



MAIN STREET

I THOUGHT THIS WAS JUST
A WIDENING PROJECT!

ROBERT CASKEY, P.E.

DALLAS TEXITE LUNCHEON
AUGUST 9, 2019



OUTLINE

- Overview and Background
- Design
- Construction
- Lessons Learned





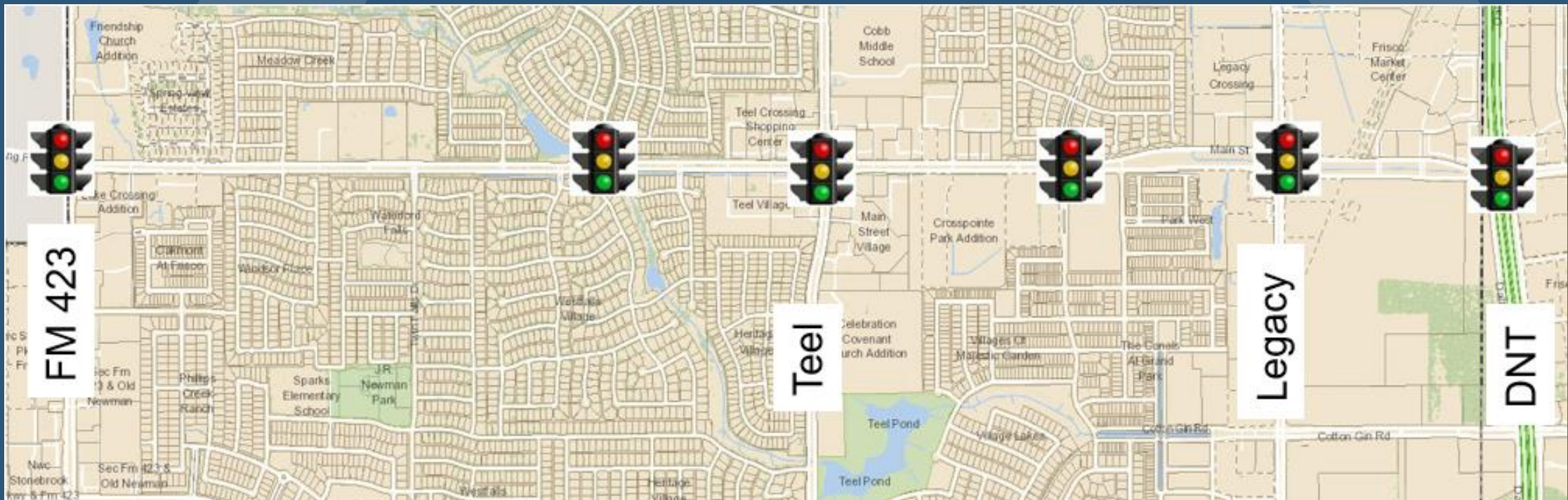
PROJECT TASKS

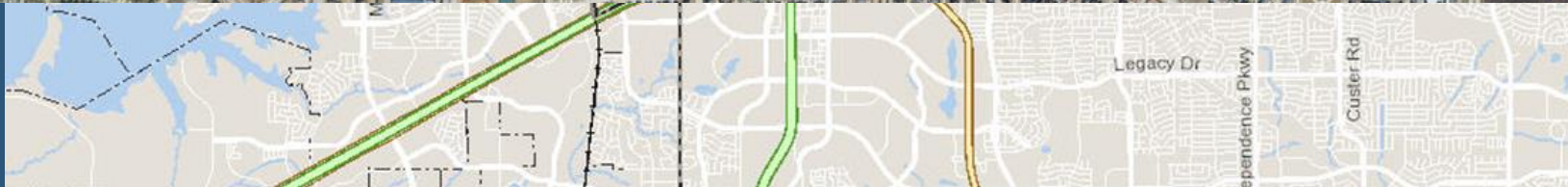
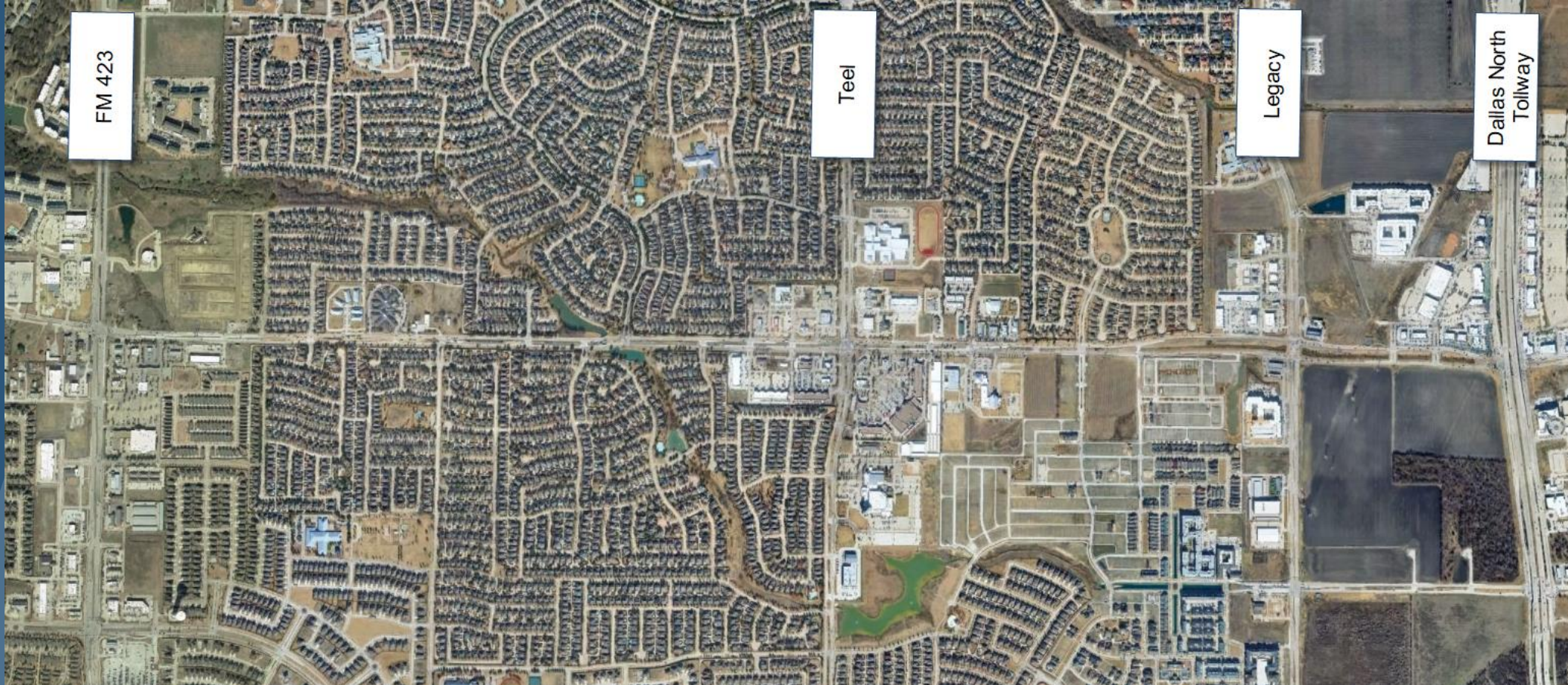
Original Tasks

- Widen to 6 lanes
- Modify 6 existing signals
- New 30" water line

Additional Tasks

- Accommodate transmission lines
- Improve Legacy intersection
- Add a new signal
- Tree relocation
- Illumination reinstall
- Add capacity to Teel and Legacy
- Pavement maintenance





EXISTING CONDITIONS

3 miles

6 signals

4 lane divided

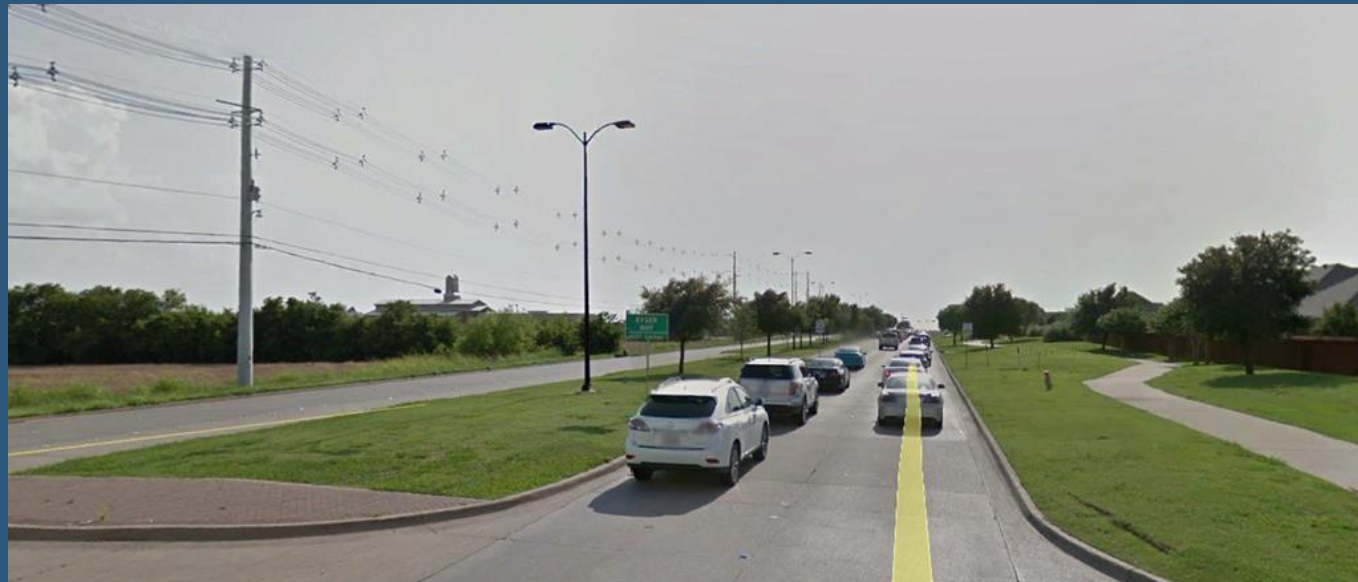
Illumination

45,000 VPD

Failing Pavement

AM Peak: Eastbound

PM Peak: Westbound



“BURY THE LINES”

FriscoEnterprise

PUC: Aesthetics don't matter, street safety does in Frisco line burial case

William Taylor, wtaylor@starlocalmedia.com Apr 20, 2016 0





DESIGN

- Legacy Drive Intersection
 - Phasing
-

BEFORE





OPTIONS



Michigan
Lefts



SPUI



Traditional
Widening



BENEFIT / COST ANALYSIS

Year 2030 Alternative	Existing Geometry (Baseline)	Traditional Widening	SPUI	Michigan Lefts
PM Peak Hour Delay (veh-hour)	357.0	125.8	122.1	346.4
Daily Total Delay (veh-hour)	3,570.0	1,258.0	1,221.0	3,464.0
Daily Delay Savings (veh-hour)	NA	2,312.0	2,349.0	106.0
Working Days per Year	250			
Annual Delay Savings (veh-hour)	NA	578,000.0	587,250.0	26,500.0
TxDOT Road User Cost of Delay	\$20.35			
Annual Benefit	NA	\$11,762,300.0	\$11,950,537.5	\$539,275.0
Present Value of Life Service Benefit*	NA	\$124,609,973.8	\$126,604,164.5	\$5,713,087.0
Estimated Construction Cost	NA	\$5,800,000.0	\$2,800,000.0	\$1,700,000.0
<u>Benefit/Cost Ratio</u>	NA	<u>21.5</u>	<u>45.2</u>	<u>3.4</u>
*Present Value of Life Service Benefit over 20 years using a 7% Discount Rate				



SPUI ADVANTAGES AND DISADVANTAGES

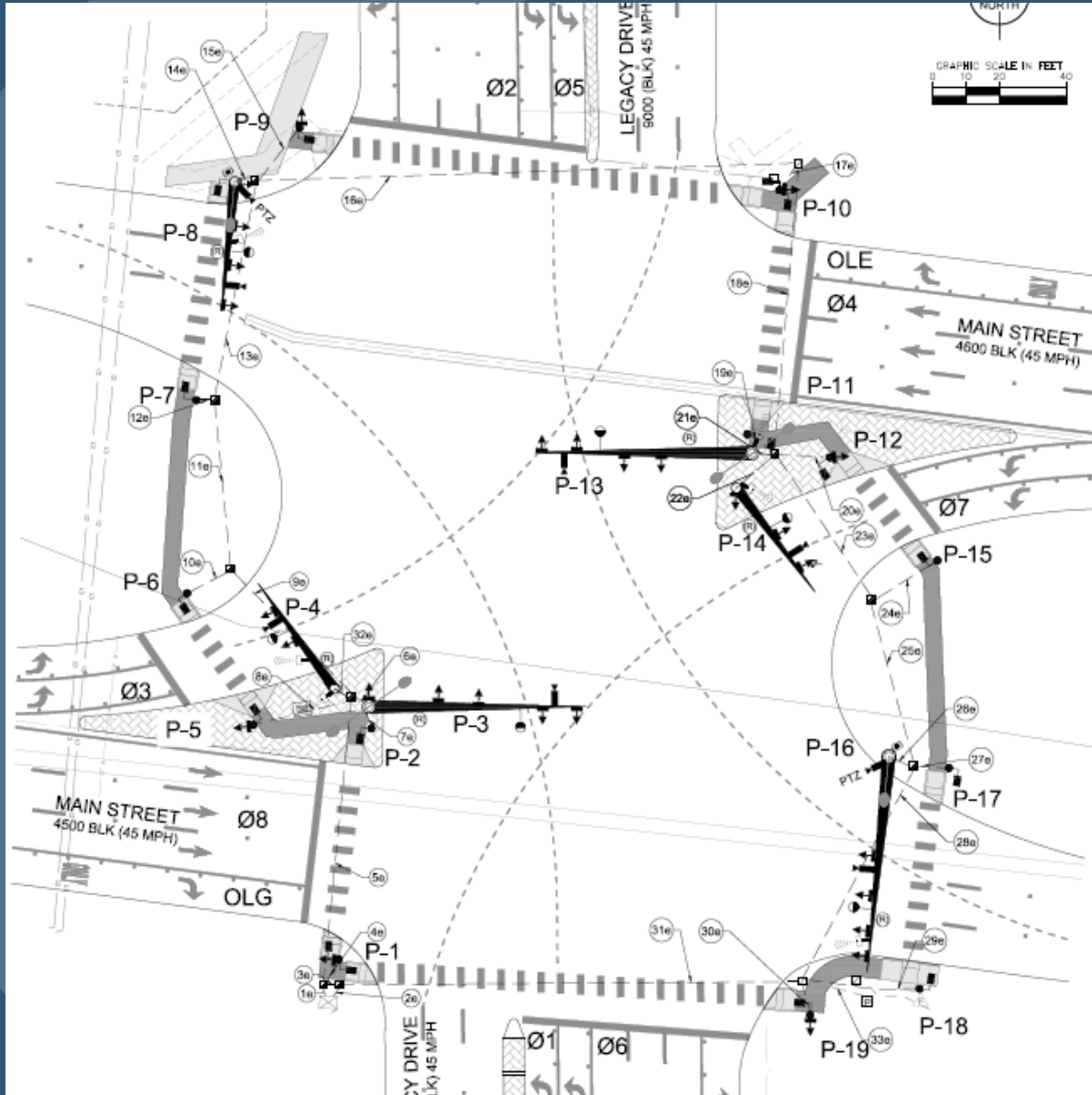
- **Advantages**

- No median storage
- Concurrent moving of opposing lefts
- Compact design (comparatively)
- Wider turns
- Higher discharge rate

- **Disadvantages**

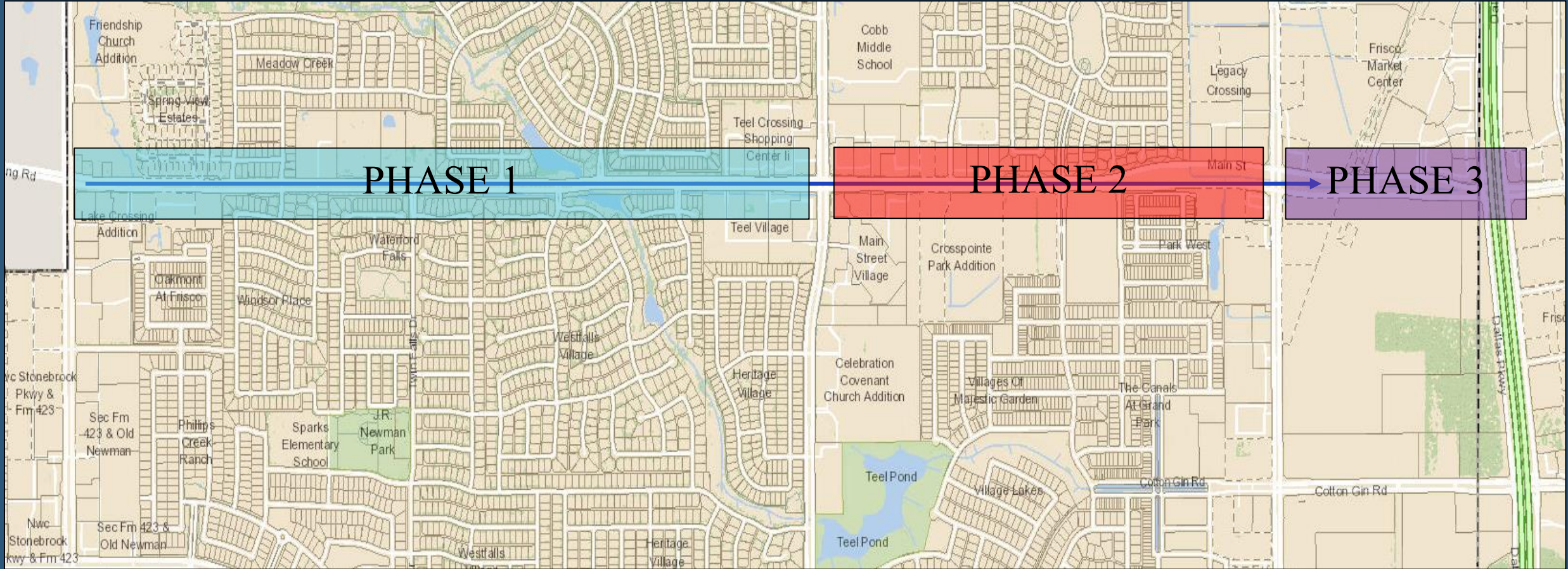
- **Atypical with thru movements from both streets**
- Peds can't cross in one cycle
- Longer clearance intervals





LEGACY INTERSECTION DESIGN

PROPOSED PHASING



CONSTRUCTION

- Brazos Duct Bank and Vaults
- Legacy Drive Intersection
- Traffic Control
- Travel Times



DUCT BANK

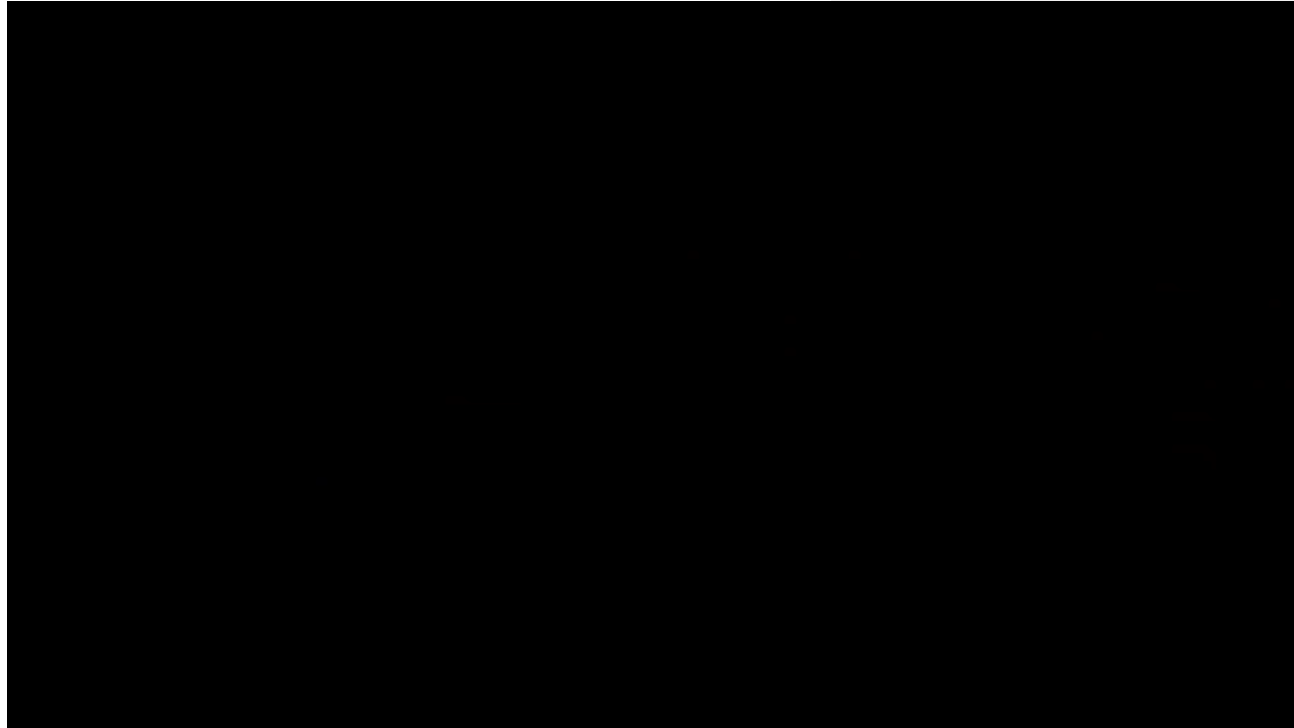






VAULTS

LEGACY AT MAIN INTERSECTION



LEGACY AFTER







LEFT TURN HEADS



LEGACY EARLY ISSUES

- Crashes
 - 16 total since opened in August 2018
 - **6 making a left from thru lane (4 in first month)**
- **Stopping in intersection**
- Left Turn Stop Bars
- Ongoing construction



TRAFFIC CONTROL

- Daily Lane Closures
- Phasing
- Traffic Switch
- Legacy Drive

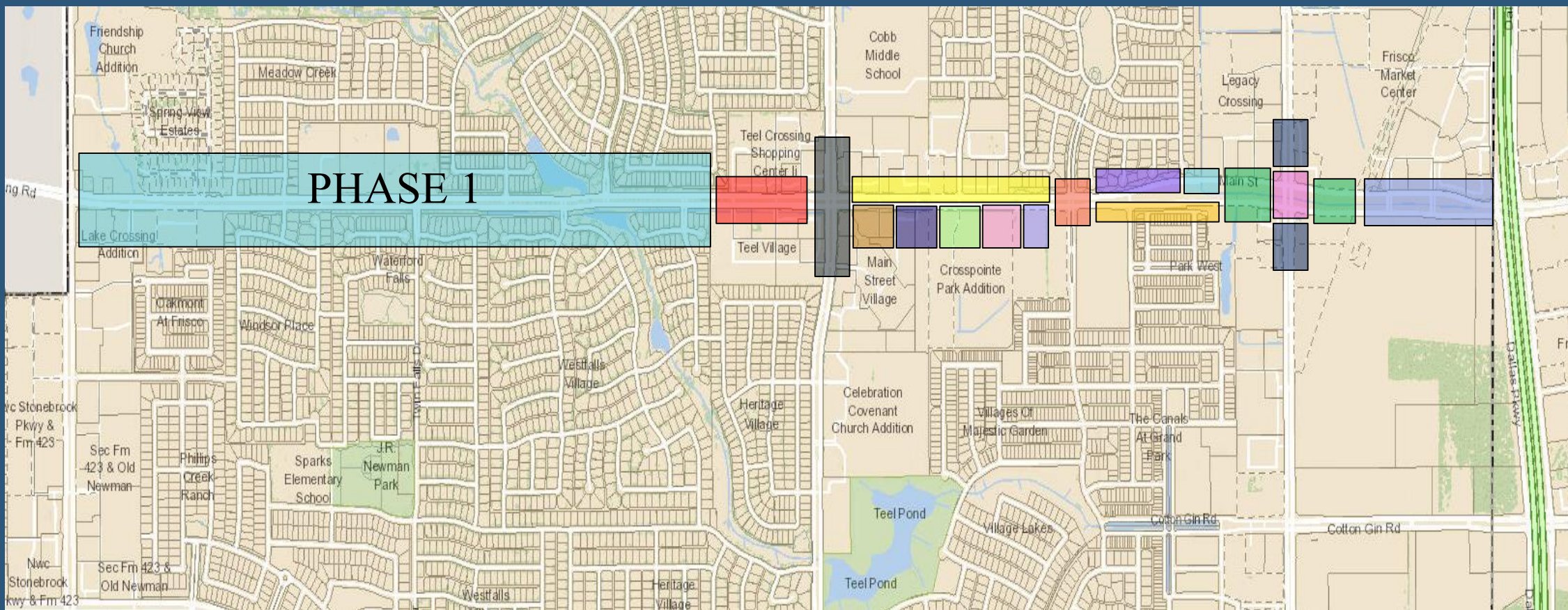


DAILY LANE CLOSURES

- 9:00 a.m. - 3:30 p.m.
- Occasionally start at 8:30 a.m. or go until 4:00 p.m. in non peak directions, if beneficial
- Subcontractors - sawcut, paving, joint seal, stripe, sidewalk, landscape, Brazos
- **Detection Issues – Closing Lanes at Signalized Intersections**



ACTUAL PHASING



PAVEMENT MAINTENANCE

- Replaced 20% of existing pavement
- \$3 million total cost



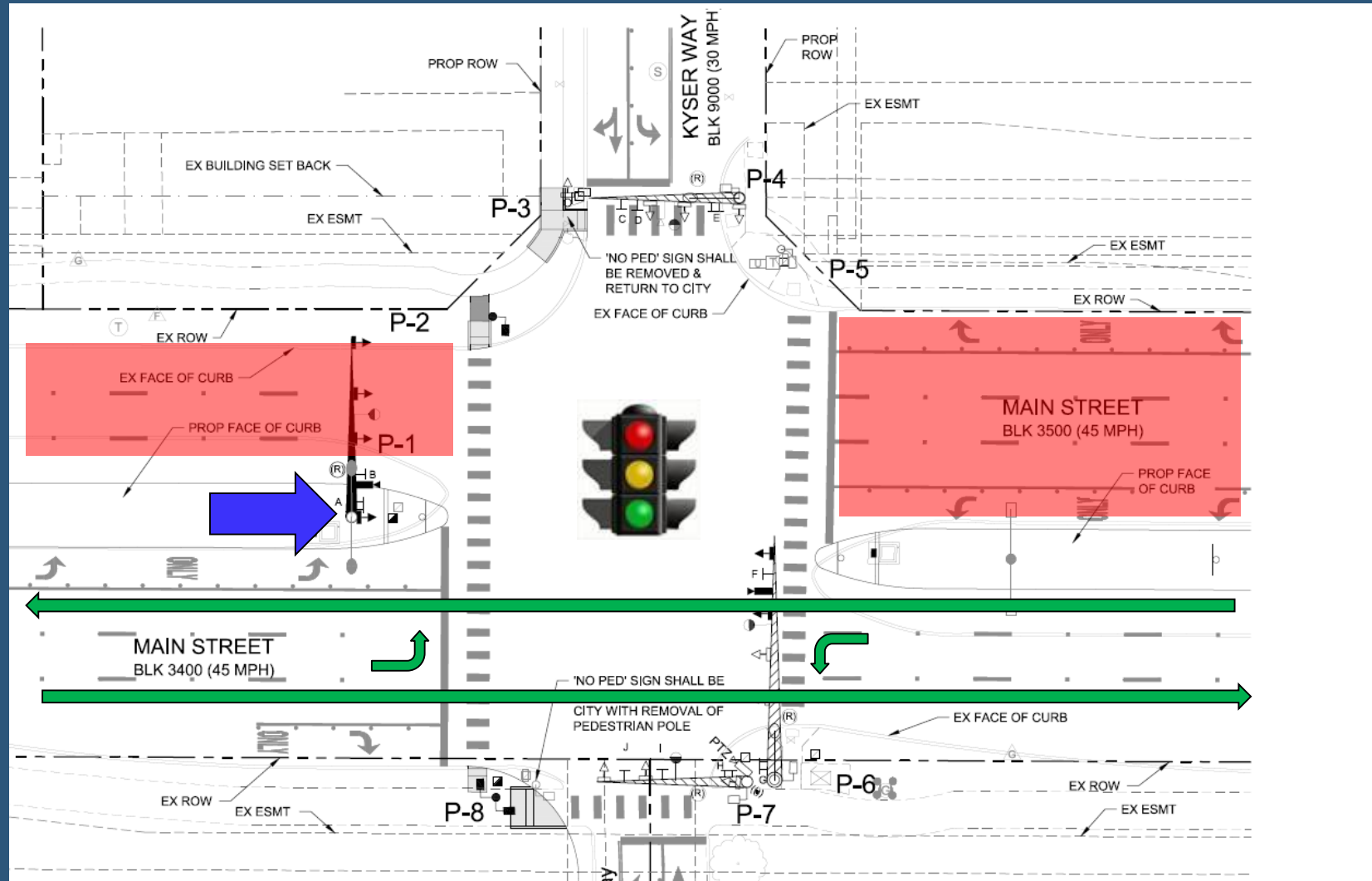


WESTBOUND CLOSURE



- Maintenance and widening
- **10 week construction became 4 weeks by implementing full closure**
- Maintain Commercial and Residential Access
- Temporary Signal at Kyser Lane

WESTBOUND CLOSURE AT KYSER WAY

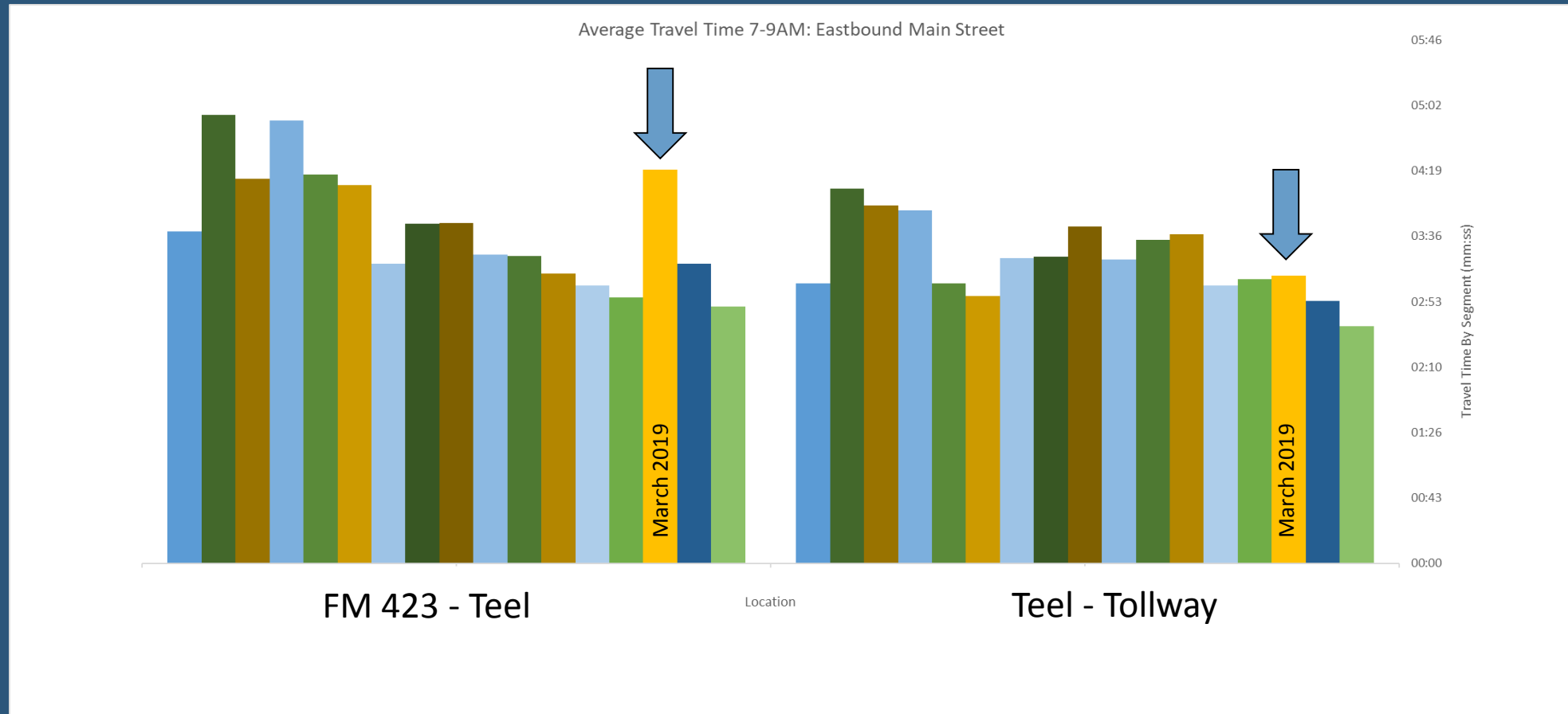


SIGNAL AT KYSER WAY



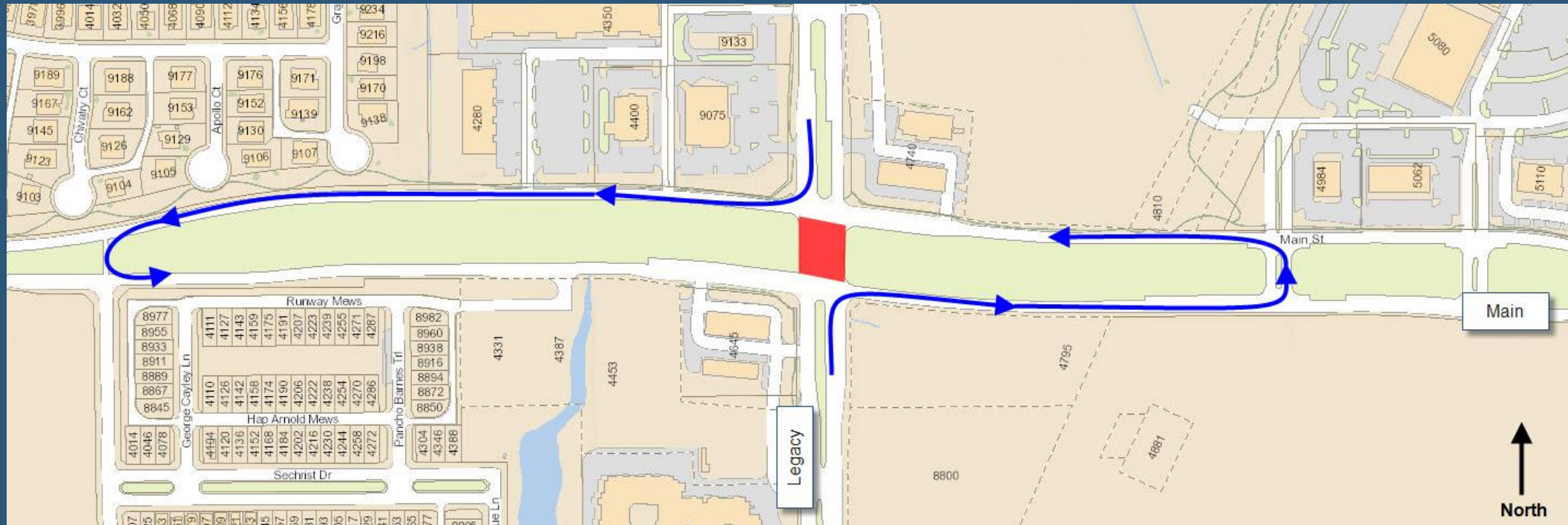
EASTBOUND TRAVEL TIMES

January 2018-May 2019



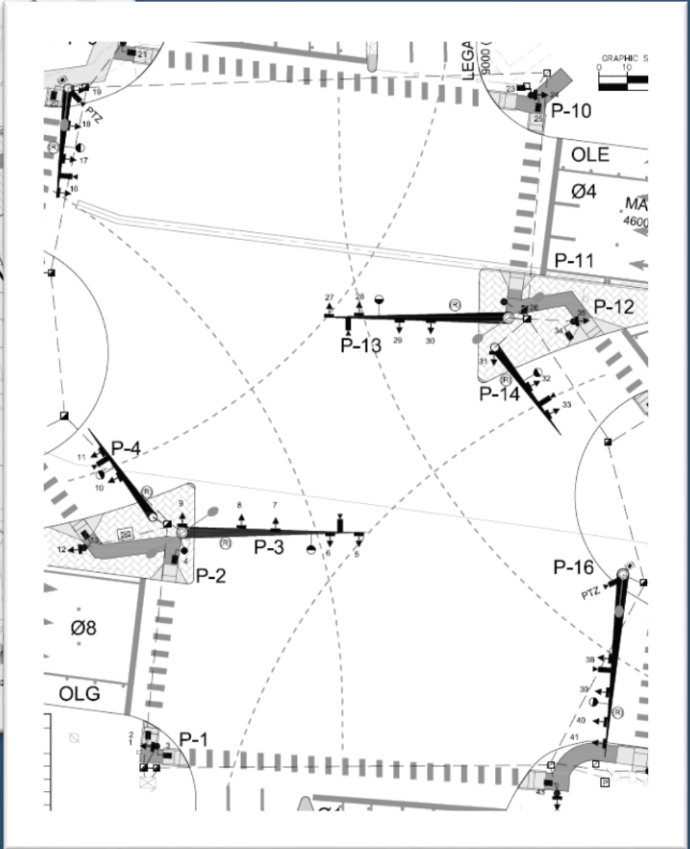
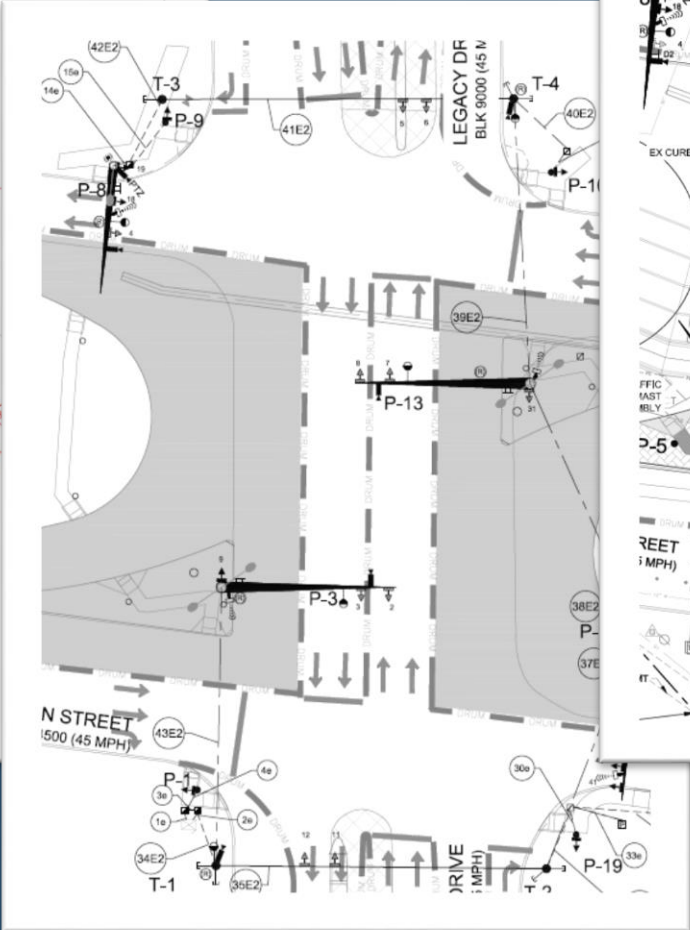
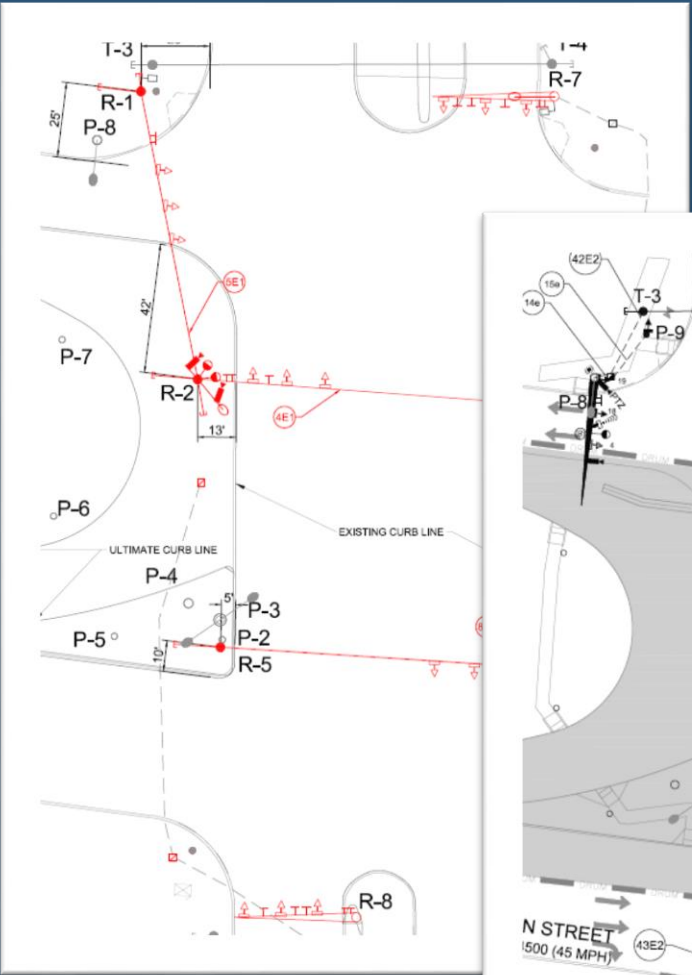
LEGACY CLOSURE TEST

- Water line and duct bank install
- Improved Operations
- Test for Legacy paving/Council Approval



PLANNED PHASING

(Legacy Drive)

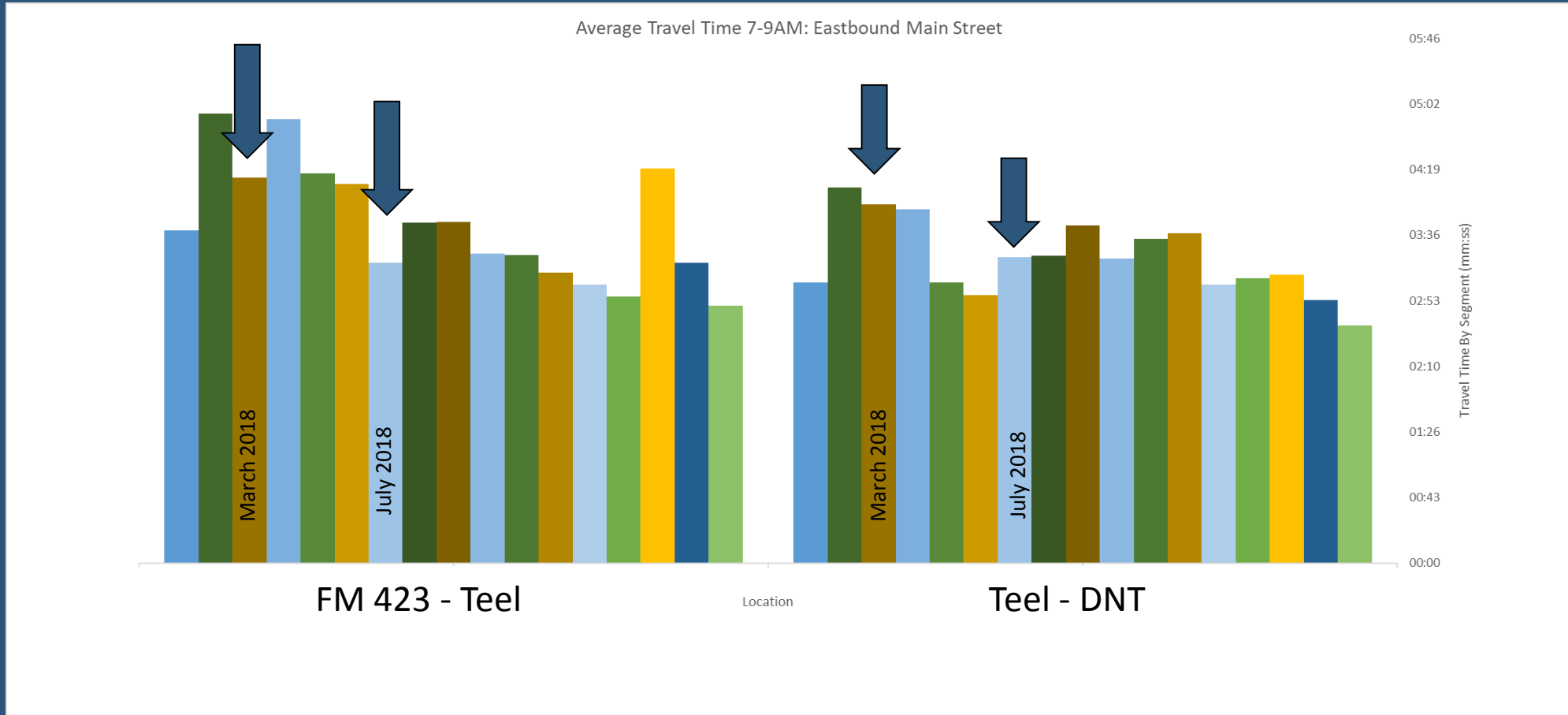




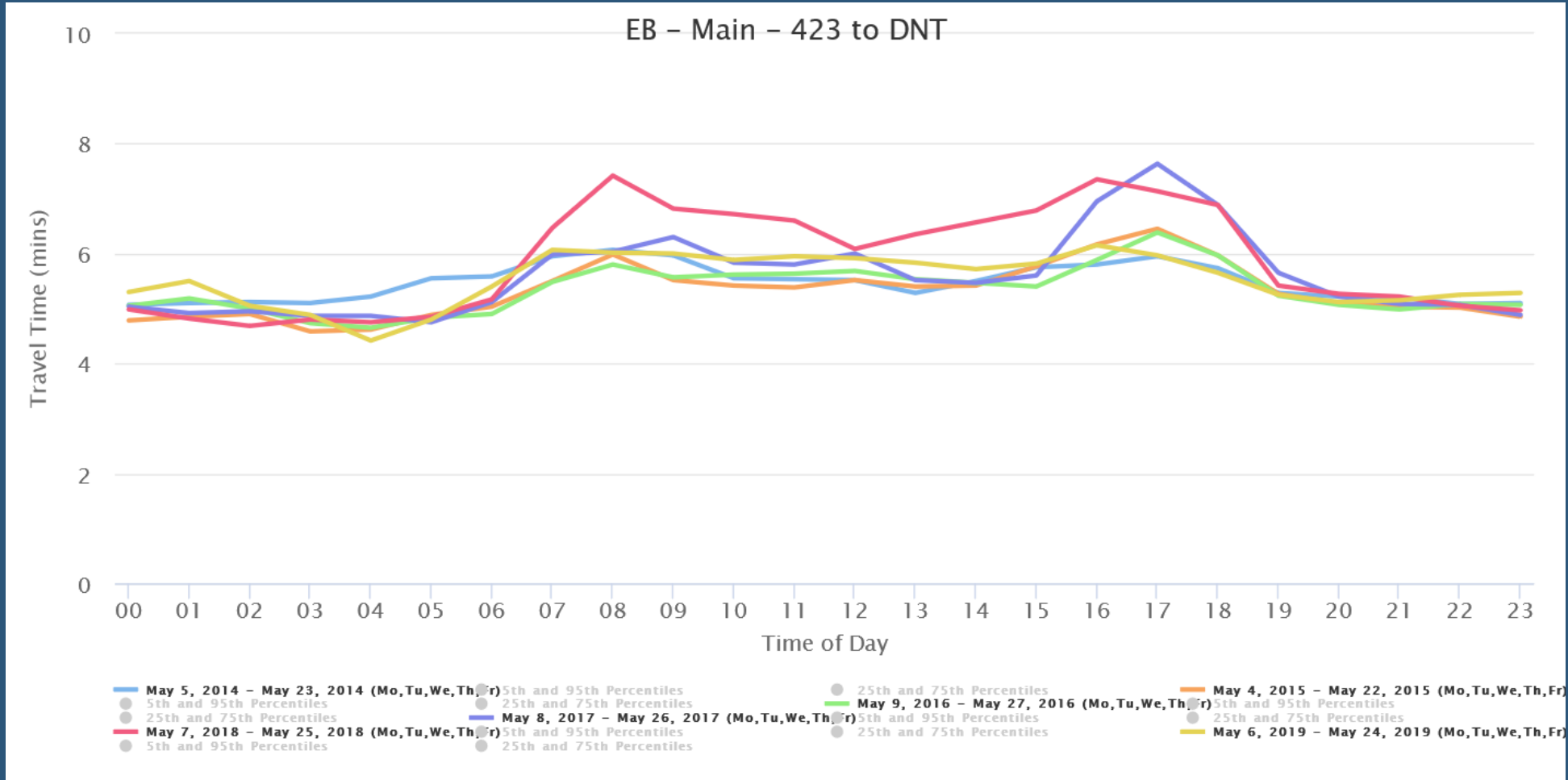
ACTUAL PHASING



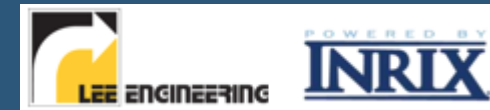
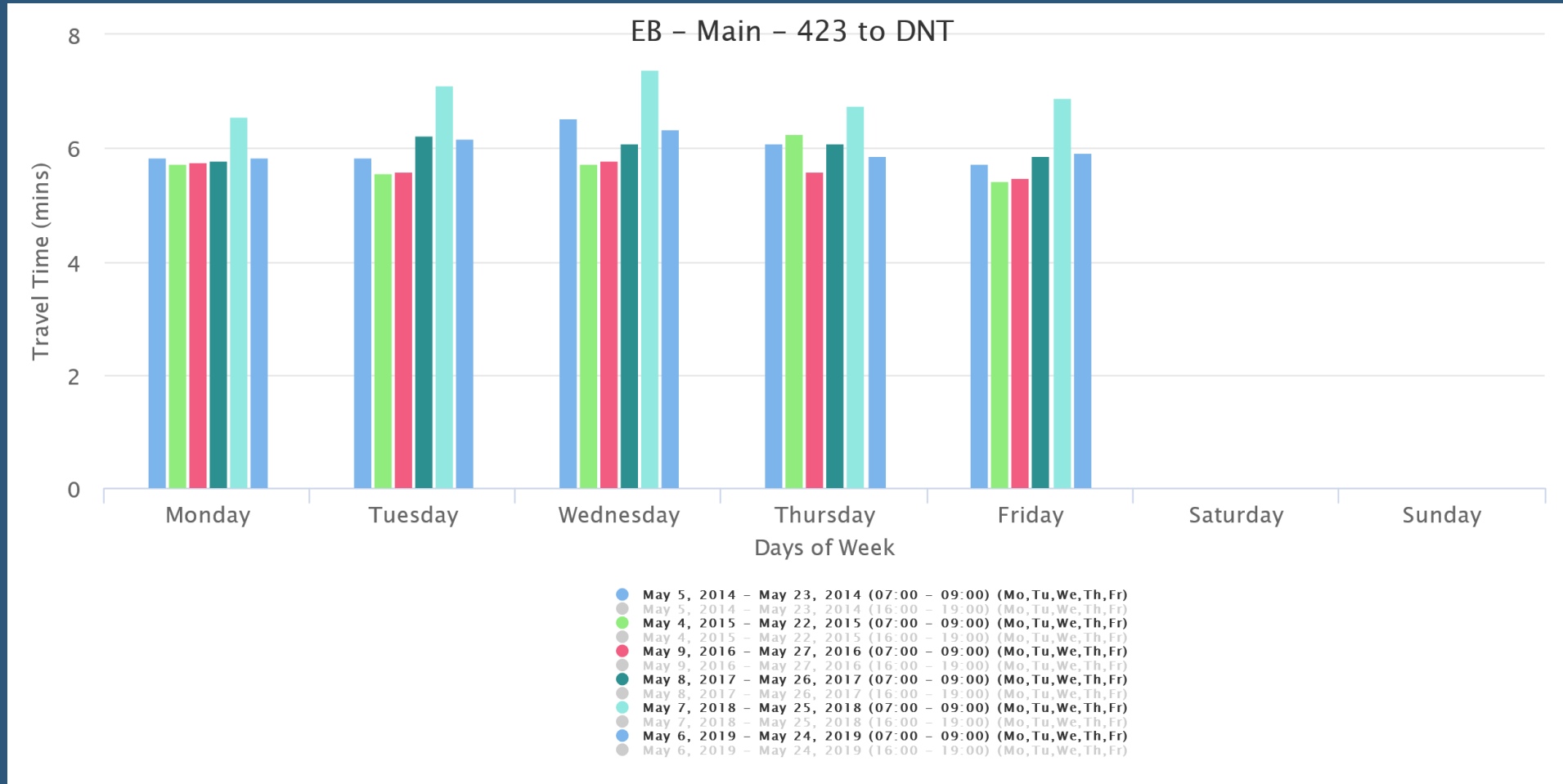
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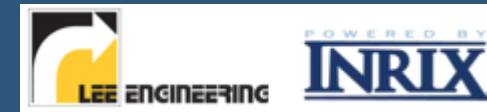
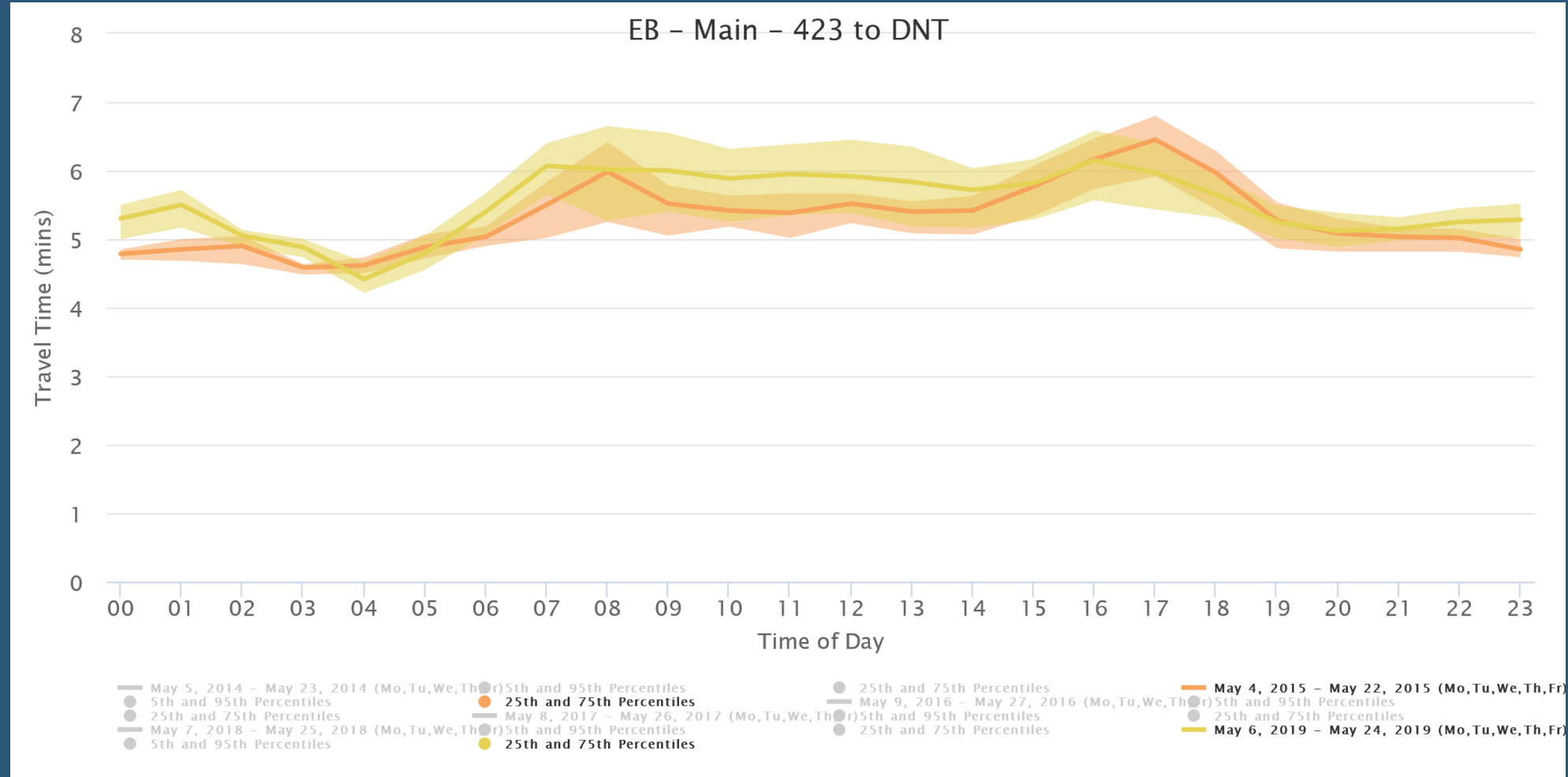
TRAVEL TIMES



AM PEAK BY YEAR



TRAVEL TIME VARIABILITY



LESSONS LEARNED

- Don't forget your phasing, if you can
- Major closures aren't that bad
- **Keep the public informed**



CONTACT INFORMATION

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