SH 161

Bottleneck Improvement Project

Dallas-Fort Worth TexITE Joint Meeting

July 15, 2016

Presented by Jory J. Dille

PARTNERSHIPS

Texas Department of Transportation

NTTA®
NORTH TEXAS TOLLWAY AUTHORITY

North Central Texas Council of Governments

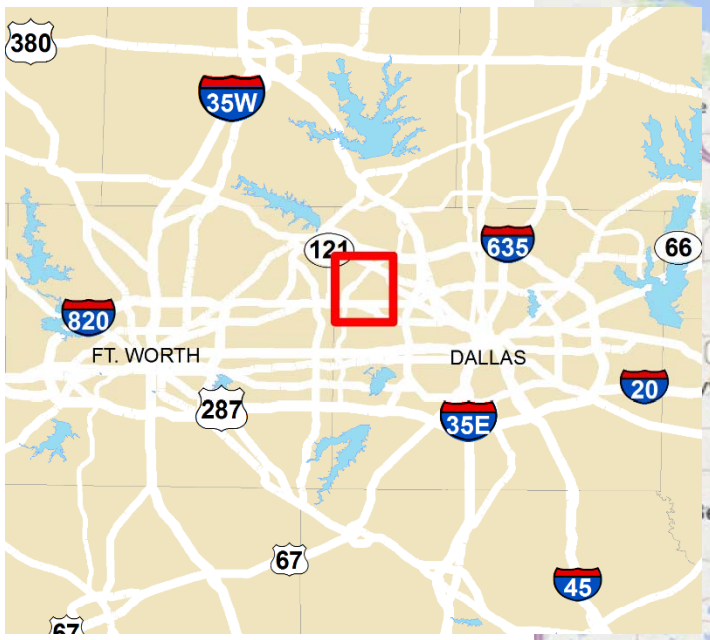
Texas A&M Transportation Institute

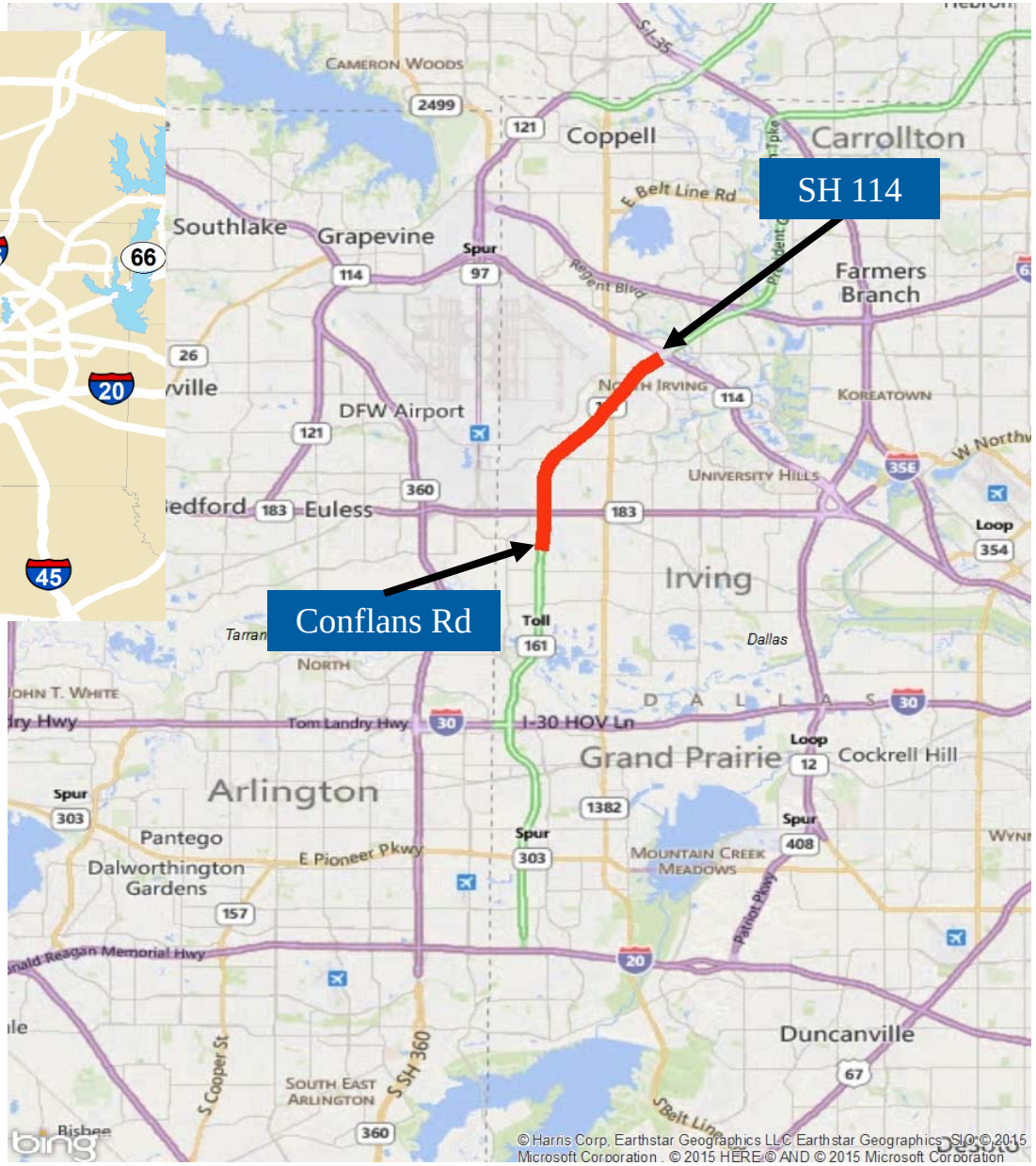
IRVING
TEXAS

PROJECT DESCRIPTION

- **SH 161 – Conflans Road to SH 114**
- **Approximately 6 Miles**
- **Improve bottleneck during peak periods**
  - AM (Northbound)
  - PM (Southbound)
- **Pilot Study**
  - One year study period with potential to extend
  - Before and after data collection

PROJECT LOCATION

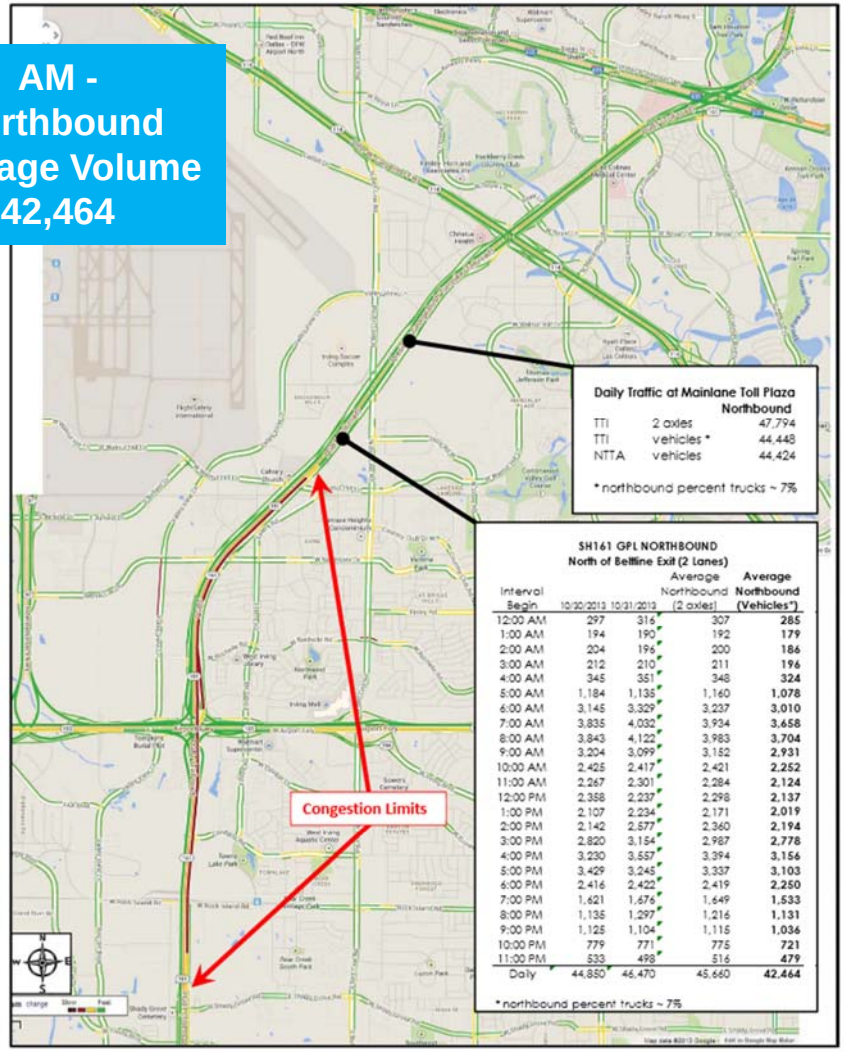




BEFORE DATA COLLECTION

AM - Northbound Average Volume 42,464

SH 161 – Morning Observation



Daily Traffic at Mainlane Toll Plaza
Northbound

TTI	2 axles	47,794
TTI	vehicles *	44,448
NTTA	vehicles	44,424

* northbound percent trucks ~ 7%

SH161 GPL NORTHBOUND
North of Beltline Exit (2 Lanes)

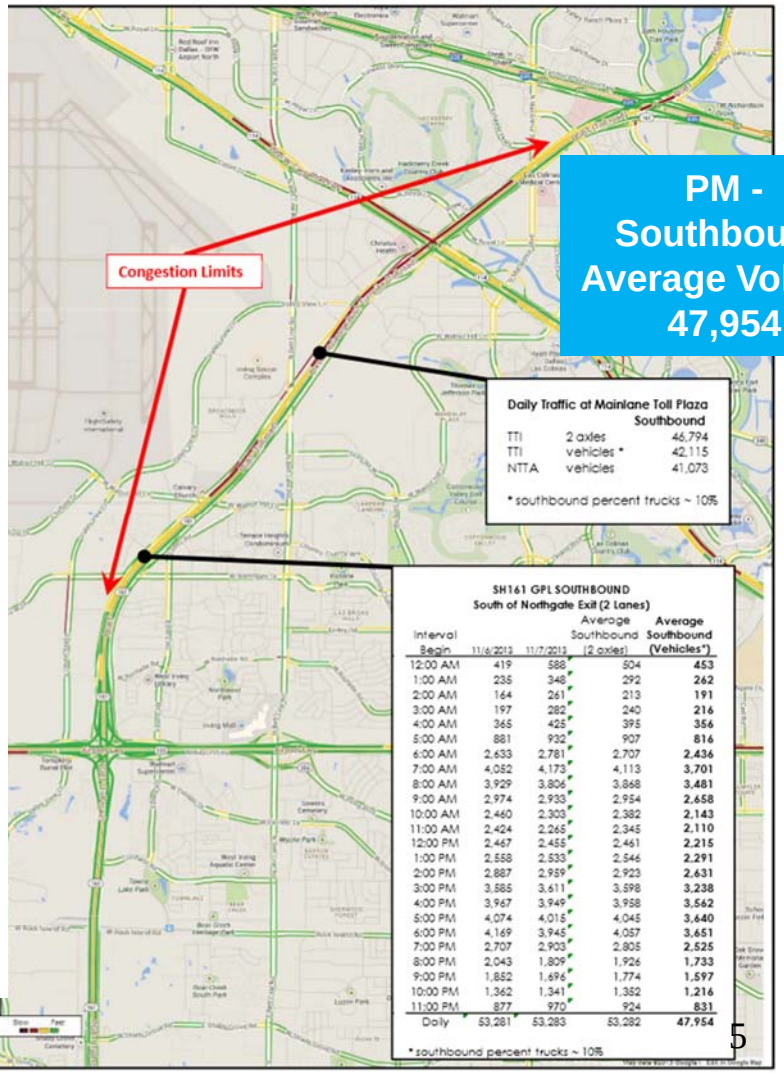
Interval Begin	10/30/2013	10/31/2013	Average Northbound (2 axles)	Average Northbound (Vehicles*)
12:00 AM	297	316	307	285
1:00 AM	194	190	192	179
2:00 AM	204	196	200	186
3:00 AM	212	210	211	196
4:00 AM	345	351	348	324
5:00 AM	1,184	1,135	1,160	1,078
6:00 AM	3,145	3,329	3,237	3,010
7:00 AM	3,835	4,032	3,934	3,658
8:00 AM	3,843	4,122	3,983	3,704
9:00 AM	3,204	3,099	3,152	2,931
10:00 AM	2,425	2,417	2,421	2,252
11:00 AM	2,267	2,301	2,284	2,124
12:00 PM	2,358	2,237	2,298	2,137
1:00 PM	2,107	2,234	2,171	2,019
2:00 PM	2,142	2,577	2,360	2,194
3:00 PM	2,820	3,154	2,987	2,778
4:00 PM	3,230	3,557	3,394	3,156
5:00 PM	3,429	3,245	3,337	3,103
6:00 PM	2,416	2,422	2,419	2,250
7:00 PM	1,621	1,676	1,649	1,533
8:00 PM	1,135	1,297	1,216	1,131
9:00 PM	1,125	1,104	1,115	1,036
10:00 PM	779	771	775	721
11:00 PM	533	498	516	479
Daily	44,850	46,470	45,660	42,464

* northbound percent trucks ~ 7%

- Peak Northbound congestion from near Shady Grove Rd. to north of Walnut Hill Ln. around 7:30 AM

PM - Southbound Average Volume 47,954

SH 161 – Evening Observation



Daily Traffic at Mainlane Toll Plaza
Southbound

TTI	2 axles	46,794
TTI	vehicles *	42,115
NTTA	vehicles	41,073

* southbound percent trucks ~ 10%

SH161 GPL SOUTHBOUND
South of Northgate Exit (2 Lanes)

Interval Begin	11/6/2013	11/7/2013	Average Southbound (2 axles)	Average Southbound (Vehicles*)
12:00 AM	419	588	504	453
1:00 AM	235	348	292	262
2:00 AM	164	261	213	191
3:00 AM	197	282	240	216
4:00 AM	365	425	395	356
5:00 AM	881	932	907	816
6:00 AM	2,633	2,781	2,707	2,436
7:00 AM	4,052	4,173	4,113	3,701
8:00 AM	3,929	3,806	3,868	3,481
9:00 AM	2,974	2,933	2,954	2,658
10:00 AM	2,460	2,303	2,382	2,143
11:00 AM	2,424	2,265	2,345	2,110
12:00 PM	2,467	2,455	2,461	2,215
1:00 PM	2,558	2,533	2,546	2,291
2:00 PM	2,887	2,959	2,923	2,631
3:00 PM	3,585	3,611	3,598	3,238
4:00 PM	3,967	3,949	3,958	3,562
5:00 PM	4,074	4,015	4,045	3,640
6:00 PM	4,169	3,945	4,057	3,651
7:00 PM	2,707	2,903	2,805	2,525
8:00 PM	2,043	1,809	1,926	1,733
9:00 PM	1,852	1,696	1,774	1,597
10:00 PM	1,362	1,341	1,352	1,216
11:00 PM	877	970	924	831
Daily	53,281	53,283	53,282	47,954

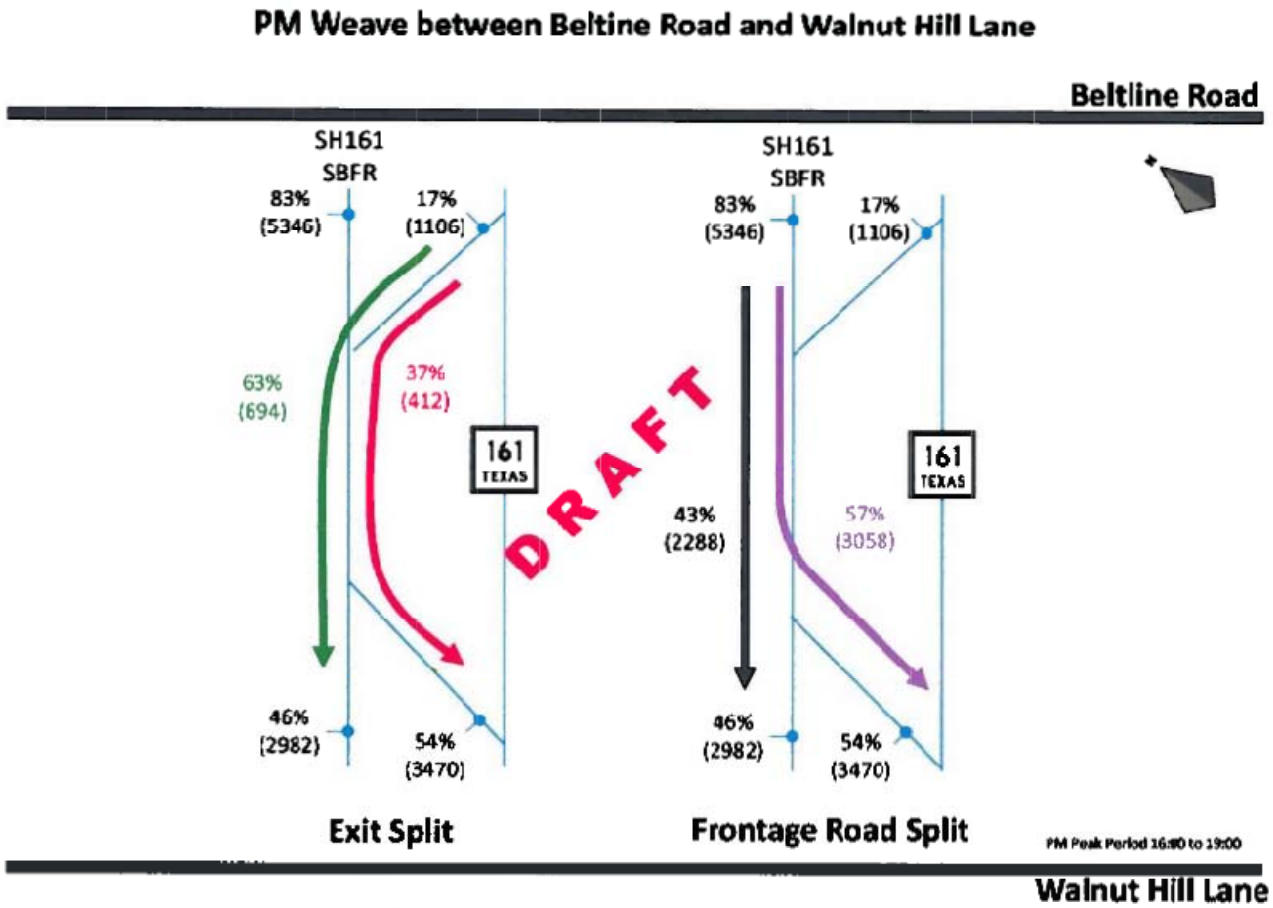
* southbound percent trucks ~ 10%

- Peak Southbound congestion from near MacArthur Blvd to south of Northgate Dr. around 5:30 PM

TRAFFIC OBSERVATIONS (AM) Northbound

Illegal Median Crossing
EB SH 183-NB SH 161 Director Connector south of Rochelle Rd
11/14/13, 12/4/13, and 12/5/13

TRAFFIC OBSERVATIONS (PM) Southbound



SH 161 Southbound
37 % Queue Jumping

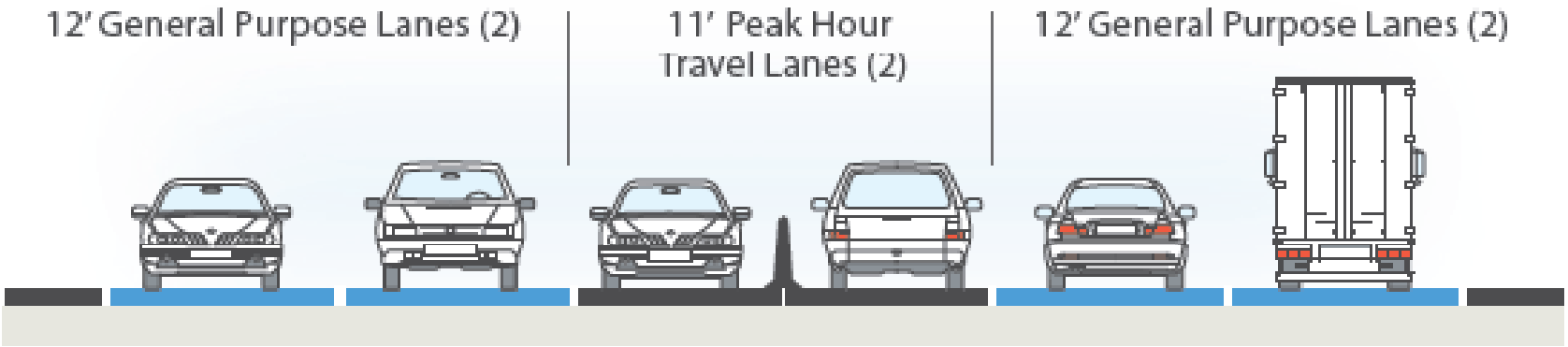
SH 161 Frontage Road
57% Entering

PROJECT ELEMENTS
$4.25M PROJECT COST

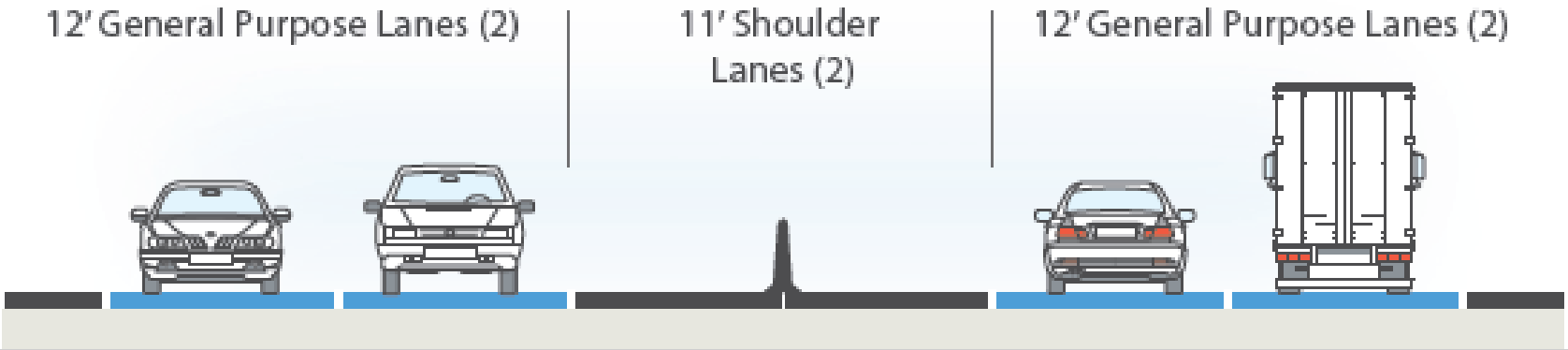
Utilize Shoulder	ITS & Signage	Staged Wreckers
Peak Period Northbound 6AM–10AM Southbound 2PM–7PM	Cameras DMS Illumination Static Signage	Expedited Incident Management Peak Period Staging Open Shoulder

UTILIZE SHOULDER

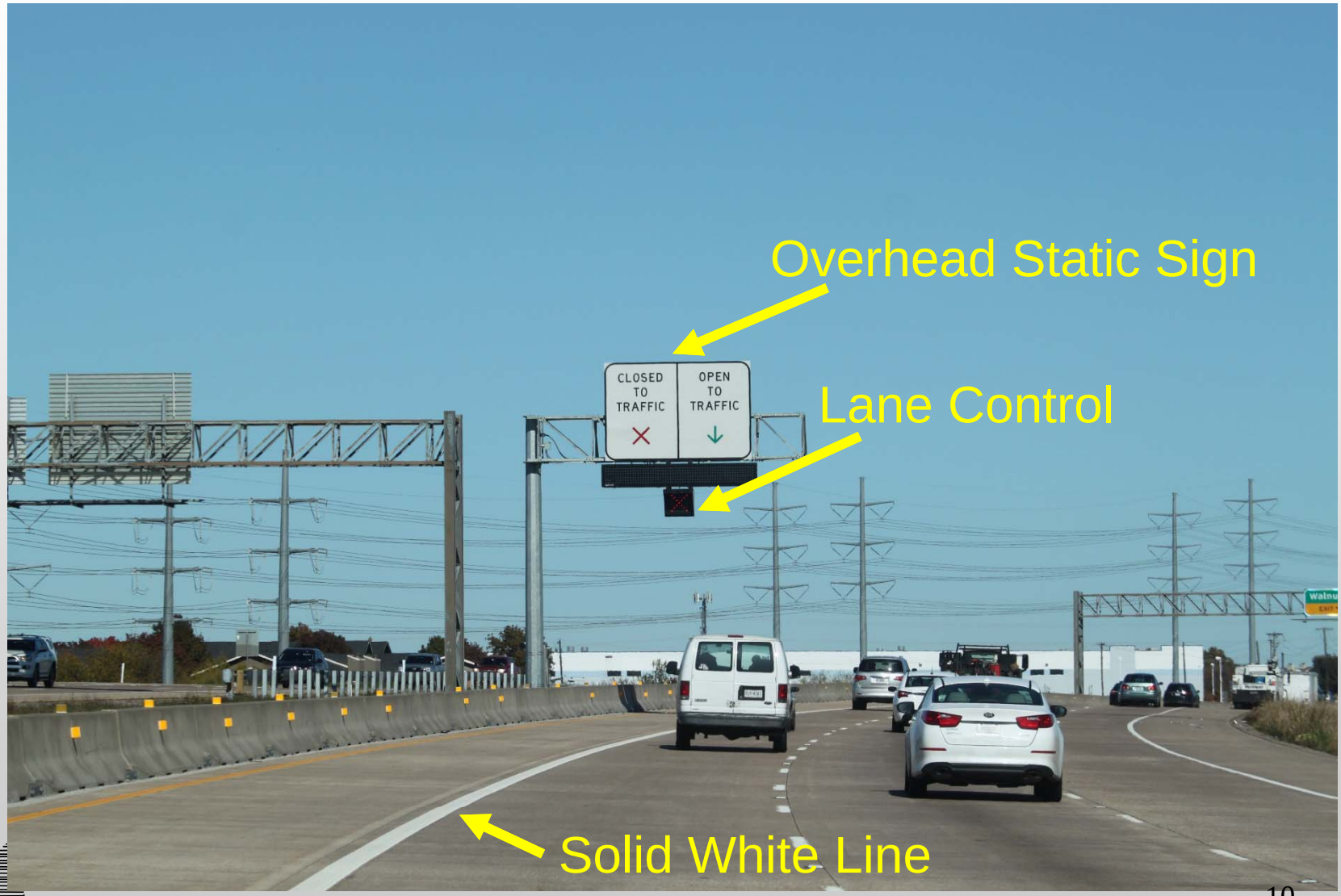
PEAK HOUR



OFF-PEAK HOUR



TYPICAL ROADBED SECTION VIEW



STATIC SIGNING

OVERHEAD LANE SIGNING

DESIGNATED EMERGENCY PARKING AREA

DMS NOTIFICATION ENTERING CORRIDOR

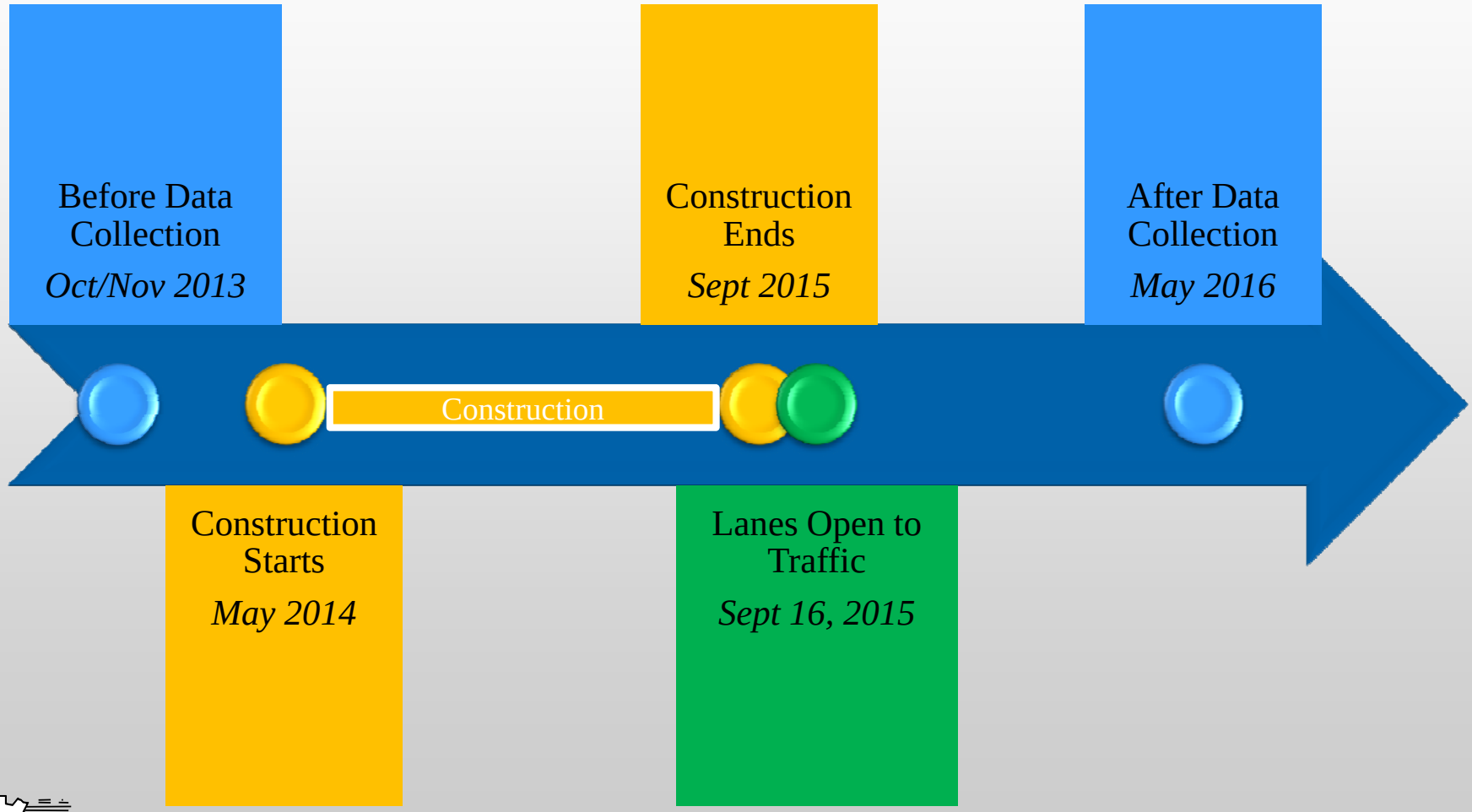
WRECKER STAGING

- 1 Staged Wrecker
  - AM Peak (Northbound)
  - PM Peak (Southbound)
- Expedited Vehicle Removal
- Assist Irving PD

DAILY OPERATIONS

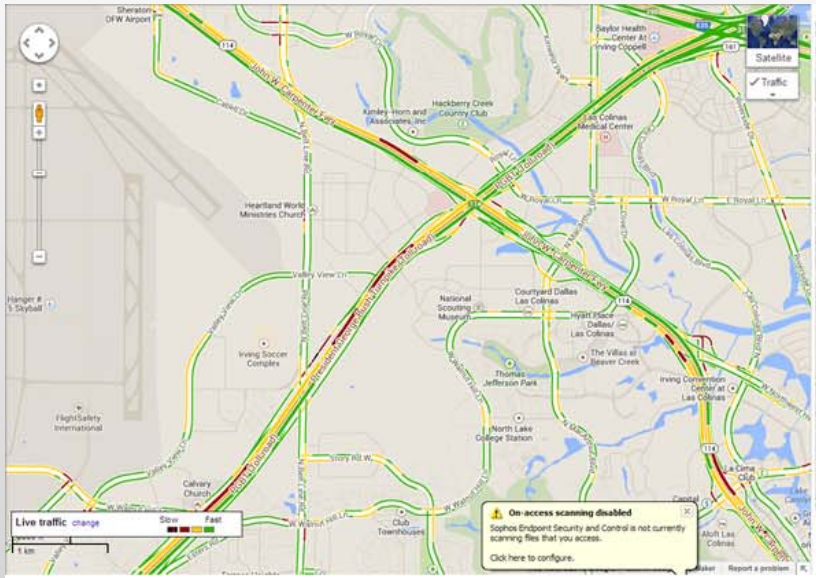
- Sweeping lane prior to AM and PM openings
  - Verify there are no obstructions (e.g., vehicles or debris)
  - Remove light debris
- Communication to DalTrans for signs/signals
- On-call wrecker staged in corridor during operation hours

BRIEF CHRONOLOGY

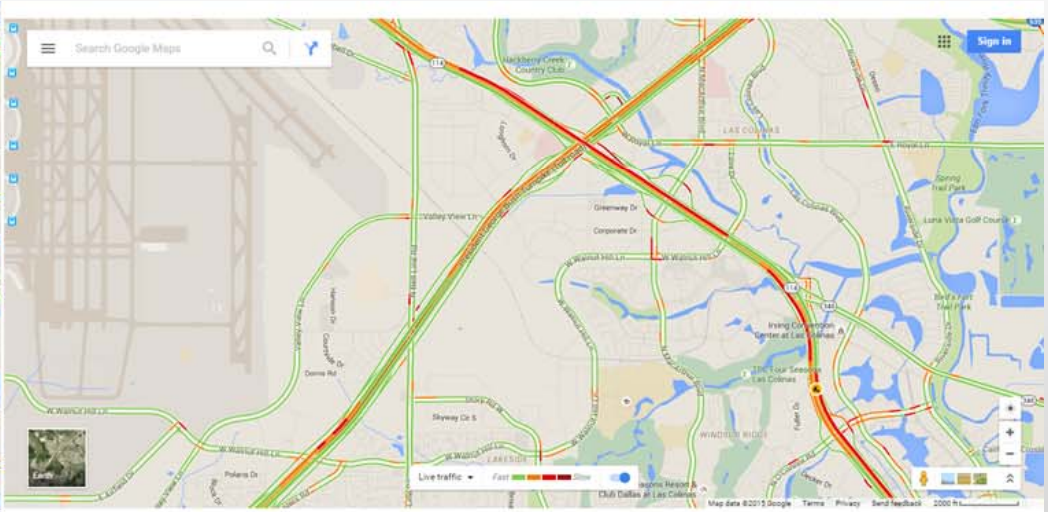


INITIAL RESULTS

PM Comparison North End



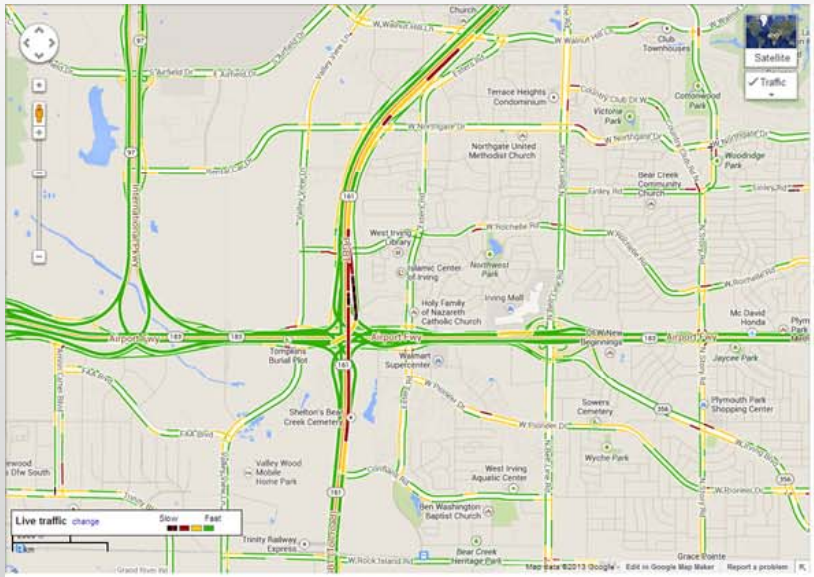
Before - Tuesday, October 29, 2013 - 5:00 PM



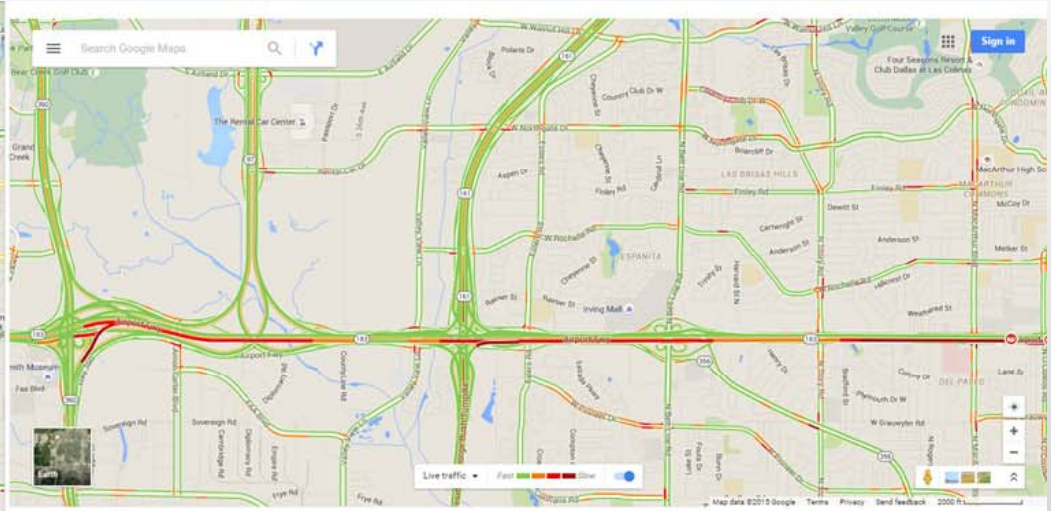
After - Tuesday, September 16, 2015 - 5:00 PM

INITIAL RESULTS

AM Comparison South End



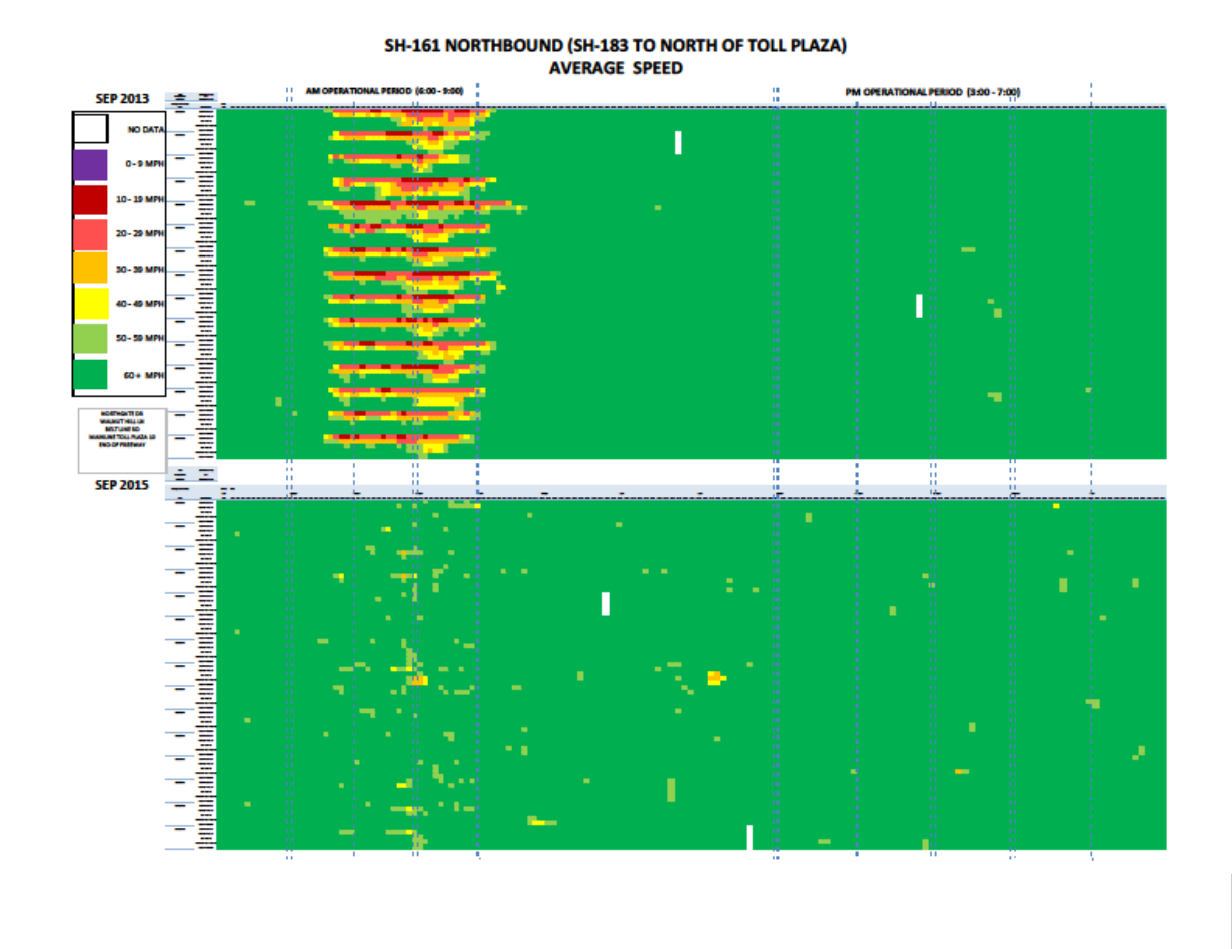
Before - Tuesday, October 29, 2013 - 8:30 AM



After - Tuesday, September 16, 2015 - 8:30 AM

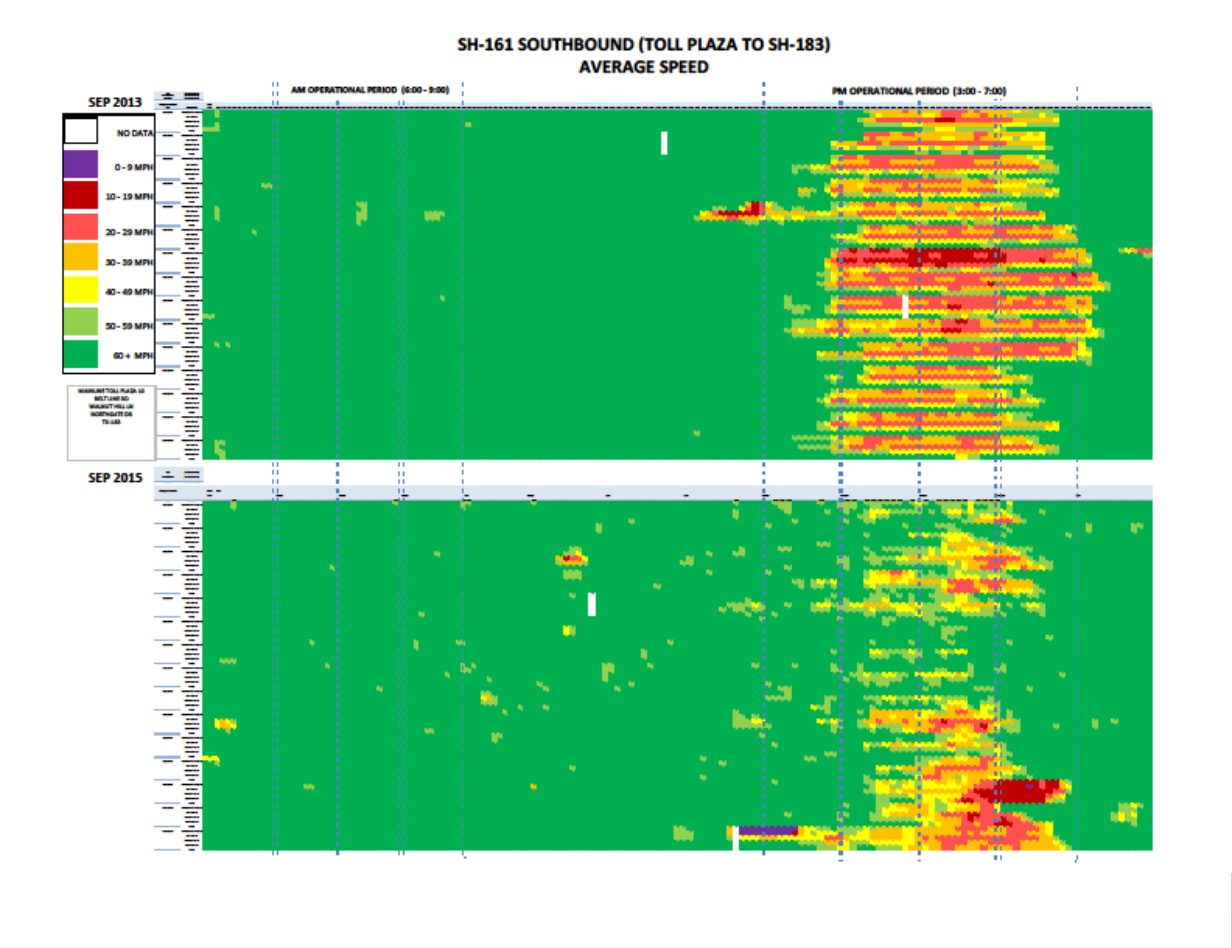
INRIX SPEED COMPARISON

Northbound Mainlane



INRIX SPEED COMPARISON

Southbound Mainlane



INRIX SPEED COMPARISON

SH-161 INRIX SPEED DATA

AM OPERATIONAL PERIOD (6:00-9:00 A.M.) BY HOUR

road	TX-161
TTI ROADTYPE	(Multiple Items)
direction	NORTHBOUND

MILES	Average of speed / Row Labels	Column Labels 2013 6 am	7 am	8 am	2013 Tota	2015 6 am	7 am	8 am	2015 Total
1.27	NORTHGATE DR	55	23	23	34	67	65	64	66
0.24	WALNUT HILL LN	62	44	39	48	67	63	63	65
1.02	BELT LINE RD	69	62	49	60	70	69	67	69
0.41	MAINLINE TOLL PLAZA 10	69	64	54	62	70	68	66	68
0.27	END OF FREEWAY	69	67	63	66	69	68	66	68
3.21	Grand Total	64	48	43	52	69	66	65	67
	Weighted Speed				46				67
						Percent Change			46.4%

AM "PEAK" PERIOD (7:00-9:00 A.M.)

road	TX-161
TTI ROADTYPE	(Multiple Items)
direction	NORTHBOUND

Average of speed / Row Labels	Column Labels 2013 7 am	8 am	2013 Total	2015 7 am	8 am	2015 Total
NORTHGATE DR	23	23	23	65	64	65
WALNUT HILL LN	44	39	42	63	63	63
BELT LINE RD	62	49	55	69	67	68
MAINLINE TOLL PLAZA 10	64	54	59	68	66	67
END OF FREEWAY	67	63	65	68	66	67
Grand Total	48	43	46	66	65	66
Weighted Speed			36			66
			Percent Change			84.3%

PM OPERATIONAL PERIOD (3:00-7:00 P.M.) BY HOUR

road	TX-161
TTI ROADTYPE	(Multiple Items)
direction	SOUTHBOUND

MILES	Average of speed / Row Labels	Column Labels 2013 3 pm	4 pm	5 pm	6 pm	2013 Total	2015 3 pm	4 pm	5 pm	6 pm	2015 Total
0.29	MAINLINE TOLL PLAZA 10	63	34	27	42	42	62	59	52	59	58
0.4	BELT LINE RD	64	38	32	45	45	63	59	52	60	58
1.05	WALNUT HILL LN	58	29	23	35	36	62	52	41	55	52
1.16	NORTHGATE DR	63	48	42	52	51	66	59	47	57	57
0.34	TX-183	67	63	60	64	64	65	63	48	55	58
3.24	Grand Total	63	41	35	46	46	63	58	47	57	56
	Weighted Speed					45					56
								Percent Change			25.1%

PM "PEAK" PERIOD (4:00-7:00 P.M.)

road	TX-161
TTI ROADTYPE	(Multiple Items)
direction	SOUTHBOUND

Average of speed / Row Labels	Column Labels 2013 4 pm	5 pm	6 pm	2013 Total	2015 4 pm	5 pm	6 pm	2015 Total
MAINLINE TOLL PLAZA 10	34	27	42	35	59	52	59	57
BELT LINE RD	38	32	45	38	59	52	60	57
WALNUT HILL LN	29	23	35	29	52	41	55	49
NORTHGATE DR	48	42	52	47	59	47	57	54
TX-183	63	60	64	62	63	48	55	56
Grand Total	41	35	46	41	58	47	57	54
Weighted Distance Speed				38				53
					Percent Change			32.4%

MEDIA REPORTS

68° Monday, May 9, 2 **The Dallas Morning News**

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Once TxDOT opened up SH 161 shoulders, traffic started sailing

Brandon Formby

Published: April 14, 2016 3:06 pm

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Heavy traffic on southbound State Highway 161 near Walnut Hill in Irving in 2013. (Kye R. Lee/Staff Photographer)

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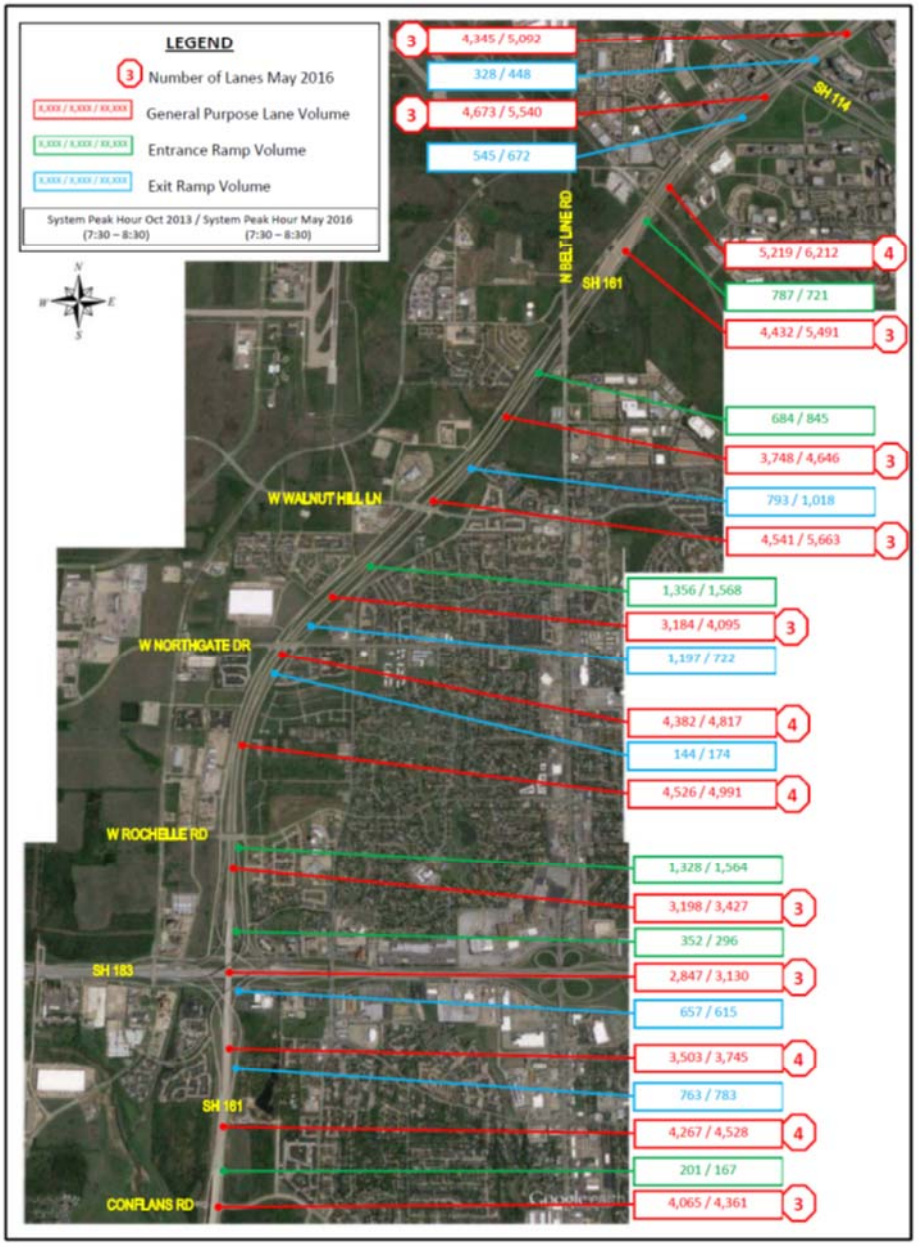
Widening Highways Never Fixes Traffic. But Darnit, It Did in Texas

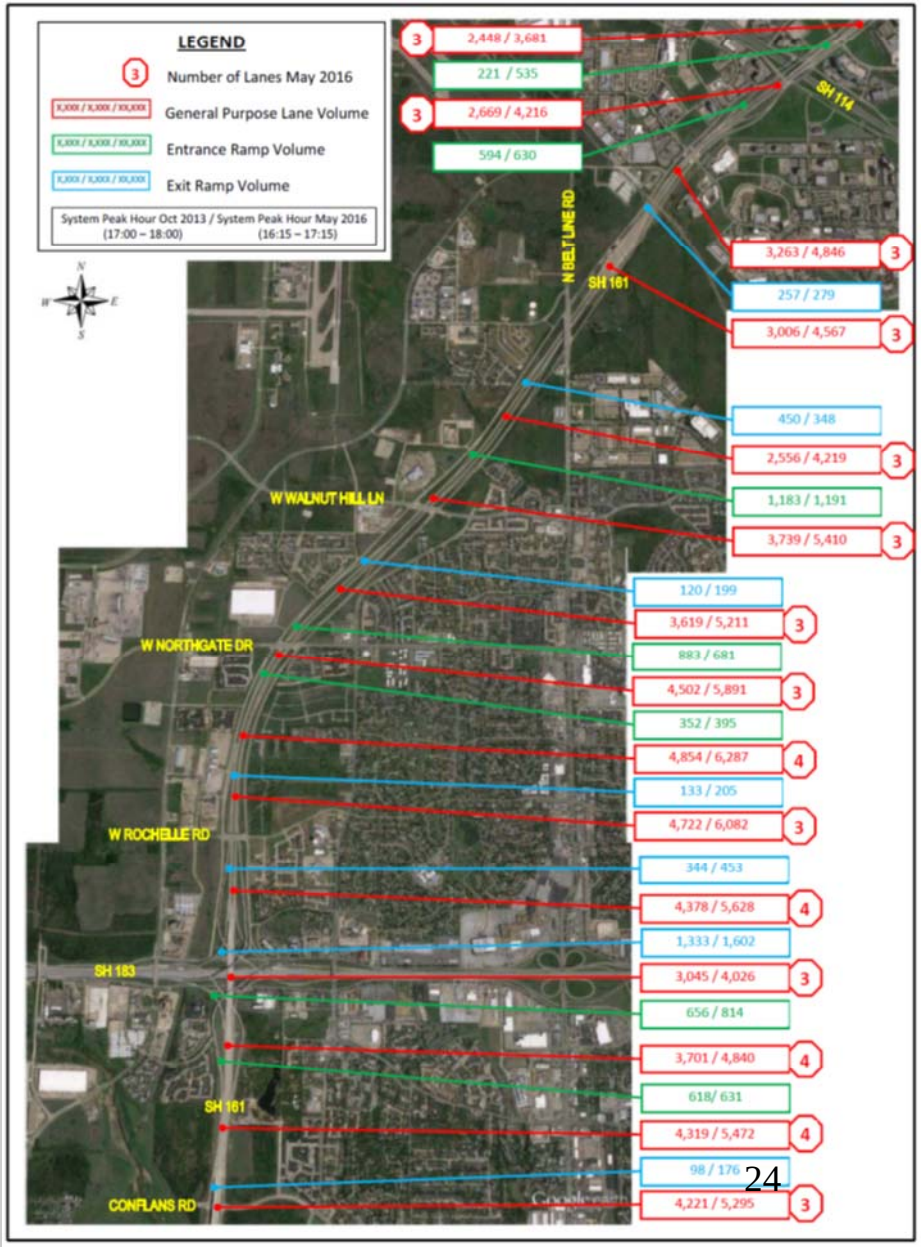
WIRED

In a true fairy tale of a transportation project, Texas spent a measly $4.25 million widening a highway and, in defiance of conventional wisdom among transportation planners, doubled the speed of rush hour traffic on a notoriously congested highway in Dallas.

The Texas Department of Transportation repaved the shoulders along both sides of a 6.3-mile stretch of State Highway 161 between Dallas and Fort Worth in September. Then it opened them up to traffic during the daily rush hour, keeping tow trucks on standby in case someone breaks down. Based on figures released this month, with the extra lanes in place, traffic "started sailing," *The Dallas Morning News* reported this week.

PEAK HOUR VOLUME COMPARISON





OBSERVATIONS

- Average of 44,000 more vehicle traveling each month since opening peak-period lane
- Average speeds have increased
- Impact of construction on SH 183
- Few incidents occur on peak-period lane

NEXT STEPS

- **Review after data collection**
- **Review for continued usage of peak-period lane after one year**
- **Use lessons learned for possible usage across the state**
- **Identified for 8 lanes (4 NB, 4 SB) in the North Texas Metropolitan Transportation Plan (MTP) 2040 - http://www.nctcog.org/trans/mtp/2040/**

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