Madisonville Study
LA 22 & LA 21/LA 1077
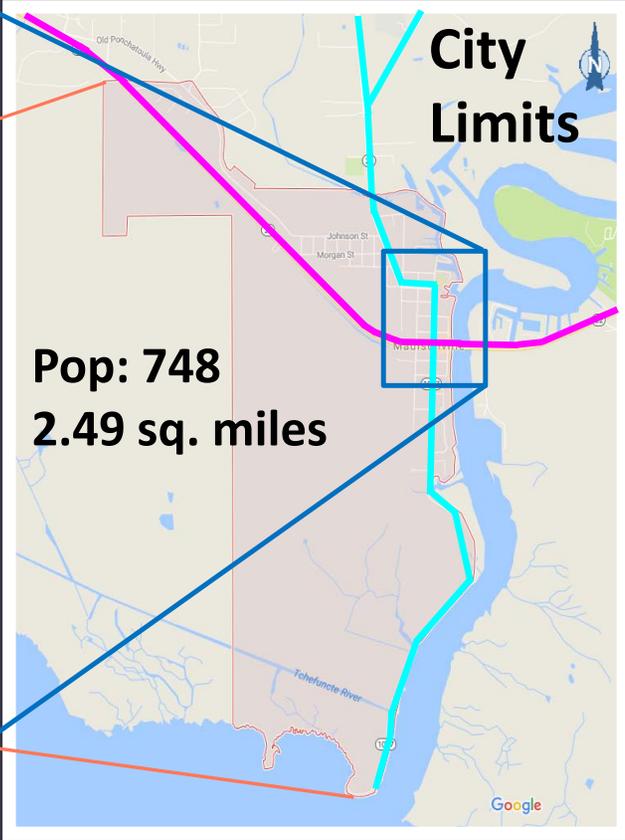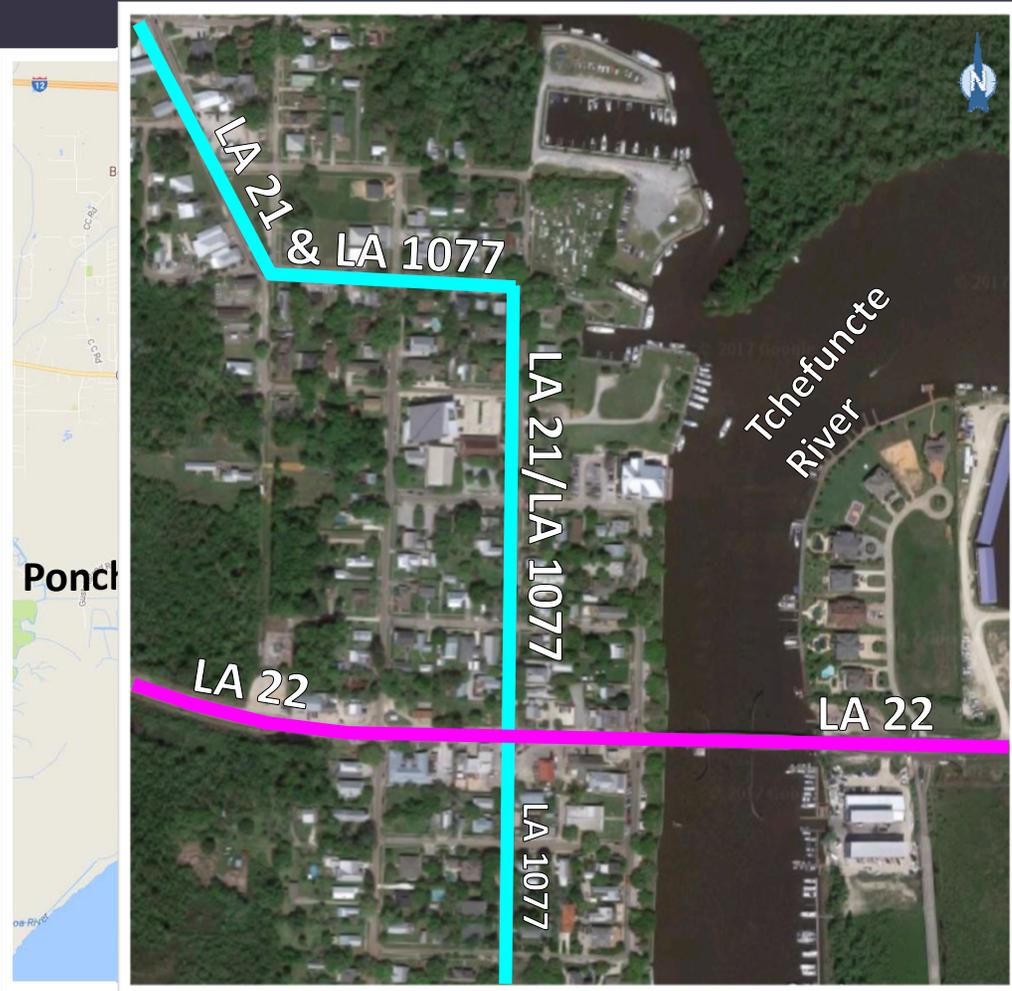
ST. TAMMANY PARISH

Clara Foshee

Engineer Intern 2

District 62 Traffic Operations

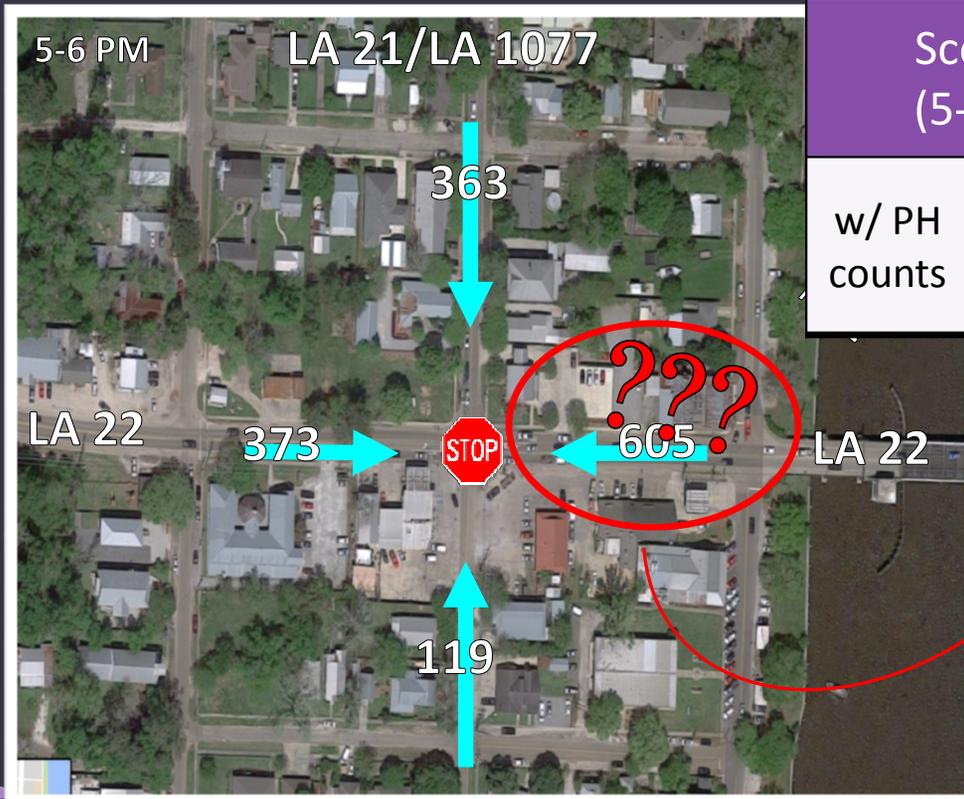# Madisonville

City Limits

Pop: 748
2.49 sq. miles

LA 21 & LA 1077

LA 21/LA 1077

LA 22

LA 1077

LA 22

Tchefuncte River

Ponch...

...lle

LA 22 at LA 21/LA 1077

2006-2011

Madisonville

2 EB

What Are the Issues?

All-Way Stop is Over Capacity

5-6 PM

LA 21/LA 1077

363

LA 22   373   STOP   605   LA 22

???

119

Analysis Results					
Scenario (5-6 PM)		v/c ratio	Delay (s)	LOS	Queue (ft)
w/ PH counts	WB Appr	1.430	**173.6**	F	**866.9**
	Overall	1.430	137.3	F	866.9

Un-Serviced Demand

What Are the Issues?

LA 22 Tchefuncte River Swing Bridge

Measuring the Un-Serviced Demand

Traveling Vehicle

Stationary Vehicle

Observed Average Peak Queue Length 5-6 PM

1.96 MILES

every 15 minutes
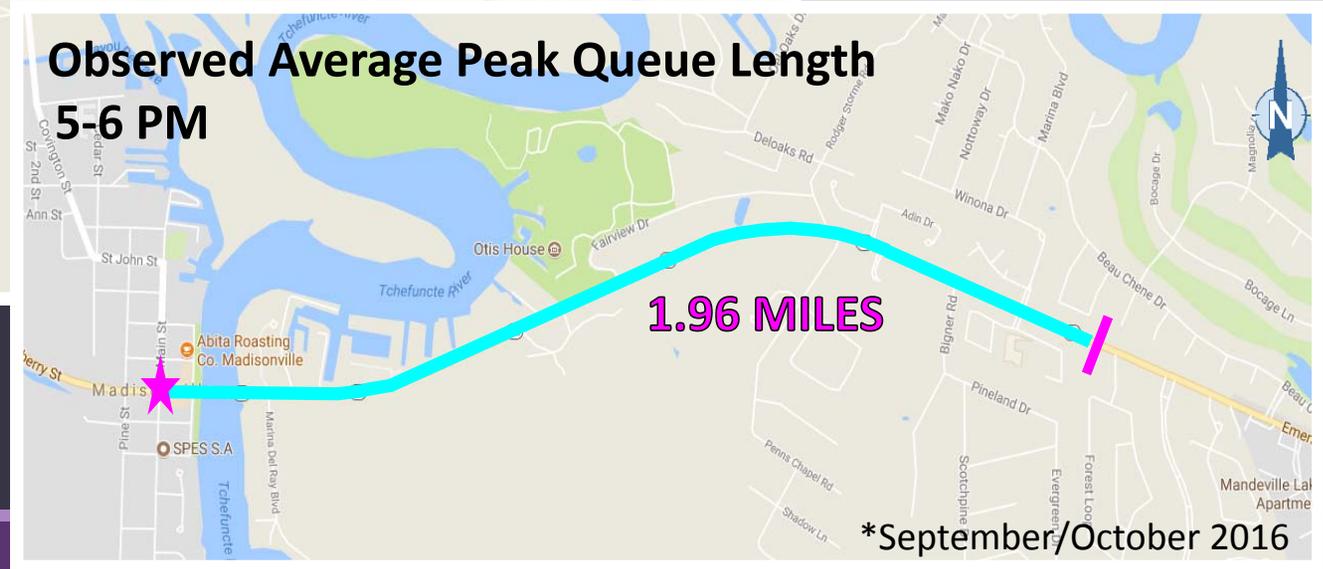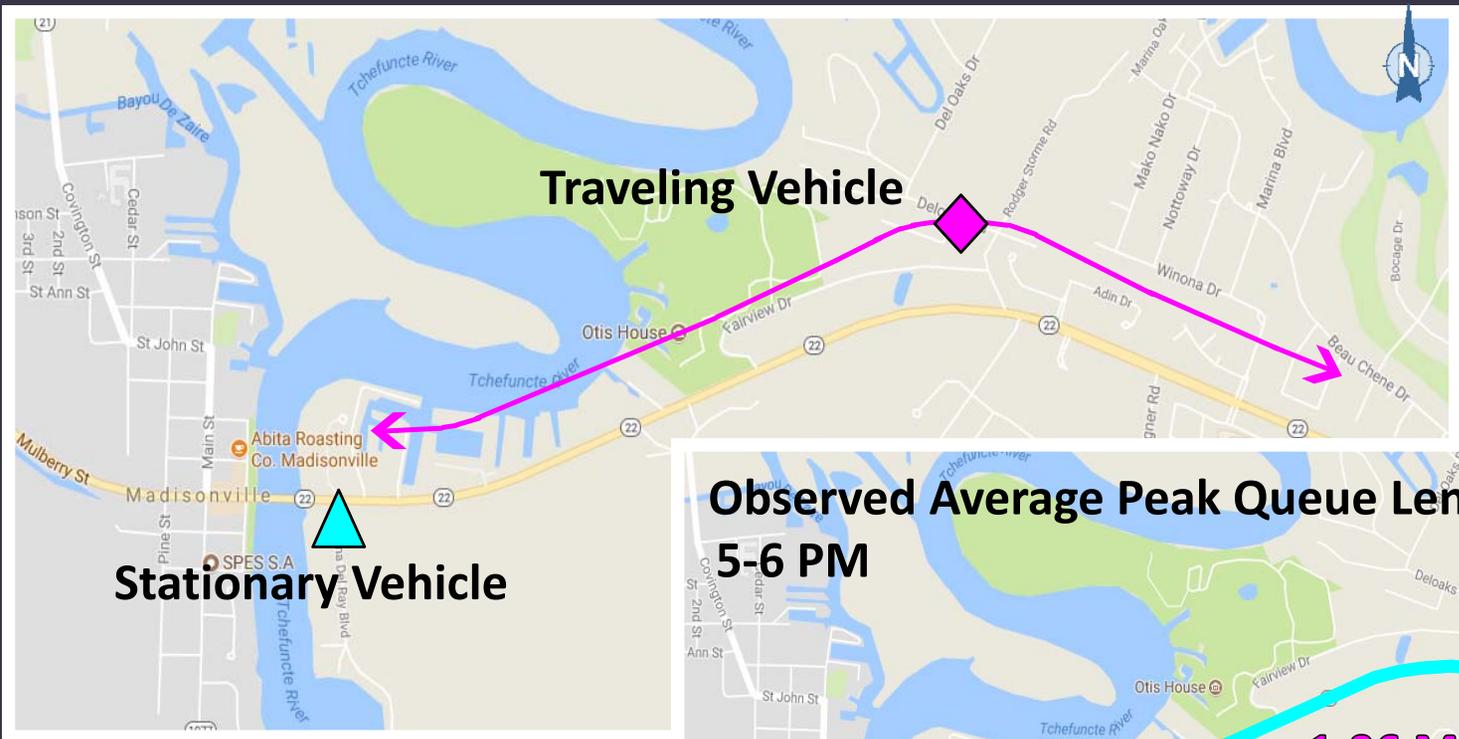
4-6 PM { Tuesday Wednesday Thursday

*September/October 2016

New Results

All-Way Stop is Worse Than Anticipated

Scenario (5-6 PM)		v/c ratio	Delay (s)	LOS	Queue (ft)
Analysis Results					
w/out USD	WB Appr	1.430	**173.6**	F	**866.9**
	Overall	1.430	137.3	F	866.9
with USD	WB Appr	1.960	**345.6**	F	**1870.2**
	Overall	**1.960**	246.0	F	1870.2

WB Serviced Demand: 605

+ WB Un-Serviced Demand (USD): **322**

_____

Total WB Arrival Volume: 927

How We Approached the Problem

Local & State Representatives

STOP

CHANGE CONTROL METHOD

Change Bridge Schedule	NON-PEAK TIMES (9AM–4PM)	PEAK TIMES (6-9AM & 4-7PM)
ORIGINAL SCHEDULE	On Hour & Half-Hour	On Hour
SCHEDULE DEVIATION	On Hour	Not at 8AM, 5PM, & 6PM

UNITED STATES COAST GUARD · SEMPER PARATUS · 1790

ST. TAMMANY PARISH · STATE OF LOUISIANA

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

Other Constraints

Limited Right-of-Way

Historical District

Empty Lot

Bank

Gas Station

Restaurant/Café

22'

35'

33'

20'

Installing Full-Access Signal

All-Way Stop (WB)

Full-Access Signal (WB)

Analysis Results (with USD)					
Scenario (5-6 PM)		v/c ratio	Delay (s)	LOS	Queue (ft)
AWS	WB Appr	1.960	**345.6**	F	**1870.2**
	Overall	1.960	246.0	F	1870.2
Signal	WB Appr	1.204	**80.0**	E	**1425.9**
	Overall	**1.204**	65.5	E	1425.9

Observed Average Peak Queue Length 5-6 PM

1.99 MILES

1.0 MILE

*April/May 2017

*January/February 2017
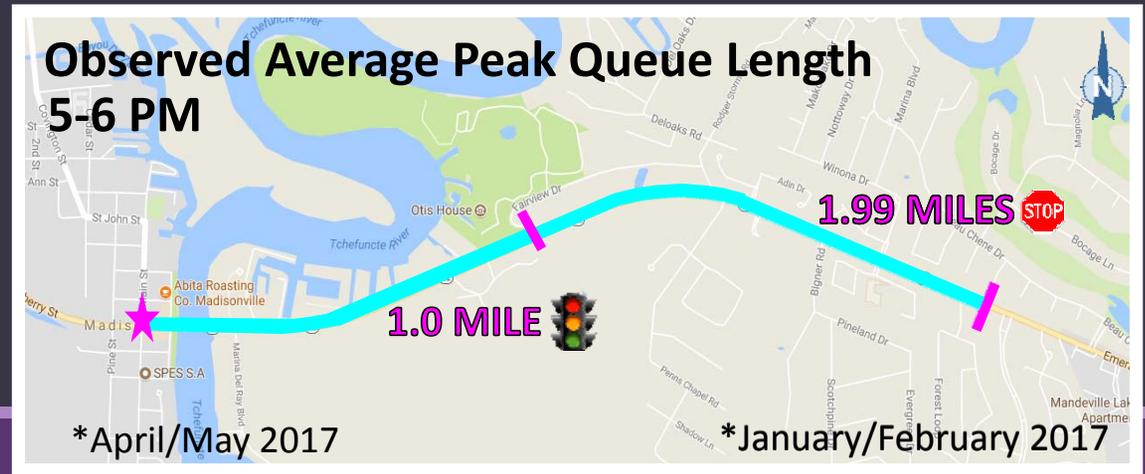
Preliminary Results of 4-Phase Study

Tentative Conclusion?

LIMIT BRIDGE OPENINGS
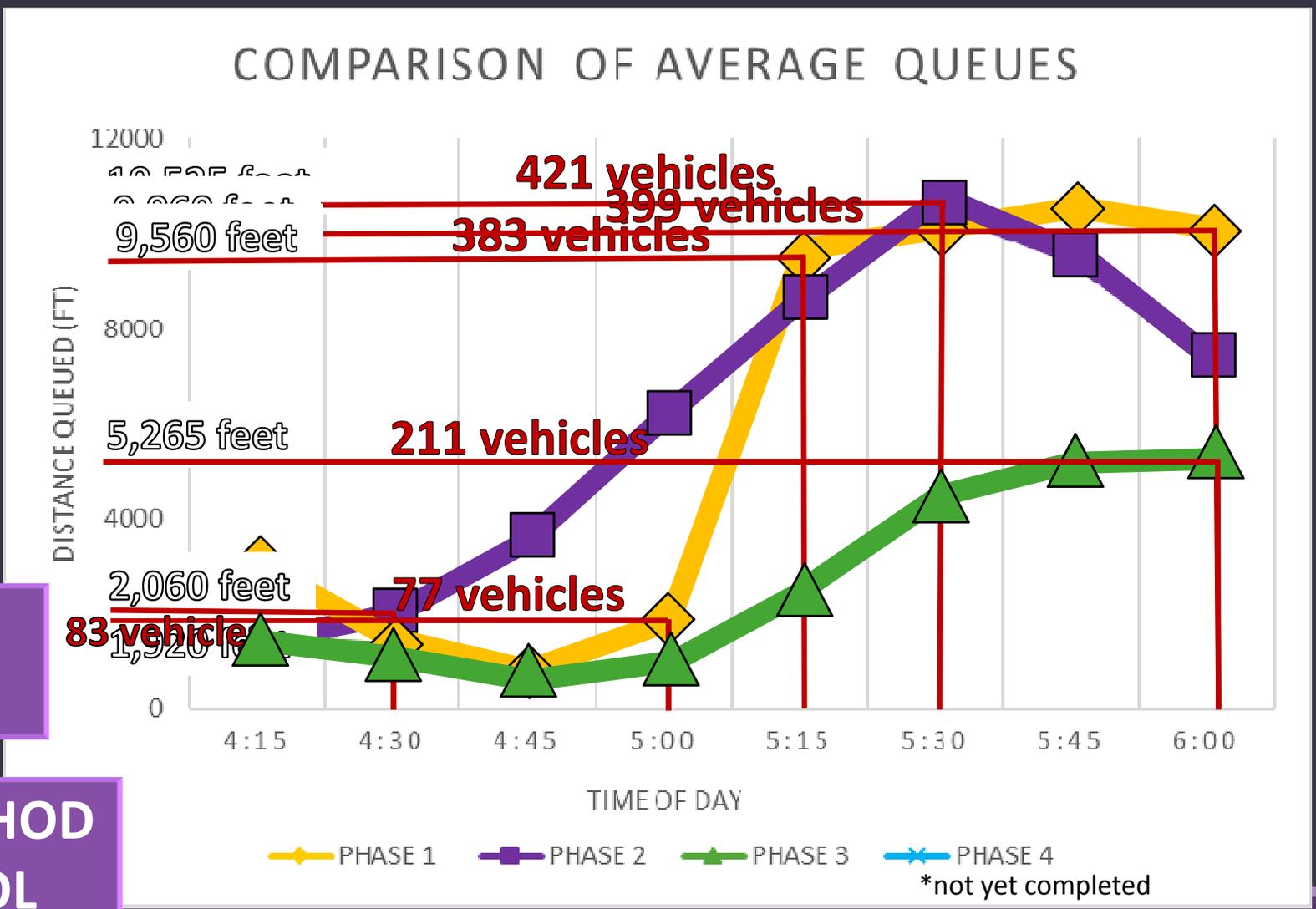
CHANGE METHOD OF CONTROL

COMPARISON OF AVERAGE QUEUES

DISTANCE QUEUED (FT)

- 12000
- 10,535 feet — **421 vehicles**
- 9,960 feet — **399 vehicles**
- 9,560 feet — **383 vehicles**
- 8000
- 5,265 feet — **211 vehicles**
- 4000
- 2,060 feet — **77 vehicles**
- 1,920 feet — **83 vehicles**
- 0

4:15   4:30   4:45   5:00   5:15   5:30   5:45   6:00

TIME OF DAY

◆ PHASE 1   ■ PHASE 2   ▲ PHASE 3   ✕ PHASE 4

*not yet completed
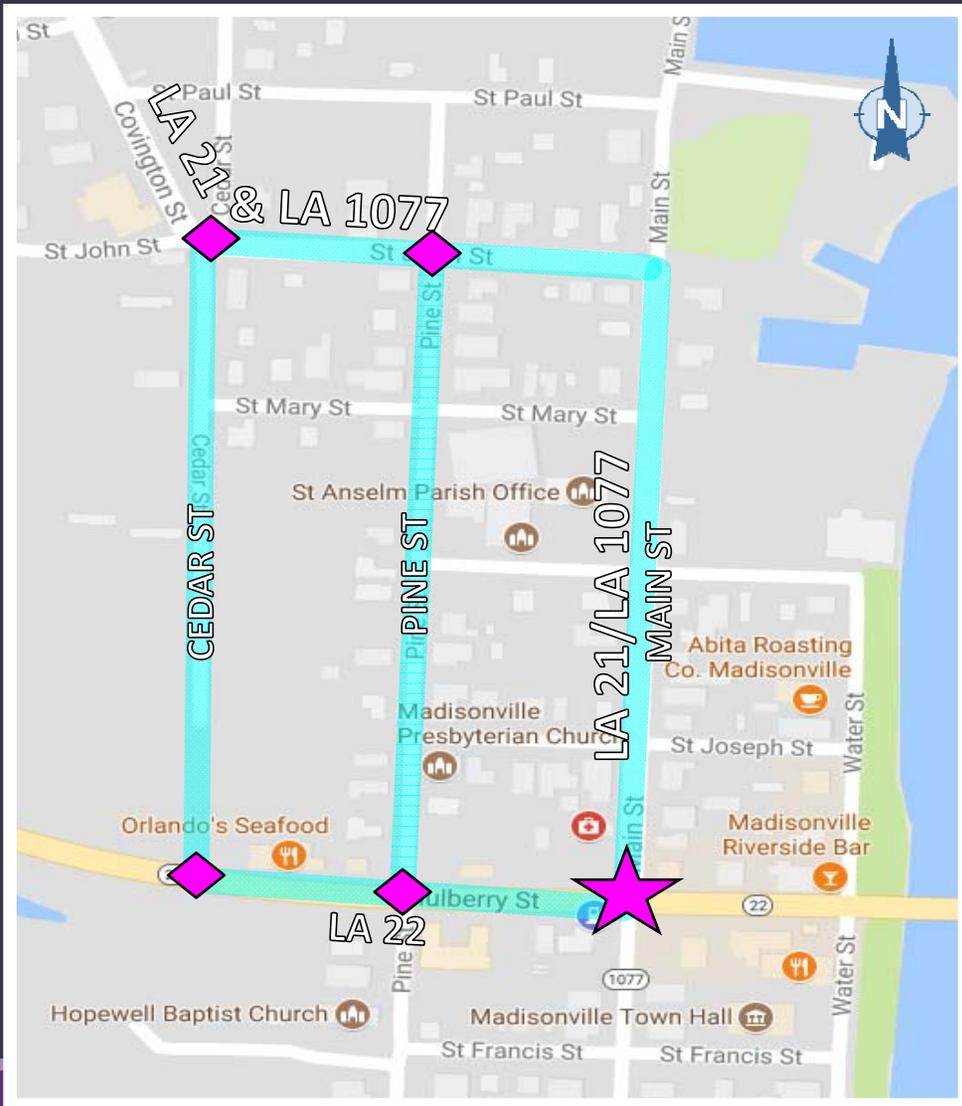
Next Steps

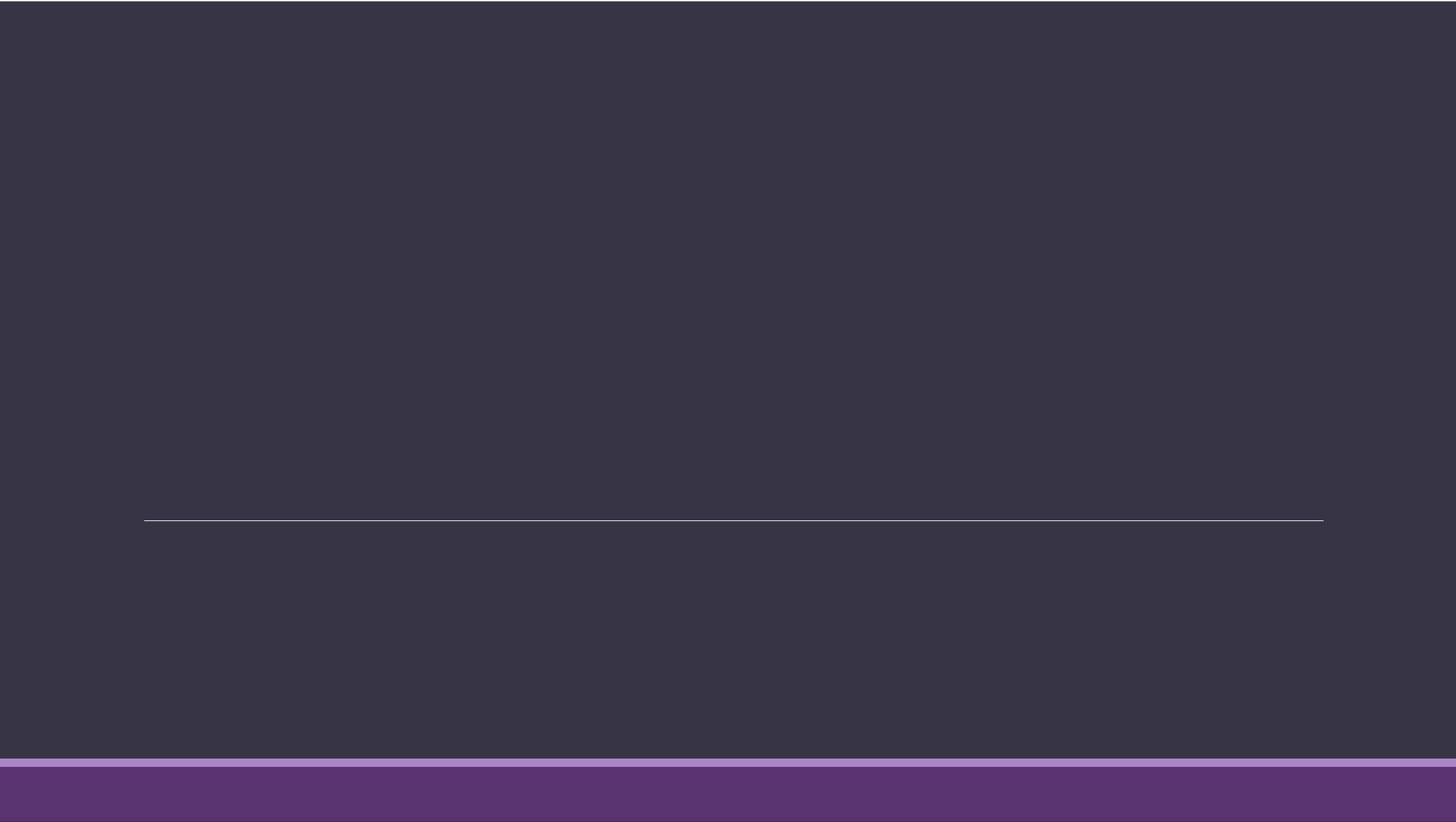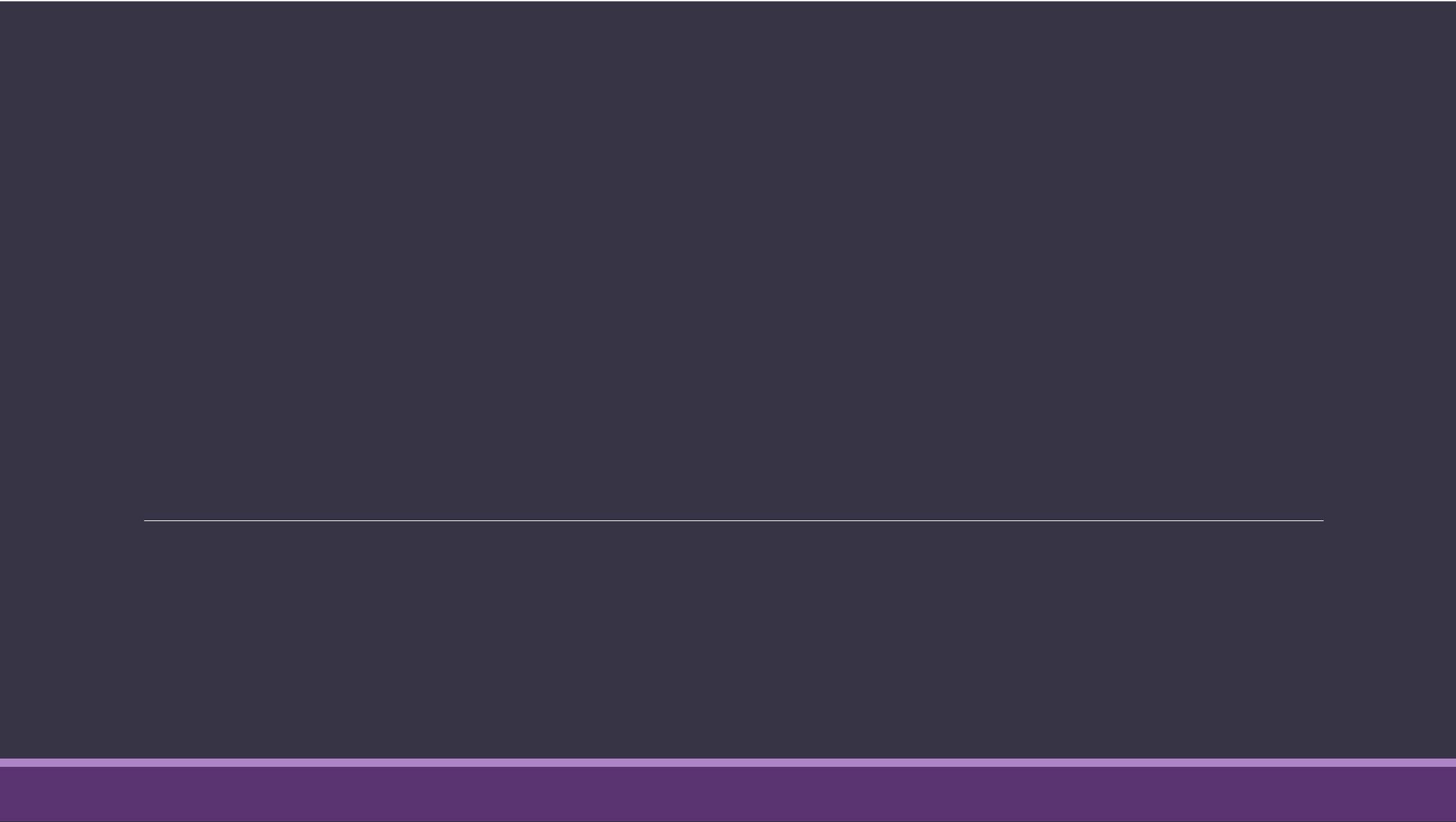1. Submit Request to Permanently Change Bridge Schedule to Coast Guard

2. Continue Studying Alternatives to Existing Highway Configuration

Distributing Un-Serviced Demand?

Questions?

Phase 1: All-Way Stop & Original Bridge Schedule

PHASE 1: W NO BRIDGE DEVIATION & W ALL-WAY-STOP
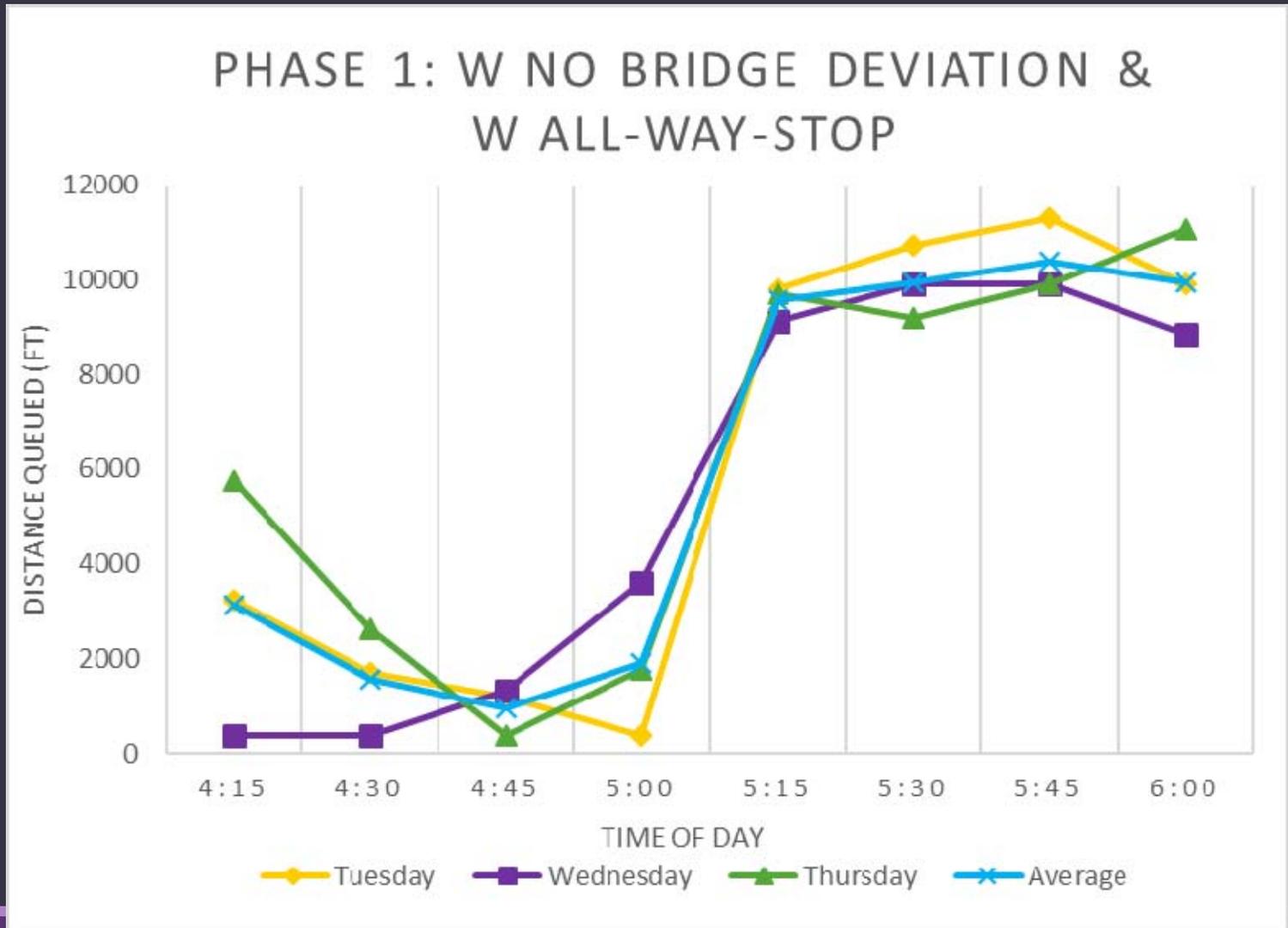
Phase 2: All-Way Stop & Bridge Schedule Deviation

PHASE 2: W BRIDGE DEVIATION & W ALL-WAY-STOP

Phase 3: Full-Access Signal & Bridge Schedule Deviation

Volumes of Existing Corridor
(volumes obtained via peak-hour turning movements)

Turning Movement Calculations for Un-Serviced Demand

Distributing Un-Serviced Demand Through a Corridor

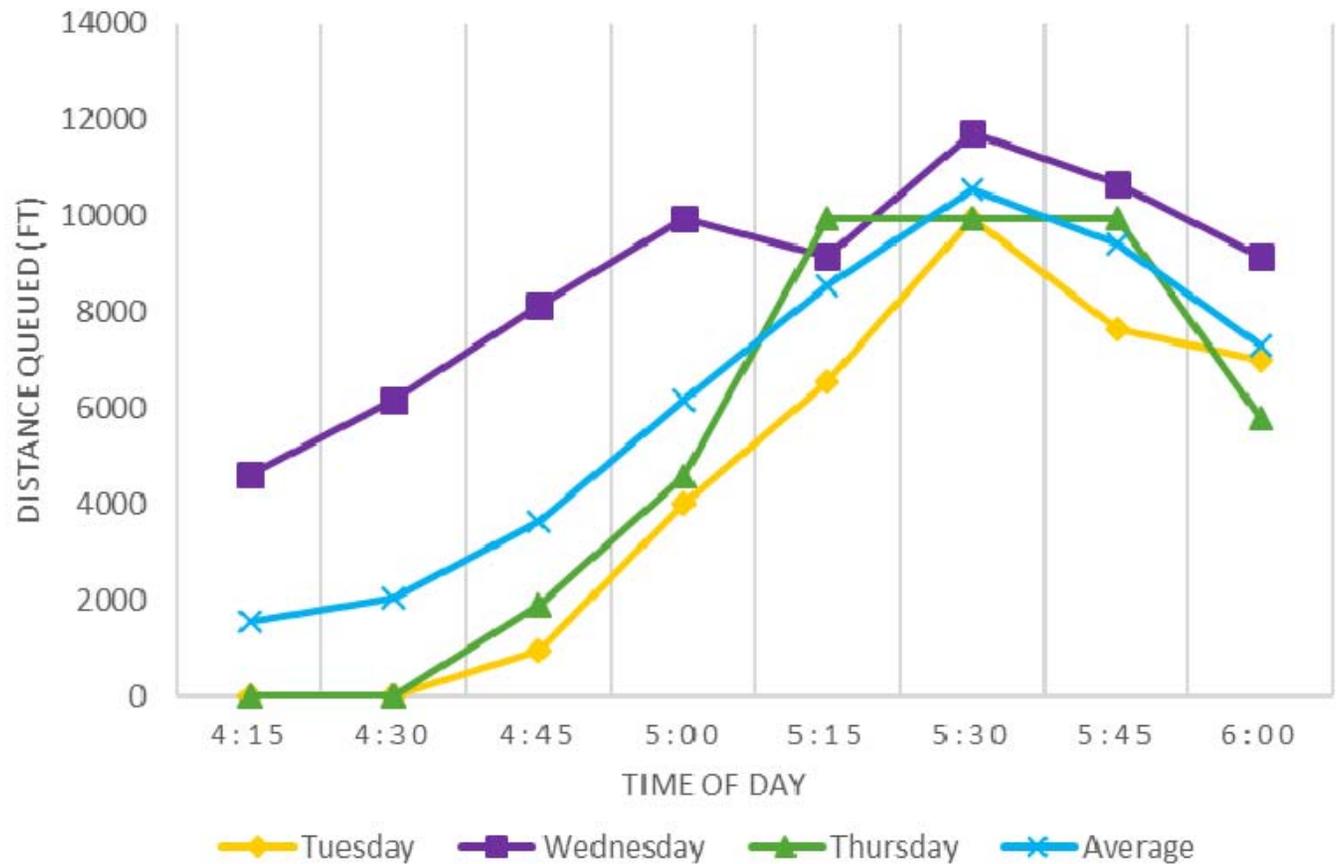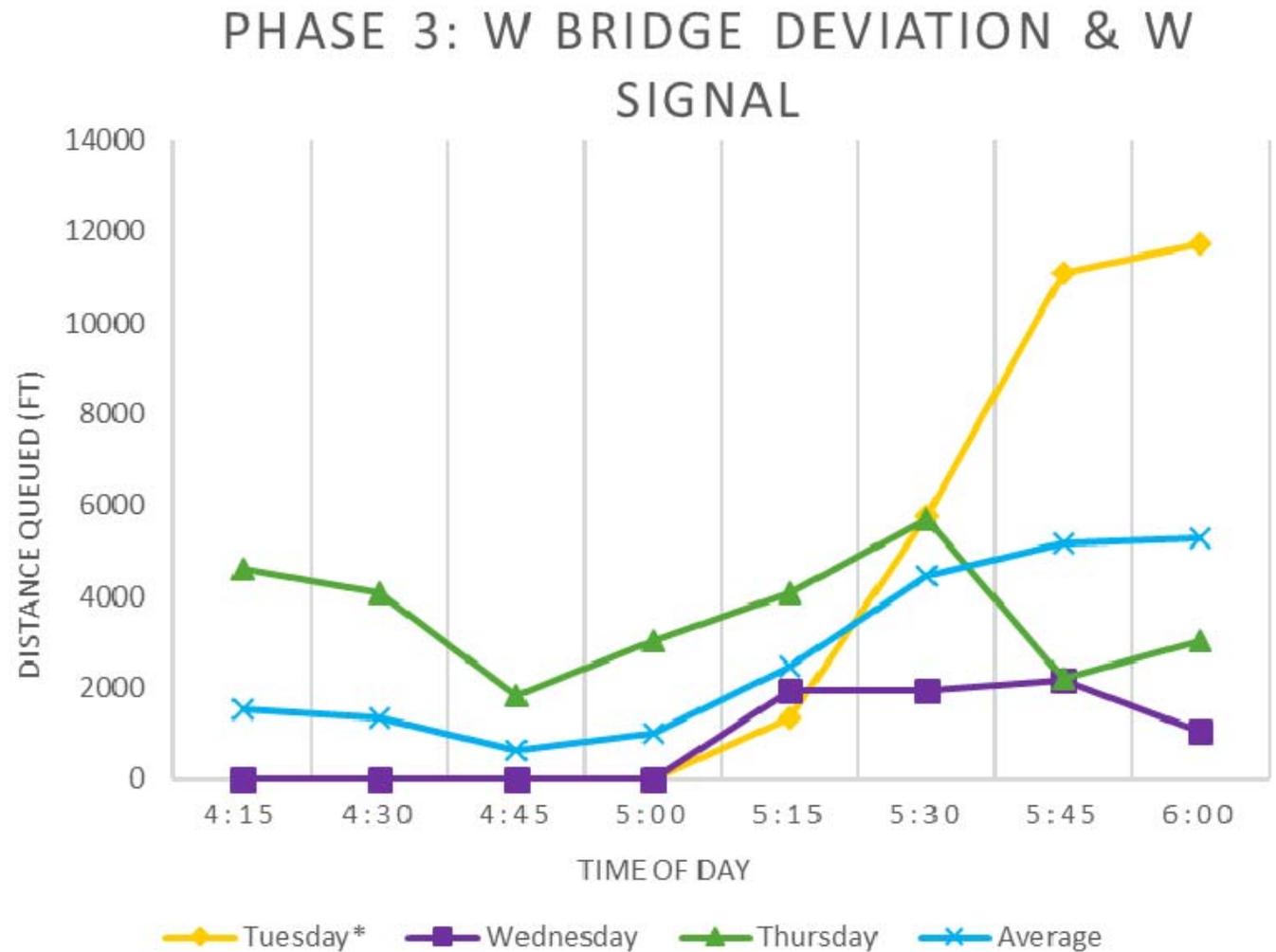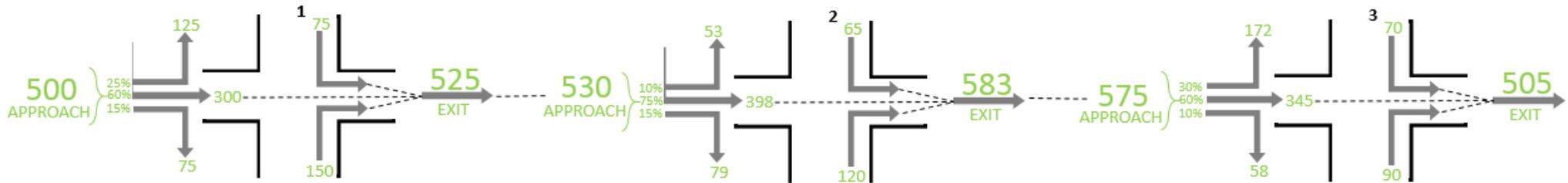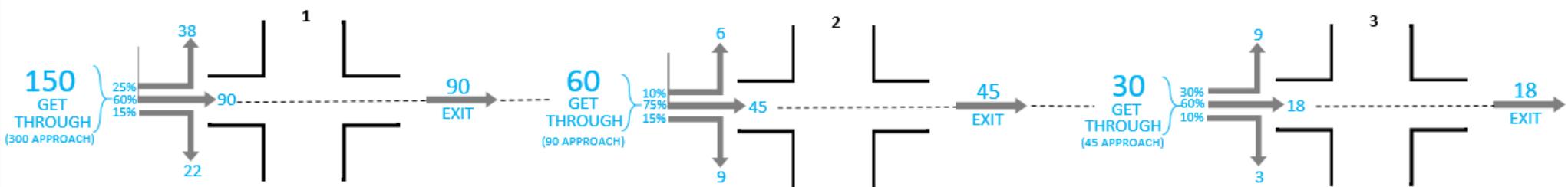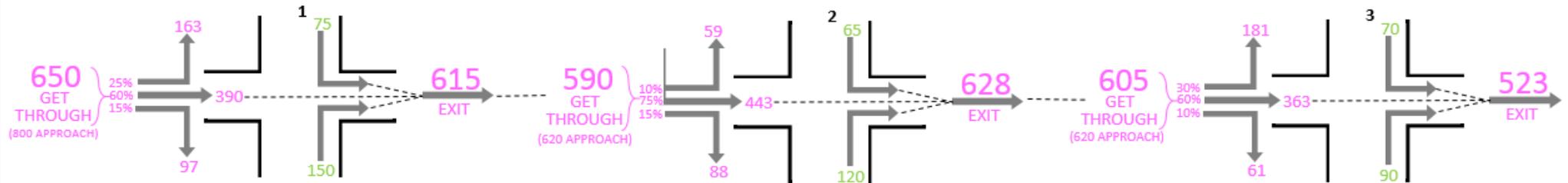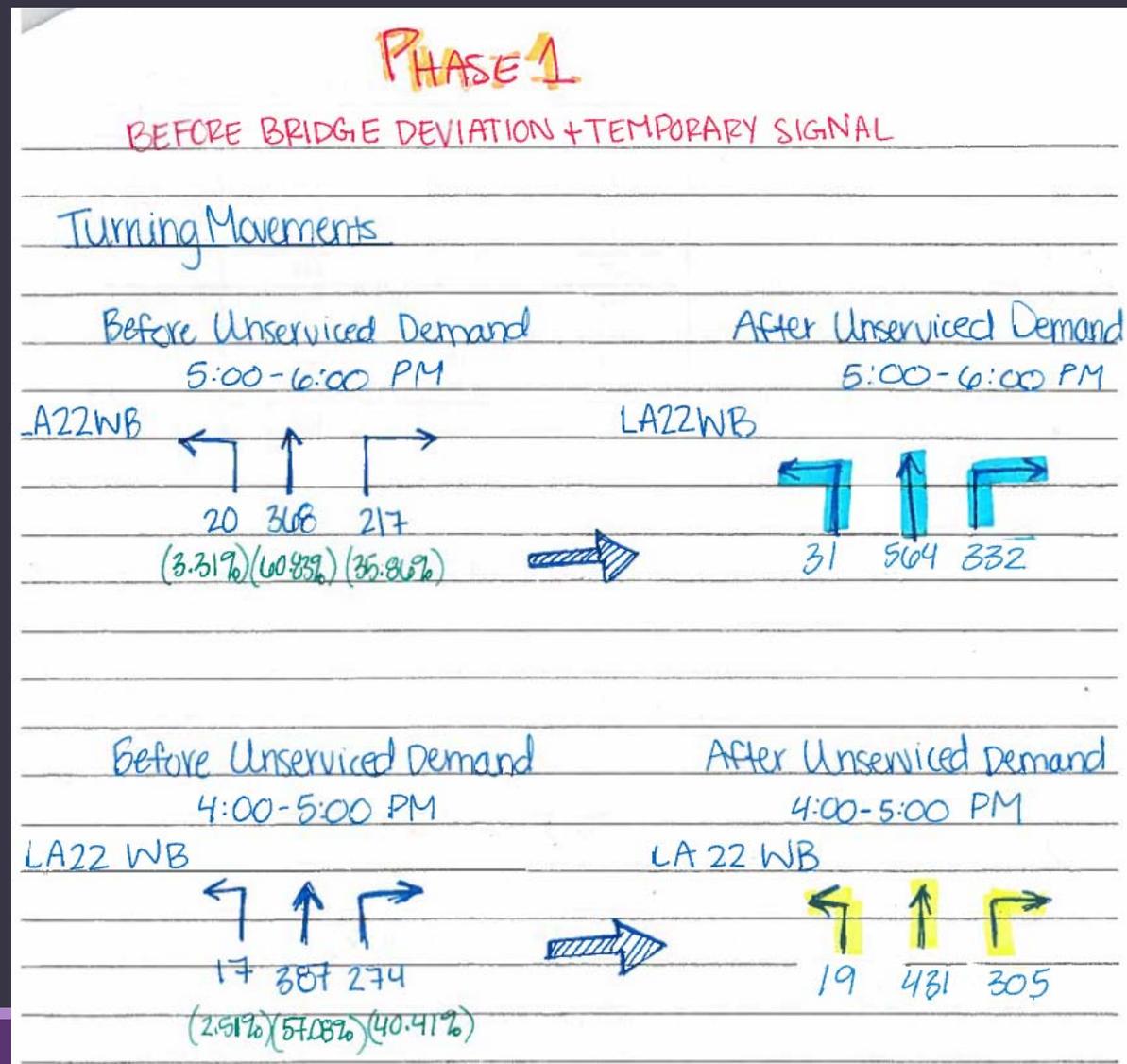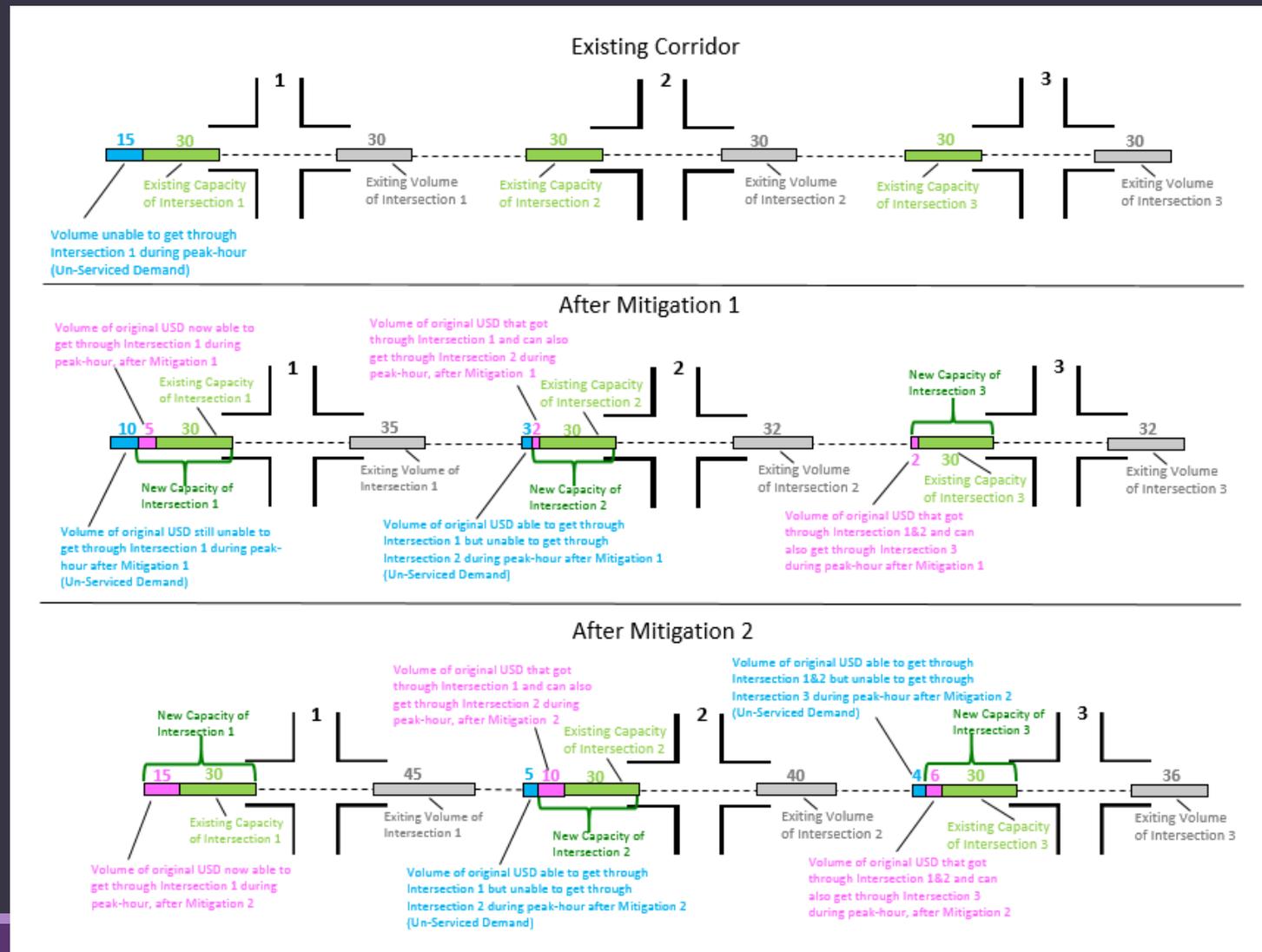# Safety Analysis

LA 22 (Mulberry Street) at LA 21/LA 1077 (Main St) at LA 1077 (Main St)		

2013

Date	Crash Type	Correctable?
1/15/2013	Non-Collision	No
2/1/2013	*Right Turn	*No
3/10/2013	Right Angle	Yes
6/27/2013	~~Other~~	~~No~~
8/13/2013	Side Swipe	No
9/5/2013	Rear End	No
11/7/2013	Side Swipe	No

2014

Date	Crash Type	Correctable?
1/2/2014	Right Angle	Yes
2/2/2014	Rear End	No
3/15/2014	Rear End	No
7/13/2014	Right Angle	Yes
8/1/2014	Other	No
8/26/2014	Rear End	No
8/29/2014	Rear End	No
12/2/2014	Rear End	No

2015

Date	Crash Type	Correctable?
~~2/27/2015~~	~~Left Turn~~	~~No~~
7/10/2015	Side Swipe	No
11/6/2015	Rear End	No

Total Crashes	18
Total Correctable Crashes	*3
5 Correctable in 12 months?	NO

*This crash was classified as "Right Turn" but should possibly be a "Right Angle" instead

correctable crash

~~wrong location reported~~

report not available

TRAFFIC SIGNAL INVENTORY

TSI NO. 00224

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT/ TRAFFIC SECTION — District 02 — SHEET: 1 OF 5

INTERSECTION: LA 22 (MULBERY ST) @ LA 21/LA 1077 (MAIN ST)	STATION ID: 52-224
CITY: Madisonville — PARISH: St. Tammany 052	INSTALLATION DATE: 05/11/89
TYPE SIGNAL: FULLY-ACTUATED	LAST REVISION DATE: 07/18/06

SIGNAL FACES

PHASES: P2 & P6 | P4 & P8 | P1 & P5

INTERVALS: 1 2 3 | 4 5 6 | 7 8 9 | 10 11 12 13 14 15 16 17 18 | FL

INTERVAL	1	2	3	4	5	6	7	8	9	FL
1	G	Y	R			R	◄G/R	◄Y/R	R	R
2	G	Y	R			R	◄G/R	◄Y/R	R	R
3	G	Y	R			R			R	R
4	G	Y	R			R			R	R
5			R	G	Y	R			R	R
6			R	G	Y	R			R	R
7			R	G	Y	R			R	R
8			R	G	Y	R			R	R
9										
10										
11										
12										
13										
14										
15										
16										

Hours of Flashing Operation: Emergency

PLAN 1 — CYCLE LENGTH = 60 — TIMES OF OPERATION = 0600-0900 (6:00AM-9:00AM) M-F — Offset = 0 sec

	sec									
TIME	18.0	5.0	1.0	16.0	5.0	1.0	8.0	5.0	1.0	
FO	0		0	22		22	36		36	
YP	10		10	59		59	5		5	
SPLIT	24		24	22		22	14		14	

PLAN 2 — CYCLE LENGTH = 150 — TIMES OF OPERATION = 1500-1900 (3:00PM-7:00PM) M-F — Offset = 0 sec

	sec									
TIME	78.0	5.0	1.0	46.0	5.0	1.0	8.0	5.0	1.0	
FO	0		0	52		52	66		66	
YP	10		10	149		149	5		5	
SPLIT	84		84	52		52	14		14	

PLAN — FREE OPERATION — CYCLE LENGTH = — TIMES OF OPERATION = 0900-1500 (9AM-3PM) & 1900-0600 (7PM-6AM) M-F — Offset = sec

PLAN — FREE OPERATION — CYCLE LENGTH = — TIMES OF OPERATION = 00:00-24:00 (12AM-12AM) S & S — Offset = sec

PLAN — CYCLE LENGTH = — TIMES OF OPERATION = — Offset = sec

PHASING SEQUENCES

P2 & P6 | P4 & P8 | P1 & P5

SIGNAL WARRANTS: #1,2,3	MAINTAINED BY: LA DOTD	CONTROLLER MANUF: NAZTEC TS2	SYSTEM #:
MASTER/ SLAVE:	MASTER AT TSI #:	COORDINATED WITH TSI #'S:

TRAFFIC SIGNAL INVENTORY

TSI NO. 00224

LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT/ TRAFFIC SECTION — SHEET: 3 OF 5

CONTROL SECTION: 261-05	HIGHWAY: LA 22 @ LA 21/LA 1077	PARISH: St. Tammany 052

Phase Timing Parameters

Phase Designation		1	2	4	5	6	8
Movement Description		↳	→	↓	↰	←	↑
PARAMETER	RANGE						
MIN GREEN (MIN I)	0 - 99.0	5.0	15.0	5.0	5.0	15.0	5.0
PASSAGE TIME	0 - 9.9	3.0	6.0	3.0	3.0	6.0	3.0
MAX GREEN I (MAX I)	0 - 99.0	15.0	60.0	35.0	15.0	60.0	35.0
MAX GREEN II (MAX II)	0 - 99.0						
YELLOW CLEARANCE (YEL)	3 - 9.9	5.0	5.0	5.0	5.0	5.0	5.0
RED CLEARANCE (RED)	0 - 9.9	1.0	1.0	1.0	1.0	1.0	1.0
WALK (WALK)	0 - 99.0						
PED CLEARANCE (P CLR)	0 - 99.0						
ADDED INITIAL GREEN	0 - 9.9						
TIME TO REDUCE	0 - 99.0						
TIME BEFORE REDUCTION	0 - 99.0						
MIN GAP	0 - 9.9						
MAX INITIAL GREEN	0 - 99						
WALK 2	0 - 99.0						
PED CLEARANCE 2	0 - 99.0						
MAX 3	0 - 99.0						
MAX EXTENSION	0 - 99.0						
RECALL	CODES	NON	MIN	NON	NON	MIN	NON
LOOP # - DELAY (in sec.)	0 - 99.0						
LOOP # - EXTEND (in sec.)	0 - 9.9						

RECALL FUNCTIONS

MON	MEMORY ON
NON	MEMORY OFF
MIN	MINIMUM
MAX	MAXIMUM
PMN	PEDESTRIAN AND MINIMUM
PMX	PEDESTRIAN AND MAXIMUM

Note 1:

Note 2:

Note 3:

Existing Volumes (with USD)

7-8 AM

5-6 PM