Super 2 Highways

Definition

- Discussed in TxDOT *Roadway Design Manual* (Chapter 4, Section 6)
- In Texas, a “Super 2” highway is defined as a two-lane rural highway in which periodic passing lanes have been added to allow passing of slower vehicles and the dispersal of traffic platoons.
Current Practice

TS2 (PL-1) – 12 [Alternating]
Current Practice
TS2 (PL-1) – 12 [Separated]

Optional 4” Dotted Extension Line
Super 2 Highways
Operations Recommendations, 0-6135

- Eliminate use of ADT as upper limit
- ADT as tool to prioritize competing projects
- Addition of lanes preferable to added length
  - Marginal benefits for >2 mi at less than 10000 ADT
  - >3 mi length should be used sparingly, avoid longer than 4 mi
### Super 2 Highways Safety Study Results, 0-6135

<table>
<thead>
<tr>
<th>Measures</th>
<th>Value</th>
<th>Segment &amp; Intersection</th>
</tr>
</thead>
<tbody>
<tr>
<td>After crashes (actual)</td>
<td>40</td>
<td>46</td>
</tr>
<tr>
<td>Crash predicted (EB estimate)</td>
<td>61.7</td>
<td>79.3</td>
</tr>
<tr>
<td>Percent reduction</td>
<td><strong>35%</strong></td>
<td><strong>42%</strong></td>
</tr>
<tr>
<td>Statistically significant @ 95%</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>
TxDOT 2016 Study, 0-6806

- Small effort focused on energy corridors
- Identify how heavy truck characteristics could influence roadway design guidance for rural two-lane highways
- Develop 2-pg briefing sheets on treatments
  - Available at: https://static.tti.tamu.edu/tti.tamu.edu/documents/0-6806-TTI-P1.pdf
• Data collection in September 2016
• Four corridors with energy exploration facilities:
  – Eagle Ford -- US-183 and SH 72 (w/ passing lanes)
  – Permian Basin -- US-285 and SH 302 (no passing lanes)
• Components:
  – Video of operations
  – Spot speeds
  – Site characteristics
TxDOT 2016 Study, 0-6806
Traffic: Observed Spot Speeds

Sites with passing lanes, 72 and 183

- Speed difference between cars and trucks is lower
- Speed variability (standard deviation) is smaller
- Average speeds are closer to posted speed limit
TxDOT 2016 Study, 0-6806
Super 2 Highways, Design Consistency

• TxDOT RDM provides for passing lane length:
  – Desirable: 1.5 – 2 mi (longer passing lanes are acceptable, but not recommended more than 4 miles. Consider switching the direction if more than 4 miles)

• Observation: when varying passing lane lengths are used, driver expectancy is violated, therefore, consistent passing lane length is desirable

• Signing and pavement markings used to inform drivers of next passing lane
TxDOT 2016 Study, 0-6806
Super 2, Review Current Practices

• Approximately 20 Super 2 corridors, primarily in south and northwest Texas
  – More under construction, in PS&E, or on “wish lists”

• Corridor lengths = 12 to 69 miles
  – Can span multiple counties
  – Some have been extended since 0-6135
• Passing lane lengths vary greatly
  – Generally between 0.85 mi and 1.85 mi
• Advance signing not always present
• Pavement markings
  – Dotted line – observed at 7 of 20 sites
  – Arrow marking – observed at 7 of 20 sites
• Saw examples of turning/speed change lanes within Super 2
TxDOT 2016 Study, 0-6806: Suggestions Designing Energy Corridor Treatments

- Super 2 Highways ➔ **Use!**
- Super 2 Passing Lane Lengths
  - Room for improvements in consistency of length used
  - No evidence supporting a change in desired length at this time (i.e., use 1.5 – 2 mi)
Super 2 Signing & Markings

- Room for improvements in consistency of use
- No evidence supporting changes to TS-2 other than the potential of adding an (optional) example of an end of lane arrow

- Example from Minnesota:
  *** place transition arrows adjacent to lane reduction signs
  **** lane reduction transition arrows are optional for speeds less than 45 mph

Source: http://www.dot.state.mn.us/trafficeng/pavement/typicaldetail/passingandtransitionlanes.pdf
TxDOT 2016 Study, 0-6806: Questions for Energy Corridor Treatments

• Much is still unknown about the needs of trucks to pass on two-lane highways, particularly trucks passing other trucks
• Increasing issue: cars passing multiple trucks (platoons or convoys)
  – How to handle passenger cars passing convoys of trucks?
TXDOT 2016 Study, 0-6806 Closing

- TRB paper on “Potential Effects of Heavy Vehicles on Operations of Super 2 Highways”
- Questions:
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