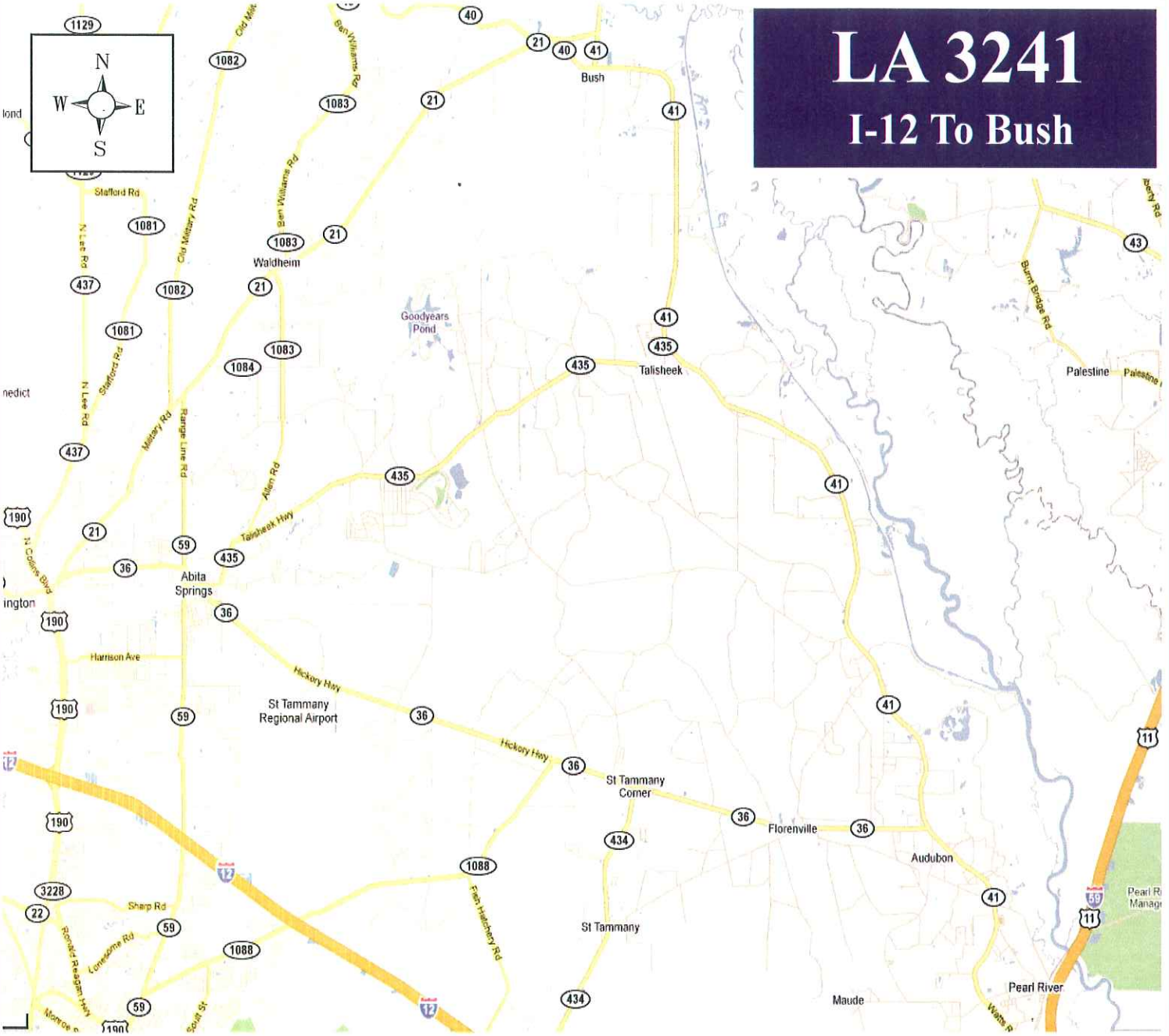

LA 3241
I-12 To Bush

Environmental Impact Statement

Traffic Study Report

State Project No. 700-52-0198
USACE Project No. MVN-2006-0037
LA 3241
I-12 To Bush

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USACE

June 2011

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INTRODUCTION

This report summarizes the methodology and findings of a traffic study to assess the Louisiana Highway 3241 (LA 3241) project Alternatives from Interstate 12 (I-12) to Bush, Louisiana, as part of the Environmental Impact Statement for the project. The proposed method to provide a direct route from I-12 to Bush is by constructing a high-speed, four-lane arterial connecting I-12 to the existing four-lane arterial portion of LA 21 in Bush.

The purpose of this study was to evaluate whether the four practicable Alternatives (B/O, P, Q, and J) connecting I-12 to LA 21 meet the project purpose and need, in terms of the impact on traffic conditions. The impacts were measured using the volumes of the traffic expected to be diverted from existing routes to the new alignments, the expected LOS and delay conditions compared to those in the existing congested areas, and the difference in travel times between the Alternatives and the existing routes.

The needs as identified by LADOTD for the project are the following:

1. Meet a legislative mandate for LA 3241 in Louisiana Revised Statute 47:820.2B(e);
2. Divert traffic within the study area onto LA 3241 to free capacity for local trips on existing routes and to reduce congestion; and
3. Provide travel time savings to support and enhance potential economic development in northern St. Tammany and Washington Parishes.

Traffic conditions for the base year of 2010, the implementation year of 2015, and the design year of 2035 were analyzed.

Eleven scenarios were identified for analysis:

- 2010 Existing Conditions
- 2015 No Build Conditions
- 2035 No Build Conditions
- 2015 Build Conditions for Alternatives B/O, P, J, and Q
- 2035 Build Conditions for Alternatives B/O, P, J, and Q

The No Build condition was defined as not constructing a direct route from I-12 to Bush and the Build condition was defined as LA 3241 being constructed as a four-lane arterial connecting I-12 to Bush along the practicable alignments.

STUDY AREA

The study area is bounded by LA 21, LA 41, US 190, US 11, and I-12. Figure 1 presents a vicinity map of the study area.

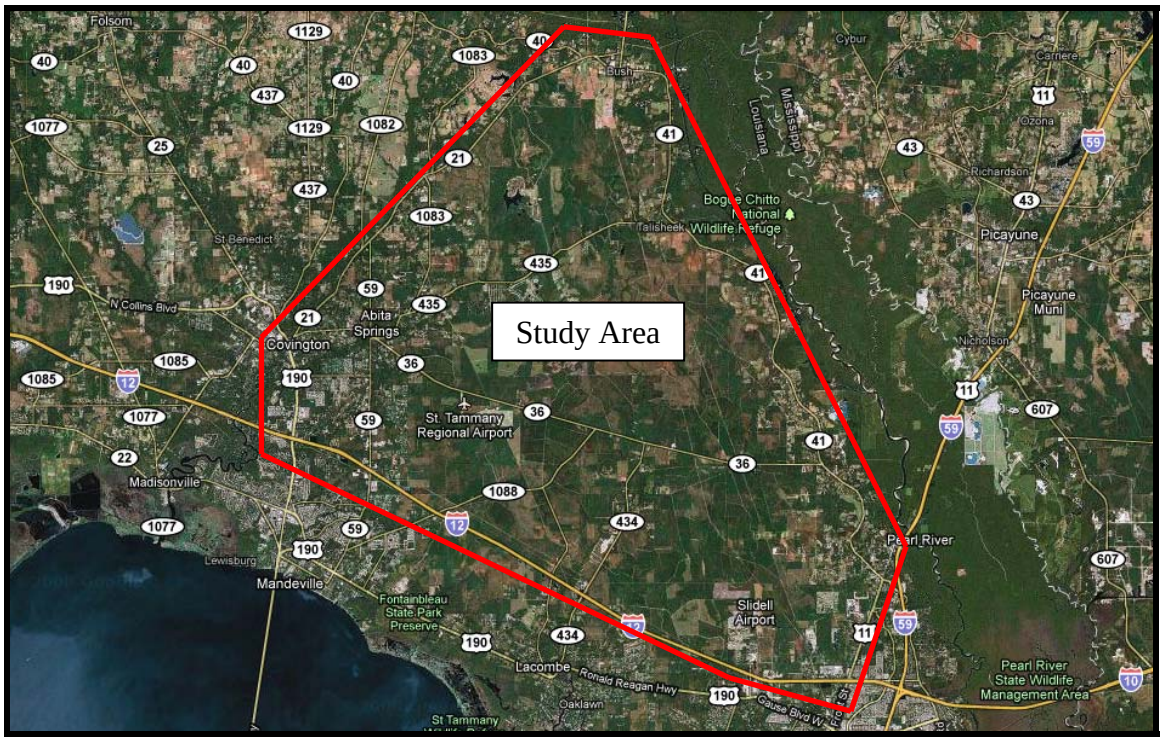

Figure 1. Vicinity Map

The study area included the following existing signalized intersections:

- LA 21 at LA 36
- US 190 at LA 21 (east intersection)
- LA 59 at Harrison Avenue.
- I-12 at LA 59 (westbound and eastbound ramp intersections)
- I-12 at Airport Road (westbound and eastbound ramp intersections)

The study area included the following existing unsignalized intersections:

- LA 1083 at LA 40
- LA 21 at LA 40 (west and east intersections)
- LA 21 at LA 41
- LA 40 at LA 41
- LA 41 at LA 435 (north and south intersections)
- LA 21 at LA 1083 (west and east intersections)
- LA 21 at LA 1084
- LA 1083 at LA 1084
- LA 1083 at LA 435
- LA 435/LA 59 at LA 36
- LA 36 at LA 59
- LA 21 at LA 59

- I-12 at LA 434 (westbound and eastbound ramp intersections)
- LA 36 at LA 1088
- LA 36 at LA 434
- LA 36 at LA 41

The study area included the following existing roadway segments:

- LA 40 between LA 1083 and LA 21
- LA 41 between LA 40 and LA 435
- LA 21 between LA 40 and LA 1083
- LA 21 between LA 1084 and LA 1083
- LA 21 between LA 59 and LA 1084
- LA 21 between LA 36 and LA 1082
- LA 59 between LA 21 and LA 36
- LA 59 between LA 36 and I-12
- LA 435 between LA 1083 and Peg Keller Road
- LA 435 between White Oaks Lane and LA 41
- LA 1083 between LA 1084 and LA 435
- LA 1083 between LA 21 and LA 1084
- LA 1084 between LA 21 and LA 1083
- LA 36 between LA 21 and LA 59
- LA 36 between LA 435 and LA 1088
- LA 36 between LA 434 and LA 41
- LA 36 between LA 1088 and LA 434
- LA 1088 between LA 36 and I-12
- LA 434 between LA 36 and I-12
- Airport Road north of I-12

The study area is mostly rural and has commercial and residential developments. Descriptions of the study roadway segments included in the study area and the surrounding land use are presented below.

LA 41

LA 41 is a four-lane divided principal arterial between LA 21 and LA 40, and narrows to a two-lane undivided minor arterial between LA 40 and US 11. LA 41 has a general north-south orientation through the study area. The northern terminus of LA 41 is located at LA 21 in Bush and the southern terminus is located at US 11 in Pearl River. LA 41 provides access to I-12 and I-59 via US 11. With the exception of a couple of industrial uses and the developed areas within Pearl River and Talisheek, the surrounding area is mostly rural and undeveloped with light residential land use.

LA 21

LA 21 is a two-lane undivided minor arterial between LA 41 and LA 36, and widens to a four-lane undivided minor arterial between LA 36 and US 190. LA 21 is oriented in a general northeast-southwest direction. For the purpose of this study, LA 21 is assumed to run in the east-west direction. The northern terminus of LA 21 is located at LA 41 in Bush and the southern terminus is located at US 190 in Covington. LA 21 provides access to I-12 via US 190 and LA 59. The surrounding land use is mostly residential.

LA 40

LA 40 is a two-lane undivided minor collector north of LA 21. LA 40 has a general east-west orientation through the study area. The eastern terminus is located at LA 21 in Bush and the western terminus is located at LA 1129 in Covington. The surrounding area is mostly rural and undeveloped with light residential land use.

LA 59

LA 59 is a two-lane undivided major/minor collector between LA 21 and Harrison Avenue, and widens to a minor arterial with a two-way left-turn lane between Harrison Avenue and US 190. LA 59 has a general north-south orientation through the study area. The northern terminus of LA 59 is located at LA 21 near Abita Springs and the southern terminus is located at US 190 in Mandeville. LA 59 provides access from LA 21, LA 36, and LA 435 to I-12. The surrounding area is mostly urban with a mix of commercial and residential land uses.

LA 435

LA 435 is a two-lane undivided minor collector roadway between LA 41 and Abita Springs. LA 435 has a general east-west orientation through the study area. The eastern terminus of LA 435 is located at LA 41 in Talisheek and the eastern terminus is located at the junction of LA 59 and LA 36 in Abita Springs. The surrounding area is mostly rural and undeveloped with light residential land use near LA 59.

LA 1083

LA 1083 is a two-lane undivided local roadway between LA 40 and LA 435. LA 1083 has a general north-south orientation through the study area. The northern terminus of LA 1083 is located at LA 40 near Bush and the southern terminus is located at LA 435 in Abita Springs. The surrounding land use is mostly residential.

LA 1084

LA 1084 is a two-lane undivided local roadway between LA 21 and LA 1083. LA 1084 has a general east-west orientation through the study area. LA 1084 connects LA 21 and LA 1083 and the surrounding land use is mostly residential.

LA 36

LA 36 is a two-lane minor arterial between Abita Springs and LA 21 and a two-lane undivided major collector between LA 21 and LA 41. LA 36 has a general east-west orientation through the study area. The eastern terminus of LA 36 is located at LA 41 near Pearl River and the western terminus is located at LA 21 in Covington. LA 36 runs parallel to I-12 and connects to US 190, LA 59, LA 1088, LA 434, and LA 41. The surrounding area is mostly rural and undeveloped, except for the urban areas at the eastern and western ends.

LA 1088

LA 1088 is a two-lane undivided local roadway between LA 36 and I-12 and crosses I-12 with a two-lane bridge. LA 1088 has a general northeast-southwest orientation through the study area. The northern terminus of LA 1088 is located at LA 36 in Covington and the southern terminus is located at LA 59 in Mandeville. At the time of this report, there is no direct access to I-12 from LA 1088. An interchange is under construction to provide access to I-12 eastbound and westbound. The surrounding area north of I-12 is mostly rural and undeveloped except for a high school and a future mixed used development.

LA 434

LA 434 is a two-lane undivided minor collector between LA 36 and I-12. LA 434 has a general north-south orientation through the study area. The northern terminus of LA 434 is located at LA 36 in Covington and the southern terminus is located at US 190 in Lacombe. LA 434 provides access to I-12 eastbound and westbound. The surrounding area north of I-12 is rural and undeveloped except for commercial developments near I-12 and light residential land use along its length.

Airport Road

Airport Road is a two-lane undivided major collector north of I-12. Airport Road has a general north-south orientation through the study area. The northern terminus of Airport Road is approximately 2 miles north of I-12 and the southern terminus is located at US 190 in Slidell. Airport Road provides access to I-12 eastbound and westbound. The surrounding land use is both commercial and residential and includes the Slidell Municipal Airport.

PREVIOUS STUDIES & PLANNED PROJECTS

Previous studies and planned projects were reviewed to develop an understanding of the study area.

I-12 at LA 1088 Interchange

At the time of this report, the proposed I-12 at LA 1088 diamond interchange was under construction. Urban Systems Associates, Inc.'s *I-12 at LA 1088 Interchange Traffic Study* (March 2007) was reviewed and used as a resource to determine the expected effects of the interchange on the traffic volumes on LA 1088 and the I-12 at LA 59 and LA 434 interchanges.

Wadsworth Development

The Wadsworth Development is under construction and is located on the northwest corner of I-12 and LA 1088. The main access is expected to be via the I-12 at LA 1088 interchange. Krebs, Lasalle, LeMieux Consultants, Inc.'s *Traffic Impact Analysis for Wadsworth Development* (July 2008) and St. Tammany Department of Engineering's *Traffic Study for Proposed I-12 at LA 1088 Interchange* (June 2009) were reviewed and used as resources to determine the expected impact of the development on the traffic volumes on LA 1088 and the I-12 interchange.

The mixed use development is proposed to include single family detached homes, a recreation community center, a nursing home, office and retail space, banks, a day care center, shopping center, pharmacy, satellite college campus, a fire station, and a police station. Only the first phase, which includes 70 dwelling units, is expected to be developed by the implementation year 2015. The development's three phases are all expected to be completed by the design year 2035.

Lakeshore High School

Lakeshore High School is located approximately 2.3 miles north of I-12 on the west side of LA 1088. As a result of collecting count data during the school year, the impact of the school-generated trips on LA 1088 is included in the 2010 existing conditions. The new I-12 at LA 1088 interchange is expected to become a main access point for the school traffic. The school principal was contacted by phone on October 21, 2010 for student enrollment and school employment data. The St. Tammany Department of Engineering's *Traffic Study for Proposed I-12 at LA 1088 Interchange* (June 2009) was also used to determine the expected distribution of the school traffic at the I-12 at LA 1088 interchange for the projected 2015 and 2035 conditions.

I-12 at Airport Road Interchange

The I-12 at Airport Road/Northshore Boulevard interchange in Slidell has been the subject of numerous studies due to the congested conditions. Two studies were reviewed for recommended interchange improvements:

- *Interstate 12 at Northshore Boulevard and Airport Road Stage 0 Feasibility Study* (Burk-Kleinpeter, Inc., December 2007), with an estimated $11.8 million cost for the recommended improvements, which included the following construction:

    - A new six-lane bridge over I-12 between the I-12 ramps.
    - Dedicated southbound and northbound right turn lanes to the westbound and eastbound I-12 on ramps, respectively.
    - Dual left turn lanes on Airport Road/Northshore Boulevard and on ramp sections to receive the dual left and right turns.

- *I-12 @ Airport Rd Single Point Urban Interchange Stage 0 Feasibility Study* (Buchart Horn, Inc., January 2011), with an estimated $23.8 million cost for the recommended improvements, which included the following construction:

    - A single point urban interchange, which consolidates the ramp intersections into one signalized intersection on the Airport Road overpass.
    - A new eight-lane bridge over I-12 between the I-12 ramps.
    - Dedicated southbound and northbound right turn lanes to the westbound and eastbound I-12 on ramps, respectively.
    - Dual left turn lanes on Airport Road/Northshore Boulevard and on ramp sections to receive the dual left turns.
    - Dual left turn off ramp sections.

I-12 Widening from Airport Road to I-59/I-10 Interchange

According to the Regional Planning Commission, the I-12 widening from four lanes to six lanes between the Airport Road interchange and the I-59/I-10 interchange is expected to be completed by 2012.

TRAVEL TIME ANALYSIS

Existing Routes

Three origin/destinations were chosen along I-12 to represent travels between I-12 and Bush:

- An eastern location, the I-12 at US 11 interchange, that would provide connectivity to Slidell and areas north, south, and east of the study area via the I-12/ I-59/I-10 interchange.

- A western location, the I-12 at US 190 interchange, that would provide access to New Orleans via the Causeway and also to areas west of the study area.
- A central location, the I-12 at LA 434 interchange, that would provide access to points south of I-12 within St. Tammany Parish and also service trips east and west of the study area between US 190 and US 11.

Based on existing traffic volume data and roadway connectivity, six existing routes were determined to be the major travel routes between Bush and I-12 at the US 190, LA 434, and US 11 interchanges. These existing routes are presented in Figure 2.

Travel Time Runs

Travel time runs were conducted on the six existing routes in both directions during both the AM and PM peaks. The travel time runs were conducted in February-May 2010 in clear weather conditions. The resulting travel times were recorded and the critical peak/directions identified.

Travel Time Savings

Based on distance and speed, travel times were estimated for the proposed Alternative routes B/O, P, Q, and J between Bush and the selected origin/destinations on I-12. This included not only the travel time on the new roadway, but also that on I-12 to reach each of the three origin/destination points. Lengths of the proposed routes were provided by C. H. Fenstermaker & Associates, Inc.

Travel time savings for the Alternatives were calculated based on the existing critical peak direction travel times obtained from the travel time runs. The critical peak direction travel times, estimated travel times, and travel time savings for each Alternative are presented in Table 1.

A review of Table 1 indicates that all four of the Alternatives are expected to provide travel time savings versus at least one of the existing routes based on the three origin-destinations (I-12 to Bush) that were studied; however, the order of magnitude varies greatly.

Alternatives B/O and P are expected to provide significant travel time savings versus existing routes between Bush and both US 190 and LA 434. Alternatives J and Q are expected to provide significant travel time savings versus an existing route between Bush and LA 434. The four Alternatives are not expected to provide significant travel time savings versus the existing route on LA 41 to US 11.

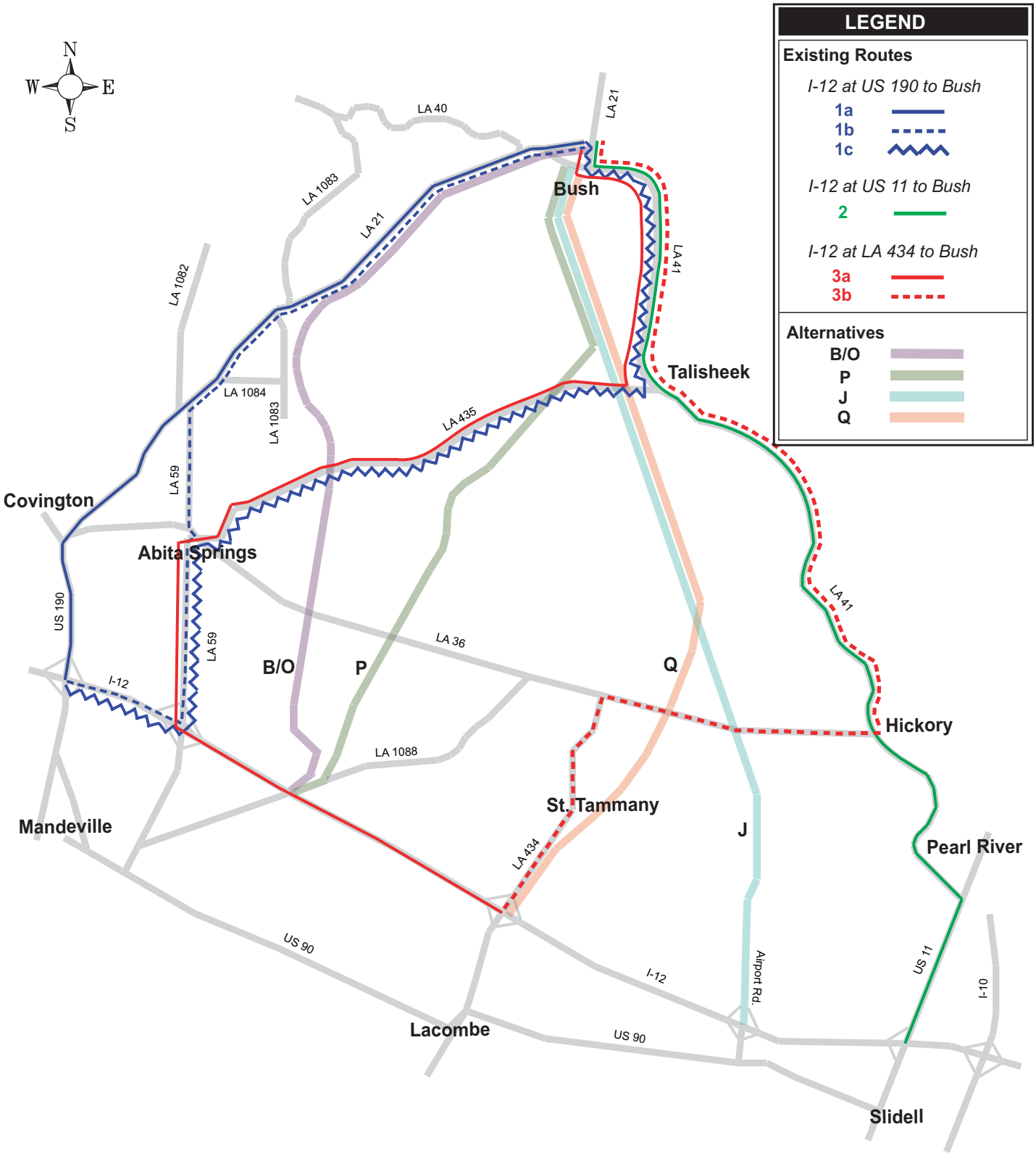

Figure 2

Existing Routes and Alternatives

I-12 to Bush
Environmental Impact Statement

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Project # 09-085

Table 1.
Travel Time Savings

Origin and Destination	Existing Route			Proposed Alternative Route											
				B/O			J			P			Q		
	No.	Distance (miles)	Critical Peak Direction Travel Time (minutes)	Distance (miles)	Estimated Travel Time* (minutes)	Travel Time Savings (minutes)	Distance (miles)	Estimated Travel Time* (minutes)	Travel Time Savings (minutes)	Distance (miles)	Estimated Travel Time* (minutes)	Travel Time Savings (minutes)	Distance (miles)	Estimated Travel Time* (minutes)	Travel Time Savings (minutes)
I-12 at US 190 to Bush	1a	18.9	30.9	23.8	21.6	9.3	38.6	34.9	-4.0	23.0	21.3	9.6	30.8	28.1	2.8
	1b	22.1	37.1			15.5			2.2			15.8			9.0
	1c	26.5	41.3			19.7			6.4			20.0			13.2
I-12 at US 11 to Bush	2	26.8	34.0	33.5	29.9	4.1	24.3	22.6	11.4	32.7	29.6	4.4	29.1	26.6	7.4
I-12 at LA 434 to Bush	3a	32.0	45.0	23.9	21.7	23.3	27.3	25.2	19.8	23.1	21.4	23.6	19.5	18.4	26.6
	3b	29.9	33.4			11.7			8.2			12.0			15.0

* Estimated travel times are based on an average travel speed of 65 mph on the new proposed alternative portions and 70 mph on I-12 and I-59.

DATA COLLECTION

Traffic volume data was collected to determine the base year traffic conditions.

Twenty-four hour volume counts were collected within the project study area during January – April 2010 at twenty-one (21) locations. To calculate the average daily traffic volumes, seasonal (monthly) and twenty-four hour monitoring factors were applied to the twenty-four hour volume counts based on roadway functional classifications provided by the Louisiana Department of Transportation and Development (LADOTD). Vehicle classification and speed count data were collected at twelve (12) locations. An explanation of the vehicle classification categories is included with the count data in the Appendix.

Intersection turning movement counts were collected at each of the study intersections during January – March 2010. The count data is included in the Appendix.

The resulting average daily traffic volumes and AM and PM peak existing volumes are presented in Figures 3A and 3B. Due to the large study area, peak hours varied and therefore the volumes presented and analyzed were based on the peak at each specific location. The highest one-hour period during the AM and PM count times were used for each intersection for a conservative analysis.

CAPACITY ANALYSIS METHODOLOGY

Capacity analyses were performed to determine operational conditions in the AM and PM peaks. This type of analysis is the industry standard for traffic studies and the methods are the widely accepted practice of evaluating impacts on traffic operations.

Levels of Service (LOS) represent a qualitative and quantitative evaluation of the traffic operation of a roadway segment and/or intersection using procedures developed by the Transportation Research Board and contained in the Highway Capacity Manual Special Report 209. The Highway Capacity Manual (HCM) procedures have been adapted to computer-based analysis packages, which include modules for two-lane highway segments, signalized intersections, and unsignalized intersection. Highway Capacity Software (HCS+) version 5.4 was used to analyze the roadway segments, ramp junctions, weaving segments, signalized intersections, and stop-controlled intersections. SIDRA Intersection version 4.0 was used to analyze roundabouts.

Roadway Segment Capacity Analysis

Roadway characteristics and peak hour volumes were entered into HCS+ for the two-lane highway segments to determine the expected LOS.

LEGEND:

- X — AM Peak Hour
- (X) — PM Peak Hour
- Signalized Intersection
- Unsignalized Intersection
- Roundabout
- X — Average Daily Traffic

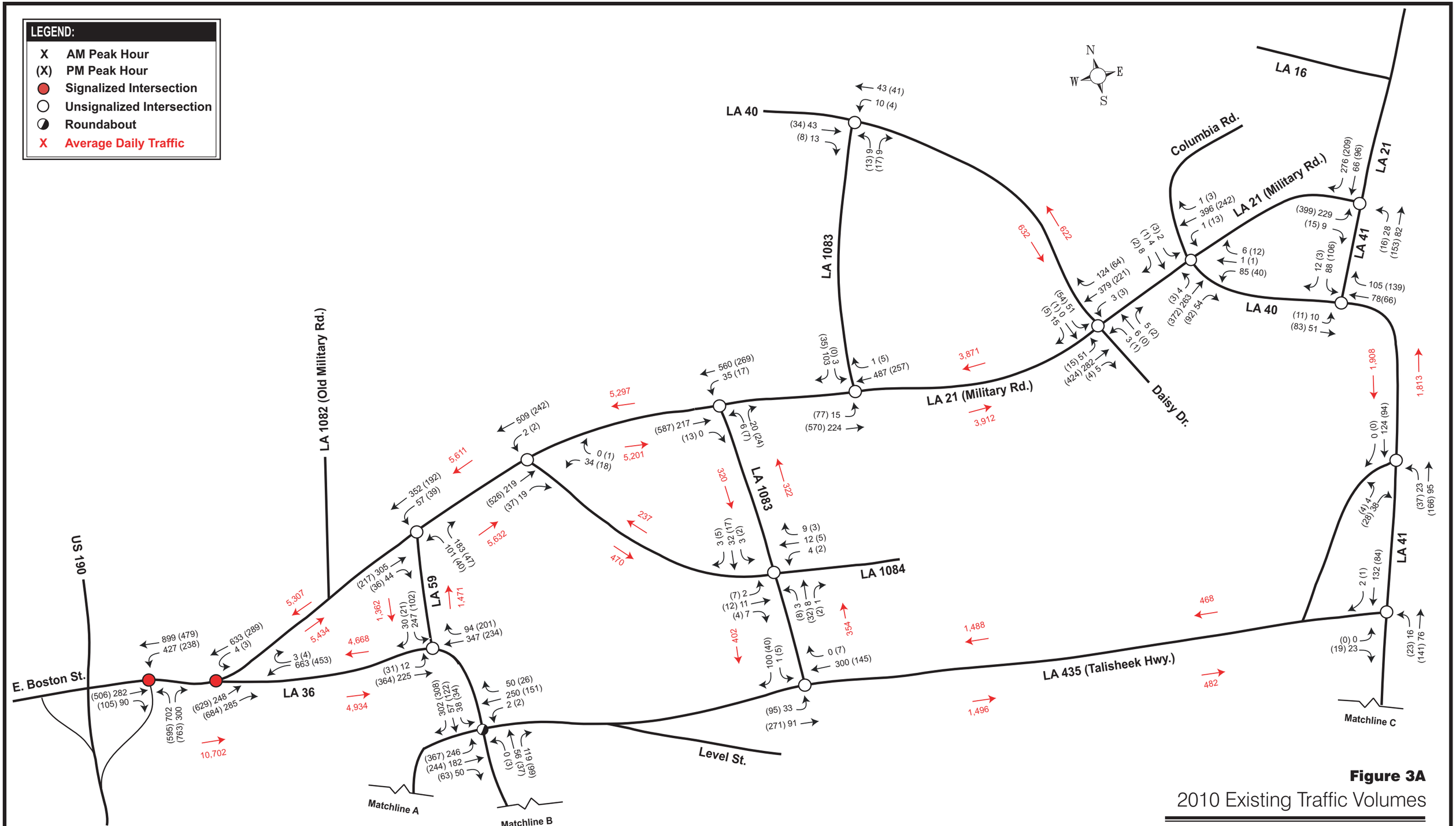

Figure 3A

2010 Existing Traffic Volumes

I-12 to Bush
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LEGEND:

- X — AM Peak Hour
- (X) — PM Peak Hour
- Signalized Intersection
- Unsignalized Intersection
- Roundabout
- X — Average Daily Traffic

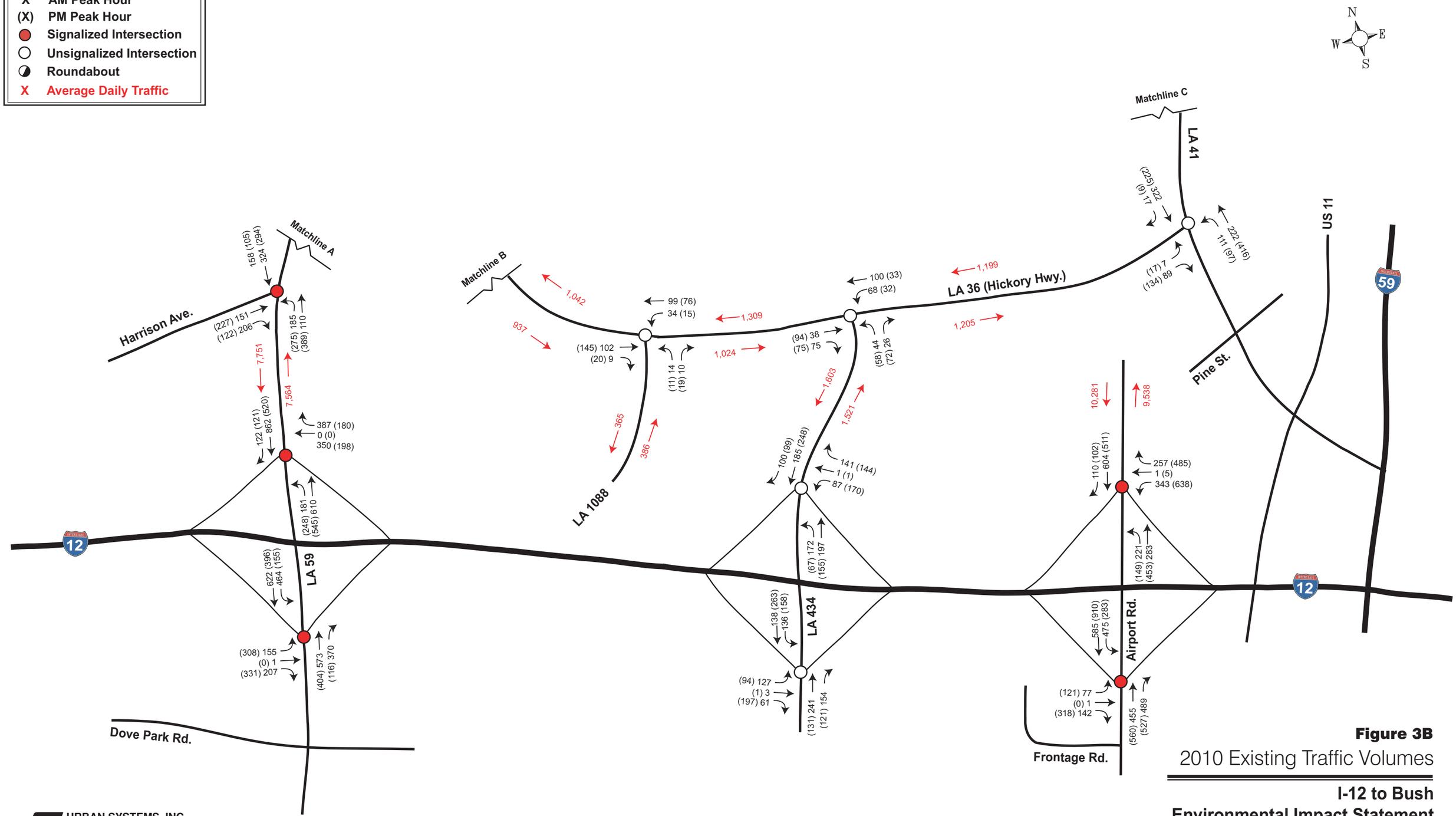

Figure 3B

2010 Existing Traffic Volumes

I-12 to Bush
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Project # 09-085

For two-lane highway segments that are daily commuter routes and on which motorists expect relatively high speeds, the Highway Capacity Manual bases LOS quality on percent time-spent-following and average travel speed. The volume to capacity ratio is another performance factor.

LOS A describes the highest quality of traffic service, when motorists are able to travel at their desired speed. LOS B characterizes a slightly higher impedance of traffic flow. LOS C describes further increases in flow, resulting in noticeable increases in platoon formation, platoon size, and frequency of passing impediments. LOS D describes unstable traffic flow in which the two opposing traffic streams begin to operate separately at higher volume levels, as passing becomes extremely difficult. At LOS E, traffic flow conditions have a percent time-spent-following greater than 80 percent. Passing is virtually impossible and platooning becomes intense, as slower vehicles or other interruptions are encountered. LOS F represents heavily congested flow with traffic demand exceeding capacity. Volumes are lower than capacity and speeds are highly variable. Table 2 presents Level of Service criteria for two-lane highways.

Table 2.
Level of Service Criteria:
Two-Lane Highways*

Level of Service	Percent Time-Spent-Following	Average Travel Speed (mph)
A	≤ 35	> 55
B	> 35 and ≤ 50	> 50 and ≤ 55
C	> 50 and ≤ 65	> 45 and ≤ 50
D	> 65 and ≤ 80	> 40 and ≤ 45
E	> 80	≤ 40
F**	v/c > 1	

* Class I two-lane highways (daily commuter routes).
** LOS F applies when the flow rate (v) exceeds the segment capacity (c).

Intersection Capacity Analysis

Intersection geometry, turning movement volumes, and traffic control parameters were entered into HCS+ for the signalized and unsignalized study intersections to determine the expected LOS. For signalized and stop-controlled intersections, the HCM bases LOS quality on average control delay (in terms of seconds per vehicle). The HCM does not present LOS criteria for roundabouts; however, SIDRA Intersection provides an estimated LOS based on the criteria for signalized intersections. Roundabout geometry and turning movement volumes were entered into SIDRA intersection to determine the expected LOS.

Levels of Service range from LOS A, a condition of little or no delay, to LOS F, a condition of capacity breakdown represented by heavy delay and congestion. LOS B is characterized as stable flow. LOS C is considered to have a stable traffic flow, but is

becoming susceptible to congestion with general levels of comfort and convenience declining noticeably. LOS D approaches unstable flow as speed and freedom to maneuver are severely restricted and LOS E represents unstable flow at or near capacity levels with poor levels of comfort and convenience.

Tables 3 and 4 present the Level of Service criteria for signalized and unsignalized intersections, respectively.

Table 3.
Level of Service Criteria:
Signalized Intersections*

Level of Service	Control Delay (sec/veh)
A	≤ 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

* Criteria apply to HCS+ signalized intersection and SIDRA Intersection roundabout analyses.

Table 4.
Level of Service Criteria:
Unsignalized Intersections

Level of Service	Control Delay (sec/veh)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

EXISTING CONDITIONS ANALYSIS

Roadway Segment Capacity Analysis

A summary of the existing LOS and delay conditions on the roadway segments are presented in Table 5. The roadway segment analysis reports are included in the Appendix.

Table 5.
Roadway Segments -
Level of Service and Capacity Analysis
Base Conditions

Roadway Segment	2010 AM Peak		2010 PM Peak	
	LOS	v/c	LOS	v/c
LA 40 between LA 1083 and LA 21	D	0.05	D	0.04
LA 41 between LA 40 and LA 435	C	0.09	C	0.12
LA 21 between LA 40 and LA 1083	D	0.27	D	0.25
LA 21 between LA 1084 and LA 1083	D	0.28	D	0.31
LA 21 between LA 59 and LA 1084	D	0.30	D	0.31
LA 21 between LA 36 and LA 1082	D	0.30	D	0.28
LA 59 between LA 21 and LA 36	D	0.12	D	0.16
LA 59 between LA 36 and I-12	E	0.42	E	0.54
LA 435 between LA 1083 and Peg Keller	D	0.11	D	0.13
LA 435 between White Oaks and LA 41	C	0.04	C	0.04
LA 1083 between LA 1084 and LA 435	C	0.04	C	0.03
LA 1083 between LA 21 and LA 1084	C	0.03	C	0.02
LA 1084 between LA 21 and LA 1083	C	0.03	D	0.03
LA 36 between LA 21 and LA 59	E	0.27	E	0.35
LA 36 between LA 435 and LA 1088	C	0.08	C	0.09
LA 36 between LA 434 and LA 41	C	0.10	C	0.11
LA 36 between LA 1088 and LA 434	C	0.10	C	0.10
LA 1088 between LA 36 and I-12	C	0.05	C	0.04
LA 434 between LA 36 and I-12	D	0.12	D	0.12
Airport Rd north of I-12	E	0.39	E	0.54

Legend

Capacity constrained (LOS E or worse)

Intersection Capacity Analysis

Signalized intersection analysis was based on the existing traffic signal phasing and timing as presented in the LADOTD's Traffic Signal Inventories (TSIs). The TSIs are included in the Appendix.

For the following signalized intersection approaches, the right-turns are free-flow/yield conditions into their own respective lane.

- I-12 at Airport Road eastbound ramp: Airport Road northbound approach
- LA 21 at LA 36: LA 21 northbound approach
- US 190 at LA 21: US 190 northbound and LA 21 eastbound approaches

HCS+ software does not include a free-flow or yield condition in the signalized module. To account for this, the right-turn volumes were not included in the existing or No Build analyses.

Summary of Results

A summary of the existing LOS and delay conditions at the intersections are presented in Table 6. The intersection analysis reports are included in the Appendix.

A review of Tables 5 and 6 indicates the LOS, volume-to-capacity ratios, and delays vary significantly throughout the study area. The existing delays are predominantly on the western portion of the study area, with the exception of the I-12 at Airport Road/Northshore Boulevard interchange in Slidell. This interchange has been the subject of numerous studies due to the congested conditions.

Existing delays in the western portion of the study area are primarily expected on the LA 21 and LA 59 corridors. Delays are also expected at the I-12 at Airport Road interchange. These conditions are expected to worsen in the implementation and design years. Significant delays at the intersections of the major routes throughout the area are expected by the design year of 2035.

Capacity constraints were identified to include roadway segments and intersections based on the analysis results. Figure 4 illustrates the capacity constraints in the existing conditions.

Table 6.
Intersections -
Level of Service and Capacity Analysis Results
Base Conditions

Intersection	Direction	2010 AM Peak LOS	2010 AM Peak Delay (s/veh)	2010 PM Peak LOS	2010 PM Peak Delay (s/veh)
LA 1083 at LA 40	**Overall**	*	*	*	*
	Northbound	A	9.0	A	8.9
	Westbound	A	7.4	A	7.3
LA 21 at LA 40 (west int.)	**Overall**	*	*	*	*
	Northbound	C	21.1	C	15.5
	Southbound	D	30.4	C	22.8
	Eastbound	A	9.0	A	8.1
	Westbound	A	8.0	A	8.3
LA 21 at LA 40 (east int.)	**Overall**	*	*	*	*
	Northbound	D	25.4	C	18.0
	Southbound	B	14.3	C	15.8
	Eastbound	A	8.2	A	7.8
	Westbound	A	8.1	A	8.5
LA 21 at LA 41	**Overall**	*	*	*	*
	Northbound	A	7.5	A	7.6
	Southbound				
	Eastbound	C	16.5	D	28.5
	Westbound				
LA 40 at LA 41	**Overall**	*	*	*	*
	Northbound				
	Southbound	B	10.6	B	11.3
	Eastbound	A	7.7	A	7.8
	Westbound				
LA 41 at LA 435 (north int.)	**Overall**	*	*	*	*
	Northbound	A	7.6	A	7.5
	Eastbound	A	9.5	A	9.4
LA 41 at LA 435 (south int.)	**Overall**	*	*	*	*
	Northbound	A	7.6	A	7.5
	Eastbound	A	9.2	A	8.9
LA 21 at LA 1083 (west int.)	**Overall**	*	*	*	*
	Northbound	B	12.9	C	15.5
	Westbound	A	7.9	A	9.0
LA 21 at LA 1083 (east int.)	**Overall**	*	*	*	*
	Southbound	B	14.6	B	10.0
	Eastbound	A	8.7	A	8.1
LA 21 at LA 1084	**Overall**	*	*	*	*
	Southbound	A	7.9	A	8.8
	Westbound	C	19.1	C	17.2
LA 21 at LA 36	**Overall**	**D**	**49.8**	**C**	**23.1**
	Northbound	B	15.7	C	21.7
	Southbound	E	64.0	B	14.6
	Westbound	D	51.3	C	30.1
US 190 at LA 21 (east int.)	**Overall**	**D**	**47.4**	**C**	**25.3**
	Northbound	F	136.5	C	27.0
	Eastbound	C	23.2	D	38.5
	Westbound	A	8.1	B	14.5
LA 1083 at LA 1084	**Overall**	*	*	*	*
	Northbound	A	7.3	A	7.3
	Southbound	A	7.3	A	7.3
	Eastbound	A	9.3	A	9.7
	Westbound	A	9.3	A	9.5
LA 1083 at LA 435	**Overall**	*	*	*	*
	Southbound	B	11.4	B	10.5
	Eastbound	A	8.1	A	7.9
LA 435/LA 59 at LA 36**	**Overall**	**B**	**12.1**	**B**	**14.4**
	Northbound	B	13.6	C	17.1
	Southbound	B	13.4	B	9.5
	Eastbound	B	10.5	C	17.9
	Westbound	B	12.0	B	11.0
LA 36 at LA 59	**Overall**	*	*	*	*
	Southbound	E	44.2	D	27.0
	Eastbound	A	8.5	A	8.5
LA 21 at LA 59	**Overall**	*	*	*	*
	Northbound	F	236.1	B	14.6
	Westbound	A	8.7	A	8.1
LA 59 at Harrison Ave.	**Overall**	**C**	**31.3**	**C**	**23.2**
	Northbound	A	5.7	B	10.9
	Southbound	B	16.1	C	31.5
	Eastbound	E	75.6	C	34.1

Intersection	Direction	2010 AM Peak LOS	2010 AM Peak Delay (s/veh)	2010 PM Peak LOS	2010 PM Peak Delay (s/veh)
I-12 at LA 59 (WB)	**Overall**	**C**	**30.4**	**B**	**15.5**
	Northbound	A	7.5	A	9.7
	Southbound	B	18.3	B	11.7
	Westbound	E	76.4	D	37.3
I-12 at LA 59 (EB)	**Overall**	**D**	**37.9**	**C**	**31.0**
	Northbound	B	14.2	B	11.1
	Southbound	E	60.5	A	6.1
	Eastbound	C	33.6	E	75.7
I-12 at LA 1088 (WB)	**Overall**				
	Northbound				
	Southbound				
	Westbound				
I-12 at LA 1088 (EB)	**Overall**				
	Northbound				
	Southbound				
	Eastbound				
I-12 at LA 434 (WB)	**Overall**	*	*	*	*
	Northbound	A	8.1	A	8.1
	Southbound				
	Westbound	B	14.0	C	21.5
I-12 at LA 434 (EB)	**Overall**	*	*	*	*
	Northbound				
	Southbound	A	8.2	A	8.0
	Eastbound	C	23.6	D	33.3
I-12 at Airport Rd. (WB)	**Overall**	**D**	**42.6**	**F**	**171.2**
	Northbound	A	8.1	A	7.0
	Southbound	B	17.3	B	16.2
	Westbound	F	106.8	F	359.5
I-12 at Airport Rd. (EB)	**Overall**	**C**	**21.1**	**C**	**29.7**
	Northbound	C	25.1	D	43.7
	Southbound	B	16.7	B	12.5
	Eastbound	C	34.5	E	59.8
LA 36 at LA 1088	**Overall**	*	*	*	*
	Northbound	B	10.6	A	10.0
	Westbound	A	7.6	A	7.7
LA 36 at LA 434	**Overall**	*	*	*	*
	Northbound	B	10.7	B	10.5
	Westbound	A	7.6	A	7.8
LA 36 at LA 41	**Overall**	*	*	*	*
	Northbound	A	8.6	A	8.1
	Eastbound	B	13.0	B	14.7
LA 3241 at LA 21	**Overall**				
	Northbound				
	Southbound				
	Eastbound				
LA 3241 at LA 21**	**Overall**				
	Northbound				
	Southbound				
	Eastbound				
LA 3241 at LA 435	**Overall**				
	Northbound				
	Southbound				
	Eastbound				
	Westbound				
LA 3241 at LA 36	**Overall**				
	Northbound				
	Southbound				
	Eastbound				
	Westbound				
LA 3241 at LA 36**	**Overall**				
	Northbound				
	Southbound				
	Eastbound				
	Westbound				
LA 3241 at LA 1088	**Overall**				
	Southbound				
	Westbound				
LA 3241 at LA 434	**Overall**				
	Northbound				
	Eastbound				

Legend

Capacity constrained (LOS E or worse).

Intersection or intersection approach does not exist or uncontrolled approach with the right-of-way and free flow.

* Overall LOS not available for two-way stop-controlled intersections.

** Roundabout analysis in SIDRA.

Figure 4

2010 Existing Capacity Constraints

I-12 to Bush
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NO BUILD CONDITIONS ANALYSIS

Traffic Assignment and Forecasting

AM and PM peak hour traffic volumes were projected for the 2015 and 2035 No Build conditions for the study area. The following resources were consulted in the development of the traffic volume projections:

- Existing traffic volume data
- Regional Planning Commission's (RPC) Southeast Louisiana (SELA) Travel Forecasting Model in TransCAD version 5.0 r2 Build 1695
- Tetra Tech, Inc.'s REMI model socioeconomic output
- Previous studies and planned projects

TransCAD uses geographic information, population figures, socioeconomic data, and vehicular origin/destination areas within regional areas to project future traffic volumes. Jeff Roesel of the RPC was consulted on proposed changes to the RPC TransCAD model.

Model modifications included adding roadway links and coding associated attributes, changing roadway link attributes, and changing Traffic Analysis Zone (TAZ) population and employment data. Changes were made based on previous studies and known projects. The output used included average daily traffic (ADT) volumes and intersection peak period traffic volumes.

As discussed with RPC, the following attribute values were used for all link additions:

- Dir = 0
- Parish = ST. TAMMANY
- HOV-related attributes = 1
- TollCost = 0
- Toll = 0
- LinkMode = 2
- TranLink = 9

The following link attributes were input as appropriate:

- SNAMES = [roadway name]
- Parish_FC = ST. TAMMANY_[functional class]
- AB_FC_Code = [functional class]
- BA_FC_Code = [functional class]
- AB_Lanes = [number of lanes per direction]
- BA_Lanes = [number of lanes per direction]
- ProjYear = [project year]

The 2010 base model scenario was modified to correct the number of lanes on the eastbound I-12 link to the west of US 11 (link 57062) from one lane to two lanes. The "Run Entire Model" function was used to run through the four-step travel demand model process. This includes trip generation and trip distribution (which establishes linked origins and destinations) as well as mode choice and trip assignment (which assigns traffic to the network).

The ADT output was reviewed and compared to actual 2010 collected data. In general, the TransCAD model predicted ADTs were higher than count data, most significantly along LA 41, LA 36, and LA 435.

The modified 2010 base model scenario was used to create the 2015 and 2035 No Build model scenarios. Input included the following:

- Added links to the highway network layer to include the I-12 at LA 1088 diamond interchange. The link attribute inputs for the LA 1088 overpass included the following:

    - Parish_FC = ST. TAMMANY_3
    - AB_FC_Code = BA_FC_Code = 3 (medium arterial)
    - AB_Lanes = BA_Lanes = 2
    - ProjYear = 2010

    The link attribute inputs for the ramps included the following:

    - Dir = 1 (one-directional)
    - Parish_FC = ST. TAMMANY_8
    - AB_FC_Code = 8 (high speed ramps)
    - AB_Lanes = 1
    - ProjYear = 2010

- Moved the existing centroid connectors (links 56444 and 56441) to represent Wadsworth Development south on LA 1088 and closer to the I-12 at LA 1088 interchange in anticipation of the Build Alternatives B/O and P that connect to LA 1088 to the north of the Wadsworth Development connection.

- Changed I-12 link attributes to include the I-12 widening between Airport Road and I-59/I-10. The link attributes were changed to the following:

    - AB_Lanes = BA_Lanes = 3
    - ProjYear = 2011

- Changed TAZ 61460 and 61470 data to include the Wadsworth Development and Lakeshore High School, respectively, using information from previous studies. Table 7 presents the original and revised TAZ 61460 and 61470 data values.

Table 7. No Build TAZ Data Input

TAZ	No Build Year	Data	TAZ Data Fields					
			population	housing _units	housing _units _occupied	school _primary _secondary	retail _emp	non _retail _emp
61460	2015	Original	97	39	35	0	0	0
		Revised	286	120	108	0	13	20
	2035	Original	156	63	56	0	0	0
		Revised	910	388	347	0	53	78
61470	2015	Original	0	0	0	0	0	0
		Revised	0	0	0	640	0	100
	2035	Original	0	0	0	0	0	0
		Revised	0	0	0	640	0	100

The "Run Entire Model" function was used for both 2015 and 2035 scenarios to incorporate the TAZ data changes. The ADT output for the 2015 and 2035 No Build model scenarios was obtained and compared to the ADT output for the 2010 Existing model scenario. In general, the volumes increased as expected and the centroid connector volumes confirmed the TAZ changes were incorporated.

The projected 2015 and 2035 No Build peak hour turning movement volumes were developed using the 2010 collected data, TransCAD ADT output, known projects, and engineering judgment. The No Build intersection volumes consider the effect of the I-12 at LA 1088 interchange, Wadsworth Development, Lakeshore High School, and the I-12 widening between Airport Road and I-59/I-10 interchange as well as the growth expected during the respective time periods.

The resulting No Build projected volumes for 2015 are presented in Figures 5A and 5B. The resulting No Build projected volumes for 2035 are presented in Figures 6A and 6B.

Capacity Analysis

Roadway Segment Capacity Analysis

Roadway segment capacity analysis was conducted for all study roadway segments for the AM and PM peaks based on the projected No Build volumes and the existing roadway geometry.

A comparison of the 2010 base conditions to the 2015 and 2035 No Build projected conditions LOS and delay for the roadway segments in the AM and PM peaks is presented in Table 8. The roadway segment analysis reports are included in the Appendix.

Intersection Capacity Analysis

Intersection capacity analysis was conducted for all study intersections for the AM and PM peaks based on the projected No Build volumes and the existing intersection geometry. Although the timing would potentially be modified over time to service the increased traffic volumes, cycle lengths and timing were kept constant in the analysis.

A comparison of the 2010 base conditions to the 2015 and 2035 No Build projected conditions LOS and delay for the intersections in the AM and PM peaks is presented in Tables 9 and 10, respectively. The intersection analysis reports are included in the Appendix.

Summary of Results

A review of Tables 8-10 indicates the conditions in the study area are expected to worsen in 2015 and 2035 without improvements or the introduction of an alternate route. In 2015, capacity constraints are primarily expected on the LA 21 and LA 59 corridors and to be concentrated in the northern and western portions of the study area, with the exception of the increased delays at the I-12 at Airport Road interchange. Existing areas of delay or congestion are expected to worsen and expand to additional locations. In 2035, capacity constraints are not only expected in the northern and western portions of the study area and at the I-12 at Airport Road interchange, but are also expected to include additional intersections on LA 21 and LA 59.

Figure 7 illustrates where capacity constraints are expected for the 2035 Projected No Build conditions.

LEGEND:

- X — AM Peak Hour
- (X) — PM Peak Hour
- Signalized Intersection
- Unsignalized Intersection
- Roundabout

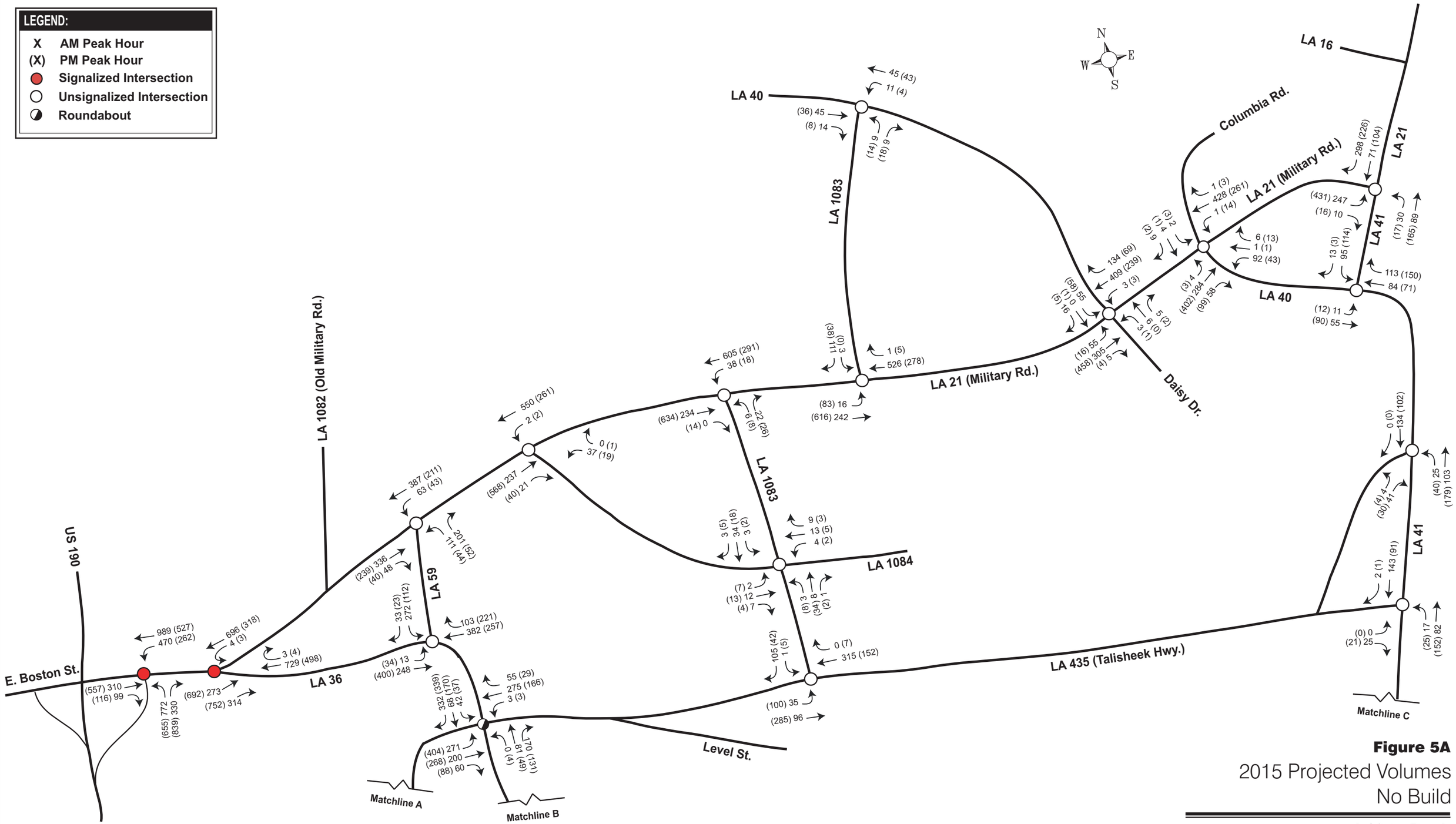

Figure 5A

2015 Projected Volumes
No Build

I-12 to Bush
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LEGEND:

- X — AM Peak Hour
- (X) — PM Peak Hour
- Signalized Intersection
- Unsignalized Intersection
- Roundabout

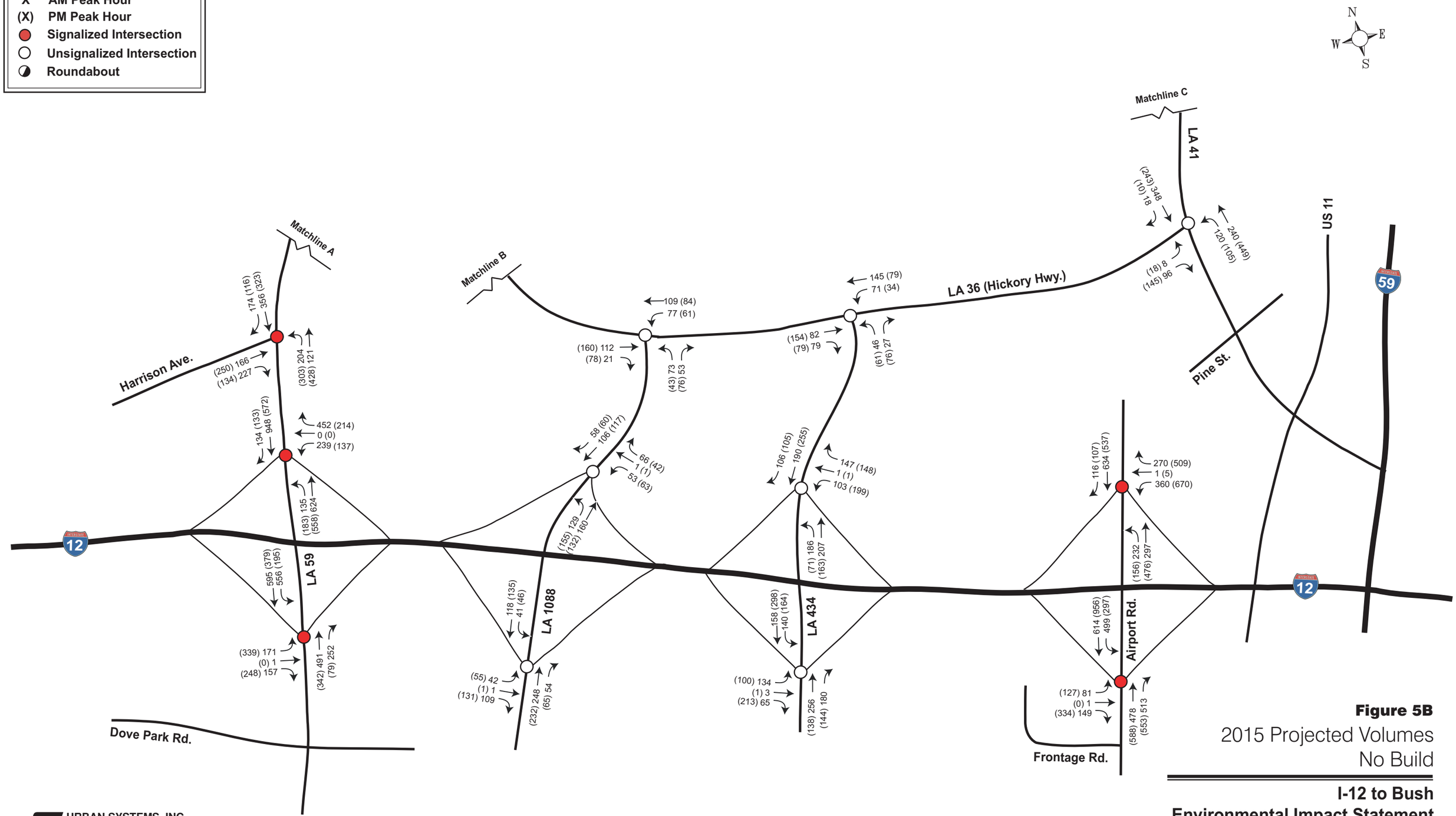

Figure 5B

2015 Projected Volumes
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LEGEND:

- X — AM Peak Hour
- (X) — PM Peak Hour
- Signalized Intersection
- Unsignalized Intersection
- Roundabout

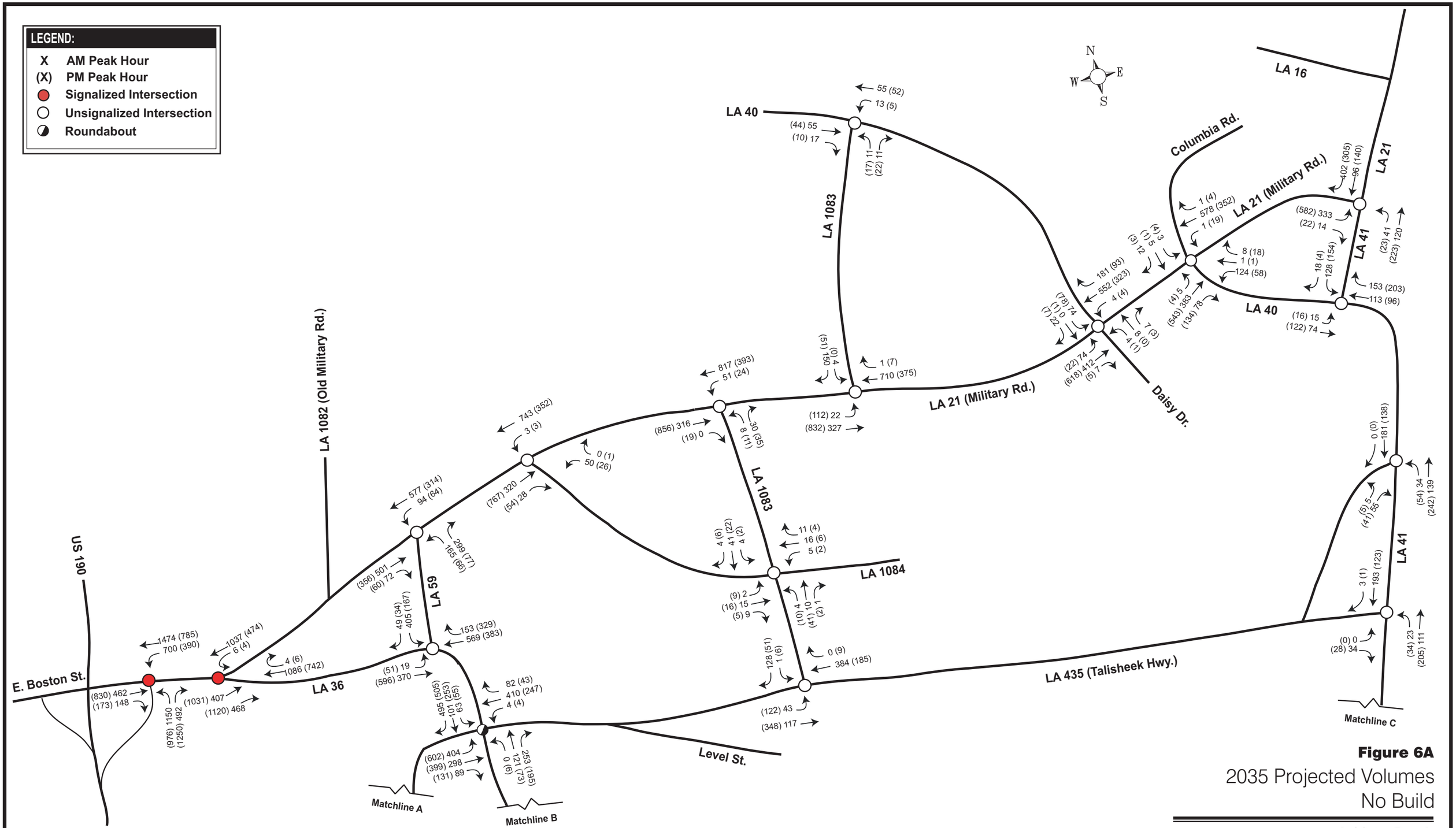

Figure 6A

2035 Projected Volumes
No Build

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LEGEND:

- X — AM Peak Hour
- (X) — PM Peak Hour
- Signalized Intersection
- Unsignalized Intersection
- Roundabout

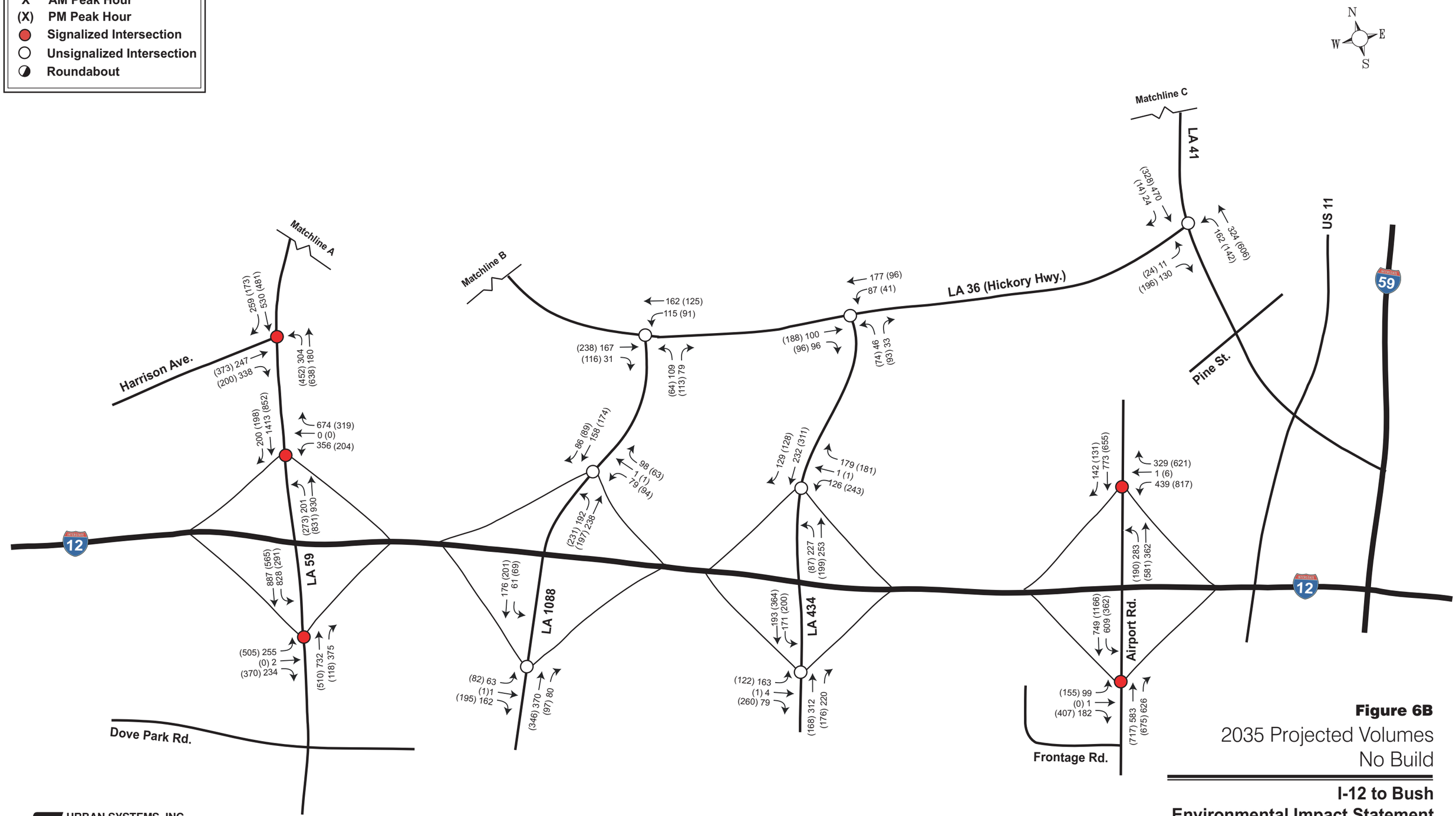

Figure 6B

2035 Projected Volumes
No Build

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Table 8.
Roadway Segments -
Level of Service and Capacity Analysis Results
Base and No Build Conditions

Peak	Roadway Segment	2010 Base Conditions		2015 No Build Future Conditions		2035 No Build Future Conditions	
		LOS	v/c	LOS	v/c	LOS	v/c
AM	LA 40 between LA 1083 and LA 21	D	0.05	D	0.06	D	0.08
	LA 41 between LA 40 and LA 435	C	0.09	C	0.10	C	0.13
	LA 21 between LA 40 and LA 1083	D	0.27	D	0.29	D	0.39
	LA 21 between LA 1084 and LA 1083	D	0.28	D	0.30	E	0.41
	LA 21 between LA 59 and LA 1084	D	0.30	D	0.32	D	0.43
	LA 21 between LA 36 and LA 1082	D	0.30	D	0.32	E	0.43
	LA 59 between LA 21 and LA 36	D	0.12	D	0.13	D	0.19
	LA 59 between LA 36 and I-12	E	0.42	E	0.46	E	0.68
	LA 435 between LA 1083 and Peg Keller	D	0.11	D	0.11	D	0.14
	LA 435 between White Oaks and LA 41	C	0.04	C	0.04	D	0.05
	LA 1083 between LA 1084 and LA 435	C	0.04	C	0.04	C	0.05
	LA 1083 between LA 21 and LA 1084	C	0.03	C	0.03	C	0.04
	LA 1084 between LA 21 and LA 1083	C	0.03	D	0.03	D	0.04
	LA 36 between LA 21 and LA 59	E	0.27	E	0.28	E	0.34
	LA 36 between LA 435 and LA 1088	C	0.08	C	0.08	C	0.10
	LA 36 between LA 434 and LA 41	C	0.10	C	0.11	D	0.13
	LA 36 between LA 1088 and LA 434	C	0.10	C	0.11	D	0.13
	LA 1088 between LA 36 and I-12	C	0.05	D	0.16	D	0.24
	LA 434 between LA 36 and I-12	D	0.12	D	0.13	D	0.15
	Airport Rd north of I-12	E	0.39	E	0.41	E	0.50
PM	LA 40 between LA 1083 and LA 21	D	0.04	D	0.04	D	0.06
	LA 41 between LA 40 and LA 435	C	0.12	C	0.13	D	0.17
	LA 21 between LA 40 and LA 1083	D	0.25	D	0.27	D	0.37
	LA 21 between LA 1084 and LA 1083	D	0.31	D	0.33	E	0.44
	LA 21 between LA 59 and LA 1084	D	0.31	D	0.33	D	0.45
	LA 21 between LA 36 and LA 1082	D	0.28	D	0.30	E	0.41
	LA 59 between LA 21 and LA 36	D	0.16	D	0.17	D	0.26
	LA 59 between LA 36 and I-12	E	0.54	E	0.59	F	0.88
	LA 435 between LA 1083 and Peg Keller	D	0.13	D	0.14	D	0.17
	LA 435 between White Oaks and LA 41	C	0.04	C	0.04	C	0.05
	LA 1083 between LA 1084 and LA 435	C	0.03	C	0.04	C	0.04
	LA 1083 between LA 21 and LA 1084	C	0.02	C	0.02	C	0.03
	LA 1084 between LA 21 and LA 1083	D	0.03	D	0.03	D	0.04
	LA 36 between LA 21 and LA 59	E	0.35	E	0.37	E	0.45
	LA 36 between LA 435 and LA 1088	C	0.09	C	0.09	C	0.11
	LA 36 between LA 434 and LA 41	C	0.11	C	0.11	D	0.14
	LA 36 between LA 1088 and LA 434	C	0.10	C	0.10	D	0.12
	LA 1088 between LA 36 and I-12	C	0.04	D	0.16	D	0.23
	LA 434 between LA 36 and I-12	D	0.12	D	0.13	D	0.16
	Airport Rd north of I-12	E	0.54	E	0.57	E	0.69

Legend

Capacity constrained (LOS E or worse)

Table 9.
Intersections -
Level of Service and Capacity Analysis Results
Base and No Build Conditions: AM Peak

Intersection	Direction	2010 Base Conditions		2015 No Build Future Conditions		2035 No Build Future Conditions	
		LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)
LA 1083 at LA 40	**Overall**	*	*	*	*	*	*
	Northbound	A	9.0	A	9.1	A	9.3
	Westbound	A	7.4	A	7.4	A	7.4
LA 21 at LA 40 (west int.)	**Overall**	*	*	*	*	*	*
	Northbound	C	21.1	C	23.7	F	52.7
	Southbound	D	30.4	E	39.2	F	328.6
	Eastbound	A	9.0	A	9.2	B	10.4
	Westbound	A	8.0	A	8.1	A	8.5
LA 21 at LA 40 (east int.)	**Overall**	*	*	*	*	*	*
	Northbound	D	25.4	D	31.7	F	179.9
	Southbound	B	14.3	B	14.9	C	20.4
	Eastbound	A	8.2	A	8.3	A	8.8
	Westbound	A	8.1	A	8.2	A	8.7
LA 21 at LA 41	**Overall**	*	*	*	*	*	*
	Northbound	A	7.5	A	7.5	A	7.6
	Southbound						
	Eastbound	C	16.5	C	18.2	E	44.2
	Westbound						
LA 40 at LA 41	**Overall**	*	*	*	*	*	*
	Northbound						
	Southbound	B	10.6	B	10.9	B	12.4
	Eastbound	A	7.7	A	7.8	A	8.0
	Westbound						
LA 41 at LA 435 (north int.)	**Overall**	*	*	*	*	*	*
	Northbound	A	7.6	A	7.6	A	7.7
	Eastbound	A	9.5	A	9.6	B	10.2
LA 41 at LA 435 (south int.)	**Overall**	*	*	*	*	*	*
	Northbound	A	7.6	A	7.6	A	7.8
	Eastbound	A	9.2	A	9.3	A	9.8
LA 21 at LA 1083 (west int.)	**Overall**	*	*	*	*	*	*
	Northbound	B	12.9	B	13.5	C	18.3
	Westbound	A	7.9	A	7.9	A	8.2
LA 21 at LA 1083 (east int.)	**Overall**	*	*	*	*	*	*
	Southbound	B	14.6	C	15.7	D	26.5
	Eastbound	A	8.7	A	8.9	A	9.8
LA 21 at LA 1084	**Overall**	*	*	*	*	*	*
	Southbound	A	7.9	A	8.0	A	8.3
	Westbound	C	19.1	C	21.3	E	43.2
LA 21 at LA 36	**Overall**	**D**	**49.8**	**F**	**95.1**	**F**	**287.9**
	Northbound	B	15.7	B	16.1	C	20.6
	Southbound	E	64.0	F	121.8	F	367.1
	Westbound	D	51.3	F	104.5	F	329.4
US 190 at LA 21 (east int.)	**Overall**	**D**	**47.4**	**E**	**64.0**	**F**	**183.6**
	Northbound	F	136.5	F	187.2	F	475.7
	Eastbound	C	23.2	C	24.6	D	54.7
	Westbound	A	8.1	B	10.8	E	64.8
LA 1083 at LA 1084	**Overall**	*	*	*	*	*	*
	Northbound	A	7.3	A	7.3	A	7.3
	Southbound	A	7.3	A	7.3	A	7.3
	Eastbound	A	9.3	A	9.4	A	9.6
	Westbound	A	9.3	A	9.4	A	9.6
LA 1083 at LA 435	**Overall**	*	*	*	*	*	*
	Southbound	B	11.4	B	11.7	B	13.1
	Eastbound	A	8.1	A	8.1	A	8.4
LA 435/LA 59 at LA 36**	**Overall**	**B**	**12.1**	**B**	**15.0**	**F**	**125.8**
	Northbound	B	13.6	C	20.1	F	302.2
	Southbound	B	13.4	C	16.5	F	129.9
	Eastbound	B	10.5	B	11.2	E	52.7
	Westbound	B	12.0	C	15.5	F	110.4
LA 36 at LA 59	**Overall**	*	*	*	*	*	*
	Southbound	E	44.2	F	81.6	F	769.6
	Eastbound	A	8.5	A	8.6	A	9.7
LA 21 at LA 59	**Overall**	*	*	*	*	*	*
	Northbound	F	236.1	F	399.5	F	2273.0
	Westbound	A	8.7	A	8.9	B	10.6
LA 59 at Harrison Ave.	**Overall**	**C**	**31.3**	**D**	**36.6**	**F**	**84.7**
	Northbound	A	5.7	A	6.1	B	14.1
	Southbound	B	16.1	B	17.3	C	32.7
	Eastbound	E	75.6	F	91.4	F	222.4

Intersection	Direction	2010 Base Conditions		2015 No Build Future Conditions		2035 No Build Future Conditions	
		LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)
I-12 at LA 59 (WB)	**Overall**	**C**	**30.4**	**C**	**31.0**	**F**	**84.0**
	Northbound	A	7.5	A	7.2	B	10.8
	Southbound	B	18.3	B	19.5	D	52.5
	Westbound	E	76.4	F	82.6	F	235.6
I-12 at LA 59 (EB)	**Overall**	**D**	**37.9**	**D**	**40.7**	**F**	**179.4**
	Northbound	B	14.2	B	12.6	B	15.9
	Southbound	E	60.5	E	62.0	F	328.9
	Eastbound	C	33.6	C	32.0	D	42.5
I-12 at LA 1088 (WB)	**Overall**			*	*	*	*
	Northbound			A	7.7	A	8.0
	Southbound						
	Westbound			B	11.1	B	14.0
I-12 at LA 1088 (EB)	**Overall**			*	*	*	*
	Northbound						
	Southbound			A	7.9	A	8.3
	Eastbound			A	9.7	B	10.6
I-12 at LA 434 (WB)	**Overall**	*	*	*	*	*	*
	Northbound	A	8.1	A	8.2	A	8.5
	Southbound						
	Westbound	B	14.0	C	17.0	E	42.2
I-12 at LA 434 (EB)	**Overall**	*	*	*	*	*	*
	Northbound						
	Southbound	A	8.2	A	8.3	A	8.7
	Eastbound	C	23.6	D	27.9	F	80.3
I-12 at Airport Rd. (WB)	**Overall**	**D**	**42.6**	**D**	**48.0**	**E**	**79.3**
	Northbound	A	8.1	A	8.9	C	22.3
	Southbound	B	17.3	B	17.6	B	19.5
	Westbound	F	106.8	F	122.8	F	207.7
I-12 at Airport Rd. (EB)	**Overall**	**C**	**21.1**	**C**	**22.7**	**D**	**41.4**
	Northbound	C	25.1	C	25.9	C	32.2
	Southbound	B	16.7	B	18.8	D	46.1
	Eastbound	C	34.5	C	34.7	D	35.9
LA 36 at LA 1088	**Overall**	*	*	*	*	*	*
	Northbound	B	10.6	C	16.8	F	72.7
	Westbound	A	7.6	A	7.9	A	8.3
LA 36 at LA 434	**Overall**	*	*	*	*	*	*
	Northbound	B	10.7	B	11.7	B	12.6
	Westbound	A	7.6	A	7.8	A	8.0
LA 36 at LA 41	**Overall**	*	*	*	*	*	*
	Northbound	A	8.6	A	8.7	A	9.7
	Eastbound	B	13.0	B	13.9	C	22.2
LA 3241 at LA 21	**Overall**						
	Northbound						
	Southbound						
	Eastbound						
LA 3241 at LA 21**	**Overall**						
	Northbound						
	Southbound						
	Eastbound						
LA 3241 at LA 435	**Overall**	*	*	*	*	*	*
	Northbound						
	Southbound						
	Eastbound						
	Westbound						
LA 3241 at LA 36	**Overall**						
	Northbound						
	Southbound						
	Eastbound						
	Westbound						
LA 3241 at LA 36**	**Overall**						
	Northbound						
	Southbound						
	Eastbound						
	Westbound						
LA 3241 at LA 1088	**Overall**						
	Southbound						
	Westbound						
LA 3241 at LA 434	**Overall**						
	Northbound						
	Eastbound						

Legend

Capacity constrained (LOS E or worse).

Intersection or intersection approach does not exist or uncontrolled approach with the right-of-way and free flow.

* Overall LOS not available for two-way stop-controlled intersections.

** Roundabout analysis in SIDRA.

Table 10.
Intersections -
Level of Service and Capacity Analysis Results
Base and No Build Conditions: PM Peak

Intersection	Direction	2010 Base Conditions		2015 No Build Future Conditions		2035 No Build Future Conditions	
		LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)
LA 1083 at LA 40	**Overall**	*	*	*	*	*	*
	Northbound	A	8.9	A	9.0	A	9.1
	Westbound	A	7.3	A	7.3	A	7.4
LA 21 at LA 40 (west int.)	**Overall**	*	*	*	*	*	*
	Northbound	C	15.5	C	16.6	C	22.1
	Southbound	C	22.8	D	26.6	F	95.4
	Eastbound	A	8.1	A	8.2	A	8.7
	Westbound	A	8.3	A	8.4	A	9.0
LA 21 at LA 40 (east int.)	**Overall**	*	*	*	*	*	*
	Northbound	C	18.0	C	19.9	E	44.5
	Southbound	C	15.8	C	17.0	C	23.8
	Eastbound	A	7.8	A	7.9	A	8.2
	Westbound	A	8.5	A	8.7	A	9.4
LA 21 at LA 41	**Overall**	*	*	*	*	*	*
	Northbound	A	7.6	A	7.6	A	7.7
	Southbound						
	Eastbound	D	28.5	E	38.6	F	201.6
	Westbound						
LA 40 at LA 41	**Overall**	*	*	*	*	*	*
	Northbound						
	Southbound	B	11.3	B	11.7	B	14.3
	Eastbound	A	7.8	A	7.8	A	8.1
	Westbound						
LA 41 at LA 435 (north int.)	**Overall**	*	*	*	*	*	*
	Northbound	A	7.5	A	7.5	A	7.7
	Eastbound	A	9.4	A	9.5	B	10.0
LA 41 at LA 435 (south int.)	**Overall**	*	*	*	*	*	*
	Northbound	A	7.5	A	7.5	A	7.6
	Eastbound	A	8.9	A	9.0	A	9.3
LA 21 at LA 1083 (west int.)	**Overall**	*	*	*	*	*	*
	Northbound	C	15.5	C	16.7	D	26.8
	Westbound	A	9.0	A	9.2	B	10.3
LA 21 at LA 1083 (east int.)	**Overall**	*	*	*	*	*	*
	Southbound	B	10.0	B	10.2	B	11.3
	Eastbound	A	8.1	A	8.1	A	8.6
LA 21 at LA 1084	**Overall**	*	*	*	*	*	*
	Southbound	A	8.8	A	9.0	A	9.9
	Westbound	C	17.2	C	18.6	D	30.8
LA 21 at LA 36	**Overall**	**C**	**23.1**	**C**	**25.9**	**F**	**101.9**
	Northbound	C	21.7	C	24.8	F	116.4
	Southbound	B	14.6	B	14.9	B	17.1
	Westbound	C	30.1	C	33.9	F	132.8
US 190 at LA 21 (east int.)	**Overall**	**C**	**25.3**	**C**	**29.9**	**F**	**101.0**
	Northbound	C	27.0	C	27.9	D	38.2
	Eastbound	D	38.5	D	49.0	F	209.7
	Westbound	B	14.5	B	17.8	E	72.6
LA 1083 at LA 1084	**Overall**	*	*	*	*	*	*
	Northbound	A	7.3	A	7.3	A	7.3
	Southbound	A	7.3	A	7.3	A	7.4
	Eastbound	A	9.7	A	9.7	A	10.0
	Westbound	A	9.5	A	9.5	A	9.7
LA 1083 at LA 435	**Overall**	*	*	*	*	*	*
	Southbound	B	10.5	B	10.7	B	11.7
	Eastbound	A	7.9	A	8.0	A	8.2
LA 435/LA 59 at LA 36**	**Overall**	**B**	**14.4**	**D**	**36.1**	**F**	**201.7**
	Northbound	C	17.1	C	22.1	D	30.3
	Southbound	B	9.5	B	10.9	F	80.5
	Eastbound	C	17.9	E	62.4	F	370.4
	Westbound	B	11.0	B	11.5	B	13.8
LA 36 at LA 59	**Overall**	*	*	*	*	*	*
	Southbound	D	27.0	E	37.2	F	498.8
	Eastbound	A	8.5	A	8.7	A	9.8
LA 21 at LA 59	**Overall**	*	*	*	*	*	*
	Northbound	B	14.6	C	16.2	F	76.4
	Westbound	A	8.1	A	8.2	A	9.1
LA 59 at Harrison Ave.	**Overall**	**C**	**23.2**	**C**	**25.8**	**E**	**76.1**
	Northbound	B	10.9	B	12.6	D	54.1
	Southbound	C	31.5	D	36.0	D	35.9
	Eastbound	C	34.1	D	36.6	F	146.3

Intersection	Direction	2010 Base Conditions		2015 No Build Future Conditions		2035 No Build Future Conditions	
		LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)
I-12 at LA 59 (WB)	**Overall**	**B**	**15.5**	**B**	**14.3**	**C**	**30.1**
	Northbound	A	9.7	A	7.9	C	30.7
	Southbound	B	11.7	B	12.1	B	15.5
	Westbound	D	37.3	D	35.8	E	62.8
I-12 at LA 59 (EB)	**Overall**	**C**	**31.0**	**D**	**36.7**	**F**	**94.8**
	Northbound	B	11.1	B	10.6	B	11.7
	Southbound	A	6.1	A	6.0	B	11.3
	Eastbound	E	75.7	F	93.0	F	258.4
I-12 at LA 1088 (WB)	**Overall**			*	*	*	*
	Northbound			A	7.8	A	8.2
	Southbound						
	Westbound			B	12.3	C	17.3
I-12 at LA 1088 (EB)	**Overall**			*	*	*	*
	Northbound						
	Southbound			A	7.9	A	8.3
	Eastbound			A	10.0	B	11.1
I-12 at LA 434 (WB)	**Overall**	*	*	*	*	*	*
	Northbound	A	8.1	A	8.2	A	8.5
	Southbound						
	Westbound	C	21.5	D	27.7	F	80.1
I-12 at LA 434 (EB)	**Overall**	*	*	*	*	*	*
	Northbound						
	Southbound	A	8.0	A	8.1	A	8.4
	Eastbound	D	33.3	F	50.6	F	200.4
I-12 at Airport Rd. (WB)	**Overall**	**F**	**171.2**	**F**	**188.0**	**F**	**266.2**
	Northbound	A	7.0	A	7.2	A	8.3
	Southbound	B	16.2	B	16.4	B	17.4
	Westbound	F	359.5	F	396.2	F	565.9
I-12 at Airport Rd. (EB)	**Overall**	**C**	**29.7**	**C**	**33.9**	**E**	**64.0**
	Northbound	D	43.7	D	52.3	F	120.9
	Southbound	B	12.5	B	13.2	B	17.5
	Eastbound	E	59.8	E	68.2	F	116.8
LA 36 at LA 1088	**Overall**	*	*	*	*	*	*
	Northbound	A	10.0	B	13.4	D	25.4
	Westbound	A	7.7	A	8.1	A	8.7
LA 36 at LA 434	**Overall**	*	*	*	*	*	*
	Northbound	B	10.5	B	11.6	B	12.9
	Westbound	A	7.8	A	8.0	A	8.2
LA 36 at LA 41	**Overall**	*	*	*	*	*	*
	Northbound	A	8.1	A	8.2	A	8.7
	Eastbound	B	14.7	C	16.0	E	42.2
LA 3241 at LA 21	**Overall**						
	Northbound						
	Southbound						
	Eastbound						
LA 3241 at LA 21**	**Overall**						
	Northbound						
	Southbound						
	Eastbound						
LA 3241 at LA 435	**Overall**	*	*	*	*	*	*
	Northbound						
	Southbound						
	Eastbound						
	Westbound						
LA 3241 at LA 36	**Overall**						
	Northbound						
	Southbound						
	Eastbound						
	Westbound						
LA 3241 at LA 36**	**Overall**						
	Northbound						
	Southbound						
	Eastbound						
	Westbound						
LA 3241 at LA 1088	**Overall**						
	Southbound						
	Westbound						
LA 3241 at LA 434	**Overall**						
	Northbound						
	Eastbound						

Legend

Capacity constrained (LOS E or worse).

Intersection or intersection approach does not exist or uncontrolled approach with the right-of-way and free flow.

* Overall LOS not available for two-way stop-controlled intersections.

** Roundabout analysis in SIDRA.

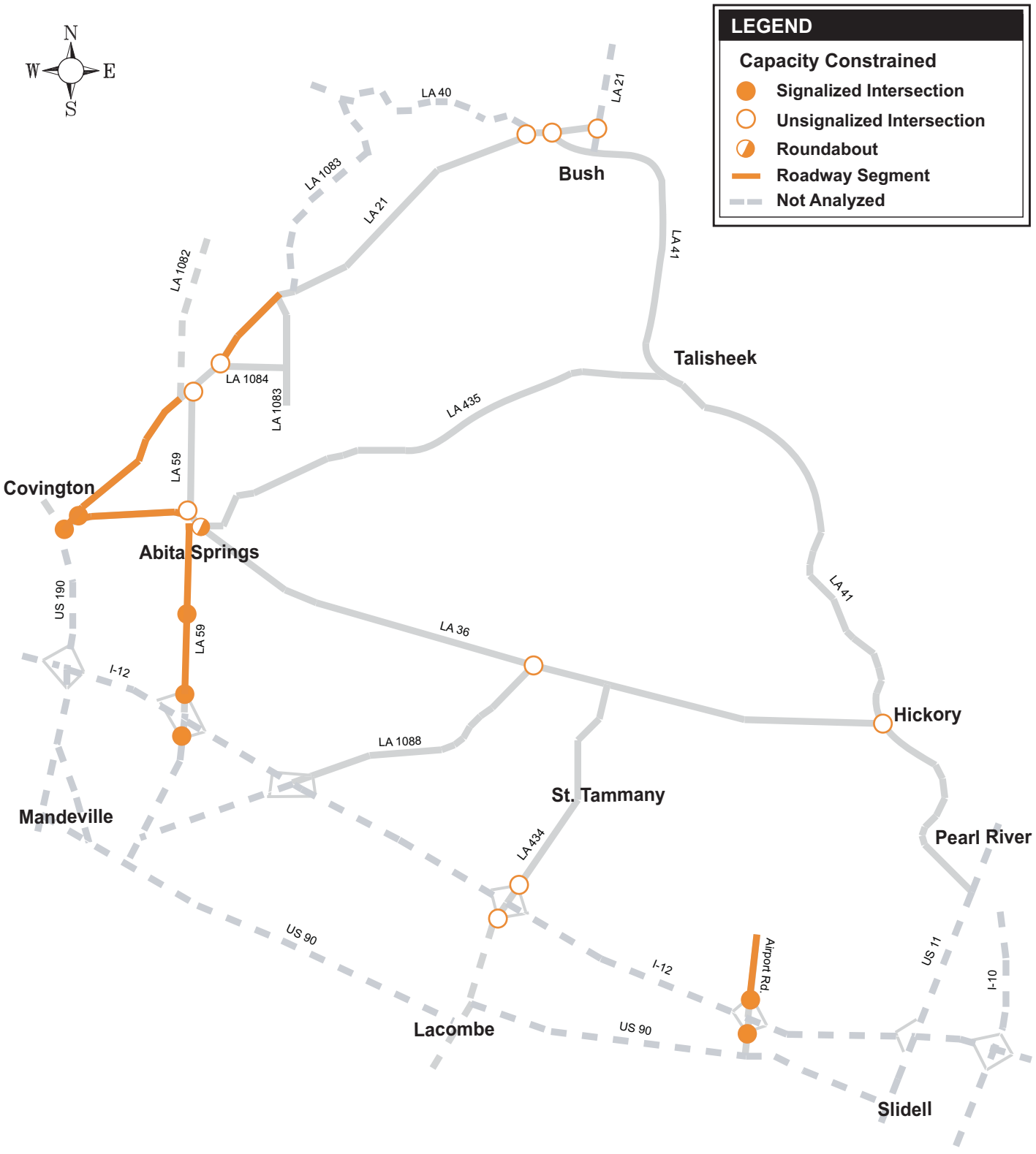

Figure 7

2035 Projected No Build
Capacity Constraints

I-12 to Bush
Environmental Impact Statement

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Project # 09-085

BUILD CONDITIONS ANALYSIS

Traffic Assignment and Forecasting

AM and PM peak hour traffic volumes were projected for the 2015 and 2035 Build Alternatives. In addition to the resources consulted in the development of the No Build volume projections, C. H. Fenstermaker & Associates, Inc.'s preliminary line and grade plans, dated August 2010, was used to develop link geometry and determine appropriate link attributes in the TransCAD model.

The 2035 Build scenarios were created first to assist the project team in determining overall design parameters for the proposed alignments. The 2035 No Build model scenario was used to create the 2035 Build Alternative B/O, J, P, and Q model scenarios. Model modifications included the following:

- Added links and nodes to the highway network layer to incorporate the Alternative roadway segments and intersections for the four proposed alignments. The line and grade plans were added as a layer and traced to best represent the proposed alignments. As discussed with RPC, the links were broken into segments such that the Alternatives were coded as functional class 1, except for short functional class 2 links on either side of the at-grade intersections at LA 21, LA 435, and LA 36, and to the north of the associated interchanges at I-12. The link attribute inputs included the following for each Alternative:
    - Parish_FC = ST. TAMMANY_1
    - AB_FC_Code = BA_FC_Code = 2 (major arterial) for short links near at-grade intersections and I-12 interchanges
    - AB_FC_Code = BA_FC_Code = 1 (limited access) other Alternative links
    - AB_Lanes = BA_Lanes = 2
    - ProjYear = 2015

- For Alternative B/O:
    - Along LA 21, attributes value changes for the LA 21 links included
        - AB_FC_Code = BA_FC_Code = 2 (major arterial)
        - AB_Lanes = BA_Lanes = 2
        - ProjYear = 2015
    - Based on the line and grade plans (Fenstermaker, August 2010), attribute value changes for the LA 1088 link between Alternative B/O and the four-lane link north of the I-12 westbound ramps included
        - AB_FC_Code = BA_FC_Code = 2 (major arterial)
        - AB_Lanes = BA_Lanes = 2
        - ProjYear = 2015

- Alternative J:
    - Along Airport Road, attribute value changes for the Airport Road links included the following:
        - AB_FC_Code = BA_FC_Code = 2 (major arterial)
        - AB_Lanes = BA_Lanes = 2
        - ProjYear = 2015
    - Based on discussions with RPC, USACE and DOTD, the interchange improvements at Airport Road would be implemented with Alternative J. Therefore it was assumed that the Airport Road overpass across I-12 would be four lanes, requiring the following attribute value changes for that link:
        - AB_FC_Code = BA_FC_Code = 2 (major arterial)
        - AB_Lanes = BA_Lanes = 2
        - ProjYear = 2015

      Attribute value changes for the Northshore Road link south of the I-12 eastbound ramps included:
        - AB_FC_Code = BA_FC_Code = 3 (medium arterial)
        - ProjYear = 2015
- For Alternative P:
    - Based on the line and grade plans, attribute value changes for the LA 1088 link between Alternative P and four-lane link north of the I-12 westbound ramps included the following:
        - AB_FC_Code = BA_FC_Code = 2 (major arterial)
        - AB_Lanes = BA_Lanes = 2
        - ProjYear = 2015
- For Alternative Q:
    - Based on the line and grade plans, attribute value changes for the LA 434 link between Alternative Q and the I-12 westbound ramps included
        - AB_FC_Code = BA_FC_Code = 2 (major arterial)
        - AB_Lanes = BA_Lanes = 2
        - ProjYear = 2015

Compared to 2035 No Build, the REMI model socioeconomic output for 2035 Build showed an insignificant total population growth of +42 and employment growth of +4.

As discussed with RPC, the population and employment growth in the TAZ data were therefore not modified for the Build scenarios. The "Copy OD Trips" from the 2035 No Build scenario and "Run Assignment Only" functions were used for obtaining unchanged origin-destination data and to assign trips to the new highway network for each Alternative. The ADT output for the 2035 Build Alternative model scenarios was obtained and compared to ADT output for the 2035 No Build model scenario.

The 2015 No Build model scenario was used to create the 2015 Build Alternative B/O, J, P, and Q model scenarios. The "Copy OD Trips" from the 2015 No Build scenario and "Run Assignment Only" functions were used for obtaining unchanged origin-destination data and assigning trips to the new highway network for each Alternative. The ADT output for the 2015 Build Alternative model scenarios was obtained and compared to the ADT output for the 2015 No Build model scenario.

The TransCAD ADT and intersection peak period traffic volume output were reviewed to determine the impact of the Build Alternative alignments in terms of redistributing traffic in the study network. Alternatives B/O and P are connected to the western portion of the study area (where the congestion is concentrated) and the model indicated significant traffic from both LA 21 and LA 59 would divert to the new routes. Alternatives Q and J are connected to the eastern portion of the study area and the model indicated mainly traffic from LA 41 would divert to the new routes. The TransCAD modeling results were translated into the 2015 and 2035 design hour turning movement volumes.

The analysis of all study area intersections for the No Build conditions established where existing congestion is present and where it is expected in the future. Not all of the study area intersections, however, are expected to be affected by each Alternative. Therefore, specific intersections were selected for each Alternative to capture the impact of the new alignment on expected LOS and delay conditions. For each Alternative, the intersections along the alignment were analyzed, as were intersections expected to experience the greatest change in demand due to rerouting to the new roadway.

The projected Build Alternative volumes for the selected intersections for each Alternative are presented in the following figures:

- 2015 Build Alternative B/O: Figures 8A and 8B
- 2015 Build Alternative J: Figures 9A and 9B
- 2015 Build Alternative P: Figures 10A and 10B
- 2015 Build Alternative Q: Figures 11A and 11B
- 2035 Build Alternative B/O: Figures 12A and 12B
- 2035 Build Alternative J: Figures 13A and 13B
- 2035 Build Alternative P: Figures 14A and 14B
- 2035 Build Alternative Q: Figures 15A and 15B

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LEGEND:

- X AM Peak Hour
- (X) PM Peak Hour
- Signalized Intersection
- Unsignalized Intersection
- Roundabout
- Alternative B/O

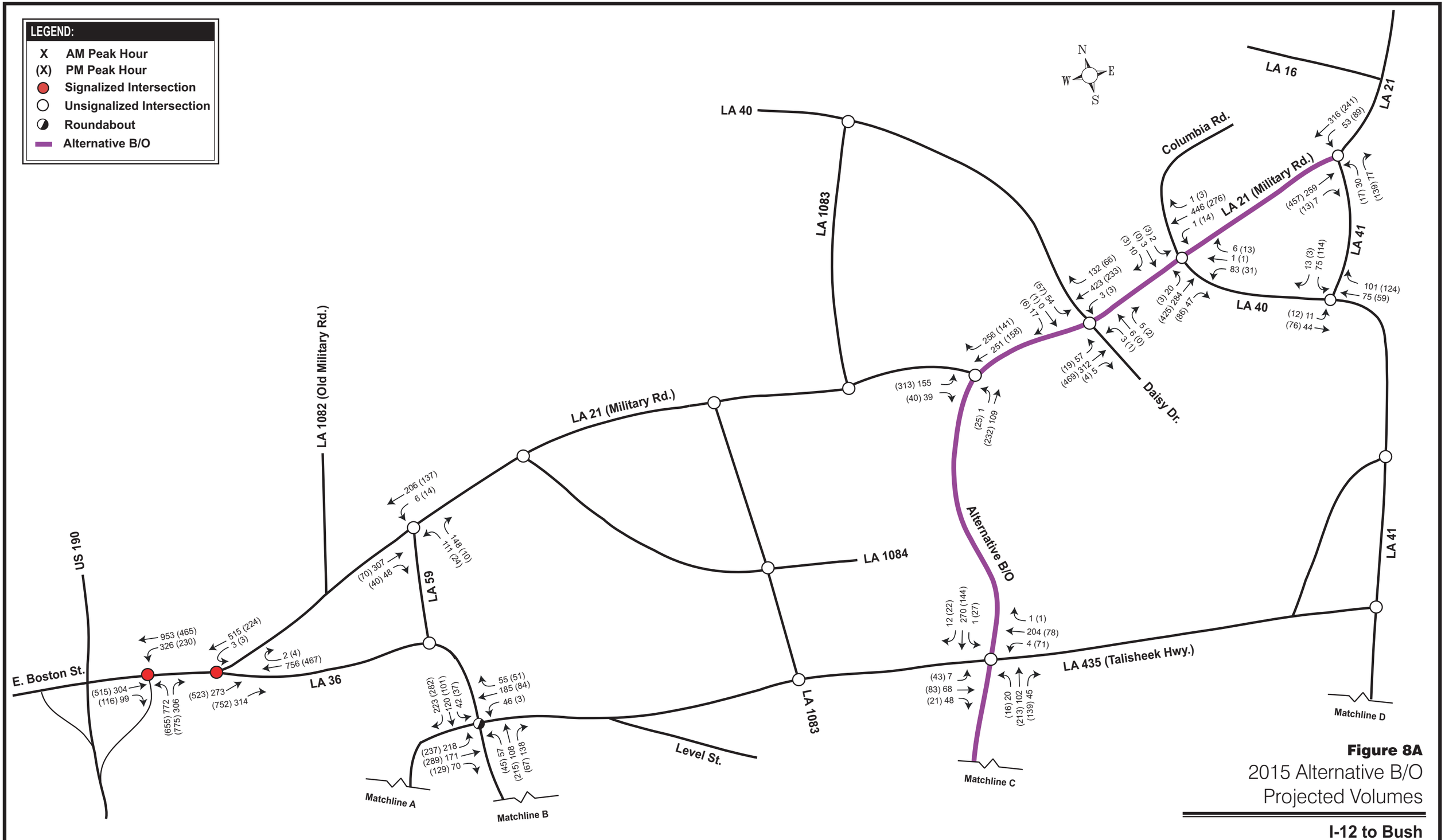

Figure 8A
2015 Alternative B/O
Projected Volumes

I-12 to Bush
Environmental Impact Statement

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LEGEND:

- X — AM Peak Hour
- (X) — PM Peak Hour
- Signalized Intersection
- Unsignalized Intersection
- Roundabout
- Alternative B/O

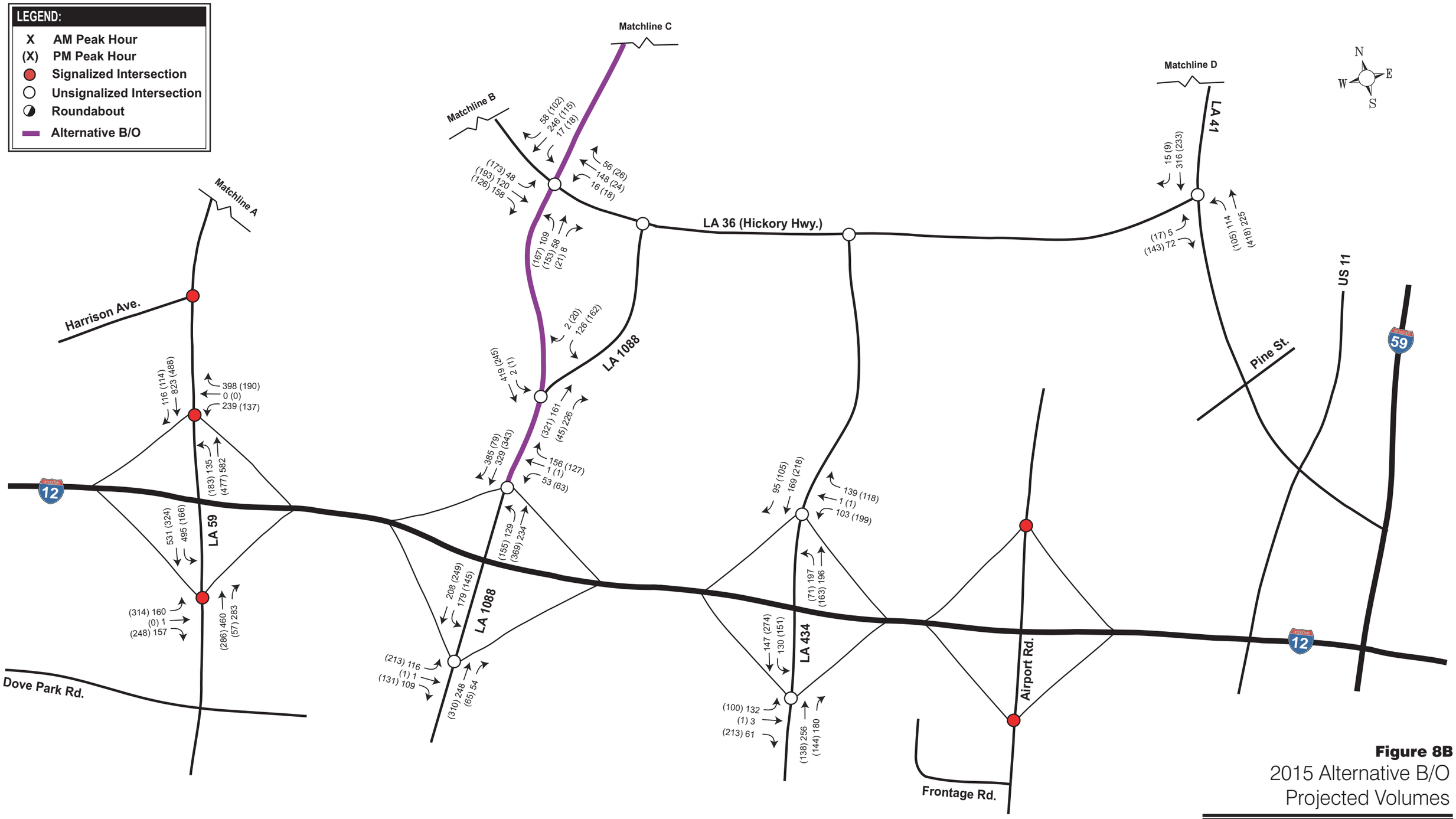

Figure 8B
2015 Alternative B/O
Projected Volumes

I-12 to Bush
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LEGEND:

- X AM Peak Hour
- (X) PM Peak Hour
- Signalized Intersection
- Unsignalized Intersection
- Roundabout
- Alternative J

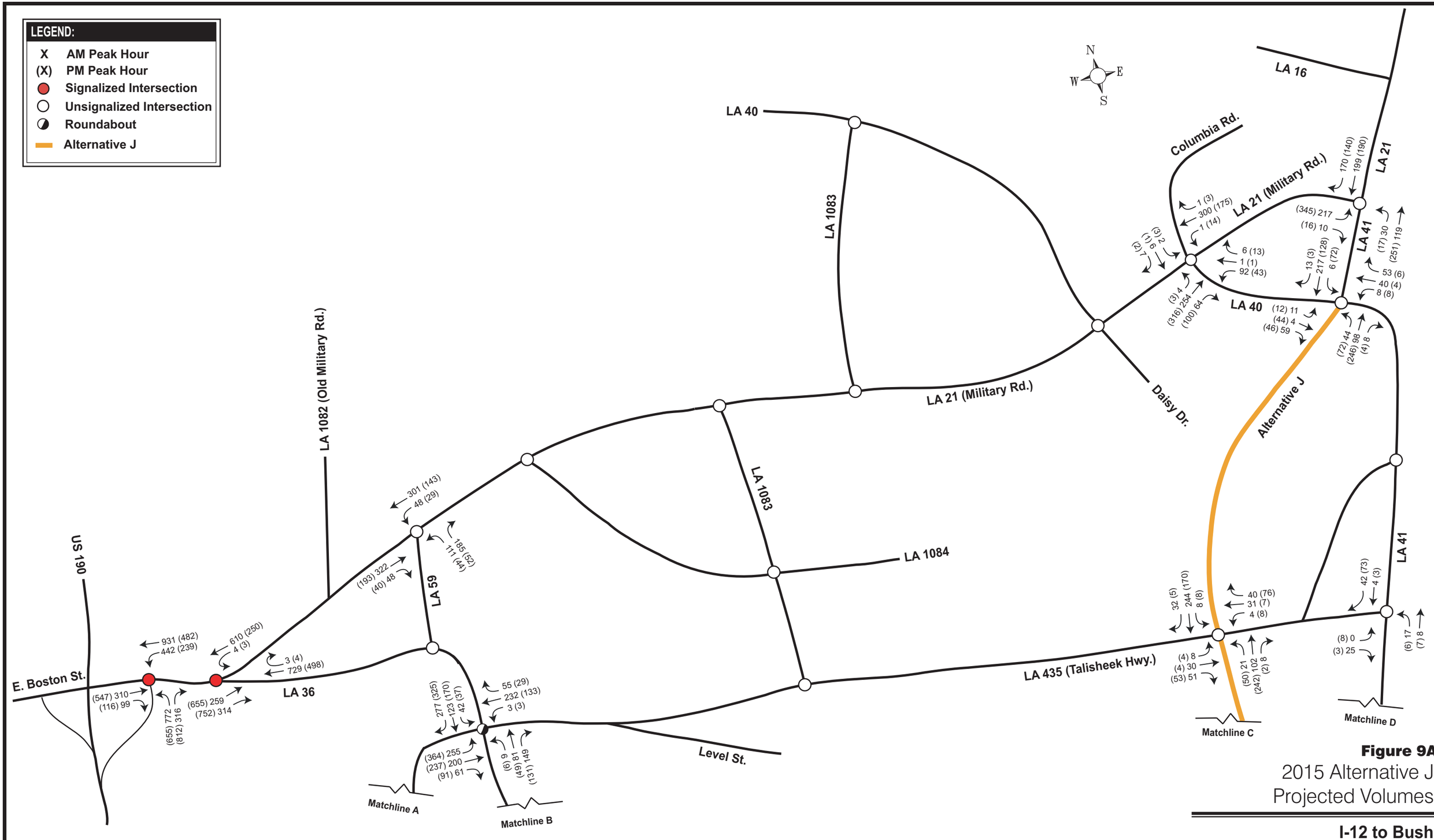

Figure 9A
2015 Alternative J
Projected Volumes

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LEGEND:

- X — AM Peak Hour
- (X) — PM Peak Hour
- Signalized Intersection
- Unsignalized Intersection
- Roundabout
- Alternative J

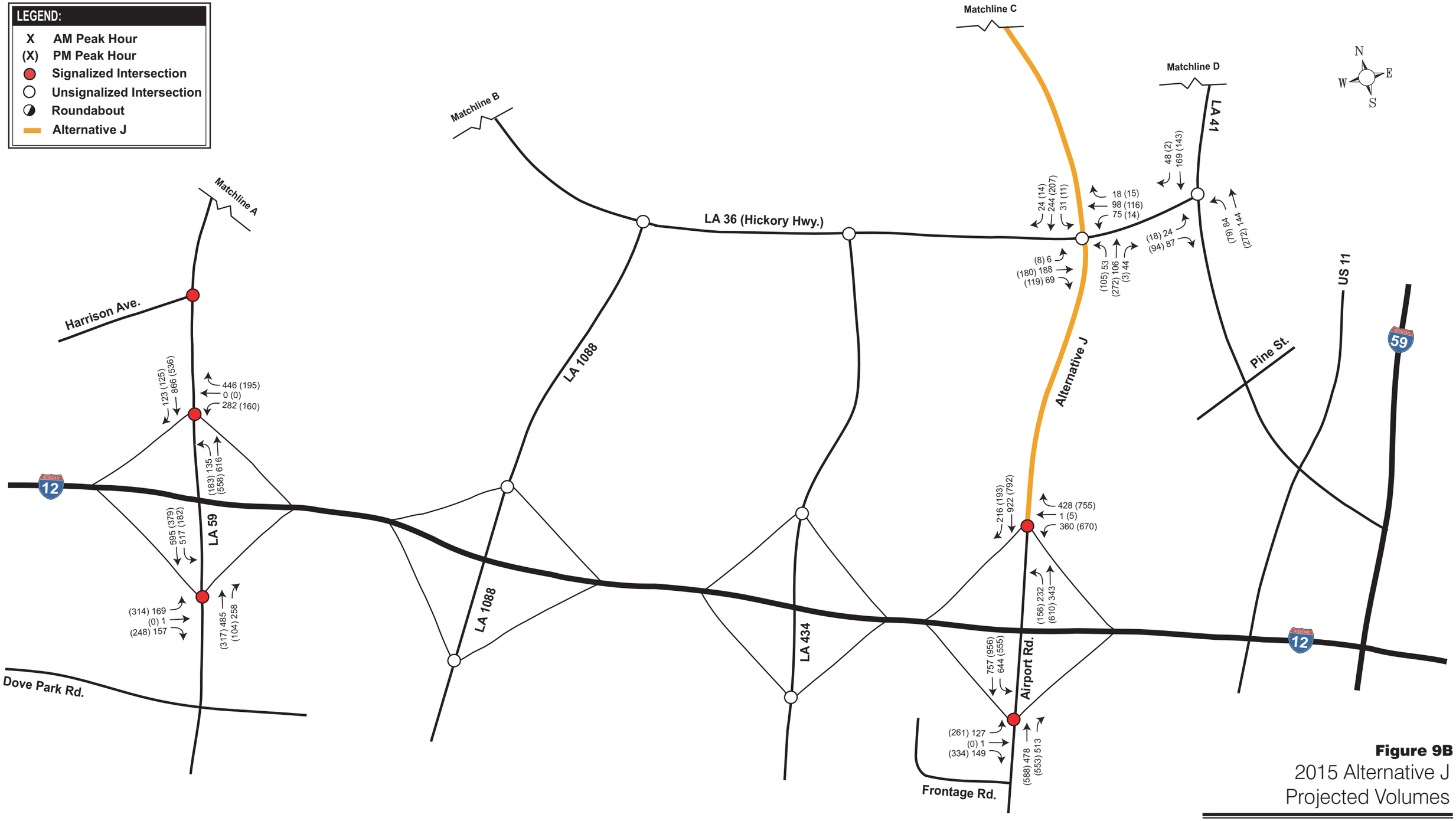

Figure 9B
2015 Alternative J
Projected Volumes

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LEGEND:

- X AM Peak Hour
- (X) PM Peak Hour
- Signalized Intersection
- Unsignalized Intersection
- Roundabout
- Alternative P

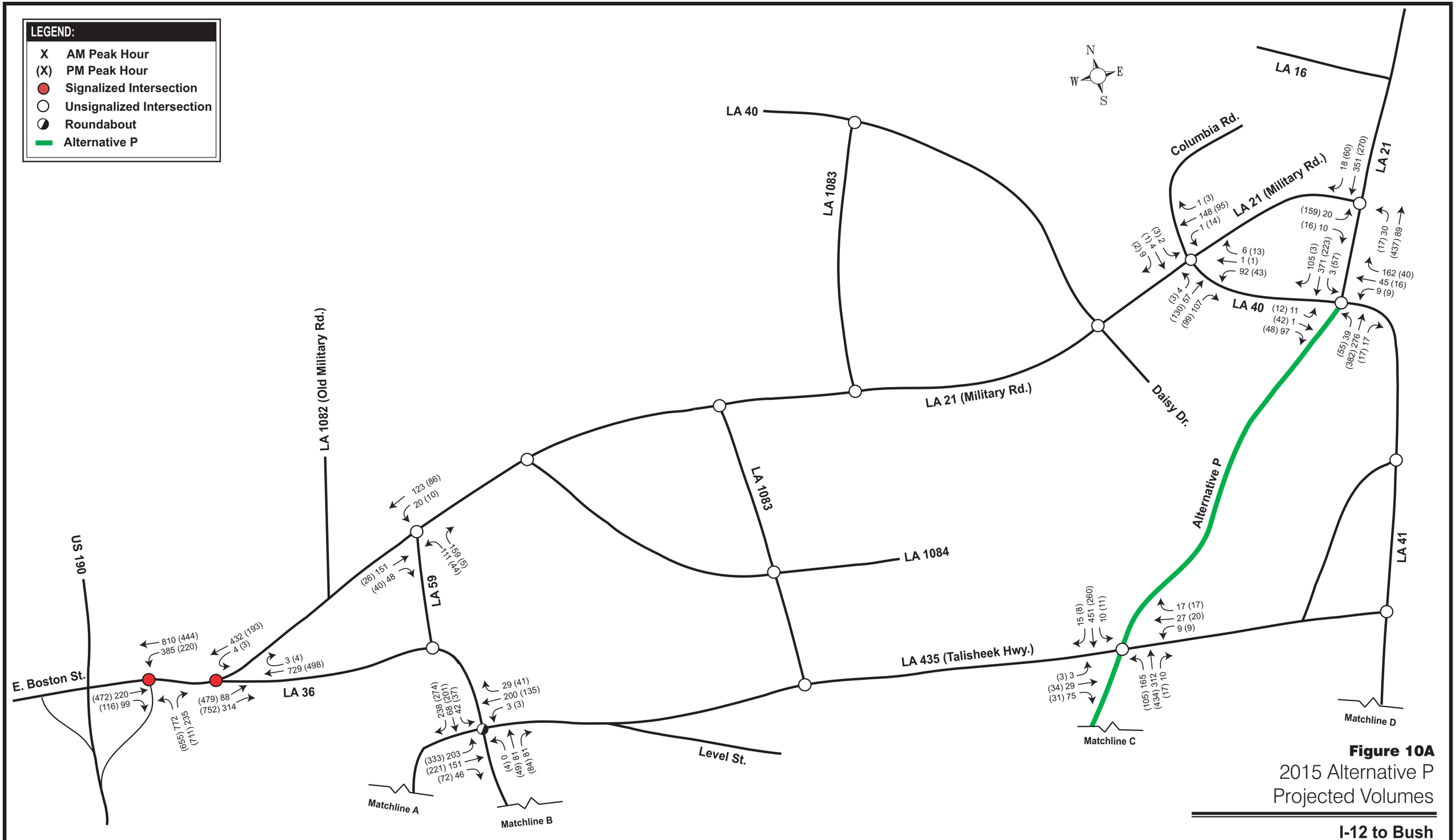

Figure 10A
2015 Alternative P
Projected Volumes

I-12 to Bush
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LEGEND:

- X — AM Peak Hour
- (X) — PM Peak Hour
- Signalized Intersection
- Unsignalized Intersection
- Roundabout
- Alternative P

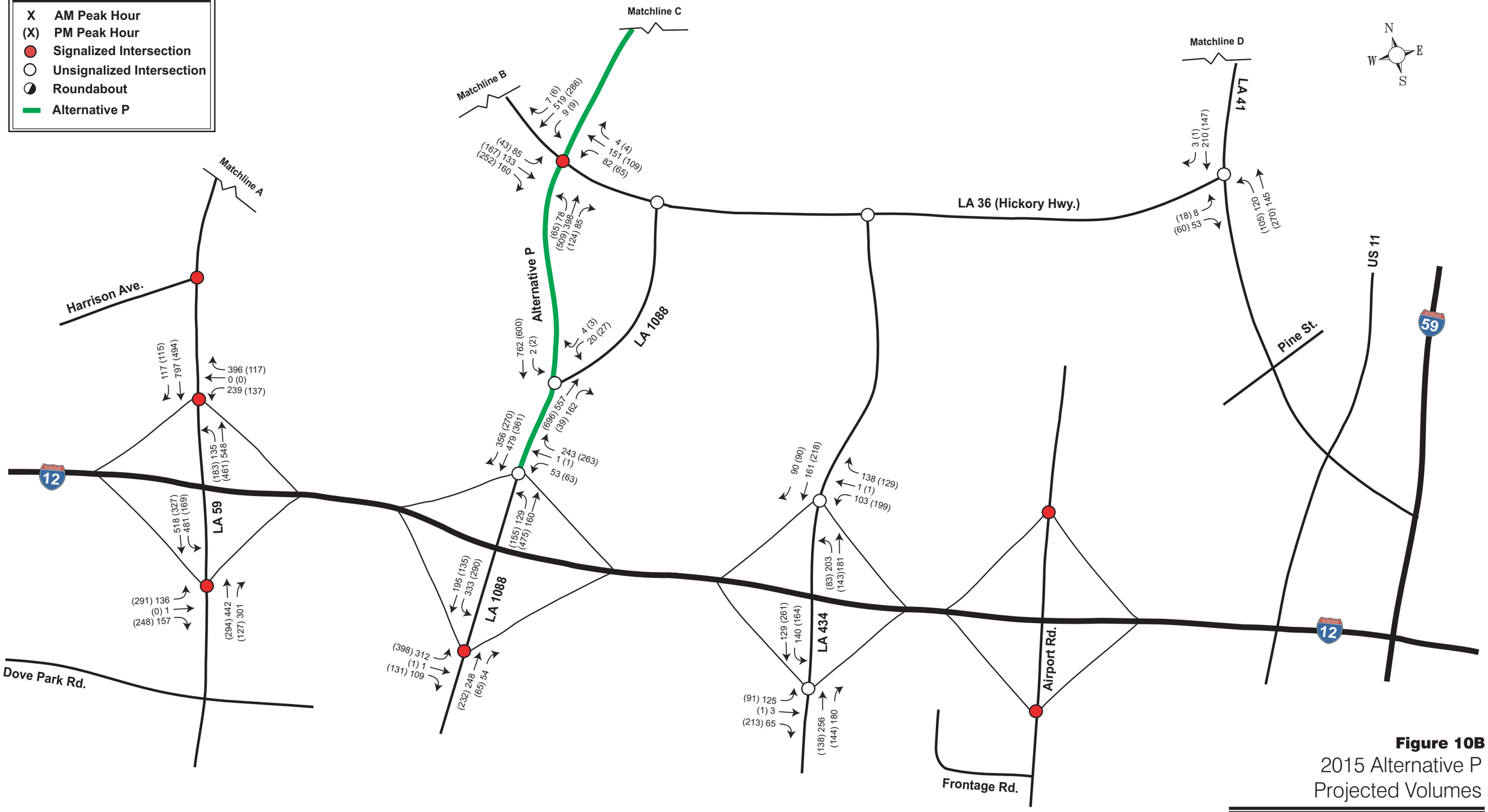

Figure 10B
2015 Alternative P
Projected Volumes

I-12 to Bush
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LEGEND:

- X — AM Peak Hour
- (X) — PM Peak Hour
- Signalized Intersection
- Unsignalized Intersection
- Roundabout
- Alternative Q

N
W E
S

LA 40
LA 1083
LA 16
LA 21
Columbia Rd.
LA 21 (Military Rd.)
LA 41
LA 40
LA 21 (Military Rd.)
Daisy Dr.
Alternative Q
LA 1082 (Old Military Rd.)
US 190
LA 59
LA 1084
LA 41
E. Boston St.
LA 36
LA 435 (Talisheek Hwy.)
Level St.
Matchline A
Matchline B
Matchline C
Matchline D

179 (141)
190 (189)
1 (3)
309 (176)
1 (14)
(231) 174
(16) 10
(3) 2
(1) 4
(2) 9
6 (13)
1 (1)
90 (41)
13 (3)
207 (130)
8 (73)
(17) 30
(165) 169
62 (44)
47 (23)
2 (2)
(3) 4
(202) 211
(99) 59
(12) 11
(46) 7
(44) 48
(45) 40
(303) 147
(4) 5
314 (160)
27 (15)
(93) 302
(40) 48
111 (44)
163 (5)
940 (493)
447 (245)
623 (267)
4 (3)
3 (4)
729 (498)
(498) 294
(116) 99
(655) 772
(752) 312
(546) 239
(752) 314
296 (311)
68 (170)
42 (37)
55 (29)
217 (150)
3 (3)
(349) 233
(256) 170
(100) 72
(11) 17
(49) 81
(104) 125
2 (3)
250 (169)
5 (4)
8 (7)
34 (30)
7 (7)
(2) 1
(6) 16
(8) 44
(39) 87
(343) 183
(5) 4

Figure 11A
2015 Alternative Q
Projected Volumes

I-12 to Bush
Environmental Impact Statement

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(504) 523 - 5511

Project # 09-085

LEGEND:

- X — AM Peak Hour
- (X) — PM Peak Hour
- Signalized Intersection
- Unsignalized Intersection
- Roundabout
- Alternative Q

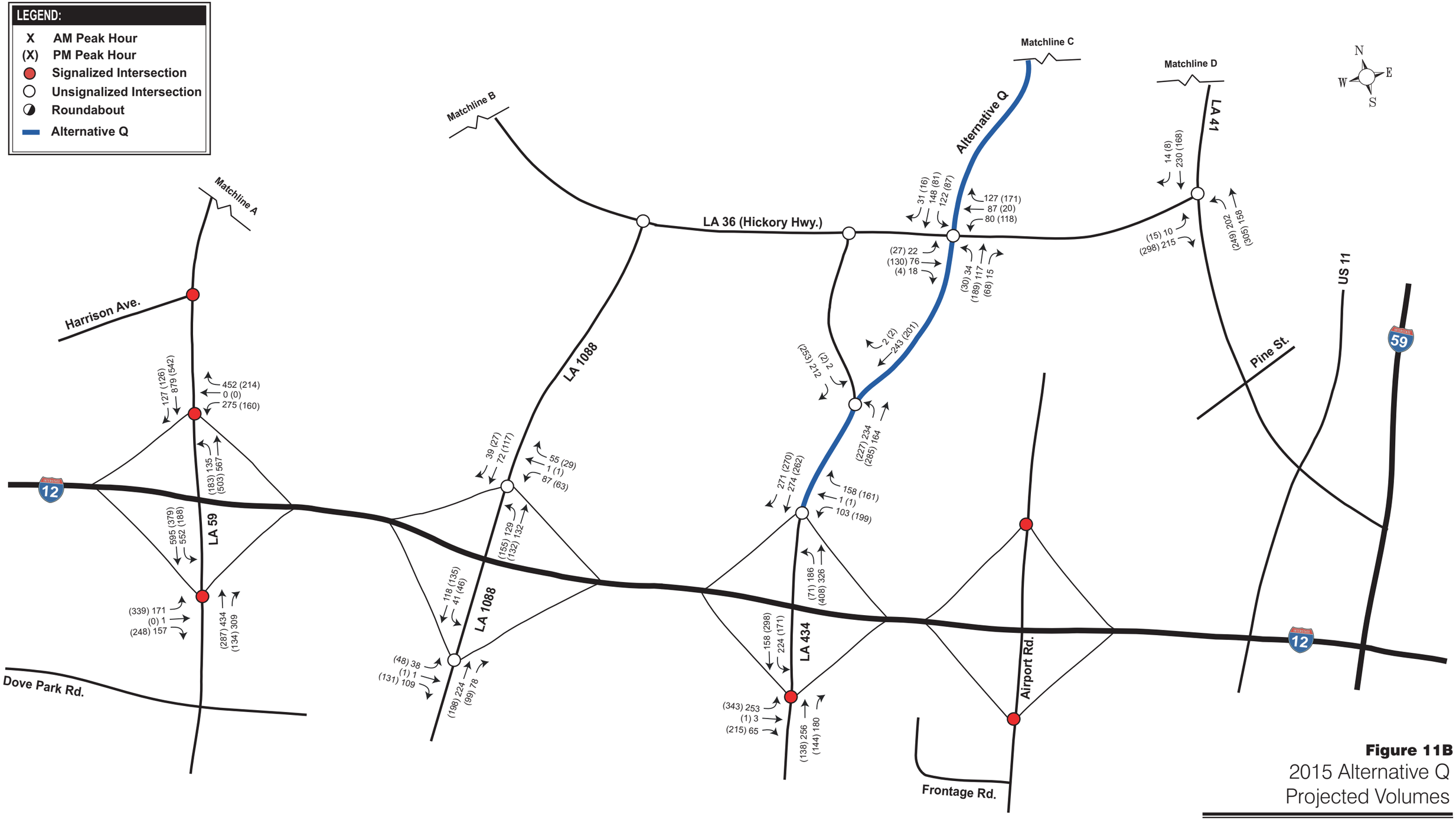

Figure 11B
2015 Alternative Q
Projected Volumes

I-12 to Bush
Environmental Impact Statement

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LEGEND:

- X — AM Peak Hour
- (X) — PM Peak Hour
- Signalized Intersection
- Unsignalized Intersection
- Roundabout
- Alternative B/O

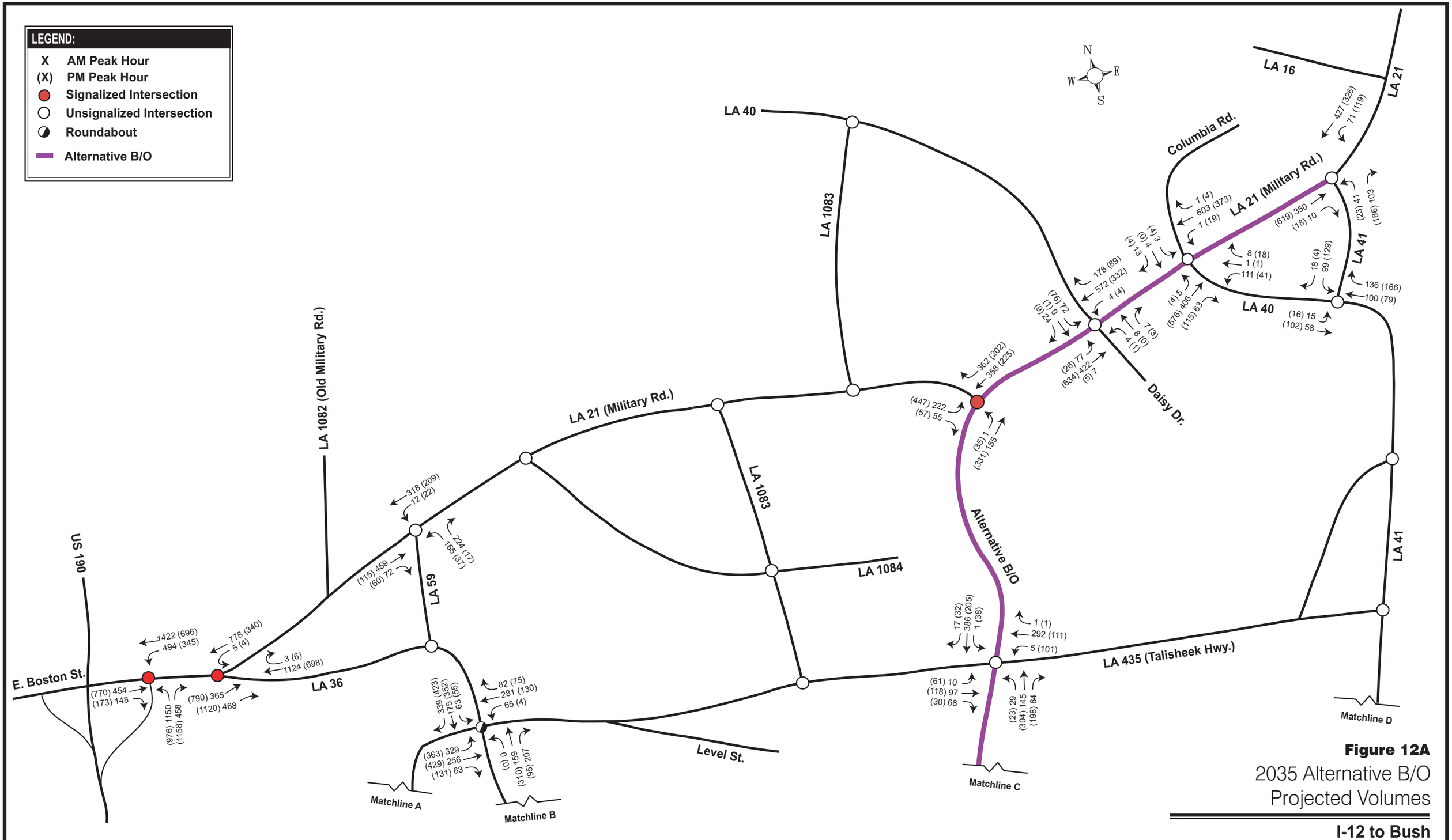

Figure 12A
2035 Alternative B/O
Projected Volumes

I-12 to Bush
Environmental Impact Statement

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LEGEND:

- X — AM Peak Hour
- (X) — PM Peak Hour
- Signalized Intersection
- Unsignalized Intersection
- Roundabout
- Alternative B/O

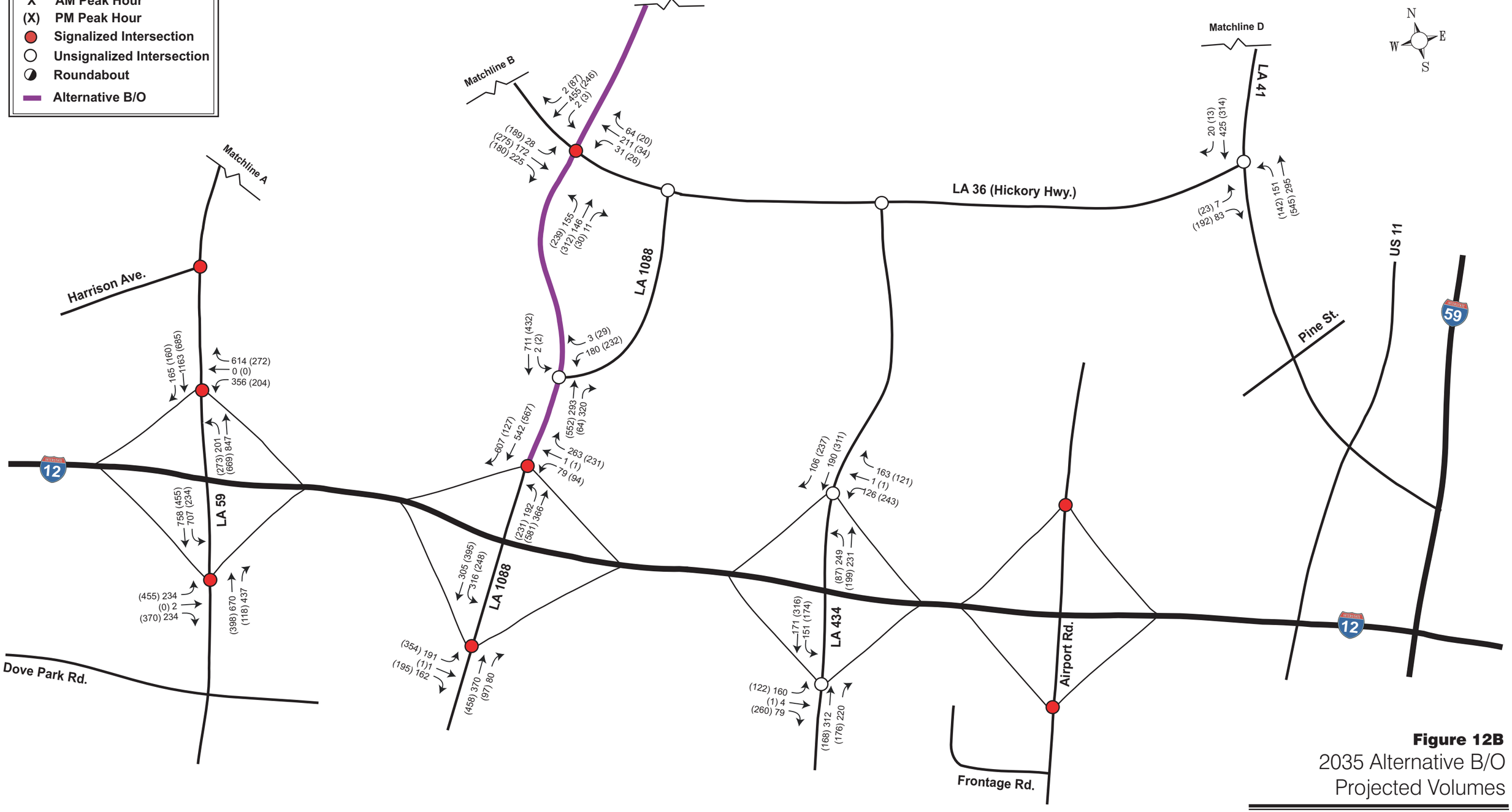

Figure 12B
2035 Alternative B/O
Projected Volumes

I-12 to Bush
Environmental Impact Statement

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LEGEND:

- X — AM Peak Hour
- (X) — PM Peak Hour
- Signalized Intersection
- Unsignalized Intersection
- Roundabout
- Alternative J

N
W E
S

LA 40
LA 1083
LA 16
Columbia Rd.
LA 21 (Military Rd.)
LA 21
242 (198)
256 (247)
1 (4)
418 (245)
1 (19)
(474) 296
(22) 14
(4) 3
(1) 7
(3) 10
8 (18)
1 (1)
124 (58)
LA 41
(23) 41
(331) 157
18 (4)
271 (160)
17 (101)
78 (8)
58 (6)
10 (10)
(4) 5
(435) 346
(135) 85
LA 40
(16) 15
(65) 10
(58) 74
(90) 55
(308) 122
(5) 10
LA 21 (Military Rd.)
Daisy Dr.
Alternative J
LA 1082 (Old Military Rd.)
LA 1083
LA 1084
LA 41
470 (229)
75 (47)
279 (77)
165 (66)
(298) 484
(60) 72
LA 59
US 190
1401 (729)
666 (362)
930 (389)
6 (4)
4 (6)
1086 (742)
LA 36
E. Boston St.
(818) 462
(173) 148
(985) 390
(1120) 468
(976) 1150
(1216) 475
426 (488)
170 (253)
63 (55)
82 (43)
356 (206)
4 (4)
(552) 384
(360) 298
(131) 89
(6) 0
(73) 121
(195) 227
Level St.
Matchline A
Matchline B
LA 435 (Talisheek Hwy.)
40 (6)
305 (212)
10 (10)
50 (95)
39 (9)
5 (10)
53 (91)
8 (13)
(10) 0
(5) 34
(10) 23
(10) 11
(5) 10
(5) 38
(66) 64
(63) 26
(303) 127
(2) 10
Matchline C
Matchline D

Figure 13A
2035 Alternative J
Projected Volumes

I-12 to Bush
Environmental Impact Statement

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LEGEND:

- X — AM Peak Hour
- (X) — PM Peak Hour
- Signalized Intersection
- Unsignalized Intersection
- Roundabout
- Alternative J

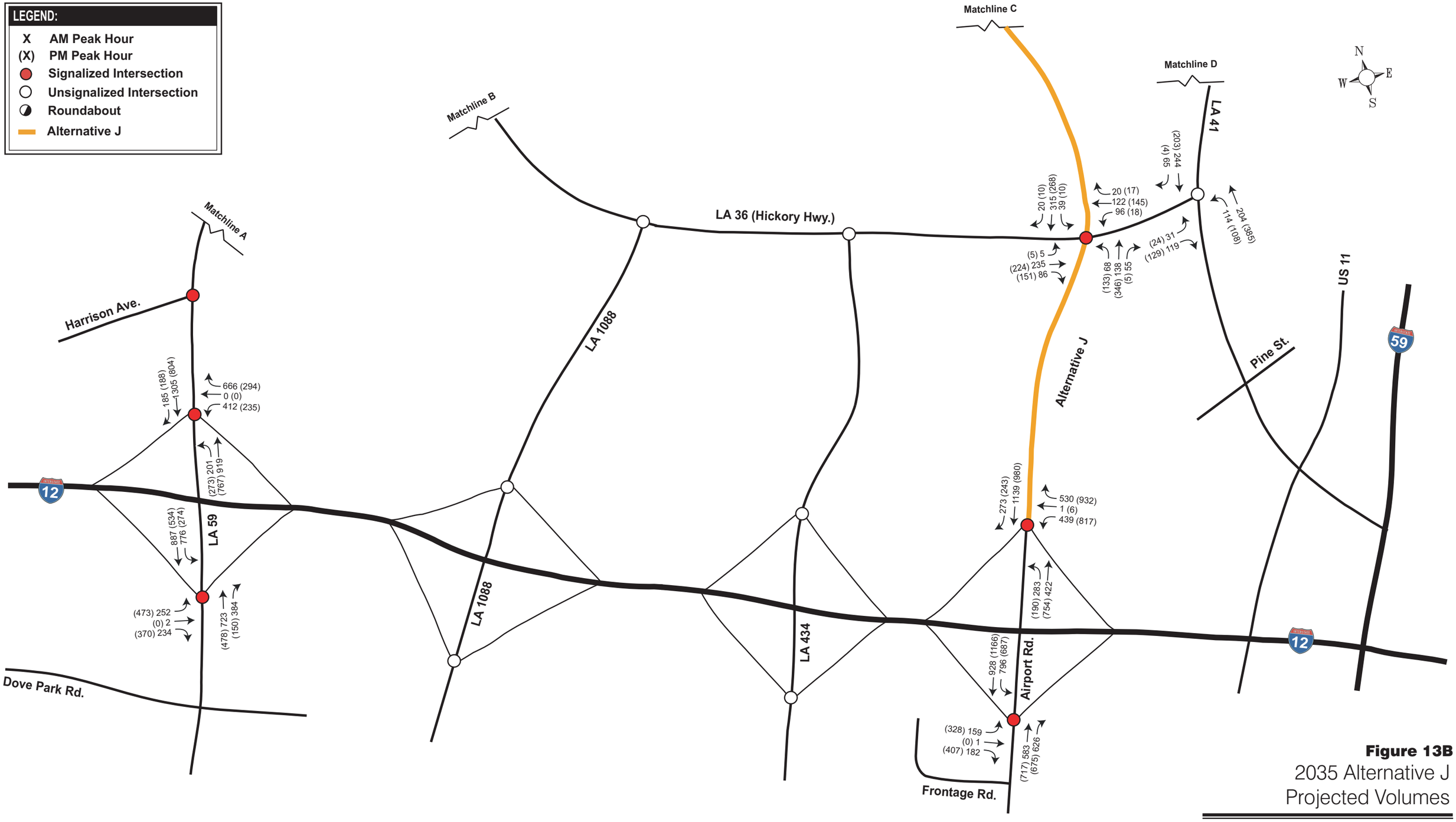

Figure 13B
2035 Alternative J
Projected Volumes

I-12 to Bush
Environmental Impact Statement

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LEGEND:

- X AM Peak Hour
- (X) PM Peak Hour
- Signalized Intersection
- Unsignalized Intersection
- Roundabout
- Alternative P

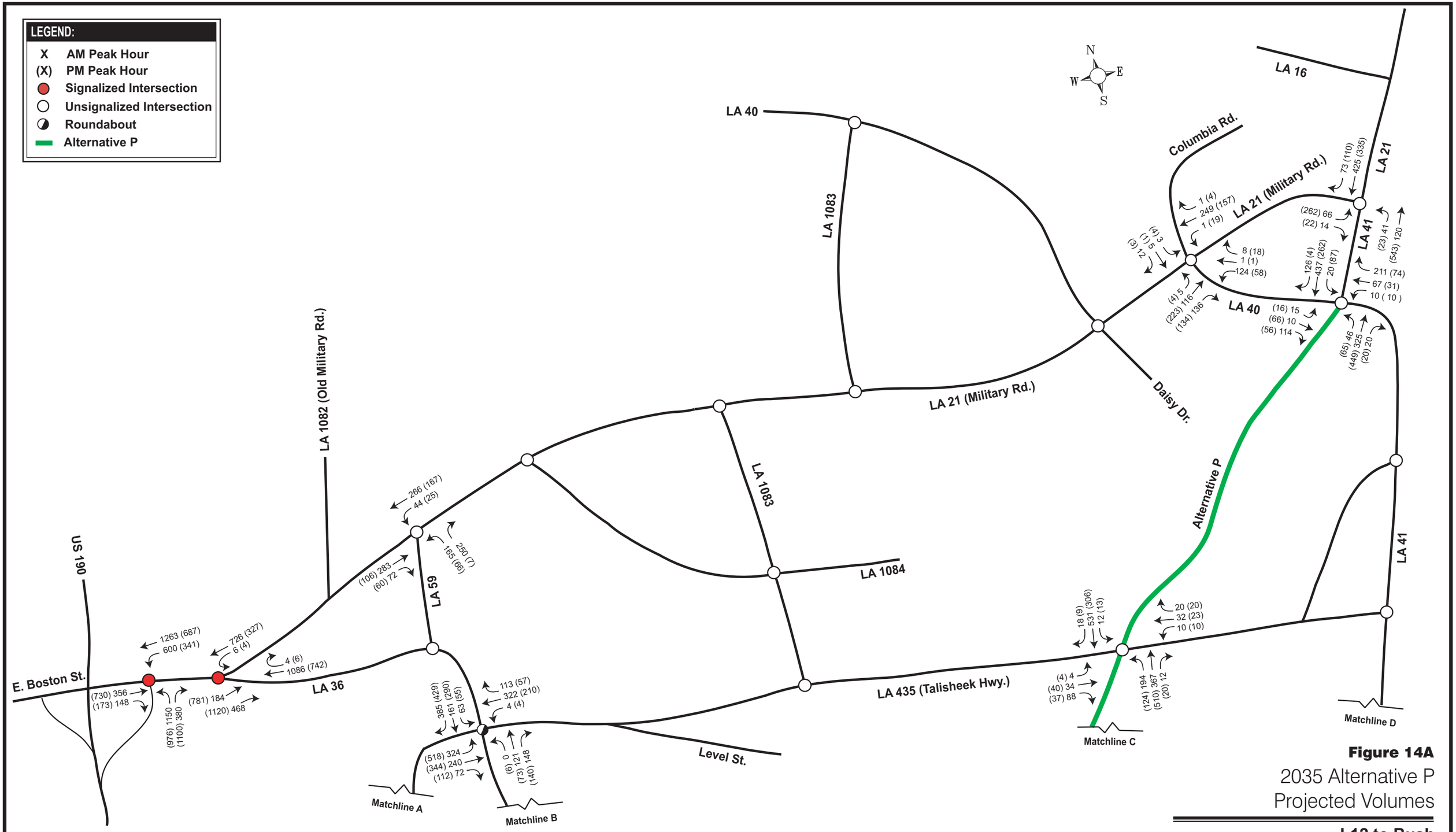

Figure 14A
2035 Alternative P
Projected Volumes

I-12 to Bush
Environmental Impact Statement

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LEGEND:

- X — AM Peak Hour
- (X) — PM Peak Hour
- Signalized Intersection
- Unsignalized Intersection
- Roundabout
- Alternative P

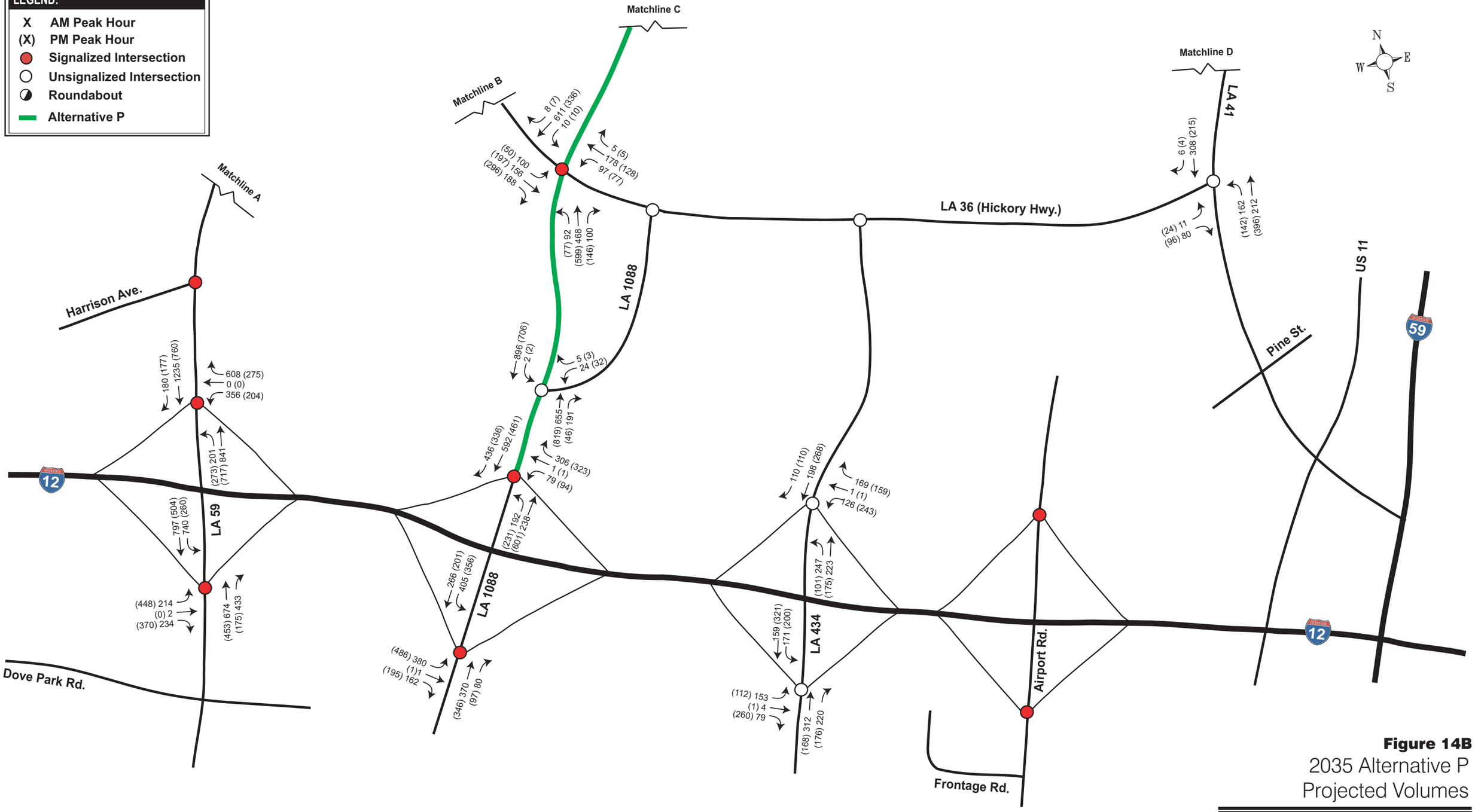

Figure 14B
2035 Alternative P
Projected Volumes

I-12 to Bush
Environmental Impact Statement

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LEGEND:

- X — AM Peak Hour
- (X) — PM Peak Hour
- Signalized Intersection
- Unsignalized Intersection
- Roundabout
- Alternative Q

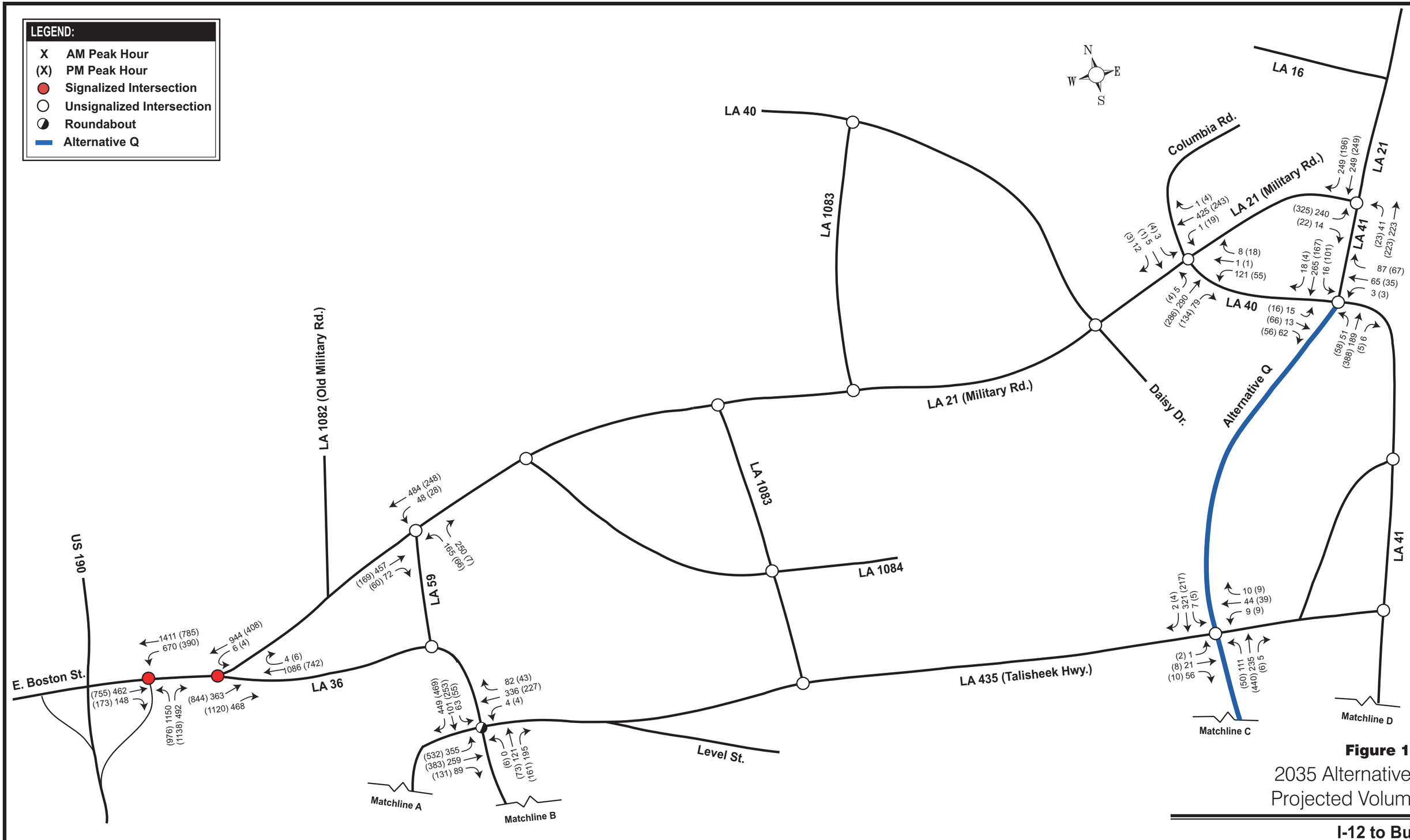

Figure 15A

2035 Alternative Q
Projected Volumes

I-12 to Bush
Environmental Impact Statement

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Project # 09-085

LEGEND:

- X — AM Peak Hour
- (X) — PM Peak Hour
- Signalized Intersection
- Unsignalized Intersection
- Roundabout
- Alternative Q

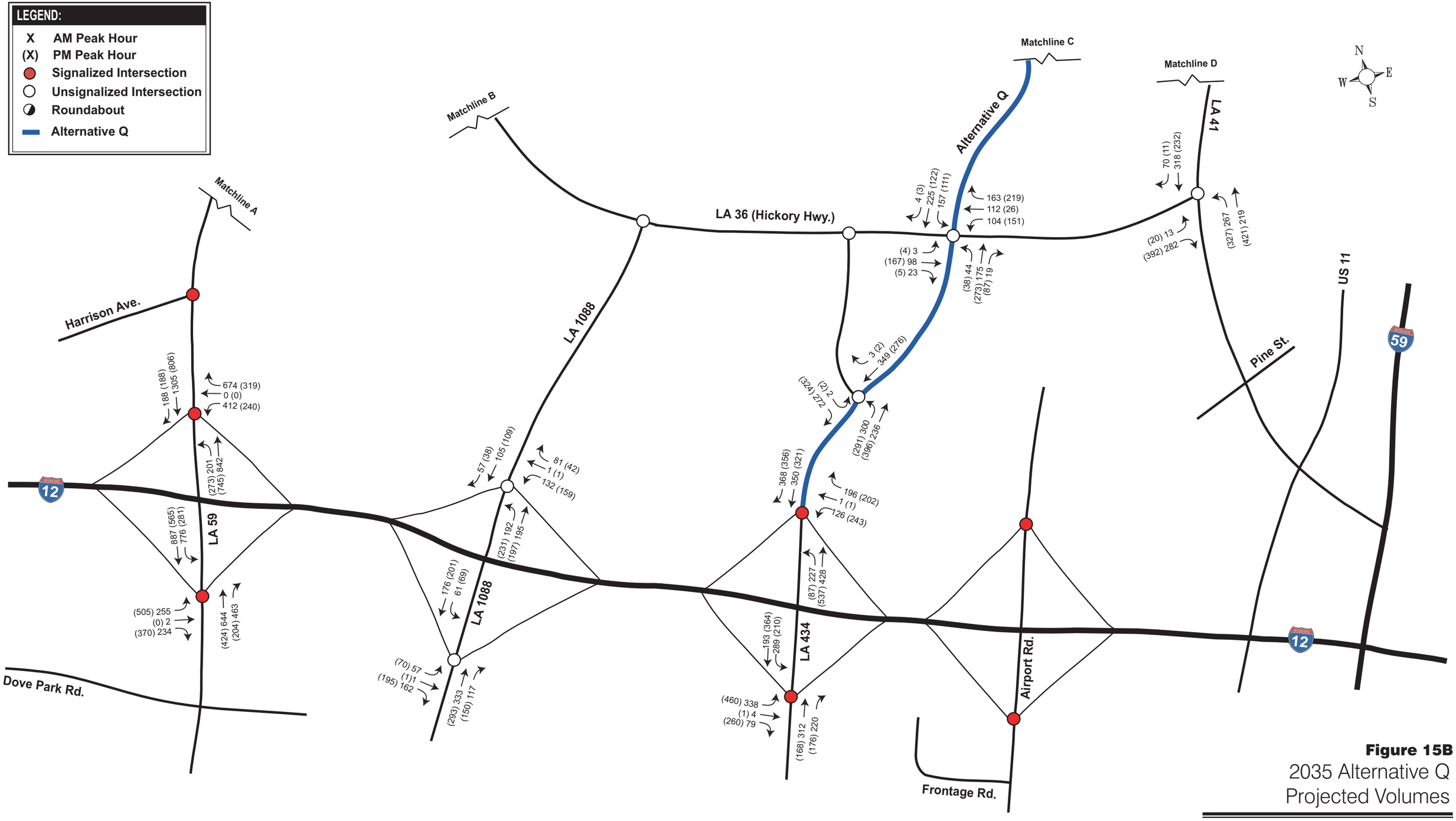

Figure 15B
2035 Alternative Q
Projected Volumes

I-12 to Bush
Environmental Impact Statement

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Project # 09-085

Intersection Capacity Analysis

The initial assumption for the capacity analysis conducted for the intersections along each Alternative was a four-lane divided roadway with stop control on the side streets. Existing roadways were assumed to "T" into the alignments to give the right of way to the through movements on the new roadway.

When unsignalized analysis with the 2015 and 2035 Build design hour volumes, four-lane roadway section, and existing cross street sections did not indicate acceptable operating conditions, improvements were developed to include additional lanes and/or signalization. At the selected signalized intersections associated with each Alternative, improvements including additional lanes and/or changes to signal operation were developed where needed to indicate acceptable operating conditions.

Table 11 presents the resulting recommended traffic control and improvements, where applicable, in addition to the basic four-lane undivided roadway for the selected intersections for each Build Alternative under 2015 and 2035 projected traffic demand.

Table 11. Build Alternative Intersection Recommendations

Intersection	2015 Recommendations	2035 Recommendations
Alt B/O at LA 21/LA 41	LA 41 to "T" into LA B/O / LA 21. Provide separate right and left turn lanes and stop control on the LA 41 approach.	
Alt B/O / LA 21 at LA 40 (east intersection)	Stop control on side street approaches.	
Alt B/O / LA 21 at LA 40 (west intersection)	Stop control on side street approaches.	
Alt B/O at LA 21	Stop control on side approaches or a roundabout could be considered.	
Alt B/O at LA 435	Stop control on side street approaches.	
Alt B/O at LA 36	Add an exclusive EBL lane on LA 36. Stop control on side street approaches.	Add an exclusive EBL lane on LA 36. Signalize the intersection.
Alt B/O at LA 36	Add an exclusive EBL lane on LA 36. Stop control on side street approaches.	
Alt B/O at LA 1088	Stop control on side street approaches.	
Alt B/O: I-12 WB ramp at LA 1088	Stop control on side street approaches.	Signalize the intersection.
Alt B/O: I-12 EB ramp at LA 1088	Stop control on side street approaches.	Signalize the intersection.

Table 11 (continued). Build Alternative Intersection Recommendations

Intersection	2015 Recommendations	2035 Recommendations
Alt J at LA 21/LA 41	Stop control on side street approaches.	
Alt J at LA 435	Stop control on side street approaches.	
Alt J at LA 36	Stop control on side approaches or a roundabout could be considered.	Signalize the intersection or a roundabout could be considered.
Alt J: I-12 ramps at Airport Rd	Widen Airport Road to provide an additional NBT lane. At the WB ramp intersection, provide a second WBR lane. At the EB ramp intersection, provide a second exclusive SBL lane.	Widen Airport Road to provide an additional NBT lane. At the WB ramp intersection, provide a second WBR lane and an exclusive SBR lane. At the EB ramp intersection, provide a second EBL lane and a second exclusive SBL lane.
	Or construction of the single point urban interchange (SPUI) configuration as specified in the *I-12 @ Airport Rd Single Point Urban Interchange Stage 0 Feasibility Study* (Buchart Horn, Inc., January 2011) with a second WBR lane at the off-ramp may be considered.	
Alt P at LA 21/LA 41	Stop control on side street approaches.	
Alt P at LA 435	Stop control on side street approaches.	
Alt P at LA 36	Signalize the intersection.	
Alt P at LA 1088	Stop control on side street approaches.	Provide exclusive WBL and WBR lanes on LA 1088. Stop control on side approaches.
Alt P: I-12 WB ramp at LA 1088	Stop control on side street approaches.	Signalize the intersection.
Alt P: I-12 EB ramp at LA 1088	Signalize the intersection.	Add a second SBL lane and signalize the intersection.
Alt Q at LA 21/LA 41	Stop control on side street approaches.	
Alt Q at LA 435	Stop control on side street approaches.	
Alt Q at LA 36	Stop control on side street approaches.	Provide an exclusive WBL lane on LA 36. Stop control on side approaches.
Alt Q at LA 434	Stop control on side street approaches.	
Alt Q: I-12 WB ramp at LA 434	Stop control on side street approaches.	Signalize the intersection.
Alt Q: I-12 EB ramp at LA 434	Signalize the intersection.	

Results of the initial capacity analyses of the intersections along the 2015 Build Alternative alignments indicated 2035 Build signalization and additional lanes may not be needed initially at certain locations and could be installed or constructed when demand increases. The initial analyses also indicated signalization at the I-12 at LA 434 ramp intersections may be needed for Alternatives B/O and P in 2035.

For the study intersections not on the Alternatives, intersection capacity analysis was conducted based on the projected Build Alternative volumes and the existing intersection geometry. Although the timing would potentially be modified over time to service the increased traffic volumes, cycle lengths and timing were kept constant in the analysis.

A summary of the AM and PM peak LOS and delay estimates for the selected Build study intersections, based on the proposed geometry and traffic control, is presented in Tables 12 and 13, respectively. The intersection analysis reports are included in the Appendix.

A review of Tables 12 and 13 indicates that in general, compared to No Build conditions, intersection operations are expected to improve overall or stay the same in the study area with the proposed Alternatives. When comparing expected LOS and delay conditions at intersections between the various Alternatives, the following greatly influences the results:

- Diverted traffic from existing routes will result in improved LOS and delay conditions; however, the more traffic that is diverted, the more volume the Alternative services and increased delay is expected at the intersections along the new route. For example, Alternatives B/O and P are expected to service more traffic along the route and, therefore, delays are estimated to be greater than those along the Alternative J and Q routes.
- Proposed improvements at intersections along the route or at the associated interchange intersections result in better LOS and delay conditions than the expected No Build conditions. For example, extensive improvements at the Airport Road interchange for Alternative J indicate significantly improved conditions over the No Build.
- Traffic diverting to the Alternatives through intersections along other routes may cause increases in the expected delays, such as at the LA 435/LA 59 at LA 36 roundabout for all Alternatives.

A comparison of the No Build and Build conditions also indicates improvements may be needed on existing intersections not on the Alternatives whether or not an Alternative route is provided. While the Alternatives are expected to provide improvements in LOS and/or delay on the congested LA 21 and LA 59 corridors, unacceptable Levels of Service are still expected at many of the intersections in the design year 2035.

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Table 12.
Intersections -
Level of Service and Capacity Analysis Results
AM Peak

Intersection	Direction	2010		2015 No Build		2015 Build								2035 No Build		2035 Build							
		Base Conditions		Future Conditions		Alternative B/O		Alternative J		Alternative P		Alternative Q		Future Conditions		Alternative B/O		Alternative J		Alternative P		Alternative Q	
		LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)
LA 1083 at LA 40	**Overall**	*	*	*	*									*	*								
	Northbound	A	9.0	A	9.1									A	9.3								
	Westbound	A	7.4	A	7.4									A	7.4								
LA 21 at LA 40 (west int.)	**Overall**	*	*	*	*	*	*							*	*	*	*						
	Northbound	C	21.1	C	23.7	C	15.1							F	52.7	C	20.6						
	Southbound	D	30.4	E	39.2	C	17.3							F	328.6	D	28.4						
	Eastbound	A	9.0	A	9.2	A	9.3							B	10.4	B	10.7						
	Westbound	A	8.0	A	8.1	A	8.0							A	8.5	A	8.4						
LA 21 at LA 40 (east int.)	**Overall**	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Northbound	D	25.4	D	31.7	C	16.1	C	21.7	B	12.4	C	19.6	F	179.9	C	21.4	F	69.1	C	18.4	E	48.7
	Southbound	B	14.3	B	14.9	B	11.6	B	13.7	B	10.3	B	12.5	C	20.4	B	13.2	C	17.5	B	11.9	C	15.5
	Eastbound	A	8.2	A	8.3	A	8.5	A	7.9	A	7.6	A	8.0	A	8.8	A	9.0	A	8.3	A	7.8	A	8.3
	Westbound	A	8.1	A	8.2	A	8.1	A	8.1	A	7.7	A	8.0	A	8.7	A	8.5	A	8.5	A	8.0	A	8.3
LA 21 at LA 41	**Overall**	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Northbound	A	7.5	A	7.5			A	7.9	A	8.6	A	7.9	A	7.6			A	8.2	A	9.0	A	8.2
	Southbound					A	8.0									A	8.4						
	Eastbound	C	16.5	C	18.2			C	20.1	B	12.1	C	17.8	E	44.2			F	55.6	C	16.3	E	36.9
	Westbound					B	10.5									B	11.7						
LA 40 at LA 41	**Overall**	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Northbound							A	7.9	A	8.7	A	7.8					A	8.1	A	9.1	A	8.0
	Southbound	B	10.6	B	10.9	B	10.4	A	7.5	A	7.9	A	7.6	B	12.4	B	11.4	A	7.5	A	8.1	A	7.7
	Eastbound	A	7.7	A	7.8	A	7.7	B	10.5	B	12.5	B	10.9	A	8.0	A	7.9	B	12.0	C	16.5	B	12.5
	Westbound							B	11.2	B	14.4	B	11.6					B	12.9	C	21.8	B	13.3
LA 41 at LA 435 (north int.)	**Overall**	*	*	*	*									*	*								
	Northbound	A	7.6	A	7.6									A	7.7								
	Eastbound	A	9.5	A	9.6									B	10.2								
LA 41 at LA 435 (south int.)	**Overall**	*	*	*	*			*	*					*	*			*	*				
	Northbound	A	7.6	A	7.6			A	7.3					A	7.8			A	7.4				
	Eastbound	A	9.2	A	9.3			A	8.5					A	9.8			A	8.8				
LA 21 at LA 1083 (west int.)	**Overall**	*	*	*	*									*	*								
	Northbound	B	12.9	B	13.5									C	18.3								
	Westbound	A	7.9	A	7.9									A	8.2								
LA 21 at LA 1083 (east int.)	**Overall**	*	*	*	*									*	*								
	Southbound	B	14.6	C	15.7									D	26.5								
	Eastbound	A	8.7	A	8.9									A	9.8								
LA 21 at LA 1084	**Overall**	*	*	*	*									*	*								
	Southbound	A	7.9	A	8.0									A	8.3								
	Westbound	C	19.1	C	21.3									E	43.2								
LA 21 at LA 36	**Overall**	**D**	**49.8**	**F**	**95.1**	**E**	**66.3**	**E**	**67.2**	**E**	**68.0**	**E**	**70.1**	**F**	**287.9**	**F**	**215.7**	**F**	**233.6**	**F**	**213.7**	**F**	**293.3**
	Northbound	B	15.7	B	16.1	B	16.1	B	15.8	B	13.6	B	15.5	C	20.6	B	18.6	B	19.7	B	14.7	B	18.5
	Southbound	E	64.0	F	121.8	C	30.7	D	52.0	C	24.8	E	58.0	F	367.1	F	160.7	F	255.3	F	134.0	F	263.3
	Westbound	D	51.3	F	104.5	F	109.9	F	100.0	F	100.0	F	100.0	F	329.4	F	324.6	F	302.8	F	302.8	F	302.8
US 190 at LA 21 (east int.)	**Overall**	**D**	**47.4**	**E**	**64.0**	**E**	**66.0**	**E**	**65.1**	**E**	**69.3**	**E**	**64.8**	**F**	**183.6**	**F**	**165.5**	**F**	**181.5**	**F**	**178.4**	**F**	**181.7**
	Northbound	F	136.5	F	187.2	F	187.2	F	187.2	F	187.2	F	187.2	F	475.7	F	475.7	F	475.7	F	475.7	F	475.7
	Eastbound	C	23.2	C	24.6	C	24.3	C	24.6	C	21.2	C	23.8	D	54.7	D	50.9	D	54.7	C	28.3	D	54.7
	Westbound	A	8.1	B	10.8	A	6.4	A	9.4	A	6.3	A	9.2	E	64.8	B	15.8	E	55.0	C	33.7	E	56.1
LA 1083 at LA 1084	**Overall**	*	*	*	*									*	*								
	Northbound	A	7.3	A	7.3									A	7.3								
	Southbound	A	7.3	A	7.3									A	7.3								
	Eastbound	A	9.3	A	9.4									A	9.6								
	Westbound	A	9.3	A	9.4									A	9.6								
LA 1083 at LA 435	**Overall**	*	*	*	*									*	*								
	Southbound	B	11.4	B	11.7									B	13.1								
	Eastbound	A	8.1	A	8.1									A	8.4								
LA 435/LA 59 at LA 36**	**Overall**	**B**	**12.1**	**B**	**15.0**	**B**	**17.3**	**B**	**14.9**	**B**	**10.7**	**B**	**12.4**	**F**	**125.8**	**F**	**91.4**	**F**	**106.7**	**E**	**57.3**	**E**	**69.7**
	Northbound	B	13.6	C	20.1	C	20.3	C	19.1	B	11.8	C	15.2	F	302.2	F	100.6	F	159.5	E	55.1	F	151.1
	Southbound	B	13.4	C	16.5	B	15.6	B	14.1	B	10.7	B	12.8	F	129.9	F	85.5	F	133.3	E	59.4	F	83.3
	Eastbound	B	10.5	B	11.2	C	16.8	B	14.6	B	10.6	B	10.8	E	52.7	F	108.8	F	93.9	D	44.1	C	31.4
	Westbound	B	12.0	C	15.5	C	17.1	B	13.6	B	10.2	B	12.5	F	110.4	E	68.0	E	55.2	E	73.6	E	55.9
LA 36 at LA 59	**Overall**	*	*	*	*									*	*								
	Southbound	E	44.2	F	81.6									F	769.6								
	Eastbound	A	8.5	A	8.6									A	9.7								
LA 21 at LA 59	**Overall**	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Northbound	F	236.1	F	399.5	F	62.8	F	240.6	C	24.9	F	148.8	F	2273.0	F	601.9	F	1533.0	F	435.4	F	1143.0
	Westbound	A	8.7	A	8.9	A	8.4	A	8.7	A	7.9	A	8.5	B	10.6	A	9.3	B	10.1	A	8.7	A	9.6
LA 59 at Harrison Ave.	**Overall**	**C**	**31.3**	**D**	**36.6**									**F**	**84.7**								
	Northbound	A	5.7	A	6.1									B	14.1								
	Southbound	B	16.1	B	17.3									C	32.7								
	Eastbound	E	75.6	F	91.4									F	222.4								

Note
* Overall LOS not available for two-way stop-controlled intersections.

** Roundabout analysis in SIDRA.

Table 12 (continued).
Intersections -
Level of Service and Capacity Analysis Results
AM Peak

Intersection	Direction	2010		2015 No Build		2015 Build								2035 No Build		2035 Build							
		Base Conditions		Future Conditions		Alternative B/O		Alternative J		Alternative P		Alternative Q		Future Conditions		Alternative B/O		Alternative J		Alternative P		Alternative Q	
		LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)
I-12 at LA 59 (WB)	**Overall**	**C**	**30.4**	**C**	**31.0**	**C**	**24.2**	**C**	**31.1**	**C**	**24.3**	**C**	**32.4**	**F**	**84.0**	**E**	**64.7**	**F**	**83.3**	**E**	**64.3**	**F**	**86.9**
	Northbound	A	7.5	A	7.2	A	6.8	A	6.9	A	6.7	A	6.9	B	10.8	B	12.0	B	12.1	B	12.1	B	12.2
	Southbound	B	18.3	B	19.5	B	17.8	B	18.3	B	17.5	B	18.5	D	52.5	C	24.8	C	34.4	C	28.7	C	34.8
	Westbound	E	76.4	F	82.6	E	58.3	E	79.9	E	57.8	F	82.9	F	235.6	F	193.4	F	245.7	F	189.5	F	251.1
I-12 at LA 59 (EB)	**Overall**	**D**	**37.9**	**D**	**40.7**	**C**	**29.3**	**C**	**32.4**	**C**	**27.0**	**D**	**40.1**	**F**	**179.4**	**F**	**133.3**	**F**	**156.7**	**F**	**146.2**	**F**	**157.3**
	Northbound	B	14.2	B	12.6	B	12.7	B	12.6	B	12.7	B	12.7	B	15.9	B	16.1	B	16.0	B	16.1	B	16.2
	Southbound	E	60.5	E	62.0	D	40.9	D	46.1	D	36.7	E	60.8	F	328.9	F	255.9	F	288.2	F	275.7	F	289.6
	Eastbound	C	33.6	C	32.0	C	31.6	C	31.9	C	31.2	C	32.0	D	42.5	D	39.7	D	42.0	D	38.0	D	42.5
I-12 at LA 1088 (WB)	**Overall**			*	*	*	*			*	*	*	*	*	*	**B**	**16.3**			**B**	**16.9**	*	*
	Northbound			A	7.7	A	8.4			A	9.0	A	7.6	A	8.0	A	7.0			A	8.8	A	7.9
	Southbound															B	18.4			B	19.2		
	Westbound			B	11.1	B	11.4			B	11.2	B	12.1	B	14.0	C	29.0			C	23.4	C	16.8
I-12 at LA 1088 (EB)	**Overall**			*	*	*	*			**B**	15.7	*	*	*	*	**B**	**13.7**			**B**	18.0	*	*
	Northbound									B	18.5					B	16.9			B	19.5		
	Southbound			A	7.9	A	8.3			A	9.8	A	7.8	A	8.3	A	7.2			A	9.1	A	8.2
	Eastbound			A	9.7	C	15.4			C	21.8	A	9.7	B	10.6	C	22.2			C	28.6	B	10.4
I-12 at LA 434 (WB)	**Overall**	*	*	*	*							*	*	*	*	**B**	**13.8**			**B**	**14.0**	**B**	**17.5**
	Northbound	A	8.1	A	8.2	A	8.2			A	8.1	A	8.5	A	8.5	A	9.2			A	9.2	B	10.8
	Southbound															B	17.0			B	17.1	C	22.7
	Westbound	B	14.0	C	17.0	C	17.2			C	17.3	C	24.8	E	42.2	B	19.3			B	19.4	C	20.5
I-12 at LA 434 (EB)	**Overall**	*	*	*	*	*	*			*	*	**B**	**18.8**	*	*	**C**	**24.3**			**C**	**24.4**	**C**	**30.3**
	Northbound											B	19.6			C	32.6			C	32.6	C	29.0
	Southbound	A	8.2	A	8.3	A	8.3			A	8.3	B	11.2	A	8.7	B	11.1			B	11.9	B	15.2
	Eastbound	C	23.6	D	27.9	D	25.4			C	24.7	C	26.9	F	80.3	C	23.3			C	22.8	D	49.2
I-12 at Airport Rd. (WB)	**Overall**	**D**	**42.6**	**D**	**48.0**			**C**	**31.3**					**E**	**79.3**			**C**	**32.5**				
	Northbound	A	8.1	A	8.9			C	20.3					C	22.3			C	24.2				
	Southbound	B	17.3	B	17.6			D	35.2					B	19.5			C	31.1				
	Westbound	F	106.8	F	122.8			C	34.3					F	207.7			D	41.4				
I-12 at Airport Rd. (EB)	**Overall**	**C**	**21.1**	**C**	**22.7**			**B**	**19.3**					**D**	**41.4**			**C**	**22.0**				
	Northbound	C	25.1	C	25.9			C	22.6					C	32.2			C	26.3				
	Southbound	B	16.7	B	18.8			B	14.4					D	46.1			B	17.0				
	Eastbound	C	34.5	C	34.7			C	34.9					D	35.9			C	35.0				
LA 36 at LA 1088	**Overall**	*	*	*	*									*	*								
	Northbound	B	10.6	C	16.8									F	72.7								
	Westbound	A	7.6	A	7.9									A	8.3								
LA 36 at LA 434	**Overall**	*	*	*	*									*	*								
	Northbound	B	10.7	B	11.7									B	12.6								
	Westbound	A	7.6	A	7.8									A	8.0								
LA 36 at LA 41	**Overall**	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Northbound	A	8.6	A	8.7	A	8.6	A	8.0	A	8.1	A	8.7	A	9.7	A	9.3	A	8.5	A	8.7	B	10.1
	Eastbound	B	13.0	B	13.9	B	12.3	B	12.4	B	11.3	C	15.4	C	22.2	C	16.1	C	17.3	B	14.4	E	43.5
LA 3241 at LA 21	**Overall**					*	*									B	12.6						
	Northbound					A	8.6									A	9.0						
	Southbound															B	11.6						
	Eastbound					B	14.7									B	17.1						
LA 3241 at LA 435	**Overall**					*	*	*	*	*	*	*	*			*	*	*	*	*	*	*	*
	Northbound					A	7.9	A	7.9	A	9.2	A	8.0			A	8.3	A	8.1	A	9.8	A	8.4
	Southbound					A	7.4	A	7.5	A	8.0	A	7.6			A	7.5	A	7.5	A	8.2	A	7.8
	Eastbound					B	12.4	B	11.0	B	15.0	B	10.8			C	16.1	B	12.0	C	18.2	B	11.8
	Westbound					C	17.4	B	10.8	C	20.7	B	13.9			E	36.8	B	11.6	D	27.9	C	16.7
LA 3241 at LA 36	**Overall**					*	*	*	*	**B**	**18.5**	*	*			**C**	**23.7**	**B**	**14.6**	**C**	**21.8**	*	*
	Northbound					A	8.3	A	8.0	B	18.7	A	7.7			B	19.9	B	13.8	C	23.6	A	7.9
	Southbound					A	7.4	A	7.5	B	18.1	A	7.7			C	29.1	B	15.6	B	19.1	A	8.0
	Eastbound					C	17.4	C	19.6	B	18.2	C	17.3			B	16.6	B	12.5	C	22.6	C	21.7
	Westbound					C	21.8	D	25.1	B	19.3	C	23.6			C	29.6	B	16.8	C	22.6	D	25.4
LA 3241 at LA 1088	**Overall**					*	*			*	*					*	*			*	*		
	Southbound					A	7.6			A	8.8					A	7.9			A	9.1		
	Westbound					B	13.6			C	16.1					C	22.4			C	18.2		
LA 3241 at LA 434	**Overall**											*	*									*	*
	Northbound											A	8.5									A	9.3
	Eastbound											B	10.6									B	11.8

Note
* Overall LOS not available for two-way stop-controlled intersections.

** Roundabout analysis in SIDRA.

Table 13.
Intersections -
Level of Service and Capacity Analysis Results
PM Peak

Intersection	Direction	2010		2015 No Build		2015 Build								2035 No Build		2035 Build							
		Base Conditions		Future Conditions		Alternative B/O		Alternative J		Alternative P		Alternative Q		Future Conditions		Alternative B/O		Alternative J		Alternative P		Alternative Q	
		LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)
LA 1083 at LA 40	**Overall**	*	*	*	*									*	*								
	Northbound	A	8.9	A	9.0									A	9.1								
	Westbound	A	7.3	A	7.3									A	7.4								
LA 21 at LA 40 (west int.)	**Overall**	*	*	*	*	*	*							*	*	*	*						
	Northbound	C	15.5	C	16.6	B	12.1							C	22.1	B	13.4						
	Southbound	C	22.8	D	26.6	B	13.9							F	95.4	C	18.2						
	Eastbound	A	8.1	A	8.2	A	8.0							A	8.7	A	8.4						
	Westbound	A	8.3	A	8.4	A	8.5							A	9.0	A	9.1						
LA 21 at LA 40 (east int.)	**Overall**	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Northbound	C	18.0	C	19.9	B	13.4	C	15.6	B	11.5	B	13.4	E	44.5	C	16.6	C	24.7	B	14.8	C	18.1
	Southbound	C	15.8	C	17.0	B	10.7	B	14.0	B	11.1	B	12.7	C	23.8	B	11.9	C	17.9	B	13.0	C	15.2
	Eastbound	A	7.8	A	7.9	A	7.9	A	7.7	A	7.5	A	7.7	A	8.2	A	8.2	A	7.9	A	7.6	A	7.8
	Westbound	A	8.5	A	8.7	A	8.7	A	8.4	A	7.8	A	8.0	A	9.4	A	9.5	A	9.0	A	8.2	A	8.4
LA 21 at LA 41	**Overall**	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Northbound	A	7.6	A	7.6			A	7.9	A	8.2	A	7.9	A	7.7			A	8.1	A	8.5	A	8.1
	Southbound					A	8.9									B	10.0						
	Eastbound	D	28.5	E	38.6			D	31.6	C	18.1	C	17.6	F	201.6			F	169.2	E	48.9	E	40.9
	Westbound					B	11.7									B	14.3						
LA 40 at LA 41	**Overall**	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Northbound							A	7.6	A	7.9	A	7.6					A	7.8	A	8.0	A	7.7
	Southbound	B	11.3	B	11.7	B	11.2	A	8.0	A	8.5	A	8.2	B	14.3	B	12.6	A	8.3	A	8.9	A	8.6
	Eastbound	A	7.8	A	7.8	A	7.7	B	13.9	C	15.4	B	14.4	A	8.1	A	7.9	C	19.7	C	24.6	C	20.9
	Westbound							B	13.4	B	13.4	B	12.3					C	16.5	C	17.0	B	15.0
LA 41 at LA 435 (north int.)	**Overall**	*	*	*	*									*	*								
	Northbound	A	7.5	A	7.5									A	7.7								
	Eastbound	A	9.4	A	9.5									B	10.0								
LA 41 at LA 435 (south int.)	**Overall**	*	*	*	*			*	*					*	*			*	*				
	Northbound	A	7.5	A	7.5			A	7.4					A	7.6			A	7.4				
	Eastbound	A	8.9	A	9.0			A	8.9					A	9.3			A	9.0				
LA 21 at LA 1083 (west int.)	**Overall**	*	*	*	*									*	*								
	Northbound	C	15.5	C	16.7									D	26.8								
	Westbound	A	9.0	A	9.2									B	10.3								
LA 21 at LA 1083 (east int.)	**Overall**	*	*	*	*									*	*								
	Southbound	B	10.0	B	10.2									B	11.3								
	Eastbound	A	8.1	A	8.1									A	8.6								
LA 21 at LA 1084	**Overall**	*	*	*	*									*	*								
	Southbound	A	8.8	A	9.0									A	9.9								
	Westbound	C	17.2	C	18.6									D	30.8								
LA 21 at LA 36	**Overall**	**C**	**23.1**	**C**	**25.9**	**C**	**22.5**	**C**	**25.4**	**C**	**23.9**	**C**	**23.9**	**F**	**101.9**	**E**	**58.6**	**F**	**94.7**	**E**	**70.7**	**E**	**72.7**
	Northbound	C	21.7	C	24.8	B	18.3	C	22.8	B	17.3	B	18.9	F	116.4	C	34.2	F	95.4	C	32.9	D	44.8
	Southbound	B	14.6	B	14.9	B	13.9	B	14.2	B	13.6	B	14.3	B	17.1	B	15.2	B	15.9	B	15.1	B	16.1
	Westbound	C	30.1	C	33.9	C	31.1	C	33.9	C	33.9	C	33.9	F	132.8	F	105.4	F	132.8	F	132.8	F	132.8
US 190 at LA 21 (east int.)	**Overall**	**C**	**25.3**	**C**	**29.9**	**C**	**26.2**	**C**	**28.6**	**C**	**24.3**	**C**	**25.3**	**F**	**101.0**	**F**	**80.2**	**F**	**93.9**	**E**	**70.7**	**F**	**83.9**
	Northbound	C	27.0	C	27.9	C	27.9	C	27.9	C	27.9	C	27.9	D	38.2	D	38.2	D	38.2	D	38.2	D	38.2
	Eastbound	D	38.5	D	49.0	D	39.9	D	46.4	C	34.4	D	37.4	F	209.7	F	167.4	F	201.3	F	139.5	F	156.8
	Westbound	B	14.5	B	17.8	B	14.3	B	15.3	B	13.4	B	14.7	E	72.6	D	51.8	E	59.3	D	50.3	E	72.5
LA 1083 at LA 1084	**Overall**	*	*	*	*									*	*								
	Northbound	A	7.3	A	7.3									A	7.3								
	Southbound	A	7.3	A	7.3									A	7.4								
	Eastbound	A	9.7	A	9.7									A	10.0								
	Westbound	A	9.5	A	9.5									A	9.7								
LA 1083 at LA 435	**Overall**	*	*	*	*									*	*								
	Southbound	B	10.5	B	10.7									B	11.7								
	Eastbound	A	7.9	A	8.0									A	8.2								
LA 435/LA 59 at LA 36**	**Overall**	**B**	**14.4**	**D**	**36.1**	**C**	**23.9**	**C**	**22.9**	**B**	**19.1**	**C**	**26.1**	**F**	**201.7**	**F**	**191.4**	**F**	**177.3**	**F**	**175.8**	**F**	**180.4**
	Northbound	C	17.1	C	22.1	E	58.3	C	20.8	B	15.0	C	19.8	D	30.3	D	31.3	C	25.8	C	17.9	C	21.8
	Southbound	B	9.5	B	10.9	B	10.0	B	9.5	B	9.4	B	10.5	F	80.5	C	19.1	D	45.5	D	41.8	E	50.6
	Eastbound	C	17.9	E	62.4	B	15.8	D	35.6	C	29.8	D	41.8	F	370.4	F	438.3	F	348.6	F	355.2	F	347.6
	Westbound	B	11.0	B	11.5	B	13.2	B	11.3	B	11.0	B	11.3	B	13.8	B	14.0	B	12.2	B	12.2	B	12.4
LA 36 at LA 59	**Overall**	*	*	*	*									*	*								
	Southbound	D	27.0	E	37.2									F	498.8								
	Eastbound	A	8.5	A	8.7									A	9.8								
LA 21 at LA 59	**Overall**	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Northbound	B	14.6	C	16.2	B	10.8	B	14.2	B	10.3	B	12.2	F	76.4	B	13.3	D	32.9	B	14.5	C	18.8
	Westbound	A	8.1	A	8.2	A	7.6	A	8.1	A	7.5	A	7.7	A	9.1	A	7.9	A	8.7	A	7.9	A	8.1
LA 59 at Harrison Ave.	**Overall**	**C**	**23.2**	**C**	**25.8**									**E**	**76.1**								
	Northbound	B	10.9	B	12.6									D	54.1								
	Southbound	C	31.5	D	36.0									D	35.9								
	Eastbound	C	34.1	D	36.6									F	146.3								

Note
* Overall LOS not available for two-way stop-controlled intersections.

** Roundabout analysis in SIDRA.

Table 13 (continued).
Intersections -
Level of Service and Capacity Analysis Results
PM Peak

Intersection	Direction	2010		2015 No Build		2015 Build								2035 No Build		2035 Build							
		Base Conditions		Future Conditions		Alternative B/O		Alternative J		Alternative P		Alternative Q		Future Conditions		Alternative B/O		Alternative J		Alternative P		Alternative Q	
		LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)	LOS	Delay (s/veh)
I-12 at LA 59 (WB)	**Overall**	**B**	**15.5**	**B**	**14.3**	**B**	**13.6**	**B**	**14.0**	**B**	**12.7**	**B**	**14.7**	**C**	**30.1**	**C**	**21.2**	**C**	**27.4**	**C**	**23.7**	**C**	**29.8**
	Northbound	A	9.7	A	7.9	A	7.1	A	7.5	A	7.1	A	7.6	C	30.7	B	17.5	C	26.8	C	23.1	C	27.2
	Southbound	B	11.7	B	12.1	B	11.5	B	11.9	B	11.6	B	11.9	B	15.5	B	13.2	B	14.7	B	14.1	B	14.7
	Westbound	D	37.3	D	35.8	C	34.2	D	35.2	C	32.4	D	36.4	E	62.8	D	46.6	E	56.2	D	47.0	E	66.6
I-12 at LA 59 (EB)	**Overall**	**C**	**31.0**	**D**	**36.7**	**C**	**31.9**	**C**	**29.8**	**C**	**25.5**	**D**	**36.9**	**F**	**94.8**	**F**	**81.9**	**F**	**82.5**	**E**	**73.7**	**F**	**95.1**
	Northbound	B	11.1	B	10.6	B	10.2	B	10.6	B	10.6	B	10.6	B	11.7	B	11.1	B	11.7	B	11.8	B	11.8
	Southbound	A	6.1	A	6.0	A	5.4	A	5.9	A	5.8	A	5.9	B	11.3	A	7.2	B	10.3	A	9.6	B	10.6
	Eastbound	E	75.7	F	93.0	E	74.1	E	74.1	E	60.2	F	93.0	F	258.4	F	206.0	F	224.3	F	199.2	F	258.4
I-12 at LA 1088 (WB)	**Overall**			*	*	*	*			*	*	*	*	*	*	B	14.4			**B**	**15.5**	*	*
	Northbound			A	7.8	A	8.6			A	8.7	A	7.8	A	8.2	A	7.6			B	10.0	A	8.0
	Southbound															B	18.8			B	19.5		
	Westbound			B	12.3	B	13.7			B	14.7	B	12.8	C	17.3	C	24.6			C	23.3	D	25.8
I-12 at LA 1088 (EB)	**Overall**			*	*	*	*			**B**	**18.1**	*	*	*	*	**B**	**17.9**			**C**	**20.0**	*	*
	Northbound									C	23.6					C	22.0			C	24.8		
	Southbound			A	7.9	A	8.4			B	14.5	A	7.8	A	8.3	A	9.6			B	13.8	A	8.1
	Eastbound			A	10.0	C	23.1			B	18.6	A	9.8	B	11.1	C	24.6			C	22.8	B	10.9
I-12 at LA 434 (WB)	**Overall**	*	*	*	*	*	*			*	*	*	*	*	*	**B**	**17.8**			**B**	**16.8**	**C**	**18.4**
	Northbound	A	8.1	A	8.2	A	8.0			A	8.1	A	8.2	A	8.5	A	9.3			B	10.2	B	12.8
	Southbound															B	19.8			B	19.1	C	23.5
	Westbound	C	21.5	D	27.7	C	23.9			C	24.6	D	30.4	F	80.1	C	21.2			B	18.9	B	19.1
I-12 at LA 434 (EB)	**Overall**	*	*	*	*	*	*			*	*	**B**	**18.6**	*	*	**B**	**18.9**			**B**	**19.2**	**C**	**29.9**
	Northbound											B	18.8			C	21.7			C	21.7	C	21.9
	Southbound	A	8.0	A	8.1	A	8.0			A	8.1	B	10.8	A	8.4	B	12.9			B	14.0	B	12.1
	Eastbound	D	33.3	F	50.6	E	40.4			E	37.0	C	24.7	F	200.4	C	24.4			C	24.5	D	47.1
I-12 at Airport Rd. (WB)	**Overall**	**F**	**171.2**	**F**	**188.0**			**C**	**28.0**					**F**	**266.2**			**D**	**35.8**				
	Northbound	A	7.0	A	7.2			B	16.6					A	8.3			B	17.7				
	Southbound	B	16.2	B	16.4			C	31.3					B	17.4			C	28.6				
	Westbound	F	359.5	F	396.2			C	32.7					F	565.9			D	52.7				
I-12 at Airport Rd. (EB)	**Overall**	**C**	**29.7**	**C**	**33.9**			**C**	**25.5**					**E**	**64.0**			**C**	**32.0**				
	Northbound	D	43.7	D	52.3			C	32.9					F	120.9			D	45.2				
	Southbound	B	12.5	B	13.2			B	17.6					B	17.5			B	18.9				
	Eastbound	E	59.8	E	68.2			C	32.8					F	116.8			D	42.5				
LA 36 at LA 1088	**Overall**	*	*	*	*									*	*								
	Northbound	A	10.0	B	13.4									D	25.4								
	Westbound	A	7.7	A	8.1									A	8.7								
LA 36 at LA 434	**Overall**	*	*	*	*									*	*								
	Northbound	B	10.5	B	11.6									B	12.9								
	Westbound	A	7.8	A	8.0									A	8.2								
LA 36 at LA 41	**Overall**	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Northbound	A	8.1	A	8.2	A	8.1	A	7.7	A	7.8	A	8.5	A	8.7	A	8.6	A	8.0	A	8.2	A	9.3
	Eastbound	B	14.7	C	16.0	C	15.3	B	11.7	B	12.2	C	24.9	E	42.2	D	32.9	C	15.6	C	17.4	F	194.7
LA 3241 at LA 21	**Overall**					*	*									**B**	**15.5**						
	Northbound					A	8.0									B	17.3						
	Southbound															B	17.5						
	Eastbound					C	19.8									B	12.6						
LA 3241 at LA 435	**Overall**					*	*	*	*	*	*	*	*			*	*	*	*	*	*	*	*
	Northbound					A	7.6	A	7.7	A	8.1	A	7.7			A	7.8	A	7.9	A	8.4	A	7.9
	Southbound					A	7.8	A	7.8	A	8.4	A	8.1			A	8.1	A	8	A	8.6	A	8.4
	Eastbound					B	14.3	A	9.5	B	14.9	B	11.0			C	22.0	A	10	C	17.4	B	11.8
	Westbound					C	16.8	B	10.1	C	16.1	B	13.4			D	33.1	B	10.9	C	20.1	C	15.6
LA 3241 at LA 36	**Overall**					*	*	*	*	**C**	**20.4**	*	*			**C**	**21.5**	**B**	**14.8**	**C**	**24.5**	*	*
	Northbound					A	8.2	A	8.0	C	24.2	A	7.5			B	19.9	B	11.7	C	30.6	A	7.6
	Southbound					A	7.6	A	7.9	B	19.7	A	7.9			C	33.6	B	11.0	C	20.2	A	8.2
	Eastbound					D	30.8	D	28.3	B	17.0	C	18.3			B	16.7	B	20.0	C	20.8	D	25.5
	Westbound					C	17.9	C	22.2	B	15.5	C	22.2			C	20.6	B	18.1	B	17.4	D	26.5
LA 3241 at LA 1088	**Overall**					*	*			*	*					*	*			*	*		
	Southbound					A	8.0			A	9.3					A	8.8			A	9.9		
	Westbound					B	14.6			C	17.2					D	32.8			C	20.1		
LA 3241 at LA 434	**Overall**											*	*									*	*
	Northbound											A	8.3									A	8.9
	Eastbound											B	10.7									B	12.0

Note
* Overall LOS not available for two-way stop-controlled intersections.

** Roundabout analysis in SIDRA.

Without any geometric or operational improvements proposed, the expected conditions at the LA 21 and LA 36 intersection and at the LA 59 interchange improve most significantly with Alternatives B/O and P due to the significant diversion of traffic from LA 21 and LA 59 that is expected. This is a result of these Alternatives providing access to the western portion of the study area. Alternatives B/O and P are also expected to decrease delays at the LA 434 interchange without requiring improvements to the intersections by re-routing trips to the LA 1088 interchange.

Alternative Q is expected to improve delay conditions at the LA 434 interchange, but mainly due to improvements required to handle the additional demand. Similarly, the improvements predicted by Alternative J at the Airport Road interchange are due to the extensive improvements proposed.

Other Considerations

Roundabouts were considered at the following intersections:

- Alternative B/O at LA 21
- Alternative J at LA 36

According to Engineering Directives and Standards Manual (EDSM) VI.1.1.5, justification and approval for installing a roundabout require that a study be conducted in which "comprehensive investigation and report of traffic conditions and physical characteristics shall be made of the location". Initial capacity analyses with our 2035 critical peak volumes for the roundabouts are provided in the Appendix.

Towards the end of this study, on January 31, 2011, the *I-12 @ Airport Rd Single Point Urban Interchange Stage 0 Feasibility Study* (Buchart Horn, Inc., January 2011) was provided by RPC. An initial capacity analysis for the signalized approaches of the SPUI concept with our 2035 critical peak volumes for Alternative J is provided in the Appendix. Although not shown in Tables 12 and 13, the analysis indicated similar LOS compared to the analyzed recommended intersection geometry and control for Alternative J at the I-12 eastbound and westbound ramps.

CONCLUSIONS

This report summarized the methodology and findings of a traffic study to assess the LA 3241 project Alternatives from I-12 to Bush, Louisiana, as part of the Environmental Impact Statement for the project.

The traffic related needs for the proposed LA 3241 alignment were identified by LADOTD as follows:

1. Divert traffic within the study area onto LA 3241
2. Free capacity for local trips on existing routes
3. Reduce congestion
4. Provide travel time savings

The traffic analysis conducted in this study provided an estimation of which of the four practicable Alternatives are expected to meet these needs and to what degree:

- Alternative B/O is expected to meet all four of the identified traffic related needs for a new roadway.
- Alternative P is expected to meet all four of the identified traffic related needs for a new roadway.
- Alternative J is expected to meet three of four of the identified traffic related needs for a new roadway.
- Alternative Q is expected to meet three of the four identified traffic related needs for a new roadway.

Alternatives B/O and P are expected to provide greater total vehicle travel time savings than Alternatives J and Q. The areas where the most traffic relief is expected from Alternatives B/O and P are those with the greatest expected congestion. Alternatives J and Q are also expected to provide improvements in LOS and/or delay on the congested LA 21 and LA 59 corridors; however, the reductions in delay are less than that provided by Alternatives B/O and P.

Improvements may be needed on existing intersections not on the Alternatives whether or not an Alternative route is provided. While the Alternatives are expected to provide improvements in LOS and/or delay on the congested LA 21 and LA 59 corridors, unacceptable Levels of Service are still expected at many of the intersections in the design year 2035.

The following provides quantifiable results, where applicable, for each Alternative.

Alternative B/O

Alternative B/O is expected to divert traffic mainly from the southwest portion of LA 21 and from LA 59 due to its location within the study area and connection points to the existing street network.

The SELA transportation model estimated that in the design year, Alternative B/O will divert approximately 35% of the daily traffic on LA 21 southwest of its connection, 20% of the daily traffic on LA 59, and 15% of the daily traffic on LA 41 to the new roadway. The 2035 ADTs on these roadways were estimated to be 16,300 vehicles per day (vpd) on LA 21, 25,100 vpd on LA 59, and 5,400 vpd on LA 41, resulting in a rough estimation of 11,535 vpd diverted. Both of these routes were identified in the Existing and No Build analysis as capacity constraints. In fact, the areas where the most traffic relief is expected from Alternative B/O are those with the greatest expected congestion. The only exception is Airport Road which is not expected to be significantly impacted by Alternative B/O.

The travel time savings expected with Alternative B/O also applies in comparison to existing routes involving LA 21 and LA 59. The greatest savings in travel time is expected versus existing routes between Bush and the I-12 at US 190 and I-12 at LA 434 interchanges at 19.7 and 23.3 minutes per vehicle, respectively.

Improvements were identified at the LA 1088 interchange to accommodate the added traffic demand with an estimated cost of $500,000 (Fenstermaker) in addition to the cost of constructing the new alignment itself. In summary, Alternative B/O is expected to meet all four of the identified traffic related needs for a new roadway.

Alternative P

Alternative P is also expected to divert traffic mainly from LA 21 and from LA 59 due to its location within the study area and connection points to the existing street network.

The SELA transportation model estimated that in the design year, Alternative P will divert approximately 40% of the daily traffic on LA 21, 16% of the daily traffic on LA 59, and 46% of the daily traffic on LA 41 to the new roadway. The 2035 ADTs on these roadways were estimated to be 16,300 vpd on LA 21, 25,100 vpd on LA 59, and 5,400 vpd on LA 41, resulting in a rough estimation of 13,020 vpd diverted. Both of these routes were identified in the Existing and No Build analysis as capacity constraints. In fact, the routes with the most traffic relief expected from Alternative P include those with the greatest expected congestion. The only exception is Airport Road which is not expected to be significantly impacted by Alternative P.

The travel time savings expected with Alternative P also applies in comparison to existing routes involving LA 21 and LA 59. The greatest savings in travel time is expected versus existing routes between Bush and the I-12 at US 190 and I-12 at LA 434 interchanges at 20.0 and 23.6 minutes per vehicle, respectively.

Improvements were identified at the LA 434 interchange to accommodate the added traffic demand with an estimated cost of $600,000 (Fenstermaker) in addition to the cost of constructing the new alignment itself. In summary, Alternative P is expected to meet all four of the identified traffic related needs for a new roadway.

Alternative J

Alternative J is expected to divert traffic mainly from LA 41 with minor diversion of traffic from LA 21 and LA 59, due to its location within the study area and connection points to the existing street network. The majority of the traffic diverted to Alternative J will access I-12 via Airport Road, a corridor with documented congestion problems and existing capacity needs.

The SELA transportation model estimated that in the design year, Alternative J will divert approximately 75% of the daily traffic on LA 41, 16% of the daily traffic on LA 21, and 6% of the daily traffic on LA 59 to the new roadway. The 2035 ADTs on these roadways were estimated to be 5,400 vpd on LA 41, 16,300 vpd on LA 21, and 25,100 vpd on LA 59 resulting in a rough estimation of 8,170 vpd diverted. In the Existing and No Build analysis, only intersections inversely affected by the new alignment on LA 41 were identified as capacity constraints. Alternative J is expected to provide improvements in LOS and/or delay on the congested LA 21 and LA 59 corridors; however, the reductions in delay are less than that provided by Alternatives B/O and P. For example, Alternative J is expected to provide an approximate 33% reduction in delay for the LA 59 northbound approach in the AM peak at the intersection of LA 21 at LA 59, whereas Alternatives B/O and P are expected to provide approximately 74% and 81% in reductions, respectively.
In fact, the area where the most traffic relief is expected is where excess capacity exists on LA 41. However the LA 41 route is substandard due to sharp curves and a lack of proper super elevation and the speed is reduced where it traverses small towns. The congestion at Airport Road would be expected to worsen or require additional improvements to accommodate the both the existing needs and significant increase in traffic demand as a result of Alternative J.

The travel time savings expected with Alternative J applies in comparison to existing routes involving LA 41. The greatest savings in travel time is expected versus existing routes between Bush and the I-12 at US 11 and I-12 at LA 434 interchanges at 11.4 and 19.8 minutes per vehicle, respectively.

Improvements were identified at the Airport Road interchange to accommodate the added traffic demand with an estimated cost of $23,200,000 (Fenstermaker) in addition to the cost of constructing the new alignment itself; most of the improvements are required to relieve existing congestion. In summary, Alternative J is expected to meet three of four of the identified traffic related needs for a new roadway.

Alternative Q

Alternative Q is also expected to divert traffic mainly from LA 41 and also from both LA 21 and LA 59 due to its location within the study area and connection points to the existing street network.

The SELA transportation model estimated that in the design year, Alternative Q will divert approximately 70% of the daily traffic on LA 41, 18% of the daily traffic on LA 21, and 6% of the daily traffic on LA 59 to the new roadway. The 2035 ADTs on these roadways were estimated to be 5,400 vpd on LA 41, 16,300 vpd on LA 21, and 25,100 vpd on LA 59, resulting in a rough estimation of 8,220 vpd diverted. LA 41 was not identified as needing additional capacity, while both LA 21 and LA 59 were. The travel time savings expected with Alternative Q applies in comparison to the existing routes involving LA 41, LA 21 and LA 59. Alternative Q is expected to provide improvements in LOS and/or delay on the congested LA 21 and LA 59 corridors; however, the reductions in delay are less than that provided by Alternatives B/O and P. For example, Alternative Q is expected to provide an approximate 50% reduction in delay for the LA 59 northbound approach in the AM peak at the intersection of LA 21 at LA 59, whereas Alternatives B/O and P are expected to provide approximately 74% and 81% in reductions, respectively.

The greatest savings in travel time is expected versus existing routes between Bush and the I-12 at US 190 and I-12 at LA 434 interchanges at 13.2 and 26.6 minutes per vehicle, respectively. Improvements were identified at the LA 434 interchange to accommodate the added traffic demand with an estimated cost of $400,000 (Fenstermaker) in addition to the cost of constructing the new alignment itself. In summary, Alternative Q is expected to meet three of the four identified traffic related needs for a new roadway.

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