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16. Abstract

The purpose of this synthesis was to summarize the use of pavement scores by the states, including the rating methods used, the score scales, and descriptions; if the scores are used for recommending pavement maintenance and rehabilitation actions; how the scores are computed; the distresses that are used for generating the scores; the sampling method; the survey frequency; and each state agency's legislative or internal goal.

The distresses considered and the way they are summarized into indices varies between states. Typically, the extent and severity is used for computing scores. In rating distresses, some agencies use the most dominant distress present, while other use all the distresses present. For each distress type/severity level, criteria are established in terms of the distress index that indicates the need for rehabilitation. In addition, how the data analysis results are used varies from state to state. According to the information collected for this synthesis, only three states indicated that they have goals set by, or reported to, their respective legislatures. Internal agency goals vary from state to state as well.

Since the scores are computed differently for each state, and since the sampling methods vary from state to state, the definition of good or better varies significantly between each state; therefore, direct comparisons between scores or percent lane miles in good or better condition between states are not valid.

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PAVEMENT SCORES SYNTHESIS

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DISCLAIMER

This research was performed in cooperation with the Texas Department of Transportation (TxDOT) and the Federal Highway Administration (FHWA). The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official view or policies of the FHWA or TxDOT. This report does not constitute a standard, specification, or regulation. This report is not intended for construction, bidding, or permit purposes. The engineer in charge of the project was Andrew J. Wimsatt P.E., Texas #72270. The United States Government and the State of Texas do not endorse products or manufacturers. Trade or manufacturers' names appear herein solely because they are considered essential to the object of this report.

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INTRODUCTION

The purpose of this synthesis was to summarize the use of pavement scores by the states, including the rating methods used, the score scales, and descriptions; if the scores are used for recommending pavement maintenance and rehabilitation actions; how the scores are computed; the distresses that are used for generating the scores; the sampling method; the survey frequency; and each state agency's legislative or internal goal.

Appendix A contains the results of the synthesis. The states that did not respond to email queries are noted in the Appendix with "N/R" beside the state name. In addition, "N/A" indicates that the data or information is not available. The researchers obtained information from 48 states and the District of Columbia; however, the team was not able to obtain any information from Rhode Island.

Appendix B contains more detailed descriptions of pavement rating and scoring processes for selected state agencies. In particular, Appendix B contains a brief description of the NHI Course on Pavement Management Systems; the Pavement Condition Index described in the ASTM D6433-99 standard; pavement scores used by the Washington State DOT and the Vermont DOT; DOT responses to specific pavement condition reporting requirements and goals; and a summary of past studies on pavement distress indices and network condition goals.

Finally, Appendix C contains the report developed by Mr. Bryan Stampley, Dr. Magdy Mikhail, and Dr. Ahmed Eltahan of the Texas Department of Transportation (TxDOT) concerning each state's pavement condition performance measures.

SUMMARY OF SURVEY RESPONSES

SURVEY OR SCORE NAMES AND RATING METHODS USED BY THE STATES

As shown in Appendix A, there is a wide variety of survey or score names used by the states, and there appears to be little consistency among the states as to these names. TxDOT has three main scores to indicate pavement condition: the condition score, the distress score, and the ride score. TxDOT currently uses visual inspection by raters for all distresses except rutting, which is measured with TxDOT's rut bar attached to the profiler. TxDOT uses automated means to measure ride.

As for rating methods, 28 states and the District of Columbia use visual inspection by raters; eight states use automated or semi-automated methods (Alabama, Iowa, Louisiana, Maine, Oklahoma, South Carolina, Vermont, and Virginia); seven states have raters evaluate pavements using images or videologs (Connecticut, Illinois, Michigan, Missouri, Nebraska, Pennsylvania, and Tennessee); and one state uses only the International Roughness Index (IRI) as the basis for rating pavements (Arkansas). For the remaining five states, it was unclear what was used in terms of rating methods.

MEASURED ATTRIBUTES

For the purposes of discussion, the following terms are defined:

Type—distress or condition categories (e.g., shallow rutting, deep rutting, longitudinal cracking, transverse cracking, alligator cracking, ride, etc.)

Extent—the amount of distress present on the pavement section being rated (e.g., for alligator cracking, TxDOT uses percent of wheel path in a 0.5-mile section to measure the extent of alligator cracking distress.)

Severity—the degree of distress (e.g., rutting can be measured at 50 percent of wheel path [extent], but severity is addressed by measuring the depth of rut.)

Distress—For TxDOT, distress means cracking and rutting and does not include ride; distress scores for each type of distress are combined to determine a distress score. This may not be the case for other states.

Condition—For TxDOT, pavement condition is the combination of distress scores and ride. Again, this may not be the case for other states.

TxDOT uses extent and type of distress. Severity level is only considered for rut depth and ride quality. As indicated in Appendix A, 29 states use extent and severity of distresses; in other words, those states may categorize distresses in terms of low severity to high severity. Seven states use extent and type of distresses (California, Illinois, Iowa,

Oregon, Pennsylvania, South Dakota, and Wisconsin). For the remaining 13 states and the District of Columbia, it was unclear what was used in terms of measured attributes.

SCORE SCALE, SCALE DESCRIPTION, AND RECOMMENDED MAINTENANCE AND REHABILITATION ACTIONS

In terms of score scales, TxDOT uses a 5-level scale for condition score, distress score, and ride score (very good, good, fair, poor, and very poor). Eleven states use a 5-level scale, seven states use a 4-level scale, and eight states use a 3-level scale. Ten states and the District of Columbia use other scale types. There was no information available for 13 states in terms of scales.

As for the scale value range, TxDOT uses a 100-point scale for condition and distress scores and a 5-point scale for ride score. Sixteen states use a 100-point scale, thirteen states use a 5-point scale, and two states use a 10-point scale. Ten states and the District of Columbia use other scale value ranges. There was no information available for nine states in terms of the scale value range. Oregon uses a 100-point scale value range for National Highway System (NHS) roadways and a 5-point range for non-NHS roadways.

Texas uses a 100-point scale for the condition score, where 70–89 is good and 90–100 is very good. For states that use a 100-point range and where 100 represents a pavement with little to no distress, good or better is defined as follows:

Georgia	75–100 is good to excellent
Iowa	60–80 is good, 80–100 is excellent
Montana	63–100 is good
Nebraska	70–89 is good; 90–100 is very good
New Hampshire	40–100 is acceptable
North Carolina	Greater than 80 is good
Ohio	75–90 is good; 90–100 is very good
Oregon	75.1–98 is good; 98.1–100 is very good for NHS
Vermont	40–100 is acceptable
Virginia	70–89 is good; greater is excellent
Washington	50–100 is good

For those states that use a 5-point range, good or better is defined as follows:

California	2 is good; 1 is excellent
Delaware	3–4 is good; 4–5 is very good
Idaho	3–5 is good
Kentucky	3.5–5 is good
Michigan	1.0–2.5 is good
New Mexico	Greater than 3 is good for Interstate Highways; greater than 2.5 is good for all other highways
Oregon	2.0–2.9 is good; 1.0–1.9 is very good for non-NHS
South Carolina	3.4–4.0 is good; 4.1–5.0 is very good
Tennessee	3.5–4.0 is good; 4.0–5 is very good
West Virginia	4 is good; 5 is excellent

The survey indicated that 23 states associate their scores with recommended maintenance and rehabilitation activities. Five states use decision trees to generate recommended maintenance and rehabilitation activities. The data were unclear or not available for 21 states and the District of Columbia. TxDOT's PMIS system generates a needs estimate report that indicates what sections may need preventive maintenance, light rehabilitation, medium rehabilitation, or heavy rehabilitation. The needs estimate is used in evaluating trends and as an aid for determining funding needs and project location selection.

RATING COMPUTATIONS AND SURVEYED DISTRESSES

In calculating ratings or scores, there also appears to be very little consistency among the states (i.e., the states use a wide variety of ways to compute ratings). Ten states use deduct values in the computations. The data were unclear or not available for nine states.

As for surveyed distresses, 29 states indicated that they collect rutting and cracking data. Nine states do not collect rutting data. Twenty-one states indicated that they collect patching data. The data were unclear or not available for 11 states and the District of Columbia. TxDOT collects rutting and cracking data.

As for ride quality or roughness, 37 states indicated that they use this information in some manner for pavement rating purposes. TxDOT uses ride quality data collected with the Department's profiler vehicle to generate the ride score.

LENGTH OF EVALUATION SECTION, SAMPLING METHOD, AND SURVEY FREQUENCY

The length of the evaluation sections for the states that reported this information vary from 52 feet (Oklahoma) to two to three miles (Ohio). Ten states use 0.1-mile or 500-foot

sections. TxDOT uses sections that are generally 0.5-mile long for PMIS distress data collection.

As for sampling methods, again there appears to be very little consistency among the states. Four states indicated that they use continuous inspection of whole sections.

Finally, for survey frequency, 29 states indicated that they conduct surveys annually, while 10 states indicated that they survey every two years. New York State conducts annual ratings on the interstate system and every two years on the other systems. South Carolina conducts annual ratings on the interstate system and every three years on other systems. TxDOT conducts surveys on the entire network on an annual basis.

LEGISLATIVE AND INTERNAL GOALS

Although 41 states indicated that they have goals, only three states indicated that they have goals set by or reported to their respective legislatures. California has to report goal progress to the legislature; the goal is is to reduce deteriorated pavements to 5,500 lane-miles by 2008. New Mexico is legislatively mandated to report the miles of interstate and non-interstate rated good and miles of the system rated deficient. North Carolina is legislatively mandated to report the percent miles rated good.

Internal goals vary from state to state; again, it appears there is little consistency among the states for these goals.

CONCLUSION

As noted in Appendix B, the distresses considered and the way they are summarized into indices varies between states. Typically, the extent and severity are used for computing scores. In rating distresses, some agencies use the most dominant distress present, while others use all the distresses present. For each distress type/severity level, criteria are established in terms of the distress index that indicates the need for rehabilitation.

In addition, how the data analysis results are used varies from state to state. As mentioned earlier, only three states indicated that they have goals set by, or reported to, their respective legislatures. Internal agency goals vary from state to state as well.

Since the scores are computed differently for each state, and since the sampling methods vary from state to state, the definition of good or better varies significantly between each state; therefore, direct comparisons between scores or percent lane-miles in good or better condition between states are not valid.

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APPENDIX A: SYNTHESIS RESULTS

Table A-1. Synthesis Results–Survey/Score Name and Rating Method.

State	Survey/Score Name	Rating Method
Alabama	None currently, revamping system	Until 1996, did manual surveys 1996 began automated surveys 1998-2004 changed contractor
Alaska	No specific distress index	Visual inspection by raters
Arizona N/R	Present Serviceability rating (PSR) 0-5	Visual
Arkansas	No specific distress index, only IRI	None now Plan to purchase ARAN
California	Pavement Condition Survey (PCS)	Visual inspection by raters
Colorado	Remaining Service Life (RSL) years Developed by Applied Pavement Technology	Visual inspection by raters for only major HWs
Connecticut N/R	Currently none Planning to reestablish ride-based index	In 1983, started video photolog for pavement condition data
Delaware	Overall Pavement Condition (OPC) wants to change to South Dakota method	Visual inspection by raters
DC	Pavement Condition Index (PSI) ASTM D6433-99	Visual inspection by raters
Florida	Pavement Condition Rating (PCR)	(1) For Flexible pavement, the rater uses a profiler to measure ride rating and rut depths. Visual inspection on other critical distress by raters. (2) For rigid pavement: visual inspection on critical distress by raters, the rater uses a profiler to measure ride rating.
Georgia N/R	Pavement Condition Evaluation System (PACES) processed using the COAPCES software developed by GA-Tech	Visual inspection by raters
Hawaii N/R	Pavement Condition Index (PCI)	Visual inspection by raters

Table A-1. Synthesis Results–Survey/Score Name and Rating Method (Continued).

State	Survey/Score Name	Rating Method
Idaho	Separate Cracking Index (CI) and Roughness Index (RI)	Visual inspection by raters
Illinois	Pavement Condition Survey (CRS)	Visual inspection of images by raters
Indiana	Pavement Condition rating (PCR)	Visual inspection by raters
Iowa	Pavement Condition Index (PCI)	Automated distress collection van
Kansas	Performance Level (PL)	Visual inspection by raters
Kentucky N/R	Condition Index	Unclear
Louisiana	Condition index and IRI	ARAN system with Wisecrax soft.
Maine	Pavement Condition Rating (PCR 0-5)	ARAN system with Wisecrax soft.
Maryland	No distress index Simply collecting rutting and cracking	Visual inspection by raters
Massachusetts	PSI	Unclear
Minnesota	RQI: Ride Quality Index SR: Surface Rating PQI: The Pavement Quality Index (Combine RQI and SR)	Visual inspection by raters
Michigan	Sufficiency Rating (SR) Distress Index (DI) Remaining Service Life(RSL) Ride Quality Index (RQI)	Images and profile data are collected via vehicle-based computer/laser/camera technology; contractor staff will view pavement surface digital imaging and create computer-based log of crack type/severity/extent per MDOT definitions
Mississippi	Pavement Condition Rating (PCR)	Currently visual inspection. Looking into automated

Table A-1. Synthesis Results–Survey/Score Name and Rating Method (Continued).

State	Survey/Score Name	Rating Method
Missouri	Present Serviceability Rating (PSR)	ARAN and manual reduction of distress data from video
Montana	Individual indices by distress and Overall Pavement Index (OPI)	Visual inspection by raters
Nebraska	Nebraska Serviceability Index (NSI)	Digital photo records and visual ratings
Nevada	PMS Category Rating	Ride IRI. Rut Depth. Fatigue and Block cracking. Non-wheel path transverse block cracking. Patching. Bleeding. Raveling. Friction number
New Hampshire	Riding Comfort Index RCI 0-5 (IRI-derived) Rut Rate Index (RRI) (0-5) Surface Distress Index (SDI) (0-5) (Deighton-designed major upgrade planned)	Currently visual inspection. Future plans for ARAN
New Jersey	Non-Load related distress (NDI) Load-related Distress (LDI) and IRI	Visual inspection by raters
New Mexico	New Mexico-designed PSI (=60% IRI+40% distress-mainly cracking)	Visual inspection by raters through contract to local University
New York	Pavement Condition Index (PCI)	Two types: Windshield to collect severity and extent + and high speed profiler (IRI), rutting and faulting. Use AASHTO PP43 for IRI. Fault in 0.1-in increments as per AASHTO PP39.
North Carolina	Pavement Condition rating (PCR) plus individual indices by distress	Visual inspection by raters

Table A-1. Synthesis Results–Survey/Score Name and Rating Method (Continued).

State	Survey/Score Name	Rating Method
North Dakota	Public Ride Perception Index (PRPI) (Scale 0 to 3 Excellent to Poor) Scale is being replaced with pure IRI (<0.95, 0.96-1.57, 1.58-2.3 and >2.4 m/km)	Distress through Pathway van the worst 15%IRI.
Ohio	Pavement Condition Rating (PCR)	Visual inspection by rating team
Oklahoma	Distress Index not clear IRI for Roughness	Automated distress data collection by contractor data reduction by manual/ automated means
Oregon	Pavement condition surveys	Two separate and distinct pavement ratings (1) for National Highway System (NHS) Highways, a detailed visual evaluation of the pavement
		(2) for non-NHS Highways, a visual survey, and scoring pavement sections with a subjective value from very good to very poor
Pennsylvania	Overall Pavement Index (OPI)	Video Logging, pavement images are collected digitally and are visually rated
Rhode Island N/R	N/A	N/A
South Carolina	Pavement Quality Index (PQI)	Using a Semi-Automated Road Profiler Collection System, rutting and roughness data are collected by instruments. Viewable road surface wear is entered from a keyboard by an observer.
South Dakota	Pavement Serviceability Rating (PSR)	Faulting, roughness and rut depth are collected by the SDDOT type profilometer. All other distresses are collected by a visual distress survey by raters.

Table A-1. Synthesis Results–Survey/Score Name and Rating Method (Continued).

State	Survey/Score Name	Rating Method
Tennessee	Pavement Quality Index (PQI)	Visual inspection of images by raters
Utah	Flexible: Environmental Cracking Index (ECI) = fn (Long.,Transv.,Block cracking) Rigid: Index =fn(corner break and shattered slabs)	Visual inspection by raters
Vermont	Currently PCI Since 2005, working on a new Structural Distress Index (SDI) (Deighton-designed)	Since 2001, ARAN system and Wisecrax soft.
Virginia	Critical Condition Index (CCI)	Recently automated through normal view digital images collected by external contractors
Washington	Pavement Structural Condition (PSC); $PSC = 100 - 15.8EC^{0.8}$ Flexible: Ec=equivalent cracking Rigid: PSC similar to PCI (under review)	Visual inspection by raters
West Virginia	Currently trying to re-establish the CCI developed for them by IMS in 1997	Visual inspection by raters
Wisconsin	Pavement Distress Index (PDI)	Visual inspection by raters
Wyoming N/R	Present Serviceability rating (PSR) 0-5	Visual

Table A-2. Synthesis Results–Measured Attributes.

State	Measured Attributes
Alabama	No detail
Alaska	No detail
Arizona N/R	Unclear
Arkansas	N/A
California	Extent and type of distress
Colorado	Unclear
Connecticut N/R	N/A
Delaware	Extent and severity
DC	See Appendix B for details
Florida	Crack index, ride index, and rut index
Georgia N/R	Extent and severity by distress

Table A-2. Synthesis Results–Measured Attributes (Continued).

State	Measured Attributes
Hawaii N/R	N/A
Idaho	Extent and severity
Illinois	Extent and type of distress
Indiana	Extent and severity
Iowa	Extent and type of distress
Kansas	Extent and severity by distress
Kentucky N/R	Unclear
Louisiana	Extent and severity by distress and IRI
Maine	Extent and severity by distress type

Table A-2. Synthesis Results–Measured Attributes (Continued).

State	Measured Attributes
Maryland	N/A
Massachusetts	Rut, ride, and condition (distress)
Minnesota	Extent and severity by distress type
Michigan	Sufficiency Rating: subjective rating based on amount/severity of distresses observed during "windshield survey" of the entire state system DI: distress ratings, ride-quality ratings, and measurements of rutting and surface friction. RSL: computed based on DI and refers to years left before reconstruction or major rehabilitation should be considered for a pavement fix.
Mississippi	Extent and severity by distress type
Missouri	Extent and severity by distress
Montana	Extent and severity by distress type
Nebraska	Extent and severity

Table A-2. Synthesis Results–Measured Attributes (Continued).

State	Measured Attributes
Nevada	Extent and Severity
New Hampshire	Extent and severity by distress
New Jersey	Extent (% occurrence) and severity by distress
New Mexico	Extent and severity by distress
New York	Extent and severity cracking only Dominant distresses recorded
North Carolina	Extent and severity by distress
North Dakota	Extent and severity
Ohio	Extent, severity and type of distress

Table A-2. Synthesis Results–Measured Attributes (Continued).

State	Measured Attributes
Oklahoma	Extent, severity and type of distress
Oregon	Extent and type of distress
	Extent and type of distress
Pennsylvania	Extent and type of distress
Rhode Island N/R	N/A
South Carolina	Extent, severity and type of distress
South Dakota	Extent and type of distress
Tennessee	Extent, severity and type of distress

Table A-2. Synthesis Results–Measured Attributes (Continued).

State	Measured Attributes
Utah	Extent and severity by distress
Vermont	Extent and severity by distress type
Virginia	Extent and Severity (qualitatively, except for transverse cracks) by distress type
Washington	Extent and severity by distress type
West Virginia	Extent and severity by distress type
Wisconsin	Extent and type of distress
Wyoming N/R	Unclear

Table A-3. Synthesis Results–Scale, Scale Description, and M&R Action.

State	Scale	Scale Description	M&R Action
Alabama	0-100	N/A	Overlay at a score of 55
Alaska	N/A	N/A	N/A
Arizona N/R	N/A	N/A	N/A
Arkansas	N/A	N/A	N/A
California	1 2 3 4 5	Excellent Good Fair Poor Very Poor	Preventive Maintenance Preventive Maintenance Major Rehabilitation or Replacement Major Rehabilitation or Replacement Major Rehabilitation or Replacement
Colorado	RSL>11 RSL 6-10 RSL 1-5 RSL=0	Good Fair Poor Due	None None None Need rehab
Connecticut N/R	N/A	N/A	N/A
Delaware	4-5 3-4 2.5-3 2-2.5 <2	Very Good Good Fair Poor Very Poor	Routine maint. Preventive maint Rehab Reconstruction
DC			Pavement Condition Index (PSI) ASTM D6433-99
Florida	0 6 6.4 10	Worst not considered to be deficient when the speed limit of the pavement segment is less than 50 mph sound condition Best	Major Rehabilitation or Replacement Major Rehabilitation or Replacement Preventive Maintenance Preventive Maintenance

Table A-3. Synthesis Results–Scale, Scale Description, and M&R Action. (Continued).

State	Scale	Scale Description	M&R Action
Georgia N/R	100-75 70-75 <70	Excellent/Good Fair Poor/Bad	 Rehab Resurfacing
Hawaii N/R	0-100	N/A	N/A
Idaho	5-3 3-2.5 2.5-2 <2	Good Fair Poor Very Poor	Unclear
Illinois	7.6-9.0 6.1-7.5 4.6-6.0 0-4.5	Excellent Good Fair Poor	Preventive Maintenance Acceptable condition Repair in the short term Immediate major rehabilitation
Indiana	IRI < 1.59 IRI 1.59 to 2.68 IRI >2.68	Good Fair Poor	N/A
Iowa	0-39 40–60 60-80 80-100	Poor Fair Good Excellent	Reconstruction Major Rehabilitation Preventive Maintenance Preventive Maintenance
Kansas	1 2 3	Smooth/no distress Require routine maint. Require rehab.	Smooth/no distress Require routine maint. Require rehab.
Kentucky N/R	3.5-5 2.5-3.5 <2.5	Good Fair Poor	Unclear
Louisiana	IRI < 171 in/mile IRI < 201 in/mile IRI < 226 in/mile IRI < 226 in/mile	"Acceptable" IH "Acceptable" NHS "Acceptable" State Hwys "Acceptable" Regional Hwys	Unclear
Maine	0-5	N/A	N/A
Maryland	N/A	N/A	N/A

Table A-3. Synthesis Results–Scale, Scale Description, and M&R Action. (Continued).

State	Scale	Scale Description	M&R Action
Massachusetts	0-5	0 - worst, 5 - best	N/A
Minnesota	RQI: 0-5 SR: 0-4 PQI: 0-4.5	See Appendix B	N/A
Michigan	SR: 4.0-5.0 SR: 3.0-3.5 SR: 1.0-2.5	Poor Pavement Fair Pavement Good Pavement	Major Rehabilitation or Replacement Major Rehabilitation or Replacement Preventive Maintenance
Mississippi	0-100	N/A	N/A
Missouri		**NHS Arter Collectors**	
	Accept. PSR	>32 29-32 <29	Preventive maintenance
	Marginal PSR	>31 29-31 <29	Asphalt surface treatments
	Unaccept. PSR	>30 29-30 <29	Rehab as per RTD 02-013/R100-008
Montana	100-63 62.9-45 <45	Good Fair Poor	Decision trees
Nebraska	100-90 89-70 69-50 30-49 0-29	IRI <0.82 m/km, Very Good IRI 0.86 - 2.48, Good IRI 2.49 to 3.33, Fair IRI 3.34 to 4.21, Poor IRI >4.21, Very Poor	Decision Trees

Table A-3. Synthesis Results–Scale, Scale Description, and M&R Action. (Continued).

State	Scale	Scale Description	M&R Action
Nevada	Depends of road Class	PMS total score	Decision trees based on PMS total scores (Combination of IRI, cracking, etc.)
New Hampshire	100 to 40 <40	Acceptable Unacceptable	Decision trees, evidently dominated by SDI
New Jersey	IRI<1.5 or SDI>3.5 IRI<2.7 + SDI>2.4 or IRI<1.5 + SDI<3.5 IRI>2.7+ SDI<2.4	Good Fair/Mediocre Poor	N/A
New Mexico	0-5	Good condition: Interstate PSI > 3 Other PSI > 2.5	N/A
New York	9-10 7-8 6 1-5 U	Excellent/No distress Good/Distress begins to show Fair/Distress clearly vis. Poor/Distress Freq./Severe Not rated/Under constr.	Treatment Selection Report (PETSR)
North Carolina	100-98 >93 >86 >70 <70	Good: PCR>80	Rehab action triggered by individual distress indices rather than PCR
North Dakota	0 to 1.3 1.3 to 2.0 2.0 to 2.8 > 2.8	Excellent Good Fair Poor	N/A

Table A-3. Synthesis Results–Scale, Scale Description, and M&R Action. (Continued).

State	Scale	Scale Description	M&R Action
Ohio	0-40	Very Poor	Major Rehabilitation or Replacement
	40-55	Poor	Major Rehabilitation or Replacement
	55-65	Fair to Poor	Major Rehabilitation or Replacement
	65-75	Fair	Major Rehabilitation or Replacement
	75-90	Good	Preventive Maintenance
	90-100	Very Good	Preventive Maintenance
Oklahoma	N/A	N/A	N/A
Oregon	10.0 to 0.0	Very Poor	Major Rehabilitation or Replacement
	45.0 to 10.1	Poor	Major Rehabilitation or Replacement
	75.0 to 45.1	Fair	Minor Level of Repair
	98.0 to 75.1	Good	Preventive Maintenance
	100 to 98.1	Very Good	Preventive Maintenance
	5	Very Poor	Major Rehabilitation or Replacement
	4.0 to 4.9	Poor	Major Rehabilitation or Replacement
	3.0 to 3.9	Fair	Minor Level of Repair
	2.0 to 2.9	Good	Preventive Maintenance
	1.0 to 1.9	Very Good	Preventive Maintenance
Pennsylvania	0	Worst	
	100	Best	N/A
Rhode Island N/R	N/A	N/A	N/A
South Carolina	0.0 to 1.9	Very Poor	Major Rehabilitation or Replacement
	2.0 to 2.6	Poor	Major Rehabilitation or Replacement
	2.7 to 3.3	Fair	Major Rehabilitation or Replacement
	3.4 to 4.0	Good	Preventive Maintenance
	4.1 to 5.0	Very Good	Preventive Maintenance

Table A-3. Synthesis Results–Scale, Scale Description, and M&R Action. (Continued).

State	Scale	Scale Description	M&R Action
South Dakota	0 2.6 3 5	Worst Best	South Dakota DOT has a detailed treatment method. Usually, for Principal Arterial (2.6<PSR<3.0) needs resurfacing, (PSR<2.6) needs reconstruction. For Other Functional Classes (PSR<2.6) needs reconstruction.
Tennessee	0-1 1.0-2.5 2.5-3.5 3.5-4.0 4.0-5	Very Poor Poor Fair Good Very Good	Mandatory field review performed Added to the resurfacing program Eligible for resurfacing program Routine and or preventive Maintenance Do nothing
Utah	N/A	N/A	N/A
Vermont	100 to 40 <40	Acceptable Unacceptable	None Rehabilitation or Reconstruction
Virginia	>90 70-89 60-69 50-59 <49	Excellent Good Fair Poor Very poor	Decision trees In general CCI<60 triggers rehab
Washington	100 100 to 50 50 < 50	Excellent Good Fair Poor	None Due Rehabilitation or Reconstruction
West Virginia	5 4 3 2 1	Excellent Good Fair Poor Very poor	Rehab at 2.5

Table A-3. Synthesis Results–Scale, Scale Description, and M&R Action. (Continued).

State	Scale	Scale Description	M&R Action
Wisconsin	0-19	Very Good	Preventive Maintenance
	20-39	Good	Preventive Maintenance
	40-59	Fair	Major Rehabilitation or Replacement
	60-79	Poor	Major Rehabilitation or Replacement
	80 or more	Very Poor	Major Rehabilitation or Replacement
Wyoming N/R	N/A	N/A	N/A

Table A-4. Synthesis Results–Rating Computation.

State	Rating Computation
Alabama	Combined deducts for age, traffic (AADT) and distress
Alaska	N/A
Arizona N/R	PSI AASHTO expression
Arkansas	N/A
California	The combinations of individual distresses observed on a pavement are evaluated for severity and broadly classified into overall levels of structural distress.
Colorado	For major HW: Individual indices by distress using: Index = 100-(Meas.-min)/(max-min)100 RSL=min of indices For secondary roads: function of year of last rehab
Connecticut N/R	N/A
Delaware	OPC = (Threshold Value) + [(Remaining Service Life)*(Reduction Rate)]
DC	Visual inspection by raters
Florida	Cracks, ride, and ruts—the three indices are equally important, and the lowest one represents the overall pavement condition.

Table A-4. Synthesis Results–Rating Computation (Continued).

State	Rating Computation
Georgia N/R	Deduct values for project average extent/severity by distress Deducts are added and subtracted from 100 to give PACES
Hawaii N/R	N/A
Idaho	RI= function of IRI CI = unclear Index used is the lowest of RI and CI
Illinois	For ACP, CRS = regression model of IRI, rutting, and severity ratings (0-5) of predominant distresses For CRCP, CRS = regression model of IRI, and severity ratings (0-5) of predominant distresses
Indiana	Flexible and Rigid: Combine PCR with IRI and Rut into Pavement Quality Index (PQI)
Iowa	PCI = 100 - Deduct values, Deduct=f (distress type, severity, and extent)
Kansas	Flexible/Rigid: PL depends on pavement type and the combination of distresses present, whereby a level is assigned to each distress type as a weighed sum of their severities
Kentucky N/R	IRI is converted to 0-5 scale Rut depth is reported in units of 1/16 inch
Louisiana	Deduct values

Table A-4. Synthesis Results–Rating Computation (Continued).

State	Rating Computation
Maine	Flexible: Deduct values Rigid: N/A
Maryland	N/A
Massachusetts	Lowest of Rut Index, Ride Index, and Condition (Distress) Index
Minnesota	$PQI = \sqrt{(RQI)(SR)}$ $SR = e^{(1.386-(0.045)(TWD))}$ RQI is based on IRI and rating panel correlation
Michigan	A Distress Index of 50 or greater equates to a RSL of zero. DI values of 0 to 50 have corresponding RSL values greater than zero. A RQI of 70 or greater equates to a RSL equal to zero. RQI values of 0 to 70 have corresponding RSL values greater than zero.
Mississippi	Flexible/Rigid Deduct values for distress combined with IRI PCR=100*(((12-IRI)/(12))^a)*(((Dmax-DP)/(Dmax))^b)
Missouri	PSR is 50/50 IRI and distress
Montana	Flexible: Ride Index (IRI Converted to RI 0-100), Rut, Alligator Cracking Index and Miscellaneous Cracking Index Rigid: N/A

Table A-4. Synthesis Results–Rating Computation (Continued).

State	Rating Computation
Nebraska	Flexible: Crack, rut depth and IRI Rigid: Fault depth and damaged joints
Nevada	Add all points from Ride IRI. Rut Depth. Fatigue and Block cracking. Non-wheel path transverse block cracking. Patching. Bleeding. Raveling. Friction number
New Hampshire	Flexible: Deduct values similar to Vermont's Rigid: Unclear
New Jersey	Flexible/Rigid: DV_NL= distr weight x severity x %occurrence NDI=(500-Sum DV)/100 DV_L=350xseverity coeff.x%occur LDI=(500-(SumDV_L+DV_rut))/100 Flex: SDI=(NDI*LDI)/5 Rigid SDI=NDI (scale 0 to 5)
New Mexico	Unclear
New York	Pavement Surface Rating, dominant distress , IRI and rut Info combined into PCI
North Carolina	Deduct values
North Dakota	N/A

Table A-4. Synthesis Results–Rating Computation (Continued).

State	Rating Computation
Ohio	PCR=100-Deduct, Deduct=(Weight for distress)(Wt. for severity)(Wt. for Extent)
Oklahoma	Unclear
Oregon	For each tenth-mile, raveling index, patching index, fatigue index, and no load index are combined into one tenth-mileindex value. This tenth-mile index value is compared to the tenth-mile rut index value. The lower of the index values is determined to be the "tenth-mile overall condition" index value. Next, to determine the overall pavement management section condition index; the "tenth-mile overall condition" indices are averaged. The GFP Rating method involves driving the highways with 2-person rating teams at 50 mph or posted speed, whichever is lower, conducting a visual survey, and scoring pavement sections with a subjective value from very good to very poor.
Pennsylvania	Ride index (45 percent), Structural index (30 percent), Surface distress index (20 percent), and Safety index (5 percent).
Rhode Island N/R	N/A
South Carolina	PSI: Pavement Serviceability Index (based on roughness) PDI: Pavement Distress Index (based on distresses) PQI: Pavement Quality Index Composite function of PSI and PDI
South Dakota	CMP = Mean – 1.25*SD Where: CMP = Composite index (>=lowest individual index and >= 0.00) Mean = Mean of all contributing individual indices SD = Standard deviation of the above mean

Table A-4. Synthesis Results–Rating Computation (Continued).

State	Rating Computation
Tennessee	PSI: Pavement Serviceability Index (based on roughness) PDI: Pavement Distress Index (based on distresses) PQI: Pavement Quality Index Composite function of PSI and PDI $PQI = PDI^{0.7} * PSI^{0.3}$
Utah	N/A
Vermont	Flexible: Deduct values Rigid: Not developed yet
Virginia	CCI=min of Load related Distress rating (LDR) and Non Load related Distress Rating (NDR) (IRI is ignored)
Washington	Flexible: Ec=equivalent cracking computation Rigid: Deduct value computation (currently individual indices are proposed for each rigid pavement distress surveyed)
West Virginia	Flexible: Minimum of PSI, SCI, ECI and RDI Rigid: Minimum of PSI, JCI and CSI
Wisconsin	PDI = Weighted average of 11 elements of distress for ACP and 12 elements of distress for PCCP
Wyoming N/R	PSI AASHTO expression

Table A-5. Synthesis Results–Surveyed Distresses.

State	Surveyed Distresses
Alabama	No detail
Alaska	IRI, rut depth, cracking and patching
Arizona N/R	Cracking and rutting
Arkansas	N/A
California	Flexible: Friction, Cracks, Raveling, Corrugations, Settlement, Heave and Distortion, Wheel Track Rutting, Potholes, Base Failures Rigid: Friction, Cracks, Settlement, Heave and Distortion, Spalling, Joint Separation
Colorado	Flexible: IRI, cracking and rutting Rigid: unclear
Connecticut N/R	N/A
Delaware	Will use individual distresses like South Dakota Condition Index = 5.0 – Deduct Value Flexible: Fatigue Cracking, Environmental Cracking, Patches, Raveling Composite Pavements: Reflective Cracking, Raveling, Patches, Fatigue Cracking Rigid Pavements: Joint Deterioration
DC	See Appendix B for details
Florida	Flexible: Rut Rating, Crack Rating, Patching, Raveling, Rippling, Depression, Bleeding, Potholes, Shoving, Corrugations, Delamination, Stripping, Lane Realignment, Rigid: Surface Deterioration, Spalling, Patching, Transverse Cracking, Longitudinal Cracking, Corner Cracking, Shattered Slabs, Faulting, Pumping, Joint Condition

Table A-5. Synthesis Results–Surveyed Distresses (Continued).

State	Surveyed Distresses
Georgia N/R	Flexible: Rut Depth, Load-Associated Cracking, Block/Transverse and Reflection Cracking, Raveling, Loss of Section, Bleeding, Shoving, Edge Distress, Potholes, Base Failure and Roughness Rigid: Joint Spalling, Edge Cracking, Faulting, Patching and Roughness
Hawaii N/R	N/A
Idaho	Unclear
Illinois	Interstate Flexible: Block Cracking, Transverse Cracking/Joint Reflection Cracks, Overlaid Patch Reflective Cracking, Longitudinal/Center of Lane Cracking, Centerline Deterioration Interstate CRCP: CRS = IRI, Durability Cracking, Transverse Cracking, Centerline Deterioration, Longitudinal Cracking, Edge Punchouts, Popouts/High Steel, Permanent Patch Deterioration
Indiana	Flexible and Rigid: Rut Depth, IRI, Faulting and Cracking
Iowa	Flexible: IRI, Rutting, Transverse Cracking, Longitudinal Cracking in the Wheel Path and Non-Wheel Path, Alligator Cracking, Block Cracking Rigid: IRI, Faulting, D-Cracking, Transverse Cracking
Kansas	Flexible: Rutting, Fatigue Cracking, Transverse Cracking, Block Cracking and Roughness (IRI) Rigid: Faulting, Condition of Joints and Roughness (IRI)
Kentucky N/R	Flexible: Roughness (IRI), Rut Depth and "Condition Points"
Louisiana	Roughness (IRI), Rut, Cracking, Patching, and Faulting

Table A-5. Synthesis Results–Surveyed Distresses (Continued).

State	Surveyed Distresses
Maine	Flexible: Rutting, Roughness, Structural and Functional Cracking Each weighed by 25% Rigid: N/A
Maryland	Flexible: Rutting, Cracking and Ride Rigid: Unclear
Massachusetts	Rut, Ride (roughness), Distress
Minnesota	See Appendix B for details
Michigan	Flexible: Rutting, Surface Friction, Cracking, Raveling, Flushing, Roadway Curvature, Pavement Grade, and Cross Slopes Rigid: Surface Friction, Cracking, Spalling, Faulting, Roadway Curvature, Pavement Grade, and Cross Slopes
Mississippi	Flexible: Long and Transverse Cracking, Patching, Alligator Cracking, Block Cracking Edge Cracking, Potholes, Raveling, Bleeding and Reflective Cracking Rigid: D-Cracking, Spalling, Map Cracking, Pumping Faulting, Blowups, Seal Deteriorate Corner Break, Punchouts, Transverse Crack
Missouri	Uses “Distress Identification Manual for the Long-Term Pavement Performance Project” and the “Asphalt – PASER Manual.”
Montana	Flexible: Fatigue Cracking, Thermal Cracking, Rutting and Ride Rigid: N/A

Table A-5. Synthesis Results–Surveyed Distresses (Continued).

State	Surveyed Distresses
Nebraska	Flexible: N/A Rigid: N/A
Nevada	N/A
New Hampshire	Flexible: Transverse, Wheel Path Fatigue Cracking, Misc. Cracking, Rutting, Roughness Rigid: Not explicitly documented (Inferred Cracking and Roughness)
New Jersey	Flexible: Wheel Path, Non-Wheel Path and Transv. Cracking, Patching, Shoulder Det. Rigid: Cracking, Faulting, Joint Deter., Patching Shoulder Deter.
New Mexico	Flexible: Raveling, Rutting/Shoving, Long. Cracking Transverse Cracking and Fatigue Cracking Rigid: Corner Break, Faulting, Joint Seal Damage, Shoulder Drop Off Long. Cracks Patch Deterioration, Spalling, Transverse and Diagonal Cracks
New York	Cracking Only Windshield, Rutting, Roughness and Faulting from High Speed Profilers. Also determines dominant distresses Alligator Cracking, Faulting, Spalling and Widening Dropoff. Dominant distresses do not affect scale description based on cracking only.
North Carolina	Flexible: Alligator and Transverse Cracking, Rutting, Raveling, Bleeding, Patching, Oxidation Rigid: Cracking, Corner Breaks, Joint Seal Damage, Joint Spalling, Shoulder Drop Off and Patching
North Dakota	N/A

Table A-5. Synthesis Results–Surveyed Distresses (Continued).

State	Surveyed Distresses
Ohio	Flexible: Raveling, Bleeding, Patching, Rutting, Surface Deterioration, Settlement & Waves, Cracking, Crack Sealing Deficiency Rigid: Transverse Crack Spacing, Longitudinal Cracking, Patching, Popout, Pumping, Punchouts or Edge Breaks, Spalling, Crack Sealing Deficiency
Oklahoma	Flexible/Comp: Transverse, Alligator and Misc. Cracking, Raveling and Patching, Macrotext. Rigid: Cracking, Faulting, Punchouts, Patching and Macrotexture
Oregon	Asphalt Concrete (AC) Pavement: Rutting, Fatigue Cracking, Longitudinal Cracking, Transverse Cracking, Block Cracking, Potholes and Patches, Raveling, BleedingJointed Concrete Pavement (JCP): Corner Crack, Corner Break, Longitudinal Cracking, Transverse Cracking, Shattered Slab, Patch Condition, Joint ConditionContinuously Reinforced Concrete Pavement (CRCP): Longitudinal Cracking, Transverse Cracking, Punchouts, Potholes and Patches, Joint Condition
Pennsylvania	Bituminous Pavements: Fatigue Cracking, Transverse Cracking, Miscellaneous Cracking, Edge Deterioration, Bituminous Patching, Raveling/Weathering, Rut Depth. Cement Concrete Pavements: Faulted Joints, Broken Slab, Transverse Joint Spalling, Transverse Cracking, Longitudinal Cracking, Longitudinal Joint Spalling, Bituminous, Patching, Cement Concrete Patching, Rut Depth
Rhode Island N/R	N/A
South Carolina	Bituminous and Composite Pavements: Raveling, Patching, Fatigue Cracking, Transverse Cracking, Longitudinal Cracking. Concrete Pavements: Surface Deterioration, Patching, Punchouts, Transverse Cracking, Spalling, Longitudinal Cracking, Pumping, Faulting
South Dakota	Flexible: Transverse Cracking, Fatigue Cracking, Patching/Patch deterioration, Block Cracking, Rutting, Roughness Rigid: D-Cracking and ASR, Joint Spalling, Corner Cracking, Faulting, Joint Seal Damage, Roughness, Punchouts

Table A-5. Synthesis Results–Surveyed Distresses (Continued).

State	Surveyed Distresses
Tennessee	Fatigue, Rutting, Longitudinal Cracks In the Wheel Path, Patching, Block Cracking, Raveling, Transverse Cracks, Longitudinal Cracks (Non-Wheel Path), & Longitudinal Cracks in the Lane Joints.
Utah	Flexible: Wheel Path, Longitudinal, Block and Transverse Cracking, Raveling/Oxidation and Patching Rigid: Long/Transv. Cracking, Corner Breaks, Durability, Spalling, Pumping, Seal Damage, Drop Off
Vermont	Flexible: Longitudinal and Transverse Cracking, Rutting and Roughness Rigid: Not developed yet
Virginia	Flexible: Alligator, Transverse/Reflection Cracking, Raveling/Oxidation, Patching and Ride Rigid: N/A
Washington	Flexible: Alligator Cracking, Longitudinal Cracking, Transverse Cracking and Patching Rigid: Faulting, Cracking and Wear
West Virginia	Flexible: Alligator/Longitudinal Cracking (SCI), Transverse/Block Crack. (ECI) and Rut (RDI) Rigid: Faulting/Damaged Joints (JCI) Slab Cracking (CSI)
Wisconsin	Flexible: Flushing, Cracking, Rutting, Transverse and Longitudinal Distortion, Surface Raveling, Patching Rigid: Cracking, Transverse Faulting, Longitudinal Joint Distress, Distressed Joints/Cracks, Patching
Wyoming N/R	Cracking and Rutting

Table A-6. Synthesis Results–Length of Evaluation Section.

State	Length of Evaluation Section
Alabama	0.04 miles (200 ft)
Alaska	N/A
Arizona N/R	N/A
Arkansas	N/A
California	PCC: 1.0 mile HMA: When pavement condition changes
Colorado	N/A
Connecticut N/R	N/A
Delaware	N/A
DC	
Florida	Varies
Georgia N/R	1 mile, except for cracking that is 100 ft
Hawaii N/R	N/A
Idaho	N/A
Illinois	When pavement condition or type change
Indiana	N/A
Iowa	The data are collected and summarized for every 10 meters. The PCI and other distress data are then summarized for homogenous pavement management sections based on project history, jurisdictional boundaries, and traffic. The sections range from 0.5 miles to 10 miles long.

Table A-6. Synthesis Results–Length of Evaluation Section (Continued).

State	Length of Evaluation Section
Kansas	0.02 mi (100ft)
Kentucky N/R	N/A
Louisiana	0.1 miles (500ft)
Maine	Unknown
Maryland	N/A
Massachusetts	N/A
Minnesota	Each year, the DIV is driven over the entire 14,000-mile trunk highway system, in both directions. Distresses are summarized over 500-ft sections
Michigan	Entire length of far-right lane - no sampling performed. Distress Index and Ride Quality Index based on 1/10-mile increments
Mississippi	Unclear
Missouri	N/A
Montana	0.04 miles (200 ft)
Nebraska	N/A
Nevada	N/A
New Hampshire	N/A

Table A-6. Synthesis Results–Length of Evaluation Section (Continued).

State	Length of Evaluation Section
New Jersey	0.1 miles
New Mexico	0.1 miles (528 ft)
New York	0.5-1 mi
North Carolina	N/A
North Dakota	0.1 mile (528 ft)
Ohio	2 to 3 miles
Oklahoma	0.01 miles (52 feet)
Oregon	Distress Survey procedure: The distress type, severity, and quantity informationare collected for 0.1-mile segments
	No segments need
Pennsylvania	Approximately one-half mile long
Rhode Island N/R	N/A
South Carolina	0.2 mile segments
South Dakota	All distresses are collected by sections, with an average section length of 0.25 mile for paved surfaces and 1.0 mile for gravel surfaced roads.

Table A-6. Synthesis Results–Length of Evaluation Section (Continued).

State	Length of Evaluation Section
Tennessee	0.1 mile
Utah	Flexible: Approx. 0.1 miles (500 ft) Rigid: Approx. 40 panels
Vermont	0.1 miles
Virginia	Unclear
Washington	Varies, based on physical landmarks
West Virginia	N/A
Wisconsin	1.0 mile
Wyoming N/R	N/A

Table A-7. Synthesis Results–Sampling Method and Survey Frequency.

State	Sampling Method	Survey Frequency
Alabama	Random 200 ft within each mile	Every 2 years
Alaska	N/A	Annually
Arizona N/R	N/A	Annually
Arkansas	N/A	Annually
California	PCC: Continuous inspection of the whole section HMA: One 100-foot sample per section	Annually
Colorado	N/A	Annually
Connecticut N/R	N/A	N/A
Delaware	N/A	Annually Local road biannually
DC		
Florida	N/A	Annually
Georgia N/R	N/A	Annually
Hawaii N/R	N/A	Annually
Idaho	N/A	Annually
Illinois	N/A	Two-year cycle
Indiana	N/A	Annually

Table A-7. Synthesis Results–Sampling Method and Survey Frequency (Continued).

State	Sampling Method	Survey Frequency
Iowa	No sampling	Two-year cycle
Kansas	Random within 1-mi section	Every 2 years
Kentucky N/R	N/A	Unclear
Louisiana	100%	Every 2 years
Maine	100% interstate 50% non-interstate	Annually
Maryland	Unclear	Annually
Massachusetts	Unclear	Unclear
Minnesota	N/A	Each year, the Pavement Management Unit collects condition data on approximately 60 percent of the entire system
Michigan	No sampling performed	Annual for Sufficiency Rating, a biennial collection for PMS rating

Table A-7. Synthesis Results–Sampling Method and Survey Frequency (Continued).

State	Sampling Method	Survey Frequency
Mississippi	20% sample Looking at 100% with automated surveys	Every 2 years
Missouri	Automated surveys possibly 100%	N/A
Montana	N/A	Annually
Nebraska		Annually
Nevada	N/A	N/A
New Hampshire	0.1 miles	Every 2 years
New Jersey	N/A	Annually
New Mexico	Starting at each mile-post	Annually
New York	Continuous inspection of whole sections	Annually Interstate Every 2 years other
North Carolina	N/A	Annually
North Dakota	First 528 ft of each mile	N/A
Ohio	N/A	Annually
Oklahoma	100%	Every 2 years

Table A-7. Synthesis Results–Sampling Method and Survey Frequency (Continued).

State	Sampling Method	Survey Frequency
Oregon	N/A	Biennial basis
Pennsylvania	N/A	2 year cycle
Rhode Island N/R	N/A	N/A
South Carolina	N/A	Interstate System-Annually Primary System-3-year cycle Secondary System-3-year cycle
South Dakota	N/A	Annually
Tennessee	N/A	Annually
Utah	Beginning of milepost	All except skid Annually Skid every 2 years
Vermont	Continuous inspection of whole sections	Annually
Virginia	100% sample on interstate 20% sample on non-Interstate routes	Every 2 years
Washington	Continuous inspection of whole sections	Annually
West Virginia	N/A	Unknown
Wisconsin	A sample of each section is rated for distress	N/A
Wyoming N/R	N/A	Annually

Table A-8. Synthesis Results–Legislative/Internal Goal.

State	Legislative/Internal Goal
Alabama	No legislative mandate Internal goal: Overlay when index reaches 55
Alaska	No legislative mandate No internal goal
Arizona N/R	No preset legislative goal Internal NHS PSR>3.23
Arkansas	No preset legislative goal Internal: Rehab. all with IRI>1.52 m/km
California	Goal Reported to Legislature: Reduce deteriorated pavement to 5,500 lane-miles by 2008. (However, due to funding constraints, the department is re-evaluating the target.)
Colorado	No preset legislative goal Internal goal: >54% Good/Fair
Connecticut N/R	N/A
Delaware	
DC	No legislative mandate Internal goal: increase % miles of excellent/good PCI
Florida	Internal Goal: 80% of network with Index > 6 for all 3 indices
Georgia N/R	Legislative mandate: unclear Internal; goal: 100% with PACES>70
Hawaii N/R	No legislative mandate. Internal goal: PCI>80
Idaho	Legislative mandate: unclear Internal goal: <18% better than CI or RI<2.5
Illinois	90% of miles “acceptable” (that is, not “backlogged”), based on CRS.

Table A-8. Synthesis Results–Legislative/Internal Goal (Continued).

State	Legislative/Internal Goal
Indiana	No preset legislative goal Internal goal: <10% miles Poor PQI and >85% Fair or better PQI Plan to switch to Rem. Service Life (RSL)
Iowa	Internal Goal: Average PCI 45-65, depending on roadway class
Kansas	No preset legislative goal Internal goal: Interstate >85% PL=1 Other >80% PL=1
Kentucky N/R	No preset legislative goal Internal goal: <30% poor
Louisiana	No preset legislative goal Agency target: IH: 97% , NHS: 95% SH: 90% Regional: 80%
Maine	No preset legislative goal Internal goal: IRI<2.65 m/km
Maryland	No preset legislative mandate Internal >84% miles IRI< 1.88 IRI<2.7 m/km Interstate and Secondary
Massachusetts	Agency Goal (not legislatively mandated) - IH: 3.0 minimum, NHS: 2.8 minimum
Minnesota	No legislative goal. Internal RQI IHW >3.0, Other >2.8
Michigan	Internal Goal: ≤30% of network Poor or Very Poor

Table A-8. Synthesis Results–Legislative/Internal Goal (Continued).

State	Legislative/Internal Goal
Mississippi	No preset legislative goal Internal goal keep Interstate and 4-lane highways at PCR>72 and 2-lane roads PCR>62 Goals to be revisited after RSL is introduced
Missouri	Legislative: None Internal target: Ensure that not all sections will come up for rehab at the same time
Montana	No preset legislative goal Internal goal: Less 5% miles with RI<60% (IRI>2.34)
Nebraska	No preset legislative goal Internal goal NSI>70%
Nevada	N/A
New Hampshire	No preset legislative mandates Working on setting internal goals
New Jersey	Legislative mandate: none Agency target: < = 20% Deficient (i.e., Poor)
New Mexico	Legislative mandate: Miles of Interst. and non-Interstate rated Good Miles system-wide rated deficient Internal: Similar goals in terms of percentages
New York	Unclear
North Carolina	Legislative mandate: Percent miles rated Good Internal goal: Interstate PCR>93 Other PCR>86

Table A-8. Synthesis Results–Legislative/Internal Goal (Continued).

State	Legislative/Internal Goal
North Dakota	Internal Agency Goal (not legislatively mandated) IH: Excellent 95%, Interregional Corridor: 90% State Corridor: 85%, District Corridor: 80% District Collector: 75%
Ohio	Internal Goal: 90% or more of priority roads with PCR ≥65, 90% or more of Urban System with PCR ≥55, and 90% of other roads with PCR ≥55. Not legislatively mandated.
Oklahoma	Unclear
Oregon	Internal Goal: 68-90% of miles in "Fair" or better condition, depending on roadway class.
Pennsylvania	None internal or mandated by legislature
Rhode Island N/R	N/A
South Carolina	Eliminate the decline of the average remaining service life (RSL) and maintain the current condition of the transportation system by December 2012. Not mandated by legislature
South Dakota	SCI above 3.0-3.9 (depending on road classification). Internal agency goal – not legislatively mandated.
Tennessee	90% of all interstate highways will be in good or very good condition. Not legislatively mandated
Utah	Legislative mandate: None, reporting IRI (1/2 car) Internal goal: Use a combination of IRI and cracking indices to forecast budget needs.

Table A-8. Synthesis Results–Legislative/Internal Goal (Continued).

State	Legislative/Internal Goal
Vermont	Internal current goal: VMT-weighed PCI>70 Proposed goal: Ride Index-based PSR (0-5) Minimum Ride Index of 50% or IRI of 2.7 m/km
Virginia	Legislative mandate: None, annual reporting Internal goal: Less than 18% of Primary HW with CCI<60 Less than 15% with IRI>2.2 m/km
Washington	No preset legislative goal Internal goal: PCI (lowest of PSC, IRI or rutting index)>90%
West Virginia	Legislative mandate: None, reporting IRI Internal goal: yet to be established
Wisconsin	Internal Goal: ≤15% of network with Poor rating
Wyoming N/R	No preset legislative goal Internal NHS PSR>3.5 Other PSR>3.0

APPENDIX B:
PAVEMENT RATING AND SCORING PROCESSES

NHI COURSE NO. 13135: PAVEMENT MANAGEMENT SYSTEMS (1998)

This NHI course offers a good overview of the nation-wide practice for summarizing distresses into indices used for pavement management applications that include:

- Trigger treatments
- Calculate life-cycle costs
- Evaluate the network condition
- Make use of the same relative scale between systems

The distress considered and the way it is summarized into indices varies between states. Typically, the extent and severity is used for computing deduct values (e.g., Table B-1 for flexible pavement cracking). In rating distresses, some agencies use the most dominant distress present, while other use all the distresses present. For each distress type/severity level, failure criteria are established in terms of the distress index that indicates the need for rehabilitation. This gives the maxium value of deduct value for the particular distress type/severity/level. Two basic approaches are used to obtain deduct values, namely expert opinion or continuous functions established through curve fitting. For the latter, straight lines are fitted to either aritmetic-arithmetic or log-log plots between extent and deduct values by severity level. The two point used commonly are the (0,0) and the point corresponding to the extent and deduct value that would warrant rehabilitation action, if that distress only was present. A problem with this approarch is that the resulting distress condition performance curves versus time are not necessarily smooth.

Table B-1: Example of Deduct Value Matrix for Fatigue Cracking.

Severity	Extent				
	None	1-10%	10-25%	25-50%	>50%
Low					
Medium					
High					

<u>References:</u>

National Highway Institute (NHI) Short Course, Pavement Management Systems, Student Workbook Publication, Course No. 13135 Federal Highway Administration, (1998).

National Highway Institute (NHI) Short Course, Highway Pavements, Student Workbook Publication, Course Number 13114 Federal Highway Administration, National Highway Institute (1992).

ASTM D6433-99

ASTM has accepted as a standard the Pavement Condition Index (*PCI*) developed by the U.S. Army Corp of Engineers. The calculation of the *PCI*, ranging from 100% to 0%, is explained next and takes place in a similar fashion for flexible and rigid pavements.

A pavement section is divided into a number of uniform sample units, (i.e., an area of 225±90 contiguous m^2 or 20±8 contiguous slabs for flexible and rigid pavements, respectively). The following calculations are conducted for each sample unit. For each distress and severity level present, the area/length affected is added up and divided by the area of the sample unit, which expressed in percent, is referred to as distress density. Subsequently, deduct values are computed for each distress density, using a series of charts.

These deduct values need to be processed to compute the maximum corrected deduct value (*max CDV*). The correction is necessary to ensure that the sum of the deduct values does not exceed 100%. If fewer than one of the deduct values is larger than 2%, the *max CDV* is equal to the sum of the individual deduct values. Otherwise, the *max CDV* is computed through an iterative process, as follows. The deduct values are arranged in decreasing order. The maximum number of allowed deduct values *m*, which cannot exceed 10, is given below as a function of the highest deduct value (*HDV*), (i.e., the first in the decreasing order list):

$$m = 1 + \frac{9}{98}(100 - HDV) \leq 10 \tag{1}$$

The allowed number of deduct values is computed as the integer part of *m*. If fewer than *m* deduct values are present, all of them are summed to compute the total deduct value. Otherwise, only the *m* highest deduct values are summed plus the $(m+1)_{th}$ deduct value factored by the real part of *m*. The sum of the allowed deduct values thus established, allows computing the *max CDV* using the charts shown in Figures B-1 and B-2, which are applicable to flexible and rigid pavements, respectively, (i.e., *q* is the number of deduct values that has not been assigned a value of 2%).

This process is repeated by substituting successively values of 2% for the actual deduct value of the $(m+1)_{th}$ deduct value, the $(m)_{th}$ deduct value and so on and recalculating the *max CDV*. The overall maximum of these values gives the *max CDV* value that is entered into the *PCI* calculation:

$$PCI = 100 - max\ CDV \tag{2}$$

The pavement section *PCI* is computed by averaging the *PCI* values of the number of pavement sample units surveyed. The latter is selected on the basis of statistical

considerations, (i.e., the variation in *PCI* between sampling units and the desired confidence level).

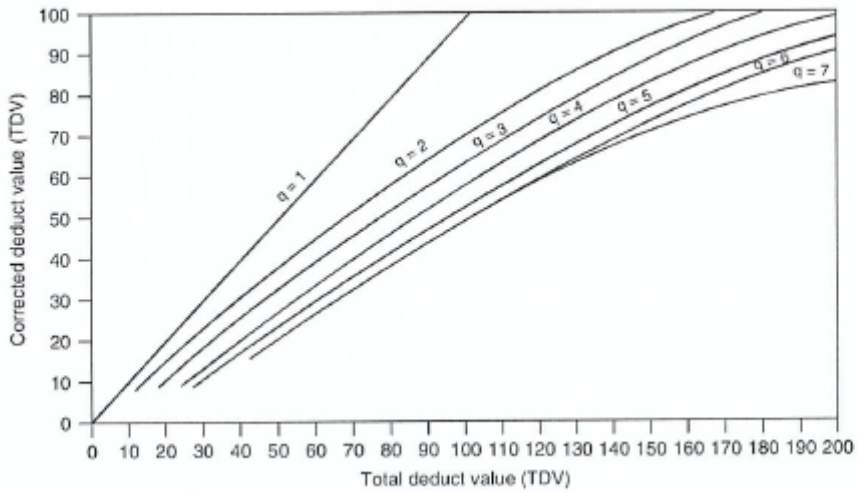

Figure B-1. Obtaining Corrected Deduct Values, Flexible Pavements.

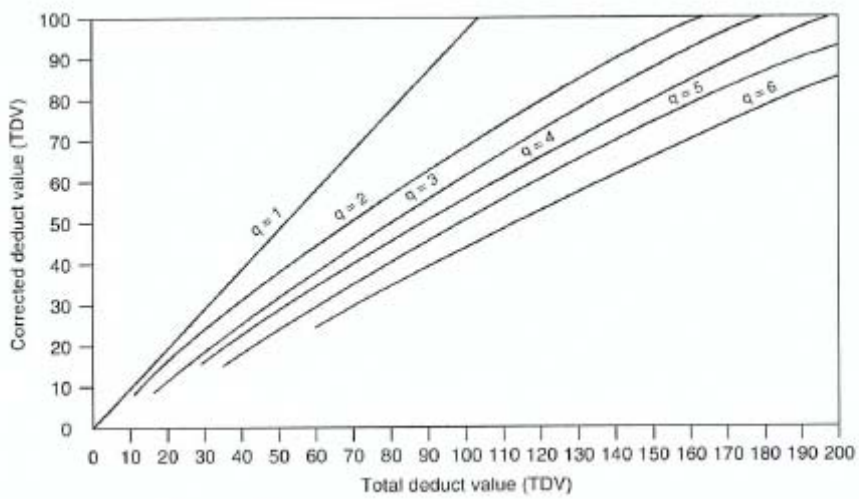

Figure B-2. Obtaining Corrected Deduct Values, Rigid Pavements.

<u>References:</u>

PAVER Asphalt Distress Manual, US Army Construction Engineering Laboratories, TR 97/104 and TR 97/105, 1997.

Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys, American Society for Testing of Materials, ASTM Book of Standards Volume 04.03, D6433-99, West Conshohocken, PA, 2000.

WASHINGTON STATE DOT

Washington State initially utilized the Present Condition Rating (*PCR*) as a means of rating pavement condition (Kay et al. 1993). The *PCR* was calculated by deducting values from 100 for the extent and severity of each distress present using:

$$PCR = (100 - \sum D)\left(1.0 - 0.3\left(\frac{CPM}{5000}\right)^2\right) \tag{3}$$

where, *D* is the deduct value and *CPM* is a roughness statistic (i.e., counts per mile from a Cox Road meter). The deduct values *D* for flexible and rigid pavements are shown in Tables B-2 and B-3.

Table B-2. WS DOT Deduct Values for Calculating *PCR* for Flexible Pavements.

				Percent of Wheel Track Length			
				1-24	25-49	50-74	75+
Alligator Cracking		(1)	Hairline	20	25	30	35
		(2)	Spalling	35	40	45	50
		(3)	Spalling & Pumping	50	55	60	65
				Average Width in Inches			
				1/8-1/4	1/4+	Spalled	
Longitudinal Cracking	Lineal Feet per 100 feet	(1)	1-99	5	15	30	
		(2)	100-199	15	30	45	
		(3)	200+	30	45	60	
				Average Width in Inches			
				1/8-1/4	1/4+	Spalled	
Transverse Cracking	Number per 100 feet	(1)	1-4	5	10	15	
		(2)	5-9	10	15	20	
		(3)	10+	15	20	25	
				Type of Patch			
				BST	Blade	AC	
Patching	Percent Area per 100 feet	(1)	1-5	20	25	30	
		(2)	6-25	25	30	35	
		(3)	25+	30	40	50	

Early performance models expressed *PCR* as an exponential function of pavement age:

$$PCR = C - m\,A^P \tag{4}$$

where
PCR = Pavement Condition Rating;
A = Pavement Age (time since construction or resurfacing);
C = model constant for maximum rating (100);
m = slope coefficient; and
P = "selected" constant that controls the degree of the performance curve.

Table B-3. WS DOT Deduct Values for Calculating *PCR* for Rigid Pavements.

				Percent of Panels		
				1-25	26-50	51+
Cracking Averaging 1/8+	Units per Panel Length	(1)	1-2	5	10	20
		(2)	3-4	10	20	35
		(3)	4+	15	30	50
				Percent of Joints		
				1-15	16-50	51+
Spalling at Joints and Cracks	Average Width in Inches	(1)	1/4-1	5	10	15
		(2)	1-3	10	20	30
		(3)	3+	15	30	50
				Percent of Panels		
				1-15	16-35	36+
Faulting, Settlement	Average Displacement in Inches	(1)	1/8-1/4	5	10	20
		(2)	1/4-1/2	10	20	30
		(3)	1/2+	15	30	40

This *PCR* index was succeeded in 1993 by the *PSC* (Pavement Structural Condition) to overcome some of the *PCR* limitations (e.g., possible negative values where multiple distresses were present, better fit with the age of the pavement and so on). For flexible pavements, the *PSC* was calculated using:

$$PSC = 100 - 15.8\ EC^{0.5} \tag{5}$$

where *EC* is a composite equivalent cracking value defined in terms of the extent and severity of alligator, longitudinal, transverse cracking and patching. The method used for translating these distresses into the *EC* is described by Kay et al. (1993). A PSC value of 50% is used as a trigger for rehabilitation action, labeling a pavement section as "due."

For rigid pavements, the *PSC* is a variation of the *PCI* as developed by Shahin and Kohn (1981) and later standardized under ASTM E1927-98 (see earlier discussion). The applicable rigid pavement distresses include joint and crack spalling, pumping, faulting/settlement, patching, raveling/scaling and wear. The equation used for computing rigid pavement *PSC* is:

$$PSC = 100 - 18.6\ EC^{0.43} \tag{6}$$

where *EC* is a composite equivalent cracking value defined in terms of the extent and severity of the distresses listed above. The method used for translating these distresses into the *EC* is described by Kay et al. (1993).

These *EC* values were conceived by selecting the magnitude of the deduct value desired for each distress type and severity. As an example, Table B-4 shows three jointed portland concrete cracking severities, CR1, CR2 and CR3, and the deduct value assigned to each one of them, given their extent, (i.e., a PSC deduct value of 50 is

assigned for 25% of panels experiencing medium cracking or 10% of the panels experiencing severe cracking). Similarly a *PSC* value of 50% is the trigger for rehabilitation.

Table B-4. Deduct Values Assigned to Rigid Pavement Cracking.

	Percent Cracked Panels		
Deduct Points	Low (CR1)	Medium (CR2)	High (CR3)
0	0	0	0
25	25	—	—
50	—	25	10
75	100	—	—
100	—	100	50

Currently, Washington State is in the process of revising their rigid pavement condition *PSC* scores (Jackson 2008) to improve on its ability to capture the distress types/levels that trigger certain rehabilitation decisions as summarized in the following table. Only cracking and faulting/wear are considered, (i.e., wear is the result of studded snow tires).

Table B-5. WS DOT Rigid Pavement Trigger Distress Levels and Rehabilitation Treatments.

Rehabilitation Treatment	Faulting	Cracking	Wear
Do Nothing	<1/8"	<10%	0 - .39"
Grinding	-	-	>0.4"
Dowel bar retrofits + Grinding	1/8" - 1/2"	<10%	-
Reconstruction	>1/2"	>10%	>1"

Three individual rigid pavement condition indices are proposed, the Rigid Pavement Cracking Index (*RPCI*) the Rigid Pavement Cracking Index (*RPFI*) and the Rigid Pavement Wear Index (*RPWI*). For cracking, the deduct values are a function of the percent of concrete panels with a single longitudinal crack (*PLC*), single transverse crack (*PTC*) and multiple cracks (*PMC*). The corresponding deduct values by crack type were obtained from straight line log-log plots fitted to specified deduct values versus percent of slabs cracked (e.g., Figure B-3 was fitted by specifying a 20-point deduct value for 10% of the slabs cracked). The *RPCI* is computed as:

$$RPCI = 100 - (LCDV + TCDV + MCDV) \tag{7}$$

where
LCDV = Longitudinal Cracking Deduct Value,
TCDV = Transverse Cracking Deduct Value, and
MCDV = Multiple Cracks Deduct Value.

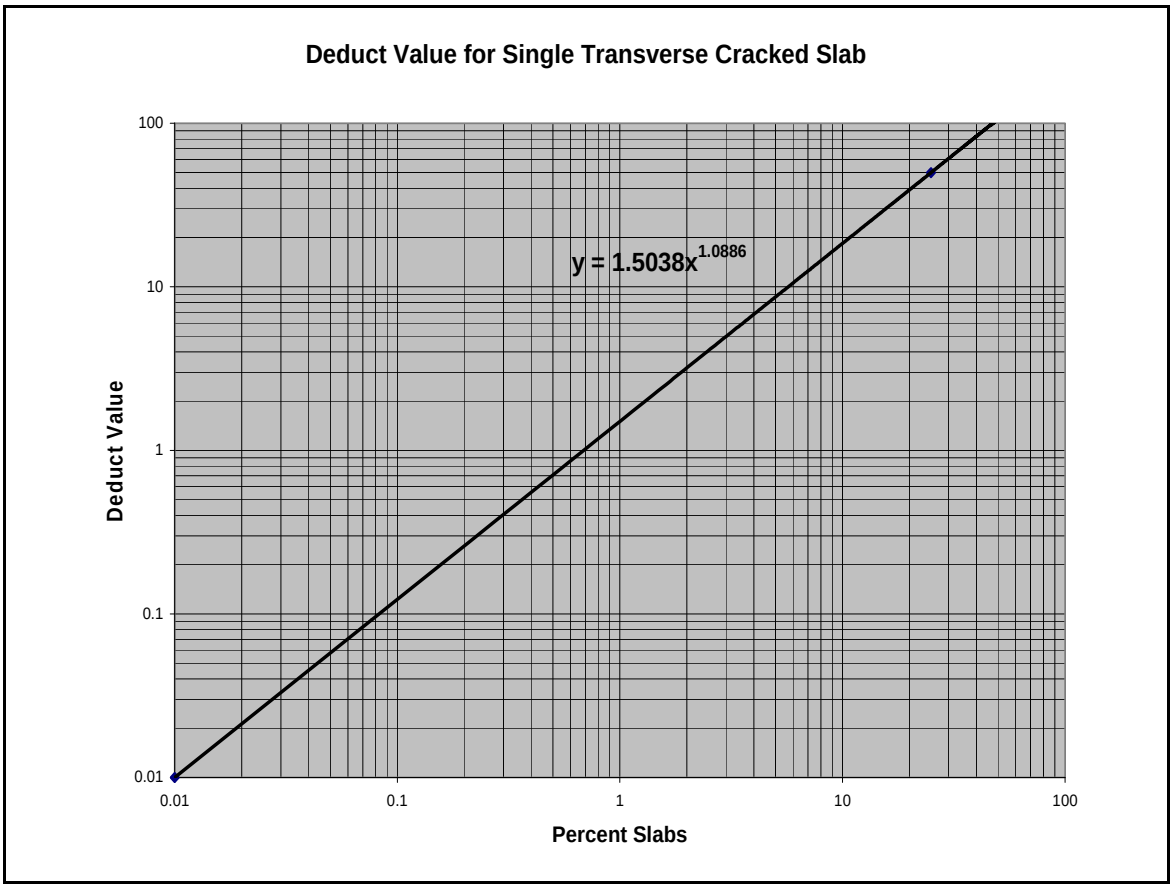

Figure B-3. Deduct Values for *TLC* (after Jackson 2008).

The *RPWI* and *RPFI* are similarly defined, the only difference being that for faulting a 4th power polynomial function is used for computing the deduct values, as opposed to a log-log. In summary, it is recommended not to combine these three condition indices into one, but rather develop individual performance relationships for each one of them. Should an aggregate index be desired for the three distresses, it is recommended to average the scores and subtract one Standard Deviation. This new approach for rigid pavement condition indexing is yet to be implemented by WS DOT.

References:

Jackson, N.C., Development of Revised Pavement Condition Indices for Portland Cement Concrete Pavement for the WSDOT Pavement Management System WA-RD 682.3, November 2008, Washington State Department of Transportation, Olympia WA.

Kay, R. K., Mahoney, J. P, Jackson, N. C., "The WSDOT Pavement Management System – A 1993 Update," WSDOT Report No. WA-RD-274.1, Washington State Department of Transportation, Olympia WA, September 1993.

Shahin, M.Y. and S.D.Kohn, Pavement Maintenance Management for Roads and Parking Lots, Report No. CERL-TR-M-294, U.S. Army Construction Engineering Research Laboratory, Champaign IL, October 1981.

Standard Guide for Conducting Subjective Pavement Ride Quality Ratings, American Society for Testing of Materials, ASTM Book of Standards Volume 04.03, E1927-98, West Conshohocken, PA, 1998.

VERMONT DOT

The earlier version of the Vermont DOT pavement management system (Deighton et al. 1995) utilized discrete deduct values for "structural" cracking (i.e., traffic-related) and transverse cracking (i.e., non-traffic related) and continuous deduct values for rut depth and roughness. Accordingly, individual indices were defined for each of these distress types. Introduction of an automated distress data collection system (ARAN) in 2001 provided additional distress data. As a result, a modified procedure emerged for computing deducts involving continuous deduct functions for cracking as a function of extent, for three discrete severity levels (Deighton & Associates 2005). These were derived using log-log plots of deduct values versus extent, similar to those described earlier under the Washington DOT system. Where multiple distresses of various extents are present, the deduct of each of them is computed individually, then their deduct is computed for those of a certain extent combined and the maximum deduct value is used for computing the overall distress index.

Despite that, it was felt that the resulting indices overestimated the need for rehabilitation treatment, as perceived by the districts. For this reason, several studies were undertaken to examine the relationship between the distresses present, the associated distress indices and the type/timing of maintenance/rehab treatments undertaken. As a result, modified indices were developed, and comparisons were conducted between the original indices and the modified indices such as for example, for structural cracking (Figure B-4) as well as between the modified indices and treatment level (e.g., Figure B-5). It is noted that in the latter figure, the experimental points reflect the average opinion of six engineers as to the treatment warranted and hence, suggest a lower prediction error than the one resulting from raw data.

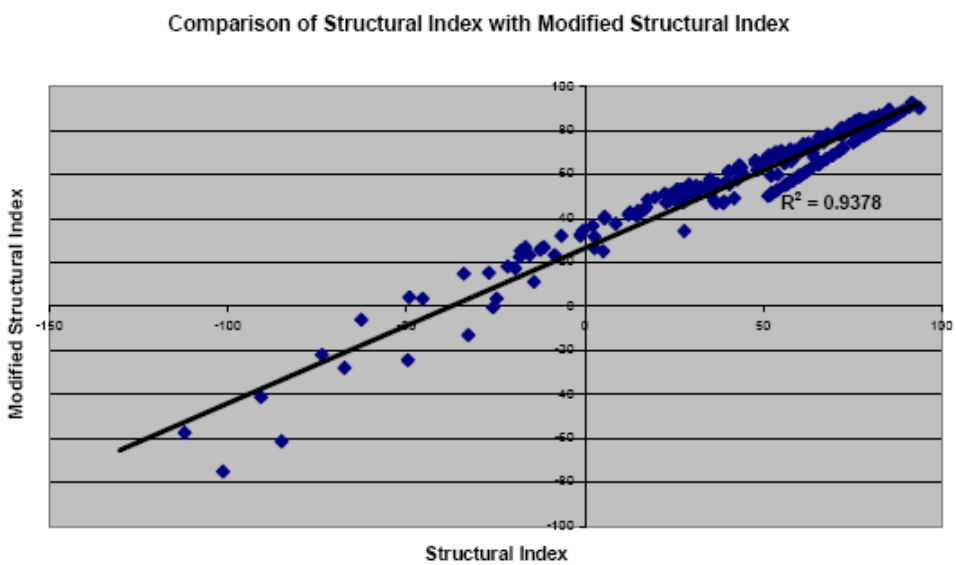

Figure B-4. Comparison between Original and Modified Structural Distress Index (Deighton et al. 2005).

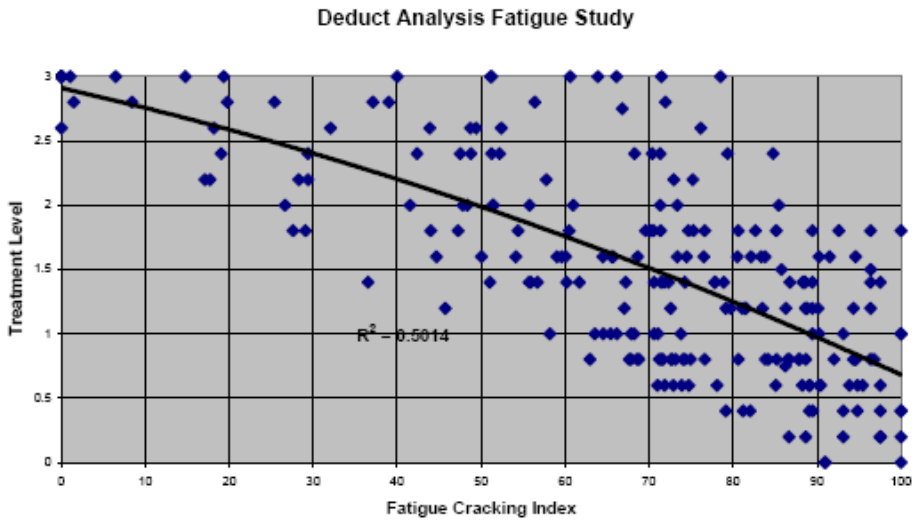

Figure B-5: Comparison between Modified Structural Distress Index and Treatment Level (0=do nothing, 1=functional repair, 2=Structural Repair, 3=base repair) (Deighton et al. 2005).

Similar plots were produced for transverse cracking and rutting. The improved indices reportedly resolved some of the limitations of the old distress indices (e.g., a high incidence of negative values) while better reflecting treatment decisions.

References:

Deighton, R. and J.Sztraka, Pavement Condition dTV Technical Guide Vol. 3. Deighton and Associates Ltd, Bowmansville, Ont., July 1995.

New Vermont Agency Transportation Pavement Performance Models; Phase I Report Deighton and Associates and Applied Pavement Technology, Feb. 2005.

DOT RESPONSES TO SPECIFIC PAVEMENT CONDITION REPORTING REQUIREMENTS AND GOALS

INTRODUCTION

The following section describes responses received from State DOT pavement management engineers to two specific questions related to pavement condition reporting and goals:

1. What index are you currently using to drive your network-level pavement repair decisions?
2. Do you have some legislature-imposed pavement performance measure for communicating your $ needs to them and if so, what is the threshold?

The questions were submitted via e-mail and the replies of those responded to-date are given next verbatim.

ARIZONA DOT

1. We use IRI and convert it to PSR (Pavement Service Rating).

2. We have no legislature-imposed pavement performance measure. We report the overall system PSR and evaluate it to a goal of 3.2. Our overall budget is set and the Director distributes the funds as he sees fit with the advice and consent of the State Transportation Board.

ARKANSAS DOT

1. Arkansas does not currently use the pavement management system to drive network level pavement repair decisions.

2. We do not have a legislature-imposed pavement performance measure.

ALABAMA DOT

1. We generate a report, and associated map, based on the age of the pavement and traffic. We have a "default" decay curve that we use to give that pavement a score based on the age. Then a further deduct is made based on the traffic. The traffic deduct $= (AADT/312.5)^{1/2}$ which means that an additional 8 points was subtracted for an AADT = 20,000. Don't ask me how the equation was derived. It is what one of our field offices was doing and the Pavement Management Steering Committee liked they started to apply statewide back in the early 1990s. The attachment has different curves that we recently looked at. Our resurfacing threshold score is 55. The original curve was based on my predecessor's engineering judgment from year 0 to 4 and, since we design our overlays for 8

years, at year 8 the score is 55. After we looked at our historic rating data we discovered that, on average, it was taking 11 years for the pavement to reach 55. So, we fitted a new curve varying the constants and picked the one that reaches zero at approximately 18 years. Honestly, the whole report is kind of a polished animal dropping. But, it seems to roughly match what the field maintenance engineers are doing, using age of pavement to prioritize, because there isn't anything else right now.

2. No

IDAHO DOT

1. The Idaho Transportation Department (ITD) rates pavements on a scale of 5.0 (perfect) to 0 (rubble). We rate both the roughness, as measured with a profiler, and the cracking, using visual inspection. We consider pavements to be deficient if either the roughness or cracking drops below 2.5 for interstate highways and arterials, or below 2.0 for collector roads. We also measure rutting depth and skid friction, but do not use these in our deficiency definition.

2. This performance measure is our own commitment; not imposed by our legislature. We estimate total $ needs with a model (HERS-ST) that suggests appropriate general treatment strategies and assigns a cost per lane mile for those treatments.

INDIANA DOT

1. We were using PQI, which is a composite of the IRI, rut and PCR. PCR being a measure of faulting and cracking. We are in the midst of switching to remaining service life; but that will take about a year.

2. We currently agree to have not more than 10% < poor PQI and at least 85% > fair PQI. Again, we are changing to RSL over the next year.

MONTANA DOT

1. MDT uses 4 condition indices (Rut, Ride, Fatigue Cracking and Thermal Cracking), 32 decision trees and 60 performance models to recommend network level treatment and repair decisions. These are developed and utilized through the MDT Pavement Management System. MDT operates two high-speed road profilers, one skid trailer and collects visual surface distress manually using temporary pavement raters during the summer months. An annual Condition and Treatment Report is published each January and the Districts use the recommended treatments from this report to nominate projects. I am attaching a document that outlines this process and a document that show an example of recommended treatments.

2. Montana does not have legislature-imposed performance measures, although we do have some internal performance measures.

NEW HAMPSHIRE DOT

1. NHDOT uses three indices in its decision trees in the PMS. They are as follows:
   a. Ride Comfort Index (RCI). The RCI is calculated directly from the IRI and is a scale from 0 to 5 with a 5 being IRI less than about 52.
   b. Rut Rate Index (RRI). The RRI is a index from 0-5 and is a representation of the amount of rutting present. The higher the value, the less the rutting.
   c. Surface Distress Index (SDI). The SDI is a measure of the types, severity, and extents of the cracking and distress present the roadway. The SDI is a scale from 0-5 with a 5 being a crack/distress free roadway.

   The RCI, RRI, and SDI are all used within the decision trees but based on our experience, the SDI has the most impact and drives the repair/treatment that is ultimately selected.

2. NHDOT does not have any legislature imposed performance goals or measures. We are working on setting some Department goals for different subsets of our network (e.g., Interstates, Turnpikes, Numbered Routes, etc.) but have not formally set anything yet.

NEW MEXICO DOT (RESPONSE ABBREVIATED)

1. The conditions of New Mexico's highways are characterized using the New Mexico Pavement Serviceability Index (PSI). The PSI of a roadway section ranges from 0 to 5 and is calculated 60% from pavement roughness and 40% from pavement cracking and other condition data that are measured annually. Interstate highway sections are considered to be in good condition when their PSI values are equal to, or greater than 3.0. Non-Interstate highway segments are considered to be in good condition when their PSI values are equal to, or more than 2.5. Information regarding miles of good and deficient roadway sections are submitted to decision makers including the and NM State Legislators, the NMDOT's Executive Staff, NMDOT's District Engineers and other State and locally elected officials. Report includes:
   - Percent of Interstate Surface Lane Miles Meeting Minimum Level of Performance
   - Percent of Non-Interstate/NHS Surface Lane Miles Meeting Minimum Level of Performance
   - Percent of Non-NHS Surface Lane Miles Meeting Minimum Level of Performance
   - Percent of Total System Surface Lane Miles Meeting Minimum Level of Performance

2. New Mexico House Bill #2, Accountability in Government Act or Performance Based Budgeting, began for all state agencies on July 1st 2001. In accordance with House Bill #2, pavement distress data is required to calculate several performance measures that the NMDOT is required to submit to the NM Legislative Finance Committee (LFC) and the NM Department of Finance and Administration (DFA). State law requires that the number of miles of highways in the New Mexico State Highway System that are in deficient condition (DFA Budget Based Performance Measures) be reported to the New Mexico Legislative Finance Committee each year. The specific performance measures required by House Bill #4, Department Of Transportation Appropriation Act, State of New Mexico 48th Legislature, 2008 are:
    - Number Of Interstate Miles Rated Good
    - Number Of Combined System-Wide Miles In Deficient Condition
    - Number Of Non-Interstate Miles Rated Good

    The above measures are reviewed by the NM Legislature each year and the goals are adjusted each year by the NM Legislative Finance Committee. Besides being mandated by State law, the above measures can influence NMDOT's overall budget.

MISSISSIPPI DOT

1. In answer to question 1, our goal is to keep the interstates and four-lane highways at a PCR of 72 and the two-lane routes at 62, but this is not written in stone. Also, if any road has an average rut of 0.20" or above, it will be triggered.

2. As for question 2, we do not have any legislature-imposed measures. We will soon be buying new software that will include optimization capabilities, and we hope to incorporate remaining service life, and at that time we will revisit performance goals.

NORTH CAROLINA DOT

1. NCDOT uses its own internal Pavement Condition Rating (PCR) developed by NCDOT and ITRE back in the 80s with occasional modifications. It is a 0-100 point scale for both Jointed Concrete and Asphalt Pavements. I've attached the deduction value spreadsheets for your information. We have survey manuals available if you need that information. I must say that this number is not specifically used to trigger treatments - that is done by individual distress. In our old PMS, this was done directly by the distress level. In our new PMS, we have index values calculated for each distress that roughly correspond to the field measurements. We consider treatments applied above about an 70-80 on the overall PCR (depending on AADT) to be preservation treatments.

2. We have a mixed bag of legislatively mandated reporting requirements. The simplest is "% Good" which are all pavements with a rating greater than or equal to an 80. This year for the first time we were also required to produce a report that

provides a 7 year analysis of A) expected pavement condition for each year based on current budgeting practices and B) A 7 year projection of funding needed to achieve and maintain a "Good" level on 75% of Secondary Roads, 80% of NC and US roads and 85% of interstates. This was done with the new Pavement Management System. Being the first time, there is still much calibration to be conducted. We also calculate a "fix it now" number which provides a figure based on the total cost to repair every pavement based on its current distress levels.

PAST STUDIES ON PAVEMENT DISTRESS INDICES AND NETWORK CONDITION GOALS

There have been two past national studies targeting the methodology used by State DOTs in summarizing pavement condition and the goals set by them in maintaining their roadway network: NCHRP Synthesis 203 (1994) entitled "Current Practices in Determining Pavement Condition" and NCHRP Report 522 (2004) for a more recent study entitled "A Review of DOT Compliance with GASB 34 requirements." A summary of the most pertinent information gleaned from these two studies is given in Tables B-6 and B-7.

Table B-6. Summary of Distress Index Methodology by State (Source: NCHRP Synthesis 203, 1994).

State	Survey	Method to Determine Distress Rating	Distress Rating Combined with?	Method or Formulae
Alabama	Yes	Weight factors	Roughness	Formula
Alaska	Yes	Distress state table	Roughness, frost	Compare with 240 condition states
Arizona	Yes	No response	Roughness, structural, traffic	No response
Arkansas	Yes	Deduct point system	Roughness	Rigid=0.65 defects+0.35ride, Flexible=1/2power(ride
California	Yes	Pavement condition category	Roughness	Over/under decisions
Colorado	Yes	No response	Roughness	Condition matrix
Connecticut	Yes	Weight factors	Roughness, AADT	Dr+ri+adt+class
Delaware	Yes-SHRP	Weight factors	Ride Comfort Index	PSI=75% (SDI)+25% (RCI), also safety and traffic
DC	Yes	Table	No response	No response
Florida	Yes	Deduct points	Not used	Separate rating for ride, rutting, cracking
Georgia	Yes-(flexible)	Deduct from 100	Not used	Not applicable
Hawaii	Yes-(Caltrans)	Distress severity and extent	Not used	Not applicable
Idaho	Yes	Cracking index	PSI (SDP)	50% roughness (0-5)+50% cracking (0-5)
Illinois	Yes	CRS 0-9	Not applicable	Not applicable
Indiana	Yes-HPMS	PSR 0 to 5 HPMS	Not used	Not applicable
Iowa	Yes	PCR 0-100	Roughness, friction, structural	Formula with coefficient
Kansas	Yes	Woodward-Clyde methodology	Roughness	Based on distress state
Kentucky	No	Assigned demerits	Roughness, friction, traffic	Point assignment
Louisiana	Yes-(draft)	Under development	Roughness	Under development
Maine	Yes	PCR 0-5	Not used	N/A
Maryland	Yes	Weight factors, deduct values	Roughness	Priority matrix
Mass.	No	Formulae	Roughness	PSI=0.65DI+.35PSR
Michigan	No	Remaining service life (RSL)	Not used	Threshold values
Minnesota	Yes	Weight scale 0-4	Roughness	PQI = square root (PSR X SR)
Mississippi	Yes-SHRP	Formula	Roughness	PCR=100(12-IRI/12)(Dmax-

Table B-6. Summary of Distress Index Methodology by State (Source: NCHRP Synthesis 203, 1994) (Continued).

				DP/Dmax)squared
Missouri	No	Condition score 0-20	Roughness	PSR=(2x roughness score)+(condition score)
Montana	Yes	Under development	Roughness	PSI reduced by degree of rutting
Nebraska	Yes	NSI (similar to PCI)	Roughness	PMS Manual Procedure
Nevada	Yes	Formula	Roughness, friction	AASHO Road Test Formulas
New Hamp.	Yes	Formula	No response	Not used
New Jersey	Yes-SHRP	Weighting factors 0-5	Roughness, traffic	PI=0.6RQI+0.3SDI+0.1TF
New Mexico	Yes-FHWA	Tables	Roughness, traffic, accidents	Formulas
New York	Yes	Score summaries	Not used	Not used
North Carolina	Yes	Deduct values	Roughness	Deduct value in distress index
North Dakota	Yes	Deduct values	Roughness	1/3 distress+1/3ride+1/3age=composite index (0-5)
Ohio	Yes	Deduct values	Roughness, friction	Not combined, independent consideration
Oklahoma	Yes	No response	Planning	No response
Oregon	Yes	Deduct values	Not used	Not applicable
Pennsylvania	Yes	Deduct values	Roughness	PSR Curve=OPI=0.45RI+0.30SI+0.20DI+.05SFI
Puerto Rico	-	-	-	-
Rhode Island	Yes	Formula	Roughness	Proprietary software
South Carolina	Yes	Distress values, models	Roughness, structural values	PQI=1.158+0.138 (PDI)(PSI)
South Dakota	Yes	Distress data elements	Roughness, structural, traffic	Ranking process
Tennessee	Yes-FHWA	Not applicable	Not applicable	Not applicable
Texas	Yes	Utility factors	Roughness	Tables, equations
Utah	Yes-SHRP	DI=5.0 - 0.13(C+P)1/2pwr.	Roughness, structural, skid	Under development
Vermont	Yes	Not used	Roughness, friction	Formula
Virginia	Yes	Rating factors	Ride rating	Ride considered separate
Washington	Yes	Deduct values	No response	Developing new process
West Virginia	No	Not applicable	Not applicable	Not applicable
Wisconsin	Yes	Work factors	No response	No response
Wyoming	No (plan SHRP)	No response	none	Not applicable

Table B-7. Summary of State Compliance with GASB 34 (Source: NCHRP Report 522, 2004).

State	Measure	Description	Latest Value	2002 Target
Alabama	Distress Rating	0-100 scaled assigned to 50 m segments based on roughness, cracking, rutting, patching, raveling	79.7	≥75
Arizona	Present Serviceability Rating (PSR)	0-5 scaled based on subjective rating by road users	3.5	≥3.23
Colorado	Remaining Services Life (RSL)	Poor (0-5 years), Fair (6-10 years) or Good (11 + years) based on surface distress	54% good or fair	54% good or fair
Delaware	Overall Payment Condition (OPC)	0-5 scale based on surface distress	9.8% in poor condition	≤15% in poor condition
Florida	Pavement Condition Survey	0-10 scale for pavement segments based on ride smoothness, pavement cracking and rutting	79% >6 for all 3 criteria	80% >6 for all 3 criteria
Idaho	Roughness Index (RI) and Cracking Index (CI)	RI – 0.0 to 5.0 based on public perception; CI – 0.0 to 5.0 for each pavement section	18% <2.5	≤18% <2.5
Indiana	Pavement Quality Index (PQI)	0-100 scaled based on 3 surface distress factors	Int – 87 NHS – 83 Other - 80	Int – 75 NHS – 75 Other - 65
Kansas	Performance Levels (PL)	PL1: Good condition; PL2: requires maintenance; PL3: Poor condition	Int 97% PL1 Other 91% PL1	Int ≥80% PL1 Other ≥78% PL1
Kentucky	Pavement Condition Index	Good, Fair, Poor based on pavement smoothness	20.6% Poor	≤30% Poor
Maine	Highway Adequacy	0-100 scale based on Pavement Condition Rating, safety, backing, ADT, posted speed and shoulder	Overall – 76.6	Overall – 60
Michigan	Sufficiency Rating	Excellent, Good, Fair, Poor, Very Poor based on surface distress	22% Poor or Very Poor	≤30% Poor or Very Poor
Minnesota	Pavement Quality Index	0.0-4.5 scaled based on smoothness and distress (cracking)	Princ. – 3.39 Other – 3.30	Princ. ≥3.0 Other ≥2.8
Nebraska	Nebraska Serviceability Index (NSI)	0-100 scale based on surface distresses – cracking, patching, roughness, rutting, faulting	Overall – 84%	Overall ≥72%

Table B-7. Summary of State Compliance with GASB 34 (Source: NCHRP Report 522, 2004) (Continued).

Nevada	International roughness Index (IRI) by road classification (I-V)	Profile index based on vehicle response to roughness (lower=smoother)	I - 83% <80 II - 77% <80 III - 86% <80 IV - 65% <80 V - 19% <80	I – 70% <80 II – 65% <80 III -60% <80 IV – 40% <80 V – 10% <80
Ohio	Pavement Condition Rating (PCR)	1-100 scale based on cracking, potholes, deterioration, other	Priority – 78% with ≥65 PCR Other – 97% with ≥55 PCR	Priority ≥75% with ≥65 PCR Other ≥75% with ≥55 PCR
Tennessee	Maintenance Rating Index (MRI)	1-100 scale based on pavement, shoulders, roadside elements, drainage, and traffic services	Overall – 87.75	Overall ≥ 75
Texas	Maintenance Assessment Program	1-5 scale based on pavement, traffic operations and roadside with 1=20%, 2=40%, 3=60%, 4 = 80%, and 5=100%	Interstate 82% Other 79%	Interstate >80% Other ≥75%
Utah	Ride Index	1-5 scale based on vehicle response to toughness with adjustment for pavement type	70% with ≥2.75 rating; 8% with ≤1.84 rating	50% with ≥2.75 rating; ≤15% with ≤1.84 rating
Washington	Pavement Condition Index	Pavement section assigned lowest value among Pavement Structural Condition, IRI and rutting	91% with ≥40 rating	90% with ≥40 rating
Wisconsin	International Roughness Index (IRI)	0-5 index based on vehicle response to roughness (lower=smoother)	5% with Poor rating	≤15% with Poor rating
Wyoming	Pavement Serviceability Rating (PSR)	0-5 scale based on ride, rutting and cracking	NHS – 3.56 Other – s3.24	NHS – 3.5 Other – 3.0

APPENDIX C:
TXDOT REPORT ON PAVEMENT CONDITION PERFORMANCE MEASURES

Reprinted from "Comparison of National Pavement Condition Performance Measures" by Bryan Stampley, P.E., Magdy Mikhail, Ph.D., P.E., and Ahmed Eltahan, Ph.D., P.E., by permission of the Texas Department of Transportation, first published in July, 2008.

Comparison of National Pavement Condition Performance Measures

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

July 22, 2008

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Comparison of National Pavement Condition Performance Measures – July 2008

Executive Summary

This report presents pavement condition performance measures used in the 50 United States, along with the District of Columbia, the Commonwealth of Puerto Rico, and the Federal Highway Administration (FHWA). The report also shows how Texas pavements would fare under each of the performance measures, based on FY 2008 Pavement Management Information System (PMIS) data.

Information for the other states was taken from a phone survey conducted on July 11-21, 2008, supplemented by e-mail contact and information taken from the various states' internet websites.

The Texas pavement condition performance measure used for comparison was the Texas Transportation Commission's "90 percent of lane miles in 'good' or better condition" measure, which was adopted in August 2001.

Of course, other states have different performance measures and different ways for rating pavement condition. As a result, we had to make the following assumptions:

- Pavement distress indices in other states were compared to the Texas PMIS Distress Score, which ranges from 1 (most distress) to 100 (least distress).
- Pavement ride quality indices in other states were compared to the Texas PMIS Ride Score, which ranges from 0.1 (worst ride) to 5.0 (best ride).
- When other states used an overall condition index that combined distress and ride, that index was compared to the Texas PMIS Condition Score, which ranges from 1 (worst) to 100 (best).
- In some states, the distress or condition index ranges from 0 (worst) to 5 (best). Texas PMIS Distress Score and Condition Score were divided by 20 to compare to the 0-5 scale.
- Many states use International Roughness Index (IRI) to describe ride quality. These were compared directly to the Texas PMIS IRI values, even though there are slight differences from state to state in how IRI is measured and reported.
- The states' performance measures did not specifically mention frontage roads, so the Texas results were presented for mainlanes only.

The remaining pages show the results, state-by-state, with the Texas PMIS results shown for comparison, when possible.

Federal Highway Administration (FHWA)

Performance Measures	Explanation
Percent of Vehicle-Miles Traveled (VMT) on pavements with Good and Acceptable Ride Quality	Measure is based on International Roughness Index (IRI), measured in inches/mile:

	IRI (inches/mile)
Good	1 to 94
Acceptable	95 to 170
Not Acceptable	> 170

Agency Target	Agency Condition	Texas Condition
	Good: 44.2% Acceptable: 84.9% Based on 2006 data.	Good: 43.33% Acceptable: 91.55% Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Left IRI > 0 Right IRI > 0 Good: Average IRI < 95 inches/mile Acceptable: Average IRI < 170 inches/mile

Alabama Department of Transportation

Performance Measures	Explanation
No legislative performance measures relating to pavements.	

Agency Target	Agency Condition	Texas Condition

Assumptions

Alaska Department of Transportation and Public Facilities

Performance Measures	Explanation
No legislative performance measures relating to pavements.	

Agency Target	Agency Condition	Texas Condition

Assumptions

Arizona Department of Transportation

Performance Measures	Explanation
Percentage of miles with International Roughness Index better than "mediocre."	IRI is measured in inches/mile. "Mediocre" is IRI > 170 inches/mile.

Agency Target	Agency Condition	Texas Condition
95%	Results not available at this time.	87.74% Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Left IRI > 0 Right IRI > 0 Good: Average IRI < = 170 inches/mile

Arkansas State Highway and Transportation Department

Performance Measures	Explanation
Arkansas is reworking their pavement condition rating and hopes to have a new Automated Road Analyzer (ARAN) van up and running within a year or two to get better cracking data. For now, no specific pavement condition performance measures are available. They have used IRI to estimate needs for various highway systems, especially IH. The idea is to estimate money (and mileage) needed to fix all "fair" and "poor" mileage.	For IH needs estimate, categories are: Good: 1 to 95 IRI (inches/mile) Fair: 96 to 170 Poor: > 170

Agency Target	Agency Condition	Texas Condition

Assumptions

Caltrans

Performance Measures	Explanation
Lane miles with Pavement Condition State at or below specified values.	Pavements in state 3, 4 or 5 are categorized as distressed pavements: • State 1: Excellent condition with no, few potholes or cracks • State 2: Good condition with minor potholes or cracks • State 3: Fair condition with potholes and cracks • State 4: Poor condition with significant cracks • State 5: Poor condition with extensive cracks For flexible pavements: Alligator Cracking >= 30% of wheelpath area **or** Patching >= 10% of lane area **or** IRI >= 224 inches/mile. For rigid pavements: 18 or more shattered slabs per mile.

Agency Target	Agency Condition	Texas Condition
The target was to reduce the total lane miles of distressed pavements to 5500 by the 2015/2016FY (about 10%). However, due to funding constraints, the department is reevaluating the target.	13,500 lane miles (32%) are distressed according to the 2005/2006 survey.	23,615.8 lane miles 13.64% Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Distress Score > 0 Distress Score < = 80

Colorado Department of Transportation

Performance Measures	Explanation
Percentage of miles in "Good" or "Fair" condition. Internal goal set by Commission – not legislatively mandated.	Based on Remaining Service Life (RSL). For some highways – especially those recently surfaced with thin treatments, like chip seals – RSL is based on actual work history, age since last structural repair or reconstruction. For other highways, RSL is based on performance prediction curves for each distress (that is, which distress has the lowest RSL).

	Remaining Service Life
Good	>= 11 years
Fair	6 to 10 years
Poor	1 to 5 years
Poor = 0	0 years

Agency Target	Agency Condition	Texas Condition
IH: >= 85% Non-IH NHS: >= 70% Other: >= 55% Statewide: >= 60%	IH: 72% Non-IH NHS: 67% Other: 51% Statewide: 59%	No comparable measure available in Texas.

Assumptions

Connecticut Department of Transportation

Performance Measures	Explanation
No performance measures yet, although they are working on some, maybe within the next few months. The closest measure right now is a statement in the triennial statewide master transportation plan to "maintain rideability of state highways…"	

Agency Target	Agency Condition	Texas Condition

Assumptions

Delaware Department of Transportation

Performance Measures	Explanation
Percentage of miles in "good" condition, based on Overall Pavement Condition (OPC) value.	OPC ranges from 0 (worst) to 100 (best), based on distress only. **OPC** Good: 61 to 100 Fair: 51 to 60 Poor: 0 to 50

Agency Target	Agency Condition	Texas Condition
Unknown.	Good: 69% Fair: 21% Poor: 10%	Good: 95.11% Fair: 2.58% Poor: 2.31% Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Distress Score > 0 Good: Distress Score >= 61 Fair: Distress Score > = 51 and Distress Score < = 60 Poor: Distress Score < = 50

District of Columbia Department of Transportation

Performance Measures	Explanation
Percentage of streets rated "good" or excellent, based on Pavement Quality Index (PQI).	PQI is based on ride quality. Use IRI less than 95 inches/mile.

Agency Target	Agency Condition	Texas Condition
72%	78.76% Based on 2007 data.	32.82% Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Left IRI > 0 Right IRI > 0 Average IRI < 95

Florida Department of Transportation

Performance Measures	Explanation
Percentage of miles with condition above 6.5.	Condition value is the minimum of Cracking, Ride, and Rut. Rating scale is from 0 (worst) to 10 (perfect). Cracking includes raveling, other cracking, and faulting.

Agency Target	Agency Condition	Texas Condition
80%	83.5% Results as of 2007-2008.	88.75% Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Conditon Score > 0 Condition Score > 65

Georgia Department of Transportation

Performance Measures	Explanation
Percentage of miles at or above a specified value, based on Pavement Condition Evaluation System (PACES) rating >= 70.	PACES Rating (0 ~ 100) is calculated based on the pavement surface distress conditions.

Agency Target	Agency Condition	Texas Condition
90%	84% Based on 2008 data.	91.14% Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Disress Score > 0 Distress Score > = 70

Hawaii Department of Transportation

Performance Measures	Explanation
Percentage of miles above a specified value, based on Pavement Condition Index (PCI).	PCI ranges from 0 (worst) to 100 (best). The standard is PCI > 80. Use Texas PMIS Condition Score > 80.

Agency Target	Agency Condition	Texas Condition
Unknown.	Results not available at this time.	80.04% Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Conditon Score > 0 Conditon Score > 80

Idaho Department of Transportation

Performance Measures	Explanation
Percentage of miles in "fair" or better condition. Internal agency goal – not legislatively mandated.	Measure is based on the lower value of the following two indices: • Roughness Index (RI) ranges from 0 (extremely rough) to 5.0 (perfectly smooth). • Cracking Index (CI) ranges from 0 (severe cracking) to 5.0 (little or no cracking).

Pavement Condition	Interstate and Arterials	Collectors
	Lower Index of CI or RI	
Good	3.1 to 5.0	3.1 to 5.0
Fair	2.5 to 3.0	2.0 to 3.0
Poor	2.0 to 2.4	1.5 to 1.9
Very Poor	less than 2.0	less than 1.5

Agency Target	Agency Condition	Texas Condition
>= 82%	80%	Good: 90.12% Fair:96.67% Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Disress Score > 0 Arterials: Funtional System = 1, 2, 6, 11,12,14,16 Collectors: Funtional System = 7,8,17 Fair: Distress Score > = 50 Poor: Distress Score > = 40

Illinois Department of Transportation

Performance Measures	Explanation
Percentage of miles "acceptable" (that is, not "backlogged"), based on the Condition Reporting System (CRS).	CRS ranges from 1.0 (most critical backlog for repair) to 9.0 (no backlog or accruing backlog).

Classification	Critical Backlog	Other Backlog
Interstate	1.0 to 4.8	4.9 to 5.1
Rural – Marked:		
ADT >3000	1.0 to 4.5	4.6 to 5.0
ADT 1000-3000	1.0 to 4.0	4.1 to 4.5
ADT 350-999	1.0 to 3.7	3.8 to 4.2
ADT < 350	not defined	1.0 to 3.7
Rural – Unmarked:		
ADT >3000	1.0 to 4.0	4.1 to 4.6
ADT 1000-3000	1.0 to 3.7	3.8 to 4.2
ADT 350-999	1.0 to 3.2	3.3 to 3.8
ADT < 350	not defined	1.0 to 3.2
Urban:		
ADT >350		
Width >= 20 feet	1.0 to 4.2	4.3 to 4.8
Width < 20 feet	1.0 to 4.5	4.6 to 5.0
Urban:		
ADT < 350, any width	not defined	1.0 to 4.2
Frontage Roads	1.0 to 3.7	3.8 to 4.2
Half-Slabs	1.0 to 3.2	3.3 to 3.8

Agency Target	Agency Condition	Texas Condition
90%	87% As of October 2007?	No comparable measure available in Texas.

Assumptions

Indiana Department of Transportation

Performance Measures	Explanation
Percentage of miles in "good" condition, for IH and all roads, based on International Roughness Index (IRI).	Based on IRI, in inches/mile, as shown below:

	IRI (inches/mile)
Good	1 to 100
Fair	101 to 169
Poor	>= 170

Agency Target	Agency Condition	Texas Condition
Unknown.	IH: 90% All Roads: 65% Based on 2002 data.	IH: 69.05% All: 38.36% Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Left IRI > 0 Right IRI >0 Average IRI < = 100 inches/mile

Iowa Department of Transportation

Performance Measures	Explanation
No legislative or internal performance measures yet, although they might have some in the near future. They do internally track the number of miles, by highway class, with Pavement Condition Index (PCI), as shown below: **Highway Class** / **Miles with PCI less than** IH: 65 Non-IH NHS: 60 Rest of Primary: 50 All other: 45 This might turn into percentages in the future. Iowa does report average PCI to the governor's office for the four highway systems. The main goal is to not decline from year to year.	PCI ranges from 0 (worst) to 100 (best). It includes distress, IRI, and adjustments for 18-k ESAL.

Agency Target	Agency Condition	Texas Condition
No specific target at this time.	Results not available at this time.	IH: 9.22% Non-IH NHS: 11.23% Rest of Primary: 6.64% All other: 2.65% Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Condition Score > 0 Primary: Functional System = 2,6,12,14,16 All other: Functional System = 7,8,9,17,19

Kansas Department of Transportation

Performance Measures	Explanation
There are two performance measures: • Percentage of miles in "good" condition. • Percentage of miles in "deteriorated" condition.	Based on Performance Level (PL), which combines distress ratings and ride quality measurements. PL ranges from 1 (best) to 3 (worst), as described below:

PL	Description
1	Denotes segments that are smooth and exhibit few if any surface defects. Pavement segments in this category do not require corrective action, however it may be appropriate to perform preventative maintenance actions to prolong this good condition. Formerly denoted "Good" or "Acceptable" condition.
2	Denotes segments that appear to require at least routine maintenance to address roughness or to correct moderate surface defects. Formerly denoted "Deteriorating" or "Tolerable" condition.
3	Denotes segments that appeared to require a rehabilitative action beyond routine maintenance at the time of the survey. Formerly denoted "Deteriorated" or "Unacceptable" condition.

Agency Target	Agency Condition	Texas Condition
For "Good" condition: • IH: 85% • Non-IH: 80% ***For "Deteriorated" condition:*** • IH: 3% • Non-IH: 5%	***For "Good" condition:*** • IH: 97.4% • Non-IH: 88.5% ***For "Deteriorated" condition:*** • IH: 0.3% • Non-IH: 0.6% 2007 NOS Condition Survey Report (August 1, 2007)	***For "Good" condition:*** • IH: 88.70% • Non-IH: 86.51% ***For "Deteriorated" condition:*** • IH: 2.18% • Non-IH: 2.16%

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Condition Score > 0 Good: Condition Score > = 70 Deteriorated: Condition Score < 35

Kentucky Transportation Cabinet

Performance Measures	Explanation
No legislative performance measures relating to pavements.	

Agency Target	Agency Condition	Texas Condition

Assumptions

Louisiana Department of Transportation

Performance Measures	Explanation
Percentage of miles with acceptable IRI.	IRI measured in inches/mile. Highway System: "Acceptable" IRI (inches/mile) IH: < 171 NHS: < 201 State Highways: < 226 Regional Highways: < 226

Agency Target	Agency Condition	Texas Condition
IH: 97% NHS: 95% SH: 90% Regional: 80%	IH: 92.4% NHS: 91.5% SH: 93.8% Regional: 82.3%	IH: 96.12% NHS: 98.05% SH: 98.85% Regional: 96.98% Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Left IRI > 0 Right IRI > 0 SH: Used SH or US Regional = FM

Maine Department of Transportation

Performance Measures	Explanation
Average IRI **and** no more than a specific percentage of "poor" mileage, for various functional classes. Internal agency goal – not legislatively mandated. New legislation passed that requires DOT to: • Report age of system • Report remaining service level • Maintain or improve condition as of July 7, 2007 (no specific targets yet).	Based on IRI (in/mi), average of both wheelpaths; "poor" is IRI > 170 Measurements done each summer; 100 percent IH, 50 percent non-IH

Agency Target	Agency Condition	Texas Condition
"Current" goals: • IH: average 75 **and** <1% poor • Arterials: average 110 **and** <16% poor • Collectors (urban and rural major): none (will continue to deteriorate) "Strategic" goals: • IH: average 75 **and** <1% poor • Arterials: average 110 **and** <16% poor • Collectors (urban and rural major): average 160 **and** <34% poor	• IH: meets "current" goal • Arterials: meets "current" goal • Collectors: not part of "current" goal. Based on Summer 2006-2007 data. 2008 measurements underway now.	• IH: average 89.89 **and** <3.88% poor • Arterials: average 104.89 **and** <7.02% poor • Collectors (urban and rural major): average 126.49 **and** <13.84% poor Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Left IRI > 0 Right IRI > 0 Arterials: Functional System = 2, 6, 12, 14, 16 Collector: Functional System = 7 or 17 Poor: Average IRI >170 inches/mile

Maryland State Highway Administration

Performance Measures	Explanation
Percentage of miles with acceptable IRI.	"Acceptable" IRI is less than 170 inches/mile.

Agency Target	Agency Condition	Texas Condition
84%	85.0% Based on 2007 data.	87.39% Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Left IRI > 0 Right IRI >0 Average IRI < 170 inches/mile

Massachusetts Highway Department

Performance Measures	Explanation
Maintain average PSI at or above minimum. Internal agency goal – not legislatively mandated.	PSI ranges from 0 (worst) to 5 (best). It is the lowest of: Rut index, Ride index, and Condition (distress) index.

Agency Target	Agency Condition	Texas Condition
IH: 3.0 minimum NHS: 2.8 minimum	3.2	IH: 4.55 minimum NHS: 4.45 minimum Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Condition Score > 0 Use PSI = (Condition Score)/20

Michigan Department of Transportation

Performance Measures	Explanation
Percentage of mileage in "poor" condition.	Based on Remaining Service Life (RSL). Ratings are based on the observed amount/severity of pavement cracking, faulting, wheel tracking and patching: • Good: 1, 2, or 3 • Poor: 4 or 5

Agency Target	Agency Condition	Texas Condition
No specific target at this time.	IH: 6.2% Freeways: 7.0% Non-Freeways: 8.8% Statewide: 8.2%	IH: 5.36% Freeways: 5.29% Non-Freeways: 4.72% Statewide: 4.72% Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Distress Score > 0 Distress Score < 60 Freeway: Functional System = 1, 11, 12 Non-Freeway: Functional System all but 1, 11, 12

Minnesota Department of Transportation

Performance Measures	Explanation
There are two performance measures: • Percentage of miles in "good" or "very good" condition. • Percentage of miles in "poor" or "very poor" condition. Both measures are based on Ride Quality Index (RQI).	RQI (0~5) is intended to represent the rating that a typical road user would give to the pavement's smoothness as felt while driving his/her vehicle: (RQI Value table below)

	RQI Value
Very Good	4.1 to 5.0
Good	3.1 to 4.0
Fair	2.1 to 3.0
Poor	1.1 to 2.0
Very Poor	0.0 to 1.0

Agency Target	Agency Condition	Texas Condition
Principal Arterials: 70% good or very good 2% poor or very poor. ***Non-Principal Arterials:*** 65% good or very good 5% poor or very poor.	***Principal Arterials:*** 68.9% 2.3% ***Non-Principal Arterials:*** 61.1% 5.2% Based on 2006 Pavement Condition Executive Summary	***Based on Texas PMIS Ride Score*** ***Principal Arterials:*** 81.04% 1.13% ***Non-Principal Arterials:*** 58.87% 2.42% ***Based on Minnesota RQI Calculation*** ***Principal Arterials:*** 60.87% 3.35% ***Non-Principal Arterials:*** 33.45% 4.08% Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Condition Score > 0 Ride Score > 0 Good: Ride Score > 3.1 Poor: Ride Score < 2.0

Mississippi Department of Transportation

Performance Measures	Explanation
Three performance measures, based on Pavement Condition Rating (PCR) and average rut depth, as shown below:	PCR ranges from 0 (worst) to 100 (perfect). Mississippi calculates average rut depth for each entire rating section.

	Standard
IH system	PCR > 72 **and** Average Rut depth < 0.25 in.
4-lane highways	PCR > 72 **and** Average Rut depth < 0.25 in.
2-lane highways	PCR > 62 **and** Average Rut depth < 0.25 in.

Agency Target	Agency Condition	Texas Condition
IH System: 100% with PCR > 72 **and** average Rut depth < 0.25 inches	***IH System:*** 93%	***IH System:*** 51.75%
4-Lane Highways: 100% with PCR > 72 **and** average Rut depth < 0.25 inches	***4-Lane Highways:*** 77%	***4-Lane Highways:*** 50.04%
2-Lane Highways: 100% with PCR > 62 **and** average Rut depth < 0.25 inches	***2-Lane Highways:*** 83%	***2-Lane Highways:*** 24.77%
Based on 2008 data.	Based on FY 2008 data.	Based on FY 2008 data.

Assumptions

Rating Cycle = P (annual PMIS, September-February)
Mainlanes only

IH System:
PMIS Highway System = IH and
Condition Score > 72 and
Shallow Rutting and Deep Rutting = 0 and
Roadbed = L, R

4-Lane Highways:
Condition Score > 72 and
Shallow Rutting and Deep Rutting = 0 and
Roadbed = L, R

2-Lane Highways:
Condition Score > 62
Shallow Rutting and Deep Rutting = 0 and
and Roadbed = K

Texas does not have a value comparable to average rut depth, so use rut percentages = 0.

Missouri Department of Transportation

Performance Measures	Explanation
No legislative performance measures relating to pavements, but they do have internal requirements.	

Agency Target	Agency Condition	Texas Condition

Assumptions

Montana Department of Transportation

Performance Measures	Explanation
Two performance measures, both based on Ride Index (RI). Internal agency goals – not legislatively mandated.	RI is calculated from IRI, but is not the same as IRI. 75 IRI = 80 Ride Index; 150 IRI = 60 Ride Index. RI range is from 0 (worst) to 100 (best).

	RI
Superior	80 to 100
Desirable	60 to 79
Undesirable	40 to 59
Unsatisfactory	1 to 39

Agency Target	Agency Condition	Texas Condition
IH System: Average RI = Desirable or Superior < 5% Undesirable or Unsatisfactory	***IH System:*** Average: 68.1 Undesirable or Unsatisfactory: 2%	***IH System:*** Average: 89.8 Undesirable or Unsatisfactory: 7.31%
Non-IH NHS: Average RI = Desirable or Superior < 5% Undesirable or Unsatisfactory	***Non-IH NHS:*** Average: 80.0 Undesirable or Unsatisfactory: 12%	***Non-IH NHS:*** Average: 100.28 Undesirable or Unsatisfactory: 10.64%
Primary Highways: Average RI = Desirable or Superior < 5% Undesirable or Unsatisfactory	***Primary Highways:*** Average: 88.8 Undesirable or Unsatisfactory: 7% Based on FY 2007 data.	***Primary Highways:*** Average: 103.41 Undesirable or Unsatisfactory: 10.87% Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Left IRI > 0 Right IRI > 0 ***Undesirable or Unsatisfactory:*** IRI >150 inches/mile ***Primary Highways:*** US and SH

Nebraska Department of Roads

Performance Measures	Explanation
Percentage of centerline miles that are "good" or "very good." These are internal agency measures.	There are two separate measures: • Nebraska Serviceability Index (NSI), which uses visual inspections and ride. • IRI, which is reported in mm/m.

	NSI	IRI
Very Good	90-100	less than 0.86
Good	70-89	0.86 to 2.48
Fair	50-69	2.49 to 3.33
Poor	30-49	3.34 to 4.21
Very Poor	0-29	greater than 4.21

Agency Target	Agency Condition	Texas Condition
84% for all highway systems.	For NSI: IH = 96% Expressways = 84% Other Highways = 78% Statewide = 79% For IRI: IH = 97% Expressways = 82% Other Highways = 91% Statewide = 91% Based on Performance Measures, Nebraska Department of Roads (September 2007)	For NSI: IH = 88.70% Expressways = 84.66% Other Highways = 86.69% Statewide = 86.25% For IRI: IH = 81.03% Expressways = 88.30% Other Highways = 82.19% Statewide = 81.03% Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Left IRI > 0 Right IRI > 0 Condition Score >0 ***For NSI:*** Condition Score >= 70 ***For IRI:*** Average IRI <= 157 inches/mile IH: Functional System = 1, 11 Expressways: Functional System = 12 Other Highways: Fuctional System = all, except for 1, 11, 12.

Nevada Department of Transportation

Performance Measures	Explanation
Traffic-weighted average International Roughness Index (IRI). Use Vehicle-Miles Traveled (VMT) as the traffic weighting factor.	IRI measured in inches/mile, as shown below:

	IH	Non-IH
Very Good	1 to 59	1 to 59
Good	60 to 94	60 to 94
Fair	95 to 119	95 to 170

Agency Target	Agency Condition	Texas Condition
No specific target at this time.	IH: not available Non-IH: not available All: 88 inches/mile	IH: 101.12 inches/mile Non-IH: 111.34 inches/mile All: 108.02 inches/mile Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Left IRI > 0 Right IRI > 0 Use VMT-weighted average IRI

New Hampshire Department of Transportation

Performance Measures	Explanation
None internal or mandated by legislature.	New Hampshire is basically redoing their pavement management system, going to a Deighton PMS and using a Pathway van to collect data. This effort is just underway and should be up and running in another year or two. They are also hoping to develop Remaining Life estimates to go along with the new data.

Agency Target	Agency Condition	Texas Condition

Assumptions

New Jersey Department of Transportation

Performance Measures	Explanation
Percentage of miles in "deficient" condition. Internal agency goal – not legislatively mandated.	"Deficient" is average IRI > 170 in/mi **or** Surface Distress < 2.5 Surface Distress rated on a scale of 0 (worst) to 5 (best).

Agency Target	Agency Condition	Texas Condition
<= 20% deficient	49% deficient Based on calendar year 2007 data. 2008 measurements and ratings underway now.	13.61% Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Left IRI > 0 Right IRI >0 Distress Score > 0 Distress Score < 50

New Mexico State Highway and Transportation Department

Performance Measures	Explanation
Percentage of miles that are "non-deficient." Internal agency goal – not legislatively mandated.	X values indicate "deficient" values for each of the three highway systems.

	IH	Non-IH NHS	Non-NHS
Very Good 4.00 to 5.00			
Good 3.00 to 3.99			
Fair 2.50 to 2.99	X		
Poor 1.00 to 2.49	X	X	X
Very Poor 0.00 to 0.99	X	X	X

Agency Target	Agency Condition	Texas Condition
No specific target at this time.	IH: 95.5% Non-IH NHS: 95.8% Non-NHS: 69.1%	IH: 91.86% Non-IH NHS: 93.45% Non-NHS: 97.58% Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Conditon Score > 0 IH: Condition Score > = 60 Non-IH NHS: Condition Score > = 50 Non-NHS: Condition Score> = 50

New York State Department of Transportation

Performance Measures	Explanation
None internal or mandated by legislature.	New York reports annual pavement conditions, but does not have specific network-level goals defined.

Agency Target	Agency Condition	Texas Condition
	Last data reported in Pavement Condition of New York's Highways: 2007.	

Assumptions

North Carolina Department of Transportation

Performance Measures	Explanation
Pavement Condition Rating (PCR)	The NC DOT uses a rating system for pavements based on the Present Serviceability Index (PSI) defined as Pavement Condition Rating (0 to 100): Rating / PCR Threshold A / 98 B / 93 C / 86 D / 70 F / < 70

Agency Target	Agency Condition	Texas Condition
Interstate: B Primary: C Secondary: C	Interstate: D Primary: D Secondary: D Based on 2006 Maintenance Condition and Funding Needs for the North Carolina State Highway System	Interstate: C (90.97) Primary: C (89.62) Secondary: C (88.94) Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Conditon Score > 0 Primary: US and SH Secondary: BR, FM, PA, PR,and Frontage Roads Use PSI = Lane Mile-weighted average Condition Score.

North Dakota Department of Transportation

Performance Measures	Explanation
Percentage of miles in "good" or better condition, based on Public Ride Perception Index (PPRI). Internal agency goal – not legislatively mandated.	PPRI was based on a panel rating of the worst 15 percent IRI. **PPRI** Excellent: 0 to 80 Good: 81 to 129 Fair: 130 to 177 Poor: > 177

Agency Target	Agency Condition	Texas Condition
IH: 95% Interregional Corridor: 90% State Corridor: 85% District Corridor: 80% District Collector: 75%	North Dakota is currently reevaluating their performance measures, and did not feel comfortable sharing the results at this time.	IH: 85.98% Interregional Corridor: 84.06% State Corridor: 75.34% District Corridor and District Collector: 47.05%: Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Left IRI > 0 Right IRI >0 Average IRI < 130 inches/mile ***PMIS highway system was used for the Corridor classifications as follows:*** Interregional Corridor: US State Corridor: SH District Corridor: FM District Collector: FM

Ohio Department of Transportation

Performance Measures	Explanation
Percentage of lane miles above specified values, based on Pavement Condition Rating (PCR). Internal agency goal – not legislatively mandated.	PCR ranges from 0 (worst) to 100 (best). It does not include ride quality.

Highway System	PCR
Priority Network	> 65
Urban System	> 60
General System	> 55

Agency Target	Agency Condition	Texas Condition
Priority Network: 90% Urban System: 90% General System: 90%	Priority Network: 96.3% Urban System: 96.89% General System: 93.5%	Priority Network: 93.27% Urban System: 89.04% General System: 93.87% Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Disress Score > 0 Distress Score > 65 ***Priority Network:*** Functional System = 1 and 11 ***Urban System:*** Functional System = 12, 14, 16, 17, 19 ***General System:*** Functional System = 2, 6, 7, 8, 9

Oklahoma Department of Transportation

Performance Measures	Explanation
Based on average IRI, in inches/mile.	

Agency Target	Agency Condition	Texas Condition
All Highways: Average IRI <= 108 inches/mile	***All Highways:*** 112 inches/mile Based on 2007 data.	***All Highways:*** 118 inches/mile Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Left IRI > 0 Right IRI> 0

Oregon Department of Transportation

Performance Measures	Explanation
Percentage of miles in "Fair" or better condition.	Measure based on surface distress. "Fair" is > 45.

Agency Target	Agency Condition	Texas Condition
IH: > 90% Primary: > 85% Secondary: > 68% Overall: 78%	Currently meet the goal.	IH: 97.57% Primary: 97.75% Secondary: 98.75% Overall: 98.27% Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Distress Score > 0 Distress Score > 45 ***Primary:*** Functional Class = 2, 6, 12, 14, 16 ***Secondary:*** Functional Class = 7, 8, 9, 17, 19

Pennsylvania Department of Transportation

Performance Measures	Explanation
None internal or mandated by legislature.	

Agency Target	Agency Condition	Texas Condition

Assumptions

Puerto Rico Highway and Transportation Authority

Performance Measures	Explanation

Agency Target	Agency Condition	Texas Condition

Assumptions

Rhode Island Department of Transportation

Performance Measures	Explanation
None internal or mandated by legislature.	Three major projects underway – remainder mainly spent on pavement preservation (such as crack sealing).

Agency Target	Agency Condition	Texas Condition

Assumptions

South Carolina Department of Transportation

Performance Measures	Explanation
None internal or mandated by legislature.	

Agency Target	Agency Condition	Texas Condition

Assumptions

South Dakota Department of Transportation

Performance Measures	Explanation
Average Surface Condition Index (SCI) above specified values, by highway system. Internal agency goal – not legislatively mandated.	SCI is a function of distress and ride. Values range from 0 (worst) to 5 (best)?

Agency Target	Agency Condition	Texas Condition
IH: 3.9 Major Arterials: 3.7 Minor Arterials: 3.4 State Secondary: 3.0 Urban: 3.6 Municipal: 3.6 Overall Network: 3.5	IH: 4.2 Major Arterials: 4.0 Minor Arterials: 3.8 State Secondary: 3.6 Urban: 4.0 Municipal: 3.9 Overall Network: 3.9 Currently meet all minimum requirements except IH trying to meet upper goal.	IH: 4.55 Major Arterials: 4.32 Minor Arterials: 4.49 State Secondary: 4.54 Urban: 4.13 Municipal: ?? Overall Network: 4.48 Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Conditon Score > 0 Use SCI = (Condition Score)/20 ***Major Arterials:*** Functional System = 2, 12, 14 ***Minor Arterials:*** Functional System = 6, 16 ***State Secondary:*** Functional System = 7, 8, 9, 17, 19 ***Urban:*** Functional System = 11, 12, 14, 16, 17, 19 ***Municipal***: none

Tennessee Department of Transportation

Performance Measures	Explanation
Percentage of IH miles with IRI < 93 inches/mile. Internal agency goal – not legislatively mandated.	Requirement just for Interstate.

Agency Target	Agency Condition	Texas Condition
95%	94.4%	62.01% Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Left IRI > 0 Right IRI > 0 Average IRI < 93 inches/mile

Texas Department of Transportation

Performance Measures	Explanation
Percentage of lane miles in "Good" or better condition. Internal agency goal – not legislatively mandated.	Pavement Management Information System (PMIS) Condition Score combines surface distress (such as rutting, cracking, potholes, punchouts, and patches) and ride quality into a single index that ranges from 1 (worst condition) to 100 (best condition):

	Condition Score
Very Good	90 to 100
Good	70 to 89
Fair	50 to 69
Poor	35 to 49
Very Poor	1 to 34

Agency Target	Agency Condition	Texas Condition
90% by FY 2012	86.25%	86.25% Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes **and** Frontage Roads Condition Score > 0

Utah Department of Transportation

Performance Measures	Explanation
Percentage of miles "good" or better. Internal agency goal – not legislatively mandated.	"Good" or better is based on IRI, measured using half-car (not quarter-car) simulation.

Agency Target	Agency Condition	Texas Condition
90% on IH 70% on Arterial 50% on Collector	95% on IH 65% on Arterial 45% on Collector	96.12% on IH 92.98% on Arterial 82.61% on Collector Based on FY 2008 data.

Assumptions
Uses Texas quarter-car IRI. Rating Cycle = P (annual PMIS, September-February) Mainlanes only Left IRI > 0 Right IRI > 0 Average IRI < = 170 inches/mile ***Arterial:*** Functional Class = 2, 6, 12, 14, 16 ***Collector:*** Functional Class = 7, 8, 17

Vermont Agency of Transportation

Performance Measures	Explanation
There are two performance measures. Both are internal agency measures – not legislatively mandated: • Average Pavement Condition Index (PCI), weighted by Vehicle-Miles Traveled (VMT). • Percentage of lane miles with "poor" condition.	PCI includes Ride, Rutting, and Cracking, on a scale from 0 (worst) to 100 (best). "Poor" condition is PCI 0 to 40.

Agency Target	Agency Condition	Texas Condition
VMT-weighted average PCI >=70. < 25% of lane miles in "poor" condition	Results not available at this time.	VMT-weighted average PCI: 87.31 < 3.03% of lane miles in "poor" condition Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Conditon Score > 0 Poor: Condition Score < = 40

Virginia Department of Transportation

Performance Measures	Explanation
There are two performance measures. • Percentage of lane miles with CCI <=60. • Percentage of lane miles with IRI >= 140.	CCI (minimum of load- and non-load related distress ratings) ranges from 0 (worst) to 100 (perfect). IRI measured in inches/mile.

Agency Target	Agency Condition	Texas Condition
18% or less with CCI <= 60	IH: 20.5% Primary System: 24.4%	IH: 5.56% Primary System: 4.89%
15% or less with IRI >= 140	IH: 7.4% Primary System: 12.5%	IH: 10.45% Primary System: 28.42%
	Based on 2008 data.	Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Left IRI > 0 Right IRI >0 Average IRI <=140 inches/mile Distress Score > 0 Distress Score< = 60

Washington State Department of Transportation

Performance Measures	Explanation
Percentage of miles in "fair" or better condition, based on Pavement Condition Index (PCI).	PCI is the lowest category of three indices: Pavement Structural Condition (PSC), International Roughness Index (IRI, in inches/mile), and Rutting (in inches):

	PSC	IRI	Rutting
Very Good	100-80	<95	<0.16
Good	80-60	95-170	0.16-0.31
Fair	60-40	170-220	0.31-0.47
Poor	40-20	220-320	0.47-0.63
Very Poor	0-20	>320	>0.63

Agency Target	Agency Condition	Texas Condition
90%	96% Based on 2006 CAFR Infrastructure Reporting Information (2005 data).	97.17% Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Left IRI > 0 Right IRI > 0 Average IRI < 220 inches/mile

West Virginia Division of Highways

Performance Measures	Explanation
No legislative or internal performance measures relating to pavements.	

Agency Target	Agency Condition	Texas Condition

Assumptions

Wisconsin Department of Transportation

Performance Measures	Explanation
No legislative or internal performance measures relating to pavements.	

Agency Target	Agency Condition	Texas Condition

Assumptions

Wyoming Department of Transportation

Performance Measures	Explanation
Percentage of miles "good" or "excellent." Internal agency goal – not legislatively mandated.	Percentage is based on Present Serviceability Rating (PSR), which is a composite score function of distress & ride:

	PSR Value
Excellent	>= 3.5
Good	3.0 to 3.5
Fair	2.5 to 3.0
Poor	< 2.5

Agency Target	Agency Condition	Texas Condition
60%	45%	91.74% Based on FY 2008 data.

Assumptions
Rating Cycle = P (annual PMIS, September-February) Mainlanes only Conditon Score > 0 Condition Score > = 60