I-35 SMART WORK ZONE UPDATE

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WASHTO 2015 Subcommittee on Materials & Construction
TxDOT is committed to finishing the widening of Main Street Texas (I-35) to six lanes from San Antonio to Hillsboro.

Current scope of I-35 Widening. (South of Salado to Hillsboro)
Overview

- 200 directional miles – Central Texas
- 14 segments / 19 projects
- Costs: ~$2.1B
- Traffic Volumes
  - 55,000 – 111,000 vehicles/day
  - Trucks: 25% – 30%
  - Over 5 years ~ 185 million trips
- TxDOT mitigation of impacts
  - Limited lane closures
  - Blackout dates
  - Completion incentives
- Complete 2018
## I-35 Demographics

<table>
<thead>
<tr>
<th>Coordination of 17</th>
<th>55,000 to 111,000</th>
<th>30 million</th>
<th>25% to 35%</th>
<th>Peak construction</th>
<th>200 directional</th>
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<tbody>
<tr>
<td>96-MILE DIFFERENT PROJECTS</td>
<td>VEHICLES</td>
<td>TRAVELERS</td>
<td>TRUCK</td>
<td>2012–2014</td>
<td>MILES</td>
</tr>
<tr>
<td>corridor construction project cost</td>
<td>per day</td>
<td>per year</td>
<td>traffic</td>
<td>estimated complete 2017</td>
<td>Central Texas</td>
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</table>
Corridor Impacts

I-35 Miles Under Construction

<table>
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<tr>
<th>Year</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
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<tr>
<td>Miles</td>
<td>59</td>
<td>63</td>
<td>63</td>
<td>44</td>
<td>17</td>
<td>7</td>
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</table>

$2.1 Billion

63 miles
Traveler Information During Construction

- Provide information on current and forecasted travel conditions across multiple construction zones to assist:
  - Local residents
  - Regional travelers
  - Long-distance travelers
- Focus of system is on the construction-related impacts
I-35 Construction Traveler Information System Components

- Real-time queue warning
- Lane and road closure information
- Current travel time information
- Expected construction delay information
- Volume and spot speed data
- Traffic cameras at high incident locations
- Portable Changeable Message Signs
Current I-35 field deployments

- **Bluetooth**
  - Travel time detection
  - 40 segments, 2-5 miles in length
- **Wavetronix**
  - Volume detector sites
  - 17 sites with volume/classification
- **CCTV**
  - Digital with PTZ
  - 6 current, at locations of interest
- **PCMS**
  - Display travel time messages
  - ~10 per direction at ~10 mile spacing
Travel Time Information Component

- Point-to-point travel times obtained via Bluetooth technology
- Presented for short distances ahead on PCMS signs throughout the corridor
- Travel times are automatically updated every 5 minutes through Center-to-Center protocol and TxDOT’s Lonestar ITS platform
Examples of Support: Lane Closures

Historical Hourly Volumes on IH-35 Southbound at West South (Tokio Rd.)
(6-month average)
Lane and Road Closure Information Component

- Database of all planned closures maintained
- Public closure notices:
  - Daily
  - Rolling 7-day advance schedule (2x weekly)
  - High-impact only
- Each freeway lane closure analyzed to predict queues and delays

![Graph showing delay per vehicle (minutes) over time]
# Lane Closure Analysis

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<tr>
<th>Southbound</th>
<th>1A</th>
<th>1B</th>
<th>1C</th>
<th>2A</th>
<th>2B</th>
<th>3A-1</th>
<th>3A-2</th>
<th>3B</th>
<th>3C</th>
<th>4</th>
<th>4A</th>
<th>BRB</th>
<th>5A</th>
<th>5B</th>
<th>5C</th>
<th>Total Delay</th>
<th>Total Travel Time</th>
<th>% Delay</th>
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<td>5.4</td>
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</table>
End of Queue Warning Safety System

- Automated monitoring near a work zone
- Warning of slow speeds
- Warning of end of ‘stop and go’ traffic
Real-Time Queue Warning Component

ROAD WORK AHEAD

Speed Sensors

67 mph  66 mph  65 mph  63 mph
Real-Time Queue Warning Component

3 miles

TRAFFIC SLOWS 3 MILES

64 mph  62 mph  56 mph  42 mph

Speed Sensors
Real-Time Queue Warning Component

2 miles

STOPPED TRAFFIC
2 MILES

Speed Sensors

64 mph
52 mph
31 mph
25 mph
## I-35 Smart Work Zones

<table>
<thead>
<tr>
<th>PCMS Message</th>
<th>Last 5-Minute Average Speed V (mph)</th>
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<tbody>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td>ROAD WORK AHEAD</td>
<td>V &gt; 55 OR V = 0.0</td>
</tr>
<tr>
<td>SLOW TRAFFIC 3 MILES</td>
<td>V &gt; 55 OR V = 0.0</td>
</tr>
<tr>
<td>SLOW TRAFFIC 2 MILES</td>
<td>V &gt; 55 OR V = 0.0</td>
</tr>
<tr>
<td>SLOW TRAFFIC 1 MILE</td>
<td>V &gt; 55 OR V = 0.0</td>
</tr>
<tr>
<td>SLOW TRAFFIC AHEAD</td>
<td>40 ≤ V &lt; 55</td>
</tr>
<tr>
<td>STOPPED TRAFFIC 3 MILES</td>
<td>V &gt; 40 OR V = 0.0</td>
</tr>
<tr>
<td>STOPPED TRAFFIC 2 MILES</td>
<td>V &gt; 40 OR V = 0.0</td>
</tr>
<tr>
<td>STOPPED TRAFFIC 1 MILE</td>
<td>V &gt; 40 OR V = 0.0</td>
</tr>
<tr>
<td>STOPPED TRAFFIC AHEAD</td>
<td>0.0 ≤ V &lt; 40</td>
</tr>
</tbody>
</table>
I-35 Smart Work Zones
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Stopped Traffic 2 Miles
Variable Speed Limits
Questions or Comments