condition

Average includes all lane miles with Condition Scores below 70.

Substandard Utility Lane Miles are totaled lane miles of PMIS sections that have Condition Scores below 70 and a utility value less than 0.70.

Chapter 2 — Substandard Condition Scores



Texas Department of Transportation Pavement Management Information System (PMIS)

Statewide District FY2008 PMIS Substandard Condition Scores (Less Than 70)

Highway Systems: All

Mainlane Roadbeds:

All Roadbeds: IH, US, SH, BR, FM, PR, PA

Construction Project Limits Used: No

ACP Patching Used: Yes

Federal Funding: Both Eligible and Ineligible

| Utility | Overall Utility Average | Substandard Utility (<0.70) Lane Miles | Traffic Utility Average (ADT * Speed Limit) | | | Highway Systems Utility Average | | | | | | |
|---------------------------------|-------------------------|--|---|----------------|-----------|---------------------------------|-------|--------|--------|--------|-------|--------|
| | | | 1-27,500 | 27,501-165,000 | > 165,000 | IH | US | SH | BR | FM | PR | PA |
| | | | LOW | MEDIUM | HIGH | | | | | | | |
| ACP Ride | 81.98 | 6,186.1 | 89.56 | 83.29 | 78.20 | 85.34 | 86.06 | 80.25 | 69.38 | 81.48 | 61.15 | 54.33 |
| JCP Ride | 53.58 | 1,444.3 | 83.96 | 62.48 | 51.76 | 58.47 | 55.85 | 51.28 | 59.52 | 44.34 | | 64.58 |
| ACP Patching | 87.90 | 4,919.3 | 83.86 | 85.91 | 90.75 | 90.19 | 86.00 | 90.42 | 95.15 | 86.63 | 94.06 | 87.33 |
| ACP Alligator Cracking | 89.88 | 3,661.0 | 91.86 | 91.76 | 87.89 | 90.40 | 87.60 | 88.07 | 90.12 | 91.41 | 93.29 | 100.00 |
| CRCP Ride | 67.18 | 1,055.9 | 87.90 | 72.94 | 66.70 | 71.08 | 64.87 | 63.29 | 74.41 | 63.49 | | 71.48 |
| ACP Failures | 92.69 | 3,185.8 | 87.78 | 91.95 | 95.07 | 89.00 | 95.33 | 94.57 | 95.44 | 91.29 | 96.55 | 100.00 |
| CRCP Portland Concrete Patching | 79.87 | 644.7 | 68.50 | 73.97 | 80.28 | 74.18 | 81.16 | 87.68 | 54.79 | 83.85 | | 87.36 |
| JCP Portland Concrete Patching | 78.94 | 570.3 | 85.11 | 77.14 | 78.93 | 81.23 | 77.89 | 75.68 | 83.99 | 88.58 | | 100.00 |
| ACP Longitudinal Cracking | 96.31 | 817.8 | 98.64 | 98.18 | 94.20 | 93.33 | 95.04 | 94.72 | 92.94 | 98.27 | 97.95 | 99.71 |
| JCP Failures | 88.35 | 254.0 | 61.57 | 78.04 | 90.20 | 86.72 | 89.53 | 86.60 | 93.61 | 94.62 | | 100.00 |
| CRCP Punchouts | 91.31 | 200.4 | 79.48 | 84.55 | 91.77 | 89.80 | 92.52 | 93.54 | 100.00 | 87.53 | | 91.72 |
| ACP Block Cracking | 99.10 | 342.7 | 99.76 | 99.36 | 98.68 | 98.40 | 98.68 | 98.85 | 98.04 | 99.59 | 99.15 | 100.00 |
| ACP Transverse Cracking | 98.86 | 138.3 | 99.53 | 98.96 | 98.53 | 98.39 | 98.33 | 98.30 | 97.12 | 99.51 | 99.62 | 100.00 |
| CRCP Spalled Cracks | 98.01 | 38.9 | 94.87 | 96.34 | 98.12 | 98.84 | 98.07 | 97.16 | 100.00 | 95.84 | | 100.00 |
| CRCP Asphalt Concrete Patching | 98.68 | 35.7 | 97.00 | 96.84 | 98.79 | 99.30 | 98.21 | 97.89 | 100.00 | 99.42 | | 90.04 |
| JCP Failed Joints & Cracks | 98.32 | 11.0 | 96.16 | 97.26 | 98.50 | 98.69 | 97.38 | 98.48 | 99.64 | 98.97 | | 100.00 |
| ACP Deep Rutting | 99.47 | 33.4 | 99.22 | 99.25 | 99.71 | 99.57 | 99.41 | 99.68 | 99.94 | 99.36 | 99.84 | 100.00 |
| ACP Shallow Rutting | 98.75 | 0.0 | 98.72 | 98.38 | 99.00 | 98.74 | 98.81 | 98.82 | 99.32 | 98.66 | 99.10 | 100.00 |
| JCP Longitudinal Cracks | 99.65 | 0.0 | 99.58 | 99.30 | 99.68 | 99.32 | 99.80 | 99.63 | 99.99 | 99.95 | | 100.00 |
| JCP Shattered Slabs | 99.99 | 0.0 | 100.00 | 99.96 | 99.99 | 99.98 | 99.97 | 100.00 | 100.00 | 100.00 | | 100.00 |

| Pavement Type | Lane Miles | | | | Percent Substandard |
|----------------------------------|------------------|-------------|-----------------|-------------|---------------------|
| | Rated | Substandard | Rated | Substandard | |
| Asphalt Concrete | 170,722.7 | 92.30% | 21,750.9 | 85.64% | 12.74% |
| Continuously Reinforced Concrete | 10,403.9 | 5.62% | 1,840.8 | 7.25% | 17.69% |
| Jointed Concrete | 3,844.4 | 2.08% | 1,805.7 | 7.11% | 46.97% |
| Total: | 184,971.0 | | 25,397.4 | | 13.73% |

86.27 Percent of Lane Miles in "Good" or Better Condition

Average includes all lane miles with Condition Scores below 70.

Substandard Utility Lane Miles are totaled lane miles of PMIS sections that have Condition Scores below 70 and a utility value less than 0.70.

Chapter 2 — Substandard Condition Scores

Texas Department of Transportation Pavement Management Information System (PMIS)

Statewide District FY2009 PMIS Substandard Condition Scores (Less Than 70)

Highway Systems: All

Mainlane Roadbeds:

All Roadbeds: IH, US, SH, BR, FM, PR, PA

Construction Project Limits Used: No

ACP Patching Used: Yes

| Utility | Overall Utility Average | Substandard Utility (<0.70) Lane Miles | Traffic Utility Average (ADT * Speed Limit) | | | Highway Systems Utility Average | | | | | | |
|---------------------------------|-------------------------|--|---|-----------------------|----------------|---------------------------------|--------|--------|--------|--------|-------|--------|
| | | | 1-27,500 LOW | 27,501-165,000 MEDIUM | > 165,000 HIGH | IH | US | SH | BR | FM | PR | PA |
| ACP Ride | 84.02 | 5,764.9 | 90.47 | 85.27 | 80.53 | 85.93 | 88.81 | 82.64 | 70.19 | 83.41 | 70.21 | 51.48 |
| ACP Patching | 87.64 | 5,362.5 | 83.88 | 85.67 | 90.46 | 88.63 | 86.24 | 89.14 | 95.94 | 86.81 | 94.07 | 100.00 |
| JCP Ride | 53.51 | 1,318.5 | 84.01 | 66.46 | 51.45 | 61.97 | 52.11 | 51.00 | 60.74 | 48.43 | | |
| ACP Alligator Cracking | 88.78 | 4,471.6 | 90.03 | 90.37 | 87.25 | 92.31 | 86.30 | 86.95 | 88.96 | 89.86 | 90.15 | 100.00 |
| CRCP Ride | 70.28 | 976.0 | 95.28 | 74.19 | 69.91 | 75.12 | 69.87 | 64.26 | 71.19 | 67.26 | | 66.91 |
| ACP Failures | 92.17 | 3,657.1 | 88.00 | 91.04 | 94.62 | 89.61 | 95.39 | 94.69 | 95.70 | 90.11 | 90.04 | 100.00 |
| CRCP Portland Concrete Patching | 79.17 | 693.3 | 57.97 | 73.98 | 79.58 | 73.62 | 80.05 | 86.90 | 64.92 | 81.22 | | 82.31 |
| JCP Portland Concrete Patching | 79.35 | 526.3 | 81.60 | 70.55 | 80.18 | 79.77 | 78.27 | 76.35 | 84.03 | 92.22 | | |
| ACP Longitudinal Cracking | 96.12 | 843.0 | 98.75 | 97.67 | 94.04 | 93.32 | 93.69 | 95.15 | 92.96 | 98.13 | 97.55 | 98.89 |
| JCP Failures | 88.95 | 225.6 | 68.73 | 83.08 | 90.04 | 87.32 | 88.26 | 88.65 | 91.47 | 94.32 | | |
| CRCP Punchouts | 92.22 | 191.5 | 76.06 | 84.85 | 92.73 | 91.31 | 92.11 | 92.95 | 100.00 | 93.32 | | 88.40 |
| ACP Block Cracking | 99.06 | 415.2 | 99.62 | 99.52 | 98.54 | 99.12 | 98.55 | 98.74 | 96.72 | 99.54 | 99.54 | 100.00 |
| CRCP Asphalt Concrete Patching | 98.02 | 57.9 | 90.35 | 97.60 | 98.09 | 98.59 | 96.13 | 98.12 | 96.27 | 99.43 | | 86.06 |
| CRCP Spalled Cracks | 97.42 | 42.2 | 92.21 | 92.78 | 97.71 | 98.12 | 98.28 | 96.25 | 100.00 | 95.50 | | 100.00 |
| ACP Transverse Cracking | 99.00 | 58.3 | 99.61 | 99.14 | 98.66 | 98.64 | 98.45 | 98.56 | 97.48 | 99.55 | 99.46 | 100.00 |
| JCP Failed Joints & Cracks | 97.84 | 23.6 | 89.68 | 97.23 | 98.11 | 97.92 | 97.97 | 97.22 | 99.03 | 99.59 | | |
| ACP Deep Rutting | 99.60 | 49.6 | 99.59 | 99.51 | 99.66 | 99.59 | 99.41 | 99.79 | 99.82 | 99.58 | 99.92 | 100.00 |
| ACP Shallow Rutting | 99.22 | 0.0 | 99.19 | 99.10 | 99.31 | 99.24 | 99.08 | 99.33 | 99.16 | 99.23 | 99.73 | 99.24 |
| JCP Longitudinal Cracks | 99.62 | 0.0 | 99.09 | 99.03 | 99.70 | 99.08 | 99.82 | 99.71 | 99.82 | 99.80 | | |
| JCP Shattered Slabs | 100.00 | 0.0 | 100.00 | 99.95 | 100.00 | 99.98 | 100.00 | 100.00 | 100.00 | 100.00 | | |

| Pavement Type | Lane Miles | | | | Percent Substandard |
|----------------------------------|------------|--------|-------------|--------|---------------------|
| | Rated | | Substandard | | |
| Asphalt Concrete | 172,223.1 | 92.01% | 22,731.9 | 86.38% | 13.20% |
| Continuously Reinforced Concrete | 11,233.6 | 6.00% | 1,873.7 | 7.12% | 16.68% |
| Jointed Concrete | 3,721.9 | 1.99% | 1,711.7 | 6.50% | 45.99% |
| Total: | 187,178.6 | | 26,317.3 | | 14.06% |

85.94 Percent of Lane Miles in "Good" or Better Condition

Average includes all lane miles with Condition Scores below 70.

Substandard Utility Lane Miles are totaled lane miles of PMIS sections that have Condition Scores below 70 and a utility value less than 0.70.

Chapter 2 — Substandard Condition Scores



Texas Department of Transportation Pavement Management Information System (PMIS)

Statewide District FY2010 PMIS Substandard Condition Scores (Less Than 70)

Highway Systems: All

Mainlane Roadbeds:

All Roadbeds: IH, US, SH, BR, FM, PR, PA

Construction Project Limits Used: No

ACP Patching Used: Yes

| Utility | Overall Utility Average | Substandard Utility (<0.70) Lane Miles | Traffic Utility Average (ADT * Speed Limit) | | | Highway Systems Utility Average | | | | | | |
|---------------------------------|-------------------------|--|---|-----------------------|----------------|---------------------------------|--------|--------|--------|--------|-------|--------|
| | | | 1-27,500 LOW | 27,501-165,000 MEDIUM | > 165,000 HIGH | IH | US | SH | BR | FM | PR | PA |
| ACP Patching | 86.53 | 5,690.6 | 83.03 | 84.95 | 89.08 | 86.64 | 83.99 | 89.08 | 95.61 | 85.78 | 94.99 | 99.34 |
| ACP Ride | 85.83 | 4,711.9 | 91.33 | 86.72 | 82.89 | 88.81 | 90.36 | 84.35 | 72.85 | 85.05 | 69.36 | 92.79 |
| ACP Alligator Cracking | 88.49 | 4,377.3 | 90.98 | 89.69 | 86.62 | 93.28 | 87.62 | 85.66 | 87.87 | 89.22 | 91.25 | 84.42 |
| JCP Ride | 59.43 | 1,091.6 | 89.54 | 69.68 | 57.38 | 64.46 | 60.25 | 57.73 | 63.39 | 49.95 | | |
| CRCP Ride | 71.61 | 864.2 | 93.98 | 76.22 | 71.17 | 76.02 | 73.32 | 65.86 | 50.66 | 65.99 | | |
| ACP Failures | 93.74 | 2,714.7 | 89.53 | 92.81 | 96.17 | 92.93 | 96.13 | 95.27 | 96.96 | 91.98 | 94.69 | 80.46 |
| JCP Portland Concrete Patching | 76.15 | 559.5 | 91.66 | 70.52 | 76.34 | 78.31 | 73.12 | 74.11 | 82.02 | 86.57 | | |
| CRCP Portland Concrete Patching | 79.78 | 639.8 | 74.23 | 71.46 | 80.27 | 74.52 | 79.40 | 88.23 | 93.69 | 79.27 | | |
| ACP Longitudinal Cracking | 95.88 | 935.6 | 98.33 | 97.29 | 93.89 | 92.37 | 93.70 | 95.24 | 91.94 | 98.01 | 97.01 | 82.51 |
| JCP Failures | 86.46 | 264.0 | 51.83 | 80.10 | 88.21 | 83.84 | 89.26 | 85.05 | 84.04 | 93.10 | | |
| CRCP Punchouts | 91.57 | 202.8 | 76.47 | 86.98 | 91.94 | 91.14 | 91.26 | 91.66 | 95.91 | 93.66 | | |
| ACP Block Cracking | 98.85 | 460.0 | 99.56 | 99.17 | 98.34 | 98.47 | 98.63 | 98.04 | 96.94 | 99.50 | 99.68 | 100.00 |
| CRCP Asphalt Concrete Patching | 96.27 | 98.9 | 92.84 | 97.29 | 96.24 | 95.61 | 95.55 | 96.79 | 96.54 | 99.81 | | |
| ACP Transverse Cracking | 99.02 | 71.6 | 99.54 | 99.17 | 98.70 | 98.36 | 98.55 | 98.65 | 97.41 | 99.61 | 99.99 | 100.00 |
| JCP Failed Joints & Cracks | 98.11 | 12.2 | 90.38 | 97.38 | 98.42 | 98.03 | 97.79 | 97.98 | 99.46 | 99.43 | | |
| CRCP Spalled Cracks | 98.47 | 14.9 | 96.67 | 95.81 | 98.63 | 98.65 | 99.17 | 97.66 | 100.00 | 98.63 | | |
| ACP Deep Rutting | 99.71 | 12.8 | 99.62 | 99.61 | 99.82 | 99.65 | 99.92 | 99.79 | 99.91 | 99.59 | 99.99 | 100.00 |
| JCP Shattered Slabs | 99.97 | 0.2 | 99.71 | 99.93 | 99.98 | 99.94 | 100.00 | 100.00 | 99.51 | 100.00 | | |
| ACP Shallow Rutting | 99.36 | 0.0 | 99.38 | 99.23 | 99.42 | 99.13 | 99.53 | 99.38 | 99.63 | 99.29 | 99.87 | 100.00 |
| JCP Longitudinal Cracks | 99.49 | 0.0 | 99.03 | 98.96 | 99.57 | 99.12 | 99.65 | 99.59 | 99.43 | 99.64 | | |

| Pavement Type | Lane Miles | | Percent Substandard |
|----------------------------------|------------------|-----------------|---------------------|
| | Rated | Substandard | |
| Asphalt Concrete | 174,691.6 | 21,482.1 | 12.30% |
| Continuously Reinforced Concrete | 11,920.6 | 1,762.3 | 14.78% |
| Jointed Concrete | 3,783.3 | 1,566.0 | 41.39% |
| Total: | 190,395.5 | 24,810.4 | 13.03% |

86.97 Percent of Lane Miles in "Good" or Better Condition

Average includes all lane miles with Condition Scores below 70.

Substandard Utility Lane Miles are totaled lane miles of PMIS sections that have Condition Scores below 70 and a utility value less than 0.70.



The highest highway in Texas is at the end of a spur from SH118 to the McDonald Observatory, on Mount Locke in the Davis Mountains of west Texas. It is 6,791 feet above sea level.

Chapter 3 — PMIS Score Trends



This Chapter shows FY 2007-2010 statewide trends for PMIS Scores using two methods:

Percentage of Lane Miles “Good” or Better

This method shows the percentage of Texas lane miles above an arbitrary “Good” value. This is basically a “pass/fail” value – it does not describe how far the mileage is above “passing” or below “failing.”

For example, in FY 2010, **86.97 percent** of Texas lane miles were in “Good” or better condition – that is, had a PMIS Condition Score of 70 or above. However, all of that mileage could have had Condition Score of 70 or 100, and the percentage (86.97 percent) would have been the same.

This is the method used in the statewide pavement condition goal (90 percent of lane miles in “Good” or better condition).

PMIS Score Classes

This method shows how Texas lane miles fall within the range of a PMIS Score value. For example, PMIS Condition Score ranges from 1 (worst) to 100 (best), but all mileage does not have the same value. The PMIS Score Classes method defines five “classes” for each PMIS Score – as shown in the tables below – and then shows the percentage of Texas lane miles that fall within each class.

In FY 2010, the percentage of lane miles in the “Very Good” (90 to 100) Condition Score class increased, while the percentage of lane miles in all other Condition Score classes decreased. The decrease of Condition Score classes in “Fair” to “Very Poor” drove up the statewide percentage of lane miles in “Good” or better condition.

| Category | Distress Score | Ride Score | Condition Score |
|-------------|----------------------|------------------|-----------------------|
| | describes “distress” | describes “ride” | describes “condition” |
| “Very Good” | 90 to 100 | 4.0 to 5.0 | 90 to 100 |
| “Good” | 80 to 89 | 3.0 to 3.9 | 70 to 89 |
| “Fair” | 70 to 79 | 2.0 to 2.9 | 50 to 69 |
| “Poor” | 60 to 69 | 1.0 to 1.9 | 35 to 49 |
| “Very Poor” | 1 to 59 | 0.1 to 0.9 | 1 to 34 |

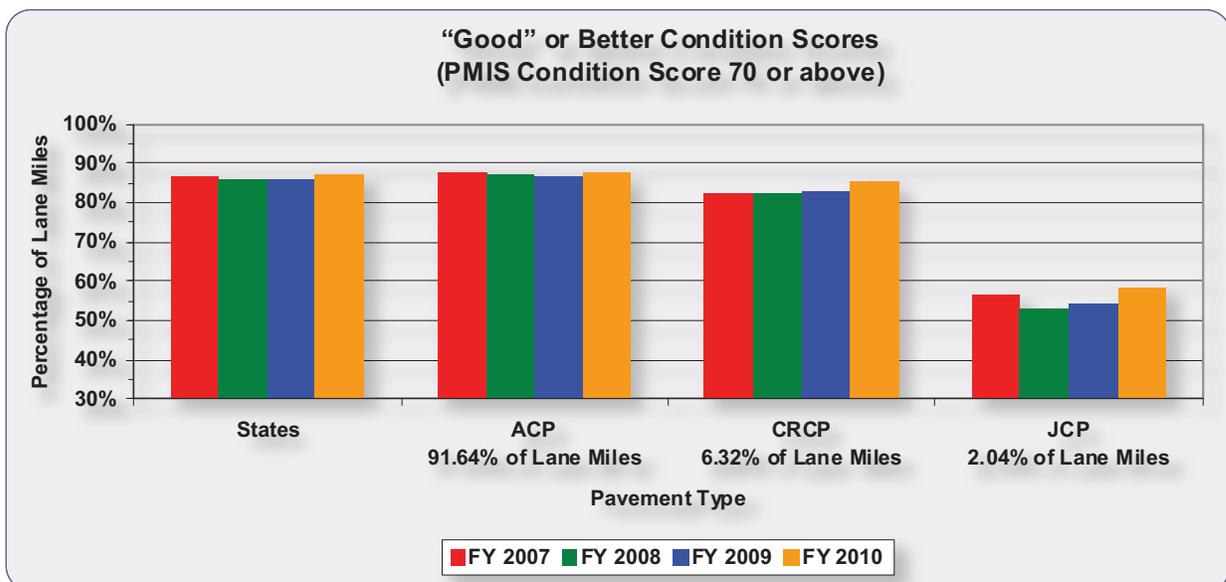
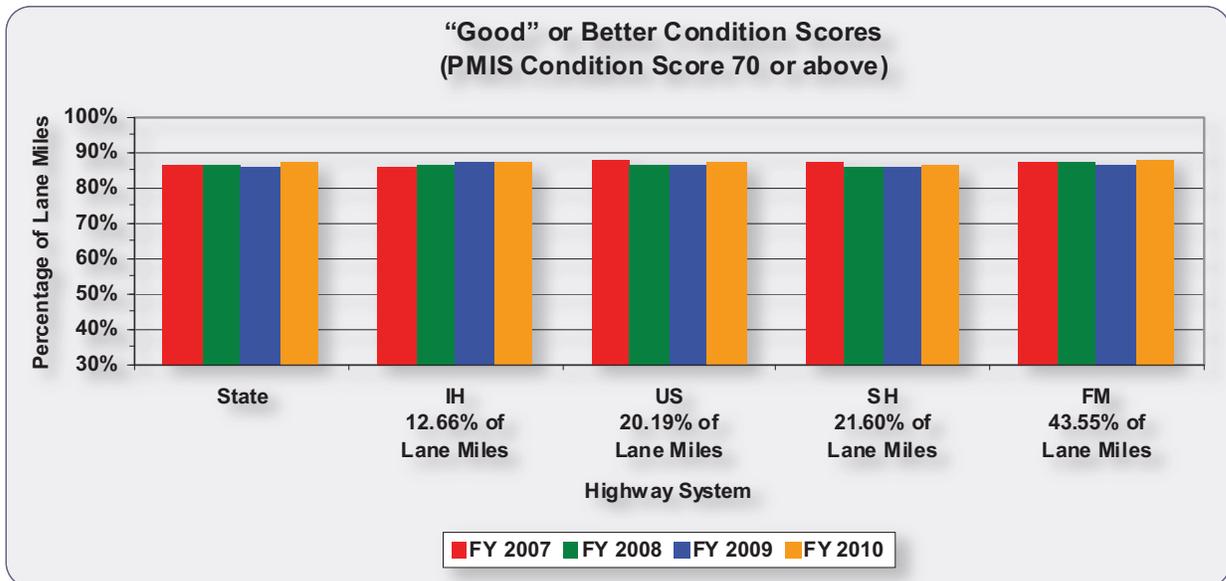
| Category | Distress Score | Shallow Distress Score | Deep Distress Score |
|-------------|----------------------|-----------------------------------|---------------------------------------|
| | describes “distress” | describes need for surface repair | describes need for sub-surface repair |
| “Very Good” | 90 to 100 | 90 to 100 | 90 to 100 |
| “Good” | 80 to 89 | 80 to 89 | 80 to 89 |
| “Fair” | 70 to 79 | 70 to 79 | 70 to 79 |
| “Poor” | 60 to 69 | 60 to 69 | 60 to 69 |
| “Very Poor” | 1 to 59 | 1 to 59 | 1 to 59 |

Chapter 3 — PMIS Score Trends

Pavement Condition (Condition Scores)

Percentage of Lane Miles “Good” or Better – PMIS Condition Score 70 or above

| Fiscal Year | Percentage of Lane Miles With “Good” or Better Condition Scores | | | | | | | | | | |
|---------------------------|---|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | State | IH | US | SH | FM | ACP | CRCP | JCP | IH ACP | IH CRCP | IH JCP |
| 2007 | 86.76% | 85.71% | 87.89% | 86.96% | 86.92% | 87.73% | 82.21% | 56.61% | 88.20% | 81.59% | 62.64% |
| 2008 | 86.27% | 86.31% | 86.28% | 85.79% | 86.99% | 87.26% | 82.31% | 53.03% | 88.87% | 81.88% | 62.67% |
| 2009 | 85.94% | 87.01% | 86.28% | 85.60% | 86.16% | 86.80% | 83.32% | 54.01% | 89.16% | 83.74% | 67.06% |
| 2010 | 86.97% | 87.10% | 86.92% | 86.70% | 87.58% | 87.70% | 85.22% | 58.61% | 89.34% | 84.08% | 65.42% |
| 2009 - 2010 Change | +1.03% | +0.09% | +0.64% | +1.10% | +1.42% | +0.90% | +1.90% | +4.60% | +0.18% | +0.34% | -1.64% |



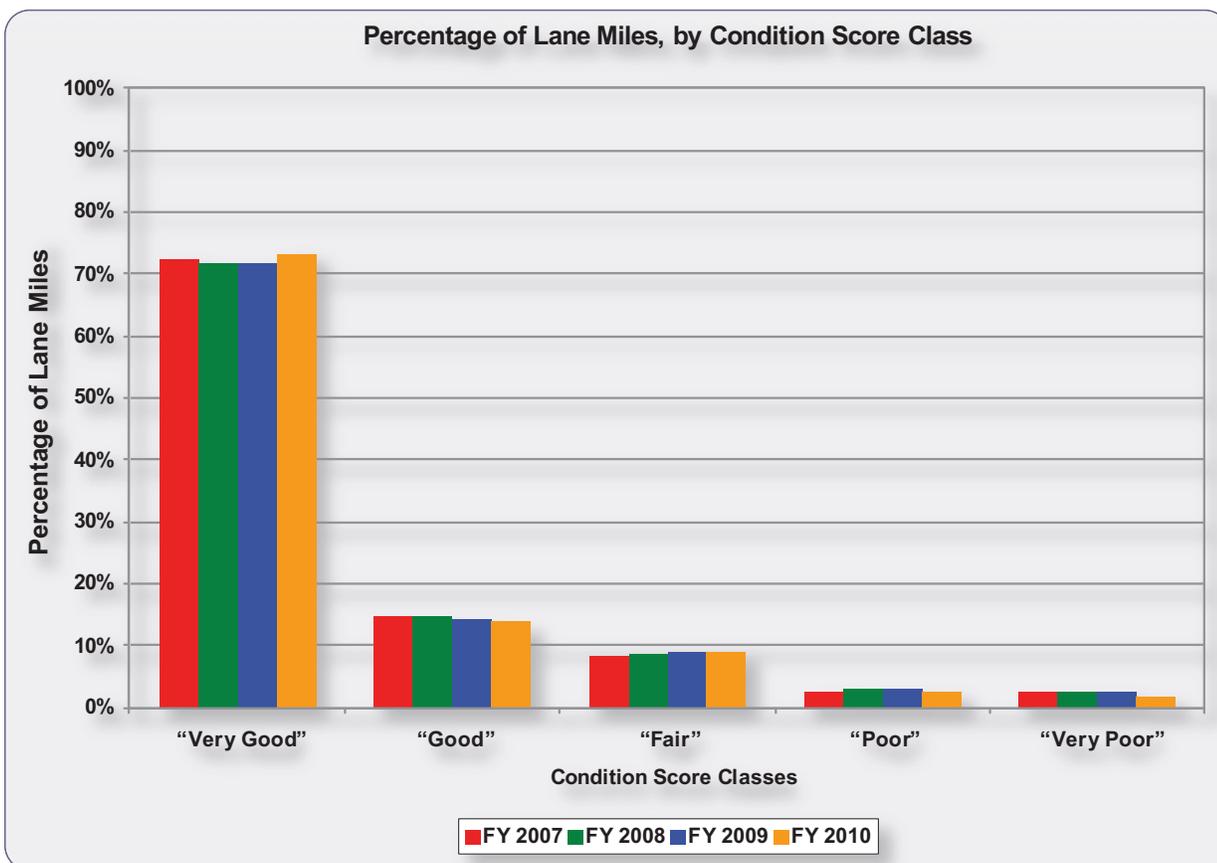
Chapter 3 — PMIS Score Trends



Pavement Condition (Condition Scores)

Percentage of Lane Miles, by Condition Score Class

| Fiscal Year | Percentage of Lane Miles, by Condition Score Class | | | | |
|---------------------------|--|---------------|---------------|---------------|---------------|
| | "Very Good" | "Good" | "Fair" | "Poor" | "Very Poor" |
| 2007 | 72.25% | 14.51% | 8.26% | 2.66% | 2.31% |
| 2008 | 71.65% | 14.62% | 8.57% | 2.79% | 2.37% |
| 2009 | 71.81% | 14.13% | 8.98% | 2.78% | 2.30% |
| 2010 | 73.18% | 13.79% | 8.76% | 2.39% | 1.88% |
| 2009 - 2010 Change | +1.37% | -0.34% | -0.22% | -0.39% | -0.42% |



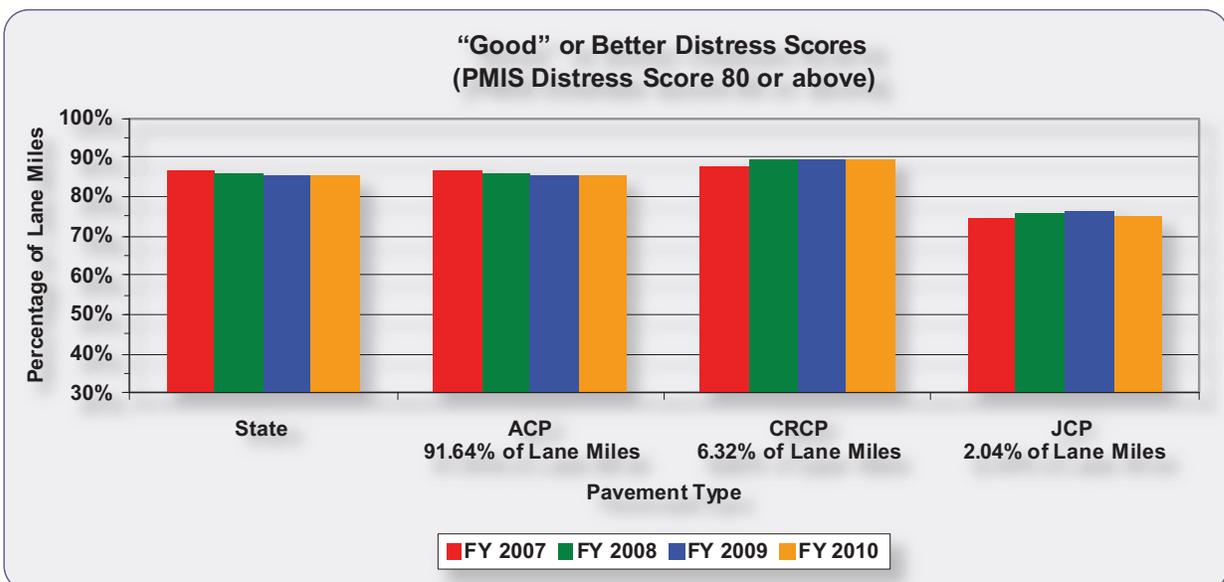
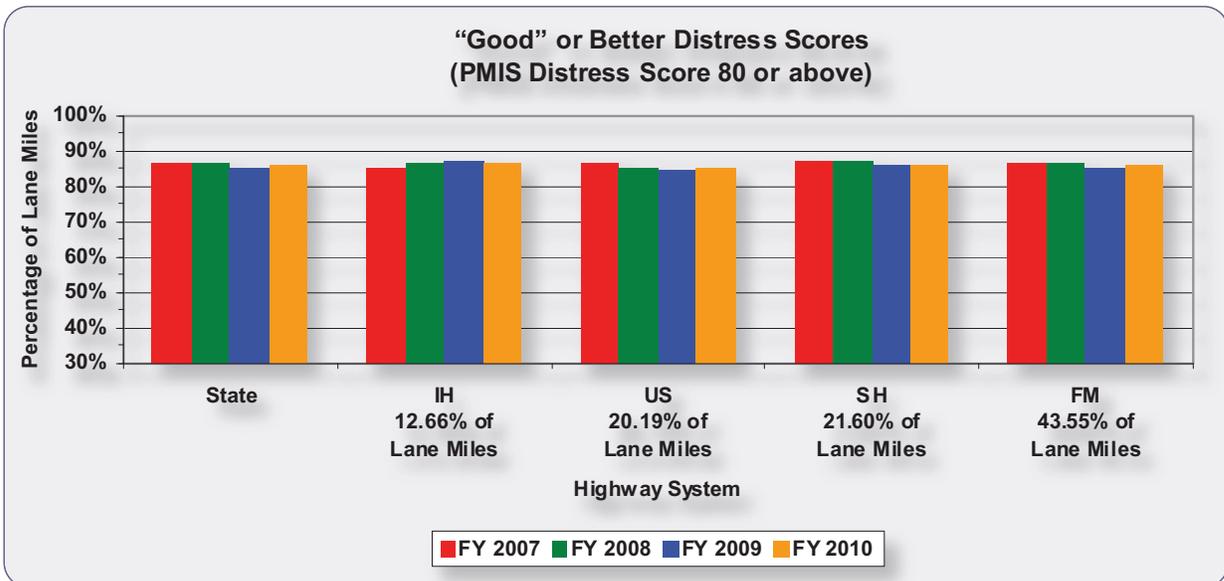
| Condition Score | Class |
|-----------------|-------------|
| 90-100 | "Very Good" |
| 70-89 | "Good" |
| 50-69 | "Fair" |
| 35-49 | "Poor" |
| 1-34 | "Very Poor" |

Chapter 3 — PMIS Score Trends

Pavement Distress (Distress Scores)

Percentage of Lane Miles “Good” or Better – PMIS Distress Score 80 or above

| Fiscal Year | Percentage of Lane Miles With “Good” or Better Distress Scores | | | | | | | | | | |
|---------------------------|--|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | State | IH | US | SH | FM | ACP | CRCP | JCP | IH ACP | IH CRCP | IH JCP |
| 2007 | 86.59% | 85.37% | 86.57% | 87.45% | 86.69% | 86.80% | 87.95% | 74.39% | 86.23% | 84.57% | 74.84% |
| 2008 | 86.19% | 86.68% | 85.24% | 86.81% | 86.45% | 86.23% | 89.36% | 75.98% | 87.02% | 87.12% | 79.14% |
| 2009 | 85.32% | 87.33% | 84.65% | 85.87% | 85.04% | 85.25% | 89.35% | 76.56% | 87.50% | 88.11% | 80.96% |
| 2010 | 85.62% | 86.21% | 84.88% | 86.12% | 85.81% | 85.55% | 89.84% | 75.26% | 86.30% | 87.55% | 78.16% |
| 2009 - 2010 Change | +0.30% | -1.12% | +0.23% | +0.25% | +0.77% | +0.30% | +0.49% | -1.30% | -1.20% | -0.56% | -2.80% |



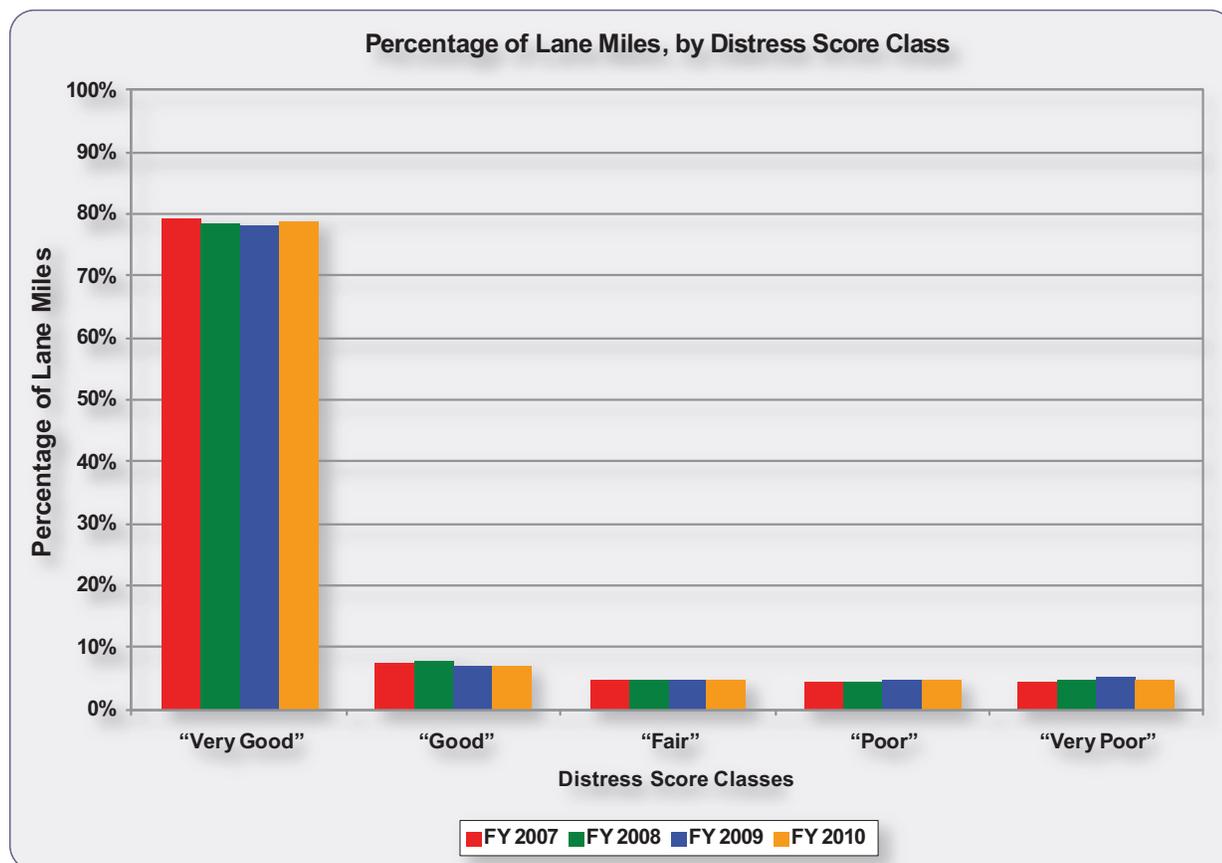
Chapter 3 — PMIS Score Trends



Pavement Distress (Distress Scores)

Percentage of Lane Miles, by Distress Score Class

| Fiscal Year | Percentage of Lane Miles, by Distress Score Class | | | | |
|-------------------------------|---|---------------|---------------|---------------|---------------|
| | "Very Good" | "Good" | "Fair" | "Poor" | "Very Poor" |
| 2007 | 79.15% | 7.44% | 4.73% | 4.23% | 4.45% |
| 2008 | 78.53% | 7.66% | 4.75% | 4.37% | 4.68% |
| 2009 | 78.25% | 7.07% | 4.88% | 4.66% | 5.14% |
| 2010 | 78.75% | 6.86% | 4.92% | 4.74% | 4.73% |
| 2009 - 2010 Change | +0.50% | -0.21% | +0.04% | +0.08% | -0.41% |



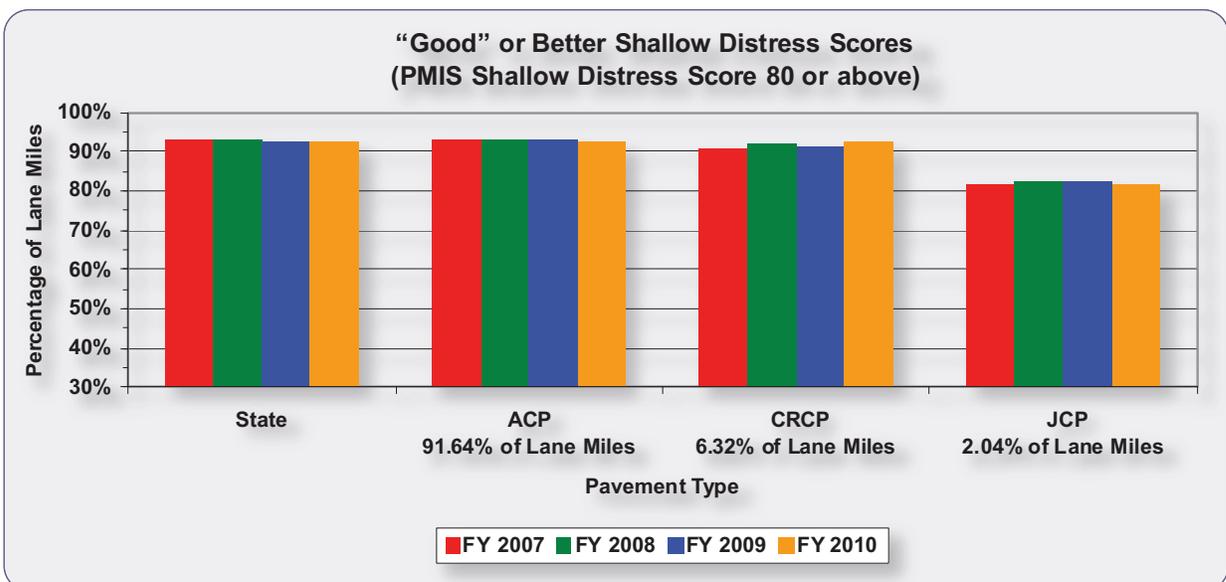
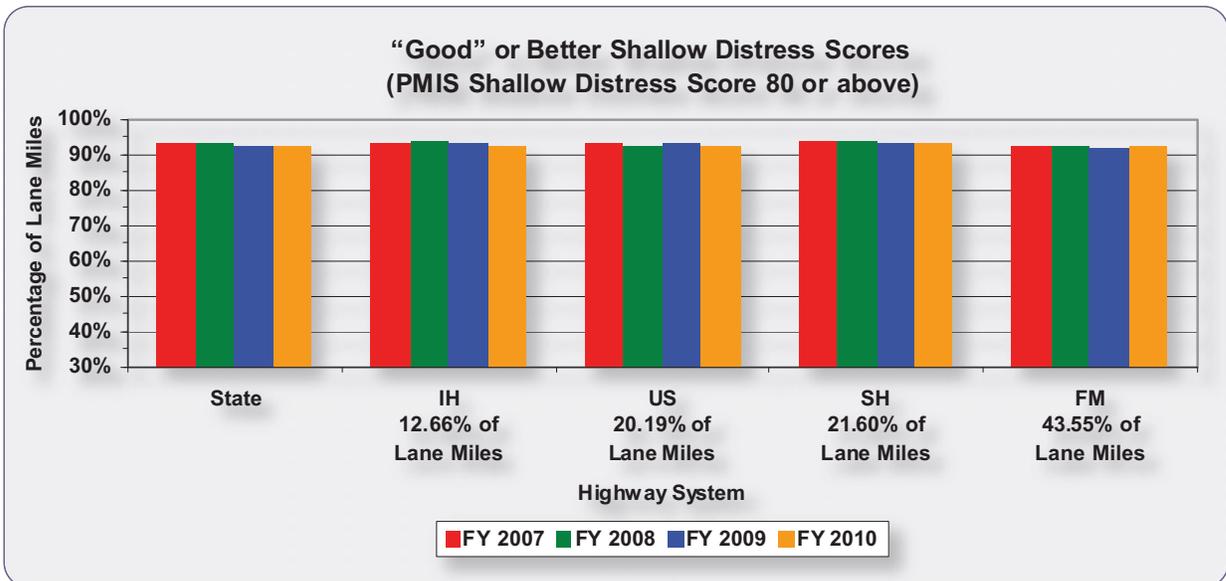
| Distress Score | Class |
|----------------|-------------|
| 90-100 | "Very Good" |
| 80-89 | "Good" |
| 70-79 | "Fair" |
| 60-69 | "Poor" |
| 1-59 | "Very Poor" |

Chapter 3 — PMIS Score Trends

Pavement Distress (Shallow Distress Scores)

Percentage of Lane Miles “Good” or Better – PMIS Shallow Distress Score 80 or above

| Fiscal Year | Percentage of Lane Miles With “Good” or Better Shallow Distress Scores | | | | | | | | | | |
|---------------------------|--|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | State | IH | US | SH | FM | ACP | CRCP | JCP | IH ACP | IH CRCP | IH JCP |
| 2007 | 93.12% | 93.37% | 93.36% | 94.00% | 92.51% | 93.52% | 90.74% | 81.78% | 95.32% | 87.73% | 85.04% |
| 2008 | 92.94% | 93.51% | 92.66% | 93.86% | 92.45% | 93.24% | 91.87% | 82.37% | 94.82% | 89.78% | 87.58% |
| 2009 | 92.66% | 93.33% | 92.93% | 93.13% | 92.09% | 92.95% | 91.68% | 82.48% | 94.56% | 90.29% | 87.55% |
| 2010 | 92.57% | 92.78% | 92.17% | 93.45% | 92.18% | 92.80% | 92.64% | 81.82% | 93.80% | 90.79% | 85.90% |
| 2009 - 2010 Change | -0.09% | -0.55% | -0.76% | +0.32% | +0.09% | -0.15% | +0.96% | -0.66% | -0.76% | +0.50% | -1.65% |



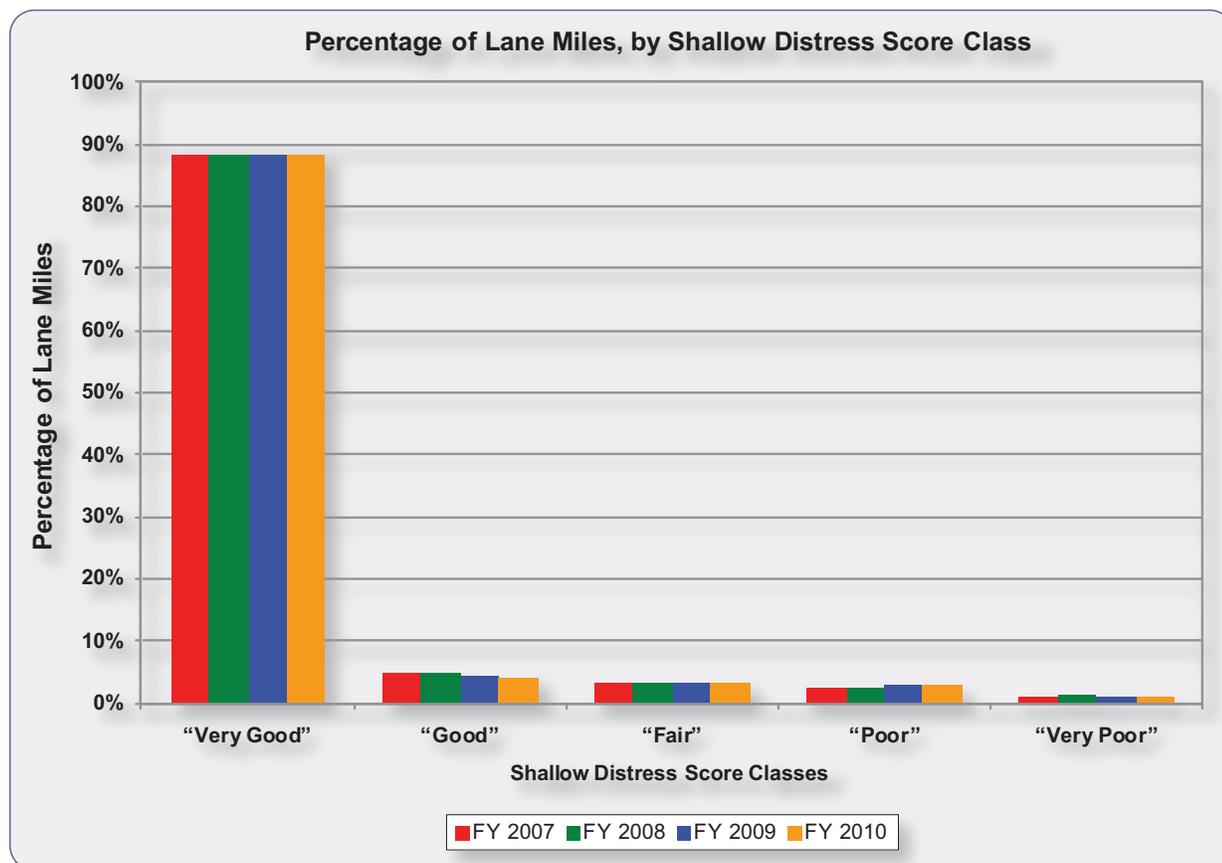
Chapter 3 — PMIS Score Trends



Pavement Distress (Shallow Distress Scores)

Percentage of Lane Miles, by Shallow Distress Score Class

| Fiscal Year | Percentage of Lane Miles, by Shallow Distress Score Class | | | | |
|---------------------------|---|---------------|---------------|---------------|---------------|
| | "Very Good" | "Good" | "Fair" | "Poor" | "Very Poor" |
| 2007 | 88.48% | 4.64% | 3.21% | 2.65% | 1.02% |
| 2008 | 88.23% | 4.71% | 3.20% | 2.68% | 1.19% |
| 2009 | 88.21% | 4.45% | 3.36% | 2.87% | 1.11% |
| 2010 | 88.48% | 4.09% | 3.33% | 3.00% | 1.10% |
| 2009 - 2010 Change | +0.27% | -0.36% | -0.03% | +0.13% | -0.01% |



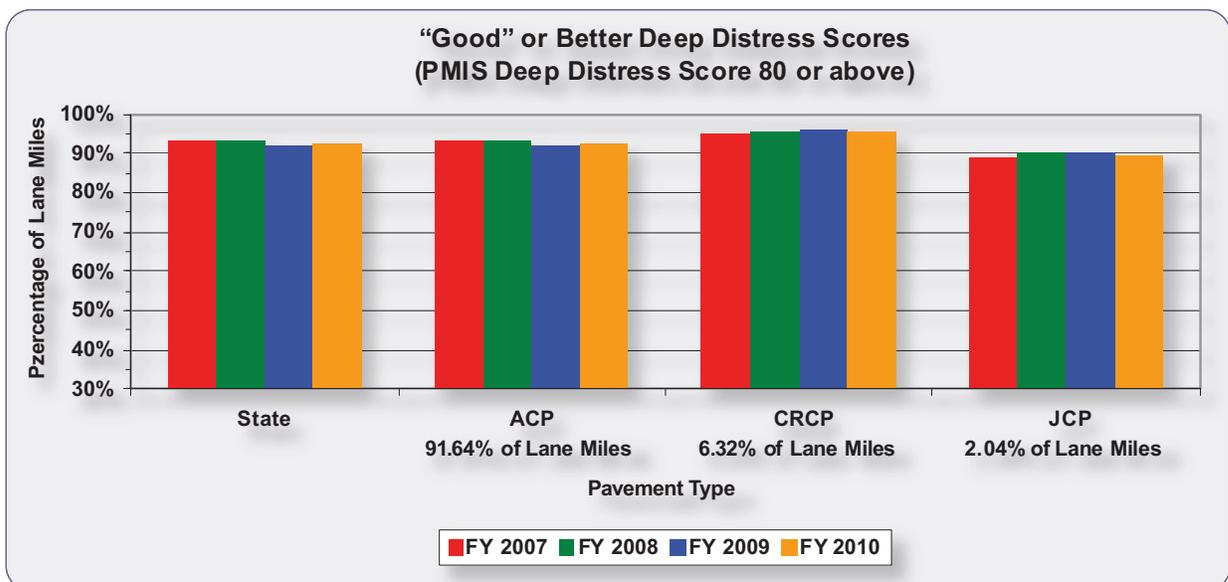
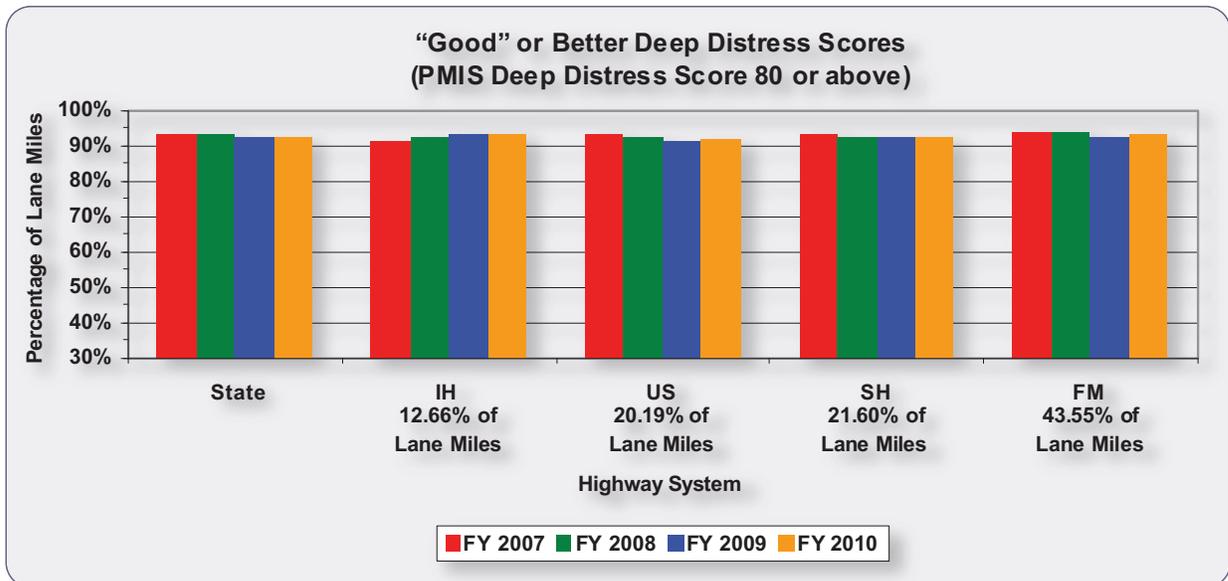
| Shallow Distress Score | Class |
|------------------------|-------------|
| 90-100 | "Very Good" |
| 80-89 | "Good" |
| 70-79 | "Fair" |
| 60-69 | "Poor" |
| 1-59 | "Very Poor" |

Chapter 3 — PMIS Score Trends

Pavement Distress (Deep Distress Scores)

Percentage of Lane Miles “Good” or Better – PMIS Deep Distress Score 80 or above

| Fiscal Year | Percentage of Lane Miles With “Good” or Better Deep Distress Scores | | | | | | | | | | |
|---------------------------|---|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | State | IH | US | SH | FM | ACP | CRCP | JCP | IH ACP | IH CRCP | IH JCP |
| 2007 | 93.36% | 91.34% | 93.19% | 93.41% | 94.15% | 93.36% | 95.13% | 89.23% | 90.81% | 94.30% | 87.77% |
| 2008 | 93.05% | 92.57% | 92.20% | 92.76% | 93.92% | 92.96% | 95.63% | 90.20% | 92.05% | 95.09% | 90.57% |
| 2009 | 92.24% | 93.41% | 91.18% | 92.36% | 92.59% | 92.02% | 96.16% | 90.33% | 92.82% | 95.88% | 91.44% |
| 2010 | 92.69% | 93.33% | 92.09% | 92.20% | 93.34% | 92.54% | 95.88% | 89.45% | 93.08% | 95.10% | 88.69% |
| 2009 - 2010 Change | +0.45% | -0.08% | +0.91% | -0.16% | +0.75% | +0.52% | -0.28% | -0.88% | +0.26% | -0.78% | -2.75% |



Chapter 3 — PMIS Score Trends



Pavement Distress (Deep Distress Scores)

Percentage of Lane Miles, by Deep Distress Score Class

| Fiscal Year | Percentage of Lane Miles, by Deep Distress Score Class | | | | |
|---------------------------|--|---------------|---------------|---------------|---------------|
| | "Very Good" | "Good" | "Fair" | "Poor" | "Very Poor" |
| 2007 | 89.14% | 4.22% | 2.18% | 2.14% | 2.31% |
| 2008 | 88.79% | 4.27% | 2.23% | 2.31% | 2.40% |
| 2009 | 87.98% | 4.25% | 2.40% | 2.59% | 2.78% |
| 2010 | 88.39% | 4.30% | 2.48% | 2.38% | 2.45% |
| 2009 - 2010 Change | +0.41% | +0.05% | +0.08% | -0.21% | -0.33% |



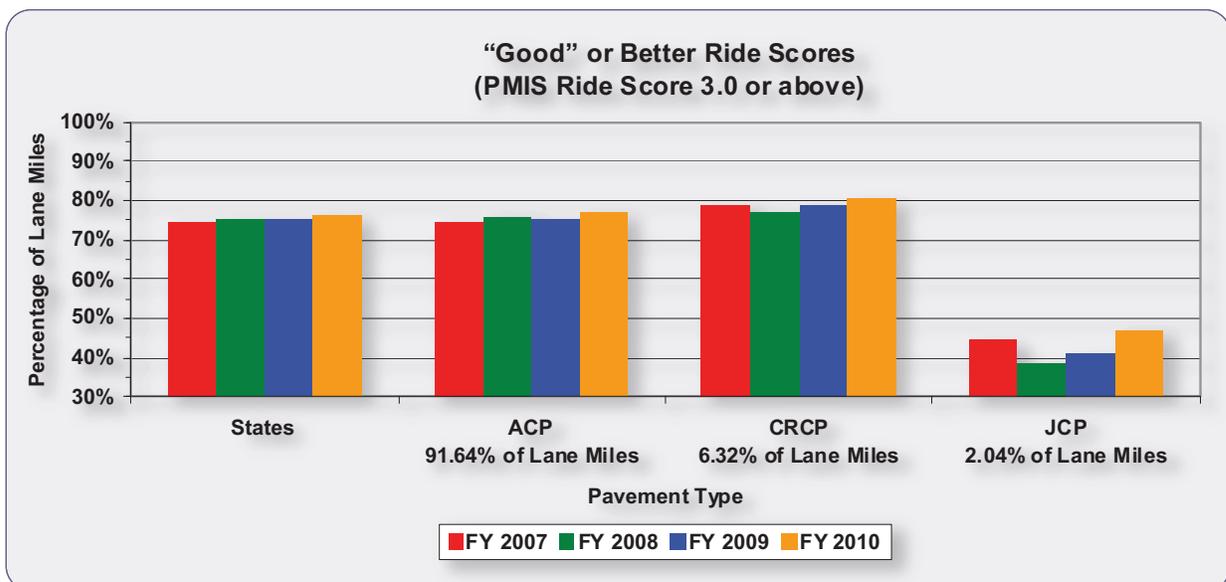
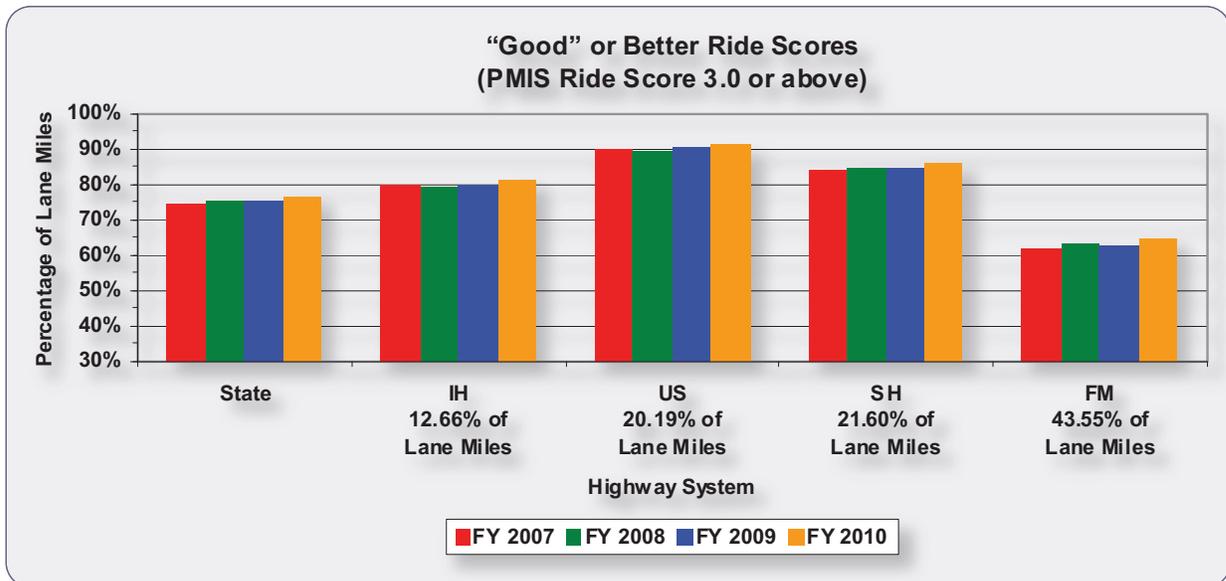
| Deep Distress Score | Class |
|---------------------|-------------|
| 90-100 | "Very Good" |
| 80-89 | "Good" |
| 70-79 | "Fair" |
| 60-69 | "Poor" |
| 1-59 | "Very Poor" |

Chapter 3 — PMIS Score Trends

Pavement Ride Quality (Ride Scores)

Percentage of Lane Miles “Good” or Better – PMIS Ride Score 3.0 or above

| Fiscal Year | Percentage of Lane Miles With “Good” or Better Ride Scores | | | | | | | | | | |
|---------------------------|--|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | State | IH | US | SH | FM | ACP | CRCP | JCP | IH ACP | IH CRCP | IH JCP |
| 2007 | 74.43% | 79.95% | 90.03% | 83.88% | 61.82% | 74.86% | 78.98% | 44.84% | 80.78% | 83.07% | 54.04% |
| 2008 | 75.00% | 79.07% | 89.29% | 84.26% | 63.35% | 75.69% | 77.18% | 38.35% | 80.84% | 79.94% | 46.01% |
| 2009 | 75.05% | 79.68% | 90.45% | 84.64% | 62.57% | 75.55% | 78.64% | 41.04% | 80.64% | 82.12% | 52.17% |
| 2010 | 76.65% | 81.39% | 91.39% | 85.71% | 64.45% | 77.02% | 80.72% | 46.86% | 82.71% | 82.70% | 53.62% |
| 2009 - 2010 Change | +1.60% | +1.71% | +0.94% | +1.07% | +1.88% | +1.47% | +2.08% | +5.82% | +2.07% | +0.58% | +1.45% |



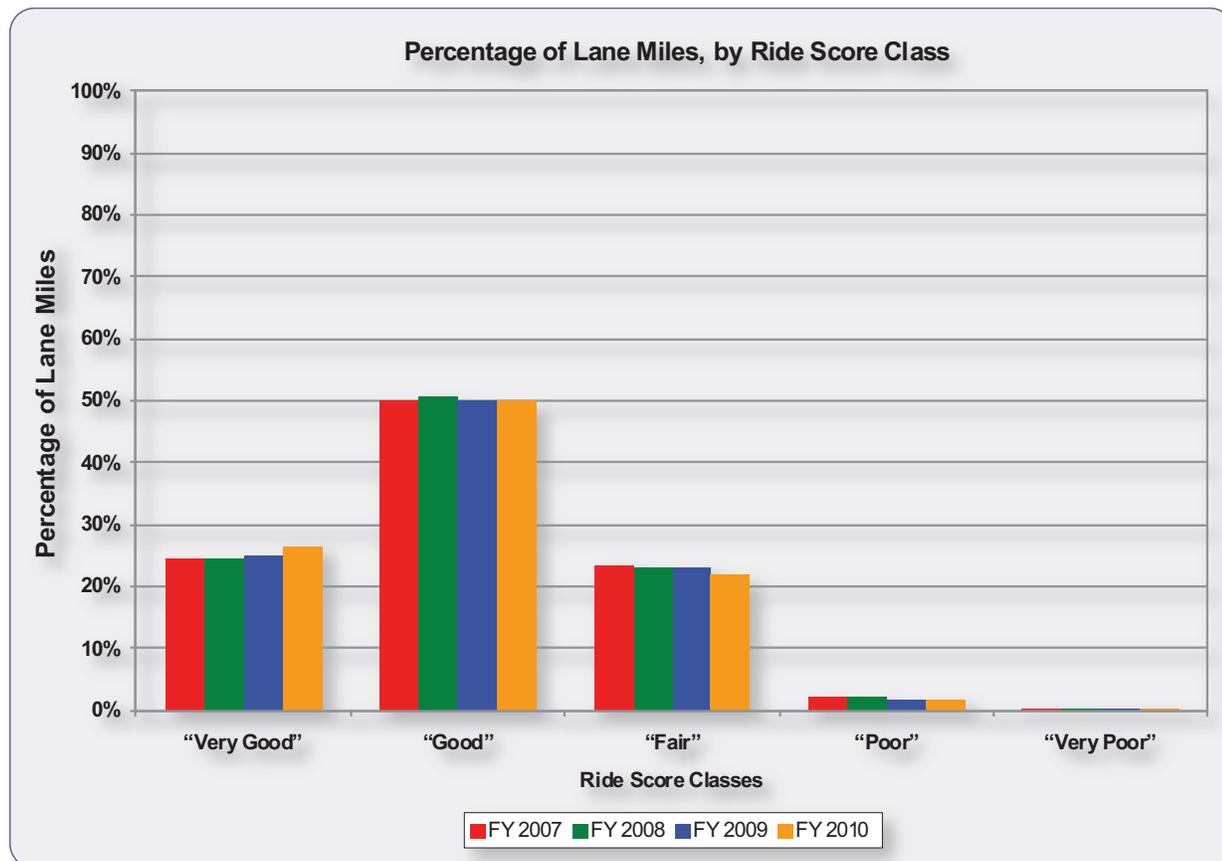
Chapter 3 — PMIS Score Trends



Pavement Ride Quality (Ride Scores)

Percentage of Lane Miles, by Ride Score Class

| Fiscal Year | Percentage of Lane Miles, by Ride Score Class | | | | |
|---------------------------|---|---------------|---------------|---------------|---------------|
| | "Very Good" | "Good" | "Fair" | "Poor" | "Very Poor" |
| 2007 | 24.44% | 49.99% | 23.26% | 2.23% | 0.09% |
| 2008 | 24.36% | 50.64% | 22.97% | 1.95% | 0.08% |
| 2009 | 24.98% | 50.07% | 23.06% | 1.82% | 0.07% |
| 2010 | 26.59% | 50.06% | 21.76% | 1.53% | 0.06% |
| 2009 - 2010 Change | +1.61% | -0.01% | -1.30% | -0.29% | -0.01% |



| Ride Score | Class |
|------------|-------------|
| 4.0-5.0 | "Very Good" |
| 3.0-3.9 | "Good" |
| 2.0-2.9 | "Fair" |
| 1.0-1.9 | "Poor" |
| 0.1-0.9 | "Very Poor" |



In the early 1900s, males 18-60 had to contribute five days a year to work on roads in the area.

In 1928, the department had 18,000 highway miles: 96 miles of concrete, 1,060 miles of asphalt, 5,000 miles of gravel, shell or stone, and 10,000 miles of just plain dirt.

From 1929-1930, the department built 1,773 miles of new highways and improved 629 miles of existing roads.

In 1956, Congress appropriated \$25 billion for construction of the Interstate system from 1957 through 1968. The figure later was considerably revised.

Chapter 4 — Pavement Distress Trends



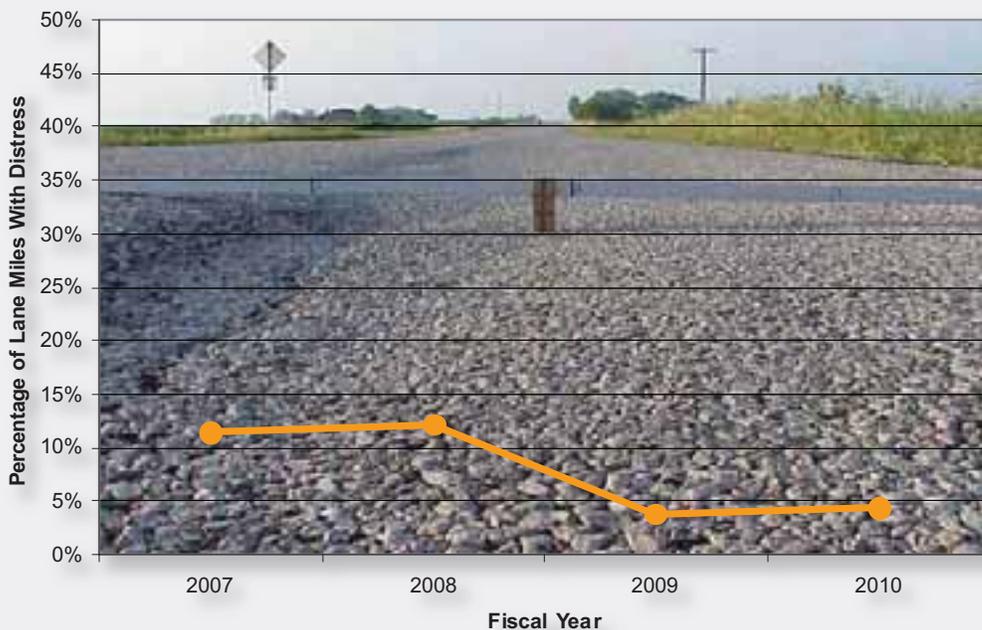
ACP Shallow Rutting (measured), FY 2007-2010



FY 2010 Trend: Less

29.34 percent of the lane miles contained Shallow Rutting

ACP Deep Rutting (measured), FY 2007-2010



FY 2010 Trend: More

4.46 percent of the lane miles contained Deep Rutting

Chapter 4 — Pavement Distress Trends

ACP Alligator Cracking (rated), FY 2007-2010



FY 2010 Trend: Less

17.40 percent of the lane miles contained Alligator Cracking

ACP Failures (rated), FY 2007-2010



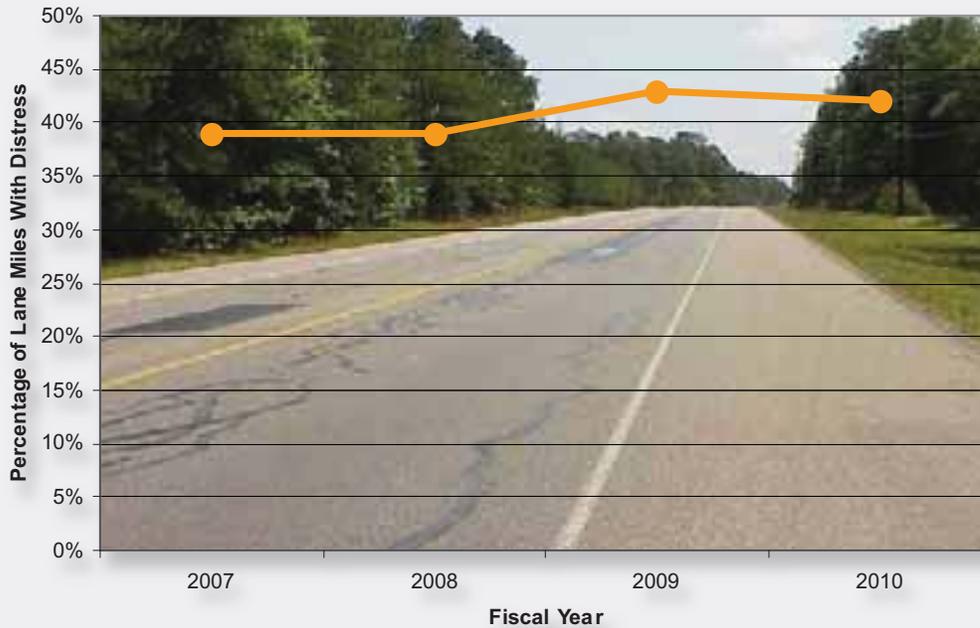
FY 2010 Trend: Less

4.67 percent of the lane miles contained Failures

Chapter 4 — Pavement Distress Trends



ACP Longitudinal Cracking (rated), FY 2007-2010



FY 2010 Trend: Less

41.99 percent of the lane miles contained Longitudinal Cracking

ACP Transverse Cracking (rated), FY 2007-2010



FY 2010 Trend: More

10.85 percent of the lane miles contained Transverse Cracking

Chapter 4 — Pavement Distress Trends

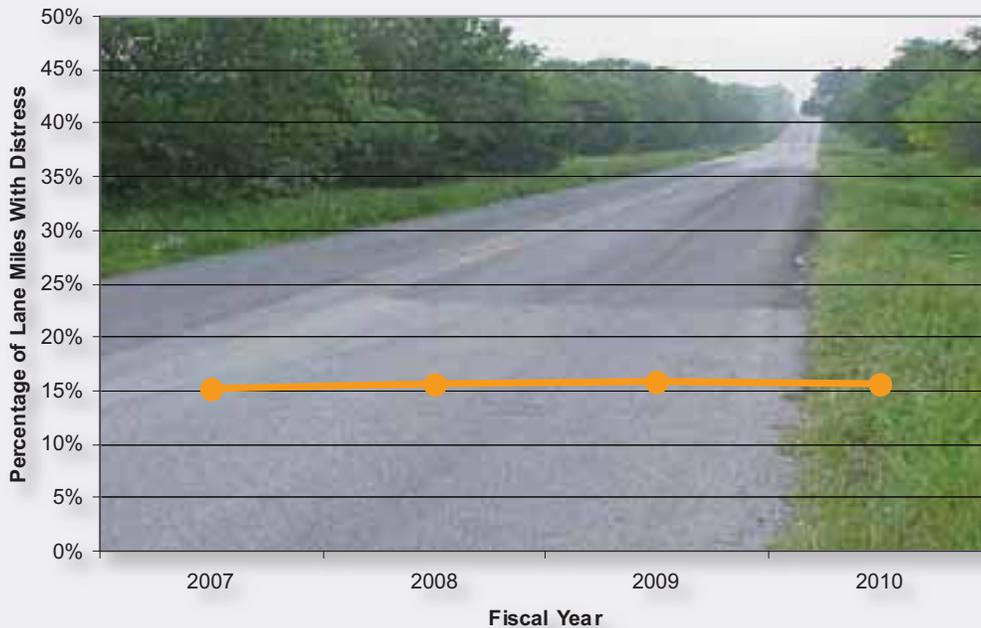
ACP Block Cracking (rated), FY 2007-2010



FY 2010 Trend: More

0.73 percent of the lane miles contained Block Cracking

ACP Patching (rated), FY 2007-2010



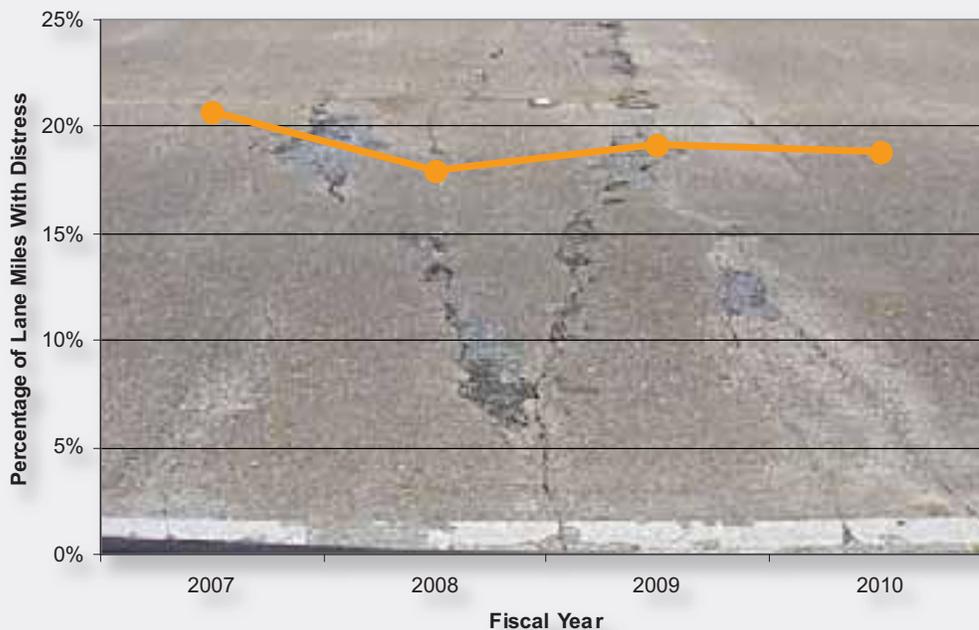
FY 2010 Trend: Less

15.69 percent of the lane miles contained Patching

Chapter 4 — Pavement Distress Trends



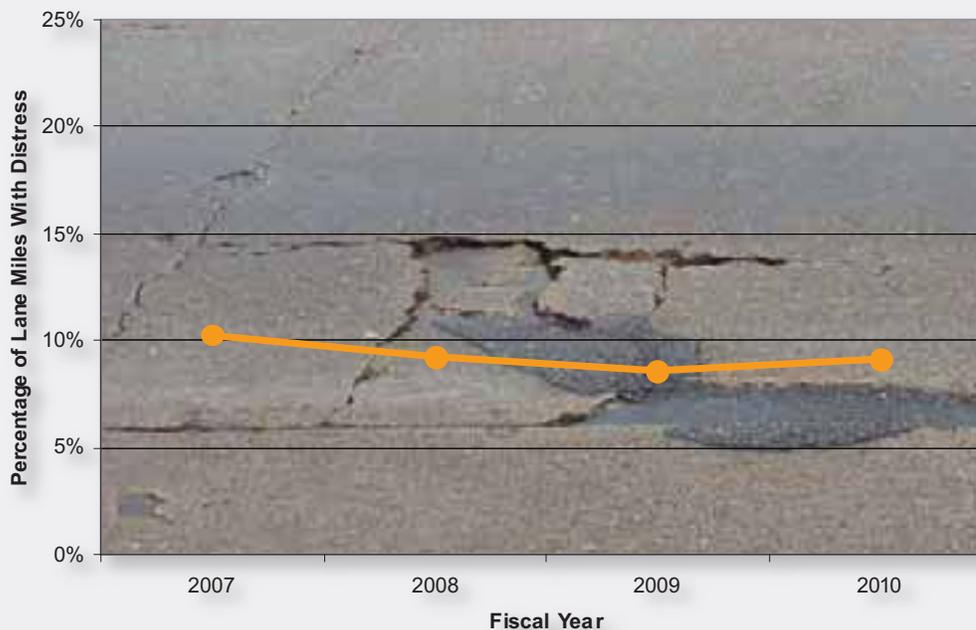
CRCP Spalled Cracks (rated), FY 2007-2010



FY 2010 Trend: Less

18.81 percent of the lane miles contained Spalled Cracks

CRCP Punchouts (rated), FY 2007-2010



FY 2010 Trend: More

9.15 percent of the lane miles contained Punchouts

Chapter 4 — Pavement Distress Trends

CRCP Asphalt Patches (rated), FY 2007-2010



FY 2010 Trend: More

1.13 percent of the lane miles contained Asphalt Patches

CRCP Concrete Patches (rated), FY 2007-2010



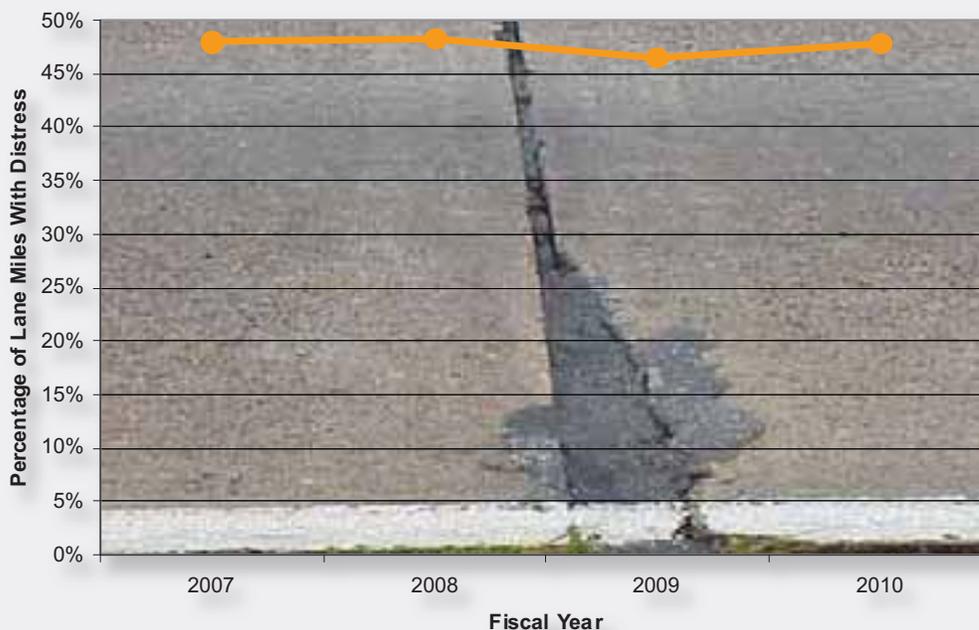
FY 2010 Trend: More

14.52 percent of the lane miles contained Concrete Patches

Chapter 4 — Pavement Distress Trends



JCP Failed Joints and Cracks (rated), FY 2007-2010



FY 2010 Trend: More

47.90 percent of the lane miles contained Failed Joints and Cracks

JCP Failures (rated), FY 2007-2010



FY 2010 Trend: More

43.44 percent of the lane miles contained Failures

Chapter 4 — Pavement Distress Trends

JCP Shattered Slabs (rated), FY 2007-2010



FY 2010 Trend: **More**

0.79 percent of the lane miles contained Shattered Slabs

JCP Slabs with Longitudinal Cracks (rated), FY 2007-2010



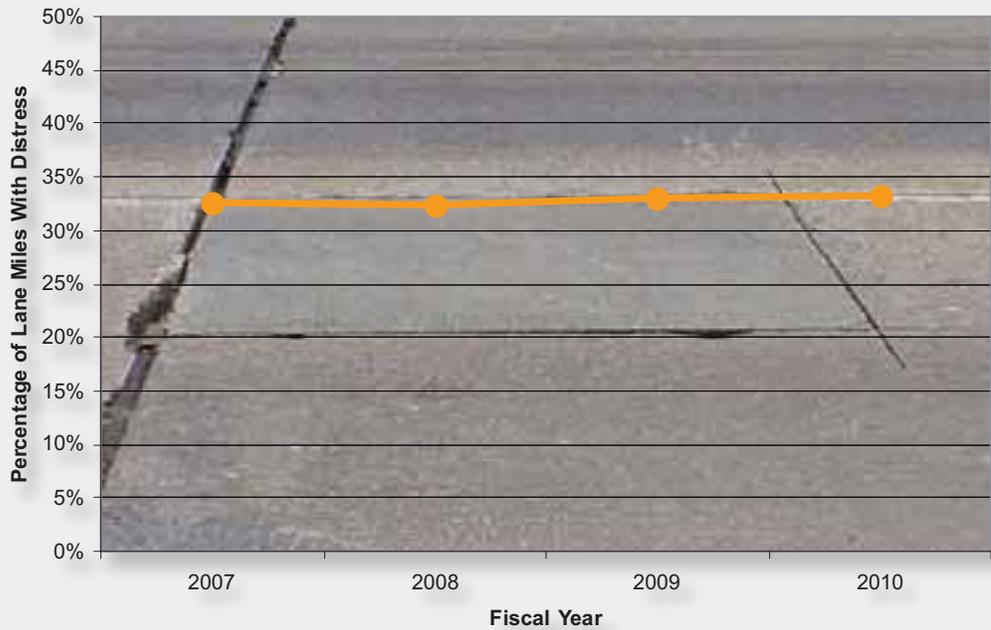
FY 2010 Trend: **More**

19.37 percent of the lane miles contained Slabs with Longitudinal Cracks

Chapter 4 — Pavement Distress Trends



JCP Concrete Patches (rated), FY 2007-2010



FY 2010 Trend: More

33.21 percent of the lane miles contained Concrete Patches



Interstate and U.S. highway routes with odd numbers run north and south; even-numbered routes run east and west. Mile markers on Interstate highways increase in the northbound and eastbound directions. Reference markers on non-Interstate routes increase in southbound and eastbound directions.

Chapter 5 — Maintenance Level of Service Trends



This chapter shows FY 2007-2010 statewide maintenance level of service trends, according to the definitions shown below.

Please note that maintenance levels of service are only defined for flexible (“asphalt”) pavements. Rigid (“concrete”) pavements are not included in this chapter.

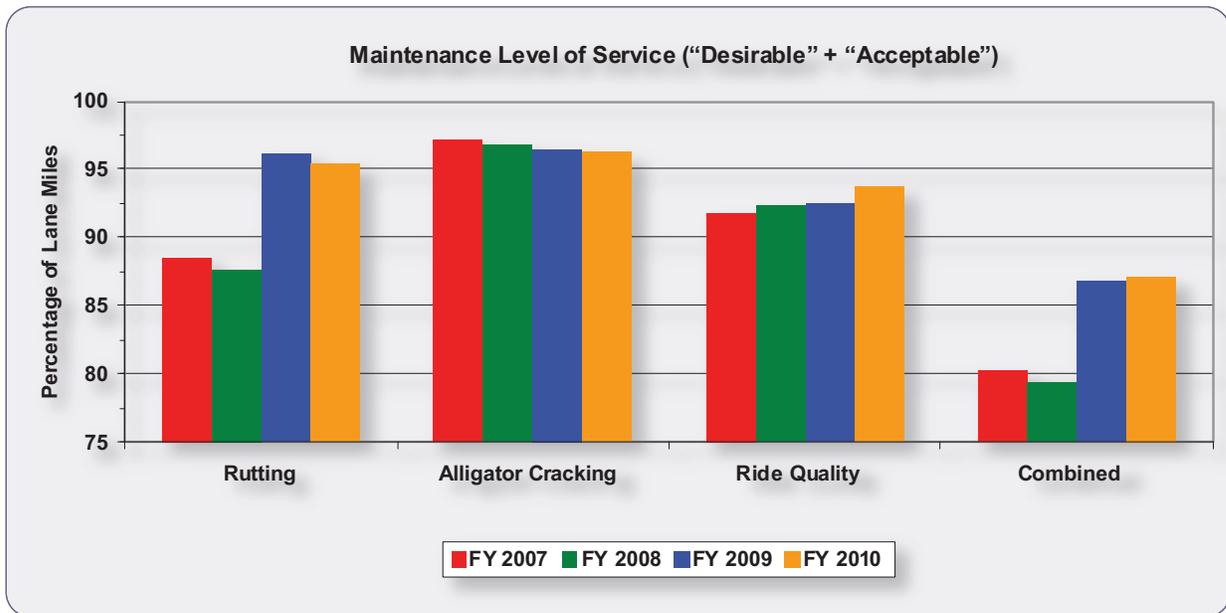
| PMIS Distress Type | Traffic Category (ADT) | LEVEL OF SERVICE | | | |
|---------------------------|------------------------|--------------------------|---------------------------|--|---|
| | | “Desirable” | “Acceptable” | “Tolerable” | “Intolerable” |
| Rutting | Low (0-500) | 0-1% Shallow & 0-1% Deep | 2-50% Shallow & 0-1% Deep | 51-100% Shallow & 0-1% Deep OR 0-50% Shallow & 2-25% Deep | 51-100% Shallow & 2-25% Deep OR 26-100% Deep |
| | Medium (501-10,000) | 0-1% Shallow & 0-1% Deep | 2-50% Shallow & 0-1% Deep | 51-100% Shallow & 0-1% Deep OR 0-50% Shallow & 2-25% Deep | 51-100% Shallow & 2-25% Deep OR 26-100% Deep |
| | High (over 10,000) | 0-1% Shallow & 0-1% Deep | 2-25% Shallow & 0-1% Deep | 26-50% Shallow & 0-1% Deep | 51-100% Shallow & 0-1% Deep OR 2-100% Deep |
| Alligator Cracking | All Traffic | 0% | 1-10% | 11-50% | 51-100% |
| Ride Quality | Low (0-500) | 2.6-5.0 | 2.1-2.5 | 1.6-2.0 | 0.1-1.5 |
| | Medium (501-10,000) | 3.1-5.0 | 2.6-3.0 | 2.1-2.5 | 0.1-2.0 |
| | High (over 10,000) | 3.6-5.0 | 3.1-3.5 | 2.6-3.0 | 0.1-2.5 |

Reference: *TxDOT Administrative Circular 5-92 (February 13, 1992)*

Chapter 5 — Maintenance Level of Service Trends

Maintenance Level of Service Trends, FY 2007-2010

| Fiscal Year | Desirable + Acceptable Level of Service | | | |
|---------------------------|---|--------------------|--------------|--------------|
| | Rutting | Alligator Cracking | Ride Quality | Combined |
| 2007 | 88.45 | 97.19 | 91.83 | 80.16 |
| 2008 | 87.70 | 96.84 | 92.29 | 79.41 |
| 2009 | 96.11 | 96.38 | 92.57 | 86.71 |
| 2010 | 95.50 | 96.32 | 93.78 | 87.10 |
| 2009 - 2010 Change | -0.61 | -0.06 | +1.21 | +0.39 |



Chapter 6 — PMIS Mileage



Total Lane Miles in PMIS, by Highway System, FY 2007-2010

| Highway System | Fiscal Year | | | |
|-------------------------------------|------------------|------------------|------------------|------------------|
| | 2007 | 2008 | 2009 | 2010 |
| Interstate Highways, mainlanes only | 15,105.7 | 15,154.7 | 15,184.6 | 15,294.8 |
| Interstate Highways, frontage roads | 9,334.3 | 9,364.8 | 9,377.6 | 9,429.5 |
| United States Highways | 38,693.1 | 39,024.1 | 39,213.6 | 39,437.9 |
| State Highways | 40,830.5 | 41,669.0 | 41,904.3 | 42,189.7 |
| Farm-to-Market Roads | 84,774.5 | 84,848.0 | 84,921.6 | 85,052.9 |
| Business Routes | 3,064.0 | 3,110.3 | 3,104.0 | 3,131.5 |
| Park Roads | 692.7 | 691.3 | 691.1 | 687.5 |
| Principal Arterial Streets | 36.0 | 63.6 | 63.6 | 63.6 |
| STATEWIDE | 192,530.8 | 193,925.8 | 194,460.4 | 195,287.4 |

Total Lane Miles in PMIS, by Pavement Type, FY 2007-2010

| Pavement Type | Fiscal Year | | | |
|--|------------------|------------------|------------------|------------------|
| | 2007 | 2008 | 2009 | 2010 |
| Flexible or Asphalt Concrete Pavement (ACP) | 177,717.0 | 178,490.0 | 178,591.5 | 178,953.8 |
| Continuously Reinforced Concrete Pavement (CRCP) | 10,467.4 | 11,170.9 | 11,770.5 | 12,345.1 |
| Jointed Concrete Pavement (JCP) | 4,346.4 | 4,264.9 | 4,098.4 | 3,988.5 |
| STATEWIDE | 192,530.8 | 193,925.8 | 194,460.4 | 195,287.4 |

Rated/Measured Mileage in PMIS, by Data/Score Type, FY 2007-2010

| Data/Score Type | Fiscal Year | | | |
|-----------------|-------------|------------|------------|------------|
| | 2007 | 2008 | 2009 | 2010 |
| | Lane Miles | Lane Miles | Lane Miles | Lane Miles |
| Condition Score | 184,601.9 | 184,971.0 | 187,178.6 | 190,395.5 |
| Distress | 188,457.5 | 188,853.6 | 190,647.5 | 193,094.3 |
| Distress Score | 185,353.4 | 186,022.7 | 188,059.2 | 191,024.3 |
| Ride | 188,271.2 | 189,071.4 | 190,291.5 | 192,215.9 |
| Ride Score | 188,271.2 | 189,071.4 | 190,291.5 | 192,215.9 |
| Rut (ACP Only) | 173,893.3 | 174,456.9 | 175,246.6 | 176,405.2 |

Rated/Measured Percentage in PMIS, by Data/Score Type, FY 2007-2010

| Data/Score Type | Fiscal Year | | | |
|-----------------|-------------|------------|------------|------------|
| | 2007 | 2008 | 2009 | 2010 |
| | Lane Miles | Lane Miles | Lane Miles | Lane Miles |
| Condition Score | 95.88% | 95.38% | 96.26% | 97.50% |
| Distress | 97.88% | 97.38% | 98.04% | 98.88% |
| Distress Score | 96.27% | 95.92% | 96.71% | 97.82% |
| Ride | 97.79% | 97.50% | 97.86% | 98.43% |
| Ride Score | 97.79% | 97.50% | 97.86% | 98.43% |
| Rut (ACP Only) | 90.32% | 89.96% | 90.12% | 90.33% |

How times change: Back before World War I, the phrase “good roads” in Texas had a different meaning. “Come to Texas if you want to see good roads,” a turn-of-the-century Bell County farmer growled: “good and rough, good and muddy.” In 1925, the Federal Bureau of Public Roads shut off all federal highway aid to Texas because of the poor state of maintenance. In 1928, Texas was spending \$495 per mile for maintenance, with most of the money spent for work trying to satisfy the Bureau of Public Roads to regain federal aid. Today, Texas highways consistently rate as the best in the country, according to Overdrive Magazine surveys of trucking owners and operators.



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