

☛ 07hr_AC-Fo_Misc_pt03



☛ Informational hearing: Logging transportation

(FORM UPDATED: 08/11/2010)

WISCONSIN STATE LEGISLATURE ... PUBLIC HEARING - COMMITTEE RECORDS

2007-08

(session year)

Assembly

(Assembly, Senate or Joint)

Committee on Forestry...

COMMITTEE NOTICES ...

- Committee Reports ... **CR**
- Executive Sessions ... **ES**
- Public Hearings ... **PH**

INFORMATION COLLECTED BY COMMITTEE FOR AND AGAINST PROPOSAL

- Appointments ... **Appt** (w/Record of Comm. Proceedings)
- Clearinghouse Rules ... **CRule** (w/Record of Comm. Proceedings)
- Hearing Records ... bills and resolutions (w/Record of Comm. Proceedings)
(**ab** = Assembly Bill) (**ar** = Assembly Resolution) (**ajr** = Assembly Joint Resolution)
(**sb** = Senate Bill) (**sr** = Senate Resolution) (**sjr** = Senate Joint Resolution)
- Miscellaneous ... **Misc**

* Contents organized for archiving by: Stefanie Rose (LRB) (July 2013)



Wisconsin Department of Transportation

www.dot.wisconsin.gov

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Governor

Frank J. Busalacchi
Secretary

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May 16, 2007

The Honorable Jerry Petrowski
Wisconsin State Representative
Chair, Assembly Committee on Transportation
11 North, State Capitol
Madison, WI 53708

The Honorable Donald Friske
Wisconsin State Representative
Chair, Assembly Committee on Forestry
312 North, State Capitol
Madison, WI 53708

Dear Chairpersons Petrowski and Friske:

At the recent joint committee meeting to discuss transportation issues related to the forest products industry, questions were raised about how to reduce the number of bridges that are load restricted under the current law. The Department had indicated that the lack of axle spacing requirements in that portion of the law affected the impacts of these loads on bridges and resulted in the state posting some additional bridges.

A change in law that would reduce the impact of loads on bridges by requiring compliance with the Federal Bridge Formula, would greatly reduce the number of bridges that would need to be posted for gross loads not exceeding 45 tons on the State highway system. In fact, in analyzing the bridges on the state system, a change to require compliance with the axle spacing and weight limits as determined using the Federal Bridge Formula would eliminate the need to post all but four state maintained bridges of the group of 57 that had been identified as inadequate to handle these loads in the absence of the axle spacing requirement. None of those four bridges remaining carry state highway traffic, but are state maintained bridges carrying local roads over state maintained freeways.

Our analysis was done based on compliance with the Federal Formula B criteria that include a maximum single axle weight of 20,000 pounds, maximum tandem axle combined weight of 34,000 pounds, and a maximum 41,000 pounds for a tridem axle combination. The maximum 6-axle vehicle weight of 94,000 pounds and a 7-axle vehicle maximum weight of 98,000 pounds was used for this analysis.

As we suggested at the hearing, adding the axle spacing and weight limit requirements to the law would provide benefits by reducing the number of bridges that would have to be restricted for gross vehicle loads. That results in fewer route disruptions. It also greatly reduces the impact of the heavier gross loads on bridges, avoiding accelerated stress and the need for additional investments in bridges to accommodate those higher impact loads.

Enclosed with this letter is a description of the analysis of the bridges that had been posted as a result of the changes in loads allowed under Act 167. The attachment

Representatives Petrowski and Friske
May 16, 2007
Page 2 of 2

includes a map showing the location of the four bridges that would remain restricted for gross loads exceeding 90,000 pounds and the detail showing that each of those four carry local traffic.

As part of the analysis of the effects should the law be changed to require compliance with axle spacing and weight limits, we also considered a specific truck configured with eight axles and proper spacing and a maximum gross vehicle load of 108,000 pounds. This configuration would only result in the need to post one additional structure on the State highway system, in this case a bridge carrying State Highway 85 over Bear Creek in Pepin County. A map is provided to display this information as well. The potential to provide greater efficiency by allowing eight axle trucks, with specific configurations that limit impacts to bridges, may be a useful tool long term for the industry. The department is ready to consider how such an option could best be designed should you wish to discuss this option in the future.

Overall, our analysis confirms the benefits of imposing axle spacing requirements. Adding the axle spacing and weight limits reduced the number of state maintained bridges that required posting at 45 tons by over 90%. The list of 57 state maintained bridges that required posting without the axle limits are provided in the attached map and listing as a comparison with the four remaining after assuming the axle based limits. While we don't have the information to determine how the change would affect individual local bridges, we believe there would be a large number of local bridges that would not require posting should the axle spacing and weight requirements be added to state law.

Should there be a desire to establish the axle spacing requirements in order to reduce bridge limitations or costs to the highway system, we have provided some language to achieve that objective. The proposed language would require compliance with the Bridge Formula weight limits and is provided in the final attachment to this letter.

Thank you for the opportunity to appear before the Joint Committees and to provide this follow up information about a possible approach to reduce the number of bridge postings. This change could provide benefits more quickly than other approaches that would require improvements to potentially a large number of bridges.

Sincerely,



Christopher P. Klein
Executive Assistant

Enclosures

cc: Clerks of the Committees on Transportation and Forestry
Members of the Assembly Committees on Transportation and Forestry

LAST 50 LOADS INTO JTC

Date	Ticket#	Gross Weight	Tare Weight	Net Weight	Volume	% Over
4/23/07	73147	76,280.00	37,140.00	39,140.00	19.57	
4/23/07	73149	79,120.00	34,880.00	44,240.00	22.12	
4/23/07	73150	77,400.00	31,960.00	45,440.00	22.72	
4/23/07	73151	57,160.00	20,500.00	36,660.00	18.33	
4/24/07	73153		45,780.00	40,100.00	20.05	-7.35% 1.0735
4/24/07	73154		34,920.00	48,120.00	24.06	-3.80% 1.038
4/24/07	73155	79,900.00	38,200.00	41,700.00	20.85	
4/24/07	73157	80,480.00	41,220.00	39,260.00	19.63	-0.60% 1.006
4/24/07	73158		38,600.00	43,420.00	21.71	-2.53% 1.02525
4/24/07	73160	74,520.00	33,280.00	41,240.00	20.62	
4/24/07	73161		41,120.00	42,160.00	21.08	-4.10% 1.041
4/24/07	73162	80,700.00	38,480.00	42,220.00	21.11	-0.88% 1.00875
4/25/07	73163		40,880.00	41,240.00	20.62	-2.65% 1.0265
4/25/07	73164	78,080.00	37,160.00	40,920.00	20.46	
4/25/07	73165	79,600.00	38,220.00	41,380.00	20.69	
4/25/07	73167	78,720.00	34,900.00	43,820.00	21.91	
4/25/07	73168	80,680.00	38,100.00	42,580.00	21.29	-0.85% 1.0085
4/25/07	73169	80,940.00	41,320.00	39,620.00	19.81	-1.17% 1.01175
4/25/07	73170	79,940.00	38,660.00	41,280.00	20.64	
4/25/07	73171	80,760.00	33,820.00	46,940.00	23.47	-0.95% 1.0095
4/25/07	73172	80,220.00	41,180.00	39,040.00	19.52	-0.28% 1.00275
4/26/07	73173		38,500.00	43,200.00	21.60	-2.13% 1.02125
4/26/07	73175	80,020.00	38,400.00	41,620.00	20.81	-0.03% 1.00025
4/26/07	73176	74,780.00	34,000.00	40,780.00	20.39	
4/26/07	73177	80,420.00	37,700.00	42,720.00	21.36	-0.52% 1.00525
4/26/07	73178	79,420.00	37,020.00	42,400.00	21.20	
4/26/07	73179	78,100.00	33,560.00	44,540.00	22.27	
4/26/07	73180	79,000.00	37,640.00	41,360.00	20.68	
4/26/07	73181	78,900.00	38,160.00	40,740.00	20.37	
4/26/07	73182	74,760.00	38,580.00	36,180.00	18.09	
4/26/07	73183	55,780.00	20,300.00	35,480.00	17.74	
4/26/07	73184	80,440.00	40,860.00	39,580.00	19.79	-0.55% 1.0055
4/26/07	73185	77,280.00	36,940.00	40,340.00	20.17	
4/26/07	73186	80,140.00	38,580.00	41,560.00	20.78	-0.17% 1.00175
4/26/07	73187		40,800.00	40,460.00	20.23	-1.57% 1.01575
4/27/07	73188	79,280.00	34,860.00	44,420.00	22.21	
4/27/07	73189	77,600.00	38,360.00	39,240.00	19.62	
4/27/07	73190	78,820.00	34,740.00	44,080.00	22.04	
4/27/07	73191	76,640.00	38,380.00	38,260.00	19.13	
4/27/07	73192	78,320.00	37,020.00	41,300.00	20.65	
4/27/07	73193		41,280.00	41,020.00	20.51	-2.88% 1.02875
4/27/07	73194		38,160.00	42,900.00	21.45	-1.33% 1.01325
4/27/07	73195		36,980.00	44,520.00	22.26	-1.88% 1.01875
4/27/07	73196	78,840.00	37,280.00	41,560.00	20.78	
4/27/07	73197		41,100.00	40,780.00	20.39	-2.35% 1.0235
4/27/07	73198	73,700.00	38,180.00	35,520.00	17.76	
4/27/07	73199	80,520.00	38,020.00	42,500.00	21.25	-0.65% 1.0065
4/30/07	73300	63,800.00	38,440.00	25,360.00	12.68	
4/30/07	73301	79,780.00	34,820.00	44,960.00	22.48	
4/30/07	73302	78,980.00	33,780.00	45,200.00	22.60	
4/30/07	73303	76,960.00	36,860.00	40,100.00	20.05	
		3,992,820.00	1,889,620.00	2,103,200.00	1,051.60	
		79,856.40	37,792.40	42,064.00	21.03	

Notes: 22 Loads over 80,000 (44%)

Of those 22, 8 were more than 5% over (16% of total) and 11 were over by less than 1000 lbs (22% of total)

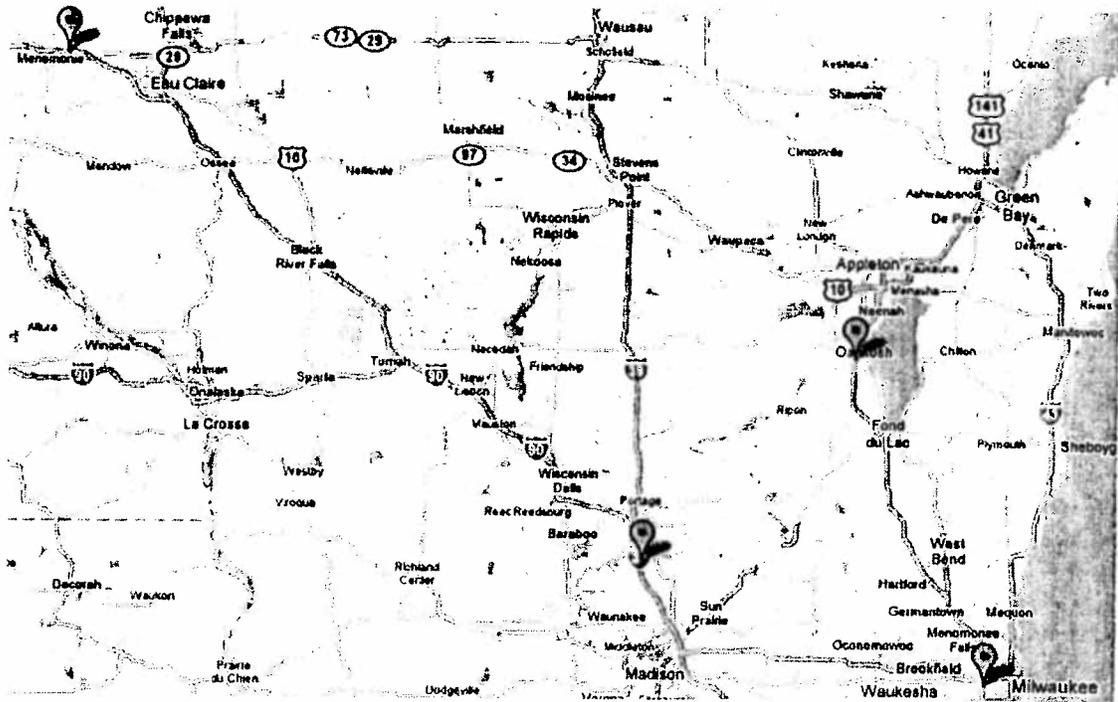
Bureau of Structures (Act 167) Analysis of Load Postings on Bridges

- The 57 total 45-ton postings resulting from ACT 167 legislation would be reduced to 4 total 45-ton postings if the following guidelines were used:
 - 6 or 7 axle vehicles with the below weight restrictions
 - Conformance to Federal Formula B Guidelines including but not limited to:
 - 20k single axle
 - 34k tandem axle
 - 41k tridem axle
 - Max 6 axle vehicle weight = 94,000 lbs
 - Max 7 axle vehicle weight = 98,000 lbs
- The four postings would be:
 - B-70-34 (CTH K / W. 20th Avenue over USH 41) in Oshkosh
 - B-40-125 (W. Lincoln Avenue over IH 894) in West Allis
 - B-17-43 (CTH E over IH 94) near Menomonie
 - B-11-125 (Smokey Hollow Road over IH 90/94 WB) near Poynette
- If 8 axle 108,000 lbs truck was proposed, the following additional bridge would need to be posted:
 - B-46-496 (STH 85 over Bear Creek) near Durand

Attached you will find 3 maps that include:

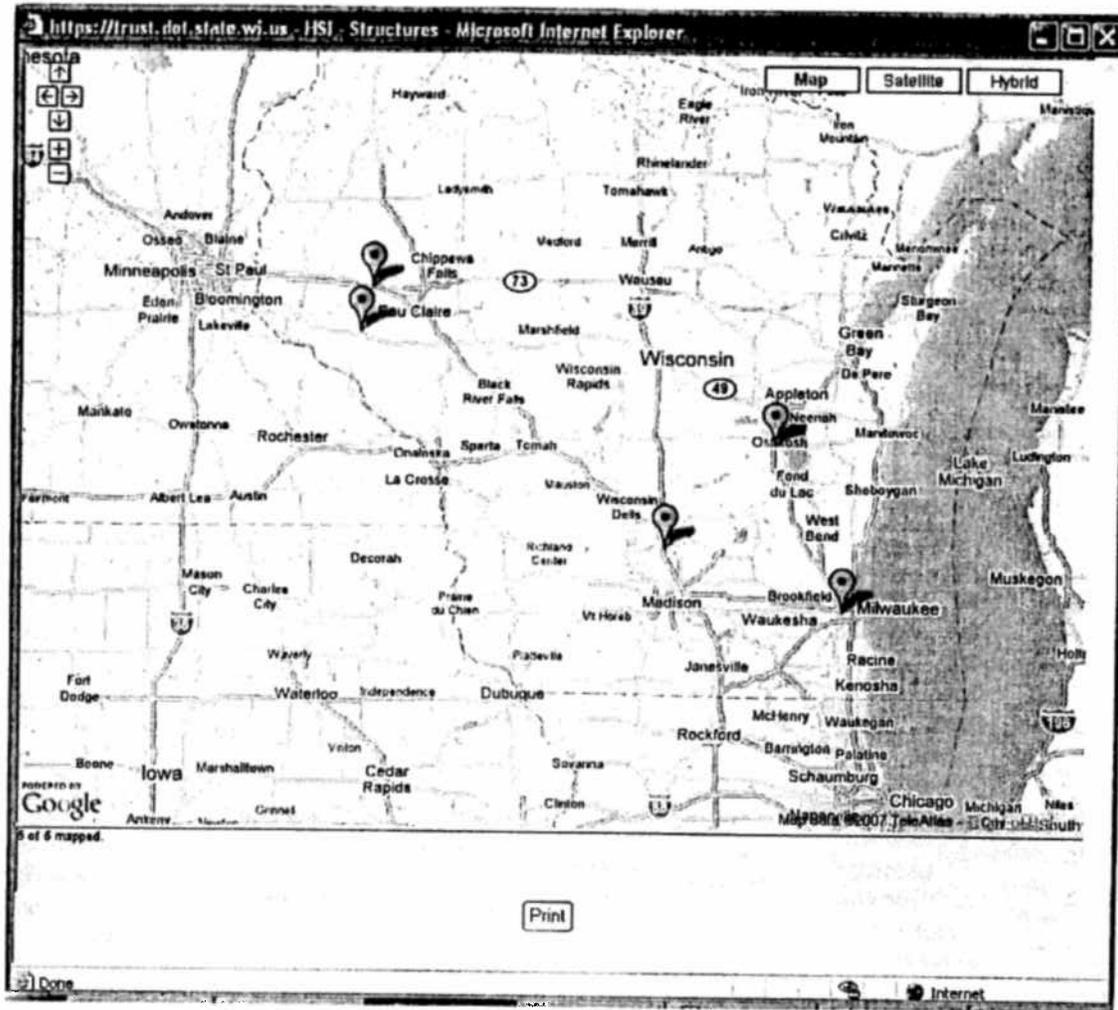
1. 7 Axle 98 resulting posted bridges (4 Bridges)
2. 8 Axle 108 resulting posted bridges (5 Bridges)
3. Original 57 posted structures

7 Axle Posting 98 K – 4 Bridges



STRUCTURE	COUNTY	FEATURE ON	FEATURE UNDER	BUILT	TYPE
B110025	Columbia	Smokey Hollow Road	IH 90	1984	Prestressed Deck Girder (3 span)
B170043	Dunn	CTH E	IH 90/94	1958	Prestressed Deck Girder (4 span)
B400125	Milwaukee	Lincoln Avenue	IH 894	1963	Steel Deck Girder (4 span)
B700034	Winnebago	CTH K	USH 41	1958	Prestressed Deck Girder (4 span)

8 Axle Posting 108K -5 Bridges



STRUCTURE	COUNTY	FEATURE ON	FEATURE UNDER	BUILT	TYPE
B110025	Columbia	Smokey Hollow Road	IH 90	1984	Prestressed Deck Girder (3 span)
B170043	Dunn	CTH E	IH 90/94	1958	Prestressed Deck Girder (4 span)
B400125	Milwaukee	Lincoln Avenue	IH 894	1963	Steel Deck Girder (4 span)
B700034	Winnebago	CTH K	USH 41	1958	Prestressed Deck Girder (4 span)
B460496	Pepin	STH 85	Bear Creek	1938	Steel Deck Girder (4 span)

B110025	1	11	SMOKEY HOLLOW RD	IH 90 WB-IH 94 WB	1984
B110070	1	11	GROTZKE RD	USH 51-IH 39	1966
B120170	5	12	STH 171	JOY HOLLOW CREEK	1931
B120831	5	12	STH 131-PINE ST	KICKAPOO RIVER	1922
B130100	1	13	HOEPKER RD	IH 90-IH 94	1960
B130101	1	13	PORTAGE RD	IH 90-IH 94	1961
B130479	1	13	STH 19	TOKEN CREEK	1939
B170040	6	17	WILSON ST	IH 94	1958
B170041	6	17	PARKWAY DR	IH 94	1958
B170043	6	17	E	IH 94	1958
B170049	6	17	H HOLLY AVE	IH 94	1959
B180031	6	18	LOWE CREEK RD	IH 94	1965
B180067	6	18	RYDER RD	IH 94	1966
B260002	7	26	STH 182	BEAR RIVER	1948
B270047	5	27	HAUGEN RD	IH 94	1966
B270052	5	27	GILBERTSON RD	IH 94	1966
B270808	5	27	STH 95	SISSON CREEK	1942
B280046	1	28	N	IH 94	1964
B290024	4	29	24TH AVE	IH 90-IH 94	1964
B290026	4	29	CEMETARY RD	IH 90-IH 94	1964
B290031	4	29	N	IH 90-IH 94	1964
B290039	4	29	MEYER RD	IH 90-IH 94	1964
B290041	4	29	43RD ST W	IH 90 EB-IH 94 EB	1964
B290042	4	29	43RD ST W	IH 90 WB-IH 94 WB	1964
B290055	4	29	KEICHINGER RD	IH 90-IH 94	1964
B380513	3	38	USH 141-MAIN ST	WAUSAUKEE RIVER	1925
B380902	3	38	STH 64	PESHTIGO RIVER	1931
B400125	2	40	W LINCOLN AVE	IH 894-USH 45	1963
B410068	5	41	CORTLAND AVE	IH 94	1968
B410389	5	41	STH 16-STH 71-WISC AVE	SOO LINE RR	1939
B450056	2	45	SILVER BEACH RD	IH 43-STH 32	1974
B470982	6	47	STH 35	TRIMBELLE RIVER	1962
B490028	4	49	BARBARAS LANE	USH 51-IH 39	1968
B520856	5	52	STH 130-STH 133	WISCONSIN RIVER 05	1932
B530145	1	53	USH 51	ROCK RIVER	1938
B530945	1	53	STH 213	BR ALLEN CREEK	1930
B550041	6	55	CTH J	IH 94	1958
B550610	6	55	USH 63	RUSH RIVER	1939
B560034	1	56	A	IH 90-IH 94	1960
B610035	5	61	STH 93	ADAMS CREEK	1957
B610948	5	61	USH 53-MAIN ST	BEAVER CREEK	1925
B640008	2	64	STH 120	COMO CREEK	1919
B640027	2	64	TOWN LINE RD	USH 12	1965
B640039	2	64	SPRINGFIELD RD	USH 12	1968
B640210	2	64	STH 36	BR WHITE R	1924
B640665	2	64	STH 36	ORE CREEK	1929

B680427	4	68	STH 49	S BR LITTLE WOLF RIVER	1938
B680739	4	68	STH 54	BR LITTLE WOLF RIVER	1941
B700034	3	70	K W 20TH AVE	USH 41	1958
B700061	3	70	USH 10-STH 441	LIT LAKE BUTTE DE MORTS	1975
B700065	3	70	Y SUNNYVIEW RD	USH 41	1975
B700066	3	70	GG	USH 41	1975

The purpose of the draft is to require trucks transporting raw forest products in vehicle combinations to not exceed the maximum gross weight on two or more consecutive axles as determined using the Bridge Gross Weight Formula, as defined in 23 CFR 658.5 and 23 CFR 658.17(e) and (f), and in no case to exceed the maximum gross vehicle weight of 98,000 pounds.

348.27 (9m) (a) 4. of the statutes is amended to read:

348.27 **(9m)** (a) 4. Raw forest products in vehicle combinations that exceed the maximum gross weight limitations under s. 348.15 (3) (c) by not more than 18,000 pounds if the vehicle combination has 6 or more axles and the gross weight imposed on the highway by the wheels of any one axle of the vehicle combination does not exceed 18,000 pounds, and if the maximum weight of any set of axles complies with the limits determined using the Bridge Gross Weight Formula, as defined in 23 CFR 658.5 and 23 CFR 658.17(e) and (f), except that the gross weight imposed on the highway by the wheels of any steering axle on the power unit may not exceed the greater of 13,000 pounds or the manufacturer's rated capacity, but not to exceed 18,000 pounds. Notwithstanding s. 348.15 (8), any axle of a vehicle combination that does not impose on the highway at least 8 percent of the gross weight of the vehicle combination may not be counted as an axle for the purposes of this subdivision. A permit under this subdivision is not valid for any maximum gross vehicle weight exceeding 98,000 pounds, and on any interstate highway designated under s. 84.29 (2), any highway or bridge with a posted weight limitation that is less than the vehicle combination's gross weight, and any part of the state trunk highway system that the department has designated by rule as a route on which a permit issued under this subsection is not valid.



VILAS COUNTY HIGHWAY DEPARTMENT



P.O. BOX 1888
EAGLE RIVER, WISCONSIN 54821
715/470-4641

INVENTORY OF VILAS COUNTY ROADS AFFECTED BY 98K LOAD LIMITS

Hwy W from US. 51 to HWY B	15.3 mi.
Hwy B from U.S. 45 to M-64	31 mi.
Hwy O from Hwy W to Gogebic 519	5.4 mi.
Hwy J from Hwy W to Iron Co. line	2.2 mi.
Hwy A from Hwy 17 to Forest Co. line	9.8 mi.
Hwy E from U.S. 45 to Hwy I7	<u>8.6mi.</u>
	72.3 mi.

Estimated cost to re pave 3" to 50K limit \$200,000 mi \$14,460,000

Estimated cost to repave 4" with polymer & foam base to 98k limit \$300,000 mi. \$21,690,000

Town roads are 2 1/4" to carry a much lesser limit.

Vilas County has 14 bridges within the county. Nine belong to the county. None of the county bridges are built to a 98K standard. Most are to less than 50K.

The knowledge of these facts notes liability of the lack of posting.

I have talked with forest product haulers who have said that the enforcement is so little that they can load way over 98K (125 or more) and make several loads with out anyone lifting a wheel. When caught the penalty is so little that the cost out weighs the "short load". Others say the weight of the "extra" axle weight puts them dangerously close to being over weight under spring load limits.

If on of these overweight trucks has to make an emergency stop as he enters a bridge that could hold the weight under normal circumstances it could cause a terrible accident that collapses the bridge.

Adding mill scale receipts as requirement to driver logs could solve the problem.

For pavements there really isn't a "load rating" (this term is used for bridges). The term "load rating" implies that there is a maximum load that can be applied to a structure before it fails (collapses). To give you a response to the county board member, I made some assumptions and did some pavement structural analysis.

Assumptions:

- **Truck configuration is a WisDOT 3S-2 (a steer axle, dual drive axles, and dual trailer axles)**

- **Legal truck weight (Max) 80,000 lbs. (18,000 steer, 31,000 dual drive, and 31,000 dual trailer)**
- **Overweight truck weight 100,000 lbs. (18,000 steer, 41,000 dual drive, and 41,000 dual trailer)**

- **Subgrade conditions are consistent (same subgrade conditions for both trucks)**

- **Ran analysis for poor subgrade ($M_R = 2000$ psi) and moderate subgrade ($M_R = 5000$ psi)**
- **Analysis showed similar trend, so final "Damage Ratio Factor" can be applied for both poor and moderate subgrades**

- **HMA and 8" Base engineering properties are consistent**

- **HMA $E^* = 800,000$ psi**

HMA is hot mix asphalt. E^* is elasticity.

- **Base coarse ($M_R = 15,000$ psi)**

Mg is mega grams

Analysis:

- Used elastic layer analysis for the different scenarios
- Developed “Damage Factor” for each truck (steer + drive dual + trailer dual)
- “Damage Factor” is the amount of damage that the truck does (Damage Factor = 1.0 is fatigue pavement failure)
- 1 / Damage Factor is the number of accumulated loadings of the truck to reach a Damage Factor = 1.0

Damage Factor = failure

- “Damage Ratio Factor” is the ratio of 100K Truck Damage Factor to the 80K Truck Damage Factor

Results: (tabulated values are rounded)

Truck	Accum.	80K Truck	Accum.	100K
		Structure	Damage Factor	Loadings
		<u>Damage Factor</u>	<u>Loadings</u>	<u>Damage Ratio Factor</u>
0.0000952	2” HMA	0.0000722	13,850	
				1.3
	10,504			
0.0000355	3” HMA	0.0000255	39,277	
				1.4
	28,185			
0.0000014	4” HMA	0.0000009	105,064	
				1.45
	72,685			

Interpretation:

For a given HMA pavement structure (HMA over 8" Base), a 100K Truck does "Damage Ratio Factor" value times the damage as an 80K Truck under the same conditions.

Example: For a 3" HMA pavement, a 100K truck does 1.4 times the damage as the 80K truck

Alternate Analysis:

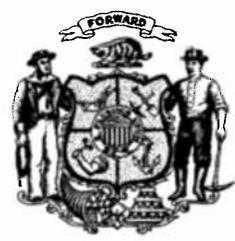
To get ~the same structural performance from a 2" HMA structure loaded by 80K trucks, a 2.25" HMA structure is required when loaded with 100K trucks.

To get ~the same structural performance from a 3" HMA structure loaded by 80K trucks, a 3.5" HMA structure is required when loaded with 100K trucks.

To get ~the same structural performance from a 4" HMA structure loaded by 80K trucks, a 4.5" HMA structure is required when loaded with 100K trucks.



WISCONSIN STATE LEGISLATURE



Wash County Corp counsel says following Act 167, Shorter bridges need examination and posting necessary

- ① \$ for bridges
- ② Enforcement

Jim

Posting System does not account for size or axle.

- Prefers ~~XXXXX~~ straight posting
- Keep it simple

Septic & Milk can run heavy in break-up.

Jay: Bridges more susceptible in July than Feb.

Jim: Disagreed with some, not all.

DOT

Kevin Chesnick, Scott Becker, Dave Vieth, Chris Klein

Damage is done by ① Law breakers ② Poorly configured trucks
Federal bridge formula should have been incorporated.

- 3230
- ① No axle spacing requirements
 - ② Violations occurring in both 5 & 6 axle trucks
 - ③ DOT believes WI as competitive as MI & MN

Changes need to be pragmatic

One Way Bridges

- Analysis of ACT 67 incorporated one way trips on state system... resulting in 50% fewer
- DOT assumed worst case scenario, than reality

Shorter Bridges

Software will only look @ angles & spacings, not length

All DOT bridges below 45 ton were posted pre-Act 67

DOT has more \$ to do analyses

5,000 bridges analyzed

2,000 bridges were most at risk to reduce County work

41 State Bridges could be relieved.

Return to federal bridge formula

6 axes & 9k lbs do not mesh w/ federal requirements

Matt Stehr & Mark Servi

① One Way bridges: Counties willing to discuss, but nervous

- Must be enforceable, if done

② Enforcement

- Not being discussed: Deterrence

- Want more deterrence

- More Patrol

- Joint letter sent out to DAs & Judges in general

- Judges wrote back saying it was ex parte communication

WCAAA

All countries affected have done assessments, no postings.

- Some postings have been done... based on engineering, not politics
- Will look to DOT re: year round 98K
- Willing to look @ Priority routes... will work w/ anyone... industry or govt.

AB 238, Leg Council, re: DOT study of cost, benef. of weight limits... WCA, WCAA agree.

Fingerpointing going on... ^{WCA} not the problem, willing to be part of the solution

Mark: Paper enforcement won't fix bridges
Doesn't believe we can legislate away the responsibility of countries to Federal govt.
MS: Not willing to accept the risk

Friske

- uniform ^{paper enforcement} data collection, variety of industries

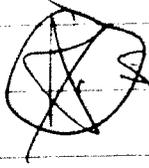


figure out proper configuration

- eliminate Act 167

- Two weight structures

Class A 160,000 lbs

Class B 80,000 lbs