

2014 MPO/RPC CONFERENCE

Freight Considerations in Transportation Planning

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Why Freight

SITE-SELECTION CRITERIA

Site selection factors	2013	2012
Ranking		
1. Availability of skilled labor	95.1	89.4 (3)
2. Highway accessibility	93.5	90.1 (2)
3. Labor costs	90.9	90.8 (1)
4. Occupancy or construction costs	87.4	85.8 (5)
5. Availability of advanced ICT services	84.0	85.1 (4)
6. Available buildings	83.3	78.4 (8)
7. Corporate tax rate	82.4	79.3 (7)
8. State and local incentives	81.9	71.1 (13)
9. Low union profile	81.4	73.5 (10)
10. Energy availability and costs	80.8	81.3 (6)
11. Tax exemptions	80.8	75.4 (9)
11E. Right-to-work state	80.8	72.8 (11)
13. Available land	80.3	59.0 (18)
14. Expedited or "fast track" permitting	78.0	87.8 (15)

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US Intermodal Growth

Quarter 3 - 2013 marks the first time seasonally adjusted domestic intermodal shipments exceeded international shipments!

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OSOW Freight Network

- ▶ WisDOT established a statewide OSOW Freight Network (FN) for use by permitted OSOW vehicles.
- ▶ The routes are based on OSOW traffic frequency data on high and wide roadway roadways along the state system.
- ▶ The statewide OSOW FN is a subset of "Designated Long Truck Routes", i.e., all roads on the FN are on "Designated Long Truck Routes", with the exception of a few roadways that may be an origination point or a recurring destination point, such as a manufacturing plant or a gravel pit.

Identification of Truck Routes

- ▶ There are three (3) categories of truck routes on the STH:
 - "Designated Long Truck Routes" (no overall length limitation; MAX 53' trailer w/ 43' king pin to rear axle; MAX 28'-6" trailers on double bottoms).
 - "75' Restricted Truck Routes" (75-ft overall length limitation; MAX 53' trailer, 43' king pin to rear axle;
 - "65' Restricted Truck Routes" (65-ft overall length limitation; MAX 48' trailer, no double bottoms).

OSOW Design Accomodations

- ▶ Oversized-overweight (OSOW) vehicles are those vehicles that exceed the maximum requirements for a route. These vehicles require a permit. The required permits fall into two general categories: (1) single-trip; and (2) multiple-trip.



Multi-Trip Permits

- ▶ Multiple-trip permit OSOW vehicles (OSOW-MT) exceed the legal semi truck criteria to use the highway system.
- ▶ The permits are not load specific or route specific.
- ▶ Multiple Trip permits authorized by 348.27(2) and (7) may travel on any road or over any bridge (including culverts), unless the roadway or structure has been restricted in a manner consistent with various laws authorizing local or State personnel to restrict, e.g., weight posting.
- ▶ The envelope for these multiple trip permits is: 16' high; 15' wide; 100' long and 170k gw27. Since OSOW-MT vehicles have an overall length of less than 110 feet



Multiple Trip Permits

- ▶ There are about 16,000 to 18,000 multi-trip permits issued on an annual basis, which account for 300,000 to 400,000 loads per year. There are three (3) representative OSOW-MT vehicles shown on the WisDOT OSOW vehicle inventory
 - 80' Mobile Home
 - WisDOT WB-92 (formerly WisDOT WB-67-Long)
 - Combine

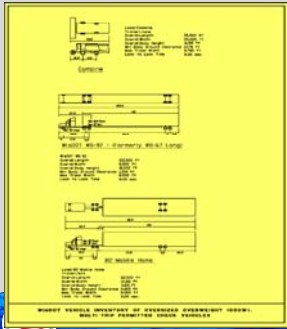


OSOW Multiple Trip Permit Statistics

OSOW Multiple Trip Permit Statistics	
Calendar Year	Number of Permits Issued
2010	18,052
2011	18,181
2012	18,303
2013	17,837
2014 (projected)	18,744



WisDOT's Check Vehicles



- ▶ Combine
 - Length: 33.5 ft.
 - Width: 20 ft.
 - Height: 11.158 ft.
- ▶ WisDOT WB-92
 - Length: 103 ft.
 - Width: 8.5 ft.
 - Height: 12.052 ft.
- ▶ 80' Mobile Home
 - Length: 112.5 ft.
 - Width: 14.166 ft.
 - Height: 11.651 ft.



Single Trip Permits

- ▶ Single trip permit OSOW vehicles (OSOW-ST) are very large loads that exceed legal length, height, weight and/or width.
- ▶ The permits are on a load specific and route-specific basis.
- ▶ These vehicles generally have an overall length greater than 110 feet, and typically are required to incorporate rear steering maneuverability. Escorts are typically required.



Single Trip Permits

- ▶ There are five (5) representative Single-trip permit OSOW vehicles (OSOW-ST) shown on the WisDOT vehicle inventory:
 - 5-axle expandable-deck lowboy (DST Lowboy)
 - Wind Tower Upper-Mid Section, 79.5' L x 11.5' W
 - Wind Tower Section, 78' L x 14.7' W
 - 55 Meter Wind Blade
 - 165' Beam
- ▶ It is estimated that if a roadway or intersection can accommodate these five (5) vehicles, then other OSOW-ST vehicles will be accommodated as well.



WisDOT's Check Vehicles



- ▶ Wind Tower Upper-Mid
 - Length: 148.75 ft.
 - Width: 10 ft.
 - Height: 11.899 ft.
- ▶ Wind Tower Section
 - Length: 112.5 ft.
 - Width: 14.167 ft.
 - Height: 11.899 ft.
- ▶ 5-Axle Expandable Deck Lowboy
 - Length: 124.4 ft.
 - Width: 10 ft.
 - Height: 11.899 ft.
- ▶ 55 Meter Wind Blade
 - Length: 209.2 ft.
 - Width: 8.5 ft.
 - Height: 11.899 ft.
- ▶ 165' Beam
 - Length: 201.3 ft.
 - Width: 8.5 ft.
 - Height: 13.802 ft.



OSOW Single Trip Permit Statistics

OSOW Single Trip Permit Statistics	
Calendar Year	Number of Permits Issued
2010	40,338
2011	44,265
2012	48,703
2013	49,270
2014 (projected)	50,531







Selecting Appropriate Design Vehicles


- ▶ Turning movements control the operations, safety, and efficiency of an intersection. If intersection geometry restricts vehicles from properly completing turning maneuvers then capacity is reduced, crash potential increases and the intersection will potentially break down. Each leg of an intersection handles the turning movements of various vehicle types with varying degrees of encroachment.
- ▶ *Intersection Design Vehicle (IDV). An Intersection Design Vehicle for an intersection turning movement is the largest standard vehicle that frequently makes that turning movement. An Intersection Design Vehicle makes the turning movement without encroaching onto other lanes (including a contiguous bike lane between a right turn lane and a travel lane - as illustrated in Figure 2.2 on the EB approach leg) and without encroaching onto the shoulder or gutter. Such designs help reduce collisions and operational delays from lane encroachments.*

FDM 11-25: Intersections of Grade
Table 2.1 Default Intersection Design and Check Vehicles & Degree of Encroachment (DIE)_{pl}

From (Approach) _{pl}	To (Departure) _{pl}	Intersection Design Vehicle (IDV) _{pl}	Intersection Check Vehicle (ICV) _{pl}
Ramp	Major Arterial or Minor Arterial or Collector or Local	WB-65 _{pl}	
Major Arterial or Minor Arterial or Collector or Local	Ramp	WB-65 _{pl}	
Major Arterial or STH or Truck Route	Major Arterial or STH or Truck Route	WB-65 _{pl}	
Major Arterial or STH or Truck Route	Minor Arterial	WB-65 (SU-40) _{pl}	WB-65 (A2) _{pl}
Major Arterial or STH or Truck Route	Collector	WB-65 _{pl}	WB-65 (A2) _{pl}
Major Arterial or STH or Truck Route	Local	SU-30 _{pl}	WB-65 (A2) _{pl}
Minor Arterial	Major Arterial or STH or Truck Route	WB-65 (SU-40) _{pl}	WB-65 (A2) _{pl}
Minor Arterial	Minor Arterial	WB-65 (SU-40) _{pl}	WB-65 (A2) _{pl}
Minor Arterial	Collector	WB-65 _{pl}	WB-65 (A2) _{pl}
Minor Arterial	Local	SU-30 _{pl}	WB-65 (A2) _{pl}
Collector	Major Arterial or STH or Truck Route	WB-65 _{pl}	WB-65 (B2) _{pl}
Collector	Minor Arterial	WB-65 _{pl}	WB-65 (B2) _{pl}
Collector	Collector	SU-30 _{pl}	WB-65 (B2) _{pl}
Collector	Local	SU-30 _{pl}	WB-65 (B2) _{pl}
Local	Major Arterial or STH or Truck Route	SU-30 _{pl}	WB-65 (B2) _{pl}


Table 2.2 Intersections Where Checking OSOW-ST or OSOW-MT Vehicles is Required^{(A)(B)(C)}

For Movement Made		OSOW Vehicles to Check
From (Approach Leg)	To (Departure Leg)	
FN - or non-FN - with KNOWN USE by OSOW-ST vehicles - or Ramp	FN - or non-FN - with KNOWN USE by OSOW-ST vehicles - or Ramp	OSOW-ST & OSOW-MT check all applicable turning movements and thru movements
non-FN STH - or non-FN truck route	non-FN STH - or non-FN truck route	OSOW-MT check all applicable turning movements and thru movements




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Roundabout Geometric Design Cases 1, 2, & 3



Geometric Design

- ▶ Roundabouts are designed with a truck apron. Truck drivers that use the inside lane are expected to off-track onto the truck apron. Regardless of the case category the outside lane of a dual lane roundabout is typically wider than the inside lane to better accommodate trucks.
- ▶ Multilane roundabouts can be designed in three different ways to accommodate legal size large trucks. Three categories of design for legal trucks have been identified as Case 1, Case 2, and Case 3:



Case 1 Roundabout

- ▶ Case 1: Roundabouts that are designed to allow trucks to encroach into adjacent lanes as they approach, enter, circulate, and exit the intersection.



Case 2 Roundabout

- ▶ Case 2: Roundabouts which are designed to accommodate trucks in-lane as they approach and enter the roundabout.
 - May require trucks to encroach into adjacent lanes as they circulate and exit the intersection.
- ▶ Case 2 roundabouts have a painted "gore" area between lanes on the approaches.



Case 3 Roundabout

- ▶ Case 3: Roundabouts that are designed to accommodate trucks in-lane as they approach and traverse the entire intersection.
- ▶ Case 3 roundabouts have a painted "gore" area between lanes on the approaches.
- ▶ Case 3 roundabouts typically are designed to allow trucks to stay in-lane for through and left turning movements, while right turning trucks may occupy multiple lanes as they exit.
- ▶ With few Case 3 roundabouts implemented to date, these designs typically require significantly more designer skill than other case types to ensure proper operations, geometrics, speeds, and safety.
- ▶ Used when Greater than 100 Large Trucks/day are anticipated.



Other Design Considerations



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Vertical Considerations



- ▶ Not only can turning radius be important for designing roundabouts, but so can vertical considerations. These considerations assist in designing freight-friendly center islands in roundabouts.



Vertical Restrictions: Monotubes

- ▶ Starting in 2009, WisDOT began installing traffic signal "monotube" structures to meet signal head per lane requirements instituted by FHWA on multi-lane facilities.
- ▶ These static structures have a bolted arm connection and therefore cannot be swung out of the way as the previous style trombone arms could.
- ▶ Typical clearance to the bottom of a signal head mounted on these monotube structures can vary from 17' 6" to 22' depending on the structure and head configuration. More than 600 of these structures will exist throughout Wisconsin along the State Trunk Highway by the end of 2014.



Vertical Restrictions: Overhead Utilities & Overhead Signs

- ▶ Oversize (over-height) trucks often encounter issues with overhead signs and utility wires.
 - Many OS trucks with height dimensions greater than legal height (13'6") are required to place a pole car ahead of the load to ensure there is sufficient vertical clearance along the route.
 - OS carriers are required to contact local municipalities and utility companies to lift utility lines and remove and replace overhead signs when necessary.



OSOW Vehicle Layover Locations

- ▶ Rest Area #106 – STH 11/USH 151 – Hazel Green, Grant County
- ▶ STH 151 Columbus, Dodge County
- ▶ Need to identify an adequate location on STH 140
- ▶ Need to identify an adequate location on STH 69 between Monroe and IL line.
- ▶ Need to identify a location along STH 11 near Janesville
- ▶ SWEFS
- ▶ STH 21
- ▶ STH 26



Implements of Husbandry (IoH)



Implements of Husbandry (IoH)

- ▶ Wisconsin Act 377 (signed into law in April 2014)
 - Definitions for IoH and Ag CMV
 - Size and Weight Limits
 - Disclosure in Sales
 - Lighting and Marking Requirements
 - Rules of the Road
 - Local Options and No Fee Permits



Implements of Husbandry (IoH)

- ▶ Why the change?
 - Equipment increasing in size and weight
 - Update statutory definition of IoH (previously two different definitions)
 - Need to maintain roads – balancing agriculture's needs and town/county responsibility
 - Provide safe roads and bridges for all

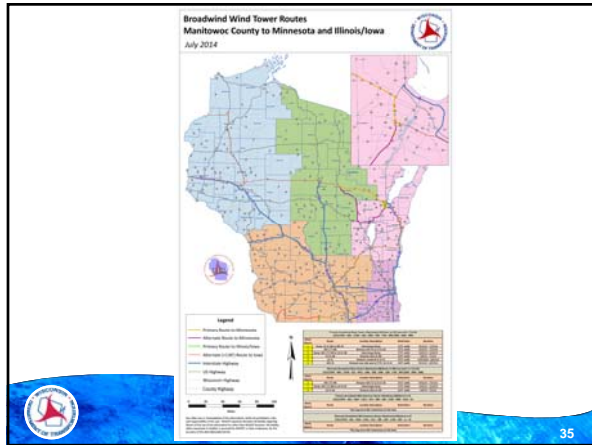


First & Last Mile Considerations

- ▶ The "last mile" of a freight system is challenging both for a city, whose —concerns include optimizing capacity and safety of streets for all users, and for the shippers, who wish to —minimize logistics costs without adversely affecting customer service.
- ▶ The "last mile" represents one of the greatest challenges for local economic development. It also represents a significant opportunity for stakeholders to come together across sectors to enhance transportation supply chain resiliency.







Broadwind Wind Towers

- ▶ 2014 WT Statistics:
 - 12 WT sections moved from Manitowoc, WI to IA per week.
 - 16 WT sections moved from Manitowoc, WI to MN (destined for ND) per week.
- ▶ 2015 Projections:
 - 39 to 54 WT sections scheduled to move from Manitowoc, WI to IA per week beginning in March/April through October.
 - There will not be any loads destined for ND in 2015; however, it is likely that both routes (Manitowoc to IA & Manitowoc to MN) will be utilized to accommodate the increased volume of WT traffic to IA.


OSOW Mega Load – Totran

- ▶ Load dimensions:
 - Length: 260'09"
 - Width: 20'01"
 - Height: 16'00"
 - Weight: 507,000 lbs
- ▶ Route:
 - West Allis, WI to MN
- ▶ Trip duration:
 - Five days & five nights
 - Only allowed to travel at night
- ▶ Escorts
 - Four State Patrol escorts and two private escorts.




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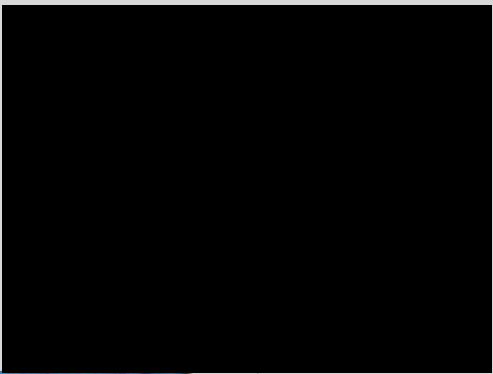
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Totran Transportation Services LTD
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Thank you

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