Introduction

- Typical Superload-Double-wide “Beam-and-Dollies” (Source: Caltran)

Superloads have significant effects on the infrastructure system in comparison with the regular permit vehicles.

Permitting criteria for superloads are different from state to state.

Although several regional associations were organized and successful pioneering practices were conducted to improve the efficiency and uniformity among different states, significant difference in superload permitting process still exists.

There is a need to better understand the current State-of-Practice in different states and to find better and practical ways to improve the uniformity in permitting practice in United States.
Introduction

Scan Approach (3 Stages)

• Stage 2: Comprehensive questionnaire/amplifying questions
  - A comprehensive questionnaire compiled with amplifying questions covering various topics was distributed to the selected states and the current practices were collected.
  - Questions were divided into 5 topic areas

• Stage 3: Workshop
  - Representatives from the host states.
  - A workshop was held to identify the best practices and propose the implementation plan for the future.

Findings and Observations

Findings and Observations based on Responses to Amplifying Questions and Discussions during Workshop

- Permitting offices and staffs
  - Some states: only one office handle the permitting (Alabama, California, Michigan, Minnesota, Ohio, Texas, Virginia)
  - Some states have more than one office (Florida, Idaho, Illinois, Indiana, Louisiana, Maine, Washington, and Wisconsin).
Findings and Observations
Findings and Observations based on Responses to Amplifying Questions and Discussions during Workshop

- Number of permits issued every year
  - The number of permits issued every year varies significantly from state to state.
    - for CY 2012
      - Texas has 268,491 permits issued
      - Wisconsin only issued 48,000 permits
    - All the states issued permits using different methods or types.
    - Some automated processes
    - Some require special analysis.
    - The total number for each type also varies significantly from state to state.

Findings and Observations based on Responses to Amplifying Questions and Discussions during Workshop

- New changes in the OW/OS permit process
  - Majority of the States are in progress to adopt new changes in permit process.
    - Moving toward automated permitting
    - Researching paperless process.
  - Indiana, Virginia and Washington are not considering adopting new changes for now.

- Process tools for screening bridges and issuing permits
  Most of the States have their own developed tools.

Findings and Observations based on Responses to Amplifying Questions and Discussions during Workshop

- Definition of superload
  - The definition of superload is not the same for different States and some of the States do not use this term (Idaho and Wisconsin). For the states that have the term of superload, the definition can be based on the dimensions only (e.g. California) or weight only (e.g. Florida), or a combination of both dimensions and gross vehicle weight (e.g. New York).

- Number of revisions allowed for permit application
  - A number of the states allows unlimited revisions till the permit is issued (e.g., Alabama) while other states only allow a limited number of revisions (e.g., Illinois). Moreover, a number of the states do not allow revisions on the permit once the permit is issued (e.g., Wisconsin).

Findings and Observations based on Responses to Amplifying Questions and Discussions during Workshop

- Permit fee structure
  - The permit fee structure varied significantly for different States. Most of the states established the fee structure based on permit type, trip type, and/or weight limit. Some of the States charge fee for bridge analysis (e.g. Texas, Louisiana) while some States do not (Michigan, Minnesota, Virginia, Washington).

- Weigh-in-Motion (WIM) for quality control
  - The majority have WIM systems in operation
    - Some for enforcement purposes
    - Some data collection only
    - None for Quality Control.

Findings and Observations based on Responses to Amplifying Questions and Discussions during Workshop

- Permitted vehicles to leave the designated route
  - 50% of the states allow permitted vehicles are to leave the designated route.
    - Some allow up to 1 mile (maximum distance)
    - Some only ½ mile
    - Some do not allow structures to be crossed
  - 50% do not allow permitted vehicles to leave the designated route

- Bridge analysis methods
  - Some States use LFR only or dominantly (Alabama, Idaho, Illinois, Maine, Ohio, Wisconsin), while some other States also use other methods (i.e. AFR, LRF, ASR) (Indiana, Louisiana, Michigan, Minnesota, Pennsylvania, Texas, Virginia, Washington State)

Findings and Observations based on Responses to Amplifying Questions and Discussions during Workshop

- Speed and traffic restriction on permits
  - Most of states use speed and traffic restriction on permits. Some of the states occupy two lanes and/or speed limits for superloads (e.g. Minnesota) while some of the states even have more severe restrictions. For instance, the State of Maine restricted the speed to 5 mph and only allow one vehicle along centerline of the bridge for severe conditions.

- Modifications to AASHTO Method
  - Some states have no modification to AASHTO load rating method: Alabama, Illinois, Indiana, Maine, Wisconsin, while some states have modification to AASHTO load rating method: Idaho, Louisiana, Michigan, Virginia, Washington State.
Findings and Observations based on Responses to Amplifying Questions and Discussions during Workshop

• Dynamic impact factor
  Most of the states would reduce the impact factor if speed restriction is applied except Indiana. However, the degree of reduction on impact factor varies from state to state. The state of Idaho allows the impact to be reduced to 10% if a speed reduction is specified while some States reduce the impact factor to 0 when the speed is low (e.g. Maine).

• One lane or multiple lanes loading for load rating
  Most of the states utilize both one lane or multiple lanes loading depends on the permit type (e.g. Washington State), or rating methods (e.g. Michigan), while the State of Wisconsin only use one lane loading for load rating.

Findings and Observations based on Responses to Amplifying Questions and Discussions during Workshop

• Load rating level for acceptance criteria
  Most of the states use operating level as acceptance criteria except Maine (usually inventory level) and Texas (do not use a load rating level when considering a superload).

• Refined analysis for OS/OW rating
  Most of the states use refined analysis for certain conditions (e.g. Maine use refined analysis for the bridge in poor condition and no other routes are available). AASHTOWare is the most popular software for refined analysis.

Findings and Observations

• Computer software for OS/OW rating
  Most of the states use AASHTOWare for OS/OW rating while some of the states use in house software for OS/OW rating (e.g. Maine and Virginia).

• Joint committee for better uniformity
  Most of the states already is or willing to be a member of a committee that is aiming at improving permitting uniformity except Indiana and Maine.

• Hand-on analysis/review for permits
  Some states have only less than 5% of single-trip permits that requires analysis/review: Alabama, Illinois, Indiana, Ohio, Washington State, Wisconsin while some states have more than 5% of single-trip permits that requires analysis/review: Idaho, Michigan, Minnesota, Pennsylvania, Virginia.

Best Practices

• Automation
  − Some States have automation and some do not. Many States has an auto issue percentage greater than 50%. Need to find out what is needed for each State to design or sub out a system that will auto issue a minimum of 50% of the work.
  − Minimum system/process requirements need to be established to assist the entire nation.
  − Furthermore, it might easier to come up with a system for different classes of loads.
  − Automation might have a better chance if AASHTO could work collectively for all the states.
  − Loads exceeding 300,000lbs and mega-loads. These loads continue to increase. Best practice guidelines might be needed for these type moves as well.

Based on the scan, the following recommendations and best practices were summarized and outlined below for the future consideration.

• Practices from different DOTs
  − Washington - offer training on permit policies and statues to state police and others.
  − Virginia - for complex bridges if consultants are hired because of specific knowledge, have them run several large wt notional permit trucks for future comparisons.
  − NY - require heavy hauler to hire consultant for super load analysis.
  − Penn - P3 to fund automasted permitting system.
  − Florida - Customer is responsible for horizontal and vertical.
  − Illinois - hire consultant to manage workflow.
  − Indiana - 200,000 lbs or greater requires police escort.
  − Washington - develop state of the practice GIS mapping for route finding.
  − Michigan - use HL-93 modified for design: 1.25 higher?
Based on the scan, the following recommendations and best practices were summarized and outlined below for the future consideration.

**Best Practices**

- Many States have an automated system for issuing permits.
- Need the MBE to address the fact that some States can not do a detailed level of analysis.
- Many states weigh their loads over a certain threshold and some other States inspect those loads, which reduces the uncertainty in the live load factor.
- Automation requires reliable and verified bridge information
- Verification of Truck Loads by inspecting and weighing them
- Research is needed to confirm the assumptions made regarding platform trailers and loading mechanism and their effects on bridge elements (e.g., Self-leveling suspension, etc.). Need to ensure equal axle distribution, axle suspension capacity, etc.

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- How to establish what the liability would be when providing limits on clearances.
- Quality control: check bridge analysis, automated system but check LARS converted data.
- Privatization of Permitting process and use of Consultants
- Dealing with Speculative Permits. Texas asking to pay upfront.
- Connecting with local jurisdiction when they writing permits and making sure that locals understand the rating levels and permitting process
- Standardize the tire pressure (different levels 620-800) and providing a consistent number
- Develop standard Permit vehicle

**Best Practices**

- Standard type of vehicle with steerable dolly, etc. could help design of maximum geometric constraints.
- Need input from Haulers.
- The process of contacting local people to inform them about the trucks arriving to their jurisdiction
- Standard for when to analyze non-super structural element
- The process of contacting local people to inform them about the trucks arriving to their jurisdiction
- Standard when non-super structural element
- Need plans to establish links with neighboring states or corridors
- National Permit Map or Corridors among different states. Need to have industry participation.
- Streamline permits by performing higher level of bridge analysis (maybe through consultants) if the Hauler accepts/needs it.
- Need to verify whether need to check culverts.

**Best Practices**

- There is variation among states in handling permits. Placing flags on some bridges especially for complex bridges.
- Locals do not have the staff to process the permits. Need to provide ways to help local jurisdictions in the process.
- Some states required a field survey of the route that includes geometric restrictions and clearances.
- Good relationship between bridge office and permit processing office.
- Regional collaboration for routine and annual permits is achievable and possible.
- Advanced Technology to verify bridge information and data collected. There is a need for funding to ensure the use of this advanced technology.
Based on the scan, the following recommendations and best practices were summarized and outlined below for the future consideration:

- **High priority items—software development; research.** The team identified the following three items as its top-priority activities:

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<td>Matt Farrar, Jeff Honefanger</td>
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**Implementing Plan**

- **Future Trends:**
  - Geofencing
  - Applying advanced technology for route tracking
  - Virtual routes
  - Crowdsourcing
  - Will for enforcement of permit weights and routes
  - Working with trucking industry as well as fabricator/designer of exceptional superloads to standardize Permit trucks and consider how it will be hauled
  - Check use of covered-space wheels to emulate lane loading
  - Establish criteria for enhancing the experience of hauling companies.

**Best Practices**

- **Recommendations to AASHTOWare:**
  - There is a proposal that MB create capacity tables using influence lines similar to Superload by Bentley.
  - Create a permit module which incorporates a bridge analysis module as well as a GIS-based routing module to help automation of permit processes.

**Final Report**

- Final Report has been published.
### Implementation Plan

#### Webinars

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#### Articles

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### Thank you!