

Planning & Design Accommodation for Oversize and Overweight Freight in Work Zones



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Learning Objectives

- Develop understanding of Federal and State roles in oversize and overweight (OS/OW) freight on highways.
- OS/OW permit requirements and relationship to work zone project scheduling and work zone TMP's.
- Importance of communication and coordination with OS/OW stakeholders on construction projects.
- Mitigation techniques for dealing with OS/OW in work zones.



Oversize & Overweight (OS/OW) Freight Movement Background

- Federal role in truck freight
- State role and responsibilities
- FHWA Work Zone Safety and Mobility regulations
- State issued permits for over-sized loads



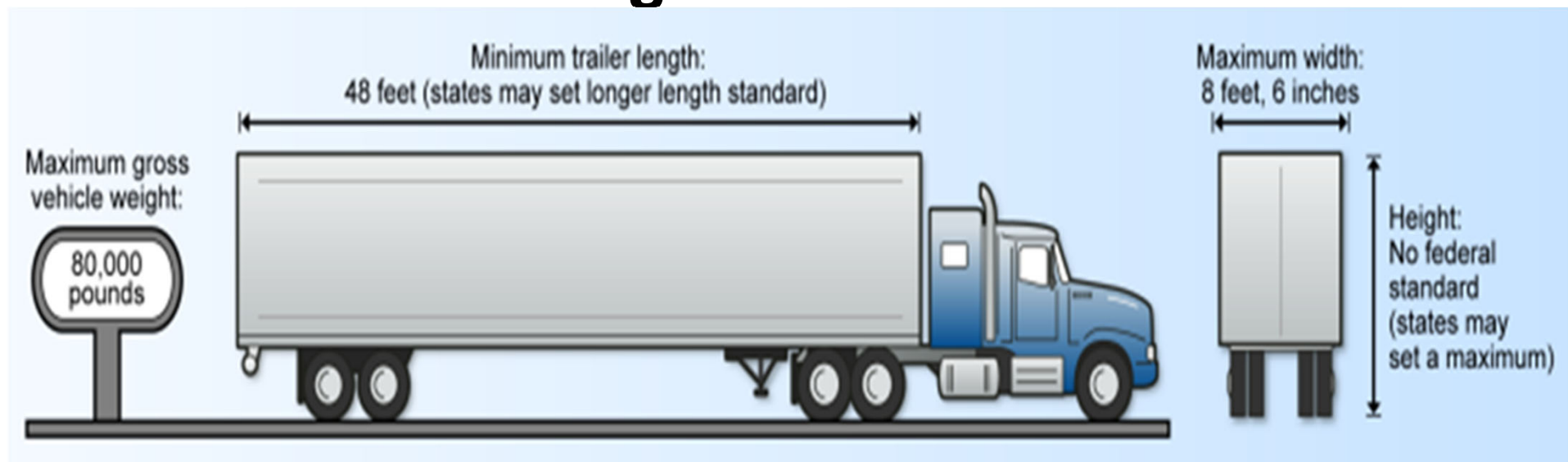
Federal Involvement on Truck Freight Routes

- 4.1 million miles of highways & streets in the U.S.
- Federal laws and rules address truck size, length and width, on 200,000 miles of the highest quality highways, which includes 47,000 mile Interstate system. Interstate system also has weight rules.
- Federal rules allow states to impose reasonable restrictions, without FHWA approval, on the National Truck Network, including construction zones.
- 2015 Fixing America's Surface Transportation Act (FAST Act) includes truck route funds and requires state Highway Freight Plans by 2017 (OS/OW not specifically mentioned in Act).



State Responsibility to Ensure Safety & Mobility

All states have laws and regulations setting their own size and weight limits for vehicles, consistent with applicable federal regulations.



Source: GAO Report 15-236



Federal Vehicle Size and Weight Standards for Semi-Trailer Truck



Why OS/OW Receive Limited Attention in Work Zone Planning

- FHWA Work Zone Safety and Mobility regulations (Rule) were enhanced in 2004 to address increased concern for safety and congestion for all highway users and workers on Federal-aid projects.
- Rule mandated states develop project transportation management plans (TMP's) on Fed-Aid projects.
- Most State TMP procedures have focused emphasis on reducing traffic congestion, and improving worker and user safety.



Why OS/OW Topic is Relevant to Work Zone Designers

- Truck freight movement is vital to all state economies, including oversize and overweight (OS/OW).
- OS/OW freight movement is among the fastest growing segments in the truck freight industry, averaging 26 percent growth nationally in a recent 10 year span.
- Important to states to ensure OS/OW freight is not severely impacted during construction work zones.



State OS/OW Permits

- States have sole responsibility to issue OS/OW permits.
- OS/OW permitting processes are complex and every state has their own laws, regulations, and processes for requesting and issuing their permits.
- Permits are typically only for non-divisible loads.



Designers Need Basic Knowledge About Their OS/OW State Permit Rules and Procedures

- Importance of communication and coordination between infrastructure units and OS/OW permit issuing agency.
- Noteworthy practice is to document coordination procedures.
- Types of permits issued.
- Single trip versus Multiple trip permits.
- Notification requirements to permit holders.



How is OS/OW Freight Typically Dealt with in Work Zones?

- Rerouting or detouring OS/OW is often a good option for accommodation.
- But it may not always be physically possible or economically reasonable.



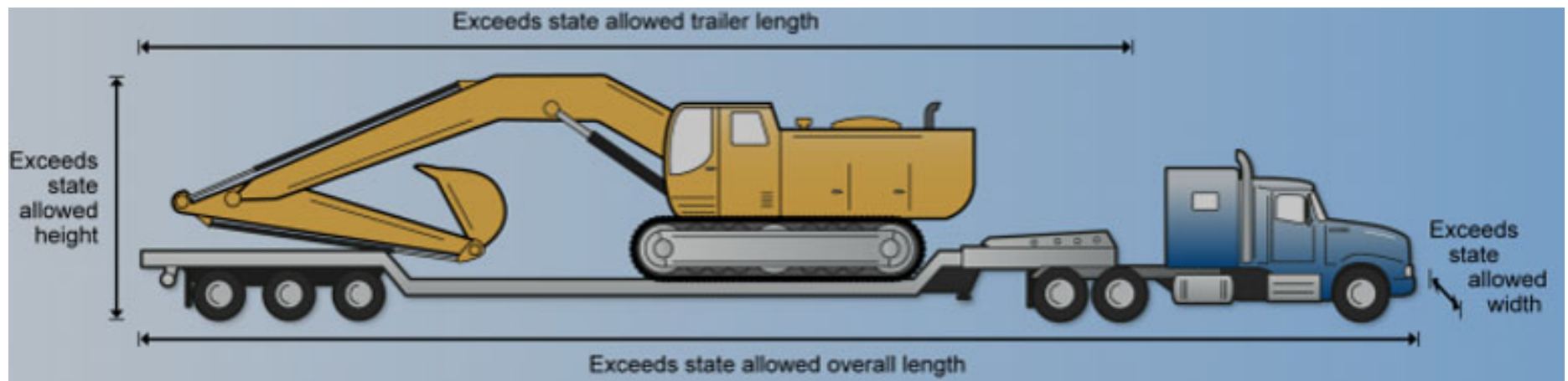
Communication & Coordination

- Develop partnership between Infrastructure Planning and Program Development units, and OS/OW Permits Issuing Agency.
- Identify OS/OW freight movement trade organizations and major OS/OW freight hauling companies.



Common OS/OW Freight

Construction Equipment and Manufactured Products



Source: GAO Report 15-236



Common OS/OW Loads

Agricultural Planting and Harvesting Equipment
Raw Forest Products



Source: TOPS Lab

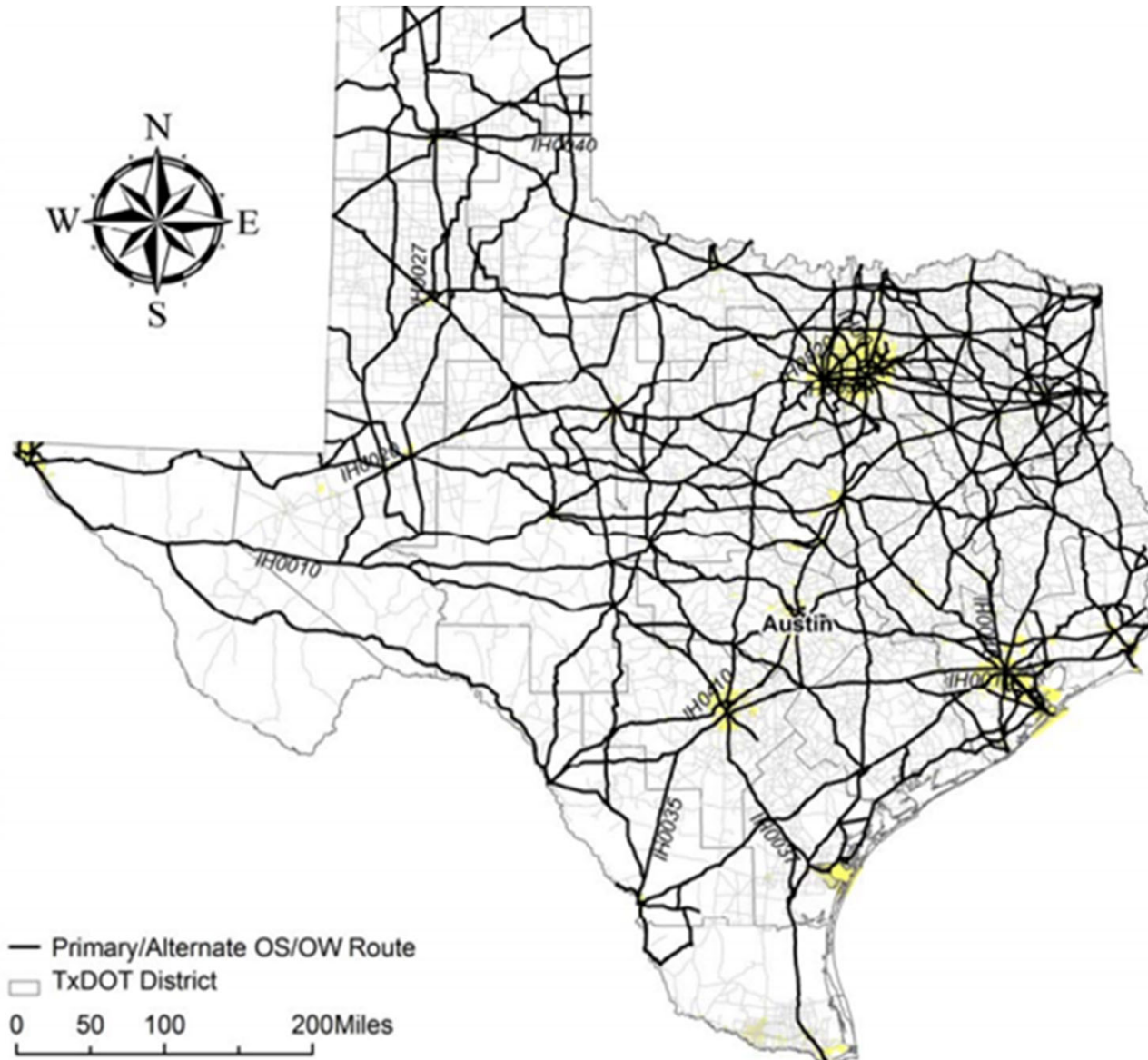


Improvement Program Project Development Planning & Scheduling

- Include OS/OW in improvement program development planning and scheduling along with all other user groups.
- Use long range planning products as starting points
 - State Freight plans
 - “Critical route pairs”
 - Preferred OS/OW route plans



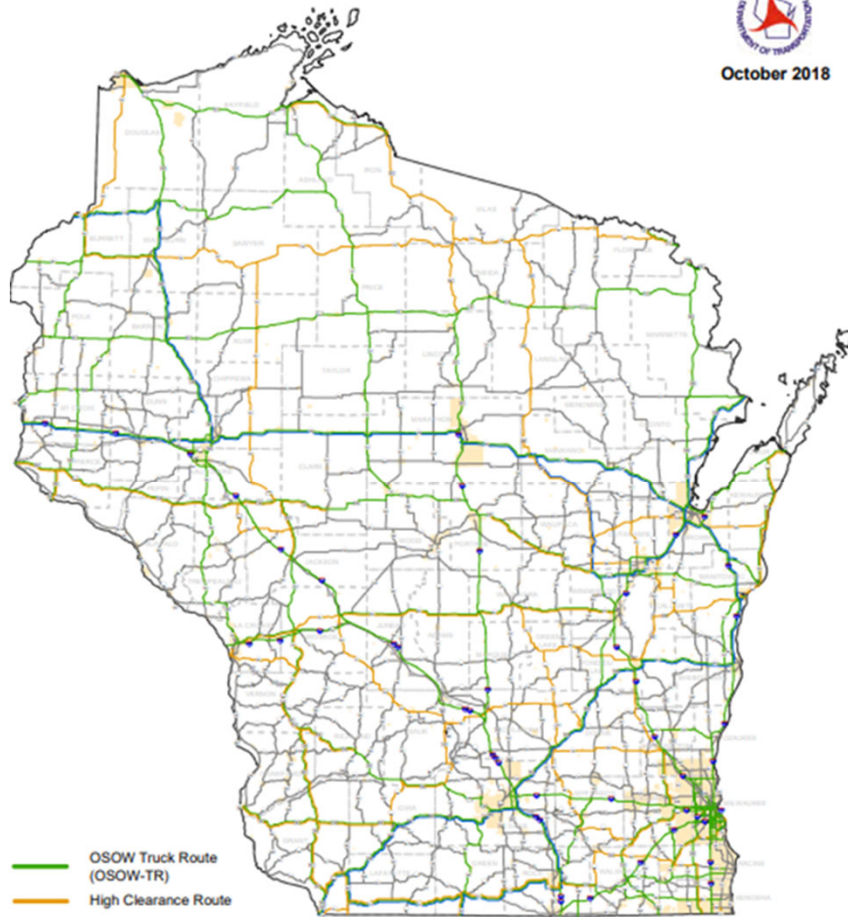
Texas Primary and Alternate OS/OW Routes



Wisconsin Preferred Corridor Routes For Different OS/OW Freight



October 2018



- OSOW Truck Route (OSOW-TR)
- High Clearance Route
- Wind Tower Corridor
- Other State Highway

Source: WisDOT Facilities Development Manual



Source: Maine Department of Transportation. | GAO-15-236



Project TMP Development

- Goal: no surprises during construction phase; eliminate or minimize need to issue change orders, this includes changes due to OS/OW.
- Include OS/OW freight consideration in TMP design checklists/project decision tree documents.
- Include OS/OW stakeholders in TMP development outreach, along with other stakeholders.
- Consider OS/OW when detour routes are evaluated.



Evaluate Alternate/Detour Routes

- What are existing size and weight restrictions?
- Are there overhead obstructions?
- Review intersection turning movement locations and identify possible lane off tracking restrictions at tight curves
- Are there existing movement of hazardous material restrictions?
- Are there emergency services response time issues?
- Any restrictions due to construction planned on the route?
- Are there other projects planning to use the same detour route?



Work zone Geometric Strategies- OS/OW Challenges & Opportunities

- One-Lane, Two-Way Traffic Control
- Intermittent or Short-term Closure
- Lane and/or Shoulder Closure
- Two-way Operation on One-side of a Divided Highway
- Shoulder as a Driving Lane
- Construct Temporary Bypass Lane(s) & bridges



Restrict/Mandate WZ or OS/OW Schedules - Pro's & Con's

- Night or Time of Day Operations
- Day of Week Operations
- Time of Year



Expedite Completion/Minimize Work Zone Impacts including OS/OW

- **Innovative Construction Methods**

- Slide-In Bridge Construction
- Precast Concrete Panel Pavement Systems



Source: FHWA

- **Construction Materials**

- Concrete accelerators
- Pre-cast, pre-stressed bridge components



Source: FHWA

- **Contract Strategies**

- Trenchless technology
- Mandated work schedules



Strategies for Accommodating Over-Width Vehicles

- Differential lane and shoulder widths
- Adjust lane widths with traffic control devices
- Moveable positive protection equipment



Source: Lindsay Corporation



Common Over-Width Vehicle Loads

Agricultural Planting & Harvesting Equipment



Source: TOPS Lab



Source: TOPS Lab

Differential lane widths and using available shoulder widths



Inches Do Matter in Work Zones



Source: Piximus



Source: Oregon DOT

Some State work zone design policies try to maintain sufficient dimensions to allow OS permitted loads to travel within projects limits



Strategies for Accommodating Over-length Vehicles

- Evaluate tight curves and turning maneuver locations for off-tracking using design tools such as turning templates.
- Pave and/or widen shoulders at tight curves.
- Restripe lane widths and adjust stop bar locations at intersections.
- Eliminate parking/enlarge turning radii near intersections.
- Modify traffic control device supports to make them removable.
- Add special provisions to require contractor flagging or fund law enforcement to control traffic at times OS/OW are at the restricted location.



Evaluate Intersections and Tight Curves on Detours & In Work Zones



Source: Maine Department of Transportation. | GAO-15-236



Wind tower transporter



Accommodation Strategies for Overweight Vehicles

- Find an acceptable detour route.
- Coordinate with permit grant agency to require extra traffic control flagging on permit.
- Restrict only heavy loads on weight restricted detour or temporary bypass bridges so only heavy load on bridge at one time.
- Over design temporary structures.



Accommodation Strategies for Over-height Vehicles

- Increase specified bridge false work clearance.
- Evaluate alternative construction techniques.
- Use interchange ramps for over-height loads with regulatory signing.
 - Coordination and communication with permit agency and all stakeholders.
 - Include tell-tale height warning system in contract.
- Divert over-height loads into lanes with sufficient higher vertical clearance using permit requirement.
- Use temporary traffic signals on two way highways.



Contract provisions for Contractor/Project Staff Coordination with OS/OW Stakeholders

- Include non-typical work zone schedule notification requirements in project special provisions, i.e. different than standard specs.
 - Multiple-Trip OS/OW Routine Permits
 - Single-Trip Routine OS/OW Permits
 - Super-load and Mega-load Permits
- Include special provisions where contractor assistance is anticipated.



In Conclusion

- OS/OW stakeholders are important highway users and need TMP design consideration.
- Timely communication and coordination with state permit granting agency and OS/OW stakeholders throughout the TMP design process will go along way for implementing a successful project.

