



FINAL REPORT

Operational Report

*Wisconsin State Highway
2005*

Maintenance, Traffic, and Operations Conditions

Issued, July 2006



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Introduction and Overview

About this report

This report is intended for operations managers in WisDOT and partner organizations. It is issued annually to provide information on the condition of Wisconsin's state highways. The first section of this report is an executive overview and has been issued in a slightly condensed version to executive managers in WisDOT. Both documents are available on the Compass website (http://dotnet/dtid_bho/extranet/compass/reports/index.htm from inside WisDOT or https://trust.dot.state.wi.us/extntgtwy/dtid_bho/extranet/compass/reports/index.htm from outside WisDOT).

The information in these reports is being used to help understand trends and conditions, prioritize resources, and set target future condition levels for our highway system. As more information is gathered, it will also be used to illustrate and understand the consequences of funding and policy shifts, and to demonstrate accountability to decision-makers at WisDOT and in the legislature.

Please consider the information *not* contained in this report when using it to make decisions. This report *includes* measures of bridges, traveled way, shoulders, drainage, roadsides, selected traffic devices, and selected aspects of winter. It *does not include* measures of preventive maintenance, operational services (like traveler information and incident management), or electrified traffic assets (like signals and lighting).

Feedback on format, content, and other aspects of the report is welcome and should be sent to Scott Bush, Compass Program Manager, at scott.bush@dot.state.wi.us or (608) 266-8666.

Key Observations on 2005 Targets

Operations supervisors and managers set targets annually, after the budget and winter expenditures are known. The targets reflect priorities, fiscal constraints, and goals for the year. Targets are not long-term goals.

If the operations budget were expanded to cover all basic routine maintenance needs, targets would be set at or close to 0% backlog because operations workers would expect to address most routine maintenance needs within the maintenance season.

Key Observations:

- Region and county highway operations staff cooperated to deliver on their promises to live within constrained funding.
- With a few notable exceptions, targets were met.
- Features with backlogs that exceed the target include delineators, routine maintenance of non-regulatory signs, and removal of hazardous debris. These features have maintenance condition worse than expected.
- The backlog for several features is below the target indicating maintenance condition better than targeted. Most notable are distressed joint cracks in concrete pavements, raised pavement markers, special pavement markings, flumes, fences, litter, and noxious weeds.
- Roadside features may be the hardest to manage to their targets. The maintenance backlog for these features tend to be above their targets, up to 21% better than targeted (noxious weeds).

Key Observations on 2005 Highway Maintenance Conditions

Region and county highway operations staff cooperated to deliver on their promises to live within constrained funding.

Key Observations:

Safety:

- Rutting on asphalt pavement received a feature grade of C for 2004 and with preliminary data from 2005. This critical safety deficiency can contribute to hydroplaning in summer and icy pavement in the winter.
- Delineators received a feature grade of D; the second grade drop in as many years.
- Hazardous debris on the shoulders received a feature grade of D. Keeping hazardous debris off the shoulders prevents it from being somehow moved back into live traffic, and protects drivers of cars that may swerve or pull over onto the shoulder.
- Unpaved shoulder drop-off received a feature grade of F. Repair of shoulder drop-off contributes to safety by keeping cars from dropping down dramatically on one side and possibly over-correcting if one or two wheels leave the pavement.

Traveled way:

- Cracking and Slab breakup of concrete pavements received feature grades of D, and Faulting received a grade of F. All feature grades for concrete pavements are C or worse with little change in 2004 and preliminary data from 2005. Feature grades for concrete pavements are worse than for asphalt pavements.

Traffic Management and Signs:

- Routine maintenance of regulatory and warning signs received a feature grade of F and routine maintenance of other signs received a feature grade of D. 41% of regulatory and warning signs and 59% of other signs are being kept in use beyond their recommended service life. This means that WisDOT would need to replace those percentages of signs on the state system in 2006 to bring all signs up to standard.
- WisDOT places a higher priority on routine maintenance of regulatory and warning signs than of other signs. As a result, 33% of other signs are being used more than five years beyond their recommended service life while 23% of regulatory and warning signs are being used more than five years beyond their recommended service life.

Shoulders:

- Unpaved shoulders drop-off /buildup received a feature grade of F. The statewide backlog for 2005 shows a modest improvement over 2004 and is on target with expectations. Unpaved drop-off is significantly worse in the NE region than in other regions.
- Hazardous debris received a feature grade of D. Hazardous debris is notably worse than targeted. Hazardous debris is significantly worse in the SW region than in other regions.
- Cracking on paved shoulders received a feature grade of D. This score is appreciably better than targeted.

Drainage and roadsides:

- Flumes received a feature grade of C; all other drainage features received grades of A or B. The maintenance backlog for flumes improved significantly in 2005 and the condition of flumes is better than targeted. This observation cannot be explained by changes in maintenance practices or priorities.

- Roadside features may be the hardest to manage to their targets. The maintenance backlogs for these features tend to be significantly higher than targeted.
- Although the condition of litter improved measurably in 2005, the feature grade remains a D.
- Noxious weeds received a feature grade of C with a maintenance backlog much lower than targeted. Noxious weeds appear widespread in the NE and SE regions.

Winter operations:

- In keeping with WisDOT guidelines, during similar winter storm events, drivers on major urban freeways and highways have less time to wait until they see bare/wet pavement than do drivers on secondary roads. From storm to storm, however, most of the variability in this time is due to weather effects (type, duration and severity of storms throughout the winter season).
- The average time to bare/wet pavement during winter 2004-05 was 2 hours and 4 minutes which is 34 minutes less than the previous winter. This improvement comes even though we experienced a slightly more severe winter. The average Winter Severity Index (WSI) in 2004-05 was 31.9 versus 31.2 in the previous year. The average annual cost per lane mile for winter maintenance increased by approximately \$100 in 2005. As expected, cost per lane mile increases with severity of the winter.

Bridges:

- 34% of decks statewide are in Fair condition and need reactive maintenance, based on their NBI ratings of 5 or 6. These include 29% of concrete bridges and 43% of steel bridges.
- Backlog for bridge inspection is calculated based on the mandatory inspection frequency for each inspection type. Initial and biennial routine inspections have the best records with only 2% of backlogs statewide. All bridges require initial and biennial routine inspections.
- Load-posted and in-depth inspections have the worst inspection backlogs with 90% and 93%, respectively of eligible bridges in need of inspection. However, only 21 and 61 bridges, respectively require these inspections. Compliance estimates of fracture critical and in-depth inspections are very preliminary. It will take 3 more years until the Highway Structure Information (HSI) database becomes current for all inspection types.

Customer Satisfaction Survey

Survey of the traveling public concerning traveling satisfaction is scheduled every two years. The last survey was conducted in February 2004; the next will be conducted in 2006. There is no new information for this report.

Definitions

The measures in this report were developed by teams of front-line practitioners and policy experts to reflect current practices for routine or reactive maintenance. They do not include measures of preventive maintenance.

An A means that we are providing all the basics in routine maintenance. A feature grade of A means that we have addressed most routine maintenance needs within the maintenance season, and there is not a significant backlog.

- Percent backlogged. This tells us what percent of that asset or feature is in a condition where we would do maintenance work on it, if we had the budget. An increasing percent

backlogged reflects fiscal constraints, not inadequate work. See Appendix A for when an asset is considered backlogged.

- Feature grades. As more of an asset or feature is backlogged, its grade declines. These grades are weighted for importance. So something that contributes to safety – for example, guardrail – would decline more rapidly than something that was primarily aesthetic – for example, mowing. See the Compass website for details.
- 2005 targets. Targets are set annually, after winter spending has been completed, and are intended to reflect priorities and goals for the year, in light of fiscal constraint. They are set by operations supervisors and managers.
- PMMS category. In the pavement maintenance management system, each mile of road receives a rating for each distress. The rating will be excellent, fair, moderate, or bad, depending on extent and severity of distress. In the PMMS system, fair is called “good” and reflects the fact that pavement surface needs routine maintenance, but ride is minimally affected.
- Years past recommended service life. This tells us how many years ago a sign should have been replaced, based on national standards.

Data

This report uses inventory data for bridges, pavement, routine maintenance of signs, and winter storms. It uses sample data for highway maintenance features. All the data were taken between September 13 and December 22, 2005. Analysis has been done to determine statistical significance for state-level data.

Executive Overview Reports

Wisconsin 2005: Targets for Paved Traveled Way Maintenance Conditions

Targets are set annually, after winter spending has been completed, and are intended to reflect priorities for that year, given fiscal constraints. They are a measure of effective management, not system condition. Target analysis for paved traveled way is based on preliminary data available in September 2005.

Element	Feature	Actual % backlog 2005	Target % backlog 2005	On target ¹	Statewide								Regions			
					Gap if target missed ²								Worse condition	On Target	Better condition	
					Worse condition				Better condition							
30	20	10	0	0	10	20	30									
Traveled way, asphalt	Alligator cracking ³	1%	5%	◎											All	
	Block cracking ³	3%	5%	◎											All	
	Edge raveling	15%	15%	◎										SE	NC,NE,SW	NW
	Flushing	0%	1%	◎											All	
	Longitudinal cracking ³	26%	25%	◎											All	
	Longitudinal distortion	0%	1%	◎											All	
	Patch deterioration	9%	10%	◎											All	
	Rutting	9%	15%						6						NW,SW	NE,NC, SE
	Surface raveling	1%	2%	◎											All	
	Transverse cracking ³	24%	25%	◎											NC, NE, SE, SW	NW
	Transverse distortion	1%	5%	◎											All	
Traveled way, concrete	Distressed joints/cracks	33%	43%							10			SE	NW	NC,NE,SW	
	Longitudinal joint distress	21%	27%						6				SE	NW	NC,NE,SW	
	Patch deterioration	28%	30%	◎									SE	NC,NE,SW	NW	
	Slab breakup	44%	45%	◎									SE	NW, SW	NC, NE	
	Surface distress	20%	25%	◎										NW,SE,SW	NC, NE	
	Transverse faulting	74%	75%	◎										All		

¹ ◎ This symbol indicates that the percent backlogged for that feature is statistically the same as the target, or within 5 percentage points.

² Gap may be smaller than the difference between actual and target. Estimates of the gap are conservative and take into account sample size.

³ Only 'unsealed' cracking distresses are considered as backlogged.

Wisconsin 2005: Targets for Highway Maintenance Conditions

Targets are set annually, after winter spending has been completed, and are intended to reflect priorities for that year, given fiscal constraints. They are a measure of effective management, not system condition.

Element	Feature	Statewide											Regions		
		Actual % backlog 2005	Target % backlog 2005	On target ⁴	Gap if target missed ⁵								Worse condition	On Target	Better condition
					Worse condition				Better condition						
				30	20	10	0	0	10	20	30				
Traffic	Centerline Markings	5%	5%	◎										All	
	Delineators	24%	15%					9					NE, NW, SE, SW	NC	
	Edgeline Markings	5%	6%	◎										All	
	Other signs (emergency repair)	1%	1%	◎										All	
	Other signs (routine)	59%	50%					9					NC, NE, NW, SW	SE	
	Protective barriers	4%	3%	◎									NE	NC, NW, SE, SW	
	Raised pavement markers	15%	25%						10					SE, SW	NC, NE, NW
	Regulatory/warning signs (emergency)	1%	0%	◎										All	
	Regulatory/warning signs (routine)	41%	40%	◎									NE	NC, SW, NW	SE
	Special pavement markings	5%	25%								20				All
Shoulders	Hazardous debris	12%	6%					6					NE, SW	NC, NW, SE	
	Cracking (paved)	52%	60%						8				SE		NC, NE, NW, SW
	Potholes/raveling (paved)	7%	10%	◎										NC, NE, NW, SE	SW
	Cross-slope (unpaved)	14%	20%						6				SW		NC, NE, NW, SE
	Drop-off/build-up (unpaved)	36%	35%	◎									NE	NC, NW, SW	SE
	Erosion (unpaved)	3%	5%	◎										All	
Drainage	Culverts	18%	15%	◎									SE	NE, NW, SW	NC
	Curb & gutter	7%	8%	◎									NW	NC, NE, SW	SE

⁴ ◎ This symbol indicates that the percent backlogged for that feature is statistically the same as the target, or within 5 percentage points.

⁵ Gap may be smaller than the difference between actual and target. Estimates of the gap are conservative and take into account sample size.

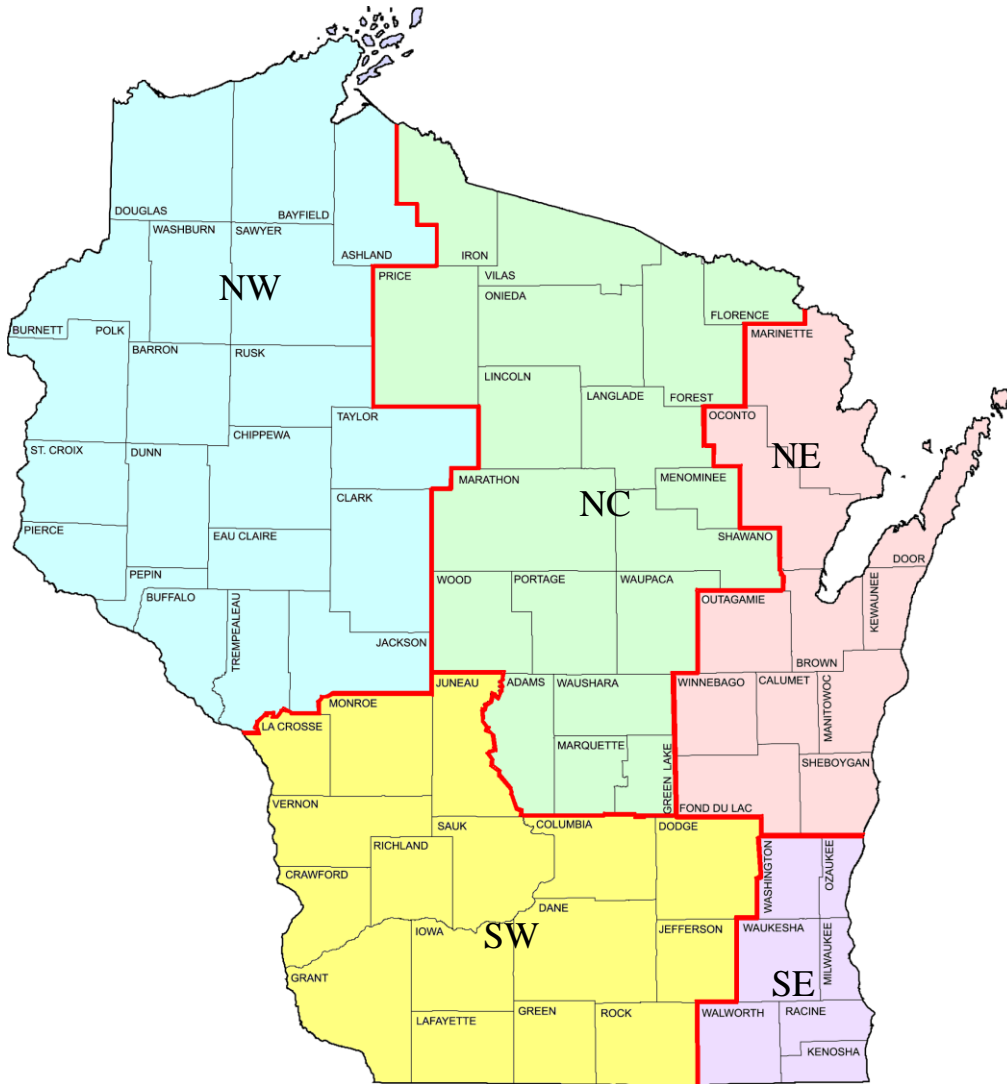
	Ditches	2%	2%	⊙									All	
	Flumes	19%	30%						11				SE	NC, NE, NW, SW
	Storm sewer system	9%	10%	⊙									All	
	Under-drains/edge-drains	20%	20%	⊙								NW, SW		NC, NE, SE
Roadsides	Fences	2%	14%						12					All
	Litter	62%	75%						13				NE, SW	NC, NW, SE
	Mowing	35%	40%	⊙									NE, NW, SE	NC, SW
	Noxious weeds	29%	50%							21				All
	Woody vegetation control	3%	5%	⊙										All
	Woody vegetation control for vision	1%	5%	⊙										All

Element	What are we spending?			Feature	How much of the system still needs work at the end of the maintenance season?										How well-maintained is the system?					This feature contributes primarily to:							
	Dollars spent ⁸ (in millions)				Condition change: 2004 to 2005 ⁹	% of system backlogged										2005 Feature grades					Critical safety	Safety / mobility	Ride / comfort	Stewardship	Aesthetics		
	FY 03	FY 04	FY 05			2003	2004	2005										A	B	C						D	F
								0	10	20	30	40	50	60	70												
				Fences	↑	14	4	2										×					✓				
				Litter	↑↑	67	70																				✓
				Mowing	↑	n/a ¹²	40													×			✓				
				Mowing for vision	13	n/a	26																✓				
				Noxious weeds	↑	19	30														×					✓	
				Woody vegetation	↑	4	4	3															✓				
				Woody veg. control for vision	--	0	1	1															✓				

¹² Definition of Mowing and Mowing for Vision was different in 2003. It is not comparable to results from 2004 and 2005

¹³ There were not enough field observations of mowing for vision to draw a statistically valid conclusion about its condition in 2005.

Wisconsin Regional Map



Regions 2005: Compass Report on Highway Maintenance Conditions

Element	Feature	How much of the system needs work at the end of the season? <i>What did it cost to achieve this condition?</i>					
		Region Percent of System Backlogged ¹⁴					
		NC	NE	NW	SE	SW	statewide
Traveled way, asphalt*	Alligator cracking	0	1	1	1	2	1%
	Block cracking	3	4	2	3	3	3%
	Edge raveling	12	18	8	23	17	15%
	Flushing	0	0	1	0	1	0%
	Longitudinal cracking	22	21	29	22	27	26%
	Longitudinal distortion ¹⁵	0	0	1	1	1	0%
	Patch deterioration	7	6	5	15	12	9%
	Rutting	8	2	13	1	13	9%
	Surface raveling	1	1	2	1	2	1%
	Transverse cracking	23	21	32	22	21	24%
Transverse distortion ¹⁵	0	0	0	0	0	1%	
Dollars spent on traveled way, asphalt (in millions)							16.8
Traveled way, concrete*	Distressed joints/cracks	26	26	41	50	28	33%
	Longitudinal joint distress	12	14	31	38	15	21%
	Patch deterioration	25	28	24	38	26	28%
	Slab breakup	38	39	45	58	42	44%
	Surface distress	10	19	27	22	20	20%
	Transverse faulting	78	71	74	80	71	74%
Dollars spent on traveled way, concrete (in millions)							3.2
Traffic and safety (selected devices)	Centerline markings	3	2	9	6	5	5%
	Delineators	13	22	25	26	33	24%
	Edgeline markings	5	1	8	3	5	5%
	Other signs (emergency repair)	0	0	0	1	4	1%
	Other signs (routine)	66	62	59	50	61	59%
	Protective barriers	0	10	4	5	1	4%
	Raised pavement markers	12	4	11	25	23	15%
Regulatory/warning signs (emergency)	1	0	0	2	1	1%	

¹⁴ Where there were fewer than 25 observations of a feature in a region, the score for that region is not shown.

¹⁵ Some roundings were done to the percent backlog numbers in the region and state level

Element	Feature	How much of the system needs work at the end of the season? <i>What did it cost to achieve this condition?</i>					
		Region					
		Percent of System Backlogged ¹⁴					
		NC	NE	NW	SE	SW	statewide
	Regulatory/warning signs (routine)	45	47	37	32	45	41%
	Special pavement markings	0	1	7	17	1	5%
	Dollars spent on traffic and safety (selected) (in millions)						15.8
Shoulders	Hazardous debris	10	14	6	9	20	12%
	Cracking (paved)	53	52	42	73	40	52%
	Potholes/raveling (paved)	6	8	8	8	4	7%
	Cross-slope (unpaved)	13	10	12	5	27	14%
	Drop-off/build-up (unpaved)	30	50	37	29	36	36%
	Erosion (unpaved)	2	1	5	2	3	3%
	Dollars spent on shoulders (in millions)						7.5
Drainage	Culverts	8	17	13	34	19	18%
	Curb & gutter	5	7	21	1	3	7%
	Ditches	1	1	1	6	3	2%
	Flumes	13	20	16	31	18	19%
	Storm sewer system	6	6	11	10	11	9%
	Under-drains/edge-drains	8	4	28	9	49	20%
	Dollars spent on drainage (in millions)						5.7
Roadsides	Barriers						
	Fences	0	0	0	1	8	2%
	Litter	60	78	47	56	71	62%
	Mowing	24	41	35	41	33	35%
	Noxious weeds	23	42	10	43	27	29%
	Woody vegetation control	2	3	1	3	6	3%
	Woody vegetation control for vision	1	0	1	2	1	1%
	Dollars spent on roadsides (in millions)						20.2

*Information is based on partial, preliminary 2005 data

Wisconsin 2004-2005: Compass Report on Winter Operations

The Bureau of Highway Operations (BHO) reports winter performance measures in the Annual Winter Maintenance Report and is now in the process of developing standards for those performance measures. As standards get developed, this Compass Report on Winter Operations will begin measuring how we are meeting expectations.

BHO's 2004-2005 Annual Winter Maintenance Report – with more operational detail – can be found on the winter reports home page (http://dotnet/dtid_bho/extranet/winter/reports/index.htm from inside WisDOT or https://trust.dot.state.wi.us/extntgtwy/dtid_bho/extranet/winter/reports/index.htm from outside WisDOT).

Statewide measures for winter

	2003-04	2004-05
Time to bare/wet pavement	2 hours 38 minutes after the storm ended	2 hours 4 minutes after the storm ended
Cost per lane mile	\$1,279	\$1,374
Winter severity index	31.2	31.9
Winter related crash	26 per 100 million vehicle miles traveled	25 per 100 million vehicle miles traveled

Key findings

- In keeping with WisDOT guidelines, during similar storm events, drivers on major urban freeways and highways have less time to wait until they see bare/wet pavement than do drivers on secondary roads. From storm to storm, however, most of the variability in this time is due to weather effects (type, duration, and severity of storms throughout the winter season).
- The average time to bare/wet pavement during winter 2004-05 was 2 hours and 4 minutes which is 34 minutes less than the previous winter. This improvement comes despite a slightly more severe winter. The average Winter Severity Index (WSI) in 2004-05 was 31.9 versus 31.2 in the previous year.
- As expected, cost per lane mile increases with the severity of the winter, except for the SE region which has the lowest average WSI but the highest cost per WSI point.

The detailed Compass Report on Winter Operations begins on page 42 of this document.

Wisconsin and Regions 2005: Compass Report on Bridges

Bridge Condition

Feature	Region Percent of Bridges					
	NC	NE	NW	SE	SW	statewide
Decks in Fair ¹⁶ condition	18%	25%	40%	56%	24%	34%
Superstructures in Fair condition	13%	16%	34%	52%	20%	29%
Substructures in Fair condition	18%	30%	32%	53%	17%	31%
Number of state-maintained bridges	600	759	1023	1073	1423	4878
Dollar spent on bridges (in millions)						\$10.6

Bridge Special Inspection Compliance

Inspection Type	Region Percent of Bridges backlogged # of Bridges backlogged					
	NC	NE	NW	SE	SW	statewide
Initial	2%	3%	1%	1%	1%	2%
	2	4	1	1	3	11
Routine	1%	2%	0%	6%	1%	2%
	3	18	9	61	9	91
Load Posted	--	100%	75%	100%	75%	90%
	--	9	3	4	3	19
In-depth ¹⁷	100%	83%	93%	90%	100%	93%
	5	5	14	19	14	57
Fracture Critical ¹⁷	50%	36%	40%	62%	30%	38%
	5	16	10	8	13	52
Underwater Diving	71%	53%	18%	90%	31%	43%

¹⁶ Bridge decks, superstructures, and substructures that receive NBI ratings of 5 or 6 are regarded to be in fair condition and warrant reactive maintenance treatments

¹⁷ Compliance estimates of fracture critical and in-depth inspections are very preliminary. It will take 3 more years until the HSI database becomes current for all inspection types.

Inspection Type	Region					
	Percent of Bridges backlogged					
	# of Bridges backlogged					
	NC	NE	NW	SE	SW	statewide
	46	33	17	19	34	149
Underwater Probe/Visual	16%	62%	27%	29%	53%	36%
	65	171	131	67	199	633

Bridge Maintenance Needs

Maintenance Action	Region					
	Percent of Bridges needing maintenance					
	# of Bridges needing maintenance					
	NC	NE	NW	SE	SW	statewide
Deck – Seal Surface Cracks	9%	5%	8%	8%	4%	7%
	53	40	86	88	52	319
Expansion Joints – Seal	4%	14%	2%	11%	2%	6%
	23	105	20	114	31	293
Misc – Cut Brush	1%	1%	9%	8%	3%	5%
	6	4	91	84	38	223
Approach – Seal Approach to Paving Block	1%	1%	15%	2%	2%	4%
	4	7	151	25	24	211
Approach - Wedge Approach	2%	0%	3%	7%	3%	3%
	9	1	30	71	38	149
Drainage – Repair Washouts / Erosion	1%	2%	4%	6%	1%	3%
	6	15	40	65	21	147
Deck – Patching	1%	4%	1%	5%	1%	3%
	7	29	15	55	16	122

2005 Signs: Compass Report on Condition and Age Distribution

Data in this section comes from the Sign Inventory Management System (SIMS). Reporting and analysis were done by Professor Teresa Adams of the University of Wisconsin, with Project Assistant Janille Smith, under the direction of WisDOT staff. This section covers only routine maintenance, not emergency replacement of knock-downs and related work. Information on emergency management of signs is available on pages 8 and 12 of this report.

Key Observations:

Routine maintenance

- Routine maintenance of both regulatory/warning signs and of other signs have high numbers of signs backlogged, or beyond their recommended service life. A higher rate of backlog for other signs (59%) than for regulatory/warning signs (41%) is a result of WisDOT priorities that allocate all routine sign maintenance resources to regulatory/warning signs.
- Since WisDOT places a higher priority on routine maintenance of regulatory and warning signs than of other signs, 33% of other signs are being used more than five years beyond their recommended service life while 23% of regulatory and warning signs are being used more than five years beyond their recommended service life.
- The SE region has the lowest percentages of signs backlogged for routine maintenance at 32% for regulatory/warning signs and 50% for other signs.
- The backlog for routine maintenance in the counties ranges from 19% to 79% for regulatory/warning signs and from 39% to 87% for other signs. Oconto has the lowest percentages of backlog in both regulatory/warning signs and other signs.

Wisconsin 2005: Compass Report on Sign Condition

Regulatory/warning/school signs				Other signs			
Total signs	% backlogged	Deficient signs	For deficient signs, average years beyond service life	Total signs	% backlogged	Deficient signs	For deficient signs, average years beyond service life
160185	41%	65092	5.7	113693	59%	67449	6.0

Regions 2005: Sign Condition

Region	Regulatory/warning/school signs				Other signs			
	Total signs	% backlogged	Deficient signs	For deficient signs, average years beyond service life	Total signs	% backlogged	Deficient signs	For deficient signs, average years beyond service life
NC	26164	45%	11746	6.1	18480	66%	12177	6.6
NE	22246	47%	10346	5.4	20367	62%	12647	5.5
NW	36737	37%	13606	5.4	29848	59%	17541	5.2
SE	32872	32%	10533	4.9	21077	50%	10439	5.7
SW	42166	45%	18861	6.3	23921	61%	14645	7.0

Counties 2005: Sign Condition

Region	County	Regulatory/warning/school signs				Other signs			
		Total signs	% backlogged	Deficient signs	For deficient signs, average years beyond service life	Total signs	% backlogged	Deficient signs	For deficient signs, average years beyond service life
NC	Adams	965	27%	257	5.6	657	57%	377	5.0
	Florence	534	61%	324	7.8	460	84%	385	9.5
	Forest	1212	44%	528	7.4	916	52%	473	8.8
	Green Lake	889	29%	254	5.0	658	77%	507	6.8
	Iron	1017	79%	806	7.0	692	83%	576	8.2
	Langlade	1245	68%	843	7.7	1189	87%	1033	10.1
	Lincoln	1502	48%	721	7.9	1283	63%	805	9.3
	Marathon	4155	34%	1394	5.1	2273	50%	1142	5.6
	Marquette	1037	44%	456	5.6	894	84%	751	4.7
	Menominee	219	46%	101	3.9	72	46%	33	4.1
	Oneida	1848	74%	1370	6.8	1252	77%	964	7.3
	Portage	2315	41%	941	4.3	2006	62%	1234	4.2
	Price	1067	78%	837	6.7	1038	66%	680	6.6
	Shawano	274	41%	113	4.5	349	55%	192	3.4
	Vilas	1577	72%	1140	6.7	915	83%	762	7.8
	Waupaca	2137	29%	612	4.0	1349	57%	771	4.3
	Waushara	1859	26%	485	3.5	1221	74%	908	5.4
Wood	2312	24%	564	5.8	1256	46%	584	5.6	
NE	Brown	3144	53%	1673	5.2	3736	68%	2548	5.8
	Calumet	842	45%	380	4.8	956	68%	646	5.0
	Door	1705	46%	781	4.4	935	73%	684	4.4
	Fond du Lac	2785	45%	1266	5.6	2079	52%	1072	6.5
	Kewaunee	592	39%	230	5.5	507	69%	351	5.0
	Manitowoc	1696	59%	1005	5.3	1850	74%	1370	5.9

Region	County	Regulatory/warning/school signs				Other signs			
		Total signs	% backlogged	Deficient signs	For deficient signs, average years beyond service life	Total signs	% backlogged	Deficient signs	For deficient signs, average years beyond service life
	Marinette	1476	40%	597	5.4	1214	53%	640	5.4
	Oconto	1725	19%	324	5.1	1121	39%	435	4.9
	Outagamie	3158	53%	1686	6.1	2571	66%	1708	5.6
	Sheboygan	2632	44%	1160	5.1	3006	66%	1989	5.3
	Winnebago	2491	50%	1244	5.5	2392	50%	1204	5.4
NW	Ashland	1229	32%	392	4.3	877	56%	493	4.9
	Barron	1945	53%	1039	5.8	1635	70%	1137	6.5
	Bayfield	1569	26%	409	4.0	1101	44%	488	4.6
	Buffalo	1771	58%	1028	8.0	1094	64%	703	7.8
	Burnett	1313	37%	480	5.6	834	59%	490	5.4
	Chippewa	2544	30%	774	4.5	2183	58%	1265	4.6
	Clark	1921	24%	463	4.2	1442	53%	770	3.9
	Douglas	2110	43%	902	4.4	1502	66%	988	5.0
	Dunn	2254	26%	589	4.6	2212	48%	1052	4.0
	Eau Claire	2755	52%	1429	4.7	2357	61%	1437	4.5
	Jackson	1778	47%	831	7.6	1569	63%	984	7.9
	Pepin	605	26%	159	4.9	589	58%	340	4.9
	Pierce	1853	28%	516	4.0	2053	73%	1503	4.1
	Polk	2238	28%	620	4.9	1634	58%	943	5.5
	Rusk	1358	35%	477	5.3	830	48%	395	5.6
	Sawyer	1530	32%	485	5.9	1101	58%	637	5.5
	St. Croix	2774	27%	744	4.7	2831	54%	1525	4.4
	Taylor	1047	25%	257	3.9	948	46%	438	4.1
	Trempealeau	1983	50%	982	6.8	1698	61%	1031	6.7
Washburn	2160	48%	1030	4.8	1358	68%	922	5.6	

Region	County	Regulatory/warning/school signs				Other signs			
		Total signs	% backlogged	Deficient signs	For deficient signs, average years beyond service life	Total signs	% backlogged	Deficient signs	For deficient signs, average years beyond service life
SE	Kenosha	3971	39%	1559	4.9	3070	44%	1336	5.8
	Milwaukee	7308	23%	1695	5.2	4718	51%	2415	7.5
	Ozaukee	1785	29%	522	4.5	1293	65%	841	5.5
	Racine	4428	42%	1859	4.5	3162	51%	1622	5.0
	Walworth	3759	29%	1108	5.5	2302	50%	1157	5.0
	Washington	3685	36%	1336	4.6	2500	49%	1234	4.8
	Waukesha	7936	31%	2454	5.1	4032	45%	1834	5.1
SW	Columbia	3069	41%	1256	6.5	1325	58%	771	6.5
	Crawford	2178	44%	955	6.3	1422	58%	825	6.6
	Dane	6252	42%	2648	5.6	2509	64%	1598	6.5
	Dodge	2805	52%	1448	5.8	1412	62%	878	6.2
	Grant	2998	51%	1516	6.1	1600	67%	1070	7.1
	Green	1471	38%	552	5.4	662	54%	359	6.9
	Iowa	1917	40%	768	6.5	984	58%	570	7.2
	Jefferson	2144	36%	763	4.7	1038	59%	615	6.9
	Juneau	2026	43%	881	5.5	1699	66%	1118	6.5
	La Crosse	2884	58%	1668	7.8	2433	67%	1633	7.6
	Lafayette	1249	57%	717	7.6	750	77%	574	8.8
	Monroe	2523	39%	978	6.8	2194	60%	1321	7.8
	Richland	1985	54%	1079	7.8	1414	48%	685	7.1
	Rock	2389	50%	1201	5.6	1320	59%	778	7.4
Sauk	3404	34%	1151	6.9	1131	58%	652	6.7	
Vernon	2872	45%	1280	5.8	2028	59%	1198	6.4	

Wisconsin and Regions 2005: Sign Age Distribution

Regulatory/warning/school signs

	Years until end of service life signs still good % of Total							Years past end of service life signs backlogged % of Total						Total
	6-10	5	4	3	2	1	0	1	2	3	4	5-10	>10	
State	46995	6542	6427	7955	7493	11515	8166	7935	8677	6509	5593	28299	8079	160185
	29%	4%	4%	5%	5%	7%	5%	5%	5%	4%	3%	18%	5%	100%
NC	7275	1147	907	1195	1011	1566	1317	1368	1296	1142	771	5490	1679	26164
	28%	4%	3%	5%	4%	6%	5%	5%	5%	4%	3%	21%	6%	100%
NE	5142	938	987	988	977	1845	1023	774	1561	1184	1014	5014	799	22246
	23%	4%	4%	4%	4%	8%	5%	3%	7%	5%	5%	23%	4%	100%
NW	10960	1508	1580	2152	1567	3141	2223	2073	2085	1550	1427	4796	1675	36737
	30%	4%	4%	6%	4%	9%	6%	6%	6%	4%	4%	13%	5%	100%
SE	11510	1089	1148	1622	2277	2850	1843	1653	1559	1137	1043	4311	830	32872
	35%	3%	3%	5%	7%	9%	6%	5%	5%	3%	3%	13%	3%	100%
SW	12108	1860	1805	1998	1661	2113	1760	2067	2176	1496	1338	8688	3096	42166
	29%	4%	4%	5%	4%	5%	4%	5%	5%	4%	3%	21%	7%	100%

Guide and other signs

	Years until end of service life signs still good % of Total							Years past end of service life signs backlogged % of Total						Total
	6-10	5	4	3	2	1	0	1	2	3	4	5-10	>10	
State	14565	1668	4571	3840	7551	7851	6198	7937	8642	6155	7569	26084	11062	113693
	13%	1%	4%	3%	7%	7%	5%	7%	8%	5%	7%	23%	10%	100%
NC	1800	357	695	639	935	884	993	1688	1079	1354	938	4220	2898	18480
	10%	2%	4%	3%	5%	5%	5%	9%	6%	7%	5%	23%	16%	100%
NE	2745	233	883	659	1285	1086	829	968	1520	1244	1683	6059	1173	20367
	13%	1%	4%	3%	6%	5%	4%	5%	7%	6%	8%	30%	6%	100%
NW	3050	305	1426	868	1768	2744	2146	2051	3256	1647	2891	5668	2028	29848
	10%	1%	5%	3%	6%	9%	7%	7%	11%	6%	10%	19%	7%	100%
SE	4154	394	393	842	2167	1541	1147	1657	1299	951	740	4031	1761	21077
	20%	2%	2%	4%	10%	7%	5%	8%	6%	5%	4%	19%	8%	100%
SW	2816	379	1174	832	1396	1596	1083	1573	1488	959	1317	6106	3202	23921
	12%	2%	5%	3%	6%	7%	5%	7%	6%	4%	6%	26%	13%	100%

Wisconsin and Regions 2005: Sign Inventory Management System Field Review Progress

Region	All signs		Not Field Reviewed ¹⁸			Field reviewed	
	Total Signs ¹⁹	%Total	No Mfg Date	No Face	Total	Field Reviewed	%Field Reviewed
NC	51817	17%	7167	170	7337	44644	86.16%
NE	52246	17%	9622	58	9680	42613	81.56%
NW	67607	22%	973	57	1030	66585	98.49%
SE	60542	20%	6587	244	6831	53949	89.11%
SW	72969	24%	6849	163	7012	66087	90.57%
State	305181	100%	31198	692	31890	273878	89.74%

¹⁸ Not Field Reviewed includes signs with no face data

¹⁹ Erroneous records were not included in this report.

2005 Traveled Way: Compass Report on Maintenance Condition

Data in this section comes from the Pavement Inventory File (PIF) dated September 2005 received from Mike Malaney. Reporting and analysis were done by Professor Teresa Adams of the University of Wisconsin, with Project Assistant Janille Smith and Emil Juni, under the direction of WisDOT staff. Pavement condition reflects primarily dollars spent through WisDOT's improvement program.

Key Observations:

Traveled way:

- Cracking and Slab breakup of concrete pavements received feature grades of D, and Faulting received a grade of F. All feature grades for concrete pavements are C or worse with little change in 2004 and partial data from 2005. Feature grades for concrete pavements are worse than for asphalt pavements.
- Rutting on asphalt pavement received a feature grade of C for 2004 and a feature grade of D with partial data from 2005. This critical safety deficiency can contribute to hydroplaning in summer and icy pavement in the winter.

Wisconsin 2005: Traveled Way Maintenance Condition

Backlogs shown for 2005 are preliminary estimates based on partial data available in September 2005.

Asphalt Traveled Way

Distress	% of miles backlogged for year			
	2002	2003	2004	2005
Alligator Cracking	2%	1%	1%	1%
Block Cracking	3%	3%	3%	3%
Edge Raveling	15%	14%	15%	15%
Flushing	1%	1%	0%	0%
Longitudinal Cracking	24%	24%	26%	26%
Longitudinal Distortion	1%	0%	0%	0%
Patch Deterioration	11%	10%	9%	9%
Rutting	10%	11%	9%	9%
Surface Raveling	3%	2%	1%	1%
Transverse Cracking	25%	22%	24%	24%
Transverse Distortion	1%	1%	1%	1%

Concrete Traveled Way

Distress	% of miles backlogged for year			
	2002	2003	2004	2005
Distressed Joint/Cracks	33%	34%	34%	33%
Longitudinal Joint Distress	26%	22%	21%	21%
Patch Deterioration	29%	28%	28%	28%
Slab Breakup	47%	46%	45%	44%
Surface Distress	23%	21%	20%	20%
Transverse Faulting	77%	76%	74%	74%

Regions 2005: Traveled Way

Backlogs shown for 2005 are preliminary estimates based on partial data available in September 2005.

Asphalt traveled way

Distress	% of Miles Backlogged in Region					
	Year	NC	NE	NW	SE	SW
Alligator Cracking	2002	1%	2%	1%	2%	3%
	2003	1%	2%	1%	2%	2%
	2004	0%	1%	1%	1%	2%
	2005	0%	1%	1%	1%	2%
Block Cracking	2002	3%	4%	2%	3%	4%
	2003	2%	4%	2%	3%	3%
	2004	3%	4%	2%	3%	3%
	2005	3%	4%	2%	3%	3%
Edge Raveling	2002	14%	16%	9%	19%	20%
	2003	12%	15%	9%	19%	17%
	2004	12%	18%	8%	23%	17%
	2005	12%	18%	8%	23%	17%
Flushing	2002	0%	0%	2%	0%	2%
	2003	0%	0%	1%	0%	1%
	2004	0%	0%	1%	0%	1%
	2005	0%	0%	1%	0%	1%
Longitudinal Cracking	2002	23%	20%	31%	22%	27%
	2003	21%	19%	32%	22%	29%
	2004	22%	21%	29%	22%	27%
	2005	22%	21%	29%	22%	27%
Longitudinal Distortion	2002	0%	0%	1%	1%	1%
	2003	0%	0%	1%	1%	1%
	2004	N/A	0%	1%	1%	1%
	2005	N/A	0%	1%	1%	1%
Patch Deterioration	2002	11%	8%	10%	16%	13%
	2003	9%	7%	7%	15%	12%
	2004	7%	6%	5%	15%	12%
	2005	7%	6%	5%	15%	12%
Rutting	2002	11%	7%	12%	5%	12%
	2003	10%	7%	15%	5%	13%
	2004	8%	2%	13%	1%	13%
	2005	8%	2%	13%	1%	13%
Surface Raveling	2002	3%	2%	2%	1%	5%
	2003	3%	2%	2%	1%	2%
	2004	1%	1%	2%	1%	2%
	2005	1%	1%	2%	1%	2%
Transverse Cracking	2002	25%	22%	36%	22%	26%
	2003	23%	20%	34%	21%	22%
	2004	23%	21%	32%	22%	21%
	2005	23%	21%	32%	22%	21%

Distress	% of Miles Backlogged in Region					
	Year	NC	NE	NW	SE	SW
Transverse Distortion	2002	0%	0%	1%	0%	3%
	2003	0%	0%	0%	0%	1%
	2004	0%	0%	0%	0%	1%
	2005	0%	0%	0%	0%	1%

Concrete traveled way

Distress	% Miles Backlogged in Region					
	Year	NC	NE	NW	SE	SW
Distressed Joint/Cracks	2002	26%	27%	39%	49%	25%
	2003	26%	26%	41%	48%	29%
	2004	26%	26%	41%	50%	28%
	2005	26%	26%	41%	50%	28%
Longitudinal Joint Distress	2002	14%	17%	38%	40%	23%
	2003	14%	15%	31%	40%	16%
	2004	12%	14%	31%	38%	15%
	2005	12%	14%	31%	38%	15%
Patch Deterioration	2002	25%	29%	24%	38%	30%
	2003	25%	27%	24%	37%	29%
	2004	25%	28%	24%	38%	27%
	2005	25%	28%	24%	38%	26%
Slab Breakup	2002	40%	44%	45%	61%	45%
	2003	39%	42%	45%	60%	44%
	2004	38%	39%	45%	58%	43%
	2005	38%	39%	45%	58%	42%
Surface Distress	2002	12%	23%	29%	24%	25%
	2003	12%	22%	27%	24%	20%
	2004	10%	19%	27%	22%	20%
	2005	10%	19%	27%	22%	20%
Transverse Faulting	2002	76%	82%	75%	78%	75%
	2003	75%	77%	74%	77%	75%
	2004	78%	71%	74%	80%	72%
	2005	78%	71%	74%	80%	71%

Wisconsin 2005: Traveled Way Condition Distribution

Conditions shown for 2005 are preliminary estimates based on partial data available in September 2005.

Asphalt traveled way

Distress	Condition ²⁰ % of miles ²¹			
	Excellent	Fair	Moderate	Poor
Alligator Cracking ²²	98%	1%	0%	0%
Block Cracking ²²	94%	2%	2%	1%
Edge Raveling	85%	13%	1%	1%
Flushing	100%	0%	NA ²³	0%
Longitudinal Cracking ²²	30%	45%	22%	4%
Longitudinal Distortion	100%	0%	0%	0%
Patch Deterioration	91%	2%	3%	3%
Rutting	91%	8%	NA ²³	1%
Surface Raveling	99%	1%	0%	0%
Transverse Cracking ²²	33%	46%	18%	3%
Transverse Distortion	99%	0%	0%	0%

Concrete traveled way

Distress	Condition % of miles			
	Excellent	Fair	Moderate	Poor
Distressed Joint/Cracks	67%	13%	17%	4%
Longitudinal Joint Distress	79%	11%	7%	3%
Patch Deterioration	72%	19%	7%	2%
Slab Breakup	56%	26%	18%	0%
Surface Distress	80%	14%	6%	NA ²³
Transverse Faulting	26%	66%	8%	1%

²⁰ Condition comes from WisDOT's pavement maintenance management system and reflects extent and severity of distress.

²¹ Rows may not sum to 100% because of rounding.

²² Only miles with unsealed cracks are included in the % backlogged. Cracks in asphalt pavement may be sealed or unsealed.

²³ NA indicates that this is not a condition category for this distress

Regions 2005: Traveled Way Condition Distribution

Conditions shown for 2005 are preliminary estimates based on partial data available in September 2005.

Asphalt traveled way

Distress	Condition	% of miles				
		Region				
		NC	NE	NW	SE	SW
Alligator Cracking	Excellent	99%	99%	99%	98%	97%
	Fair	0%	1%	1%	1%	2%
	Moderate	0%	0%	0%	0%	1%
	Poor	0%	0%	0%	0%	0%
Block Cracking	Excellent	94%	92%	96%	94%	94%
	Fair	2%	3%	2%	2%	3%
	Moderate	2%	3%	1%	2%	2%
	Poor	1%	2%	1%	2%	1%
Edge Raveling	Excellent	88%	82%	92%	77%	83%
	Fair	10%	16%	7%	20%	14%
	Moderate	2%	1%	1%	2%	2%
	Poor	0%	1%	0%	1%	1%
Flushing	Excellent	100%	100%	99%	100%	99%
	Fair	0%	0%	1%	0%	0%
	Poor	0%	0%	0%	0%	0%
Longitudinal Cracking	Excellent	30%	24%	39%	16%	32%
	Fair	53%	45%	40%	48%	41%
	Moderate	15%	25%	18%	32%	24%
	Poor	2%	6%	3%	5%	3%
Longitudinal Distortion	Excellent	100%	100%	99%	99%	99%
	Fair	0%	0%	0%	0%	1%
	Moderate	0%	0%	0%	0%	0%
	Poor	0%	0%	0%	0%	0%
Patch Deterioration	Excellent	93%	94%	95%	85%	88%
	Fair	2%	1%	1%	7%	2%
	Moderate	3%	2%	2%	4%	4%
	Poor	2%	2%	2%	5%	5%
Rutting	Excellent	92%	98%	87%	99%	87%
	Fair	7%	2%	12%	1%	12%
	Poor	1%	0%	1%	0%	1%
Surface Raveling	Excellent	99%	99%	98%	99%	98%
	Fair	1%	1%	1%	0%	2%
	Moderate	0%	0%	0%	0%	0%
	Poor	0%	0%	0%	0%	0%
Transverse Cracking	Excellent	28%	28%	36%	17%	44%
	Fair	57%	50%	41%	55%	35%
	Moderate	13%	18%	20%	25%	18%
	Poor	3%	3%	3%	3%	2%

Distress	Condition	% of miles				
		Region				
		NC	NE	NW	SE	SW
Transverse Distortion	Excellent	100%	100%	100%	100%	99%
	Fair	0%	0%	0%	0%	1%
	Moderate	0%	0%	0%	0%	0%
	Poor	0%	0%	0%	0%	0%

Concrete traveled way

Distress	Condition	% of miles				
		Region				
		NC	NE	NW	SE	SW
Distressed Joint/Cracks	Excellent	74%	74%	59%	50%	72%
	Fair	13%	9%	15%	11%	14%
	Moderate	12%	14%	22%	28%	12%
	Poor	2%	3%	4%	12%	2%
Longitudinal Joint Distress	Excellent	88%	86%	69%	62%	85%
	Fair	7%	9%	15%	16%	10%
	Moderate	3%	4%	13%	14%	4%
	Poor	1%	1%	4%	8%	1%
Patch Deterioration	Excellent	75%	72%	76%	62%	74%
	Fair	17%	20%	17%	21%	20%
	Moderate	7%	6%	6%	11%	6%
	Poor	1%	2%	1%	6%	1%
Slab Breakup	Excellent	62%	61%	55%	42%	58%
	Fair	27%	21%	26%	27%	29%
	Moderate	11%	18%	19%	31%	13%
	Poor	0%	0%	0%	0%	0%
Surface Distress	Excellent	90%	81%	73%	78%	80%
	Fair	6%	14%	22%	12%	15%
	Moderate	4%	5%	5%	10%	5%
Transverse Faulting	Excellent	22%	29%	26%	20%	29%
	Fair	74%	60%	62%	68%	66%
	Moderate	4%	11%	10%	11%	4%
	Poor	0%	0%	2%	1%	0%

Counties 2005: Traveled Way

Backlogs shown for 2005 are preliminary estimates based on partial data available in September 2005.

Asphalt traveled way

Region	County	% of miles backlogged										
		Alligator Cracking	Block Cracking	Edge Raveling	Flushing	Longitudinal Cracking	Longitudinal Distortion	Patch Deterioration	Rutting	Surface Raveling	Transverse Cracking	Transverse Distortion
NC	ADAMS	0%	11%	12%	1%	88%	0%	2%	9%	1%	95%	0%
	FLORENCE	0%	2%	18%	0%	61%	0%	2%	0%	2%	63%	0%
	FOREST	1%	7%	3%	0%	44%	0%	0%	0%	0%	55%	0%
	GREEN LAKE	0%	2%	7%	0%	71%	0%	3%	3%	0%	80%	0%
	IRON	1%	7%	15%	0%	73%	0%	2%	0%	1%	71%	0%
	LANGLADE	0%	3%	19%	0%	85%	0%	8%	0%	0%	89%	0%
	LINCOLN	2%	5%	6%	1%	66%	0%	7%	2%	5%	63%	0%
	MARATHON	2%	5%	20%	1%	65%	0%	15%	28%	1%	78%	1%
	MARQUETTE	0%	0%	5%	0%	66%	0%	0%	9%	0%	72%	0%
	MENOMINEE	0%	6%	28%	0%	91%	0%	6%	0%	0%	97%	0%
	ONEIDA	0%	1%	1%	0%	51%	0%	1%	0%	0%	60%	0%
	PORTAGE	0%	12%	13%	0%	77%	0%	8%	6%	1%	66%	0%
	PRICE	0%	9%	8%	0%	75%	0%	0%	0%	0%	71%	0%
	SHAWANO	1%	6%	18%	0%	78%	0%	3%	2%	1%	74%	0%
	VILAS	0%	3%	11%	0%	81%	0%	4%	0%	0%	83%	0%
	WAUPACA	0%	13%	11%	0%	74%	0%	7%	17%	1%	70%	0%
WAUSHARA	0%	6%	15%	0%	67%	0%	13%	17%	2%	63%	2%	
WOOD	0%	4%	15%	1%	75%	0%	18%	16%	1%	73%	0%	
NE	BROWN	1%	8%	12%	0%	82%	0%	2%	4%	0%	69%	0%
	CALUMET	0%	13%	19%	0%	74%	0%	4%	2%	0%	67%	0%

Region	County	% of miles backlogged										
		Alligator Cracking	Block Cracking	Edge Raveling	Flushing	Longitudinal Cracking	Longitudinal Distortion	Patch Deterioration	Rutting	Surface Raveling	Transverse Cracking	Transverse Distortion
	DOOR	0%	0%	2%	0%	65%	0%	1%	0%	1%	75%	0%
	FOND DU LAC	3%	13%	34%	0%	84%	0%	12%	0%	0%	83%	1%
	KEWAUNEE	0%	2%	5%	0%	58%	0%	2%	0%	0%	40%	0%
	MANITOWOC	0%	4%	20%	0%	90%	0%	1%	1%	1%	78%	1%
	MARINETTE	2%	3%	20%	0%	62%	0%	8%	0%	0%	62%	0%
	OCONTO	0%	14%	17%	0%	83%	0%	3%	0%	3%	84%	0%
	OUTAGAMIE	5%	3%	18%	0%	77%	0%	7%	0%	1%	67%	0%
	SHEBOYGAN	1%	8%	18%	0%	72%	0%	4%	1%	1%	71%	0%
	WINNEBAGO	1%	15%	16%	1%	70%	0%	12%	9%	1%	71%	1%
NW	ASHLAND	3%	3%	13%	0%	77%	0%	4%	15%	0%	81%	0%
	BARRON	0%	1%	9%	0%	66%	0%	3%	6%	0%	73%	0%
	BAYFIELD	0%	6%	3%	0%	56%	1%	6%	14%	1%	62%	0%
	BUFFALO	1%	1%	12%	0%	53%	0%	6%	15%	0%	35%	0%
	BURNETT	0%	1%	7%	0%	78%	0%	1%	27%	0%	87%	0%
	CHIPPEWA	0%	1%	12%	0%	46%	0%	12%	4%	2%	44%	0%
	CLARK	0%	3%	1%	2%	47%	0%	7%	10%	1%	50%	0%
	DOUGLAS	1%	9%	2%	0%	71%	2%	2%	2%	2%	69%	2%
	DUNN	2%	14%	13%	2%	52%	1%	5%	17%	4%	59%	2%
	EAU CLAIRE	1%	8%	11%	1%	65%	0%	5%	9%	3%	71%	0%
	JACKSON	0%	2%	16%	2%	62%	0%	10%	13%	1%	56%	0%
	PEPIN	0%	0%	2%	0%	56%	0%	0%	9%	0%	51%	0%
	PIERCE	4%	6%	12%	0%	71%	0%	3%	7%	0%	66%	0%
	POLK	0%	1%	6%	0%	59%	1%	4%	17%	6%	66%	2%
RUSK	1%	1%	7%	0%	67%	0%	8%	20%	0%	78%	0%	

Region	County	% of miles backlogged										
		Alligator Cracking	Block Cracking	Edge Raveling	Flushing	Longitudinal Cracking	Longitudinal Distortion	Patch Deterioration	Rutting	Surface Raveling	Transverse Cracking	Transverse Distortion
	SAWYER	0%	0%	6%	1%	48%	0%	1%	14%	0%	60%	0%
	ST. CROIX	2%	5%	5%	0%	56%	0%	2%	13%	0%	70%	0%
	TAYLOR	3%	7%	7%	10%	61%	0%	4%	4%	1%	67%	1%
	TREMPEALEAU	2%	1%	10%	1%	67%	0%	15%	17%	1%	62%	0%
	WASHBURN	0%	7%	4%	1%	80%	4%	5%	30%	8%	77%	2%
SE	KENOSHA	1%	10%	34%	0%	79%	0%	12%	1%	1%	81%	0%
	MILWAUKEE	1%	5%	24%	1%	86%	1%	28%	1%	0%	87%	0%
	OZAUKEE	2%	12%	26%	0%	95%	0%	14%	0%	3%	98%	0%
	RACINE	2%	9%	10%	0%	70%	0%	10%	1%	1%	71%	0%
	WALWORTH	4%	3%	21%	0%	85%	1%	10%	0%	0%	75%	1%
	WASHINGTON	0%	5%	24%	0%	90%	1%	11%	1%	1%	90%	1%
	WAUKESHA	3%	3%	23%	0%	86%	0%	8%	2%	1%	82%	0%
SW	COLUMBIA	5%	6%	20%	0%	69%	0%	6%	16%	2%	59%	0%
	CRAWFORD	4%	3%	22%	1%	82%	0%	19%	8%	0%	65%	0%
	DANE	3%	7%	19%	2%	70%	1%	18%	18%	1%	68%	3%
	DODGE	2%	6%	19%	0%	68%	0%	10%	13%	6%	56%	3%
	GRANT	2%	7%	13%	0%	67%	0%	10%	19%	0%	58%	0%
	GREEN	0%	6%	13%	0%	81%	1%	2%	3%	2%	38%	2%
	IOWA	3%	9%	9%	0%	58%	0%	5%	9%	0%	41%	0%
	JEFFERSON	7%	6%	11%	1%	78%	3%	9%	17%	1%	75%	4%
	JUNEAU	4%	7%	15%	0%	75%	0%	19%	21%	2%	71%	0%
	LA CROSSE	1%	9%	25%	4%	89%	1%	13%	13%	2%	70%	1%
	LAFAYETTE	3%	5%	16%	0%	71%	0%	5%	25%	0%	68%	0%
MONROE	0%	2%	9%	0%	46%	0%	5%	7%	1%	40%	0%	

Region	County	% of miles backlogged										
		Alligator Cracking	Block Cracking	Edge Raveling	Flushing	Longitudinal Cracking	Longitudinal Distortion	Patch Deterioration	Rutting	Surface Raveling	Transverse Cracking	Transverse Distortion
	RICHLAND	1%	9%	17%	1%	62%	0%	20%	9%	1%	41%	0%
	ROCK	7%	2%	20%	0%	61%	3%	10%	10%	6%	48%	2%
	SAUK	4%	7%	13%	1%	53%	1%	12%	7%	4%	43%	2%
	VERNON	2%	1%	23%	0%	76%	0%	14%	2%	1%	43%	0%

Concrete traveled way

Region	County	% of miles backlogged					
		Distressed Joint/Cracks	Longitudinal/ Joint Distress	Patch Deterioration	Slab Breakup	Surface Distress	Transverse Faulting
NC	ADAMS	0%	0%	33%	28%	0%	100%
	GREEN LAKE	100%	40%	20%	80%	0%	100%
	IRON	75%	75%	75%	75%	50%	75%
	LINCOLN	32%	15%	20%	53%	8%	79%
	MARATHON	40%	9%	35%	53%	13%	80%
	MARQUETTE	7%	0%	4%	19%	4%	74%
	ONEIDA	53%	18%	12%	53%	12%	41%
	PORTAGE	23%	22%	41%	38%	24%	70%
	PRICE	100%	100%	17%	92%	25%	42%
	SHAWANO	12%	0%	7%	17%	1%	84%
	VILAS	100%	100%	0%	0%	0%	0%
	WAUPACA	2%	2%	3%	8%	0%	92%
	WAUSHARA	14%	12%	25%	31%	6%	78%
	WOOD	23%	7%	27%	33%	5%	77%
NE	BROWN	20%	13%	34%	45%	28%	60%
	CALUMET	11%	16%	26%	42%	0%	68%
	DOOR	17%	0%	17%	63%	0%	96%
	FOND DU LAC	41%	20%	39%	46%	9%	74%
	MANITOWOC	26%	27%	11%	33%	60%	56%
	MARINETTE	38%	6%	56%	63%	6%	88%
	OCONTO	20%	0%	12%	24%	7%	71%
	OUTAGAMIE	39%	22%	37%	47%	7%	58%
	SHEBOYGAN	33%	13%	39%	42%	16%	85%
WINNEBAGO	14%	3%	13%	23%	3%	90%	
NW	ASHLAND	75%	8%	42%	67%	25%	33%
	BARRON	15%	40%	5%	20%	60%	33%
	BAYFIELD	33%	0%	0%	0%	0%	67%
	BUFFALO	58%	33%	42%	83%	25%	100%
	CHIPPEWA	25%	41%	19%	42%	36%	56%
	CLARK	17%	3%	7%	25%	4%	75%
	DOUGLAS	36%	22%	21%	33%	20%	76%
	DUNN	53%	36%	25%	53%	11%	92%
	EAU CLAIRE	53%	32%	57%	69%	15%	97%
	JACKSON	50%	49%	20%	51%	73%	51%
	PIERCE	64%	0%	20%	60%	4%	96%

Region	County	% of miles backlogged					
		Distressed Joint/Cracks	Longitudinal/ Joint Distress	Patch Deterioration	Slab Breakup	Surface Distress	Transverse Faulting
	POLK	10%	0%	20%	50%	0%	100%
	RUSK	100%	94%	12%	53%	0%	94%
	SAWYER	13%	0%	88%	25%	0%	88%
	ST. CROIX	58%	36%	45%	58%	46%	88%
	TAYLOR	33%	33%	33%	33%	0%	33%
	TREMPEALEAU	77%	56%	23%	67%	6%	90%
	WASHBURN	21%	0%	8%	28%	0%	89%
SE	KENOSHA	36%	20%	37%	60%	10%	97%
	MILWAUKEE	66%	49%	50%	85%	13%	91%
	OZAUKEE	7%	0%	6%	14%	0%	87%
	RACINE	67%	43%	70%	73%	33%	80%
	WALWORTH	50%	52%	27%	33%	40%	53%
	WASHINGTON	16%	0%	11%	23%	4%	80%
	WAUKESHA	57%	49%	36%	61%	41%	69%
SW	COLUMBIA	27%	19%	14%	32%	25%	53%
	CRAWFORD	70%	40%	70%	100%	10%	100%
	DANE	26%	7%	30%	52%	17%	81%
	DODGE	30%	12%	13%	44%	6%	79%
	GRANT	19%	10%	21%	40%	2%	76%
	GREEN	40%	20%	30%	45%	10%	83%
	IOWA	5%	0%	16%	31%	2%	76%
	JEFFERSON	40%	38%	44%	60%	39%	65%
	JUNEAU	23%	0%	27%	38%	9%	89%
	LA CROSSE	33%	17%	32%	37%	24%	73%
	LAFAYETTE	10%	0%	5%	10%	5%	35%
	MONROE	29%	35%	25%	37%	53%	52%
	RICHLAND	46%	38%	38%	62%	8%	77%
	ROCK	24%	9%	14%	29%	19%	58%
SAUK	30%	2%	52%	50%	7%	96%	
VERNON	88%	75%	75%	88%	38%	94%	

2005 Winter: Compass Report on Winter Operations

Executive summary

Statewide measures for winter

	2003-04	2004-05
Time to bare/wet pavement	2 hours 38 minutes after the storm ended	2 hours 4 minutes after the storm ended
Cost per lane mile	\$1,279	\$1,374
Winter severity index	31.2	31.9
Winter related crash	26 per 100 million vehicle miles traveled	25 per 100 million vehicle miles traveled

Key findings

- In keeping with WisDOT guidelines, during similar storm events, drivers on major urban freeways and highways have less time to wait until they see bare/wet pavement than do drivers on secondary roads. From storm to storm, however, most of the variability in this time is due to weather effects (type, duration and severity of storms throughout the winter season).
- The average time to bare/wet pavement during winter 2004-05 was 2 hours and 4 minutes which is 34 minutes less than the previous winter. This improvement comes despite a slightly more severe winter. The average Winter Severity Index (WSI) in 2004-05 was 31.9 versus 31.2 in the previous year.
- As expected, cost per lane mile increases with the severity of the winter, except for the SE region which has the lowest average WSI but the highest cost per WSI point.

About this report

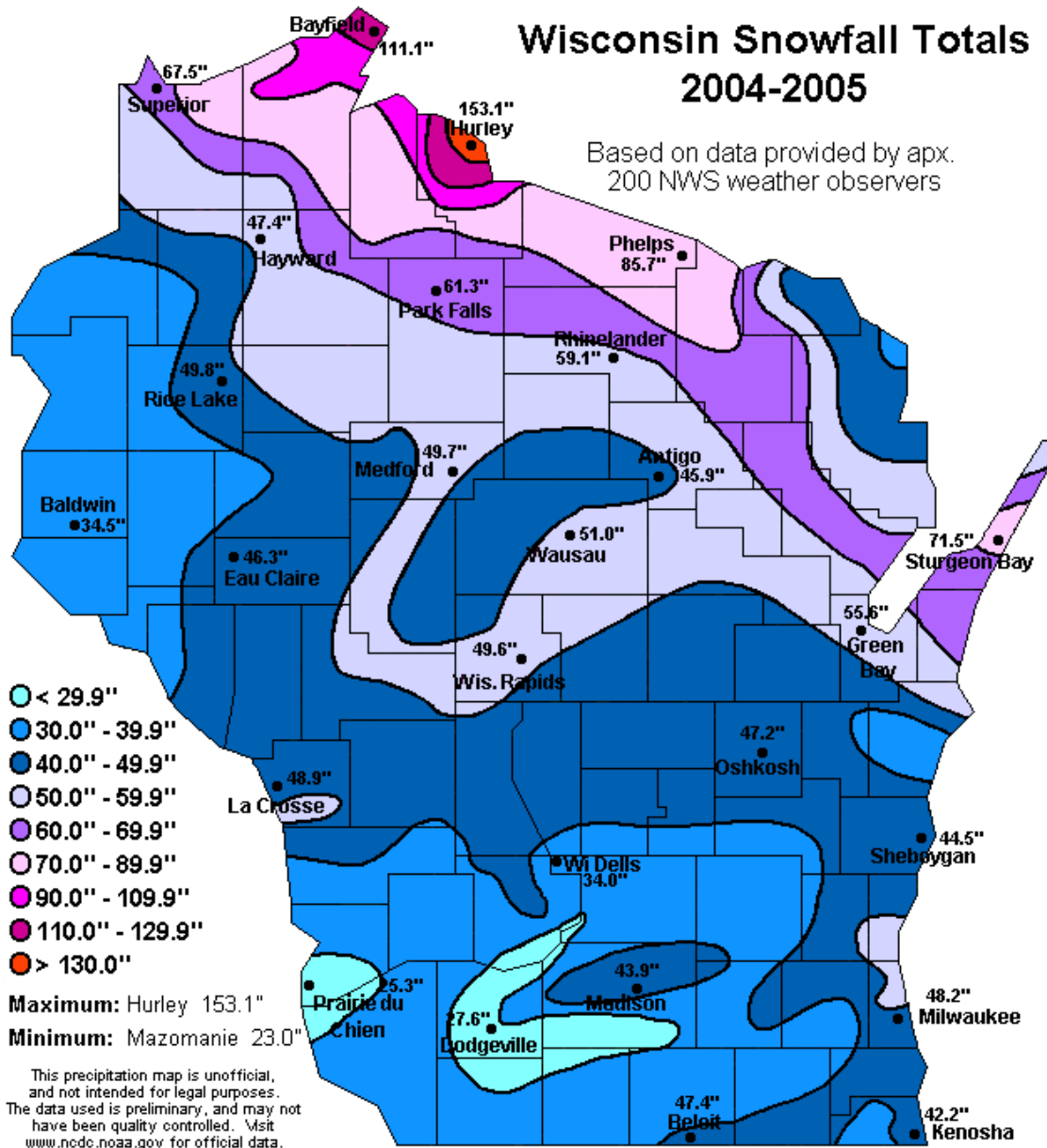
The measures in this section of the report focus on a few key winter operations outcomes critical to drivers and taxpayers. Reporting and analysis were done by Professor Teresa Adams of the University of Wisconsin-Madison with Project Assistant Emil Juni, under the direction of WisDOT staff. The primary audience for these measures is expected to be WisDOT and county highway managers with a general interest in winter operations, e.g., region directors and county commissioners. This section of the report looks at winter operations on state highways from November 1, 2004 to April 30, 2005.

The Bureau of Highway Operations issues two reports on winter. This Compass report on winter focuses on measures critical to drivers and citizens, and is directed toward a general audience. The Annual Winter Maintenance Report focuses on operational measures and analysis, and is directed toward front-line operations managers.

2004-2005 winter season snowfall for Wisconsin

Note: The below map is in color. If you are not viewing a color copy, please contact the Compass Program Manager at the Bureau of Highway Operations for a color version to be mailed or emailed to you.

The National Weather Service (NWS) map below shows the snowfall for Wisconsin during the period July 1, 2004 to June 30, 2005. Comparison of the 2004-2005 snowfall map to the average snowfall map (also from NWS) indicates that the northern regions had more snowfall than average and the southern regions had less.



Winter by the numbers

Infrastructure	Lane miles	31,810 miles
	Road Weather Information System (RWIS) stations	59
Material usage²⁴	Salt	407,924 tons 12.8 tons per lane mile
	Average cost of salt	\$31.42 per ton
	Pre-wetting liquid used	638,685 gal.
	Anti-icing agent	272,856 gal.
	Sand	15,843 cubic yd.
Services	Regular county hours on winter ²⁵	110,390 hrs.
	Overtime county hours on winter	123,300 hrs.
	Public service announcements aired	6,382 total 5,735 radio; 647 TV
	Cost of public service announcements	\$31,500
Management and Technology	Patrol sections	719
	Average patrol section length	44.24 miles
	Salt spreaders equipped with on-board pre-wetting unit ²⁶	639 of 2647 (24%)
	Counties with salt spreaders equipped with on-board pre-wetting unit	59 of 72 (82%)
	Salt spreaders equipped with ground-speed controller unit	1316 of 2647 (50%)
	Counties with salt spreaders equipped with ground-speed controller unit	69 of 72 (96%)
	Underbody plows	508
	Counties with underbody plows	51 of 72 (71%)
	Counties equipped to use anti-icing agents	65 of 72 (90%)
	Counties that used anti-icing agents during 2004-05 winter season	56 of 72 (78%)

²⁴ All material usage quantities are from the county storm reports except for salt. The salt quantities are from the Salt Inventory Reporting System

²⁵ Costs and hours come from county storm reports, and reflect sanding, salting, plowing and anti-icing efforts.

²⁶ County equipment may be used on either state or county roads.

Compass winter operations measures

Time to bare/wet pavement

The counties, under contract to WisDOT, provides different levels of effort during and after a storm depending on how busy and how critical a given category of highway is. State highways fall into five such categories, with category 1 being the highest priority. It would be expected that an urban freeway (category 1) would receive more materials, labor and equipment – and would show a quicker time to bare/wet pavement – than would a rural two-lane highway (category 5). For more information on these categories, see page 49.

The table below shows that the trend for average time to bare/wet pavement is as expected: The more critical the highway, the shorter the average time to bare/wet pavement. Time to bare/wet pavement is measured from the reported end time of a storm. ‘Bare/wet never achieved’ means that it took more than 24 hours to achieve bare/wet condition, or the next storm began before bare/wet condition was achieved. Less critical highways are more likely to have snow on them 24 hours after a storm has ended than are more critical highways. This suggests that major urban freeways and highways are receiving a higher level of effort for winter operations than secondary roads.

Further analysis suggests that variability, within a category, is due more to weather effects (type, duration and severity of storms throughout the winter season) than to differences in the level of effort or relative resources.

Highway category		Average time to bare/wet pavement (hours after end of storm)*				2004 - 05 Storms		
		2003 - 04 Average	2004 - 05 Average	2003 - 04 Standard deviation	2004 - 05 Standard deviation	Total	Bare/wet never achieved	% Bare/wet never achieved
More critical highways	1	1.07	0.45	3.94	5.22	209	8	4%
	2	1.31	0.64	4.06	5.31	391	19	5%
↓ Less critical highways	3	1.52	1.82	4.25	5.92	485	18	4%
	4	2.45	3.06	4.96	5.65	526	71	13%
	5	3.63	2.89	5.04	5.54	688	138	20%

* Only includes storms where bare/wet pavement was achieved

Winter weather crashes per vehicle miles traveled (VMT)

The following table shows that counties with higher winter coverage tend to have fewer crashes per 100 million VMT. (Group A has higher coverage than Group B, etc.). For more information on county groupings A-D, see page 49 at the end of this section. Winter weather crashes are those crashes that occurred on snow-, slush-, or ice-covered pavements.

	Winter Service Group	VMT* (100 million)	Crashes	Crashes per 100 million VMT		Average Winter Severity Index	
				2003 - 04	2004 - 05	2003 - 04	2004 - 05
Counties with more coverage ↓	Group A	136.89	2807	21	21	26.02	28.95
	Group B	68.56	1804	29	26	25.32	27.16
Counties with less coverage	Group C	45.59	1464	35	32	31.20	32.21
	Group D	24.25	687	34	28	37.98	36.71

*100 million vehicle miles traveled (VMT) for November 1, 2004 through April 30, 2005 determined from annual average daily traffic (AADT) counts, gallons of gas sold, fuel tax collected, and average vehicle miles per gallon.

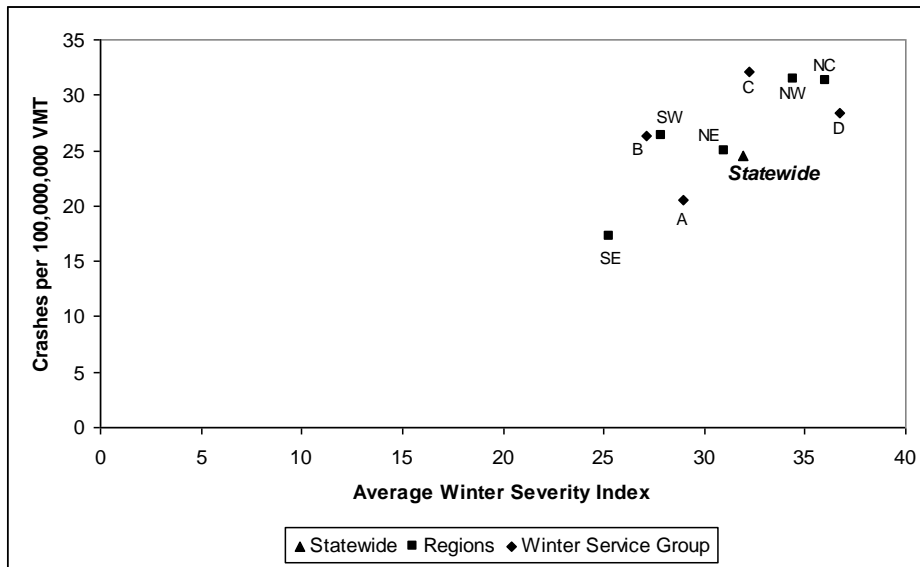
The following table shows the crashes per 100 million VMT statewide and in each Region. The state average is 25 winter crashes per 100 million VMT.

Scope	VMT (100 million)	Crashes	Crashes per 100 million VMT		Average Winter Severity Index	
			2003 - 04	2004 - 05	2003 - 04	2004 - 05
Statewide	275.30	6762	26	25	31.20	31.91
NC	33.87	1061	34	31	38.21	36.04
NE	49.01	1219	26	25	30.26	31.04
NW	37.90	1192	37	31	36.69	34.43
SE	85.37	1466	21	17	20.45	25.29
SW	69.15	1824	29	26	21.78	27.89

Winter service group assignments

Winter Service Group	County Name
A	Brown, Dane, Eau Claire, Kenosha, La Crosse, Marathon, Milwaukee, Ozaukee, Portage, Racine, Waukesha, Winnebago
B	Chippewa, Columbia, Dodge, Dunn, Jefferson, Manitowoc, Marquette, Outagamie, Rock, Sauk, Shawano, Sheboygan, St. Croix, Walworth, Washington, Waushara
C	Barron, Calumet, Clark, Crawford, Door, Douglas, Fond Du Lac, Grant, Iowa, Jackson, Juneau, Kewaunee, Lafayette, Lincoln, Monroe, Oconto, Trempealeau, Vernon, Washburn, Waupaca, Wood
D	Adams, Ashland, Bayfield, Buffalo, Burnett, Florence, Forest, Green, Green Lake, Iron, Langlade, Marinette, Menominee, Oneida, Pepin, Pierce, Polk, Price, Richland, Rusk, Sawyer, Taylor, Vilas

The following figure shows us that, as severity of the winter increases, so does the winter crash rate. As expected, the number of winter crashes increases as VMT increases. Regions with more rural roads tend to have higher winter crash rates (crashes per VMT) which are consistent with trends for non-winter crash rates.



Costs per lane mile versus winter severity index

The following table lists the total actual cost per lane mile for winter operations in each region, along with region winter severity index. The costs were obtained from the WisDOT's FOS (Financial Operating System). As severity of the winter increases, so does the cost per lane mile. Regions that incurred higher cost per lane mile had more severe weather than the statewide average, with the exception of SE region. The statewide average cost per lane mile was \$1,374 with average severity index of 31.91. Total costs include material, labor, equipment, and administrative costs.

Measured relative to winter severity

Region	Average WSI		Actual cost/LM		Relative cost per WSI point	
	2003-04	2004-05	2003-04	2004-05	2003-04	2004-05
NC	38.21	36.04	\$1500	\$1,481	\$39	\$41.10
NE	30.26	31.04	\$1394	\$1,389	\$46	\$44.77
NW	36.69	34.43	\$1264	\$1,244	\$34	\$36.12
SE	20.45	25.29	\$1734	\$1,733	\$85	\$68.53
SW	21.78	27.89	\$1224	\$1,201	\$56	\$43.06
Statewide	31.20	31.91	\$1391	\$1,374	\$45	\$43.05

Winter Data, Definitions, and Categories

Data

Unless otherwise noted, all material and labor figures come from the winter storm reports that are submitted by each county for every event or anti-icing procedure throughout the winter season. The data quality is unknown. Weather, road conditions, and materials usages are based upon the observations of county patrol superintendents and sometimes on their expert judgment and, as such, contain more variability than direct measurements. Winter 2004-05 was the first

year for reporting the time-to-bare/wet-pavement measure according to the passable roadway categories. Consistency with the reporting procedure for this is unknown.

Definitions

Dollars: Cost data are from the fiscal year, July 1, 2004 to June 30, 2005.

Winter: November 1 through April 30, unless otherwise noted.

Winter Activities: Actual cost data incorporates all winter activities, including putting up snow fence, transporting salt, filling salt sheds, thawing out frozen culverts, calibrating salt spreaders, producing and storing salt brine, and anti-icing applications, as well as plowing and salting. Costs from storm reports, however, cover only plowing, sanding, salting, and anti-icing.

Roads: The roads referred to in this report are state maintained highways, including Interstate and US highways. See the following tables for groupings.

Categories & groupings

Passable roadway expectation categories

Category	Definition	Lane miles	% of total
1	Major urban freeways and most highways with six lanes and greater	1945	6%
2	High volume four-lane highways (ADT \geq 25,000) and some four-lane highways (ADT < 25,000), and some 6-lane highways.	2887	9%
3	All other four-lane highways (ADT < 25,000)	7364	21%
4	Most high volume two-lane highways (ADT \geq 5,000) and some 2-lanes (ADT < 5000)	4563	15%
5	All other two-lane highways	15051	49%

Winter service availability and coverage groups

Group	Definition	Number of Counties	% of Counties
A	Counties where all or most of the highways receive 24-hour coverage	12	17%
B	Counties with 18-hour and 24-hour coverage. More than 50% of highways receive 24-hour coverage.	16	22%
C	Counties with 18-hour and 24-hour coverage. Less than 50% of highways receive 24-hour coverage.	20	28%
D	Counties where no highways receive 24-hour coverage.	24	33%

2005 Highway Maintenance Conditions: Compass Report on Traffic, Shoulders, Drainage, Roadsides

Data in this section comes from the field review performed by WisDOT region area assistants and county patrol superintendents. Reporting was done by WisDOT staff. No statistical analysis has been done on this data at the county and region-levels. Please take the number of observations into account when reviewing the information.

Traffic:

- Delineators received a feature grade of D - the second grade drop in as many years.

Shoulders:

- Unpaved shoulders drop-off /buildup received a feature grade of F. The statewide backlog for 2005 shows a modest improvement over 2004 and is on target with expectations. Unpaved drop-off is significantly worse in the NE region than in other regions. Repair of shoulder drop-off contributes to safety by keeping cars from dropping down dramatically on one side and possibly over-correcting if one or two wheels leave the pavement.
- Hazardous debris and cracking on paved shoulders both received feature grades of D. Hazardous debris is notably worse than targeted while cracking on paved shoulders is appreciably better than targeted. Hazardous debris is significantly worse in the SW region than in other regions. Keeping hazardous debris off the shoulders prevents it from being somehow moved back into live traffic, and protects drivers of cars that may swerve or pull over onto the shoulder.

Roadsides and drainage:

- Roadside features may be the hardest to manage to their targets. The maintenance backlogs for these features tend to be significantly higher or lower than targeted.
- Noxious weeds received a feature grade of C with a maintenance backlog much lower than targeted. Noxious weeds appear widespread in the NE and SE regions.
- Although the condition of litter improved measurably in 2005, the feature grade remains a D.
- Flumes received a feature grade of C; all other drainage features received grades of A or B. However, the maintenance backlog for flumes improved significantly in 2005 and the condition of flumes is better than targeted.
- Mowing for vision received a feature grade of F, a significant downgrade from the grade of D in the previous year. None of the regions achieved the established target for this feature in 2005.

Counties 2005: Traffic and Shoulders

Region	County	Condition % backlogged # of observations													
		Traffic								Shoulders					
		Centerline	Delineators	Edgeline	Other Signs (emergency)	Protective Barriers	Raised Pavement Markers	Reg./Warn. Signs (emergency)	Special Pavement Markings	Hazardous Debris	Cracking (paved)	Potholes (paved)	Cross Slope (unpaved)	Drop-off (unpaved)	Erosion (unpaved)
NC	ADAMS	6%	--	0%	0%	0%	--	0%	0%	11%	28%	6%	0%	59%	0%
		18	--	12	29	23	--	78	14	18	18	18	17	17	16
	FLORENCE	0%	--	0%	0%	--	--	0%	0%	6%	60%	0%	0%	25%	6%
		17	--	10	25	--	--	12	4	17	10	10	16	16	16
	FOREST	0%	0%	0%	0%	0%	--	3%	--	8%	51%	0%	5%	11%	3%
		38	59	27	194	59	--	258	--	38	35	35	37	37	37
	GREEN LAKE	0%	0%	0%	0%	0%	--	0%	0%	0%	36%	0%	7%	36%	0%
		14	11	10	32	6	--	54	5	14	14	14	14	14	14
	IRON	0%	100%	0%	0%	8%	--	0%	--	0%	67%	0%	13%	33%	0%
		24	4	19	80	4	--	207	--	24	15	15	24	24	24
	LANGLADE	7%	0%	0%	0%	--	--	7%	--	10%	70%	0%	38%	34%	0%
		30	21	8	162	--	--	179	--	30	20	20	29	29	29
	LINCOLN	16%	33%	24%	0%	0%	51%	0%	0%	14%	53%	13%	62%	57%	5%
		37	104	25	159	44	76	238	14	35	32	32	37	37	37
	MARATHON	2%	8%	0%	0%	0%	1%	0%	4%	9%	69%	14%	7%	37%	0%
		44	131	28	390	78	111	448	157	44	36	36	41	41	41
	MARQUETTE	0%	0%	0%	0%	0%	7%	0%	0%	33%	67%	7%	0%	73%	0%
		15	91	11	72	7	76	40	27	15	15	15	15	15	15
	MENOMINEE	22%	--	0%	0%	--	--	0%	--	0%	100%	0%	0%	56%	11%
		9	--	3	20	--	--	32	--	9	1	1	9	9	9
ONEIDA	0%	0%	0%	0%	0%	0%	3%	17%	18%	53%	16%	3%	19%	6%	
	36	37	22	199	31	35	308	137	38	38	38	36	36	36	

		Condition % backlogged # of observations													
Region	County	Traffic								Shoulders					
		Centerline	Delineators	Edgeline	Other Signs (emergency)	Protective Barriers	Raised Pavement Markers	Reg./Warn. Signs (emergency)	Special Pavement Markings	Hazardous Debris	Cracking (paved)	Potholes (paved)	Cross Slope (unpaved)	Drop-off (unpaved)	Erosion (unpaved)
	PORTAGE	0%	0%	0%	0%	1%	0%	0%	0%	16%	76%	6%	3%	27%	0%
		37	222	22	373	110	222	301	77	37	34	34	37	37	37
	PRICE	13%	0%	29%	0%	--	--	0%	--	6%	42%	0%	0%	16%	0%
		32	9	24	86	--	--	103	--	32	24	24	32	32	32
	SHAWANO	0%	14%	0%	0%	0%	12%	0%	0%	14%	67%	4%	4%	18%	4%
		28	111	17	138	24	90	156	63	28	24	24	28	28	28
	VILAS	0%	--	0%	0%	--	60%	0%	100%	8%	47%	0%	0%	29%	4%
		23	--	16	188	--	7	202	27	24	19	19	24	24	24
WAUPACA	0%	12%	3%	0%	--	0%	0%	0%	3%	39%	6%	10%	21%	3%	
	39	10	32	112	--	9	317	93	39	31	31	39	39	39	
WAUSHARA	0%	0%	0%	0%	--	0%	0%	0%	15%	33%	0%	10%	20%	0%	
	19	67	11	65	--	60	110	5	20	18	18	20	20	19	
WOOD	0%	57%	0%	0%	0%	0%	0%	0%	10%	13%	0%	43%	29%	0%	
	20	36	14	24	22	11	72	21	21	16	16	21	21	21	
NE	BROWN	0%	19%	0%	0%	8%	3%	0%	0%	23%	69%	3%	7%	67%	0%
		29	296	27	316	102	271	267	92	30	29	29	27	27	27
	CALUMET	0%	0%	0%	0%	0%	--	0%	--	0%	47%	6%	12%	47%	0%
		17	10	15	84	10	--	57	--	17	17	17	17	17	17
	DOOR	22%	4%	7%	0%	0%	--	0%	25%	6%	33%	6%	6%	65%	0%
		18	8	14	67	5	--	110	5	18	18	18	17	17	17
	FOND DU LAC	0%	25%	0%	--	--	50%	--	0%	80%	93%	100%	100%	77%	0%
		40	50	29	--	--	8	--	70	5	29	7	2	22	8
KEWAUNEE	0%	--	0%	0%	--	--	0%	--	0%	33%	0%	0%	50%	0%	
	6	--	5	7	--	--	13	--	6	6	6	6	6	6	

		Condition % backlogged # of observations													
Region	County	Traffic							Shoulders						
		Centerline	Delineators	Edgeline	Other Signs (emergency)	Protective Barriers	Raised Pavement Markers	Reg./Warn. Signs (emergency)	Special Pavement Markings	Hazardous Debris	Cracking (paved)	Potholes (paved)	Cross Slope (unpaved)	Drop-off (unpaved)	Erosion (unpaved)
	MANITOWOC	0%	33%	6%	0%	1%	12%	0%	--	14%	81%	14%	0%	33%	0%
		21	96	16	83	49	57	138	--	21	21	21	21	21	21
	MARINETTE	4%	62%	0%	0%	6%	--	0%	0%	9%	36%	9%	4%	43%	4%
		23	29	8	118	29	--	119	1	23	22	22	23	23	23
	OCONTO	0%	0%	0%	0%	7%	--	0%	--	20%	80%	0%	7%	13%	0%
		15	8	12	6	8	--	12	--	15	10	10	15	15	15
	OUTAGAMIE	0%	--	--	0%	0%	--	0%	0%	13%	16%	0%	24%	69%	3%
		32	--	--	176	9	--	283	62	31	32	32	29	29	29
SHEBOYGAN	0%	33%	0%	0%	34%	0%	0%	0%	17%	48%	4%	14%	29%	0%	
	23	92	17	171	32	69	116	38	23	23	23	21	21	21	
WINNEBAGO	0%	0%	--	0%	--	0%	0%	0%	11%	32%	0%	0%	28%	6%	
	19	24	--	113	--	22	91	38	19	19	19	18	18	18	
NW	ASHLAND	17%	--	20%	0%	--	--	0%	--	11%	100%	0%	22%	56%	6%
		18	--	15	31	--	--	99	--	18	10	10	18	18	18
	BARRON	0%	10%	0%	0%	3%	15%	0%	25%	3%	41%	0%	0%	38%	0%
		32	186	26	241	45	174	32	4	32	27	26	21	21	20
	BAYFIELD	0%	0%	4%	0%	0%	--	0%	0%	3%	60%	4%	0%	37%	3%
		32	64	23	165	85	--	242	29	32	25	25	30	30	30
	BUFFALO	12%	13%	0%	5%	0%	--	0%	0%	6%	24%	12%	0%	41%	0%
		17	71	8	86	42	--	64	43	17	17	17	17	17	17
BURNETT	38%	22%	33%	0%	--	0%	0%	0%	4%	62%	0%	0%	52%	0%	
	26	36	18	148	--	34	177	73	26	21	21	25	25	25	
CHIPPEWA	0%	12%	0%	0%	0%	4%	0%	0%	2%	20%	5%	0%	0%	0%	
	41	276	33	332	107	143	264	30	41	41	41	41	41	41	

		Condition % backlogged # of observations													
Region	County	Traffic							Shoulders						
		Centerline	Delineators	Edgeline	Other Signs (emergency)	Protective Barriers	Raised Pavement Markers	Reg./Warn. Signs (emergency)	Special Pavement Markings	Hazardous Debris	Cracking (paved)	Potholes (paved)	Cross Slope (unpaved)	Drop-off (unpaved)	Erosion (unpaved)
	CLARK	0%	10%	0%	0%	0%	4%	0%	0%	0%	26%	0%	5%	3%	0%
		38	143	38	165	47	70	290	17	38	38	38	37	37	37
	DOUGLAS	60%	4%	46%	4%	1%	25%	0%	0%	17%	54%	4%	0%	53%	10%
		30	178	24	80	40	184	196	44	30	26	26	30	30	30
	DUNN	0%	35%	0%	0%	19%	24%	0%	0%	9%	52%	8%	21%	45%	0%
		33	202	24	112	141	42	182	24	33	25	25	33	33	33
	EAU CLAIRE	0%	23%	0%	0%	0%	0%	0%	10%	10%	15%	4%	0%	0%	5%
		29	234	15	186	144	153	118	27	29	26	26	22	22	22
	JACKSON	0%	0%	0%	0%	--	2%	0%	--	9%	9%	3%	0%	8%	0%
		34	118	10	32	--	105	65	20	33	33	32	26	26	26
	PEPIN	0%	52%	0%	0%	0%	--	0%	--	0%	50%	20%	86%	57%	0%
		10	10	6	5	3	--	33	--	10	10	10	7	7	7
	PIERCE	0%	33%	0%	0%	0%	--	0%	0%	7%	46%	4%	0%	23%	0%
		30	113	23	62	75	--	192	15	30	26	26	30	30	29
	POLK	15%	11%	7%	0%	1%	--	0%	12%	0%	64%	12%	17%	57%	20%
		33	65	28	275	63	--	205	64	33	25	25	29	30	30
RUSK	0%	0%	0%	0%	--	--	0%	0%	0%	11%	6%	24%	60%	4%	
	25	1	13	170	--	--	235	4	25	18	18	25	25	25	
SAWYER	11%	--	17%	0%	0%	--	0%	--	0%	20%	7%	5%	42%	5%	
	19	--	12	28	14	--	88	--	19	15	15	19	19	19	
ST. CROIX	0%	25%	0%	0%	2%	15%	0%	0%	9%	71%	18%	15%	41%	0%	
	34	299	25	272	215	161	267	82	34	34	34	34	34	34	
TAYLOR	0%	0%	0%	0%	0%	--	0%	0%	4%	17%	0%	25%	38%	8%	
	24	43	19	89	43	--	79	5	24	18	18	24	24	24	

		Condition % backlogged # of observations													
Region	County	Traffic								Shoulders					
		Centerline	Delineators	Edgeline	Other Signs (emergency)	Protective Barriers	Raised Pavement Markers	Reg./Warn. Signs (emergency)	Special Pavement Markings	Hazardous Debris	Cracking (paved)	Potholes (paved)	Cross Slope (unpaved)	Drop-off (unpaved)	Erosion (unpaved)
	TREMPEALEAU	12%	66%	11%	0%	14%	0%	0%	100%	8%	58%	21%	60%	66%	29%
		42	229	28	169	130	28	275	42	38	38	38	35	35	35
	WASHBURN	20%	4%	17%	0%	4%	7%	0%	0%	12%	72%	28%	4%	64%	0%
		25	66	12	167	14	52	192	23	25	25	25	25	25	25
SE	KENOSHA	5%	30%	8%	0%	18%	42%	0%	0%	0%	41%	0%	0%	47%	0%
		20	82	12	106	81	45	121	11	20	17	16	15	15	15
	MILWAUKEE	6%	29%	0%	1%	0%	35%	3%	22%	15%	100%	20%	71%	100%	14%
		33	55	24	660	292	97	410	633	33	20	20	7	7	7
	OZAUKEE	0%	4%	0%	0%	0%	34%	0%	0%	14%	83%	0%	0%	50%	0%
		14	49	12	52	4	49	53	24	14	12	12	12	12	12
	RACINE	6%	46%	0%	0%	0%	33%	14%	0%	0%	56%	13%	0%	21%	0%
		17	110	13	65	60	47	117	43	17	16	16	14	14	14
	WALWORTH	3%	23%	0%	0%	1%	4%	0%	18%	3%	76%	11%	7%	41%	4%
		39	270	33	168	80	224	528	123	39	38	37	27	27	27
WASHINGTON	3%	33%	0%	0%	11%	13%	0%	22%	3%	79%	0%	0%	4%	0%	
	30	154	27	132	140	64	342	82	30	29	29	28	28	28	
WAUKESHA	14%	25%	12%	2%	0%	25%	0%	8%	22%	67%	9%	0%	13%	3%	
	37	72	34	516	84	56	309	164	37	33	33	31	31	31	
SW	COLUMBIA	0%	44%	0%	0%	--	11%	0%	0%	56%	80%	0%	80%	92%	12%
		25	52	19	53	--	52	178	3	25	20	20	25	25	25
	CRAWFORD	15%	49%	8%	0%	1%	--	0%	100%	0%	27%	0%	22%	7%	0%
		27	184	26	80	201	--	213	7	27	22	22	27	27	27
	DANE	6%	21%	7%	6%	1%	18%	0%	0%	50%	50%	6%	36%	60%	2%
		48	326	41	485	87	232	411	157	48	48	48	47	47	47

Region	County	Condition % backlogged # of observations													
		Traffic								Shoulders					
		Centerline	Delineators	Edgeline	Other Signs (emergency)	Protective Barriers	Raised Pavement Markers	Reg./Warn. Signs (emergency)	Special Pavement Markings	Hazardous Debris	Cracking (paved)	Potholes (paved)	Cross Slope (unpaved)	Drop-off (unpaved)	Erosion (unpaved)
DODGE	4%	46%	0%	0%	0%	21%	0%	0%	54%	81%	0%	33%	67%	0%	
	24	86	19	164	7	79	163	32	24	21	21	24	24	24	
GRANT	0%	48%	5%	0%	0%	--	0%	--	19%	35%	4%	23%	46%	8%	
	27	162	21	60	105	--	35	--	27	26	26	26	26	26	
GREEN	0%	0%	0%	4%	0%	--	0%	0%	0%	57%	0%	43%	50%	7%	
	14	44	12	57	9	--	19	7	14	14	14	14	14	14	
IOWA	0%	21%	0%	0%	1%	8%	0%	0%	14%	29%	0%	0%	0%	0%	
	7	11	3	11	11	2	6	2	7	7	7	5	5	5	
JEFFERSON	0%	43%	--	--	--	43%	--	0%	0%	63%	11%	13%	0%	0%	
	22	50	--	--	--	79	--	58	22	19	19	15	15	15	
JUNEAU	0%	0%	0%	0%	0%	--	0%	0%	0%	33%	7%	6%	18%	0%	
	36	26	28	171	80	--	296	41	36	27	27	34	34	34	
LA CROSSE	0%	43%	0%	5%	0%	89%	0%	0%	43%	43%	8%	26%	83%	0%	
	23	81	8	66	52	42	147	21	23	14	13	23	23	23	
LAFAYETTE	7%	60%	0%	67%	0%	--	22%	0%	25%	27%	9%	56%	50%	25%	
	14	29	6	4	17	--	38	27	16	11	11	16	16	16	
MONROE	3%	3%	3%	0%	--	1%	0%	0%	3%	10%	3%	11%	9%	0%	
	40	205	39	162	--	203	122	37	39	40	40	35	35	34	
RICHLAND	6%	3%	0%	0%	11%	--	0%	--	6%	10%	0%	9%	6%	0%	
	33	83	28	73	97	--	216	--	33	21	21	33	33	33	
ROCK	0%	42%	--	0%	0%	--	--	0%	13%	50%	10%	0%	0%	0%	
	32	111	--	5	2	--	--	101	32	30	29	23	23	23	
SAUK	21%	15%	26%	0%	0%	29%	0%	0%	29%	56%	0%	63%	63%	4%	
	24	43	19	83	8	35	219	3	24	16	16	24	24	24	

Region	County	Condition % backlogged # of observations													
		Traffic								Shoulders					
		Centerline	Delineators	Edgeline	Other Signs (emergency)	Protective Barriers	Raised Pavement Markers	Reg./Warn. Signs (emergency)	Special Pavement Markings	Hazardous Debris	Cracking (paved)	Potholes (paved)	Cross Slope (unpaved)	Drop-off (unpaved)	Erosion (unpaved)
	VERNON	10%	71%	11%	0%	0%	--	0%	--	0%	9%	5%	19%	19%	0%
		31	114	28	71	100	--	188	--	32	22	22	32	32	32

Counties 2005: Drainage and Roadsides

Region	County	Condition % backlogged # of observations												
		Drainage						Roadsides						
		Culverts	Curb & Gutter	Ditches	Drains	Flumes	Storm Sewer	Barriers	Fences	Litter	Mowing	Noxious Weeds	Woody Vegetation Control	Woody Vegetation Control for Vision
NC	ADAMS	0%	22%	0%	--	67%	38%	--	--	89%	0%	44%	17%	0%
		95	30	152	--	23	7	--	--	18	18	18	18	18
	FLORENCE	0%	2%	0%	--	--	0%	--	--	18%	6%	47%	0%	0%
		56	1	152	--	--	1	--	--	17	16	17	17	17
	FOREST	0%	0%	0%	--	--	0%	0%	--	56%	30%	16%	0%	0%
		17	80	653	--	--	16	13	--	36	37	38	38	38
	GREEN LAKE	0%	8%	0%	--	0%	0%	--	--	71%	0%	14%	0%	0%
		17	6	105	--	5	3	--	--	14	14	14	14	14
	IRON	30%	--	0%	38%	--	--	--	--	29%	21%	0%	0%	0%
		135	--	351	14	--	--	--	--	24	24	24	24	24
	LANGLADE	0%	35%	0%	--	--	--	--	--	53%	15%	80%	3%	7%
		55	17	422	--	--	--	--	--	30	27	30	30	30
	LINCOLN	0%	--	12%	20%	--	0%	--	0%	95%	37%	35%	5%	3%
		164	--	658	21	--	11	--	65	37	35	37	37	37
	MARATHON	0%	5%	0%	20%	0%	0%	--	0%	59%	57%	18%	5%	2%
		142	178	928	151	137	134	--	90	44	42	44	44	44

Region	County	Condition % backloged # of observations												
		Drainage						Roadsides						
		Culverts	Curb & Gutter	Ditches	Drains	Flumes	Storm Sewer	Barriers	Fences	Litter	Mowing	Noxious Weeds	Woody Vegetation Control	Woody Vegetation Control for Vision
MARQUETTE	0%	1%	0%	--	17%	--	--	0%	53%	7%	0%	0%	0%	
	42	17	122	--	17	--	--	64	15	15	14	14	14	
MENOMINEE	0%	--	4%	--	0%	--	--	--	89%	11%	0%	0%	0%	
	14	--	41	--	3	--	--	--	9	9	9	9	9	
ONEIDA	17%	--	3%	--	--	--	--	0%	84%	37%	13%	0%	0%	
	117	--	712	--	--	--	--	112	38	38	38	38	38	
PORTAGE	15%	0%	0%	0%	33%	12%	--	0%	68%	14%	8%	0%	5%	
	251	88	742	135	86	122	--	200	37	37	37	37	37	
PRICE	9%	--	0%	100%	--	--	--	--	25%	25%	16%	0%	0%	
	200	--	589	6	--	--	--	--	32	32	32	32	32	
SHAWANO	30%	3%	2%	1%	0%	8%	--	--	57%	39%	54%	0%	0%	
	99	89	406	90	38	73	--	--	28	28	28	28	28	
VILAS	0%	100%	1%	--	--	--	--	--	46%	39%	0%	0%	0%	
	40	20	377	--	--	--	--	--	24	23	24	24	24	
WAUPACA	0%	0%	1%	0%	0%	0%	0%	0%	49%	8%	0%	0%	0%	
	371	167	865	112	62	26	1	8	39	39	39	39	38	
WAUSHARA	17%	4%	0%	0%	0%	0%	--	0%	81%	10%	33%	0%	5%	
	73	48	223	10	35	18	--	60	21	21	21	21	21	

Region	County	Condition % backlogged # of observations												
		Drainage						Roadsides						
		Culverts	Curb & Gutter	Ditches	Drains	Flumes	Storm Sewer	Barriers	Fences	Litter	Mowing	Noxious Weeds	Woody Vegetation Control	Woody Vegetation Control for Vision
	WOOD	0%	0%	0%	--	0%	--	--	--	67%	14%	33%	0%	0%
		4	39	214	--	12	--	--	--	21	21	21	21	21
NE	BROWN	10%	1%	0%	0%	0%	11%	0%	0%	87%	30%	70%	0%	0%
		122	108	443	59	34	110	30	277	30	30	30	30	30
	CALUMET	0%	0%	2%	0%	--	0%	--	--	100%	41%	63%	6%	0%
		9	16	163	3	--	10	--	--	17	17	16	17	17
	DOOR	0%	7%	1%	--	0%	10%	--	--	78%	61%	22%	6%	6%
		27	38	176	--	5	33	--	--	18	18	18	18	18
	FOND DU LAC	50%	--	3%	7%	0%	0%	--	0%	100%	54%	63%	--	0%
		23	--	202	191	111	163	--	117	34	37	40		39
	KEWAUNEE	67%	17%	1%	--	50%	--	--	--	83%	67%	50%	17%	0%
		7	2	21	--	6	--	--	--	6	6	6	6	6
	MANITOWOC	0%	2%	1%	--	50%	0%	0%	0%	67%	57%	70%	0%	0%
		29	91	255	--	54	67	20	57	21	21	20	21	21
	MARINETTE	20%	27%	2%	--	50%	--	--	--	78%	39%	17%	4%	0%
		53	34	290	--	17	--	--	--	23	23	23	23	22
	OCONTO	25%	0%	2%	--	0%	--	--	--	73%	27%	20%	0%	0%
		43	7	113	--	7	--	--	--	15	15	15	15	15

Region	County	Condition % backloged # of observations												
		Drainage						Roadsides						
		Culverts	Curb & Gutter	Ditches	Drains	Flumes	Storm Sewer	Barriers	Fences	Litter	Mowing	Noxious Weeds	Woody Vegetation Control	Woody Vegetation Control for Vision
	OUTAGAMIE	33%	14%	0%	--	67%	0%	--	--	55%	13%	3%	3%	0%
		43	83	429	--	20	37	--	--	31	32	32	32	31
	SHEBOYGAN	9%	0%	2%	40%	0%	20%	--	0%	78%	64%	74%	4%	0%
		125	49	302	22	45	36	--	67	23	22	23	23	23
	WINNEBAGO	33%	0%	0%	0%	--	0%	--	0%	58%	28%	0%	0%	0%
		60	52	229	32	--	19	--	24	19	18	19	19	18
NW	ASHLAND	0%	16%	2%	--	--	40%	--	--	39%	41%	39%	0%	0%
		24	13	144	--	--	3	--	--	18	17	18	18	18
	BARRON	13%	5%	0%	0%	0%	0%	--	0%	22%	43%	6%	0%	0%
		272	50	495	106	30	8	--	174	32	28	31	31	32
	BAYFIELD	18%	30%	1%	75%	33%	25%	--	--	22%	48%	63%	0%	0%
		172	62	512	45	85	10	--	--	32	29	32	32	32
	BUFFALO	11%	6%	1%	--	0%	--	--	--	65%	56%	18%	0%	0%
		85	41	165	--	4	--	--	--	17	16	17	17	17
	BURNETT	17%	30%	1%	--	--	50%	--	--	42%	38%	15%	0%	4%
		75	42	389	--	--	13	--	--	26	26	26	26	26
	CHIPPEWA	0%	56%	0%	--	0%	0%	--	0%	41%	27%	10%	0%	0%
		223	61	822	--	52	124	--	146	41	41	41	41	41

Region	County	Condition % backloged # of observations												
		Drainage						Roadsides						
		Culverts	Curb & Gutter	Ditches	Drains	Flumes	Storm Sewer	Barriers	Fences	Litter	Mowing	Noxious Weeds	Woody Vegetation Control	Woody Vegetation Control for Vision
CLARK	11%	--	0%	0%	--	--	--	--	29%	42%	0%	0%	0%	
	151	--	714	98	--	--	--	--	38	38	38	38	37	
DOUGLAS	10%	--	0%	33%	--	0%	--	0%	50%	30%	0%	0%	0%	
	109	--	447	27	--	6	--	15	28	30	29	30	30	
DUNN	25%	19%	0%	--	25%	0%	--	0%	82%	12%	15%	0%	0%	
	170	102	586	--	10	27	--	85	33	33	33	32	32	
EAU CLAIRE	0%	19%	1%	--	0%	0%	--	0%	48%	14%	18%	0%	0%	
	135	26	392	--	41	14	--	175	29	29	28	29	29	
JACKSON	0%	--	0%	--	--	--	--	1%	52%	97%	3%	3%	0%	
	95	--	315	--	--	--	--	105	33	31	33	33	33	
PEPIN	0%	1%	2%	--	0%	0%	--	--	40%	80%	10%	0%	22%	
	10	8	50	--	3	5	--	--	10	10	10	10	9	
PIERCE	7%	--	2%	--	0%	--	--	--	53%	37%	0%	3%	0%	
	188	--	447	--	10	--	--	--	30	30	30	30	30	
POLK	25%	12%	0%	0%	0%	0%	0%	0%	31%	25%	0%	0%	0%	
	59	65	464	18	57	56	32	1	32	32	31	33	33	
RUSK	20%	29%	0%	100%	100%	--	--	--	52%	16%	0%	8%	0%	
	62	5	371	23	4	--	--	--	25	25	25	25	25	

Region	County	Condition % backlogged # of observations												
		Drainage						Roadsides						
		Culverts	Curb & Gutter	Ditches	Drains	Flumes	Storm Sewer	Barriers	Fences	Litter	Mowing	Noxious Weeds	Woody Vegetation Control	Woody Vegetation Control for Vision
	SAWYER	14%	--	1%	--	--	--	--	--	42%	37%	6%	5%	0%
		57	--	209	--	--	--	--	--	19	19	18	19	19
	ST. CROIX	11%	4%	4%	--	0%	24%	--	0%	56%	6%	0%	0%	0%
		186	43	648	--	19	146	--	203	34	34	34	34	34
	TAYLOR	25%	0%	0%	--	--	--	--	--	50%	25%	0%	0%	0%
		77	5	292	--	--	--	--	--	24	24	24	23	23
	TREMPEALEAU	27%	14%	1%	33%	--	44%	--	0%	50%	54%	11%	3%	0%
		305	99	676	219	--	50	16	44	38	35	38	38	37
WASHBURN	40%	25%	0%	33%	0%	--	--	0%	80%	12%	0%	0%	0%	
	75	46	416	9	33	--	--	31	25	25	25	25	24	
SE	KENOSHA	50%	0%	17%	--	--	8%	--	4%	100%	40%	35%	5%	5%
		63	11	196	--	--	68	--	45	20	20	20	20	20
	MILWAUKEE	80%	1%	41%	--	33%	15%	0%	2%	94%	52%	21%	0%	0%
		171	572	428	--	46	630	73	266	33	33	33	33	32
	OZAUKEE	0%	0%	1%	0%	--	4%	--	0%	36%	29%	64%	0%	0%
		11	26	87	31	--	69	--	49	14	14	14	14	14
	RACINE	0%	0%	8%	50%	33%	13%	0%	0%	65%	63%	6%	0%	0%
		59	39	200	18	36	77	23	47	17	16	17	17	15

Region	County	Condition % backloged # of observations												
		Drainage						Roadsides						
		Culverts	Curb & Gutter	Ditches	Drains	Flumes	Storm Sewer	Barriers	Fences	Litter	Mowing	Noxious Weeds	Woody Vegetation Control	Woody Vegetation Control for Vision
SW	WALWORTH	20%	12%	0%	4%	25%	0%	--	1%	15%	29%	77%	13%	3%
		397	199	789	177	100	138	--	202	39	38	39	39	39
	WASHINGTON	33%	1%	1%	5%	23%	4%	0%	0%	37%	37%	90%	0%	3%
		25	106	446	79	69	101	26	90	30	30	30	30	30
	WAUKESHA	20%	0%	0%	27%	44%	2%	3%	2%	59%	42%	3%	0%	0%
		114	315	664	126	161	244	17	56	37	36	36	36	37
SW	COLUMBIA	63%	4%	8%	100%	--	--	--	15%	96%	8%	56%	32%	8%
		127	29	321	23	--	--	--	57	25	24	25	25	25
	CRAWFORD	0%	1%	0%	--	--	0%	--	--	59%	23%	0%	0%	0%
		168	96	353	--	--	48	--	--	27	26	27	27	27
	DANE	0%	4%	2%	23%	18%	30%	0%	12%	89%	40%	48%	13%	0%
		255	109	1207	125	66	61	22	307	46	48	48	48	47
	DODGE	100%	8%	7%	40%	100%	--	--	13%	92%	38%	71%	13%	0%
		37	87	407	69	28	--	--	55	24	24	24	24	24
	GRANT	0%	10%	0%	--	50%	0%	--	--	59%	33%	7%	4%	4%
		105	85	383	--	42	32	--	--	27	27	27	27	27
	GREEN	0%	0%	0%	--	0%	0%	--	0%	64%	43%	86%	0%	7%
		38	22	118	--	22	14	--	11	14	14	14	14	14

Region	County	Condition % backloged # of observations												
		Drainage						Roadsides						
		Culverts	Curb & Gutter	Ditches	Drains	Flumes	Storm Sewer	Barriers	Fences	Litter	Mowing	Noxious Weeds	Woody Vegetation Control	Woody Vegetation Control for Vision
IOWA		0%	2%	0%	--	0%	0%	0%	58%	86%	29%	14%	0%	0%
		3	5	14	--	2	9	3	2	7	7	7	7	7
JEFFERSON		100%	--	--	--	--	--	--	0%	68%	5%	36%	0%	0%
		8	--	--	--	--	--	--	112	22	22	22	22	21
JUNEAU		13%	2%	3%	0%	0%	0%	--	--	67%	28%	8%	0%	0%
		284	73	779	1	38	20	--	--	36	36	36	36	36
LA CROSSE		20%	3%	0%	--	--	0%	--	33%	50%	83%	39%	0%	0%
		93	21	220	--	--	26	--	42	22	23	23	21	18
LAFAYETTE		0%	--	0%	--	0%	100%	--	0%	88%	56%	13%	13%	0%
		32	--	135	--	13	1	--	16	16	16	16	16	16
MONROE		0%	0%	0%	--	--	--	--	0%	33%	51%	0%	0%	0%
		54	37	401	--	--	--	--	213	40	39	40	39	40
RICHLAND		1%	0%	0%	--	--	0%	--	--	85%	52%	0%	0%	3%
		282	58	525	--	--	43	--	--	33	33	33	33	33
ROCK		50%	--	0%	--	0%	--	--	0%	69%	0%	31%	0%	3%
		39	--	6	--	5	--	--	201	32	32	32	32	32
SAUK		20%	--	9%	83%	--	--	--	11%	96%	17%	57%	17%	0%
		78	--	339	35	--	--	--	35	24	24	23	23	23

Region	County	Condition % backlogged # of observations												
		Drainage						Roadsides						
		Culverts	Curb & Gutter	Ditches	Drains	Flumes	Storm Sewer	Barriers	Fences	Litter	Mowing	Noxious Weeds	Woody Vegetation Control	Woody Vegetation Control for Vision
	VERNON	1%	0%	0%	--	0%	0%	--	--	59%	22%	0%	0%	0%
	VERNON	185	66	505	--	31	29	--	--	32	32	32	32	31

2005 Bridges: Compass Report on Condition, Maintenance, and Inspection Backlog

Data in this section comes from the Highway Structures Information System (HSI) online report. Data from HSI was taken during the period of three weeks from October 19th to November 9th, 2005. HSI is still under major development at the time the data was taken. Reporting and analysis were done by Professor Teresa Adams of the University of Wisconsin, with Research Assistant Emil Juni, under the direction of WisDOT staff.

Key observations

Bridge Deck Condition Distribution

- 34% of decks statewide are in Fair condition and need reactive maintenance, based on their NBI ratings of 5 or 6. These include 29% of concrete bridges and 43% of steel bridges.
- The SE region has the lowest percent of decks in good condition, only 37% of decks in good condition and 7% of decks in poor condition. However, SE region has the largest deck area to maintain (13,481,198 ft²) and second most number of bridges (1,000).
- The SW region has the most bridges in the state (1,220) and performs excellently with 74% of decks in Good condition and only 2% in Poor condition.

Bridge Maintenance Needs

- Maintenance actions are those recommended by bridge inspectors for each bridge at the time of inspection.
- The following maintenance actions are recommended as needed. As approaches settle, brush continually grows, decks eventually crack and drainage issues arise at wings, these actions become necessary:
 1. Expansion Joints - Seal
 2. Misc - Cut Brush
 3. Deck - Seal Surface Cracks
 4. Approach - Seal Approach to Paving Block
 5. Approach - Wedge Approach
 6. Drainage - Repair Washouts / Erosion
 7. Deck – Patching

Bridge Special Inspection Backlog

- Backlog for bridge inspection is calculated based on the mandatory inspection frequency for each inspection type. Bridges without a 'Last Inspection Date' are reported in HSI as 'Unknown' and are regarded as non-compliant (backlogged) for this report. Initial and biennial routine inspections have the best records with only 2% of backlogs statewide. All bridges require initial and biennial routine inspections.
- Load-posted and in-depth inspections have the worst inspection backlogs with 90% and 93%, respectively of eligible bridges in need of inspection. However, only 21 and 61 bridges, respectively require these inspections. Compliance estimates of fracture critical and in-depth inspections are very preliminary. It will take 3 more years until the HSI database becomes current for all inspection types.

2005 Bridges: Compass Report on Condition

Wisconsin 2005: Bridge Condition Distribution

	Bridges	Deck Area (ft ²)	Component	% of bridges in condition			
				Good ¹	Fair ²	Poor ³	Critical ³
All	4,281	42,483,105	Decks	62%	34%	3%	0%
			Superstructures	68%	29%	3%	0%
			Substructures	68%	31%	2%	0%
Concrete	2,737	21,176,604	Decks	68%	29%	3%	0%
			Superstructures	74%	23%	3%	0%
			Substructures	76%	23%	1%	0%
Steel	1,544	21,306,501	Decks	53%	43%	5%	0%
			Superstructures	58%	40%	2%	0%
			Substructures	52%	44%	3%	0%

Region 2005: Bridge Condition Distribution

Region	Bridges	Deck Area (ft ²)	Component	% of bridges in condition			
				Good ¹	Fair ²	Poor ³	Critical ³
NC	525	3,844,905	Decks	80%	18%	2%	0%
			Superstructures	86%	13%	1%	0%
			Substructures	81%	18%	1%	0%
NE	673	6,768,540	Decks	74%	25%	1%	0%
			Superstructures	83%	16%	1%	0%
			Substructures	69%	30%	1%	0%
NW	863	7,864,503	Decks	55%	40%	4%	0%
			Superstructures	64%	34%	2%	0%
			Substructures	64%	32%	4%	0%
SE	1,000	13,481,198	Decks	37%	56%	7%	0%
			Superstructures	42%	52%	6%	0%
			Substructures	45%	53%	1%	0%
SW	1,220	10,523,959	Decks	74%	24%	2%	0%
			Superstructures	78%	20%	2%	0%
			Substructures	82%	17%	1%	0%

¹Good: Bridges with NBI rating 7-9 should receive Preventive Maintenance

²Fair: Bridges with NBI 5-6 should receive Reactive Maintenance

³Poor and Critical: Bridges with NBI 0-4 should receive Rehabilitation or Replacement. These bridges are considered backlogged for maintenance

Bridge Maintenance Needs

Bridges recommended for maintenance are shown as percentages of 'number of bridges recommended for this particular maintenance in this county/region/state' divided by 'total number of bridges in this county/region/state'.

Wisconsin 2005: Bridge Maintenance Needs

Maintenance	% of bridges recommended for maintenance ²⁷					
	Statewide	Region				
		NC	NE	NW	SE	SW
Deck - Seal Surface Cracks	7%	9%	5%	8%	8%	4%
Expansion Joints - Seal	6%	4%	14%	2%	11%	2%
Misc - Cut Brush	5%	1%	1%	9%	8%	3%
Approach - Seal Approach to Paving Block	4%	1%	1%	15%	2%	2%
Approach - Wedge Approach	3%	2%	0%	3%	7%	3%
Drainage - Repair Washouts / Erosion	3%	1%	2%	4%	6%	1%
Deck - Patching	3%	1%	4%	1%	5%	1%
Misc - Remove/Monitor Loose Concrete	2%	0%	0%	0%	7%	0%
Approach - Other Work	2%	0%	0%	1%	5%	1%
Slope Protection - Reseal Slope Paving	2%	0%	0%	4%	3%	0%
Misc - Paint Spot / Complete	1%	1%	1%	2%	4%	0%
Superstructure - Other Work	1%	1%	0%	2%	2%	1%
Channel - Remove Debris	1%	1%	1%	2%	0%	2%
Deck - Surface Repair Spalls	1%	0%	1%	4%	1%	0%
Approach - Seal Cracks	1%	0%	0%	2%	3%	1%
Deck - Other Work	1%	0%	0%	1%	3%	1%
Channel - Clean Box Culvert	1%	1%	1%	2%	1%	1%
Substructure - Other Work	1%	0%	1%	2%	1%	1%
Substructure - Repair Abutment / Wings	1%	1%	1%	1%	2%	0%
Deck - Repair Railing	1%	0%	0%	2%	2%	0%
Misc - Other Work*	7%	1%	3%	6%	20%	2%

* Misc - Other Work* are all maintenance works other than what are listed. The nature of a particular work is shown at the associated comment field in the HSI online report.

²⁷ The recommended maintenance listed on this table are the 25 most recommended maintenance statewide

Counties 2005: Bridge Maintenance Needs

Region	County	Number of state bridges	% of bridges recommended for maintenance ²⁸							
			Deck - Seal Surface Cracks	Expansion Joints - Seal	Misc - Cut Brush	Approach - Seal Approach to Paving Block	Approach - Wedge Approach	Drainage - Repair Washouts / Erosion	Deck - Patching	Misc - Other Work*
NC	ADAMS	7	43%	29%	0%	0%	14%	0%	0%	0%
	FLORENCE	8	0%	0%	0%	0%	0%	0%	0%	0%
	FOREST	11	0%	0%	0%	0%	0%	0%	0%	0%
	GREEN LAKE	11	27%	9%	9%	0%	9%	0%	0%	9%
	IRON	18	0%	0%	0%	0%	0%	0%	0%	0%
	LANGLADE	10	0%	0%	0%	10%	0%	0%	0%	0%
	LINCOLN	49	4%	0%	2%	0%	2%	0%	0%	4%
	MARATHON	143	10%	6%	2%	0%	1%	3%	2%	1%
	MARQUETTE	36	17%	8%	0%	0%	3%	0%	0%	0%
	MENOMINEE	3	33%	0%	0%	33%	0%	0%	0%	0%
	ONEIDA	14	0%	0%	0%	0%	0%	0%	0%	0%
	PORTAGE	77	8%	3%	0%	1%	0%	1%	1%	0%
	PRICE	20	0%	0%	0%	0%	0%	0%	0%	0%
	SHAWANO	49	8%	2%	2%	0%	4%	0%	0%	0%
	VILAS	11	36%	0%	0%	0%	0%	0%	0%	0%
WAUPACA	63	2%	3%	0%	0%	0%	0%	0%	0%	

²⁸ The recommended maintenance listed on this table are the twelve most recommended maintenance statewide

			% of bridges recommended for maintenance ²⁸							
Region	County	Number of state bridges	Deck - Seal Surface Cracks	Expansion Joints - Seal	Misc - Cut Brush	Approach - Seal Approach to Paving Block	Approach - Wedge Approach	Drainage - Repair Washouts / Erosion	Deck - Patching	Misc - Other Work*
	WAUSHARA	21	5%	0%	0%	0%	0%	0%	0%	0%
	WOOD	49	14%	6%	0%	2%	4%	2%	6%	4%
NE	BROWN	215	7%	6%	0%	0%	0%	4%	3%	2%
	CALUMET	13	0%	0%	0%	0%	0%	0%	8%	0%
	DOOR	7	0%	0%	0%	0%	0%	0%	0%	0%
	FOND DU LAC	69	1%	0%	0%	0%	1%	0%	0%	3%
	KEWAUNEE	15	0%	7%	0%	0%	0%	0%	0%	0%
	MANITOWOC	89	3%	18%	1%	0%	0%	1%	4%	1%
	MARINETTE	20	5%	20%	0%	15%	0%	0%	0%	5%
	OCONTO	38	0%	8%	0%	0%	0%	3%	0%	0%
	OUTAGAMIE	80	4%	33%	1%	5%	0%	3%	9%	5%
	SHEBOYGAN	84	5%	2%	1%	0%	0%	2%	1%	0%
WINNEBAGO	129	9%	31%	1%	0%	0%	1%	7%	5%	
NW	ASHLAND	19	5%	0%	21%	5%	11%	0%	0%	0%
	BARRON	64	6%	5%	9%	8%	5%	9%	2%	3%
	BAYFIELD	33	3%	3%	24%	0%	0%	6%	0%	12%
	BUFFALO	70	6%	1%	7%	13%	7%	3%	1%	9%
	BURNETT	14	0%	0%	14%	0%	0%	14%	0%	0%
	CHIPPEWA	123	12%	0%	2%	24%	2%	2%	3%	6%
	CLARK	43	9%	0%	19%	23%	0%	0%	0%	5%

			% of bridges recommended for maintenance ²⁸							
Region	County	Number of state bridges	Deck - Seal Surface Cracks	Expansion Joints - Seal	Misc - Cut Brush	Approach - Seal Approach to Paving Block	Approach - Wedge Approach	Drainage - Repair Washouts / Erosion	Deck - Patching	Misc - Other Work*
	DOUGLAS	61	3%	3%	7%	7%	2%	5%	3%	2%
	DUNN	89	8%	1%	8%	16%	2%	2%	0%	2%
	EAU CLAIRE	98	15%	0%	6%	40%	0%	0%	4%	1%
	JACKSON	73	0%	0%	3%	0%	0%	1%	0%	1%
	PEPIN	16	0%	0%	6%	0%	0%	0%	0%	6%
	PIERCE	57	18%	4%	12%	16%	4%	7%	0%	49%
	POLK	12	0%	8%	42%	17%	0%	17%	8%	8%
	RUSK	28	4%	0%	18%	0%	4%	14%	0%	4%
	SAWYER	19	0%	0%	5%	11%	0%	0%	5%	0%
	ST. CROIX	91	15%	1%	10%	20%	9%	1%	0%	4%
	TAYLOR	20	0%	0%	5%	5%	0%	0%	0%	0%
	TREMPEALEAU	73	8%	10%	7%	7%	4%	8%	1%	5%
WASHBURN	20	10%	5%	10%	15%	5%	15%	0%	5%	
SE	KENOSHA	58	16%	19%	2%	0%	2%	3%	0%	16%
	MILWAUKEE	568	7%	14%	11%	1%	2%	2%	7%	18%
	OZAUKEE	50	14%	2%	6%	4%	14%	4%	2%	20%
	RACINE	45	0%	7%	4%	11%	2%	0%	0%	9%
	WALWORTH	113	12%	9%	8%	5%	11%	11%	0%	32%
	WASHINGTON	74	0%	4%	0%	8%	1%	4%	0%	18%
	WAUKESHA	165	11%	4%	4%	2%	22%	21%	7%	23%

			% of bridges recommended for maintenance ²⁸							
Region	County	Number of state bridges	Deck - Seal Surface Cracks	Expansion Joints - Seal	Misc - Cut Brush	Approach - Seal Approach to Paving Block	Approach - Wedge Approach	Drainage - Repair Washouts / Erosion	Deck - Patching	Misc - Other Work*
SW	COLUMBIA	97	0%	0%	2%	0%	0%	0%	0%	1%
	CRAWFORD	66	18%	0%	9%	12%	17%	0%	3%	6%
	DANE	271	0%	4%	1%	0%	1%	2%	0%	1%
	DODGE	63	0%	0%	3%	2%	5%	2%	0%	3%
	GRANT	64	0%	0%	0%	0%	0%	0%	0%	0%
	GREEN	28	0%	0%	0%	0%	0%	0%	4%	0%
	IOWA	56	0%	0%	0%	0%	0%	4%	2%	0%
	JEFFERSON	68	0%	1%	1%	0%	0%	0%	0%	0%
	JUNEAU	76	22%	13%	0%	0%	0%	1%	8%	0%
	LA CROSSE	104	1%	0%	6%	1%	4%	0%	0%	6%
	LAFAYETTE	39	0%	0%	10%	0%	3%	5%	3%	0%
	MONROE	154	10%	2%	3%	4%	3%	1%	1%	8%
	RICHLAND	74	3%	3%	3%	4%	0%	0%	1%	1%
	ROCK	114	0%	0%	0%	0%	0%	0%	0%	0%
	SAUK	76	0%	1%	1%	1%	0%	1%	0%	0%
VERNON	73	7%	4%	8%	4%	15%	10%	3%	0%	

* Misc - Other Work' are all maintenance works other than what are listed. The nature of a particular work is shown at the associated comment field in the HSI online report.

Wisconsin 2005: Bridge Special Inspection Backlog

In the inspection backlog tables, inspection backlogs are shown as percentages of 'number of bridges non-compliant for this particular inspection in this county/region/state' divided by 'total number of bridges in this county/region/state requiring this type of inspection'. Shown under the percentages are the numbers of bridges backlogged for that inspection type in the county/region/state. Data was extracted from WisDOT's HSI (Highway Structures Information System) on-line reports.

The special inspection types shown have different mandatory inspection frequency. The list of inspection frequencies for each special inspection is as follows:

- Initial: After construction & Major Rehab, or 48 months
- Routine: 24 months
- Load Posted: 12 months
- In-depth: 72 months
- Fracture Critical: 24 months
- Underwater Diving: 60 months
- Underwater Probe/Visual: 24 months

Special Inspection Type						
% of bridges backlogged for inspection type						
# of bridges backlogged for inspection						
Initial	Routine	Load Posted	In-depth ²⁹	Fracture Critical ²⁹	Underwater Diving	Underwater Probe/Visual
2%	2%	90%	93%	38%	43%	36%
11	91	19	57	52	149	633

²⁹ Compliance estimates of fracture critical and in-depth inspections are very preliminary. It will take 3 more years until the HSI database becomes current for all inspection types.

Regions 2005: Bridge Special Inspection Backlog

Region	Special Inspection Type						
	Initial	Routine	Load Posted	In-depth	Fracture Critical	Underwater Diving	Underwater Probe/Visual
NC	2%	1%	-- ³⁰	100%	50%	71%	16%
	2	3	--	5	5	46	65
NE	3%	2%	100%	83%	36%	53%	62%
	4	18	9	5	16	33	171
NW	1%	0%	75%	93%	40%	18%	27%
	1	0	3	14	10	17	131
SE	1%	6%	100%	90%	62%	90%	29%
	1	61	4	19	8	19	67
SW	1%	1%	75%	100%	30%	31%	53%
	3	9	3	14	13	34	199

³⁰ Where no numbers are given, there were no bridges requiring this type of inspection in this region.

Counties 2005: Bridge Special Inspection Backlog

Region	County	Special Inspection Type						
		Initial	Routine	Load Posted	In-depth	Fracture Critical	Underwater Diving	Underwater Probe/Visual
NC	ADAMS	0%	0%	--	--	--	100%	0%
		0	0	-- ³¹	--	--	2	0
	FLORENCE	100%	0%	--	--	0%	100%	100%
		1	0	--	--	0	1	1
	FOREST	0%	0%	--	--	--	--	100%
		0	0	--	--	--	--	3
	GREEN LAKE	0%	0%	--	--	--	0%	0%
		0	0	--	--	--	0	0
	IRON	0%	0%	--	--	--	100%	100%
		0	0	--	--	--	4	3
	LANGLADE	0%	0%	--	--	100%	100%	100%
		0	0	--	--	1	1	2
	LINCOLN	0%	0%	--	--	100%	100%	100%
		0	0	--	--	2	6	6
	MARATHON	0%	0%	--	100%	--	60%	16%
		0	0	--	4	--	9	21
	MARQUETTE	0%	0%	--	--	--	0%	0%
		0	0	--	--	--	0	0
	MENOMINEE	0%	0%	--	--	--	--	100%
		0	0	--	--	--	--	1
ONEIDA	0%	0%	--	--	--	100%	100%	
	0	0	--	--	--	5	5	
PORTAGE	0%	0%	--	--	--	0%	10%	
	0	0	--	--	--	0	5	
PRICE	0%	0%	--	--	--	80%	--	
	0	0	--	--	--	4	--	

³¹ Where no numbers are given, there were no bridges requiring this type of inspection in this county.

Region	County	Special Inspection Type						
		Initial	Routine	Load Posted	In-depth	Fracture Critical	Underwater Diving	Underwater Probe/Visual
	SHAWANO	0%	2%	--	--	0%	67%	75%
		0	1	--	--	0	4	6
	VILAS	0%	0%	--	--	--	100%	100%
		0	0	--	--	--	2	4
	WAUPACA	11%	0%	--	--	100%	71%	4%
		1	0	--	--	1	5	2
WAUSHARA	0%	0%	--	--	--	100%	0%	
	--	0	--	--	--	1	0	
WOOD	0%	4%	--	100%	50%	50%	9%	
	0	2	--	1	1	2	6	
NE	BROWN	0%	6%	100%	100%	0%	11%	71%
		0	12	4	1	0	2	57
	CALUMET	0%	0%	--	--	--	--	0%
		--	0	--	--	--	--	0
	DOOR	0%	0%	100%	--	33%	0%	100%
		--	0	4	--	2	0	9
	FOND DU LAC	0%	7%	--	--	--	100%	64%
		0	5	--	--	--	5	9
	KEWAUNEE	0%	0%	--	--	--	0%	0%
		0	0	--	--	--	0	0
	MANITOWOC	0%	1%	--	--	0%	100%	63%
		0	1	--	--	0	5	24
	MARINETTE	0%	0%	--	--	43%	100%	85%
		0	0	--	--	3	5	11
OCONTO	0%	0%	--	--	0%	100%	22%	
	0	0	--	--	0	2	4	
OUTAGAMIE	18%	0%	100%	50%	0%	71%	92%	
	3	0	1	1	0	5	12	
SHEBOYGAN	8%	0%	--	--	--	100%	39%	
	1	0	--	--	--	1	12	
WINNEBAGO	0%	0%	--	100%	61%	100%	75%	

Region	County	Special Inspection Type						
		Initial	Routine	Load Posted	In-depth	Fracture Critical	Underwater Diving	Underwater Probe/Visual
		0	0	--	3	11	8	33
		0%	0%	--	--	--	33%	44%
	ASHLAND	0	0	--	--	--	1	4
		0%	0%	--	--	--	50%	46%
	BARRON	0	0	--	--	--	1	11
		0%	0%	--	--	--	0%	12%
	BAYFIELD	0	0	--	--	--	0	3
		6%	0%	--	--	0%	15%	48%
	BUFFALO	1	0	--	--	0	2	12
		0%	0%	--	--	0%	0%	57%
	BURNETT	0	0	--	--	0	0	4
		0%	0%	--	100%	0%	25%	29%
	CHIPPEWA	0	0	--	3	0	2	10
		0%	0%	--	--	--	--	30%
	CLARK	0	0	--	--	--	--	7
		0%	0%	100%	--	50%	0%	25%
	DOUGLAS	0	0	1	--	1	0	8
		0%	0%	--	100%	67%	0%	15%
	DUNN	0	0	--	2	2	0	8
		0%	0%	100%	100%	100%	30%	31%
	EAU CLAIRE	0	0	1	5	1	3	10
		0%	0%	--	--	--	100%	84%
	JACKSON	0	0	--	--	--	4	16
		0%	0%	--	--	100%	0%	0%
	PEPIN	0	0	--	--	1	0	0
		0%	0%	--	100%	100%	0%	16%
	PIERCE	0	0	--	1	2	0	7
		0%	0%	--	0%	100%	0%	33%
	POLK	0	0	--	0	1	0	2
		0%	0%	--	100%	--	0%	24%
	RUSK	0	0	--	1	--	0	5

Region	County	Special Inspection Type						
		Initial	Routine	Load Posted	In-depth	Fracture Critical	Underwater Diving	Underwater Probe/Visual
	SAWYER	0%	0%	--	--	--	0%	44%
		0	0	--	--	--	0	4
	ST. CROIX	0%	0%	100%	100%	100%	20%	7%
		0	0	1	1	2	1	4
	TAYLOR	0%	0%	--	--	0%	--	50%
		0	0	--	--	0	--	4
TREMPEALEAU	0%	0%	0%	100%	0%	50%	32%	
	0	0	0	1	0	3	6	
WASHBURN	0%	0%	--	--	--	--	40%	
	0	0	--	--	--	--	6	
SE	KENOSHA	0%	0%	--	--	0%	--	9%
		0	0	--	--	0	--	2
	MILWAUKEE	0%	5%	100%	89%	73%	60%	50%
		0	27	1	17	8	3	38
	OZAUKEE	0%	16%	100%	--	0%	100%	54%
		0	8	1	--	0	1	7
	RACINE	0%	0%	--	--	--	100%	5%
		0	0	--	--	--	5	1
WALWORTH	11%	23%	100%	100%	--	--	19%	
	1	26	2	2	--	--	6	
WASHINGTON	0%	0%	--	--	--	100%	17%	
	0	0	--	--	--	5	2	
WAUKESHA	0%	0%	--	--	--	100%	19%	
	0	0	--	--	--	5	11	
SW	COLUMBIA	0%	0%	100%	100%	67%	7%	86%
		0	0	1	3	2	1	6
	CRAWFORD	6%	0%	100%	--	40%	82%	13%
		1	0	1	--	2	9	3
	DANE	0%	0%	--	100%	0%	0%	100%
0		1	--	1	0	0	24	
DODGE	0%	0%	--	--	--	0%	67%	

Region	County	Special Inspection Type						
		Initial	Routine	Load Posted	In-depth	Fracture Critical	Underwater Diving	Underwater Probe/Visual
		0	0	--	--	--	0	4
	GRANT	5%	0%	--	--	17%	0%	100%
		1	0	--	--	1	0	10
	GREEN	0%	0%	--	--	--	0%	100%
		0	0	--	--	--	0	6
	IOWA	0%	0%	100%	100%	50%	0%	100%
		0	0	1	1	1	0	10
	JEFFERSON	0%	0%	--	--	0%	10%	100%
		0	0	--	--	0	1	5
	JUNEAU	0%	3%	--	--	0%	20%	9%
		0	2	--	--	0	1	10
	LA CROSSE	0%	0%	--	100%	0%	76%	68%
		0	0	--	2	0	13	15
	LAFAYETTE	0%	5%	--	--	67%	33%	100%
		0	2	--	--	2	1	10
	MONROE	0%	0%	--	100%	0%	--	54%
		0	0	--	1	0	--	22
	RICHLAND	0%	3%	--	--	100%	67%	69%
		0	2	--	--	2	2	22
	ROCK	4%	0%	--	100%	0%	50%	94%
		1	0	--	4	0	5	17
	SAUK	0%	3%	--	100%	50%	0%	100%
		0	2	--	1	3	0	20
	VERNON	0%	0%	0%	100%	0%	100%	44%
		0	0	0	1	0	1	15

Appendix A: Highway maintenance backlog thresholds

Threshold denotes the point at which a feature becomes part of the potential maintenance workload for the next 12 months. For continuous features or features measured by the mile, this includes both sides of the road for a mile. At this point, the mile of road is backlogged for this feature. For discrete features (e.g., culverts), the measure is for the overall inventory of features. These are not safety measures.

Element	Feature	Thresholds
Pavement, asphalt	Alligator cracking	10% or more of the surface has unsealed alligator cracking (within a mile)
	Block cracking	10% or more of the surface has unsealed block cracking (within a mile)
	Edge raveling	Visible cracking is present for 10% or more of the mile
	Flushing	Flushing is present in more than small, isolated areas (within a mile)
	Longitudinal cracking	Any unsealed longitudinal cracking (within a mile)
	Longitudinal distortion	Significant distortion affects 1% or more of roadway (within a mile)
	Patch deterioration	Any patch is deteriorated enough to affect ride quality (within a mile)
	Rutting	Ruts are ¼ inch or deeper (within a mile)
	Surface raveling	The aggregate and/or asphalt binder has worn away and the surface texture is rough or pitted (within a mile)
	Transverse cracking	Any unsealed transverse cracks at least 6' in length (within a mile)
	Transverse distortion	Significant distortion affects 1% or more of roadway (within a mile)
Pavement, concrete	Distressed joints/ cracks	Distress in wheel path greater than 2 inches wide (within a mile)
	Longitudinal joint distress	Faulting or signs of distress are present (within a mile)
	Patch deterioration	Any patch is deteriorated enough to affect ride quality (within a mile)
	Slab breakup	Slab is divided into at least 2-3 large blocks, affecting 10% or more of the slab (within a mile)
	Surface distress	Any measurable surface distress is present (within a mile)
	Transverse faulting	Any measurable faulting (within a mile)
Traffic and safety devices (selected)	Centerline/edgeline markings	Line with > 20% paint missing (within a mile)
	Delineators	Missing OR not visible at posted speed OR damaged (by delineator)
	Protective barriers	Not functioning as intended (linear feet of barrier)
	Other signs (emergency)	Missing OR not visible at posted speed (by sign)
	Other signs (routine)	Beyond service life (by sign)
	Raised pavement markers	Missing OR damaged (by RPM)
	Regulatory/warning signs	Missing OR not visible at posted speed (by sign)
	Reg./warning signs (routine)	Beyond service life (by sign)
Special pavement markings	Missing OR not functioning as intended (by marking)	

Element	Feature	Thresholds
Shoulders	Cracking	200 linear feet or more of unsealed cracks > ¼ inch (by mile)
	Cross-slope	200 linear feet or more of cross-slope at least 2x planned slope with the maximum cross slope of 8% (by mile)
	Drop-off/ buildup	200 linear feet or more with drop-off or build-up > 1.5 inches (by mile)
	Erosion	200 linear feet or more with erosion >2 inches deep (by mile)
	Hazardous Debris	Any items large enough to cause a safety hazard (by mile)
	Potholes/ raveling	Any potholes OR raveling > 1 square foot by 1 inch deep (by mile)
Drainage	Culvert	Culverts that are >25% obstructed OR where a sharp object-e.g., a shovel-can be pushed through the bottom of the pipe OR pipe is collapsed or separated (by culvert)
	Curb & gutter	Curb & gutter with severe structural distress OR >1 inch structural misalignment OR >1 inch of debris build-up in the curb line (by linear feet of curb & gutter)
	Ditches	Ditch with greater than minimal erosion of ditch line OR obstructions to flow of water requiring action (by linear feet of ditch)
	Flumes	Not functioning as intended OR deteriorated to the point that they are causing erosion (by flume)
	Storm sewer system	Inlets, catch basins, and outlet pipes with >=50% capacity obstructed OR <80% structurally sound OR >1 inch vertical displacement or heaving OR not functioning as intended (by inlet, catch basin & outlet pipes)
	Drains	Under- and edge-drains with outlets, endwalls or end protection closed or crushed OR water flow or end protection is obstructed (by drain)
Roadsides	Barriers	Noise barrier or retaining wall not functioning as intended (by LF of barrier)
	Fences	Fence missing OR not functioning as intended (by LF of fence)
	Litter	Any pieces of litter on shoulders and roadside visible at posted speed, but not causing a safety threat. (by mile)
	Mowing	Any roadside has mowed grass that is too short, too wide or is mowed in a no-mow zone (by mile)
	Mowing for vision	Any instances in which grass is too high or blocks a vision triangle (by mile)
	Noxious weeds	Any visible clumps (by mile)
	Woody vegetation control	Any instances in which a tree is present in the clear zone OR trees and/or branches overhang the roadway or shoulder creating a clearance problem (by mile)
	Woody vegetation control for vision	Any instances in which woody vegetation blocks a vision triangle (by mile)