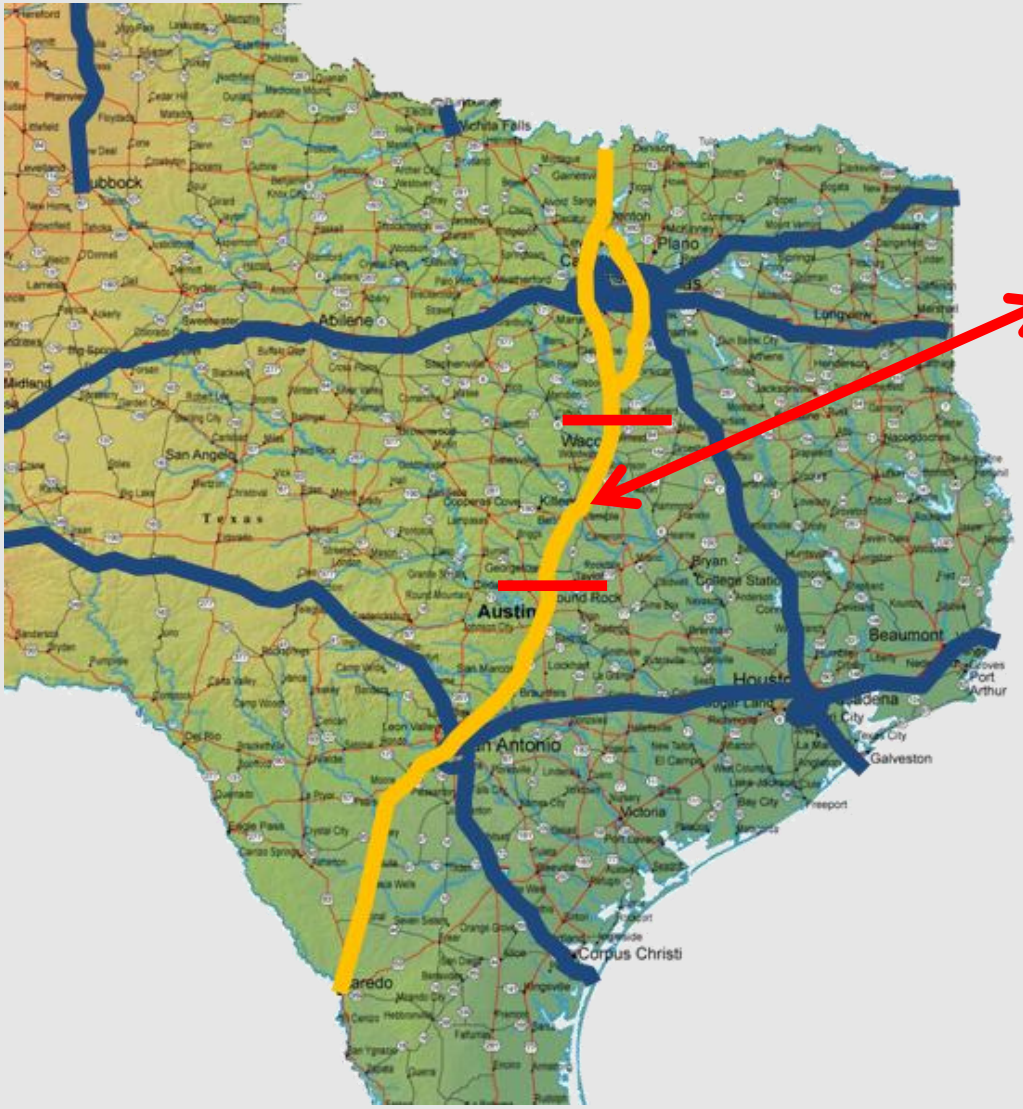
TEXAS DEPARTMENT OF TRANSPORTATION

I-35 SMART WORK ZONE UPDATE

John Habermann, P.E.

WASHTO 2015 Subcommittee on Materials & Construction

Overview

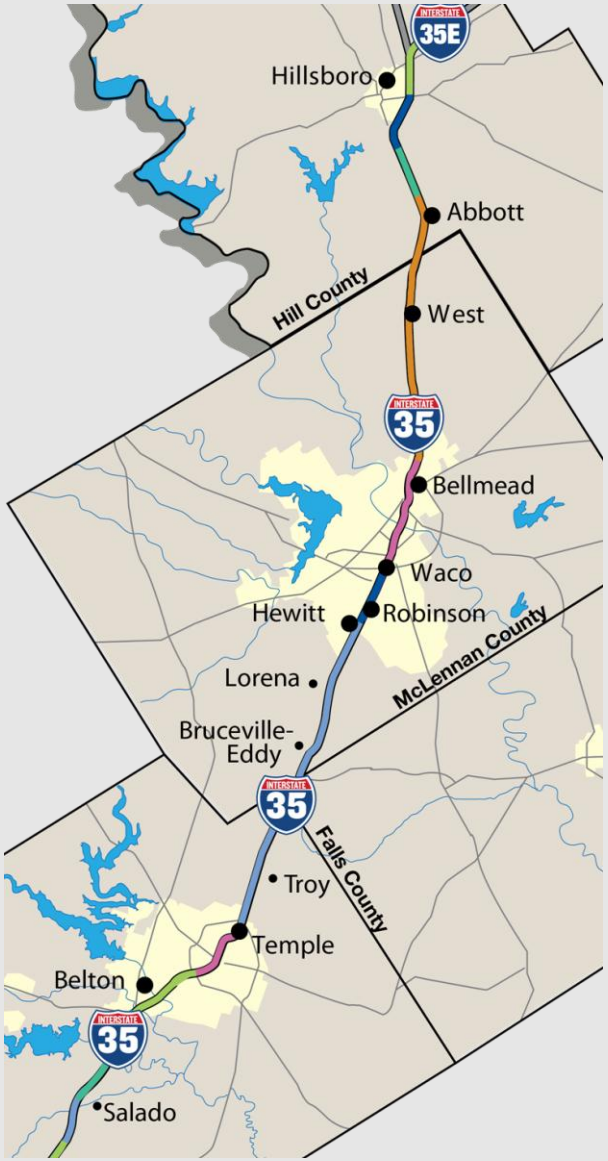


Current scope of I-35 Widening. (South of Salado to Hillsboro)

TxDOT is committed to finishing the widening of Main Street Texas (I-35) to six lanes from San Antonio to Hillsboro.

Overview

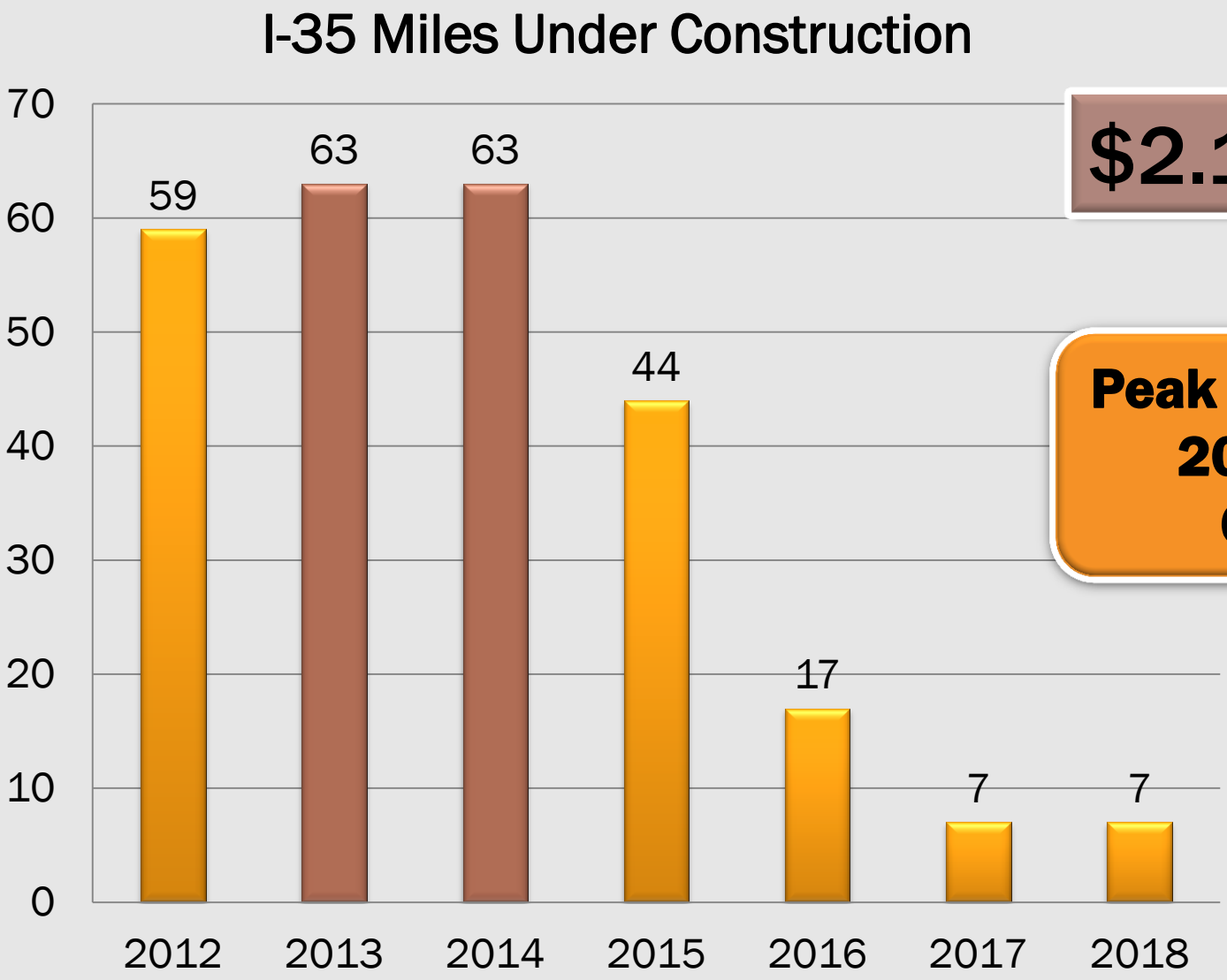
- 200 directional miles – Central Texas
- 14 segments / 19 projects
- Costs: ~$2.1B
- Traffic Volumes
  - 55,000 – 111,000 vehicles/day
  - Trucks: 25% – 30%
  - Over 5 years ~ 185 million trips
- TxDOT mitigation of impacts
  - Limited lane closures
  - Blackout dates
  - Completion incentives
- Complete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



I-35 Demographics

$2.1 billion	**Coordination of 17**	**55,000 to 111,000**	**30 million**	**25% to 35%**	**Peak construction**	**200 directional**
96-MILE	**DIFFERENT PROJECTS**	**VEHICLES**	**TRAVELERS**	**TRUCK**	**2012–2014**	**MILES**
corridor construction project cost	with multiple contractors	per day	per year	traffic	estimated complete 2017	Central Texas

Corridor Impacts



$2.1 Billion

Peak Construction:
2013–2014
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

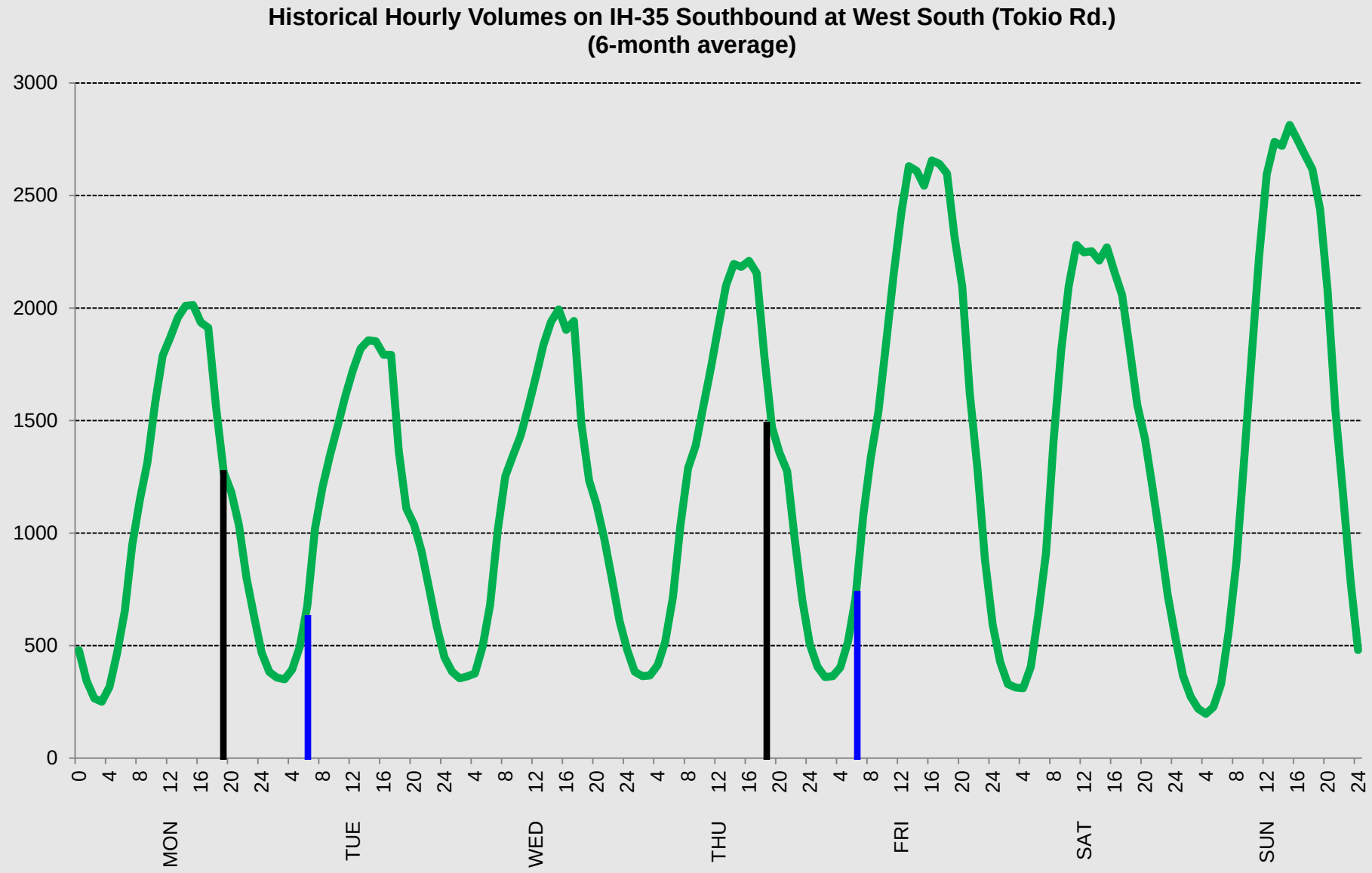
  - Display travel time messages

  - ~10 per direction at ~10 mile spacing

Travel Time Information Component

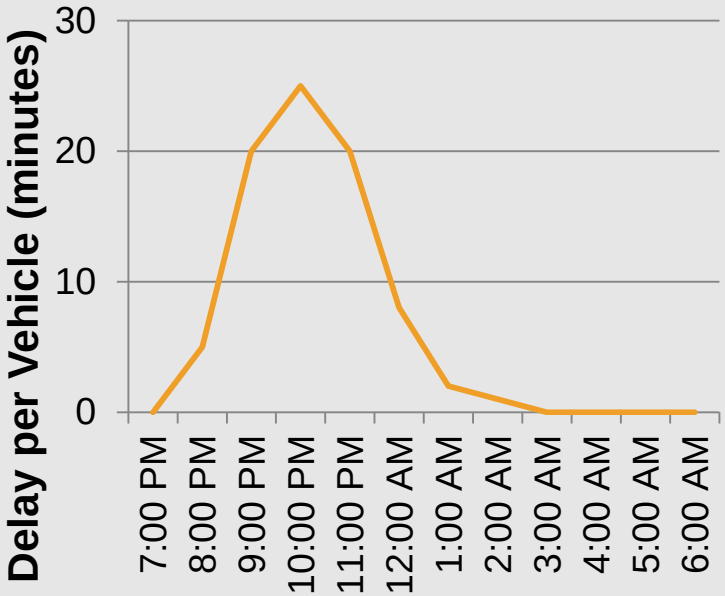
- Point-to-point travel times obtained via Bluetooth technology
- Presented for short distances ahead on PCMS signs throughout the corridor
- Travel times are automatically updated every 5 minutes through Center-to-Center protocol and TxDOT's Lonestar ITS platform

Examples of Support: Lane Closures



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

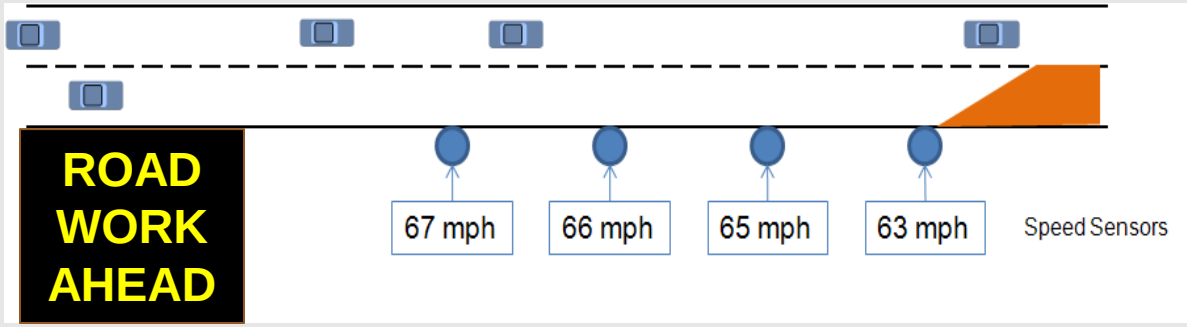


Lane Closure Analysis

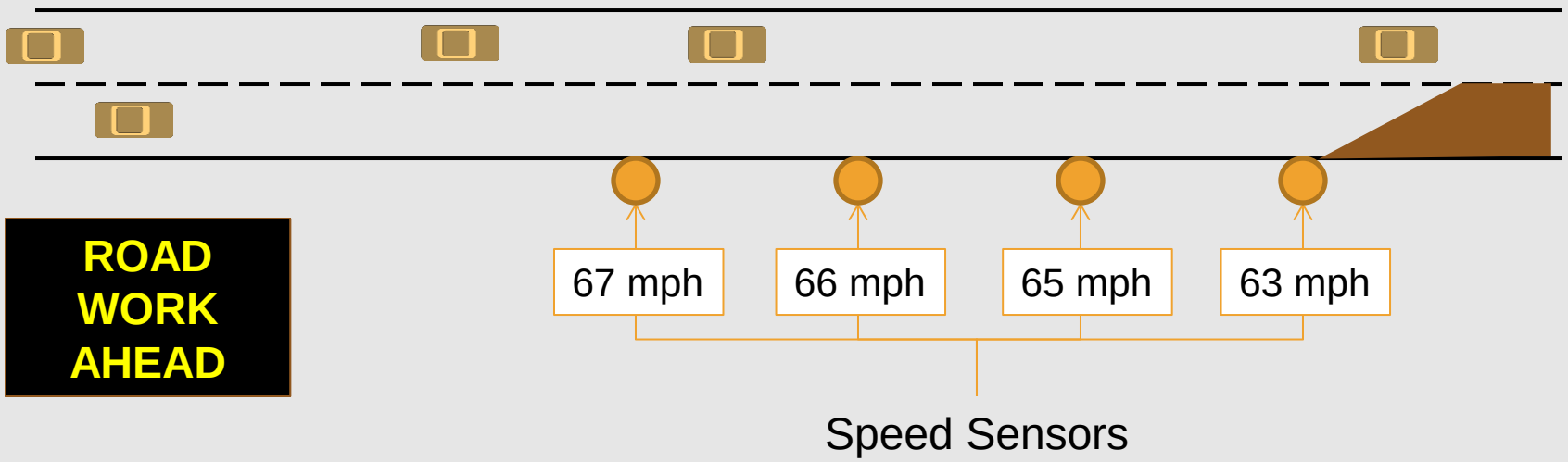
Southbound	1A	1B	1C	2A	2B	3A-1	3A-2	3B	3C	4	4A	BRB	5A	5B	5C	Total Delay	Total Travel Time	% Delay
7 PM	0	6.8	0	0	0	0	0	8	0	0	0	0	0	7.6	0	22.4	122.4	22.4
8 PM	0	8.3	0	0	0	0	0	10.8	0	0	0	0	0	7.4	0	26.5	126.5	26.5
9 PM	0	7.5	0	0	0	0	0	10.8	0	0	0	0	0	0	0	18.4	118.4	18.4
10 PM	0	3.2	0	0	0	0	0	8.1	0	0	0	0	0	0	0	11.3	111.3	11.3
11 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0
12 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0
1 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0
2 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0
3 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0
4 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0
5 AM	0	3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	3.4	103.4	3.4
6 AM	0	0	0	0	0	0	0	5.4	0	0	0	0	0	0	0	5.4	105.4	5.4

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



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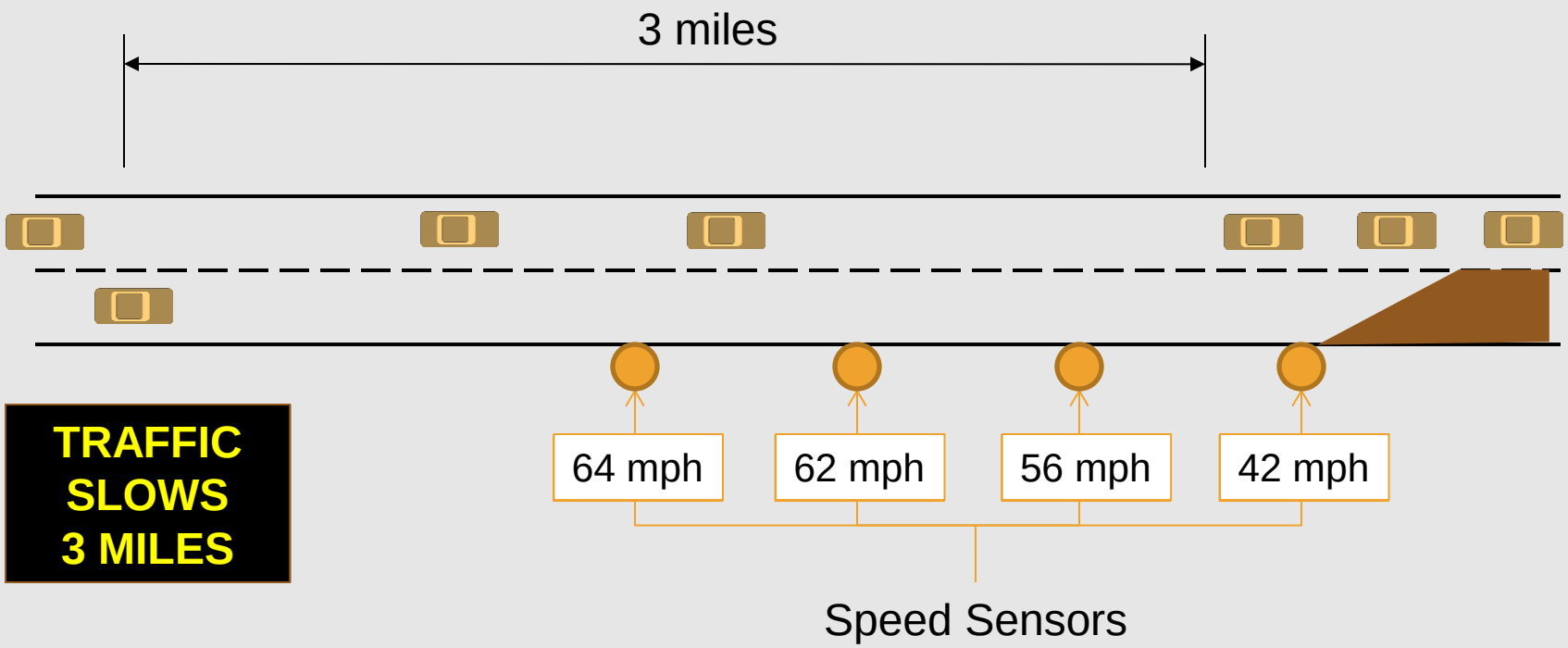

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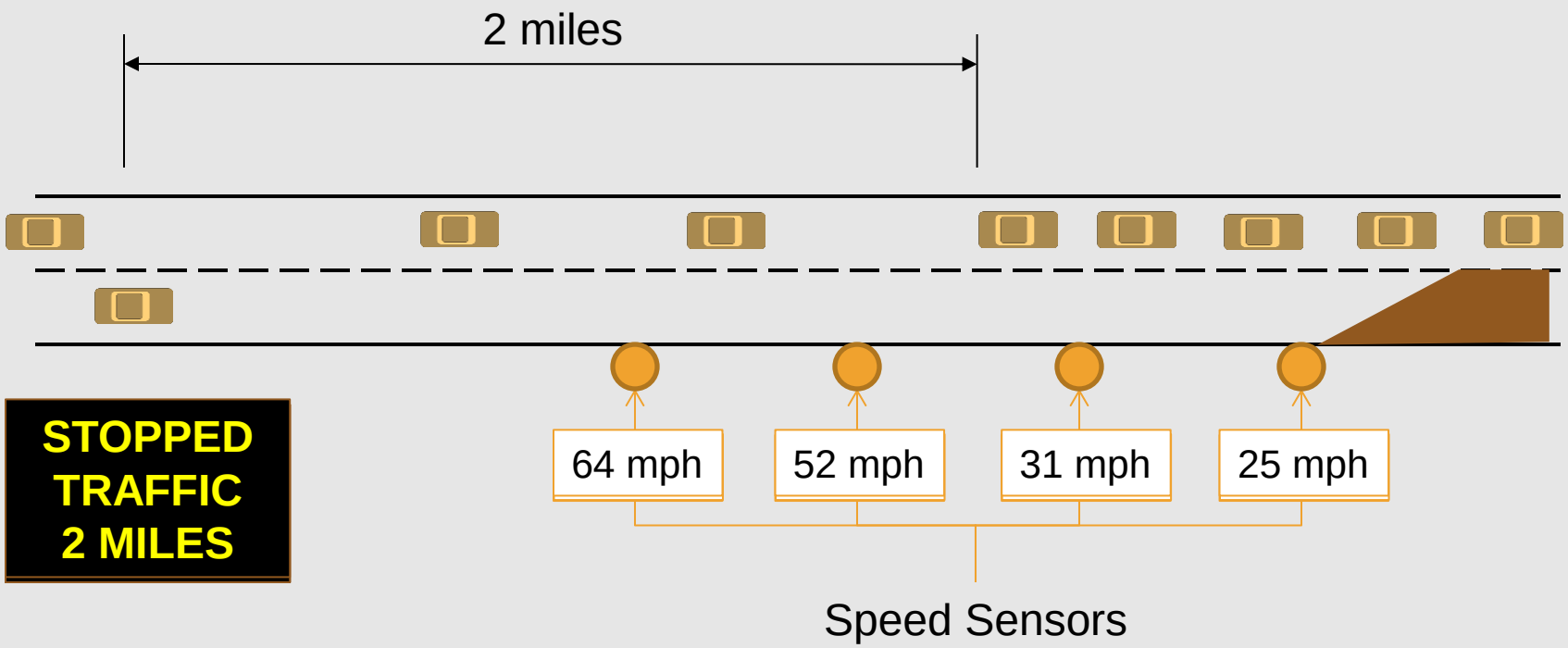
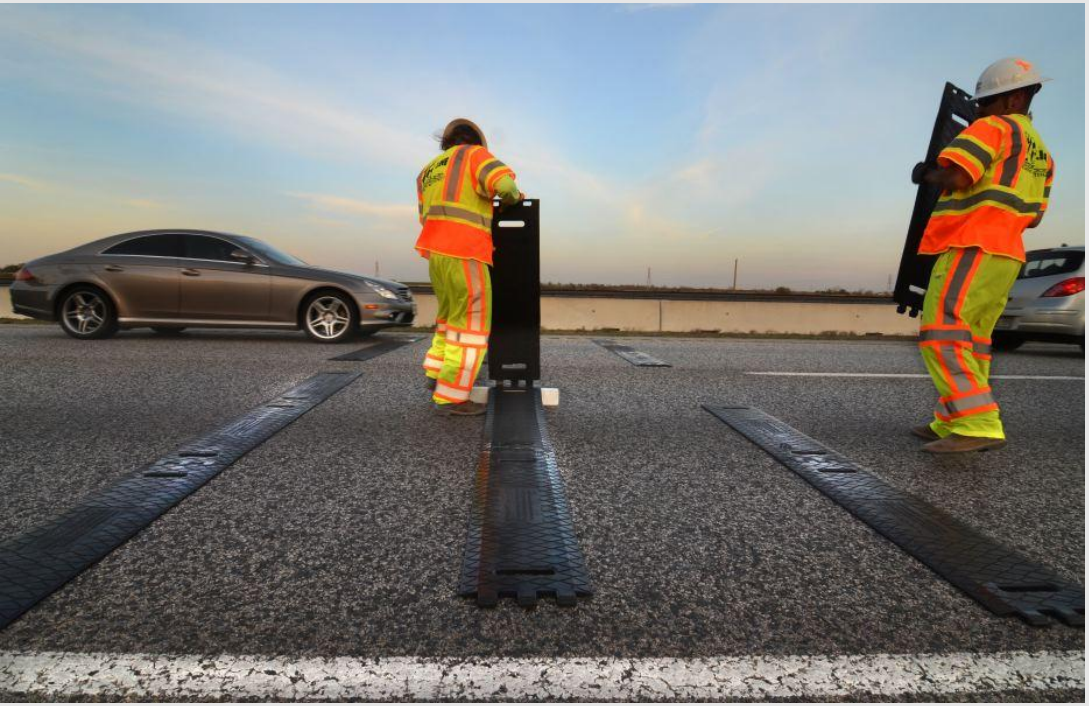


I-35 Smart Work Zones

PCMS Message	Last 5-Minute Average Speed V (mph)			
	4	3	2	1
ROAD WORK AHEAD	V > 55 OR V = 0.0	V > 55 OR V = 0.0	V > 55 OR V = 0.0	V > 55 OR V = 0.0
SLOW TRAFFIC 3 MILES	V > 55 OR V = 0.0	V > 55 OR V = 0.0	V > 55 OR V = 0.0	40 ≤ V < 55
SLOW TRAFFIC 2 MILES	V > 55 OR V = 0.0	V > 55 OR V = 0.0	40≤ V< 55	V > 40 OR V = 0.0
SLOW TRAFFIC 1 MILE	V > 55 OR V = 0.0	40≤ V< 55	V > 40 OR V = 0.0	V > 40 OR V = 0.0
SLOW TRAFFIC AHEAD	40≤ V< 55	V > 40 OR V = 0.0	V > 40 OR V = 0.0	V > 40 OR V = 0.0
STOPPED TRAFFIC 3 MILES	V > 40 OR V = 0.0	V > 40 OR V = 0.0	V > 40 OR V = 0.0	0.0 ≤ V < 40
STOPPED TRAFFIC 2 MILES	V > 40 OR V = 0.0	V > 40 OR V = 0.0	0.0 ≤ V < 40	Any value
STOPPED TRAFFIC 1 MILE	V > 40 OR V = 0.0	0.0 ≤ V < 40	Any value	Any value
STOPPED TRAFFIC AHEAD	0.0 ≤ V < 40	Any value	Any value	Any value

I-35 Smart Work Zones



I-35 Smart Work Zones

Variable Speed Limits

Questions or Comments