INCREASING INTERSTATE LEGAL TRUCK WEIGHTS
Presentation Outline

- Review 2009 Benefits
- Legal Truck Weight Increases - States
- Impact of Proposed Legal Truck Weights
- A Lesson for WisDOT – Zoo Interchange
- Discussion - What Next?
Review 2009 Benefits
New Orleans SCOBS - 2009

- Safety
  - Similar operational characteristics to 5-axle
  - Reduced VMT lowers accident exposure

- Fuel consumption and emissions reduced 17% per ton-mile after accounting for MPG loss

- Lower VMT will produce a small but measurable reduction in congestion

- Reduces transportation costs, lowering overall U.S. manufacturing, agricultural and retail costs
External Benefits for Increase: Wisconsin Truck Study - 2009

- Congestion
- Pavement
- Safety
- Emission – “Green”
- Transport - Economy
<table>
<thead>
<tr>
<th>Federal Bridge Formula</th>
<th>Configuration</th>
<th>User Benefits</th>
<th>Public Benefits &amp; Impacts</th>
<th>Net Benefits</th>
</tr>
</thead>
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<tr>
<td></td>
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<td>Transport Savings</td>
<td>Pavements</td>
<td>Safety</td>
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<td>Y Baseline</td>
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<td>19.91</td>
<td>4.43</td>
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<td>0.53</td>
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<tr>
<td>Y 8a D 108</td>
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<td>16.76</td>
<td>2.90</td>
<td>1.65</td>
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<td>127.94</td>
<td>10.19</td>
<td>9.40</td>
<td>11.03</td>
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<tr>
<td>N 6a STT 98</td>
<td>14.61</td>
<td>0.32</td>
<td>0.68</td>
<td>0.26</td>
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</tbody>
</table>

All Values in $ Millions per Year (assumes operation on Interstates)

10 Times Benefit
Legal Truck Weight Increases: States
Current Relevant State Activities

**Illinois**
- **Increase:** From 73.28k to 80k for everything
- **Purpose:** Uniformity with current federal limits

**Iowa**
- **Increase:** From 80k to 90k for 6-axle vehicles; to 96k for 7-axle vehicles
- **Purpose:** Increase hauling efficiency, uniformity of state legislation
Florida
- **Increase:** From 80k to 88k for divisible loads, by permit only.
  Legislation had been trying to increase from 80k to 88k without permit.
- **Purpose:** Trucking industry’s desire to increase hauling efficiency

Maine
- **Increase:** For 6-axle trucks, 80k to 100k on the Interstate
- **Purpose:** 1-year pilot study; an attempt to get the trucks off of local roads and bridges

Vermont
- **Increase:** For 6-axle trucks, 80k to 100k on the Interstate
- **Purpose:** 1-year pilot study; an attempt to get the trucks off of local roads and bridges
A Lesson for WisDOT: Zoo Interchange
“What is your state’s level of confidence that your truck weight enforcement program adequately deters illegal overweight truck traffic at posted bridges?”

- Low: 21 states
- Very Low: 10 states
- Medium: 16 states
- High: 2 states
Wisconsin Zoo Interchange: Milwaukee (Busiest in State)
Zoo Interchange Maintenance: Assessment

- July 2009: As Zoo interchange funding is deferred, DOT performs assessment study of corridor focus on bridges, pavement, and safety
- July 2009: Posting of 3 concrete box girders in interchange core
- August 2009: Complex inspection, analysis and repair investigation
- September 2009: Recommendation for Super Replacement
- October 2009: ABC Work shop
- December 2009: Emergency contract and parallel alignment construction
Install Virtual Weigh in Motion Systems (VWIMS)
Two bridges had 98 percent compliance to posting signs of 40 and 35 tons.

Unfortunately, the worst bridge with a 30 ton posting had a sizeable number of overweight vehicles:

- 22,000 vehicles over the posting sign
- Over 2,000 vehicles a week
- Many vehicles over 120,000 lbs
Wisconsin State Patrol Performed an Enforcement Blitz

- 3 week operation - March 7 - 21
- $50,000 per week = 50 citations per week
- Several inspector portable stations and use of VWIMS
Result: No Real Effect

[Graph showing number of vehicles vs. week number with lines for > 60 Kips, > 70 Kips, and > 80 Kips.]

START BLITZ

5/26/2010  
SCOBS - Sacramento
Action: Re-Inspect Bridge B-40-100
Result: Unfavorable

- Several additional shear cracks
- Crack propagation 3-6 inches in several load carrying sensitive areas
Action: Close Bridge - Busiest Interchange in State

Cracks force abrupt closure of Zoo Interchange bridge

State authorities closed the bridge that carries traffic northbound on Highway 45 through the Zoo Interchange shortly before 3 a.m. Friday, fearing that overweight trucks could collapse the deteriorating span. Roughly 40,000 vehicles a day will be detoured off the major northbound route for nearly two months, until a replacement for the bridge can be finished.

Work on that started in January as part of an emergency project to replace three bridges found in need of immediate replacement. An inspection of the Highway 45 bridge on Thursday night revealed that cracks in the concrete supports had widened and lengthened.
Result: New Bridge Open in Less Than One Week
“What is your state’s level of confidence that your truck weight enforcement program adequately deters illegal overweight truck traffic at posted bridges?”

Wisconsin is a resounding VERY LOW!
Impact of Proposed Legal Truck Weights
H.R. 1799 (Michaud) - 97 Kip Vehicle 2009

- (A) 6 axles
- (B) single axle 20,000 pounds
- (C) tandem axle 34,000 pounds
- (D) 3 or more axles 51,000 pounds
- (E) the gross weight 97,000 pounds

Does not meet Federal Formula B
Six-Axle Tractor-Trailer
97,000 Pound GVW
2009 Safe and Efficient Vehicle
Maine Vehicle

- 100 kip vehicles
- 1 year pilot to get vehicles off local roads and on to interstate
Six-Axle Tractor-Trailer
100,000 Pound GVW
Maine Vehicle
TRB Vehicle – 97 Kip 1998

- Study vehicle used for effects on NBI
- Moment analysis model uses effects
- Estimated costs and number of posted vehicles
- Does not follow Formula B
Six-Axle Tractor-Trailer
97,000 Pound GVW
1998 TRB Vehicle
Wisconsin DOT 98 Kip Vehicle

- Wisconsin truck study 2009 presented to legislation
- Vehicle give most benefit (EXCEPT BRIDGE)
- Does not meet Formula B
Six-Axle Tractor-Trailer
98,000 Pound GVW
2008 Wisconsin Truck Study
<table>
<thead>
<tr>
<th>State</th>
<th>97-kip 1998 TRB Vehicle</th>
<th>100-kip Maine Vehicle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of Bridges Posted</td>
<td>Percent</td>
</tr>
<tr>
<td>Florida</td>
<td>1701</td>
<td>25.8%</td>
</tr>
<tr>
<td>Hawaii</td>
<td>570</td>
<td>76.0%</td>
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<tr>
<td>Illinois</td>
<td>187</td>
<td>2.4%</td>
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<tr>
<td>Massachusetts</td>
<td>28</td>
<td>0.6%</td>
</tr>
<tr>
<td>Michigan</td>
<td>Limited</td>
<td>~0</td>
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<tr>
<td>New Jersey</td>
<td>23</td>
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<td>New Mexico</td>
<td>67</td>
<td>2.3%</td>
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<tr>
<td>New York</td>
<td>70</td>
<td>0.4%</td>
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<tr>
<td>Ohio</td>
<td>134</td>
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<tr>
<td>Oregon</td>
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<tr>
<td>Pennsylvania</td>
<td>200</td>
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<tr>
<td>Virginia</td>
<td>1,095</td>
<td>10.1%</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>4</td>
<td>.11%</td>
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</table>
Observations

- **TRB –**
  - Range: 0.4 – 76.0 percent
  - Average: 5.6 percent
  - Total Number: 3642 bridges

- **Maine Vehicle –**
  - Range: 1.0 – 87.0 percent
  - Average: 13.8 percent
  - Total Number: 8448 bridges
Maine vehicle has greater impact than TRB vehicle!

States are using quite different posting procedures!
Discussion – What’s Next?
Bridge Community: Strong Message

- Bridge Engineers say a resounding NO to heavier loads on interstate! (State Bridge Engineers Survey 2010)
  - NO – 40
  - Yes – 9
Recent AASHTO Survey suggest most states do not even contact bridge office for proposed legislation changes (AASHTO Survey 2007 Truck Size and Weight)

Recent legislation and industry pressure at the federal and state level
Considerations if Adopted

- Should meet Formula B (So far no proposed vehicle does meet the Formula)
- Will need funding – FUNDING, MORE FUNDING
  - Replacement
  - Strengthening
    - UK example: 9 year EU exemption to strengthen / replace 2000 bridges at a cost of ~ $423 million.
- Trucking industry benefits greatly reduced if posting thousands of bridges severely limits commerce routes.
Considerations if Adopted

- What about risks? Is there more potential risk when posting bridges?
- Do heavier loads on bridges accelerate deterioration on bridges? (California case study? Others?)
One Year Pilot Program: Maine Truck

- What can realistically be learned from 1 year pilot program?
  - Instrumentation and Monitoring?
- Should FHWA reach out to bridge community for support?
- How about long-term bridge and other research programs?
Last Thoughts

- We need to educate
- We need to quantify effects
- We need to identify risks
Questions...