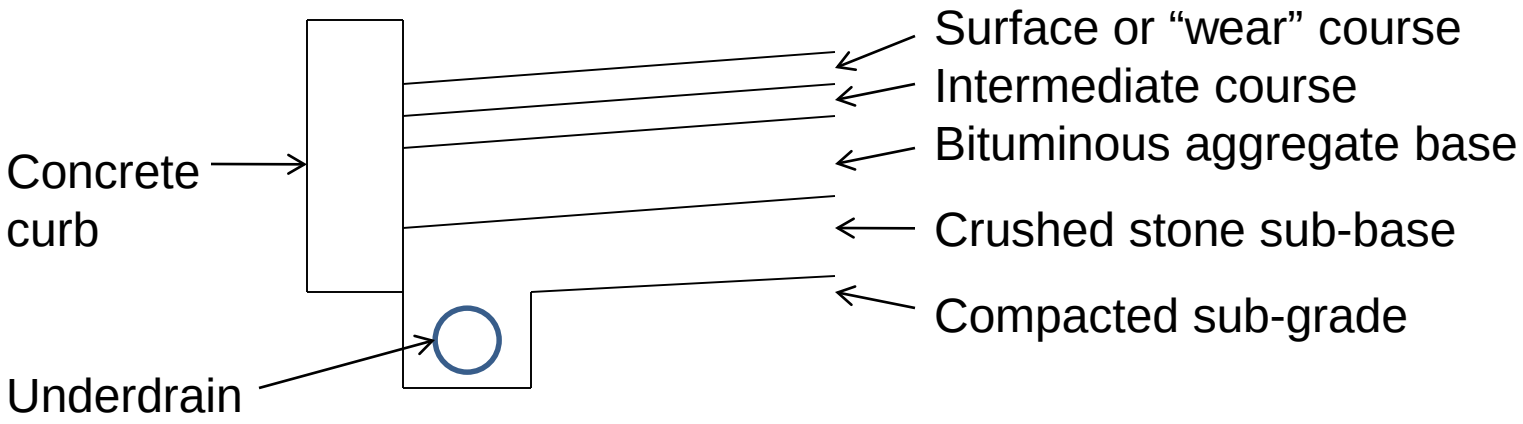
Pavement Surface Evaluation and Rating Presentation

City of Oberlin
Public Works Department
July 15, 2020

Causes of Pavement Deterioration

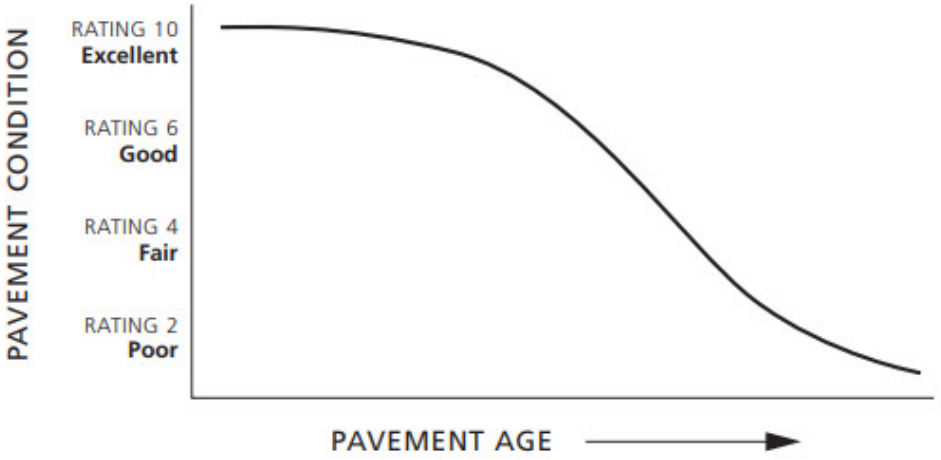
- Environmental : weathering and aging
- Structural: repeated traffic loading
  - Sub base, base, quality of materials/construction
- Both



Four Categories of Pavement Distress

- Surface Defects
- Surface deformation
- Cracks
- Patches and Potholes

Pavement Condition Over Time

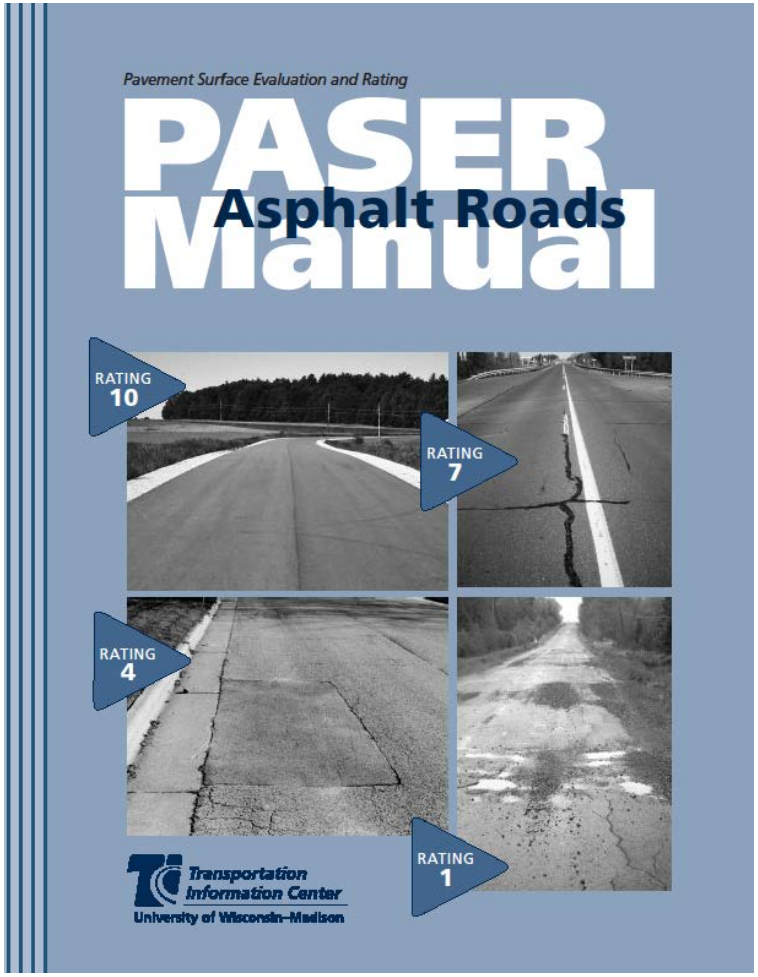


In addition to indicating the surface condition of a road, a given rating also includes a recommendation for needed maintenance or repair. This feature of the rating system facilitates its use and enhances its value as a tool in ongoing road maintenance.

RATINGS ARE RELATED TO NEEDED MAINTENANCE OR REPAIR

Rating 9 & 10	No maintenance required
Rating 8	Little or no maintenance
Rating 7	Routine maintenance, cracksealing and minor patching
Rating 5 & 6	Preservative treatments (sealcoating)
Rating 3 & 4	Structural improvement and leveling (overlay or recycling)
Rating 1 & 2	Reconstruction

Pavement Surface Evaluation and Rating (PASER)



- Visual inspection system
- Rates pavement surface on a scale of 1-10
- Published by The Transportation Information Center, University of Wisconsin.
- Based in part on a roadway management system originally developed by Phil Scherer, transportation Planner, Northwest Wisconsin Regional Planning Commission.
- Compared to a more complicated 1-100 Pavement Condition Index (PCI) which measures and rates each type of defect.

Rating system

Surface rating	*Visible distress**	*General condition/ treatment measures*
10 Excellent	None.	New construction.
9 Excellent	None.	Recent overlay. Like new.
8 Very Good	No longitudinal cracks except reflection of paving joints. Occasional transverse cracks, widely spaced (40' or greater). All cracks sealed or tight (open less than ¼").	Recent sealcoat or new cold mix. Little or no maintenance required.
7 Good	Very slight or no raveling, surface shows some traffic wear. Longitudinal cracks (open ¼") due to reflection or paving joints. Transverse cracks (open ¼") spaced 10' or more apart, little or slight crack raveling. No patching or very few patches in excellent condition.	First signs of aging. Maintain with routine crack filling.
6 Good	Slight raveling (loss of fines) and traffic wear. Longitudinal cracks (open ¼"–½"), some spaced less than 10'. First sign of block cracking. Sight to moderate flushing or polishing. Occasional patching in good condition.	Shows signs of aging. Sound structural condition. Could extend life with sealcoat.
5 Fair	Moderate to severe raveling (loss of fine and coarse aggregate). Longitudinal and transverse cracks (open ½") show first signs of slight raveling and secondary cracks. First signs of longitudinal cracks near pavement edge. Block cracking up to 50% of surface. Extensive to severe flushing or polishing. Some patching or edge wedging in good condition.	Surface aging. Sound structural condition. Needs sealcoat or thin non-structural overlay (less than 2")
4 Fair	Severe surface raveling. Multiple longitudinal and transverse cracking with slight raveling. Longitudinal cracking in wheel path. Block cracking (over 50% of surface). Patching in fair condition. Slight rutting or distortions (½" deep or less).	Significant aging and first signs of need for strengthening. Would benefit from a structural overlay (2" or more).
3 Poor	Closely spaced longitudinal and transverse cracks often showing raveling and crack erosion. Severe block cracking. Some alligator cracking (less than 25% of surface). Patches in fair to poor condition. Moderate rutting or distortion (1" or 2" deep). Occasional potholes.	Needs patching and repair prior to major overlay. Milling and removal of deterioration extends the life of overlay.
2 Very Poor	Alligator cracking (over 25% of surface). Severe distortions (over 2" deep) Extensive patching in poor condition. Potholes.	Severe deterioration. Needs reconstruction with extensive base repair. Pulverization of old pavement is effective.
1 Failed	Severe distress with extensive loss of surface integrity.	Failed. Needs total reconstruction.

** Individual pavements will not have all of the types of distress listed for any particular rating. They may have only one or two types.*

Excellent/Very Good

Surface Rating	*Visible Distress**	*General condition/treatment measures*
10 Excellent	None.	New construction.
9 Excellent	None.	Recent overlay. Like new.
8 Very Good	No longitudinal cracks except reflection of paving joints. Occasional transverse cracks, widely spaced (40’ or greater). All cracks sealed or tight (open less than 1⁄4”).	Recent sealcoat or new cold mix. Little or no maintenance required.

** Individual pavements will not have all of the types of distress listed for any particular rating. They may have only one or two types.*

Surface Rating - 10

New Construction – No maintenance required.

Elm Street – Reconstructed 2019

Surface Rating - 9

Recent Overlay. Like new. – No maintenance required.

Lincoln St. – Resurfaced 2019

N. Pleasant - Resurfaced 2017

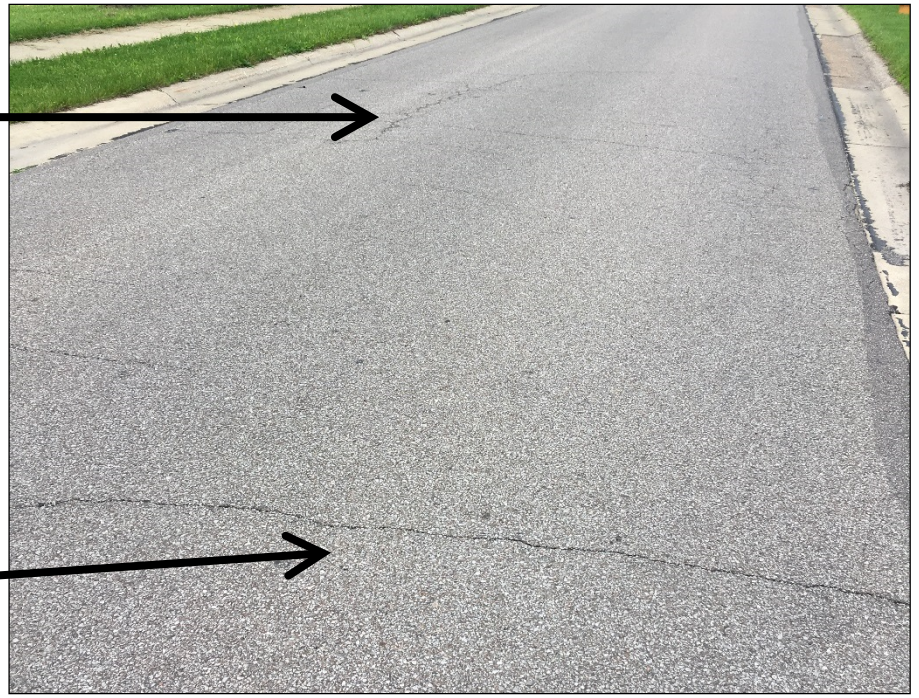
Other examples: E. College, Oberlin Road, Pyle-S. Amherst

Surface Rating - 8

Recent Overlay showing longitudinal or transverse cracks. All cracks are tight or sealed. Little or no maintenance required

This pavement is rated an 8 with but will slip to a 7 rating as longitudinal cracks begin to form.

The transverse cracks are still widely spaced (40’ or greater)



Park St. Between Vine St and College

Resurfaced 2013

Good

Surface Rating	*Visible Distress**	*General condition/treatment measures*
7 Good	Very slight or no raveling, surface shows some traffic wear. Longitudinal cracks (open 1⁄4”) due to reflection or paving joints. Transverse cracks (open 1⁄4”) spaced 10’ or more apart, little or slight crack raveling. No patching or very few patches in excellent condition.	First signs of aging. Maintain with routine crack filling.
6 Good	Slight raveling (loss of fines) and traffic wear. Longitudinal cracks (open 1⁄4”–1⁄2”), some spaced less than 10’. First sign of block cracking. Sight to moderate flushing or polishing. Occasional patching in good condition.	Shows signs of aging. Sound structural condition.

** Individual pavements will not have all of the types of distress listed for any particular rating. They may have only one or two types.*

Surface Rating - 7

First signs of aging. Maintain with routine crack filling.

Eric Nord Way - Constructed 2010

Surface Rating - 6

Shows signs of aging. Sound structural condition.

Locust St.
Resurfaced 2001

First sign of block cracking.

North Pleasant
Resurfaced 2007

Cracks sealed 2018.

Fair

Surface Rating	*Visible Distress**	*General condition/treatment measures*
5 Fair	Moderate to severe raveling (loss of fine and coarse aggregate). Longitudinal and transverse cracks (open 1⁄2") show first signs of slight raveling and secondary cracks. First signs of longitudinal cracks near pavement edge. Block cracking up to 50% of surface. Extensive to severe flushing or polishing. Some patching or edge wedging in good condition.	Surface aging. Sound structural condition. Needs sealing or thin non-structural overlay (less than 2")
4 Fair	Severe surface raveling. Multiple longitudinal and transverse cracking with slight raveling. Longitudinal cracking in wheel path. Block cracking (over 50% of surface). Patching in fair condition. Slight rutting or distortions (1⁄2" deep or less).	Significant aging and first signs of need for strengthening. Would benefit from a structural overlay (2" or more).

** Individual pavements will not have all of the types of distress listed for any particular rating. They may have only one or two types.*

Surface Rating - 5

Roads are still in good structural condition
but need sealcoating or overlay.

Sycamore Pl. - Resurfaced 1998

Cracking up to 50% of surface. Longitudinal cracks near pavement edge.

Vine (Main to Pleasant) - 1996

Block cracking up to 50% of surface. Patching in fair condition. Should be crack sealed again.

Surface Rating - 4

Roads show first signs of needing an overlay.
Severe surface raveling which should no longer be sealed.

Walnut – Resurfaced 2009

Block cracking over 50% of surface. Crack erosion.

Cedar (Elm to College)

Block cracking over 50% (not sealed). Cracks open > ¼” some crack erosion. Secondary cracks forming. Some areas already patched.

Poor-Failed

Surface Rating	*Visible Distress**	*General condition/treatment measures*
3 Poor	Closely spaced longitudinal and transverse cracks often showing raveling and crack erosion. Severe block cracking. Some alligator cracking (less than 25% of surface). Patches in fair to poor condition. Moderate rutting or distortion (1" or 2" deep). Occasional potholes.	Needs patching and repair prior to major overlay. Milling and removal of deterioration extends the life of overlay.
2 Very Poor	Alligator cracking (over 25% of surface). Severe distortions (over 2" deep) Extensive patching in poor condition. Potholes.	Severe deterioration. Needs reconstruction with extensive base repair. Pulverization of old pavement is effective.
1 Failed	Severe distress with extensive loss of surface integrity.	Failed. Needs total reconstruction.

** Individual pavements will not have all of the types of distress listed for any particular rating. They may have only one or two types.*

Surface Rating - 3

Will require select structural repair prior to milling and resurfacing.

Hawthorn

Alligator cracking up to 25%.
Several patches.

Washington Circle - 1998

Alligator cracking up to 25%

Surface Rating - 2

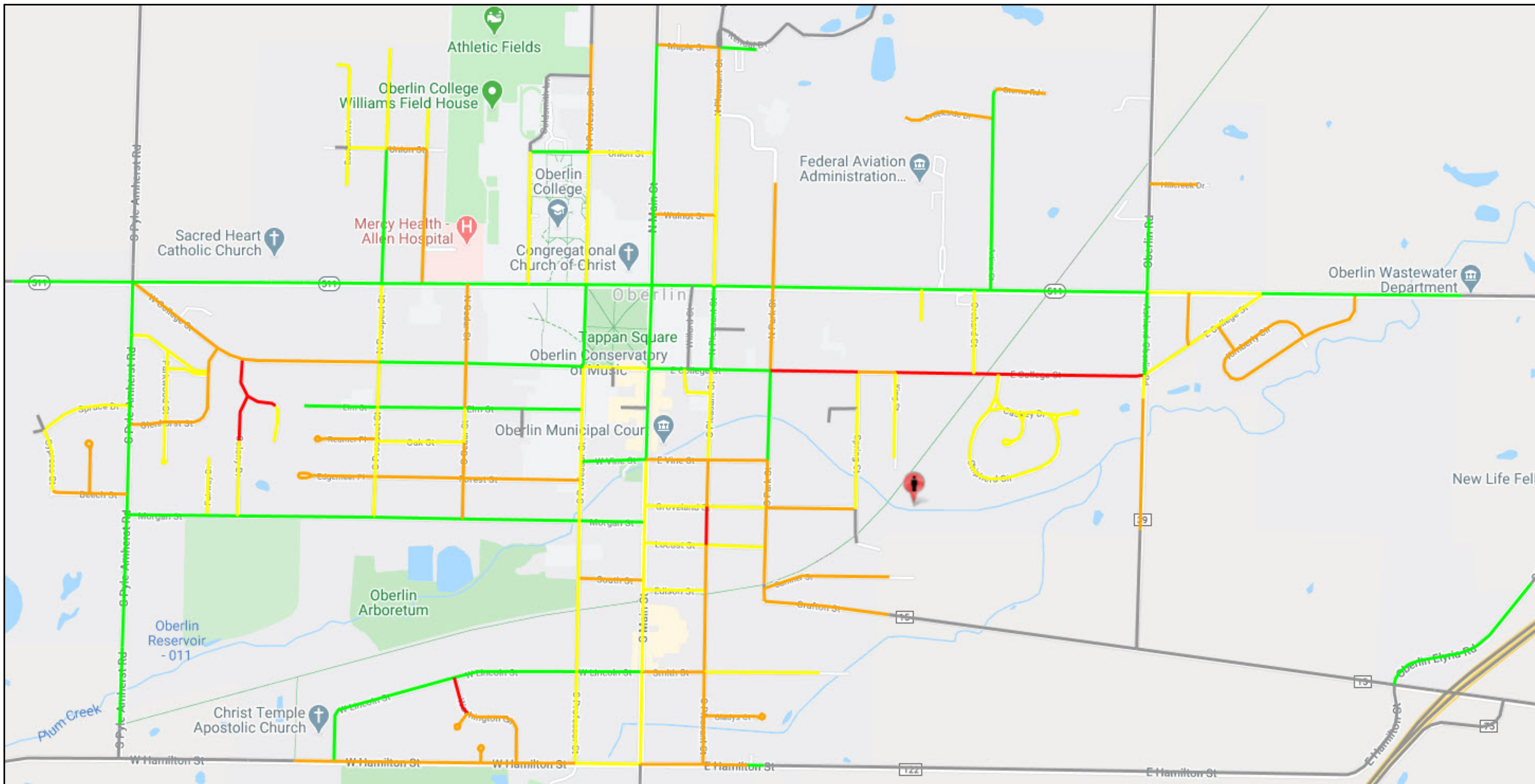
Severely deteriorated. Normally needs reconstruction.

Sumner (2011)

Severe alligator cracking over 75% of surface (criteria is 25%). Potholes, patches, and rutting.

Pavement Ratings 2020

Very Good/Excellent (8,9,10)	**Good (6,7)**
Fair (4,5)	Poor/Very Poor/Failed (1,2,3)



Other considerations that factor into project prioritization.

- Underground utilities
- Curbs
- Under drainage system
- Select areas of failure
- Street type by function
  - Local, collector, arterial
- Street type by use
  - Residential, commercial, industrial
- Funding availability


PAVEMENT
ENDS