CONSIDERING LARGE TRUCKS IN THE DEVELOPMENT OF TRAFFIC MANAGEMENT PLANS

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April 13, 2015
What is a Traffic Management Plan (TMP)?

The TMP lays out a set of coordinated transportation management strategies and describes how they will be used to manage the work zone impacts of a road project.

These strategies include:
- temporary traffic control measures and devices
- public information and outreach
- operational strategies

The scope, content, and level of detail of a TMP may vary based on the State or local transportation agency's work zone policy and the anticipated work zone impacts of the project.
Temporary Traffic Control Plan (TTCP)

Four main components to a TTCP setup and each one has considerations when designing for Large Trucks:

- Advance Warning Area
- Transition (taper) Area
- Activity Area (includes Buffer Space and Work Space)
- Termination Area
Advance Warning Area

The section of highway where road users are informed about the upcoming work zone with signs:

- Advance road work signs provide direction to action required
- Higher speed roadways require more signs of a larger size
- To ensure mobility for large trucks, need to provide adequate advance notice of unexpected changes in the roadway alignment
Transition (Taper) Area

- The section of highway where road users are redirected out of their normal path of travel
- Tapers are strategically designed to meet the operating speed and road characteristics
- Consider distance large trucks need to make lane shifts and impacts of grade changes

Table 6C-4. Formulas for Determining Taper Length

<table>
<thead>
<tr>
<th>Speed (S)</th>
<th>Taper Length (L) in feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 mph or less</td>
<td>$L = \frac{WS^2}{60}$</td>
</tr>
<tr>
<td>45 mph or more</td>
<td>$L = WS$</td>
</tr>
</tbody>
</table>

Where:
- $L = \text{taper length in feet}$
- $W = \text{width of offset in feet}$
- $S = \text{posted speed limit, or off-peak 85th-percentile speed prior to work starting, or the anticipated operating speed in mph}$
Activity Area

The section of the highway where the work activity takes place and often includes a buffer zone to allow for recovery of an errant vehicle

Things to consider regarding large trucks:

- **Lane Widths** – Need to ensure adequate width for large trucks and off-set to other lanes/obstructions
- **Positive Protection** – Use of temporary barrier (concrete or steel) should be test-level rated for large trucks
- **Work Area Access** – Need to provide access/egress for trucks entering the work zone
Termination Area

- The section of the highway where road users are returned to their normal driving path
- This area extends from the downstream end of the work area to the last TTC device such as the End Road Work sign
- Use caution when transitioning heavy truck traffic back to normal lanes
Essential Traffic Control Devices

- Arrow Boards
- Temporary Traffic Barriers
- Temporary Markings / Lane Separators
- Warning Lights
- Temporary Traffic Control Signals
Work Zone Safety TCD’s

- Truck Mounted Attenuators
- Signing for egress points
- Temporary Rumble Strips
- Notification of Narrow Lanes

April 13, 2015
National Symposium on Work Zones and Large Trucks
Keys to TMP Planning and Design

1. Understand the vehicle classification and traffic volumes on the roadway.

2. Determine minimum width and number of lanes required. Are shoulder lanes necessary for TTCP?

3. Explore construction staging plans for options: cross-over travel lanes, detours or alternate routes.
Example TTC Plan

The following Typical Application shows an example of a lane closure

A. Long-Term and Intermediate
B. Short-Term

How do truck % fit into these plans?
Designing TTCP for Large Trucks

Design Elements

- Ensure lane width supports truck traffic
- Provide sufficient taper length for lane drops
- Maintain adequate accel/decel lane lengths
- Avoid speed differentials
- Check turn radii for all interchange/intersection locations
Accommodating Large Trucks

- Understand the constraints controlling the construction means and methods
- Restrict trucks to designated lanes
- Is detouring traffic a possibility, or is an alternate route available?
- Is it feasible to create a “Trucks Only” route?
Queue Warning System

- Used to alert motorists of stopped traffic before they reach the back of queue
- Helps to prevent rear-end crashes before they happen
Dynamic Merge System

- **Early merge:** In low-volume conditions reduces the occurrence of high-speed merging at the point of lane closure
- **Late merge:** In high-volume conditions reduces the length of the queue

[Image of Dynamic Merge System diagram]

*FHWA Operations*

*Work Zone Safety*

*Street Smart Rental*
Best Practices for Large Trucks

- **Outreach** – Early engagement of Statewide Trucking Association on expected traffic impacts and to encourage diversion if possible

- **Communication** – Use of HAR system or CB Wizards for real-time notification

- **Incident Response** – Consider on-call tow services for narrow cross-section or crossover conditions
Summary

• Understand the TTCP Requirements
  – Traffic control devices = safety for all road users

• Design for Location Specific Conditions
  – Need to understand the field conditions/impacts

• Stakeholder Outreach
  – Communicate plan and respond to feedback

• Assess work zone operations
  – No “plan” is perfect. Implement, monitor, evaluate and adjust to improve safety & mobility
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