Incorporating Oversize/Overweight (OSOW) Data into Transportation Planning

Tuesday, May 16, 2017
2:00-3:30 PM ET
Purpose
Discuss NCHRP Report 830: Multistate, Multi-modal, Oversize/Overweight Transportation.

Learning Objectives
At the end of this webinar, you will be able to:
• Understand OSOW freight movement
• Identify the potential uses of OSOW data in freight planning
NCHRP Research Report 830: Multistate, Multi-modal, Oversize/Overweight Transportation
NCHRP is a State-Driven Program

- Sponsored by individual state DOTs who
  - Suggest research of national interest
  - Serve on oversight panels that guide the research.

- Administered by TRB in cooperation with the Federal Highway Administration.
Practical, ready-to-use results

- Applied research aimed at state DOT practitioners
- Often become AASHTO standards, specifications, guides, syntheses
- Can be applied in planning, design, construction, operations, maintenance, safety, environment
Additional NCHRP Publication Available on this Topic

- NCHRP Synthesis 476: Practices for Permitting Superheavy Load Movements on Highway Pavements

You can learn more about this publication by visiting www.trb.org
Today’s Speakers

- Shelley Latham, *Perkins STC*
- Alex Marach, *CPCS Transcom Limited*
- Bill Wondrachek, *Wisconsin Department of Transportation*
- John Fuller, *University of Iowa*
TRB - Incorporating Oversize/Overweight (OSOW) Data into Transportation Planning
Figure A-4. Permit maximum on tandem axles.
Combination of radii that allow wrong way travel on one side of the roundabout in both directions (North-South Option & West-East Option)

Mountable Curbs where possible - Inside & Outside

Width of entry/exit throats for combination

Subbase & related surface prepared to allow a tractor & trailer combination to drive over

Signage sleeved and removable. Flush when removable.
Figure A-17. Length threshold for first civilian escort on multilane roadways.
Plan ahead: MN Fishing Opener weekend OSOW travel restrictions

Oversize/overweight travel is not allowed on all state highways including interstates from 2 p.m. on Friday, May 12 until 2 a.m. Saturday, May 13 and from 2 p.m. Sunday, May 14 until 2 a.m. Monday, May 15.

Thank you.

For more OSOW permit information, visit mndot.gov/cvo/oversize.

Stay Connected with Minnesota Department of Transportation:

MnDOT’s Social Media Hub >>

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Your Challenges

HOW TO MOVE FORWARD.

No two projects are the same; regardless of similarities

Photo courtesy of: Perkins STC
SUPERLOAD: IN MISSOURI, MASSIVE TRUCKS FIND BIG OBSTACLES

Posted on April 25, 2017 | by Jacob Luecke | Leave a comment

By Jacob Luecke
jluceke@mcchamber.com
Director/Editor of Publications and Video Programming

It's just before midnight in Urbana, Missouri. Typically this is a quiet hour in this rural town. But tonight is different.

On the southern edge of Urbana, seven vehicles are stopped on Highway 65. Orange warning lights flash against the darkness.

At the center of this scene is a monstrous 220,000-pound tractor-trailer. It's carrying a white metal box roughly the size of a small house — an electrical control building destined for a substation in Oran, Missouri.

This rig is twice as long as a normal 18-wheeler. It's nearly twice as wide and stands 3 feet taller than a typical trailer. As it waits to move, the droning idle of its 600-horsepower engine blankets the other nighttime sounds.

This is a superload.

Feature video: Superloads find obstacles in Missouri

Pursuing a facelift for Missouri's old Victorians

OUR VIEW

Read the column by Dan Mehan, Missouri Chamber President and CEO.
Application of Oversize/Overweight Data to Freight Planning

Alex Marach
Senior Consultant
CPCS Transcom Inc.
May 16, 2017
Presentation Objectives

• Establish the Context
• Identify Data Availability
• Explore Opportunities
NCHRP Report 830

A “Guidebook”

Published Summer 2016

Available on TRB Website
Presentation Context

- **OSOW Freight is on the Rise**
- **Loads are Larger and Heavier**
- **OSOW Permitting is done on a State-by-State Basis**
Relevance for Freight Planning

• OSOW Freight is Critical to the Economy

• Infrastructure Impacts and Routing Impacts Performance

• Longevity of Infrastructure Decisions
Overlap between DOT and Industry

- **Public Sector** – minimize disruptions and negative impacts while promoting commerce

- **Shippers and Carriers** – minimize time, cost and promote safety and reliability
OSOW Data Availability

• **Rich Data Source from OSOW Permits**
  – Internally generated
  – Origin and destination
  – Load characteristics

• **Qualitative Sources**
  – Shipper outreach
  – Carrier outreach
  – Neighboring states
Using OSOW Data in Freight Planning

- **Understanding OSOW**
  - Typical OSOW loads
  - Frequent shippers & receivers
  - State entry and exit points
- **Identify Industry Issues and Needs**
  - Infrastructure
  - Policy
  - Regional
- **Identify Key OSOW Corridors**
Potential Outcomes

- Corridor Identification and Protection
- Infrastructure Investment Needs
  - Promote access, safety, and/or efficiency
- Policy Changes
  - Permitting or operation
- Coordination
  - Inter and Intra state
- Opportunities for Partnership
Conclusions

• The Potential to Use OSOW Data in Freight Planning is High

• High Impact of Planning (or a Lack of Planning) Activities

• Available Resources from Literature and Transportation Peer Groups
Thank You
Incorporating Oversize/Overweight (OSOW) Data into Transportation Planning

TRB Webinar
May 16, 2017

Topics
Background / History
High Routes
Tree Effort
What is OS/OW/OH?

Standard truck and OSOW size comparisons (2010-2016)

General Roadway Dimensions
- Lane width: 11-12 ft.
- Bridge height: 14 ft. 6 in. to 16 ft.

Height
- OH 95th ntile: over 25 ft.
- OH Median: 18 ft.

Width
- Standard Truck: 8.5 ft.
- OSOW Median: 12 ft.
- OSOW 95th ntile: 15 ft.

Length
- Standard Truck: 75 ft.

Exceeding maximums:
- 260 ft. (2014)
- 225 ft. (2012)
- 200 ft. (2013)
- OSOW Median: 140 ft.
**Accommodating OS/OW/OH**

- **2011**
  - Intersection design for OS/OW
  - Check Vehicles

- **2013**
  - Freight Network Map
  - Autoturn guidance
  - Check criteria

- **2015**
  - Updated flow chart
  - OSOW requirement for 3R projects

- **2016**
  - Draft OH corridors

- **2017**
  - 20-foot Monotube Structure Design
Introduction / History

• Connecting manufacturers to the Port of Milwaukee

• Opportunity to develop a statewide perspective

• High Route Freight Corridor Task Force
  • February – June 2016
Accommodating OH

Trucks of legal height are typically 13 feet 6 inches while over-height loads can reach up to 23 feet in height or higher. The standard minimum vertical clearance for height constraints are shown and will vary based on highway design.
What Did we Do?

- Using the historic permits as a starting point, we defined whether corridors can or cannot support the movement of over-height vehicles.
  1. Considered eliminating roadways if constraints currently exist.
  2. Considered adding roadways to fill the gaps.
  3. Considered corridors that support the Origin/Destination pairs.
Process

- Established Cross Divisional Task Force (DTSD Regions and Bureaus, DTIM)
- Met with BOS and BTO re Design Elements/Costs
- Developed Origin/Destination Maps with Frequently used routes.
- Worked with DTIM on cost/benefit analysis
- Multiple meeting with task force to refine map
- Created Draft Map
- Reviewed 6 year program for Projects on Corridor
- Reviewed Current Impediments on Corridor
- Developed Cost Estimates for 18-6” and 20’ Options
- Developed Cost Alternatives for Varying Implementation Strategies
Why did we do it?

- City of Milwaukee Port Issues
- Secretary’s Office Directive
- Historical Use
  - 2014-2015
    - 993 Loads >16’
    - 207 Loads > 17-6’
How We Did it.

OSOW Single Trip Permit Analysis Portal

Issue Date
From: [ ] To: [ ]

Effective Dates
From: [ ] To: [ ]

Permits to Display:
Add Permit Number

OSOW Permit Numbers
<< Add
>> Remove

GW (lbs)
From: [ ] To: [ ]

Veh Length
From: [ ] ft [ ] in
To: [ ] ft [ ] in

Veh Height
From: [ ] ft [ ] in
To: [ ] ft [ ] in

Veh Width
From: [ ] ft [ ] in
To: [ ] ft [ ] in

Customer Number
[ ]

Segment ID
[ ]

Start State
[ ] Any [ ]

End State
[ ] Any [ ]

Search Permits
Export to Excel
Export Image

No records to display
Initial Analysis

Number of Trips made by Over-Height Vehicles
15 feet 11 inches to 20 feet

Trips per Corridor
- 1 - 40
- 41 - 105
- 106 - 428
- Other Roadway Segments
Initial Analysis

Frequency of OSOW Permits Statewide
6 inch height bins

925 permits 17 ft 6 in or taller from 1/1/2010 to 12/31/2015
Top 11 Origins and their Destination Pairs
17 feet 6 inches or Greater

Legend
Number of Permits Originating Frequency of trips for O/D Pairs
1 - 12 1 - 2
13 - 32 3 - 7
33 - 73 8 - 16

Disclaimer: This map is intended for WisDOT study purposes only. Permit data is from January 1, 2010 to December 31, 2015.

Note: Most O/SOW trips linked to Michigan cross into the Upper Peninsula.
Top 10 Destinations and their Origin Pairs
17 feet 6 inches or Greater

Legend
Number of Permits Arriving Frequency for O/D Pairs
- 1 - 11
- 12 - 28
- 29 - 78
- 4 - 6
- 7 - 16

Disclaimer: This map is intended for WisDOT study purposes only. Permit data is from January 1, 2010 to December 31, 2015.
Gaps

OSOW High Clearance Routes - 10 Mile Buffer
DRAFT

Symbol Legend
- High-Routes
- High Route Connections
- High Route 10 Mile Buffer
- Interstate Highway
- US Highway
- Wisconsin Highway
- Connecting Highways
- Region Boundaries
- Bridge Structures
- Sign Structures
- Railroad Crossings
- Monotube Structures

Map of Wisconsin showing various roads and locations.

Legend:
- Chetek is a major origin for Over-height loads and is greater than 10 miles away from the nearest High Route. Potentially consider a spur route for preservation in order to provide the connection to the proposed High Routes.
- Richland Center is a major origin for Over-height loads and is greater than 10 miles away from the nearest High Route. Potentially consider a spur route for preservation in order to provide the connection to the proposed High Routes.

Number of Permits Originating:
- 1 - 12
- 13 - 32
- 33 - 73

Number of Permits Arriving:
- 1 - 11
- 12 - 28
- 29 - 78
Incremental Costs to:
Minimum Monotube Clearance from 17’-6” to 20’

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<th>Type</th>
<th>Incremental Cost</th>
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<tr>
<td>type9</td>
<td>$1,150</td>
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<td>type10</td>
<td>$1,200</td>
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<tr>
<td>type12</td>
<td>$1,925</td>
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<tr>
<td>type13</td>
<td>$2,100</td>
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Bridge Clearance from 16’ to 20’-$400,000
Full Span Overhead Sign Supports from 18’-3” to 20’-$9,000
Full Span Sign Bridge from 18’3” to 20’-$23,000*

*30% Increase on 71’ Sign Bridge
Alternatives

- **Approach**
  - Maintain existing corridors and enhance now
  - Maintain existing corridors and enhance when replaced
  - Maintain existing corridors
  - Do Nothing

- **Height**
  - 18 foot 6 inch ground clearance
  - 20 foot ground clearance
## Summary

Mileage of Over height Corridors reduced from 11,600 to 2,359.
Currently 25 Bridges and 33 Sign Supports on Network <18-6”

<table>
<thead>
<tr>
<th></th>
<th>18 feet 6 inches</th>
<th>20 feet</th>
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<tr>
<td>Maintain existing corridors and enhance now(Timeline TBD)</td>
<td>$46,396,500</td>
<td>$55,194,000</td>
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<td>Maintain existing corridors and enhance when replaced (Over 50 Years)</td>
<td>$4,429,500</td>
<td>$13,227,000</td>
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<tr>
<td>Maintain existing corridors(Annual)</td>
<td>$500</td>
<td>$36,000</td>
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<tr>
<td>Increased Value of Additional Freight Accommodated (Annual increase of Value of previous design height threshold)</td>
<td>Current→ 18’-0” $22,000,000</td>
<td>Current→19’6” $38,000,000</td>
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<tr>
<td>Number of Loads in 5 Year History which may not be accommodated</td>
<td>555</td>
<td>191</td>
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</table>

All Costs in Today’s Dollars.
Final Map

OSOW High Clearance Routes

Symbol Legend
- High Routes
- Interstate Highway
- US Highway
- Wisconsin Highway
- Connecting Highways

2,359 Miles of STH and USH
Milwaukee 23' Route
High Route – Design

Designs must accommodate high route as well.
• Monotubes-New Design
• Sign Bridges
• Utilities
• Temporary Signals
• Bridges
• Rail Crossings
• Mill and Overlay
Implementation

- Freight Planning Maps
  - [http://wisconsindot.gov/osowmaps](http://wisconsindot.gov/osowmaps)
  - WisDOT Region Project Review Process
  - Check project design elements for height

- Incorporate into the Project Development Process
  - Update WisDOT manuals
  - Update project scoping review process
Implementation
High Route – Construction

FDM 11-50

5.12.3 High Clearance Routes

The Department as adopted statewide high clearance routes (http://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/tools/planning-maps.aspx) to maintain clearance for oversize loads up to 20’ feet in height. On these routes, all temporary signals, signage etc. should be positioned to not impede loads up to 20 feet in height.
What’s Next

Truck Route Evaluation and Efficiency Task Force (TREE)
# Envelope Review

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<th>Width Frequency</th>
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<td>Total Permits</td>
<td>80th percentile</td>
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<tr>
<td></td>
<td>(Width &gt; 8 ft 6 in)</td>
<td></td>
<td></td>
<td>(Length &gt; 75 ft)</td>
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<td>(GVW &gt; 80,000 lbs)</td>
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<td>15 ft</td>
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<td>140 ft</td>
<td>18,015</td>
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<td>32,922</td>
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<td>15 ft</td>
<td>34,627</td>
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<td>140 ft</td>
<td>20,006</td>
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<td>34,175</td>
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<td>15 ft</td>
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Next Steps

- Kick of Meeting in May
- 2017 Coordination and Review
  - Historical Use
  - Origin Destination
  - Design Vehicles
  - Feasibility of Improvements
Questions

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http://wisconsindot.gov/osowmaps
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- Shelley Latham, *Perkins STC*, [slatham@perkinsstc.com](mailto:slatham@perkinsstc.com)
- Bill Wondrachek, Jr., *Wisconsin Department of Transportation*, [bill.wondrachek@dot.wi.gov](mailto:bill.wondrachek@dot.wi.gov)
Get Involved with TRB

• Getting involved is free!
• Join a Standing Committee (http://bit.ly/2jYRrF6)
• Become a Friend of a Committee http://bit.ly/TRBcommittees
  – Networking opportunities
  – May provide a path to become a Standing Committee member
• For more information: www.mytrb.org
  – Create your account
  – Update your profile

97th TRB Annual Meeting: January 7-11, 2018
Get involved with NCHRP

- Participate in AASHTO committees
- Suggest NCHRP research topics
- Volunteer to serve on NCHRP panels
- Lead pilot projects and other implementation efforts at your agency
- For more information: http://www.trb.org/nchrp/nchrp.aspx