

Jefferson County Highway Department 2015 Budget Highlights

8-4-14

Budget Highlights

1. **Highway Department Budget (Levy)** – The Highway Department submitted budget requires a tax levy of \$5,767,302. This is a levy reduction from the 2014 budget of \$181,803 or 3.1%.
2. **Construction Budget** – The submitted construction budget includes a levy of \$4,023,308 for highway paving and construction. The funding will allow the county to pave approximately 12.5 miles of county highway in 2015. The long-term goal of the department is to replace pavements every 20 years and this is accomplished with a 12 to 13 mile per year pavement turnover.
3. **Winter Maintenance** - The Highway Department is anticipating the winter maintenance account to be over budget by \$200,000 to \$300,000 for the second consecutive year. The department is also experiencing a significant increase in the cost of salt for the 2014-2015 Winter, the salt contract increased by \$9.05 per ton or a 15% increase. Based on the anticipated salt needs for the department, this equates to a \$50,000 budget increase.
4. **Facilities** - The main facility project for the Highway Department will be completed in 2015, with occupancy expected in April. Additional project work on site will include salt storage buildings expected to be completed by September, 2015. The Highway Department budget request includes moving forward on the construction of satellite facilities in Lake Mills and Concord.

Construction and Paving Program

◦ The 2015 construction and paving program is weighted heavier in resurfacing projects and will allow the county to complete approximately 12.5 miles. This falls within the goals set by the department of turning over pavements 12 to 13 miles per year, with a 20-year life cycle of the asphalt pavement. Based on a typical balanced year in the 3R (Resurfacing, Rehabilitation, Reconstruction) program, the Highway Department will complete about 8 to 9 miles of project work.

Project 3R Program (Average Costs per mile)

Resurface - \$325,000/mi

Rehabilitation - \$525,000/mi

Reconstruction - \$850,000/mi

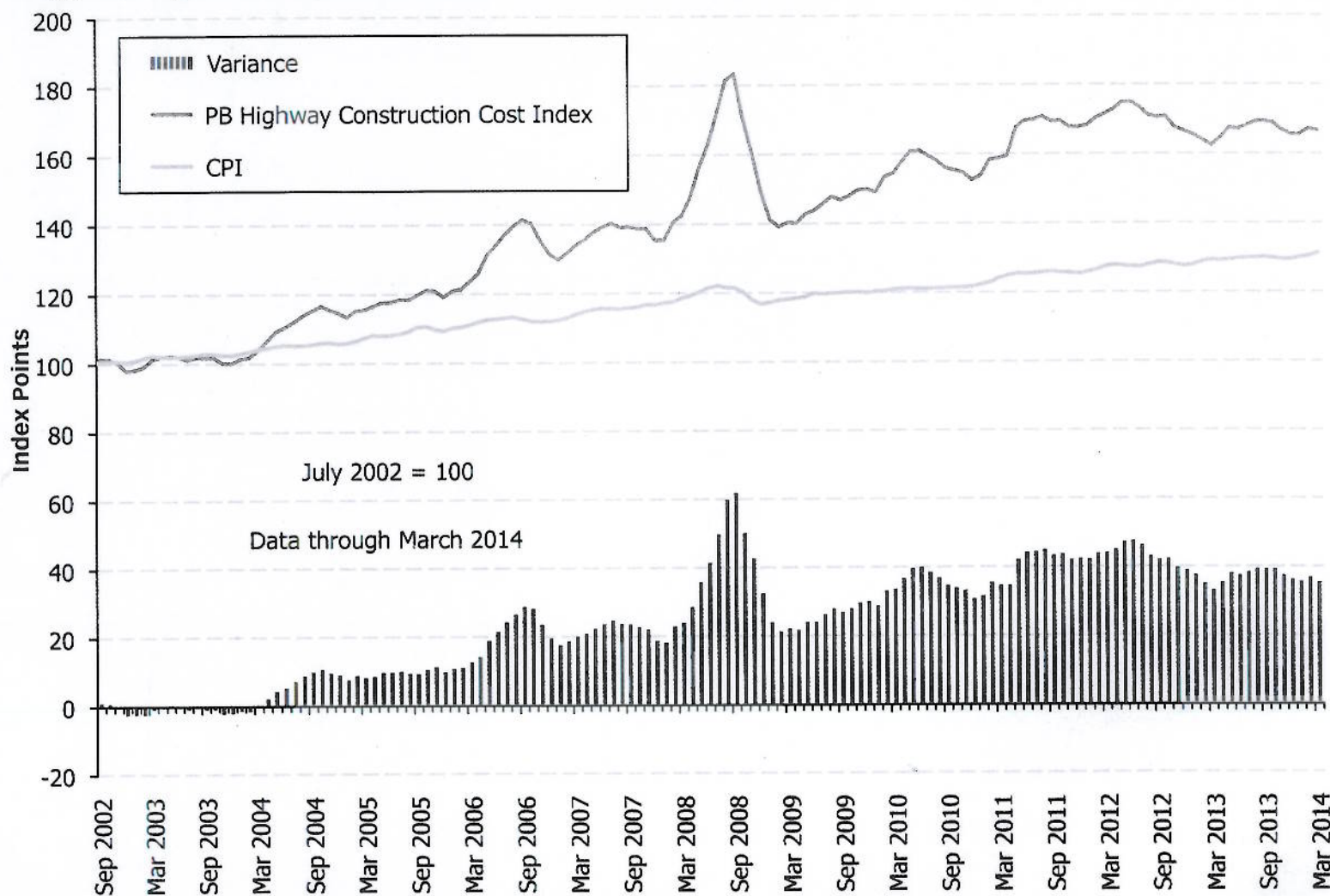
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Asphalt and Construction Cost Index

◦ Highway construction materials since 2005 have far outpaced typical inflation index increases, *see the included chart* showing highway construction cost escalation over the last 10 years [Roads & Bridges, May 2014].

[See the additional Construction and Pavement Map Pages 1-7 and the summary information regarding the PASER Pavement Rating System]

Highway construction cost escalation



Brad Ship

PB's Highway Construction Cost Index (PB HCCI) decreased approximately 0.5 index points, or 0.3%, in the month of March 2014 (compared with February 2014). In the month, asphalt and steel mill products decreased 1.2% and 1.1%, respectively, and were the primary drivers for the monthly decrease. Aggregate increased 1% in the month, partially offsetting the overall decrease, while all other components saw a change of less than 1%. Year over year, the index has increased 2.6% since March 2013.

PB HCCI comprises the following six cost components: construction labor, construction equipment, steel, asphalt and asphalt binder, aggregate and concrete. The resulting index represents average highway-construction costs for the U.S. as a whole. Cost inflation for specific regions, capital programs and projects will vary from this index depending on project types and work mix, as well as the regional or local construction market (including local contractor and material-supplier markets) and contractor margins (which are lower during construction downturns). **R&B**

July 2002 = 100	PB HCCI	% change month	% change year annual (previous corresponding period)
March 2014	166.6*	-0.3%	2.6%
February 2014	167.1*	1.0%	1.9%
January 2014	165.4*	0.0%	0.0%
December 2013	165.5*	-0.8%	-0.6%
November 2013	166.8	-1.2%	-0.4%
October 2013	168.9	-0.2%	-1.1%

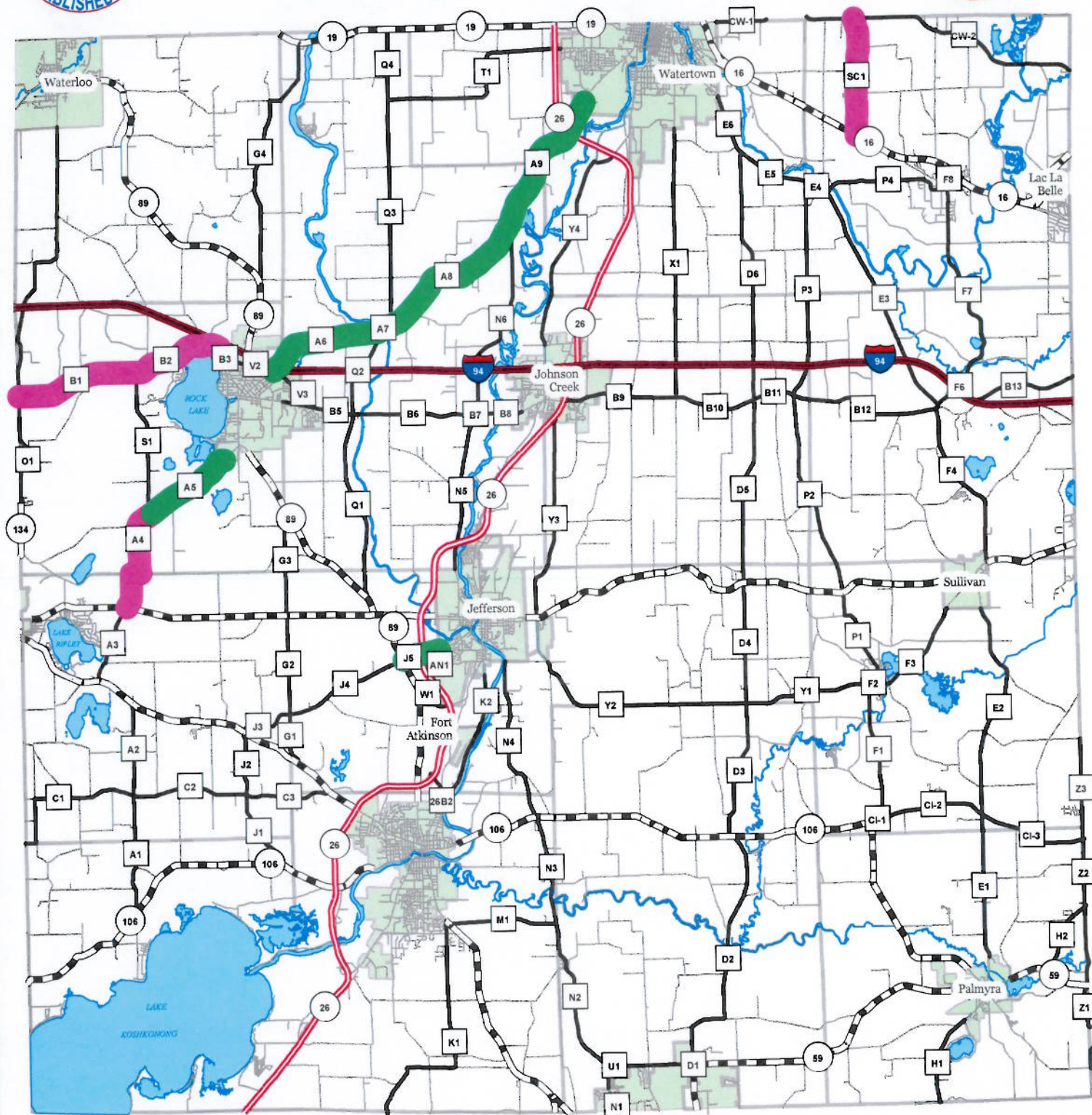
* Preliminary estimates subject to change.

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Jefferson County Highways

2015 Highway Projects



Project Type

- █ Reconstruction
- █ Seal Coating



0 1 2 4 Miles

Jefferson County Highway Department, Printed August 2014.

Road Classification

- ▬ 94 Interstate
- ▬ 26 Multilane Divided
- ▬ 12 106 U.S. or State Hwy
- ▬ C County Hwy
- ▬ Local

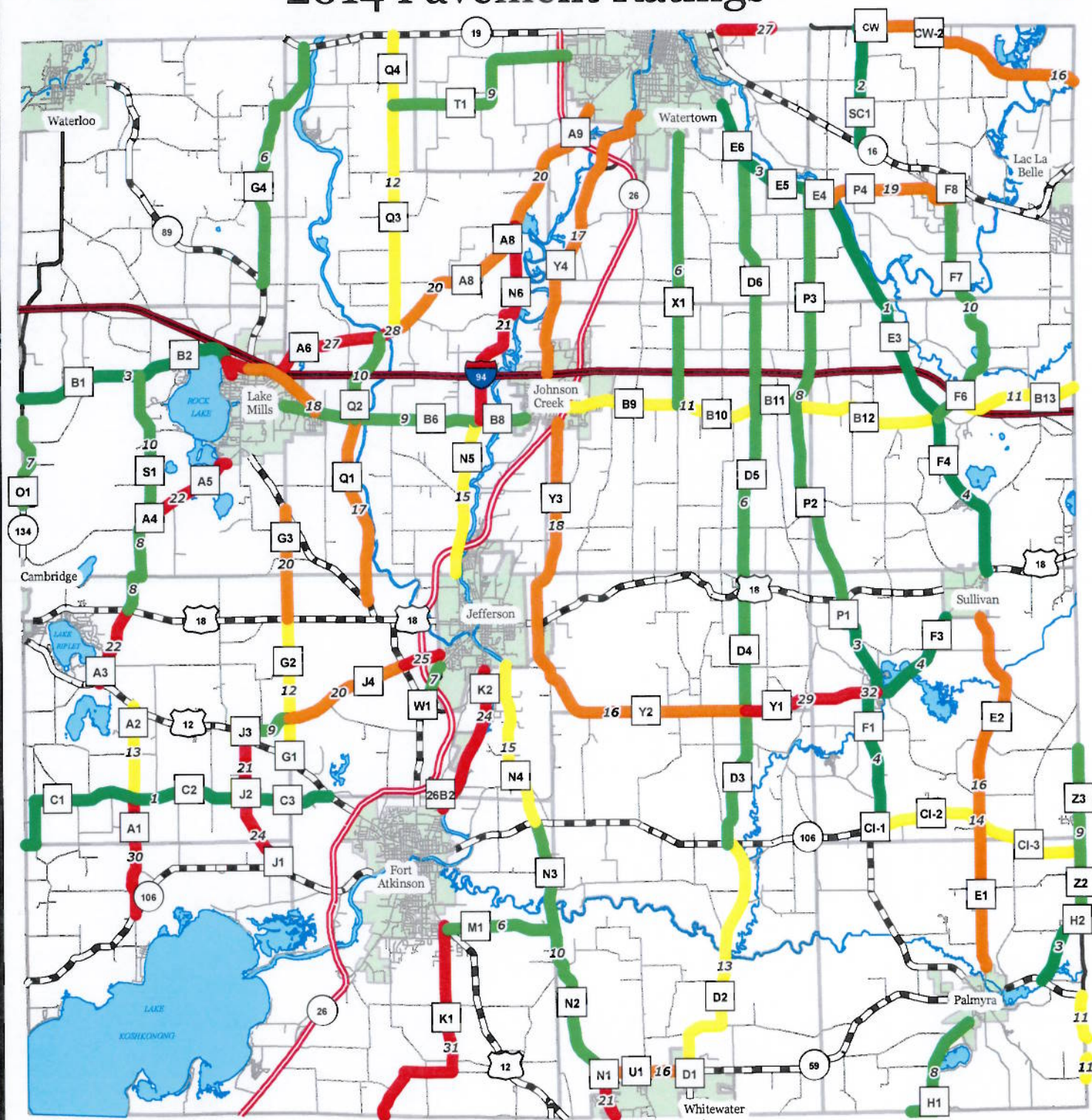
Features

- █ City or Village
- █ Township
- █ Open Water



Jefferson County Highways

2014 Pavement Ratings



Pavement Ratings

(Pavement Age also noted)



0 1 2 4 Miles

Jefferson County Highway Department, Printed August 2014.

Road Classification



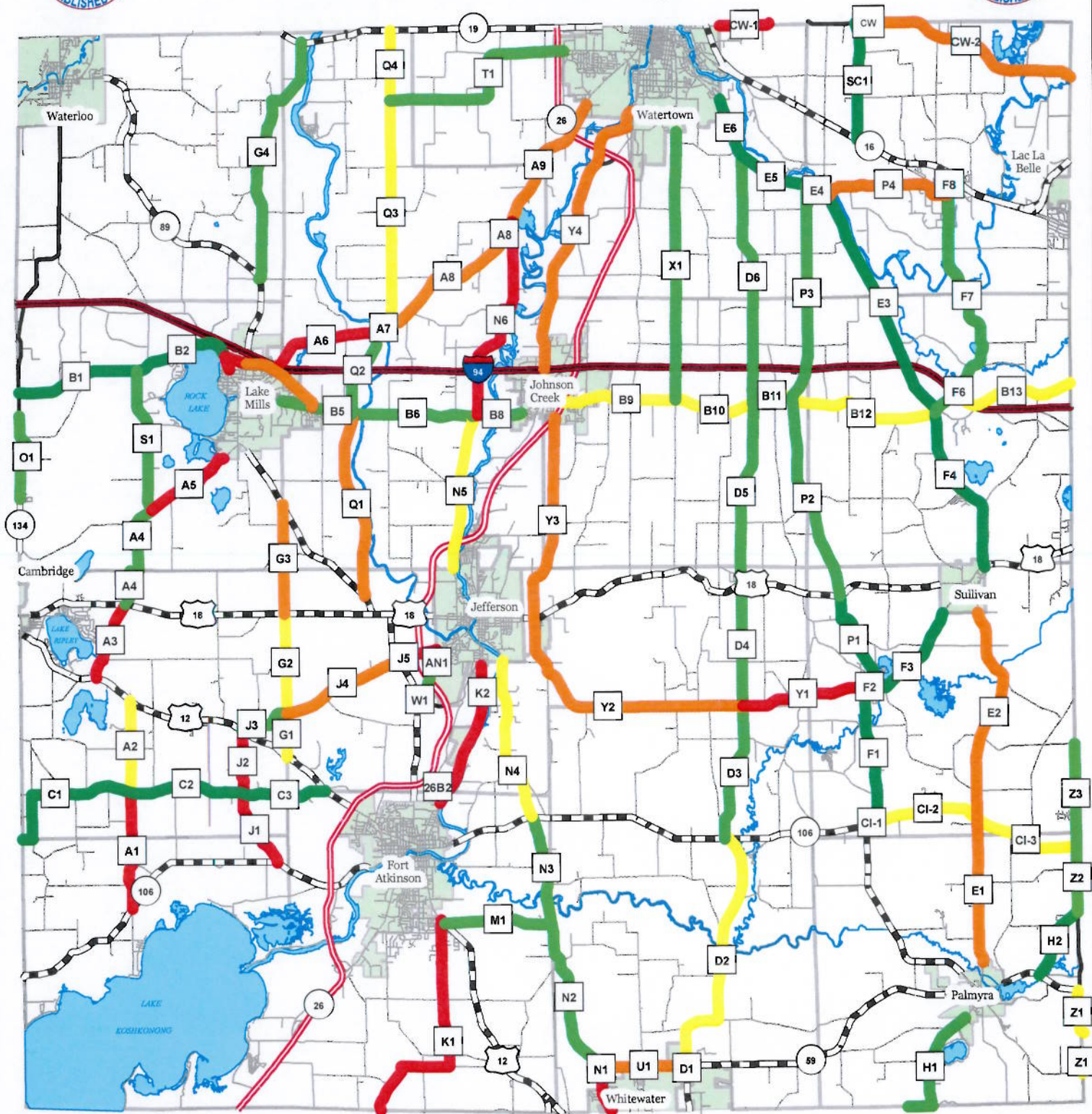
Features





Jefferson County Highways

2014 Pavement Age



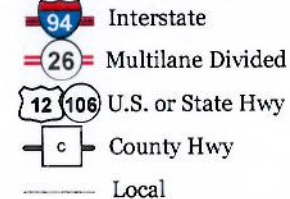
Pavement Age



0 1 2 4 Miles

Jefferson County Highway Department, Printed August 2014.

Road Classification



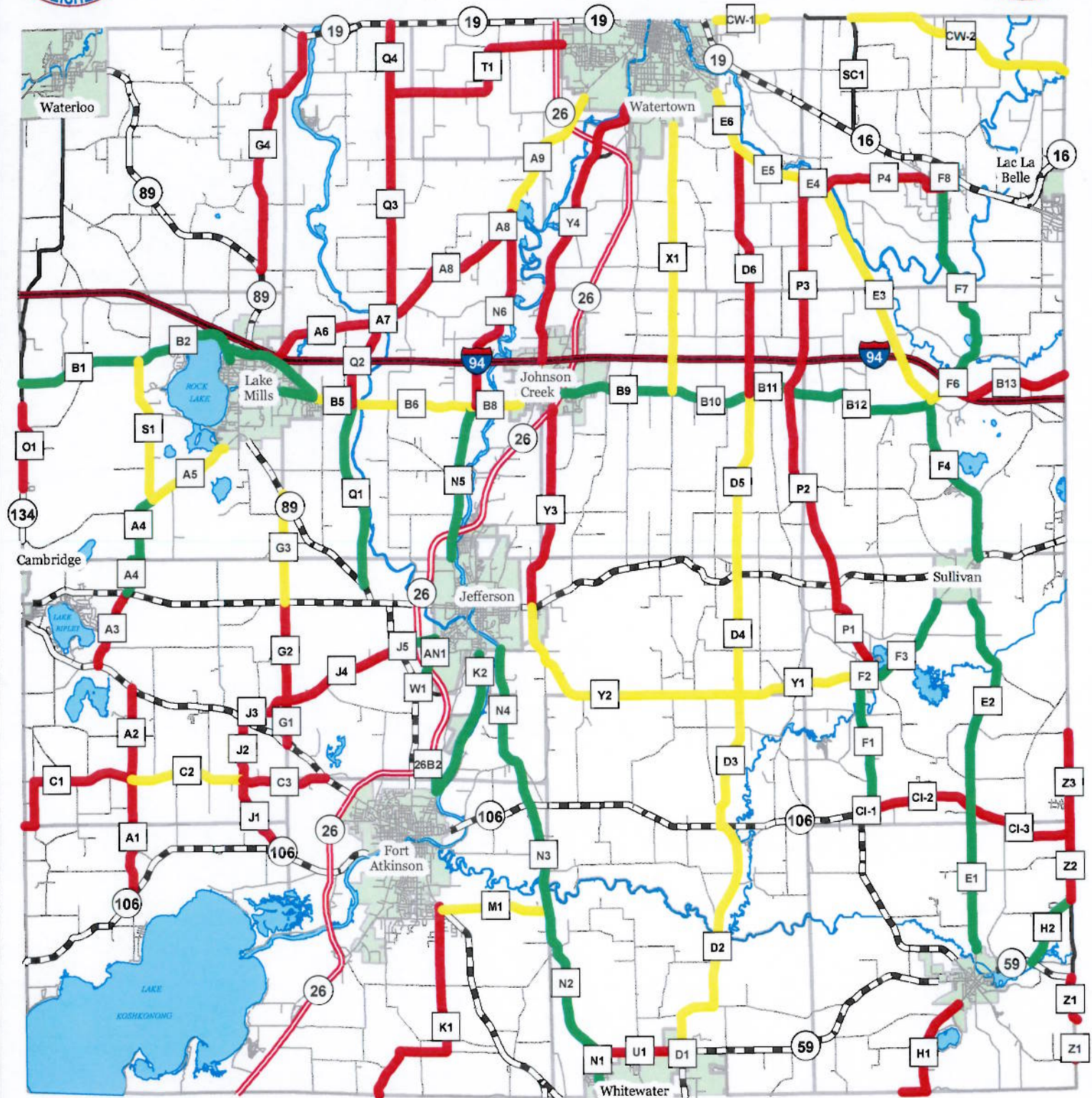
Features



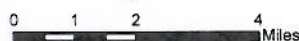
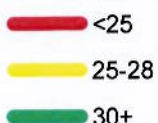


Jefferson County Highways

Average Pavement Width



Average Pavement Width

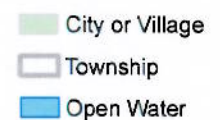


Jefferson County Highway Department, Printed August 2014.

Road Classification



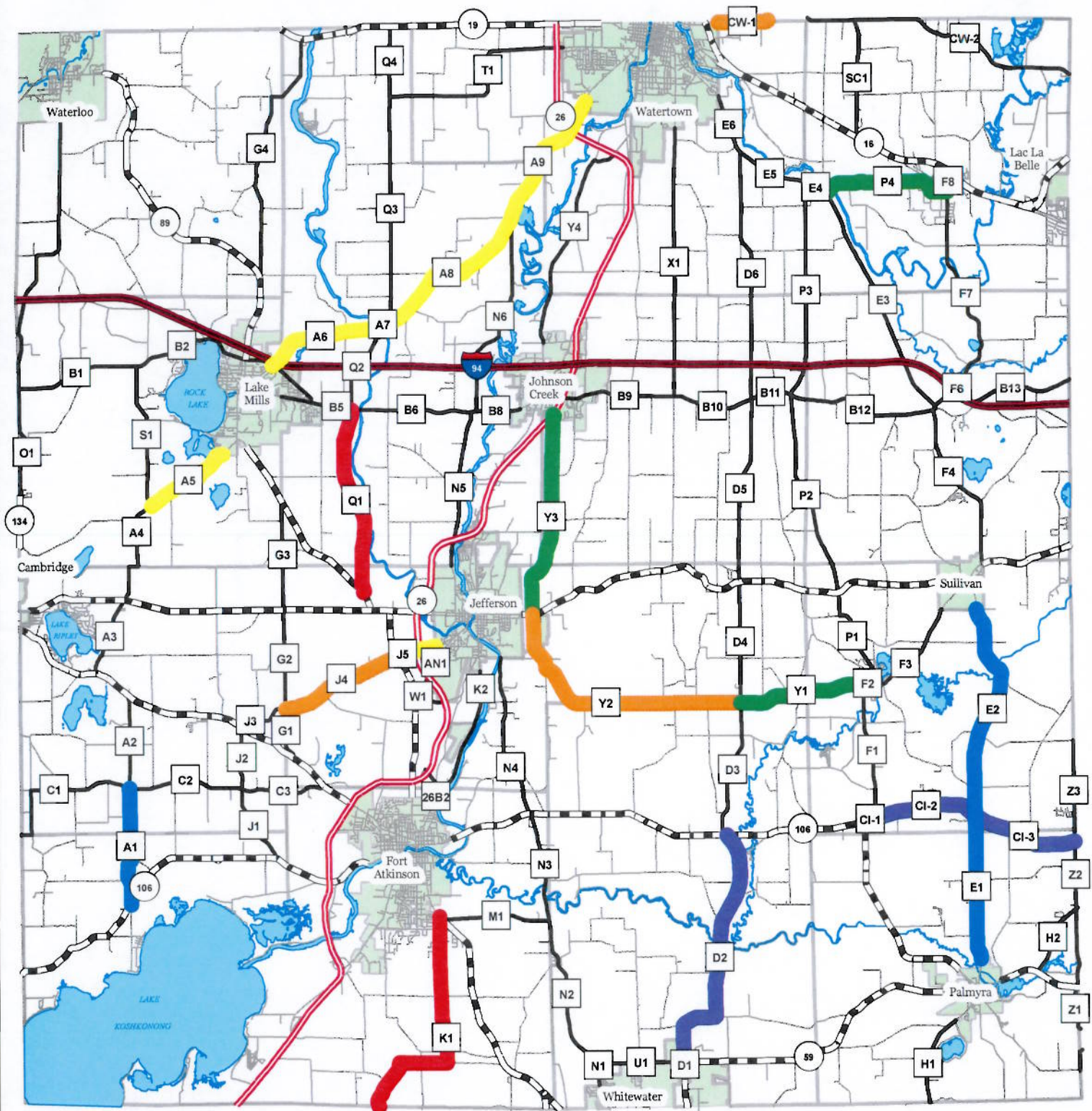
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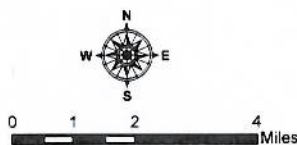


Jefferson County Highways

5 Year Improvement Plan



5 Year Plan



Jefferson County Highway Department, Printed August 2014.

Road Classification



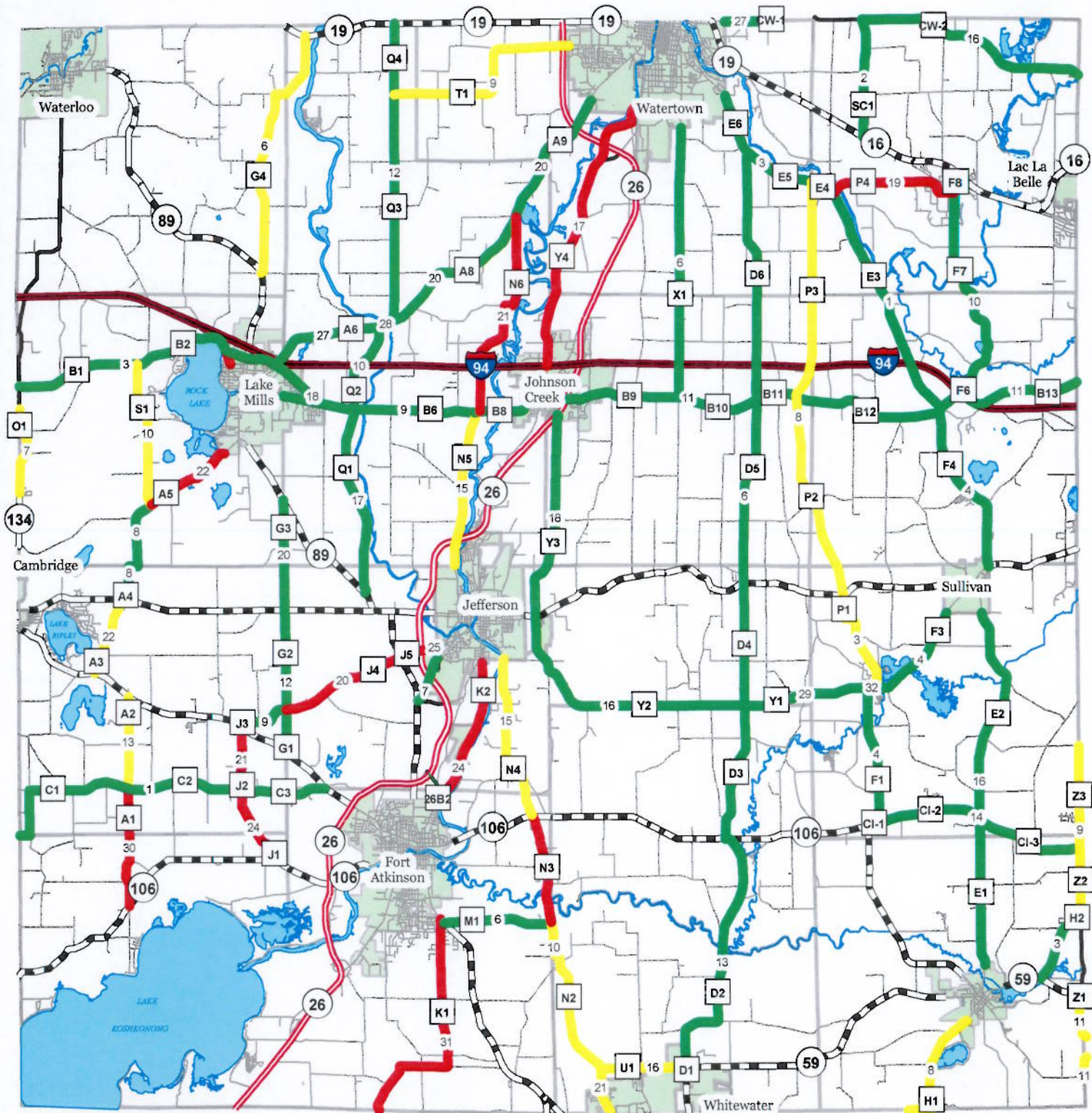
Features





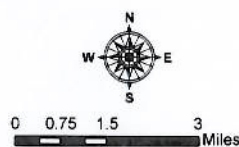
Jefferson County Highways

Future 3R Project Planning



Next Pavement Treatment (Pavement Age noted on segment)

- Reconstruction - 36 Miles**
Cost: \$850,000/mi
- Rehabilitation - 54 Miles**
Cost: \$525,000/mi
- Resurface - 165 Miles**
Cost: \$325,000/mi



Jefferson County Highway Department, Printed August 2014.

Road Classification

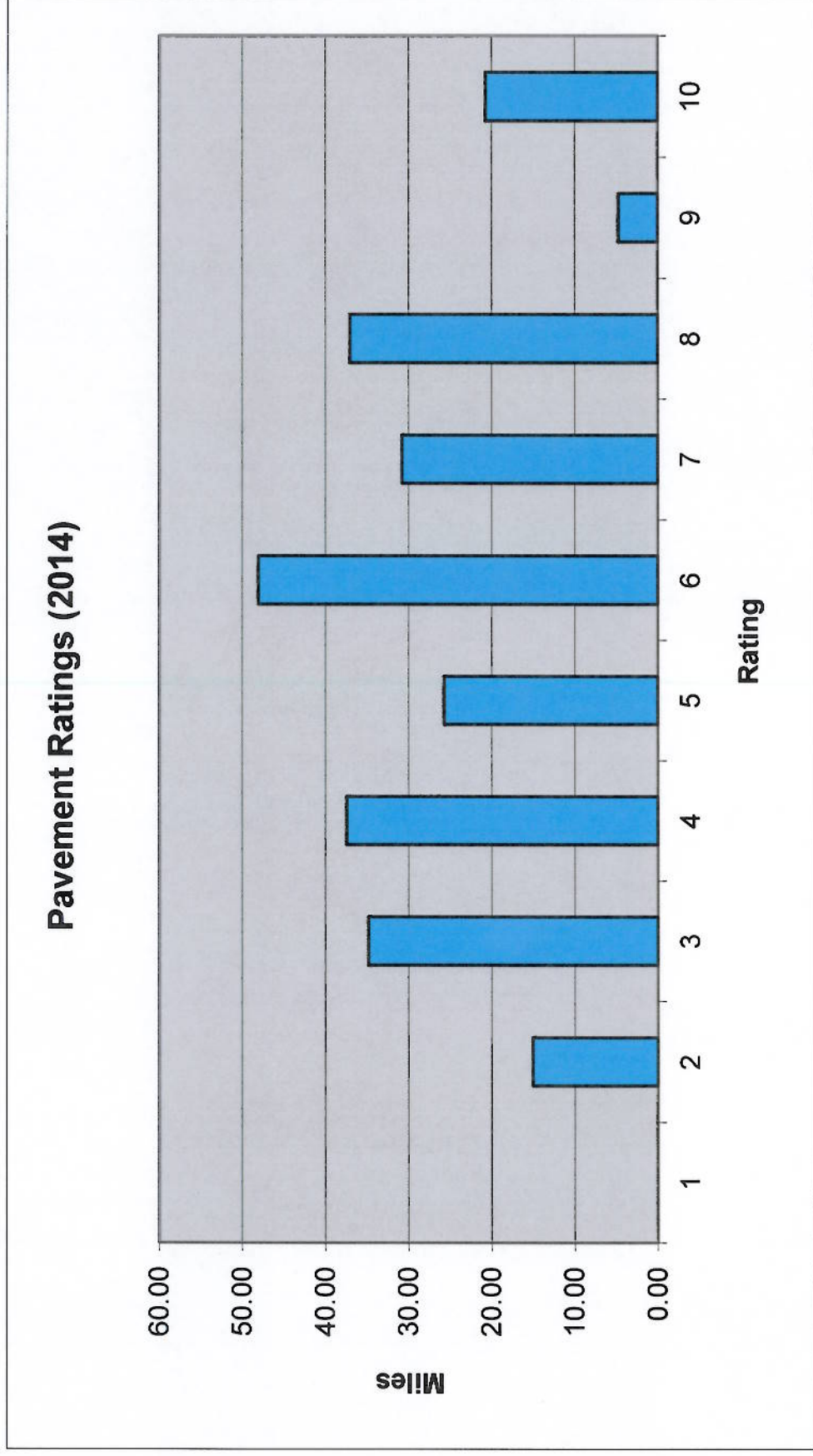
- 94** Interstate
- 26** Multilane Divided
- 12 (106)** U.S. or State Hwy
- c** County Hwy
- Local

Features

- City or Village
- Township
- Open Water

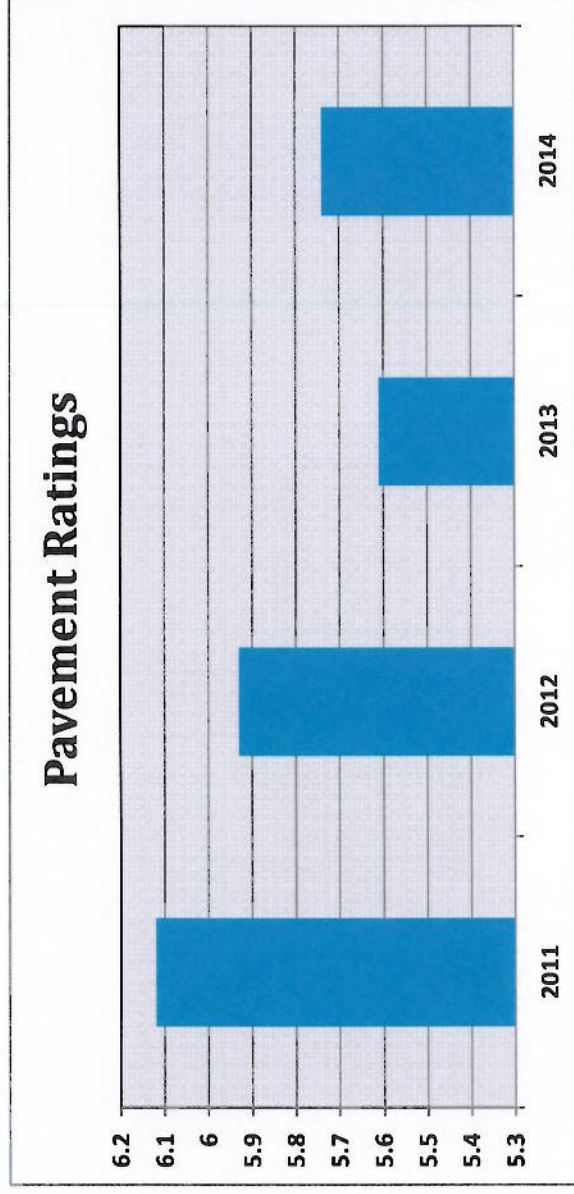
Jefferson County Highway Department

2014 Average Pavement Rating = 5.74



Jefferson County Highway Department

Average Pavement Ratings by Year



Year	Pavement Rating
2011	6.12
2012	5.93
2013	5.61
2014	5.74

Pavement Ratings	Pavement Condition
10	Excellent
9	Excellent
8	Very Good
7	Good
6	Good
5	Fair
4	Poor
3	Poor
2	Very Poor
1	Failed

**Jefferson County Highway Department
Potential Project List - 2014**

CTH	ID #	From	To	Pvt Length	Pvt Rating	Next Pvt Treatment (Resurf, Rehab, Recon)	Construction Year	Pvt Age
CI	CI-1	STH 106	CTH F	0.26	4	Resurface	2000	14
CI	CI-2	CTH F	CTH E	2.39	4	Resurface	2000	14
CI	CI-3	CTH E	CTH Z	2.44	4	Resurface	2000	14
CW	CW-2	CTH SC	Waukesha County	5.30	4	Resurface	1998	16
D	D1	STH 59	CTH U	0.16	4	Resurface	1998	16
D	D2	CTH U	STH 106	5.90	4	Resurface	2001	13
E	E1	Palmyra	CTH CI	3.23	4	Resurface	1998	16
K	K2	STH 26 (Bus)	Jefferson	3.13	4	Reconstruction	1990	24
N	N4	STH 106	Jefferson	3.77	4	Rehabilitation	1999	15
Q	Q2	CTH B	CTH A	1.99	4	Resurface	2004	10
Y	Y2	CTH D	US 18	6.13	4	Resurface	1998	16
Y	Y3	US 18	STH 26	4.71	4	Resurface	1996	18
A	A5	CTH S	Lake Mills	2.03	3	Reconstruction	1993	21
A	A6	CTH V	CTH Q	2.82	3	Resurface	1987	27
A	A7	CTH Q (s)	CTH Q (n)	0.36	3	Resurface	1986	28
A	A8	CTH Q (n)	CTH N	3.80	3	Resurface	1994	20
A	A9	CTH N	Watertown	3.26	3	Resurface	1994	20
J	J4	CTH G	STH 89	2.91	3	Reconstruction	1994	20
J	J5	STH 89	Jefferson	0.84	3	Reconstruction	1989	25
K	K1	Rock County	US 12	5.52	3	Reconstruction	1983	34
N	N5	Jefferson	CTH B	3.53	3	Rehabilitation	1999	15
Y	Y1	CTH F	CTH D	2.86	3	Resurface	1985	29
Y	Y4	Johnson Creek	Watertown	4.90	3	Reconstruction	1997	17
Z	Z1	Waukesha County	STH 59	2.01	3	Rehabilitation	2003	11
B	B3	CTH V	Lake Mills	0.29	2	Reconstruction	1986	28
CW	CW-1	Watertown	Oak Hill Road	0.92	2	Resurface	1987	27
E	E2	CTH CI	Sullivan	5.01	2	Resurface	1998	16
J	J1	STH 106	CTH C	1.80	2	Reconstruction	1990	24
J	J2	CTH C	US 12	1.44	2	Reconstruction	1993	21
A	A1	STH 106	CTH C	2.69	2	Reconstruction	1984	30
P	P4	CTH E	CTH F	2.91	2	Reconstruction	1995	19

89.31

Pavement Surface Evaluation and Rating

PASER Asphalt Roads Manual

RATING
10



RATING
7



RATING
4



RATING
1



Rating pavement surface condition

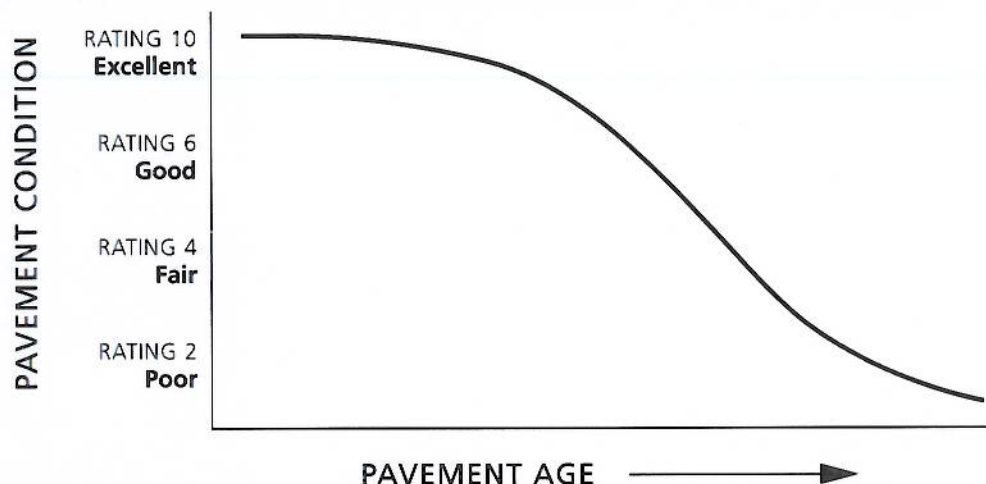
With an understanding of surface distress, you can evaluate and rate asphalt pavement surfaces. The rating scale ranges from **10—excellent** condition to **1—failed**. Most pavements will deteriorate through the phases listed in the rating scale. The time it takes to go from excellent condition (10) to complete failure (1) depends largely on the quality of the original construction and the amount of heavy traffic loading.

Once significant deterioration begins, it is common to see pavement decline rapidly. This is usually due to a combination of loading and the effects of additional moisture. As a pavement ages and additional cracking develops, more moisture can enter the pavement and accelerate the rate of deterioration.

Look at the photographs in this section to become familiar with the descriptions of the individual rating categories. To evaluate an individual pavement segment, first determine its general condition. Is it relatively new,

toward the top end of the scale? In very poor condition and at the bottom of the scale? Or somewhere in between? Next, think generally about the appropriate maintenance method. Use the rating categories outlined below.

Finally, review the individual pavement distress and select the appropriate surface rating. Individual pavements will **not** have all of the types of distress listed for any particular rating. They may have only one or two types.



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

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 1/4").	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 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. Slight 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 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 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 (1/2" 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.

RATING 10 & 9

EXCELLENT —

No maintenance required

Newly constructed or recently overlaid roads are in excellent condition and require no maintenance.

►
RATING 10
New construction.



►
RATING 9
Recent overlay,
rural.



►
RATING 9
Recent overlay,
urban.



**RATING 8****VERY GOOD —****Little or no maintenance required**

This category includes roads which have been recently sealcoated or overlaid with new cold mix. It also includes recently constructed or overlaid roads which may show longitudinal or transverse cracks. All cracks are tight or sealed.



**Recent
chip seal.**



**Recent
slurry seal.**

▼ **Widely spaced,
sealed cracks.**



▲ **New cold mix surface.**



RATING 7

GOOD —

Routine sealing recommended

Roads show first signs of aging, and they may have very slight raveling. Any longitudinal cracks are along paving joint. Transverse cracks may be approximately 10' or more apart. All cracks are 1/4" or less, with little or no crack erosion. Few if any patches, all in very good condition. Maintain a crack sealing program.

►
Tight and sealed
transverse and
longitudinal cracks.
Maintain crack
sealing program.



►
Tight and sealed
transverse and
longitudinal cracks.



►
Transverse cracks
about 10' or more
apart. Maintain crack
sealing program.





RATING 6

GOOD —

Consider preservative treatment

Roads are in sound structural condition but show definite signs of aging. Seal-coating could extend their useful life. There may be slight surface raveling. Transverse cracks can be frequent, less than 10' apart. Cracks may be 1/4–1/2" and sealed or open. Pavement is generally sound adjacent to cracks. First signs of block cracking may be evident. May have slight or moderate bleeding or polishing. Patches are in good condition.

◀ Slight surface raveling with tight cracks, less than 10' apart.

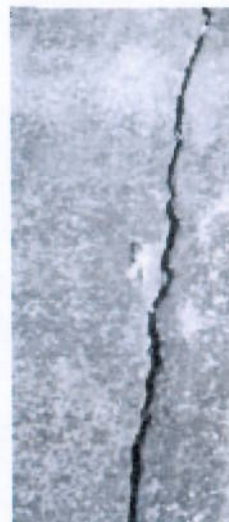
◀ Transverse cracking less than 10' apart; cracks well-sealed.



▼ Large blocks, early signs of raveling and block cracking.

Open crack, 1/2" wide; adjoining pavement sound.
▼

▼ Moderate flushing.



RATING 5

FAIR —

Preservative maintenance treatment required

Roads are still in good structural condition but clearly need sealcoating or overlay. They may have moderate to severe surface raveling with significant loss of aggregate. First signs of longitudinal cracks near the edge. First signs of raveling along cracks. Block cracking up to 50% of surface. Extensive to severe flushing or polishing. Any patches or edge wedges are in good condition.

▼ Block cracking with open cracks.



► Moderate to severe raveling in wheel paths.



▼ Severe flushing.



▲ Wedges and patches extensive but in good condition.

Severe raveling with
▼ extreme loss of aggregate.



Load cracking and slight
▼ rutting in wheel path.



RATING 4

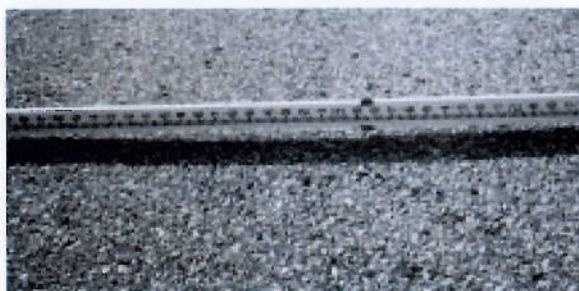
FAIR —

Structural improvement required

Roads show first signs of needing strengthening by overlay. They have very severe surface raveling which should no longer be sealed. First longitudinal cracking in wheel path. Many transverse cracks and some may be raveling slightly. Over 50% of the surface may have block cracking. Patches are in fair condition. They may have rutting less than 1/2" deep or slight distortion.

◀ Longitudinal cracking;
early load-related
distress in wheel path.
Strengthening needed.

▼ Slight rutting; patch
in good condition.



▼ Extensive block cracking.
Blocks tight and sound.
◀ Slight rutting in
wheel path.

RATING 3

POOR—

Structural improvement required

Roads must be strengthened with a structural overlay (2" or more). Will benefit from milling and very likely will require pavement patching and repair beforehand. Cracking will likely be extensive. Raveling and erosion in cracks may be common. Surface may have severe block cracking and show first signs of alligator cracking. Patches are in fair to poor condition. There is moderate distortion or rutting (1-2") and occasional potholes.

► Many wide and raveled cracks indicate need for milling and overlay.



► 2" ruts need mill and overlay.



► Open and raveled block cracks.



**RATING 3****POOR — (continued)****Structural improvement required**

◀ Alligator cracking.
Edge needs repair
and drainage needs
improvement prior
to rehabilitation.

▼ Distortion with patches
in poor condition. Repair
and overlay.



RATING 2

VERY POOR—

Reconstruction required

Roads are severely deteriorated and need reconstruction. Surface pulverization and additional base may be cost-effective. These roads have more than 25% alligator cracking, severe distortion or rutting, as well as potholes or extensive patches in poor condition.

▶
Extensive alligator cracking. Pulverize and rebuild.



▲ Severe rutting.
Strengthen base and reconstruct.

▲ Patches in poor condition, wheelpath rutting. Pulverize, strengthen and reconstruct.



▶
Severe frost damage.
Reconstruct.

**RATING 1****FAILED —
Reconstruction required**

Roads have failed, showing severe distress and extensive loss of surface integrity.



Potholes from frost damage. Reconstruct.



Potholes and severe alligator cracking. Failed pavement. Reconstruct.



Extensive loss of surface. Rebuild.

Practical advice on rating roads

Inventory and field inspection

Most agencies routinely observe roadway conditions as a part of their normal work and travel. However, an actual inspection means looking at the entire roadway system as a whole and preparing a written summary of conditions. This inspection has many benefits over casual observations. It can be helpful to compare segments, and ratings decisions are likely to be more consistent because the roadway system is considered as a whole within a relatively short time.

An inspection also encourages a review of specific conditions important in roadway maintenance, such as drainage, adequate strength, and safety.

A simple written inventory is useful in making decisions where other people are involved. You do not have to trust your memory, and you can usually answer questions in more detail. Having a written record and objective information also improves your credibility with the public.

Finally, a written inventory is very useful in documenting changing roadway conditions. Without records over several years it is impossible to know if road conditions are improving, holding their own, or declining.

Annual budgets and long range planning are best done when based on actual needs as documented with a written inventory.

The Wisconsin DOT local road inventory (WISLR) is a valuable resource for managing your local roads. Adding PASER surface condition ratings is an important improvement.

Averaging and comparing sections

For evaluation, divide the local road system into individual segments which are similar in construction and condition. Rural segments may vary from

1/2 mile to a mile long, while sections in urban areas will likely be 1-4 blocks long or more. If you are starting with the WISLR Inventory, the segments have already been established. You may want to review them for consistent road conditions.

Obviously, no roadway segment is entirely consistent. Also, surfaces in one section will not have all of the types of distress listed for any particular rating. They may have only one or two types. Therefore, some averaging is necessary.

The objective is to rate the condition that represents the majority of the roadway. Small or isolated conditions should not influence the rating. It is useful to note these special conditions on the inventory form so this information can be used in planning specific improvement projects. For example, some spot repairs may be required.

Occasionally surface conditions vary significantly within a segment. For example, short sections of good condition may be followed by sections of poor surface conditions. In these cases, it is best to rate the segment according to the worst conditions and note the variation on the form.

The overall purpose of condition rating is to be able to compare each

segment relative to all the other segments in your roadway system. On completion you should be able to look at any two pavement segments and find that the better surface has a higher rating.

Within a given rating, say 6, not all pavements will be exactly the same. However, they should all be considered to be in better condition than those with lower ratings, say 5. Sometimes it is helpful in rating a difficult segment to compare it to other previously rated segments. For example, if it is better than one you rated 5 and worse than a typical 7, then a rating of 6 is appropriate. Having all pavement segments rated in the proper relative order is most important and useful.

Assessing drainage conditions

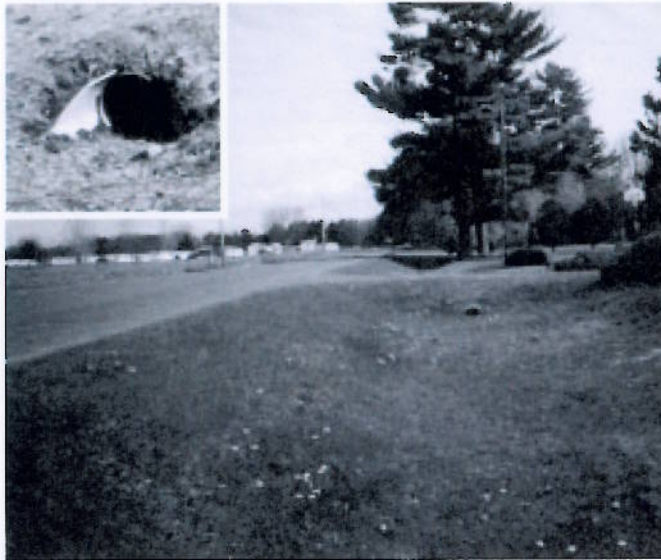
Moisture and poor pavement drainage are significant factors in pavement deterioration. Some assessment of drainage conditions during pavement rating is highly recommended. While you should review drainage in detail at the project level, at this stage simply include an overview drainage evaluation at the same time as you evaluate surface condition.



Urban drainage.
RATING:
Excellent

Good rural ditch and driveway culvert. Culvert end needs cleaning.

RATING: Good



High shoulder and no ditch lead to pavement damage. Needs major ditch improvement for a short distance.

RATING: Fair



No drainage leads to failed pavement.

RATING: Poor



Consider both pavement surface drainage and lateral drainage (ditches or storm sewers). Pavement should be able to quickly shed water off the surface into the lateral ditches. Ditches should be large and deep enough to drain the pavement and remove the surface water efficiently into adjacent waterways.

Look at the roadway crown and check for low surface areas that permit ponding. Paved surfaces should have approximately a 2% cross slope or crown across the roadway. This will provide approximately 3" of fall on a 12' traffic lane. Shoulders should have a greater slope to improve surface drainage.

A pavement's ability to carry heavy traffic loads depends on both the pavement materials (asphalt surfacing and granular base) and the strength of the underlying soils. Most soils lose strength when they are very wet. Therefore, it is important to provide drainage to the top layer of the subgrade supporting the pavement structure.

In rural areas, drainage is provided most economically by open ditches that allow soil moisture to drain laterally. As a rule of thumb, the bottom of the ditch ought to be at least one foot below the base course of the pavement in order to drain the soils. This means that minimum ditch depth should be about 2' below the center of the pavement. Deeper ditches, of course, are required to accommodate roadway culverts and maintain the flow line to adjacent drainage channels or streams.

You should also check culverts and storm drain systems. Storm drainage systems that are silted in, have a large accumulation of debris, or are in poor structural condition will also degrade pavement performance.

The T.I.C. publication, *Drainage Manual: Local Road Assessment and Improvement*, describes the elements of drainage systems, depicts them in detailed photographs, and explains how to rate their condition. Copies are available from the Transportation Information Center.

Planning annual maintenance and repair budgets

We have found that relating a normal maintenance or rehabilitation procedure to the surface rating scheme helps local officials use the rating system. However, an individual surface rating should not automatically dictate the final maintenance or rehabilitation technique.

You should consider future traffic projections, original construction, and

pavement strength since these may dictate a more comprehensive rehabilitation than the rating suggests. On the other hand, it may be appropriate under special conditions to do nothing and let the pavement fully deteriorate, then rebuild when funds are available.

Summary

Using local road funds most efficiently requires good planning and accurate identification of appropriate rehabili-

tation projects. Assessing roadway conditions is an essential first step in this process. This asphalt pavement surface condition rating procedure has proved effective in improving decision making and using highway funds more efficiently. It can be used directly by local officials and staff. It may be combined with additional testing and data collection in a more comprehensive pavement management system.