LADOTD Statewide Traffic Engineers Meeting

June 19, 2014

Traffic Signal Timing Project Update

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Traffic Signal Timing Project Update

- Summary of scope of work
- Summary of results for completed corridors
- Summary of future corridors to be retimed
- Lessons learned

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LADOTD State Projects / Task Order Based

State Project No. 700-99-0546 – Districts 61, 62 & 02
Retainer Contract for Signal Timing Studies

State Project No. 700-99-0542 – Districts 03, 04, 05, 07, 08 & 58
Retainer Contract for Signal Timing Studies

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Signal Timing Project Scope of Work

- Task 1 – Initial Data Collection Report
- Task 2 – Final Data Collection Report
- Task 3 – New Proposed TSIs
- Task 4 – Programming Controllers

Task 1 - Initial Data Collection Report

- 7-day, 24 hour approach traffic counts, 15 min. intervals
- Intersection / Controller inventories
- Controller database uploads
- Crash summary and/or collision diagram (if required)
- Warrants analysis
- Determination of peak periods for TMCs, travel time runs and peak hour observations
- Submittal of Initial Data Collection Report

Task 2 - Final Data Collection Report

- Perform peak hour TMCs, 15 minute intervals w/queue lengths
- Perform peak hour observations
- Perform peak hour travel time runs using GPS and TRU-TRAFFIC
- Perform clearance interval calculations
- Submittal of Final Data Collection Report

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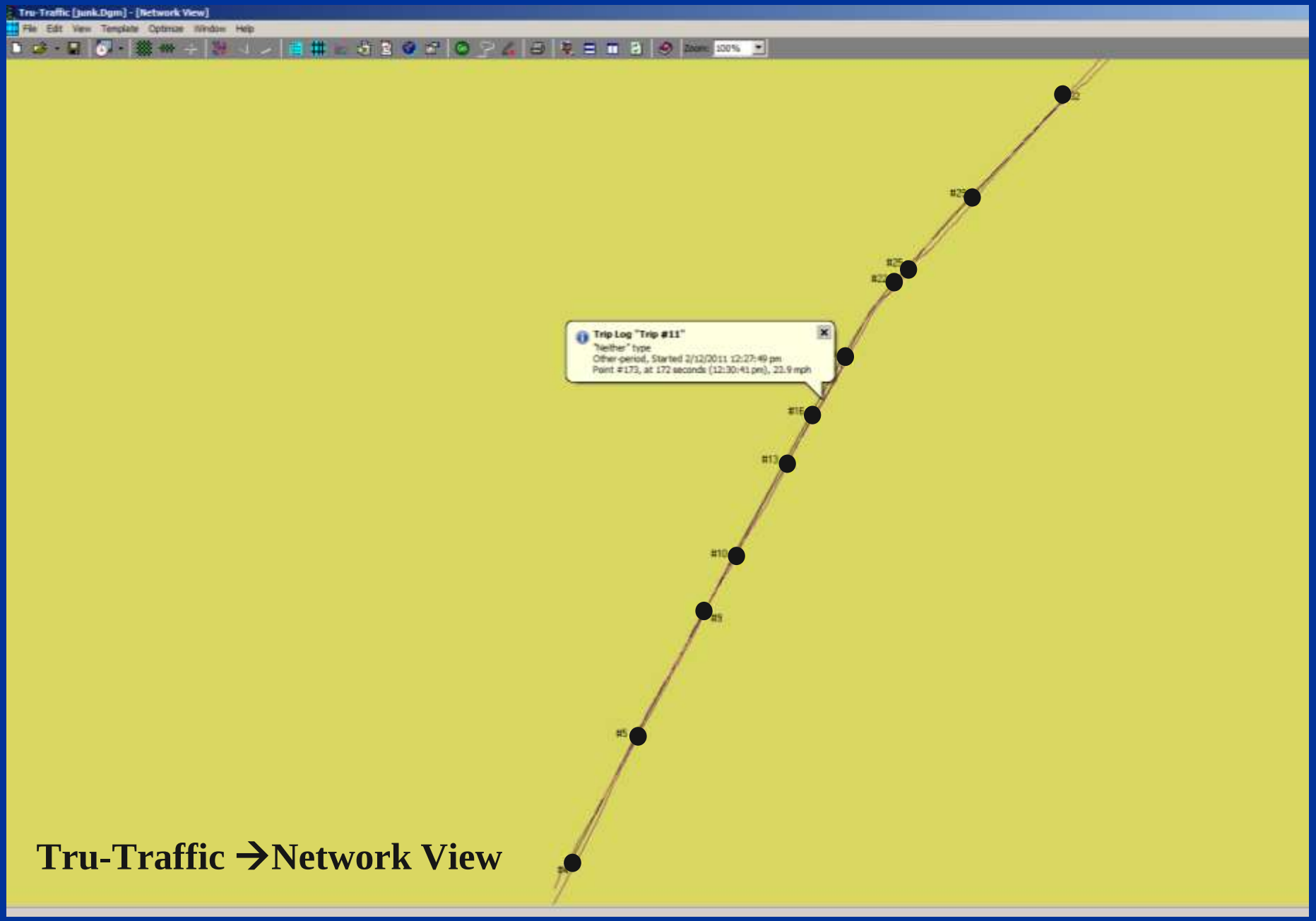

Tru-Traffic →Network View

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AM PEAK 5/10/2011	TRAVEL RUN 1			TRAVEL RUN 2			TRAVEL RUN 3		
	SOUTHBOUND			SOUTHBOUND			SOUTHBOUND		
Intersection	TIME	TRAVEL TIME (SEC)	STOP DELAY (SEC)	TIME	TRAVEL TIME (SEC)	STOP DELAY (SEC)	TIME	TRAVEL TIME (SEC)	STOP DELAY (SEC)
LA 1 (W. 1st St)	7:10:42 AM			7:49:00 AM			7:55:43 AM		
W. 4th St	7:10:50 AM	8	0	7:49:17 AM	16	8	7:55:52 AM	9	0
St. Mary St	7:11:02 AM	12	0	7:49:50 AM	34	16	7:56:07 AM	14	0
W. 7th St	7:11:16 AM	15	0	7:50:07 AM	17	0	7:56:41 AM	34	18
W. 10th St	7:12:09 AM	53	21	7:50:56 AM	48	10	7:57:17 AM	36	0
Total	*1 Min 28 Sec*	88	21	*1 Min 55 Sec*	115	34	*1 Min 33 Sec*	93	18
	NORTHBOUND			NORTHBOUND			NORTHBOUND		
Intersection	TIME	TRAVEL TIME (SEC)	STOP DELAY (SEC)	TIME	TRAVEL TIME (SEC)	STOP DELAY (SEC)	TIME	TRAVEL TIME (SEC)	STOP DELAY (SEC)
W. 10th St	7:14:25 AM			7:51:57 AM			8:00:00 AM		
W. 7th St	7:14:52 AM	27	0	7:52:30 AM	33	0	8:00:42 AM	42	8
St. Mary St	7:15:06 AM	14	0	7:53:22 AM	52	38	8:00:59 AM	17	0
W. 4th St	7:15:19 AM	12	0	7:53:39 AM	17	0	8:01:12 AM	13	0
LA 1 (W. 1st St)	7:16:52 AM	94	87	7:53:49 AM	10	0	8:01:56 AM	44	36
Total	*2 Min 27 Sec*	147	87	*1 Min 52 Sec*	112	38	*1 Min 56 Sec*	116	44

AM PEAK 5/10/2011	TRAVEL RUN 4			TRAVEL RUN 5			AVERAGE TRAVEL RUN		
	SOUTHBOUND			SOUTHBOUND			SOUTHBOUND		
Intersection	TIME	TRAVEL TIME (SEC)	STOP DELAY (SEC)	TIME	TRAVEL TIME (SEC)	STOP DELAY (SEC)	TIME	TRAVEL TIME (SEC)	STOP DELAY (SEC)
LA 1 (W. 1st St)	8:04:06 AM			8:29:50 AM					
W. 4th St	8:04:13 AM	8	0	8:29:57 AM	7	0		10	2
St. Mary St	8:04:42 AM	28	13	8:30:09 AM	11	0		18	4
W. 7th St	8:04:58 AM	16	0	8:30:43 AM	34	16		24	7
W. 10th St	8:05:27 AM	29	0	8:31:15 AM	33	0		36	3
Total	*1 Min 21 Sec*	81	13	*1 Min 25 Sec*	85	16	*1 Min 28 Sec*	88	16
	NORTHBOUND			NORTHBOUND			NORTHBOUND		
Intersection	TIME	TRAVEL TIME (SEC)	STOP DELAY (SEC)	TIME	TRAVEL TIME (SEC)	STOP DELAY (SEC)	TIME	TRAVEL TIME (SEC)	STOP DELAY (SEC)
W. 10th St	8:06:06 AM			8:31:58 AM					
W. 7th St	8:06:40 AM	33	0	8:32:45 AM	47	13		35	2
St. Mary St	8:07:08 AM	28	10	8:33:06 AM	21	0		25	9
W. 4th St	8:07:36 AM	28	0	8:33:22 AM	16	0		17	0
LA 1 (W. 1st St)	8:08:11 AM	35	29	8:34:03 AM	42	33		37	29
Total	*2 Min 4 Sec*	124	39	*2 Min 6 Sec*	126	46	*1 Min 54 Sec*	114	40

Task 3 - New Proposed TSIs

- Develop Synchro models for existing peak hour conditions (existing geometry, signal timing, and peak hour volumes).
- Calibrate existing Synchro models based on the travel time runs collected in Task 2.0.
- Develop Synchro models for recommended signal timings.
  - Coordinated Systems / Subsystems
  - Cycle Lengths
  - Signal Phasing
  - Phase Splits
  - Offsets
- Provide recommendations on striping/lane use changes, signal equipment upgrades and geometric improvements.

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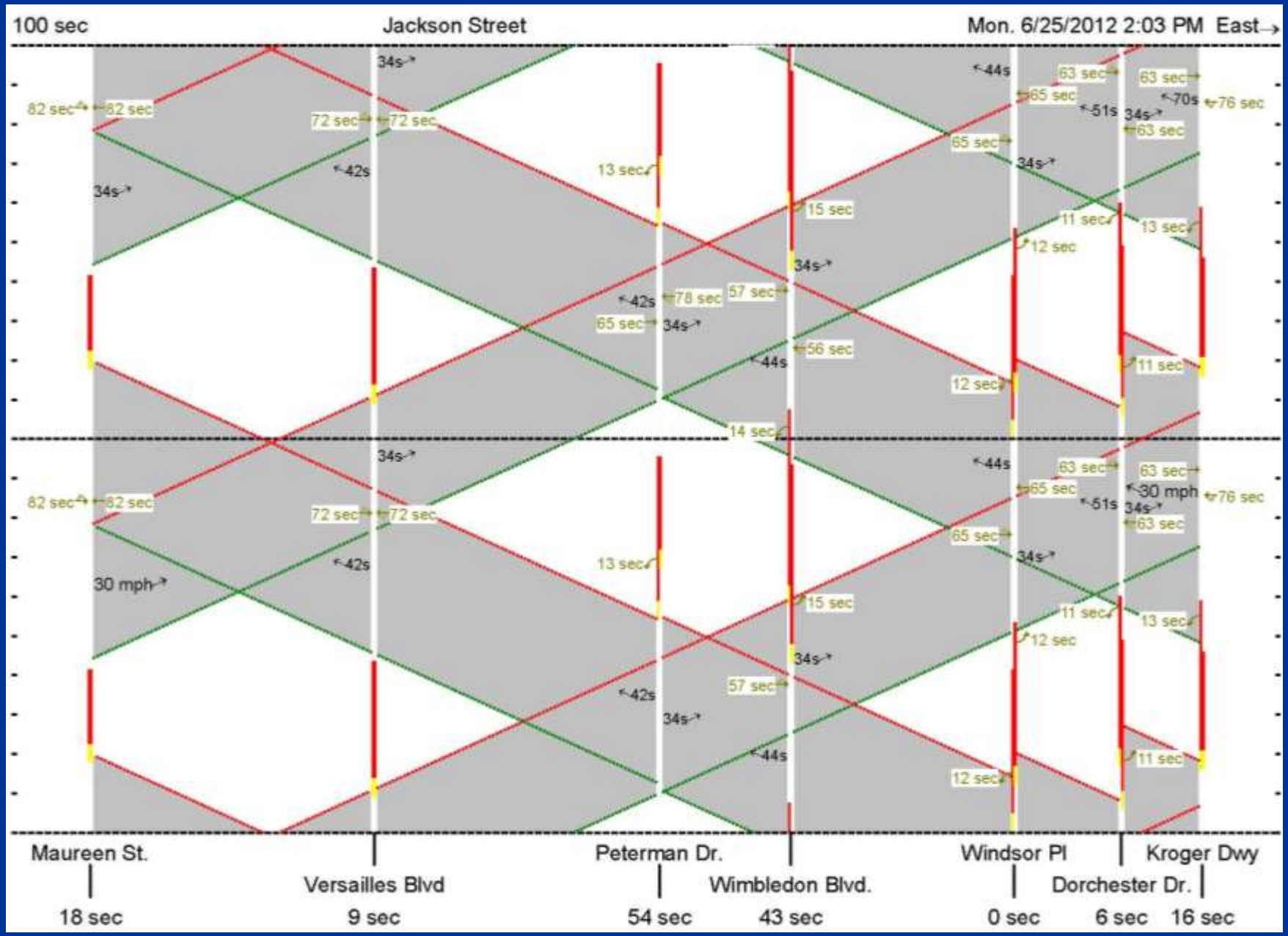
Task 3 - New Proposed TSIs Cont'd.

- Submittal of Recommend Signal Timing Report
  - New TSIs with recommend signal timing plans
  - Comparison of existing and proposed LOS/Delay for all peaks.
  - Comparison of existing and proposed travel times for all peaks.
  - Comparison of existing and proposed time space diagrams.
  - Summary of all signal equipment upgrade recommendations.
  - Summary of all striping/lane use recommendations.
  - Summary of all geometric recommendations.



Tru-Traffic → Time-Space Diagram

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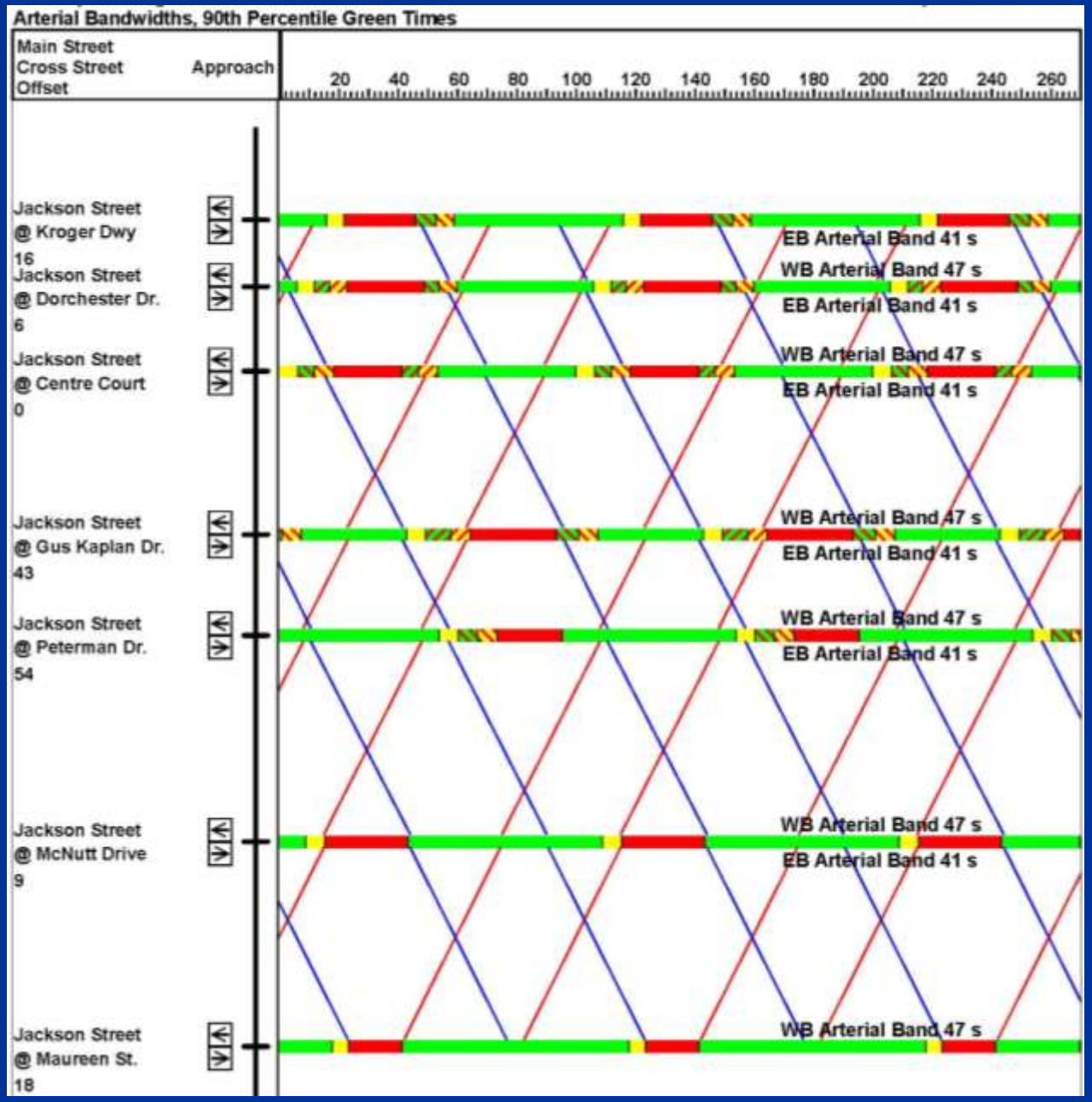

Synchro → Time-Space Diagram

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Task 4 - Programming Controllers

- Develop Streetwise Signal Timing Databases based on approved signal timing plans.
- Recommended signal timing plans are programmed by either the NSI team or by LADOTD District personnel and downloaded to controllers.
- Monitor signal timing plans in the field to verify operations. Make timing adjustments as necessary.
- Perform post travel time runs to compare to existing travel time runs.
- Provide updated TSI forms for all intersections once all adjustments have been completed and field verified.

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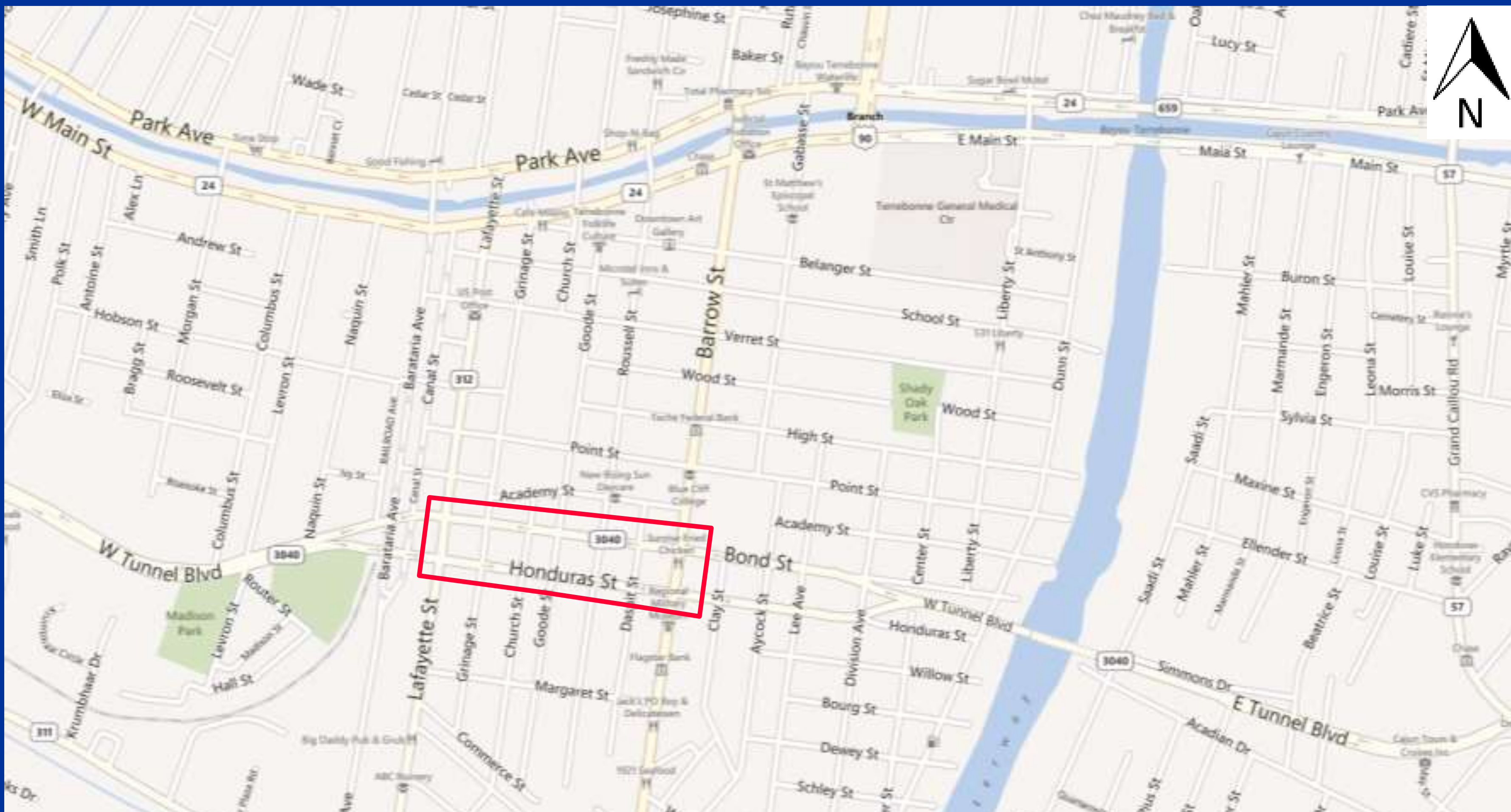
Corridors Completed To Date

- LA 3040 (6 intersections), Houma, LA
- LA 20 (5 intersections), Thibodaux, LA
- LA 57 (13 intersections), Houma, LA
- LA 3 (11 intersections), Bossier City, LA
- LA 526 (8 intersections), Shreveport, LA
- US 61 (20 intersections), New Orleans, LA
- US 11 (17 intersections), Slidell, LA

State Project No. 700-99-0546 – Districts 61, 62 & 02

Task Order No. H.005750

LA 3040, Houma, LA (6 intersections), (LA 182 to LA 312)



LA 3040 - Houma, LA

RESULTS SUMMARY:

	BEFORE	AFTER
Timing Plans	1	1
Cycle Length (seconds)	70 (all peaks)	70 (all peaks)
Avg. Travel Time Savings	WB – 0% / EB – 16%	

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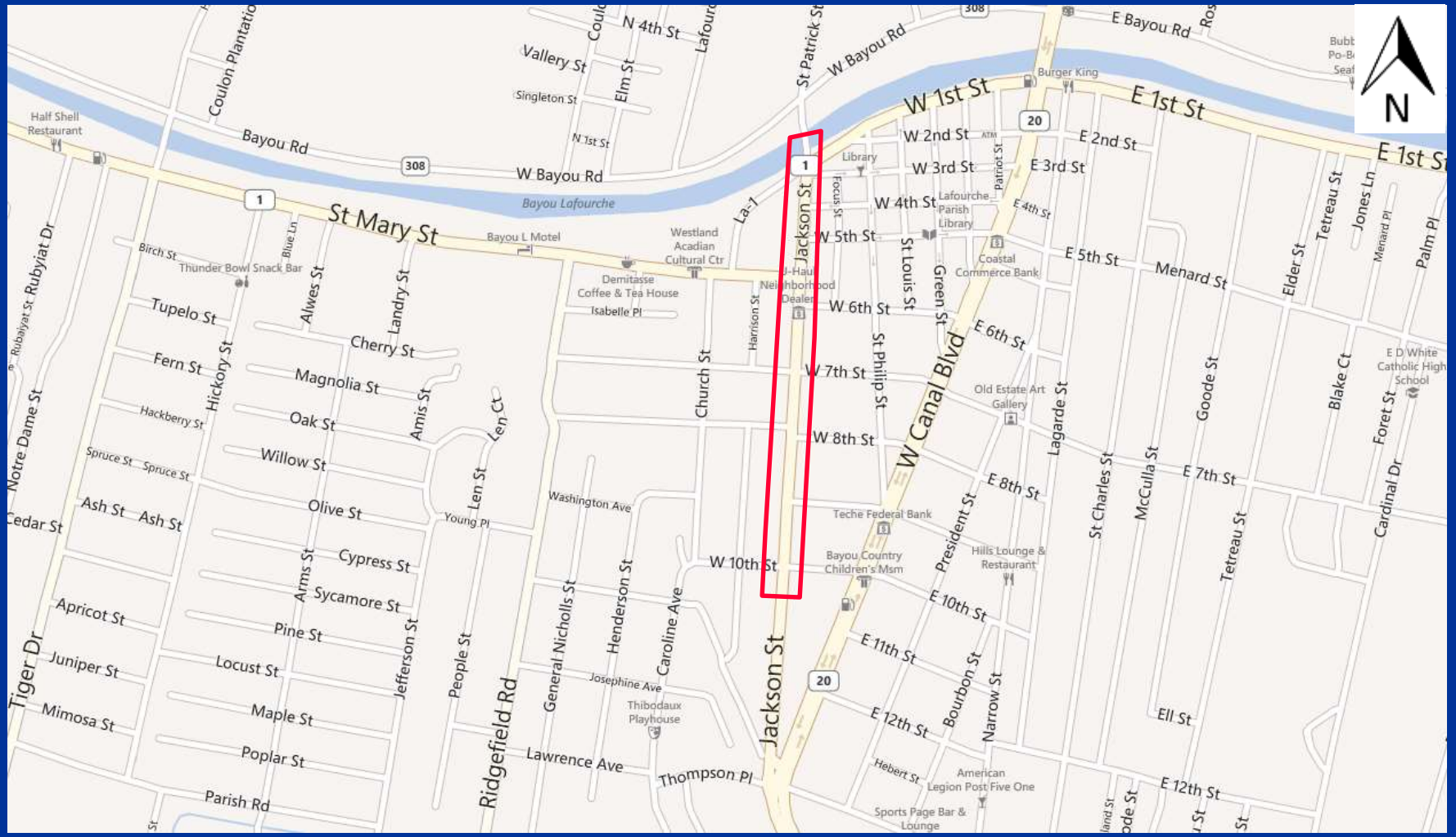
Task Order No. H.005750

LA 20, Thibodaux, LA (5 intersections), (W. 10th St. to LA 1)



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LA 20 (Jackson Street) - Thibodaux, LA

RESULTS SUMMARY:

	BEFORE	AFTER
Timing Plans	1	2
Cycle Length (seconds)	70 (all peaks)	70 (AM) 90 (Noon/PM)
Avg. Travel Time Saving	NB - 28% / SB – 18%	

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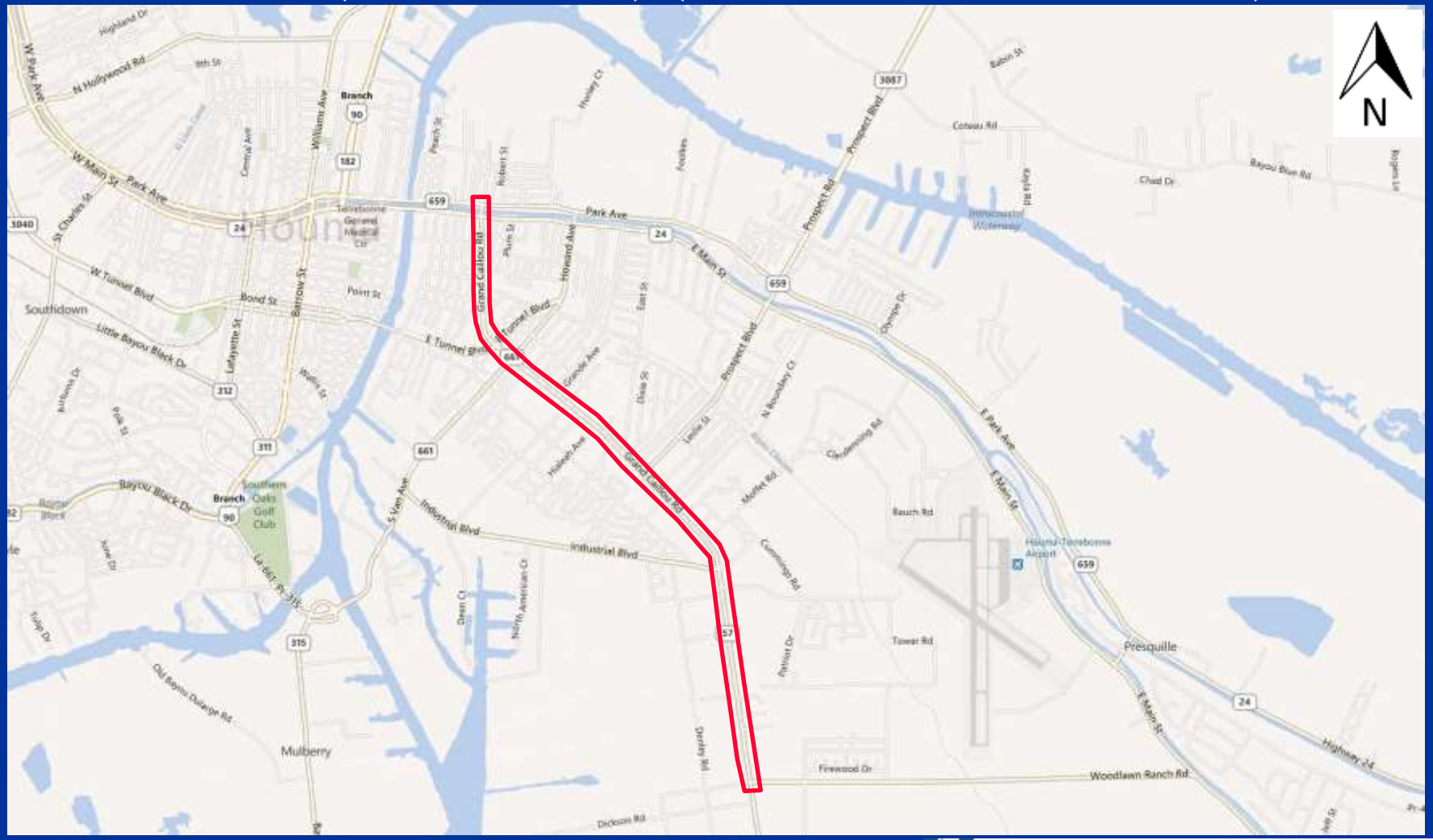
State Project No. 700-99-0546 – Districts 61, 62 & 02

Task Order No. H.005750

LA 57, Houma, LA (13 intersections), (LA 24 to Woodlawn Ranch Rd.)



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LA 57 (Grand Caillou Road) - Houma, LA

RESULTS SUMMARY:

	BEFORE	AFTER
Timing Plans	1	3
Cycle Length (seconds)	Varied (60-100)	90 (AM/Noon) 100 (PM)
Avg. Travel Time Saving	NB - 34% / SB – 22%	

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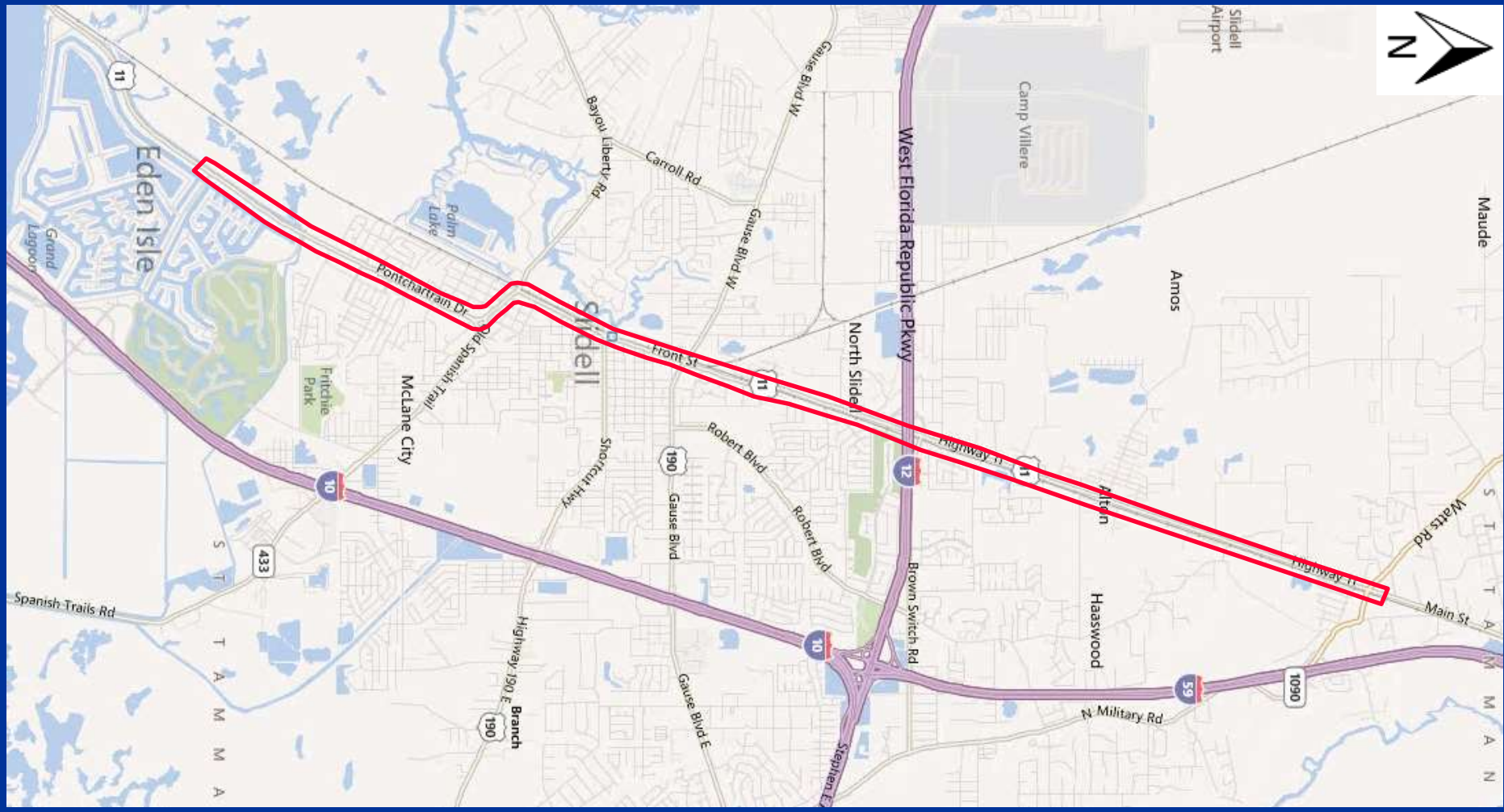
State Project No. 700-99-0546 – Districts 61, 62 & 02

Task Order No. H.005757.5

US 11, Slidell, LA (17 intersections), (Eden Isles Blvd. to LA 41/LA 3081)



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US 11 – Slidell, LA

RESULTS SUMMARY:

	BEFORE	AFTER
Timing Plans	3 Subsystems w/ 3 Plans AM/Noon/PM	3 Subsystems w/ 3 Plans AM/Noon/PM
Cycle Length (seconds)	Subsystem 1 – 100/100/140 Subsystem 2 – 90/110/110 Subsystem 3 – 80/80/80	Subsystem 1 – 120/100/120 Subsystem 2 – 90/110/110 Subsystem 3 – 80/80/100
Avg. Travel Time Saving	Subsystem 1: NB – 26% / SB – 26% Subsystem 2: NB – 27% / SB – 22% Subsystem 3: NB – 15% / SB – 20% Overall: NB – 17% / SB – 19%	

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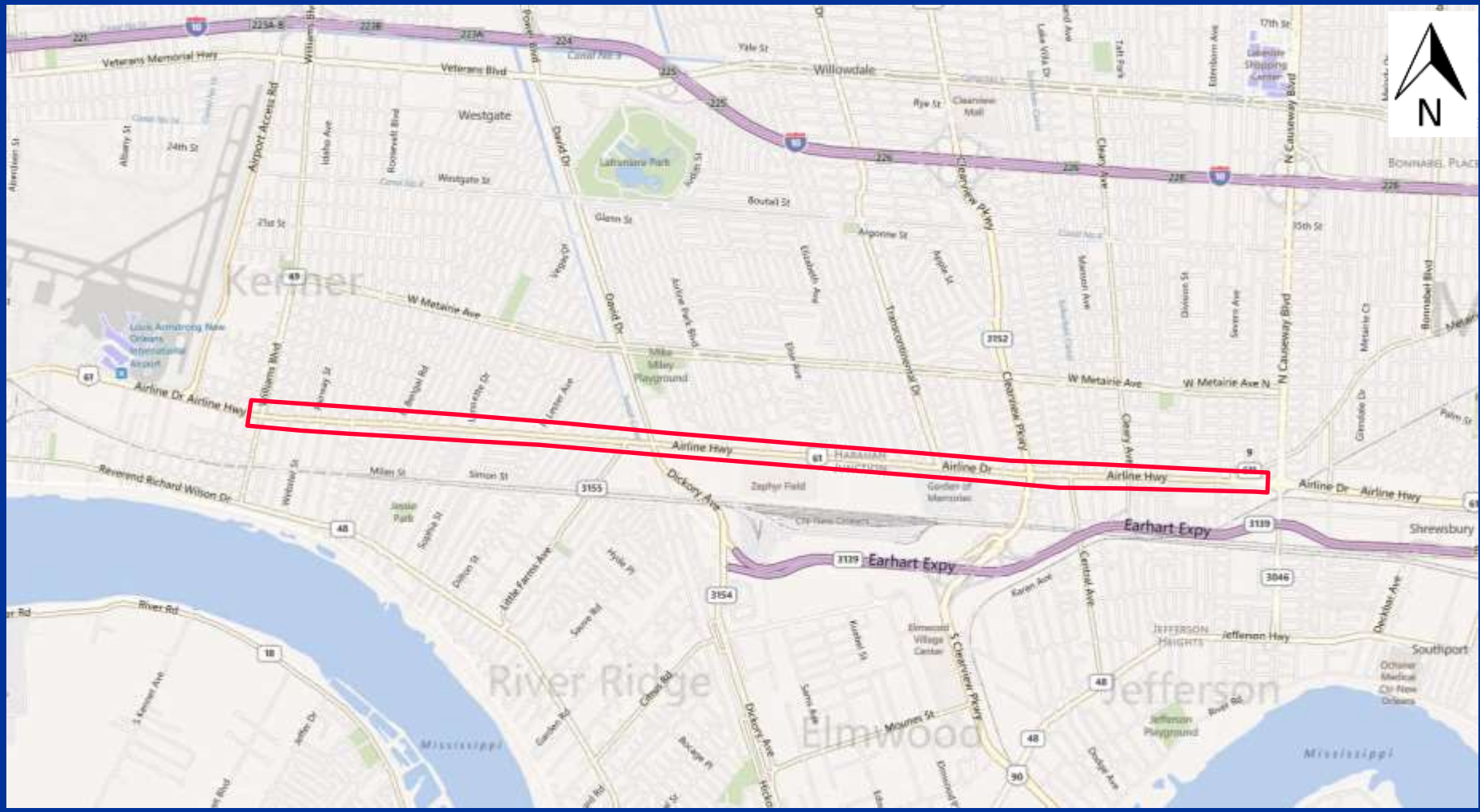
State Project No. 700-99-0546 – Districts 61, 62 & 02

Task Order No. H.005760

US 61, New Orleans, LA (20 intersections), (Williams Blvd. to Severn Ave.)



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US 61 (Airline Drive) – New Orleans, LA

RESULTS SUMMARY:

	BEFORE	AFTER
Timing Plans	3 Subsystems w/ 3 Plans AM/Noon/PM	2 Subsystems w/ 4 Plans AM/Noon/PM/Wknd
Cycle Length (seconds)	Subsystem 1 – Free Op Subsystem 2 – 80/70/90 Subsystem 3 – 120/100/120	Subsystem 1 – 140/100/130/100 Subsystem 2 – 120/100/130/130
Avg. Travel Time Saving	Subsystem 1: EB – 26% / WB – 22% Subsystem 2: EB – 38% / WB – 45%	

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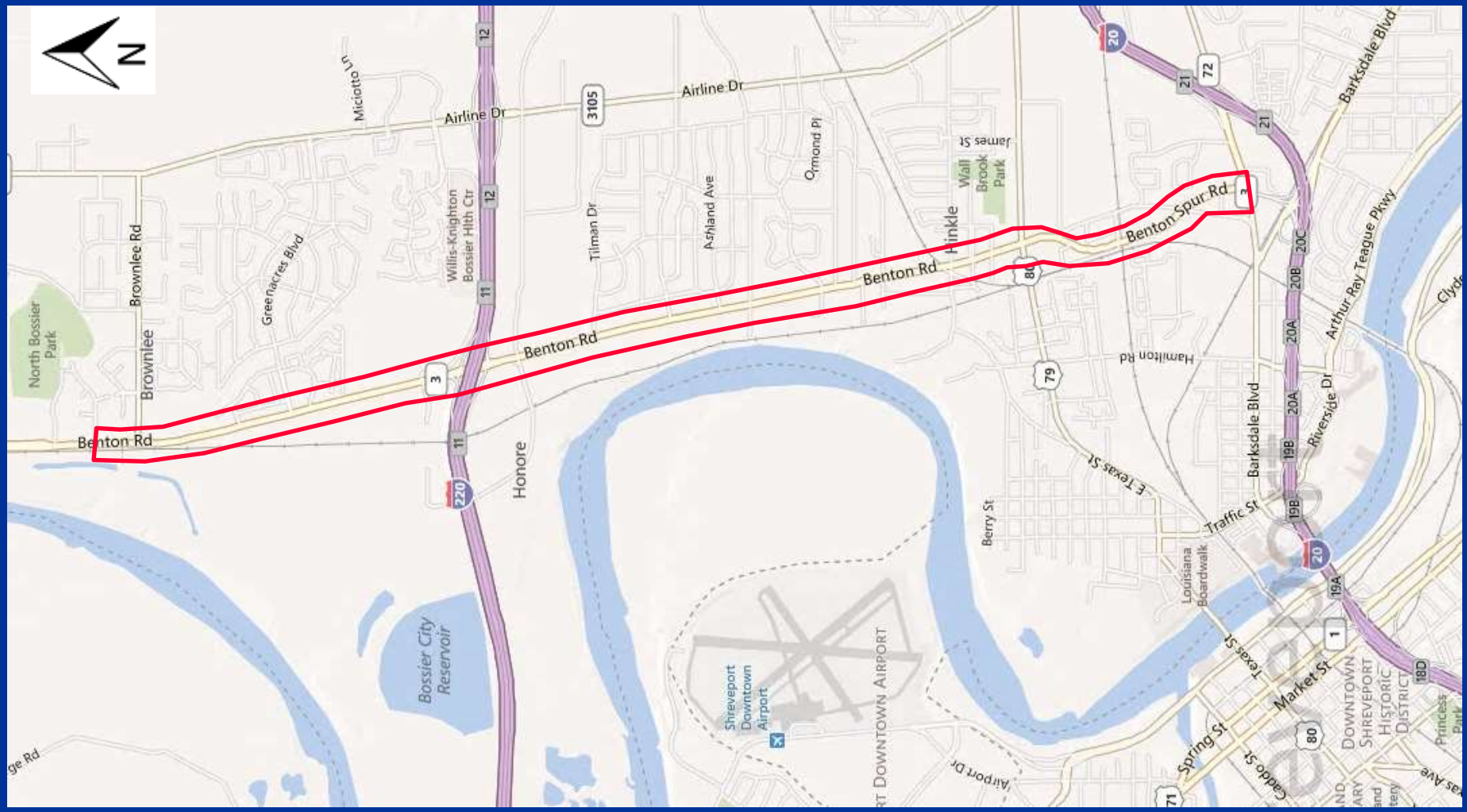
State Project No. 700-99-0542 – Districts 03, 04, 05, 07, 08 & 58

Task Order No. H.005756.5

LA 3, Bossier City, LA (11 intersections), (Brownlee Rd. to Old Minden Hwy.)



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LA 3 (Benton Road) – Bossier City, LA

RESULTS SUMMARY:

	BEFORE	AFTER
Timing Plans	2 Subsystems w/ 4 Plans AM/Noon/PM/Wknd	2 Subsystems w/ 4 Plans AM/Noon/PM/Wknd
Cycle Length (seconds)	Subsystem 1 – 120/130/130/110 Subsystem 2 – 130/100/130/100	Subsystem 1 – 140/120/150/120 Subsystem 2 – 160/100/150/90
Avg. Travel Time Saving	Subsystem 1: NB – 29% / SB – 34% Subsystem 2: NB – 5% / SB – 23% Overall: NB – 18% / SB 21%	

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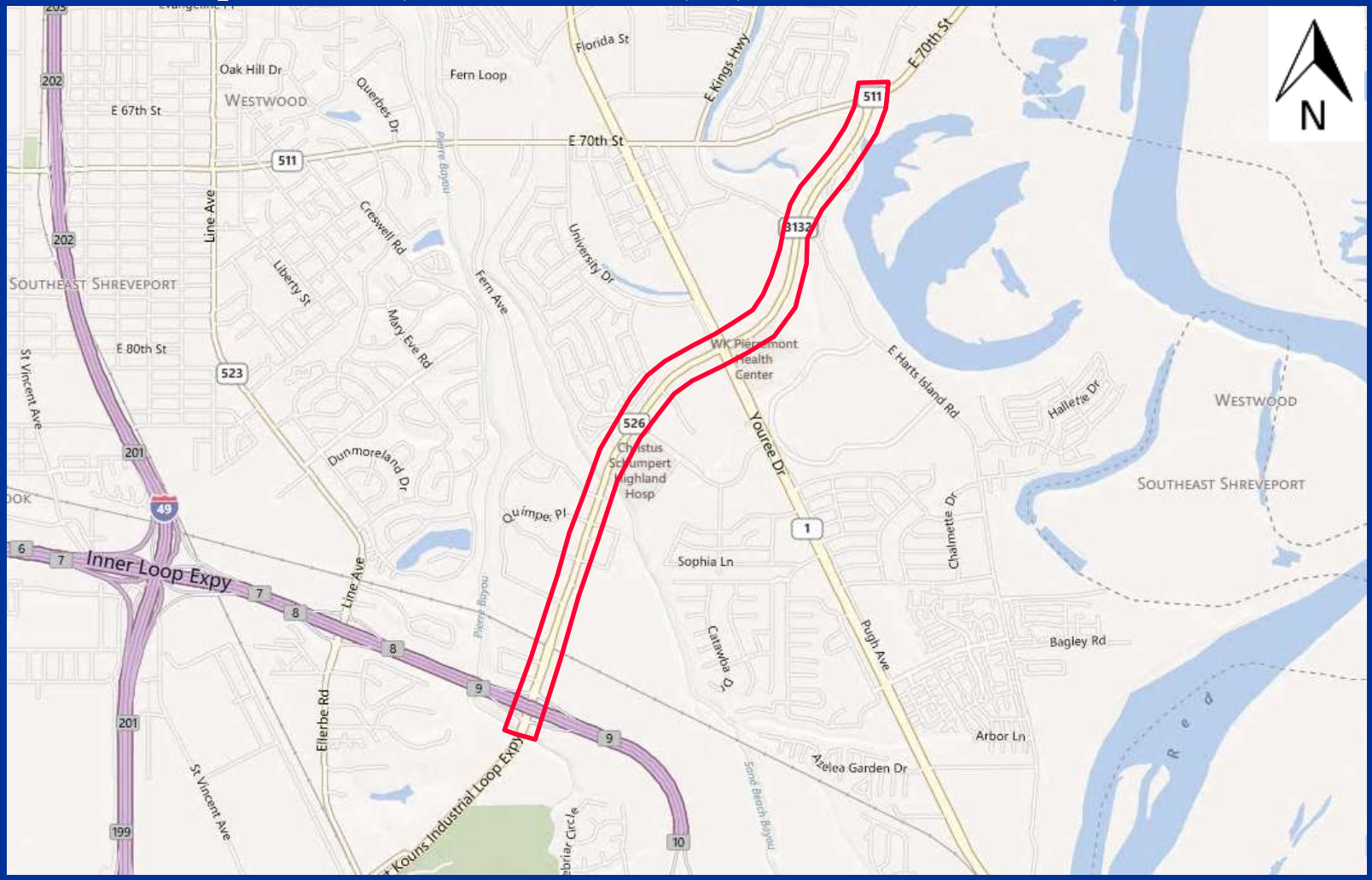
State Project No. 700-99-0542 – Districts 03, 04, 05, 07, 08 & 58

Task Order No. H.005756.5

LA 526, Shreveport, LA (8 intersections), (LA 511 to LA 3132)



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LA 526 – Shreveport, LA

RESULTS SUMMARY:

	BEFORE	AFTER
Timing Plans	4 Plans AM/Noon/PM/Wknd	4 Plans AM/Noon/PM/Wknd
Cycle Length (seconds)	110 (All Peaks)	110 (All Peaks)
Avg. Travel Time Saving	NB – 17% / SB – 23%	

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Ongoing Traffic Signal Timing Studies

Corridor / Location	Status
LA 19 (11 intersections) - Baker, LA	Final Data Collection
LA 44 (10 intersections) - Gonzales, LA	Signal Timing Phase
US 425 (11 intersections) - Vidalia/Ferriday, LA	Final Data Collection
LA 3124/LA 60 (8 intersections) - Bogalusa, LA	Initial Data Collection
LA 10 (7 intersections) - Franklinton, LA	Initial Data Collection
LA 16 (11 intersections) - Amite, LA	Initial Data Collection
LA 3105 (19 intersections) - Bossier City, LA	Initial Data Collection

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Ongoing Traffic Signal Timing Studies Cont'd.

Corridor / Location	Status
LA 72 (9 intersections) - Bossier City, LA	Initial Data Collection
LA 1 (17 intersections) - Shreveport, LA	Initial Data Collection
US 171 (29 intersections) - Shreveport, LA	Initial Data Collection
LA 526 (17 intersections) - Shreveport, LA	Initial Data Collection

Lessons Learned

- Recommend to have all controllers upgraded to TS2 with GPS units especially if no other interconnect is present.
- Make sure all controller's clocks are in sync.
- Have vehicle detection verified before implementing.
- Be prepared to spend field time on trouble shooting controller issues and detection issues.
- Verify Streetwise Databases before implementing timings.

QUESTIONS?

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