Assessing & Prioritizing Roadway Needs

Ohio Township Association

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Assessing & Prioritizing

What does this mean?

Assessing and Prioritizing Roadway Needs means to obtain an unbiased rating of the current roadway conditions so future pavement rehabilitations and/or preventative maintenance can be addressed in a systematic and cost-effective approach.

How is it accomplished?

A visual inspection of current Pavement Distresses.

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Pavement Distresses

Raveling
Bleeding
Patching
Debonding
Rutting
Map Cracking
Base Failure
Settlements
Transverse cracks
Wheel Track Cracking
Longitudinal Cracking
Edge Cracking
Upheaval
Crack Sealing Deficiency

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Distress Definitions

Raveling - Disintegration of the pavement from the surface downward due to the loss of aggregate particles. Raveling may occur as a result of asphalt binder aging, poor mixture quality, segregation, or insufficient compaction.

Patching - Placing of asphalt concrete on the surface of the existing pavement or the replacement of the existing pavement in small isolated areas.

Rutting - Vertical deformations in the pavement surface along the wheel tracks.

Wheel Track Cracking - Cracks located within or near the wheel track.

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Distress Definitions

Transverse Cracking - Block cracks are interconnected cracks which divide the pavement into large rectangular pieces or blocks at approximately right angles to the pavement centerline. The occurrence of transverse cracking is usually related to thermal shrinkage of the asphalt binder or binder age.

Edge Cracking - Edge cracks are longitudinal or crescent shaped cracks found within 1 foot (0.3 m) of the pavement edge line.

Crack Sealing Deficiency - Crack sealing deficiency is crack sealing which is no longer effective in preventing intrusion of water or cracks which have never been sealed.

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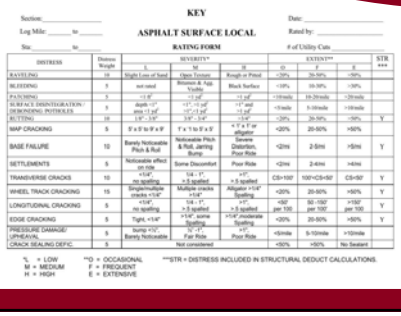
Pavement Condition Key



KEY

ASPHALT SURFACE LOCAL

RATING FORM

DISTRESS	Distress Weight	SEVERITY* L	M	H	EXTENT** L	M	H	STR ***
RAVELING	10	Slight Loss of Sand	Open Texture	Rough or Pitted	<20%	20-50%	>50%	
BLEEDING	5	not rated	Invasive & App. Visible	Black Surface	<10%	10-30%	>30%	
PATCHING	5	<1 ft²	<1 yd²	>1 yd²	<1/mile	1/5-20/mile	>20/mile	
SURFACE DISINTEGRATION / DEBONDING POTHOLES	5	depth <1" area <1 ft²	<1", >1 yd² <10", <1 yd²	>1" and >1 yd²	<1/mile	1-10/mile	>10/mile	
RUTTING	10	1/8" - 1/4"	1/4" - 1/2"	>1/2"	<20%	20-50%	>50%	Y
MAP CRACKING	5	0' x 0' to 0' x 0'	1' x 1' to 3' x 3'	< 1' x 1' or effected	<20%	20-50%	>50%	
BASE FAILURE	10	Barely Noticeable Pitch & Roll	Noticeable Pitch & Roll, Jarring Bump	Severe Distortion, Poor Ride	<2/mi	2-5/mi	>5/mi	Y
SETTLEMENTS	5	Noticeable effect on ride <1/4"	Some Discomfort	Poor Ride	<2/mi	2-4/mi	>4/mi	
TRANSVERSE CRACKS	10	1/4 - 1", no spalling	1/4 - 1", >3 spalled	>1", >3 spalled	CS>100'	100'<CS<50'	CS<50'	Y
WHEEL TRACK CRACKING	15	Single/multiple cracks <1/4"	Multiple cracks >1/4"	Alligator >1/4" Spalling	<20%	20-50%	>50%	Y
LONGITUDINAL CRACKING	5	<1/4", no spalling	1/4 - 1", >3 spalled	>1", >3 spalled	<50' per 100'	50'-150' per 100'	>150' per 100'	Y
EDGE CRACKING	5	Tight, <1/4"	>1/4", some Spalling	>1/4",moderate Spalling	<20%	20-50%	>50%	Y
PRESSURE DAMAGE/ UPHEAVAL	5	bump <1/2" Barely Noticeable	1/2 - 2" Fair Ride	>2", Poor Ride	<5/mile	5-10/mile	>10/mile	
CRACK SEALING DEFIC.	5	Not considered			<50%	>50%	No Sealant	

*L = LOW M = MEDIUM H = HIGH **O = OCCASIONAL F = FREQUENT E = EXTENSIVE ***STR = DISTRESS INCLUDED IN STRUCTURAL DEDUCT CALCULATIONS.

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Pavement Condition Rating Form

Section: _____ Date: _____
Log mile: _____ to _____ Rated by: _____
Sta: _____ to _____ # of Utility Cuts _____

LOCAL

PAVEMENT CONDITION RATING FORM

DISTRESS	DISTRESS WEIGHT	SEVERITY WT.*			EXTENT WT.**			DEDUCT POINTS***
		L	M	H	O	F	E	
RAVELING	10	0.3	0.6	1	0.5	0.8	1	
BLEEDING	5	0.8	0.8	1	0.6	0.9	1	
PATCHING	5	0.3	0.6	1	0.6	0.8	1	
SURFACE DISINTEGRATION or DEBONDING	5	0.3	0.6	1	0.6	0.8	1	
RUTTING	10	0.3	0.7	1	0.6	0.8	1 T	
MAP CRACKING	5	0.2	0.6	1	0.4	0.8	1	
BASE FAILURE	10	0.6	0.8	1	0.7	0.9	1 T	
SETTLEMENTS	5	0.4	0.7	1	0.6	0.8	1	
TRANSVERSE CRACKS	10	0.4	0.7	1	0.5	0.7	1 T	
WHEEL TRACK CRACKING	15	0.4	0.7	1	0.5	0.7	1 T	
LONGITUDINAL CRACKING	5	0.2	0.6	1	0.4	0.8	1 T	
EDGE CRACKING	5	0.4	0.7	1	0.5	0.7	1 T	
PRESSURE DAMAGE/UPHEAVAL	5	0.4	0.6	1	0.5	0.8	1	
CRACK SEALING DEFICIENCY	5	1	1	1	0.5	0.8	1	
							TOTAL DEDUCT =	
							SUM OF STRUCTURAL DEDUCT (T) =	
							100 - TOTAL DEDUCT + PCR =	

L = LOW — *O = OCCASIONAL
M = MEDIUM — F = FREQUENT
H = HIGH — E = EXTENSIVE
*** DEDUCT POINTS = DISTRESS WEIGHT X SEVERITY WT. X EXTENT WT.

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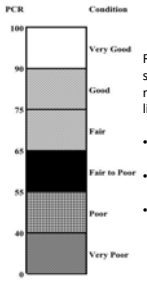
Pavement Condition Rating



Pavement Condition Rating (PCR) Scale

Roadways within a township can be ranked and grouped with similar PCR scores and categorized as needing minor rehab, major rehab or varying **preventative maintenance practices**. From this list and available budget, roadways can be prioritized accordingly

- Major Rehabilitation (PCR<55)
- Minor Rehabilitation (55<PCR<65)
- **Preventive Maintenance (70<PCR<90)**

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Preventative Maintenance

Preventive Maintenance is a strategy of cost-effective treatments for an existing roadway system that preserves the system, slows deterioration, extends the service life, and maintains and / or improves the functional condition of the system without substantially increasing structural capacity.

Crack Sealing (75<PCR<90)
Crack Sealing is the placement of a mixture asphalt modified binder mixed with polyester or polypropylene fibers into existing cracks in the pavement. Crack Sealing is used to minimize the intrusion of water into the pavement. By keeping water out of the pavement, erosion of the mix is kept to a minimum, deterioration of the cracks are slowed, and less water is available to saturate the base materials.

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Preventative Maintenance

Chip Seals (70<PCR<90)
Chip Seals are a sprayed application of a polymer-modified asphalt binder covered immediately by a washed limestone and rolled with a pneumatic roller. The rolling operation is intended to seat the aggregate into the binder and insure chip retention. Chip seals are intended for low volume roadways to provide a new wearing surface as well as to eliminate raveling, retard oxidation, reduce the intrusion of water, improve surface friction and seal cracks.

Micro-surfacing (70<PCR<90)
Micro-surfacing is a thin surface, cold applied paving mixture composed of a polymer-modified asphalt emulsion, crushed aggregate, mineral filler, water, and other additives. Micro-surfacing is used to retard raveling and oxidation, fill ruts, reduce the intrusion of water, improve surface friction, and remove minor surface irregularities.

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Preventative Maintenance

Thin Hot Mix Overlays (70<PCR<90)
A thin dense graded hot mix asphalt (HMA) overlay is the highest type alternative available in the pavement preventive maintenance program. Thin overlays protect the pavement structure, reduce the rate of pavement deterioration, correct surface deficiencies, reduce permeability and improve the ride quality of the pavement, particularly when accompanied by a scratch course or surface milling.

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Preventative Maintenance

PREVENTIVE MAINTENANCE SUMMARY TABLE

	Pavement Applications	Crack Sealing	Chip Seal	Micro-Surfacing	Polymer Modified Asphalt Concrete	Thin Hot Mix Overlay	Concrete Pavement Restoration	Drainage Preservation
Pavement Surface	Concrete	√					√	√
	Asphalt	√	√	√	√	√		√
Reasons For	Friction		√	√	√	√		
	Rideability			√	√	√	√	
	Raveling	√	√	√	√	√		
	Rutting			√	√	√		
	Cracking	√	√		√	√	√	
	Oxidation		√	√	√	√		
	Water	√	√	√	√	√		√
Traffic	Low Volume (<2500 ADT)	X	X	X	X	X	X	X
	High Volume (>2500 ADT)	X		X	X	X	X	X
	Maximum Speed < 45 MPH				Type A			
Average Cost	Weight / Area	$.60 - $1.00 Per Lb.	$1.00 - $1.75 Per S.Y.	$1.25 - $2.00 Per S.Y.	$2.00 - $4.00 Per S.Y.	$2.50 - $3.50 Per S.Y.	$4.00 - $12.00 Per S.Y.	
	Lane Mile (not incl. shoulders)	$1,000 $4,000	$8,000 $12,000	$8,000 $16,000	$14,000 $25,000	$17,000 $25,000	$25,000 $75,000	$2,000 $5,000
	Average Life (years)	1 - 4	5 - 8	5 - 8	7 - 12	8 - 12	7 - 12	1 - 5

Table taken from ODOT's 2001 PAVEMENT PREVENTIVE MAINTENANCE GUIDELINES Manual. Add 10%-15% to costs per lane mile for current prices.

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