

Project Traffic Analysis Report *(Draft)*

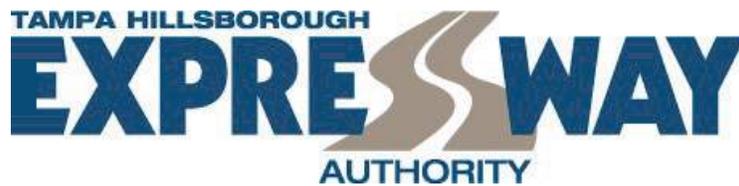
Eastbound Selmon Expressway (SR 618) at Downtown East/West Interchange

Hillsborough County, Florida

THEA Project Number: HI-0141-P-07

Prepared For:

Tampa Hillsborough Expressway Authority
1104 E Twiggs Street, #300, Tampa, FL 33602



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Executive Summary

The Tampa Hillsborough Expressway Authority (THEA) is conducting a Project Development and Environment (PD&E) Study to evaluate the need for improvements to the access of the Selmon Expressway and along Whiting Street within Downtown Tampa. To assess those needs, the study area of Channelside Drive, from Florida Avenue to Kennedy Boulevard, Kennedy Boulevard from N Jefferson Street to Channelside Drive, N Jefferson Street, from E Whiting Street to E Kennedy Boulevard, E Whiting Street from Florida Avenue to N Jefferson Street, Florida Avenue from Channelside Drive to E Whiting Street, and all roadway network within the bounds of those roads will serve as the project study area. The proposed improvements are as follows:

- Realignment of the eastbound Selmon Expressway off-ramp to Downtown West (Exit 6A) to only access Florida Avenue.
- Relocation of the eastbound Selmon Expressway off-ramp to Downtown East (Exit 6B) from its existing access at Channelside Drive to new access at Whiting Street.
- Realignment of the eastbound Selmon Expressway on-ramp at Jefferson Street to accommodate the new overhead off-ramp to Whiting Street.
- Through connection of Whiting Street from the Selmon Expressway off-ramp to Meridian Avenue.

This Project Traffic Analysis Report (PTAR) evaluates the proposed improvements by developing design volumes and analyzing traffic operations. Currently, the Selmon Expressway provides off-ramp access to Florida Avenue and Channelside Drive within the project limits, and Whiting Street is a two-lane, non-continuous roadway that terminates at Brush Street.

Existing Conditions

Table E.1 shows the results of the existing year (2019) intersection analysis during the AM and PM peak hours for the intersections directly adjacent to or reconfigured by the proposed improvements. A more detailed analysis of the entire study area can be found in Section 2.4.1 of this report. The results of the analysis indicate that all of the intersections currently meet the level of service (LOS) target D with the exception of the intersection of Whiting Street at Jefferson Street during the PM peak hour.

Table E.1: Existing Year (2019) Intersection Analysis

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
1	Channelside Drive and Florida Avenue	14.5	B	19.3	B
2	Channelside Drive and Morgan Street	39.9	D	25.5	C
13	Brorein Street and Florida Avenue	37.0	D	28.4	C
21	Whiting Street and Jefferson Street	18.7	B	60.6	E
22	Whiting Street and Nebraska Avenue*	9.5	A	9.0	A
24	Whiting Street and Meridian Avenue	36.6	D	14.0	B

*Only stop-controlled approaches have been summarized.

Table E.2 shows the results of the existing year (2019) queue analysis during the AM and PM peak hours for the Selmon Expressway off-ramps. A detailed queue analysis for the entire study area can be found in Section 2.4.2 of this report. The results of the analysis indicate that the queue spillback does not currently back up onto the Selmon Expressway mainline.

Table E.2: Existing Year (2019) Queue Analysis

ID	Ramp	Storage Length (ft)	Queue Length (ft)	
			AM Peak Hour	PM Peak Hour
2	Selmon Expressway Off-Ramp to Channelside Drive	350	310	148
12	Selmon Expressway Off-Ramp to Florida Avenue	500	104	60

Future Developments

The City of Tampa has experienced significant development and economic growth over the past 20 years, which is expected to continue with ongoing developments, such as Water Street Tampa, a 56-acre redevelopment project, and Port Tampa Bay, which is also undergoing a major redevelopment. As a result, the traffic demand is expected to increase by the design year (2046), which will require improvements to the Downtown roadway network, including improvements to the Selmon Expressway off-ramps.

No-Build Alternative

In order to quantify the benefit of the proposed improvements, a No-Build Alternative was assessed for the study area. The No-Build Alternative assumes that no changes will be made to the existing geometry or traffic control operations of the Downtown Tampa study area, with the exception of the new street connections constructed for the Water Street Tampa development, shown in Figure 1.2. Table E.3 shows the No-Build intersections directly adjacent to or reconfigured by the proposed improvements in the Build Alternative. A more detailed analysis of this entire study area can be found in Section 5.1.2 of this report. The results indicate that four of the six intersections are not anticipated to meet the LOS target D under the No-Build conditions in the design year (2046).

Table E.3: Design Year (2046) No-Build Alternative Intersection Analysis

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
1	Channelside Drive and Florida Avenue	22.6	C	50.4	D
2	Channelside Drive and Morgan Street	550.2	F	370.1	F
13	Brorein Street and Florida Avenue	138.9	F	106.7	F
21	Whiting Street and Jefferson Street	44.9	D	417.8	F
22	Whiting Street and Nebraska Avenue*	741.9	F	1699.2	F
24	Whiting Street and Meridian Avenue	17.7	B	35.8	D

*Only stop-controlled approaches have been summarized.

Table E.4 shows the results of the design year (2046) queue analysis during the AM and PM peak hours for the Selmon Expressway off-ramps in the No-Build Alternative. A more detailed analysis of the entire study area can be found in **Section 5.1.3** of this report. The results of the analysis indicate that the queue spillback of the Selmon Expressway off-ramp to Channelside Drive is expected to extend onto the Selmon Expressway mainline due to the delay at the intersection of Channelside Drive at Morgan Street. If left in its current configuration, the queue spillback is expected to cause significant congestion on the Selmon Expressway. Additionally, the results indicate that the queue spillback of the Selmon Expressway off-ramp to Florida Avenue is expected to extend onto the Selmon Expressway, further exacerbating the westbound congestion that is expected.

Table E.4: Design Year (2046) No-Build Alternative Queue Analysis

ID	Ramp	Storage Length (ft)	Queue Length (ft)	
			AM Peak Hour	PM Peak Hour
2	Selmon Expressway Off-Ramp to Channelside Drive	350	3076	2325
12	Selmon Expressway Off-Ramp to Florida Avenue	500	576	612

Build Alternative

Table E.5 shows the Build results for the design year (2046) intersection analysis during the AM and PM peak hours for the intersections directly adjacent to or reconfigured by the proposed improvements. A more detailed analysis of the entire study can be found in **Section 5.2.2** of this report. The results of the analysis indicate that five of the nine intersections are not anticipated to meet the LOS target D in the design year (2046). However, the delay at the intersection of Channelside Drive and Morgan Street indicates a significant improvement from the No-Build Alternative. Additionally, the relocated Selmon Expressway off-ramp to Whiting Street operations are expected to improve to LOS B in the AM peak hour and LOS C in the PM peak hour.

Table E.5: Design Year (2046) Alternative Intersection Analysis

ID	Intersection	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
1	Channelside Dr and Florida Ave	73.3	E	210.6	F
2	Channelside Dr and Morgan St	17.5	B	21.9	C
12	Selmon Expy Off-ramp and Florida Ave	49.0	D	27.5	C
13	Brorein St and Florida Ave	126.3	F	92.3	F
21	Whiting St and Jefferson St	37.3	D	57.6	E
B	Whiting St and Selmon Off-ramp	14.2	B	23.7	C
23	Whiting St and Brush St	72.6	E	138.2	F
C	Whiting St and Meridian Ave (North)	100.9	F	16.8	B
24	Whiting St and Meridian Ave (South)	33.3	C	24.4	C

Table E.6 shows the results of the design year (2046) queue analysis of the AM and PM peak hours for the Selmon Expressway off-ramps for the Build Alternative. A more detailed analysis of the entire study area can be found in **Section 5.2.3** of this report. The results of the analysis indicate that the queue spillback on the proposed ramp configurations is not expected to extend to the Selmon Expressway mainline. The

reconfiguration of the Selmon Expressway off-ramps is expected to mitigate traffic congestion on the Selmon Expressway that would be expected with the increased traffic demand in a No-Build Scenario by the design year.

Table E.6: Design Year (2046) Build Alternative Queue Analysis

ID	Ramp	Storage Length (ft)	Queue Length (ft)	
			AM Peak Hour	PM Peak Hour
12	Selmon Expressway Off-Ramp to Florida Avenue	1100	710	438
B	Selmon Expressway Off-Ramp to Whiting Street	1250	269	339

Conclusion

As a result of the economic growth and redevelopment within the City of Tampa, which is expected to continue, the traffic demand within Downtown Tampa and along the Selmon Expressway is anticipated to increase by the design year (2046), which will require improvements to the roadway network, including improvements to the Selmon Expressway off-ramps. The proposed improvements to the Selmon Expressway off-ramps are expected to mitigate traffic congestion on the Selmon Expressway that would be expected with the increased traffic demand on the existing ramp configuration by the design year. The relocation of the Selmon Expressway off-ramp from Channelside Drive to Whiting Street is expected to prevent queue spillback onto the mainline. Additionally, updating the Selmon Expressway off-ramps to operate under signal control with no right-turn on red will allow pedestrians to safely cross at the ramp terminal intersections. The connection of Whiting Street from Jefferson Street to Meridian Avenue and the pedestrian underpass at the location of the existing Channelside Drive off-ramp will improve network connectivity and route choice within the Downtown Tampa network.

Table of Contents

1.0	Introduction.....	1
1.1	Project Location.....	1
1.2	Project Background	3
1.3	Purpose & Need	4
1.4	Study Methodology.....	5
2.0	Existing Conditions	7
2.1	Data Collection.....	7
2.2	Roadway Characteristics.....	10
2.3	Existing Year (2019) Volume Development.....	20
2.3.1	Design Traffic Factors	20
2.3.2	Methodology.....	20
2.3.3	Sink/Sources	29
2.3.4	Existing Year (2019) Turning Movement Volumes	30
2.4	Existing Year (2019) Operational Analysis	39
2.4.1	Intersection Analysis	39
2.4.2	Queue Analysis.....	42
2.5	Historical Crash Data.....	46
2.6	Multimodal Accommodations	46
2.6.1	Pedestrians and Bicyclists.....	46
2.6.2	Transit	49
3.0	Study Alternatives.....	51
4.0	Development of Future Traffic	53
4.1	Travel Demand Model.....	53
4.2	Methodology for Development of Future Traffic	53
4.3	Growth Rates.....	54
4.4	Future Year AADT	54
4.5	Future Year Peak Hour Volumes	54
5.0	Alternatives Analysis	151
5.1	No-Build Alternative Operational Analysis.....	151

5.1.1	Lane Geometry.....	151
5.1.2	Intersection Analysis	160
5.1.3	Queue Analysis.....	167
5.2	Build Alternative Operational Analysis	175
5.2.1	Lane Geometry.....	175
5.2.2	Intersection Analysis	184
5.2.3	Queue Analysis.....	191
5.3	Safety Analysis.....	199
6.0	Conclusion	200

List of Tables

Table 2.1: Traffic Count Data Collection Efforts	7
Table 2.2: Turning Movement Count Growth.....	8
Table 2.3: Roadway Characteristics	10
Table 2.4: Recommended Design Traffic Factors.....	20
Table 2.5: Sink/Sources	29
Table 2.6: Existing Year (2019) Intersection Analysis.....	40
Table 2.7: Existing Year (2019) Queue Analysis	43
Table 2.8: Existing Year (2019) Pedestrian and Bicycle Movements.....	47
Table 5.1: Opening Year (2026) No-Build Alternative Intersection Analysis.....	161
Table 5.2: Interim Year (2036) No-Build Alternative Intersection Analysis	163
Table 5.3: Design Year (2046) No-Build Alternative Intersection Analysis.....	165
Table 5.4: Opening Year (2026) No-Build Alternative Queue Analysis	168
Table 5.5: Interim Year (2036) No-Build Alternative Queue Analysis.....	171
Table 5.6: Design Year (2046) No-Build Alternative Queue Analysis	173
Table 5.7: Opening Year (2026) Build Alternative Intersection Analysis	185
Table 5.8: Interim Year (2036) Build Alternative Intersection Analysis.....	187
Table 5.9: Design Year (2046) Build Alternative Intersection Analysis.....	189
Table 5.10: Opening Year (2026) Build Alternative Queue Analysis.....	192
Table 5.11: Interim Year (2036) Build Alternative Queue Analysis	195
Table 5.12: Design Year (2046) Build Alternative Queue Analysis.....	197

List of Figures

- Figure 1.1: Project Location Map 2
- Figure 1.2: Water Street Tampa Development Area..... 3
- Figure 1.3: Project Study Area of Influence..... 6
- Figure 2.1: Traffic Count Data Locations 9
- Figure 2.2: Existing (2019) Lane Geometry 12
- Figure 2.3: Existing Year (2019) AADT 21
- Figure 2.4: Sink/Source Locations..... 30
- Figure 2.5: Existing Year (2019) Turning Movement Volumes..... 31
- Figure 4.1: Opening Year (2026) No-Build Alternative AADTs 55
- Figure 4.2: Interim Year (2036) No-Build Alternative AADTs..... 63
- Figure 4.3: Design Year (2046) No-Build Alternative AADTs..... 71
- Figure 4.4: Opening Year (2026) Build Alternative AADTs 79
- Figure 4.5: Interim Year (2036) Build Alternative AADTs..... 87
- Figure 4.6: Design Year (2046) Build Alternative AADTs 95
- Figure 4.7: Opening Year (2026) No-Build Alternative Turning Movement Volumes..... 103
- Figure 4.8: Interim Year (2036) No-Build Alternative Turning Movement Volumes 111
- Figure 4.9: Design Year (2046) No-Build Alternative Turning Movement Volumes..... 119
- Figure 4.10: Opening Year (2026) Build Alternative Turning Movement Volumes 127
- Figure 4.11: Interim Year (2036) Build Alternative Turning Movement Volumes..... 135
- Figure 4.12: Design Year (2046) Build Alternative Turning Movement Volumes 143
- Figure 5.1: No-Build Alternative Geometry 152
- Figure 5.2: Build Alternative Geometry..... 176

Appendices

Appendix A: Traffic Methodology Statement

Appendix B: Field Collected Count Data

Appendix C: THEA Comprehensive Downtown Channelside Traffic Study Field Count Data

Appendix D: Volume Development Technical Memorandum

Appendix E: Signal Timing Plans

Appendix F: Existing Conditions Analysis

Appendix G: Safety Analysis Technical Memorandum

Appendix H: SPP Concepts

Appendix I: Preferred Alternative Concept Plan

Appendix J: No-Build Alternative Analysis

Appendix K: Build Alternative Analysis

Glossary of Terms

Term	Definition
AADT	Annual Average Daily Traffic
CARS	Crash Analysis Reporting System
CDMS	Crash Data Management System
CSX	Chessie-Seaboard Merger
DDHV	Directional Design Hour Volume
FDOT	Florida Department of Transportation
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
HART	Hillsborough Area Regional Transit Authority
HCM	Highway Capacity Manual
LOS	Level of Service
MPH	Miles per Hour
NCHRP	National Cooperative Highway Research Program
OD	Origin-Destination
PD&E	Project Development and Environment
PSTA	Pinellas Suncoast Transit Authority
PTAR	Project Traffic Analysis Report
SIS	Strategic Intermodal System
SPP	Strategic Property Partners
TBRPM	Tampa Bay Regional Planning Model
THEA	Tampa Hillsborough Expressway Authority
TMC	Turning Movement Count

1.0 Introduction

1.1 Project Location

The Tampa Hillsborough Expressway Authority (THEA) is conducting a Project Development and Environment (PD&E) Study to evaluate the need for improvements to the access of the Selmon Expressway and along Whiting Street within Downtown Tampa. The improvements seek to relieve local traffic congestion while improving access within the existing roadway network. The project study area is shown in **Figure 1.1** and is bounded by Florida Avenue from Channelside Drive to Whiting Street, east on Whiting Street from Florida Avenue to Jefferson Street, north on Jefferson Street from Whiting Street to Kennedy Boulevard, east on Kennedy Boulevard from Jefferson Street to Channelside Drive, and south/west along Channelside Drive from Kennedy Boulevard to Florida Avenue.

The Selmon Expressway is a tolled, limited access facility that is part of the Florida Department of Transportation's (FDOT's) Strategic Intermodal System (SIS) and plays a major role in the Tampa Bay area's economy and mobility. Operating east-west within the City of Tampa, it serves a key role in the movement of people, freight, and goods in a safe and effective manner between its western terminus at Gandy Boulevard (US 92/SR 600) and its eastern terminus at I-75 and Brandon Parkway/Town Center Boulevard. The Selmon Expressway and Downtown East/West interchange serve as a major access point for commuter traffic to and from Downtown Tampa. The Selmon Expressway within the study area currently transitions from a six-lane, to a four-lane, then back to a six-lane urban principal arterial expressway with a posted speed limit of 55 miles per hour (mph).

This Project Traffic Analysis Report (PTAR) documents the detailed intersection and queue analyses of the No-Build and Build alternatives to evaluate the impacts of the anticipated increase in traffic demand within the study area.

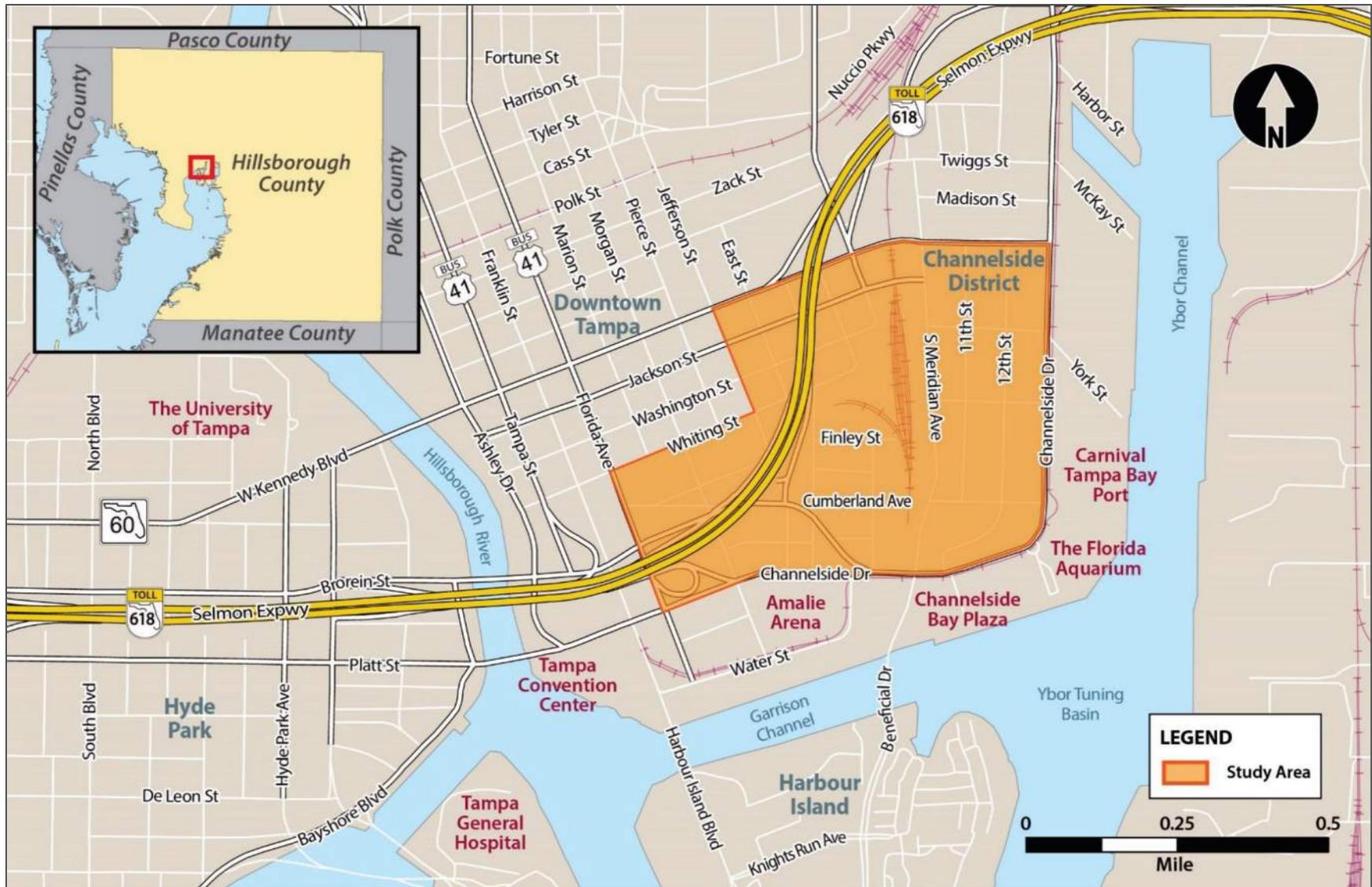


Figure 1.1: Project Location Map

1.2 Project Background

Downtown Tampa has experienced an enormous amount of development and redevelopment over the past 20 years. Office, commercial, and residential development, along with attractions like the Tampa Riverwalk, have made the southern portion of Downtown Tampa a desired area for recreation, entertainment, business, and residential properties. Along with these attractions, mobility needs have also grown, with a desire to provide safe mobility choices for the area.

Within the study area is Water Street Tampa, a 56-acre redevelopment project. Water Street Tampa will construct up to 9 million square feet of mixed-use development that will include residential buildings, office buildings, and hotels, as well as retail spaces. The Water Street Tampa development area is shown in **Figure 1.2**. Construction of this development has already begun, with an expected completion by 2027. The increase in traffic from this development has been considered in the volume development, as well as the analysis, for this PTAR.



Figure 1.2: Water Street Tampa Development Area

Additionally, Port Tampa Bay, which is also undergoing a major redevelopment as part of the Port Tampa Bay Master Plan, is located just east of the study area along Channelside Drive. Within the Port Tampa Bay Master Plan, the Channelside Master Plan includes increasing the Port's attraction and maximizing capacity for all cruise vessels, while integrating it with the redevelopment of the Channel District and

evaluating longer-term solutions to serve the new generation cruise fleet. The Channelside Master Plan also includes creating a community with a working waterfront integrated with residential, commercial, and retail uses. Future traffic from this major redevelopment project was also considered in the volume development, as well as the analysis, for this PTAR.

1.3 Purpose & Need

The purpose of this project is to provide a direct connection of Whiting Street to North Meridian Avenue to improve traffic flow and safety for all transportation modes, increase capacity on the adjacent street network, and offer additional connections within the street network. The project will also reconfigure the on-ramp to the Selmon Expressway at Jefferson Street and the off-ramps at Florida Avenue and Channelside Drive to provide a direct connection from the Selmon Expressway to improve safety, traffic circulation and access to Whiting Street and North Meridian Avenue.

The need for the project is based on the following criteria:

SYSTEM LINKAGE

Based upon the Tampa Bay Regional Planning Model (TBRPM) Version 8.2, the existing roadway network will be over capacity by the 2045 design year. Additional network connectivity, such as the Whiting Street extension and ramp reconfigurations, are necessary to provide additional route choice and access to alleviate the congestion.

SAFETY

Safety and operational concerns with the Florida Avenue and Channelside Drive off-ramps include substandard radius and a free-flow merge movement onto Florida Avenue with a sidewalk/crosswalk conflict. The ramp termini onto Channelside Drive terminates into a 5-leg intersection at Channelside Drive and Morgan Street, which is a major pedestrian access point to the Amalie Arena. Six (6) years of data (2013-1018) were reviewed, and 14 crashes have occurred at this ramp. As the Water Street Project builds out to the east of the ramp system, the adverse impact of geometric issues and pedestrian conflicts are expected to be exacerbated. Also, the planned widening of the Selmon Expressway south of the Downtown ramps will alleviate congestion issues and result in higher speed, higher volume interactions at this ramp. As such, improving the ramp geometry, eliminating pedestrian conflicts, and redirecting Downtown East traffic beyond the Water Street District is critical to proactively address safety concerns as both the Selmon Expressway and Downtown Tampa continue to develop.

TRANSPORTATION DEMAND

Based upon the Tampa Bay Regional Planning Model (TBRPM) Version 8.2, Jefferson Street (39,000 AADT) and Kennedy Boulevard (AADT 34,000) are expected to reach their operational capacity by 2040. As the Water Street Project develops, the vehicle demand is expected to increase. The proposed connection of Whiting Street could carry up to 14,800 AADT, providing valuable route divergence and congestion relief to the parallel facilities.

1.4 Study Methodology

This PTAR documents the methodologies and procedures employed to develop demand traffic, develop design volumes, and analyze traffic operations for the Whiting Street PD&E Study. The analysis results will assist THEA and the City of Tampa in identifying optimal improvements that achieve desired traffic operations for access to and from the Selmon Expressway within Downtown Tampa and the surrounding area.

This PTAR has been prepared in accordance with the Traffic Methodology Statement submitted to THEA on January 5, 2021. A copy of the Traffic Methodology Statement is provided in **Appendix A**. The analysis years used in this project are as follows:

- Existing Year: 2019
- Opening Year: 2026
- Interim Year: 2036
- Design Year: 2046

The study area of influence and study intersections are illustrated in **Figure 1.3**. The intersections in the area from north of Jackson Street, with the exception of the Kennedy Boulevard at Channelside Drive intersection, have been analyzed for volume development purposes only, while the intersections in the area from south of Washington Street were analyzed for both volume development and traffic operational analysis.



Figure 1.3: Project Study Area of Influence

2.0 Existing Conditions

2.1 Data Collection

Traffic count data was collected for the Whiting Street study area for the development of existing year (2019) and future year traffic volumes. Intersection data collection occurred from May 2019 to February 2020 and included 48-hour tube counts, 72-hour tube counts, and 6-hour to 12-hour peak period turning movement counts (TMCs). While supplemental data was required and collected in early 2020, it was assumed that travel patterns would have only minor differences when compared to the 2019 data set. Therefore, all field data collected for this effort will represent a 2019 existing condition. A list of study date ranges for the traffic count data for this study is summarized in **Table 2.1**.

Table 2.1: Traffic Count Data Collection Efforts

Data Collection Date	Count Type	Analysis Hours
5/21/2019	6-Hour TMC	6:30 AM to 9:30 AM, 4:00 PM to 7:00 PM
9/11/2019	6-Hour TMC	6:30 AM to 9:30 AM, 3:45 PM to 6:45 PM
9/17/2019	6-Hour TMC	6:30 AM to 9:30 AM, 3:45 PM to 6:45 PM
9/24/2019	6-Hour TMC	6:30 AM to 9:30 AM, 3:45 PM to 6:45 PM
12/10/2019	8-Hour TMC	7:00 AM to 10:00 AM, 11:00 AM to 1:00 PM, 3:00 PM to 6:00 PM
1/21/2020	12-Hour TMC	6:00 AM to 6:00 PM
5/14/2019 to 5/15/2019	48-hour	12:00 AM to 12:00 AM (next day)
9/10/2019 to 9/12/2019	72-hour	12:00 AM to 12:00 AM (next day)
9/17/2019 to 9/19/2019	72-hour	12:00 AM to 12:00 AM (next day)
9/24/2019 to 9/26/2019	72-hour	12:00 AM to 12:00 AM (next day)
2/25/2020 to 2/27/2020	72-hour	12:00 AM to 12:00 AM (next day)

During the project, it was determined to include additional intersections along the Channelside Drive corridor. Due to the impacts of COVID-19 on the ability for the project team to collect field data, the *THEA Comprehensive Downtown Channelside Traffic Study* was utilized as a basis to expand the study area. The additional intersections included are as follows:

- Kennedy Boulevard at Channelside Drive
- Whiting Street at Channelside Drive
- Cumberland Avenue at Channelside Drive

The data collection effort for this *THEA Comprehensive Downtown Channelside Traffic Study* included data from 2014 and 2016 and was used to establish existing year 2016 AADTs and DDHVs for use in that study. These existing year 2016 intersection level DDHVs were grown to supplement the 2019 data for the remainder of the Whiting Street PD&E study area. This was conducted by observing areas where the 2016

and 2019 intersections overlapped between the two studies to create a weighted annual growth rate for both the AM and PM time periods. The calculations establishing an AM and PM time period growth rate of 4.9 percent and 1.9 percent, respectively, can be found in **Table 2.2**.

Table 2.2: Turning Movement Count Growth

Location	Time of Day	Total 2016 Entering Volume	Total 2019 Entering Volume	AGR
Channelside Drive at Meridian Avenue	AM	4,888	5,201	2.1%
Meridian Avenue at Kennedy Boulevard	AM	5,938	7,211	7.1%
Channelside Drive at Meridian Avenue	PM	4,061	4,282	1.8%
Meridian Avenue at Kennedy Boulevard	PM	4,639	4,918	2.0%
Total	AM	10,826	12,412	4.9%
Total	PM	8,700	9,200	1.9%

Due to collection limitations and construction within the study area, the volumes for the following intersections were estimated by a review of the imbalances between the intersection TMCs in each direction:

- Channelside Drive at Old Water Street
- Channelside Drive at 12th Street
- Washington Street at Channelside Drive
- Brorein Street at Nebraska Avenue
- Cumberland Avenue at Meridian Avenue
- Jackson Street and East Street

The field collected count data for this study and field collected data used to support the *THEA Comprehensive Downtown Channelside Traffic Study* can be found in **Appendix B** and **Appendix C**, respectively. **Figure 2.1** shows the cumulative locations of the traffic count data collection effort.

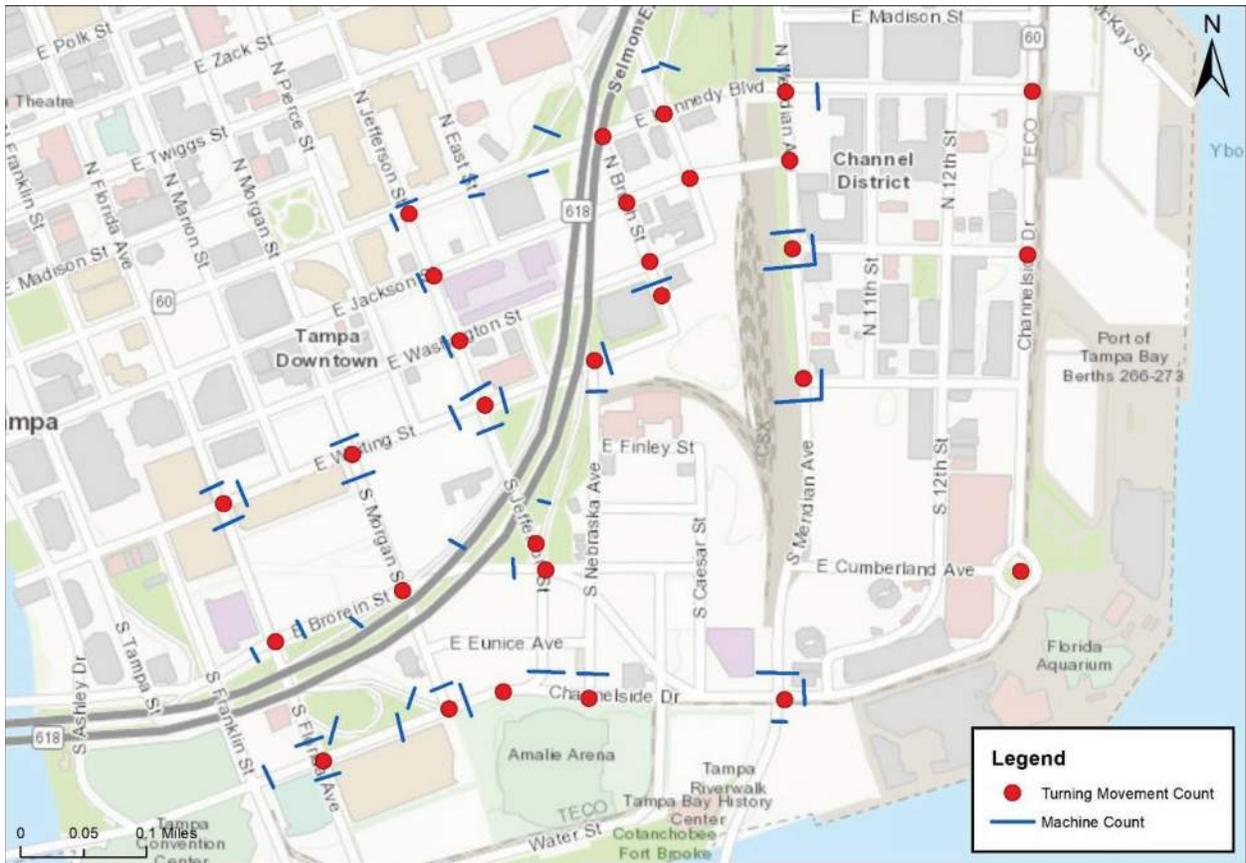


Figure 2.1: Traffic Count Data Locations

2.2 Roadway Characteristics

Table 2.3 describes the roadway characteristics of each roadway being analyzed in the study area. It should also be noted that the Selmon Expressway is a limited access, SIS corridor. Additionally, discontinuity in the Whiting Street corridor is currently present west of Meridian Avenue, due to the Chessie-Seaboard Merger (CSX) railway adjacent to the roadway.

Table 2.3: Roadway Characteristics

Roadway	From	To	Functional Classification	Length (mi)	Speed Limit (mph)	Typical Section	Directionality
<i>East-West Corridors</i>							
Selmon Expressway	Florida Avenue	Whiting Street	Principal Arterial - Freeway and Expressway URBAN	0.4	55	Four-Lane	Two-Way
Channelside Drive	Florida Avenue	Jefferson Street	Major Collector URBAN	0.2	40	Three-Lane	One-Way
	Jefferson Street	Nebraska Avenue	Major Collector URBAN	< 0.1	40	Two-Lane	One-Way
	Nebraska Avenue	Meridian Avenue	Major Collector URBAN	0.2	40	Four-Lane	Two-Way
	Meridian Avenue	Cumberland Avenue	Major Collector URBAN	0.3	40	Two-Lane	Two-Way
Brorein Street	Florida Avenue	Morgan Street	Major Collector URBAN	0.1	35	Four-Lane	One-Way
	Morgan Street	Jefferson Street	Major Collector URBAN	0.1	35	Three-Lane	One-Way
	Jefferson Street	Nebraska Avenue	Major Collector URBAN	< 0.1	35	Two-Lane	One-Way
Whiting Street	Florida Avenue	Jefferson Street	Minor Collector URBAN	0.2	*	Four-Lane	Two-Way
	Jefferson Street	Brush Street	Local Road	0.2	*	Two-Lane	Two-Way
Washington Street	Jefferson Street	Brush Street	Local Road	0.2	**	Two-Lane	Two-Way
	Brush Street	Nebraska Avenue	Local Road	< 0.1	*	Two-Lane	Two-Way
Jackson Street	Jefferson Street	Brush Street	Principal Arterial - Other URBAN	0.2	30	Three-Lane	One-Way
	Brush Street	Meridian Avenue	Principal Arterial - Other URBAN	0.1	30	Four-Lane	One-Way
Kennedy Boulevard	Jefferson Street	Selmon Off-Ramp	Principal Arterial - Other URBAN	0.1	30	Five-Lane	One-Way
	Selmon Off-Ramp	Meridian Avenue	Principal Arterial - Other URBAN	0.2	30	Three-Lane	One-Way

*There is no speed limit posted along this corridor. For analysis purposes, a speed limit of 25 miles per hour (mph) was assumed.

**This segment is in a school zone, with a speed limit of 15 mph.

Table 2.3 (continued): Roadway Characteristics

Roadway	From	To	Functional Classification	Length (mi)	Speed Limit (mph)	Typical Section	Directionality
<i>North-South Corridors</i>							
Florida Avenue	Channelside Drive	Whiting Street	Minor Arterial URBAN	0.2	30	Three-Lane	One-Way
Morgan Street	Channelside Drive	Whiting Street	Major Collector URBAN	0.2	30	Four-Lane	Two-Way
Jefferson Street	Channelside Drive	Brorein Street	Major Collector URBAN	0.1	30	Two-Lane	One-Way
	Brorein Street	Whiting Street	Major Collector URBAN	0.1	30	Four-Lane	Two-Way
	Whiting Street	Jackson Street	Major Collector URBAN	0.1	30**	Four-Lane	Two-Way
	Jackson Street	Kennedy Boulevard	Major Collector URBAN	< 0.1	30	Four-Lane	Two-Way
Nebraska Avenue	Channelside Drive	Brorein Street	Major Collector URBAN	0.1	35	Two-Lane	One-Way
	Brorein Street	Whiting Street	Local Road	0.2	*	Two-Lane	Two-Way
	Washington Street	Jackson Street	Local Road	< 0.1	*	Two-Lane	Two-Way
	Jackson Street	Kennedy Boulevard	Minor Arterial URBAN	< 0.1	*	Two-Lane	One-Way
	Kennedy Boulevard	Selmon On-Ramp	Minor Arterial URBAN	< 0.1	*	Three-Lane	Two-Way
Brush Street	Whiting Street	Washington Street	Local Road	< 0.1	*	Two-Lane	Two-Way
	Washington Street	Kennedy Boulevard	Local Road	0.1	*	Four-Lane	Two-Way
Meridian Avenue	Channelside Drive	Cumberland Avenue	Major Collector URBAN	0.1	40	Five-Lane	Two-Way
	Cumberland Avenue	Jackson Street	Principal Arterial - Other URBAN	0.3	40	Six-Lane	Two-Way
	Cumberland Avenue	Kennedy Boulevard	Major Collector URBAN	< 0.1	40	Six-Lane	Two-Way
Channelside Dr	Cumberland Avenue	Kennedy Boulevard	Major Collector URBAN	0.4	40	Four-Lane	Two-Way

*There is no speed limit posted along this corridor. For analysis purposes, a speed limit of 25 miles per hour (mph) was assumed.

**This segment is in a school zone, with a speed limit of 15 mph.

The existing (2019) lane geometry for each of the study intersections is shown in **Figure 2.2**. For consistency with the existing year (2019) volume development and operational analysis, 2019 lane geometry has been utilized for this PD&E Study as the existing lane geometry, though network and geometry changes have occurred since 2019. The intersections in the area from the north of Jackson Street, with the exception of the Kennedy Boulevard at Channelside Drive intersection, have been analyzed for volume development purposes only, while the intersections in the area from south of Washington Street were analyzed for both volume development and traffic operational analysis, as indicated in **Figure 1.3**.

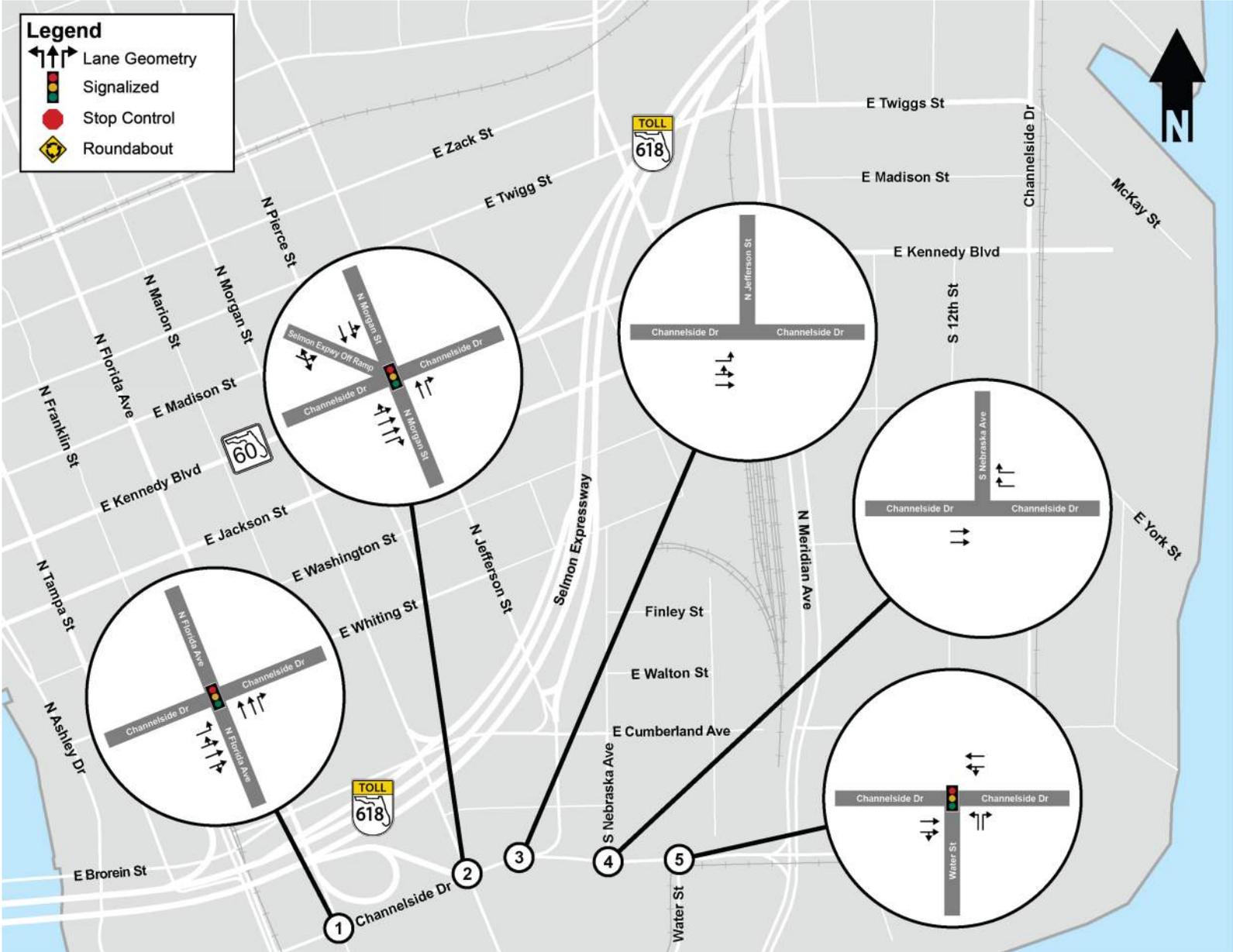


Figure 2.2a: Existing (2019) Lane Geometry

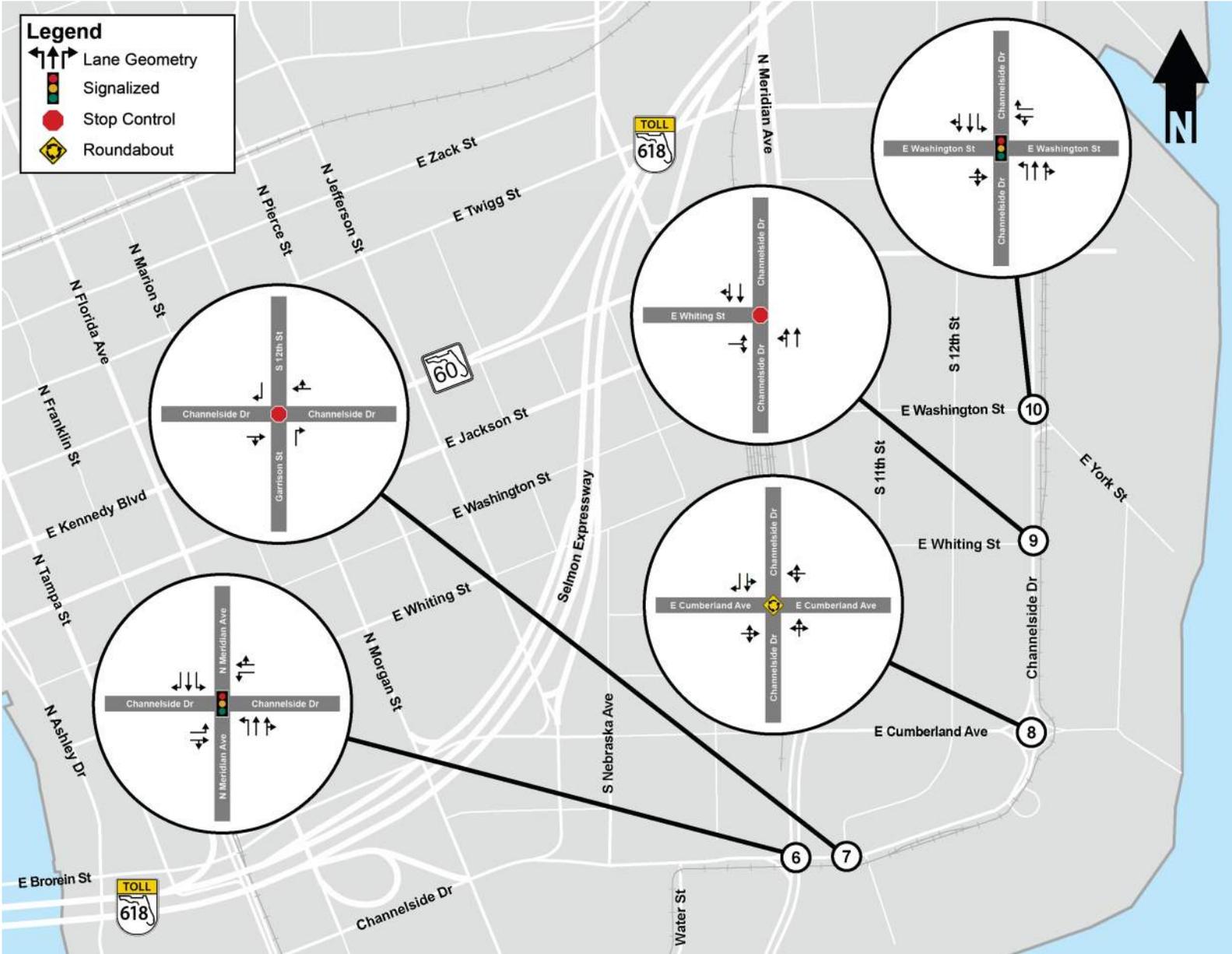


Figure 2.2b: Existing (2019) Lane Geometry

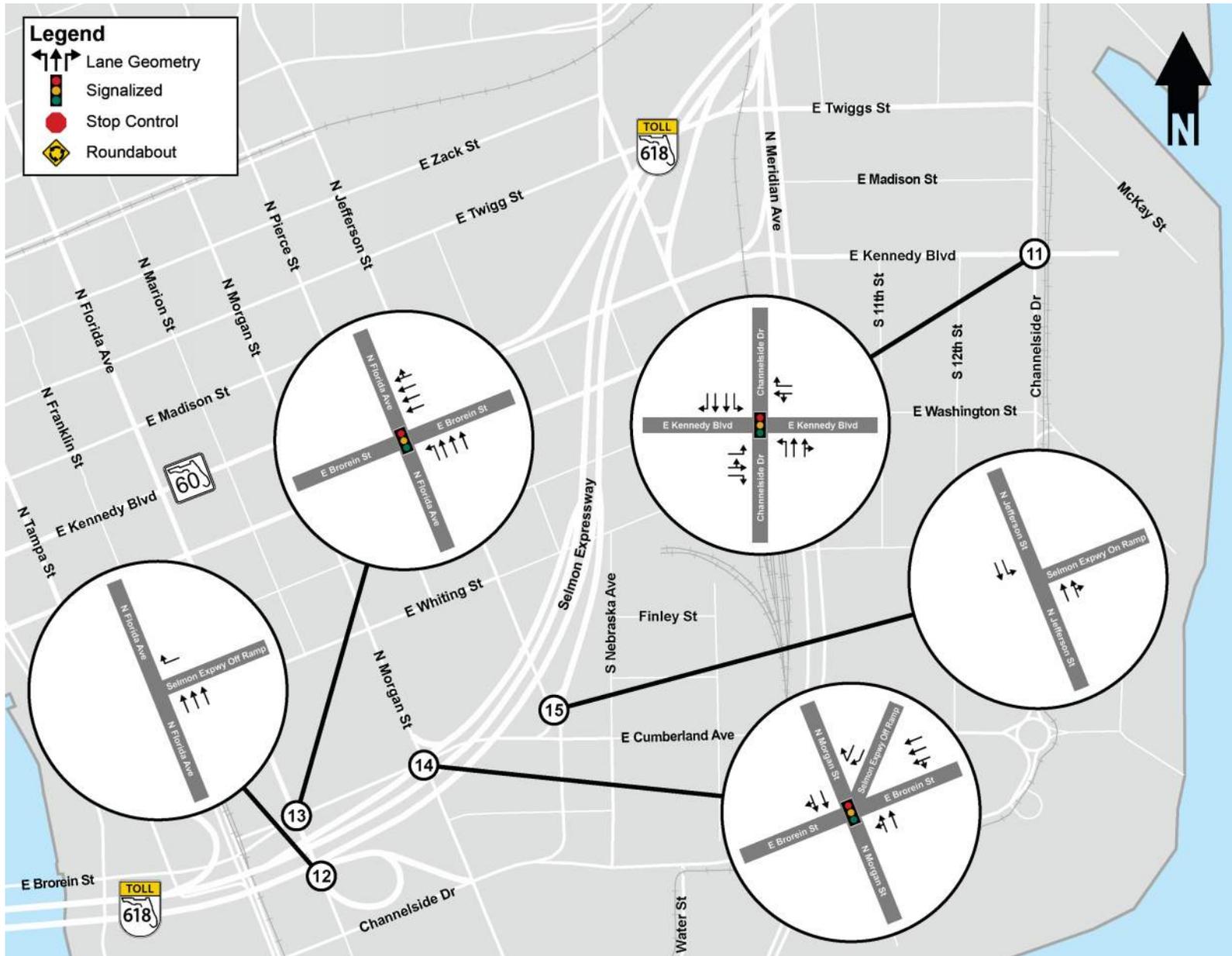


Figure 2.2c: Existing (2019) Lane Geometry

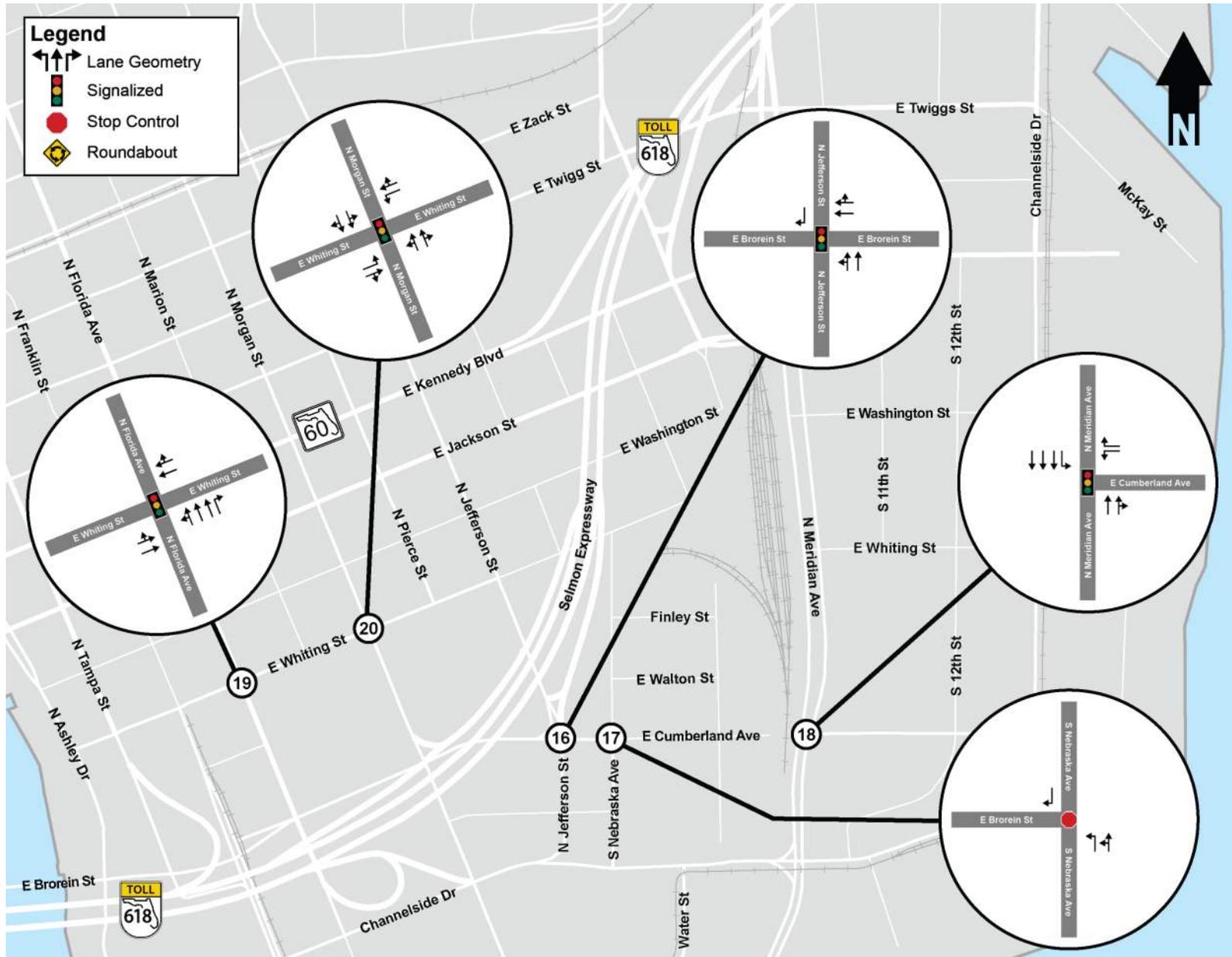


Figure 2.2d: Existing (2019) Lane Geometry



Figure 2.2e: Existing (2019) Lane Geometry

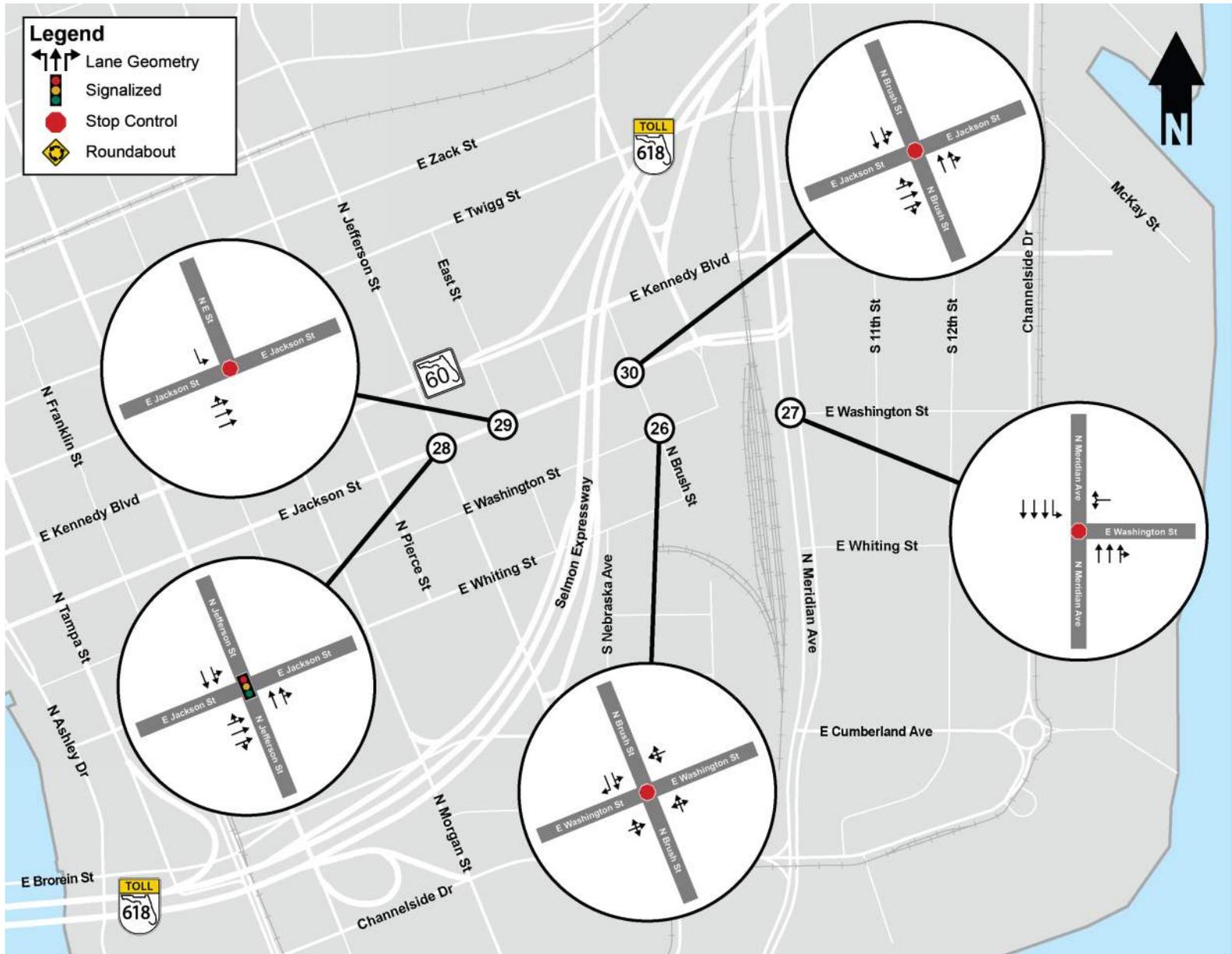


Figure 2.2f: Existing (2019) Lane Geometry

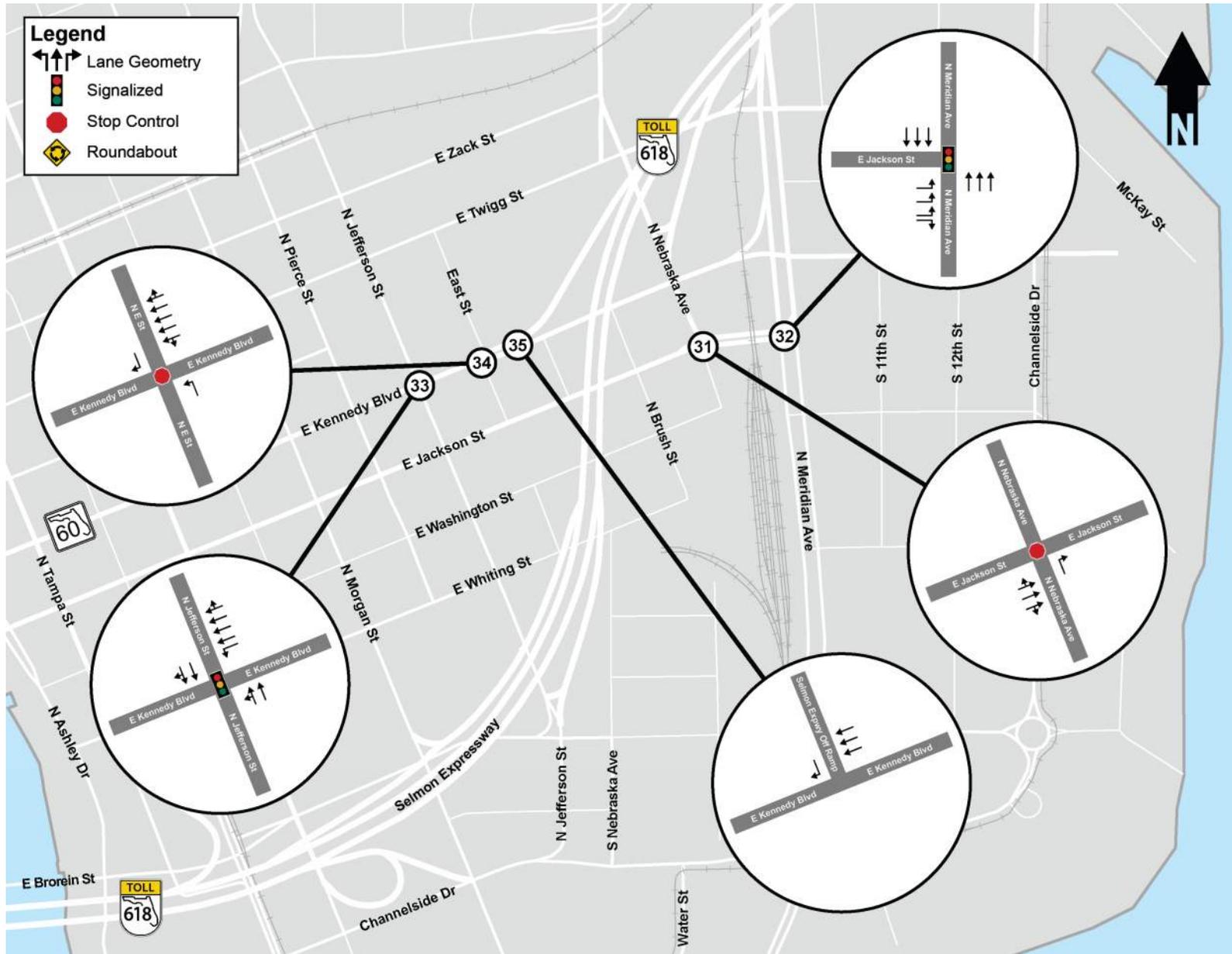


Figure 2.2g: Existing (2019) Lane Geometry

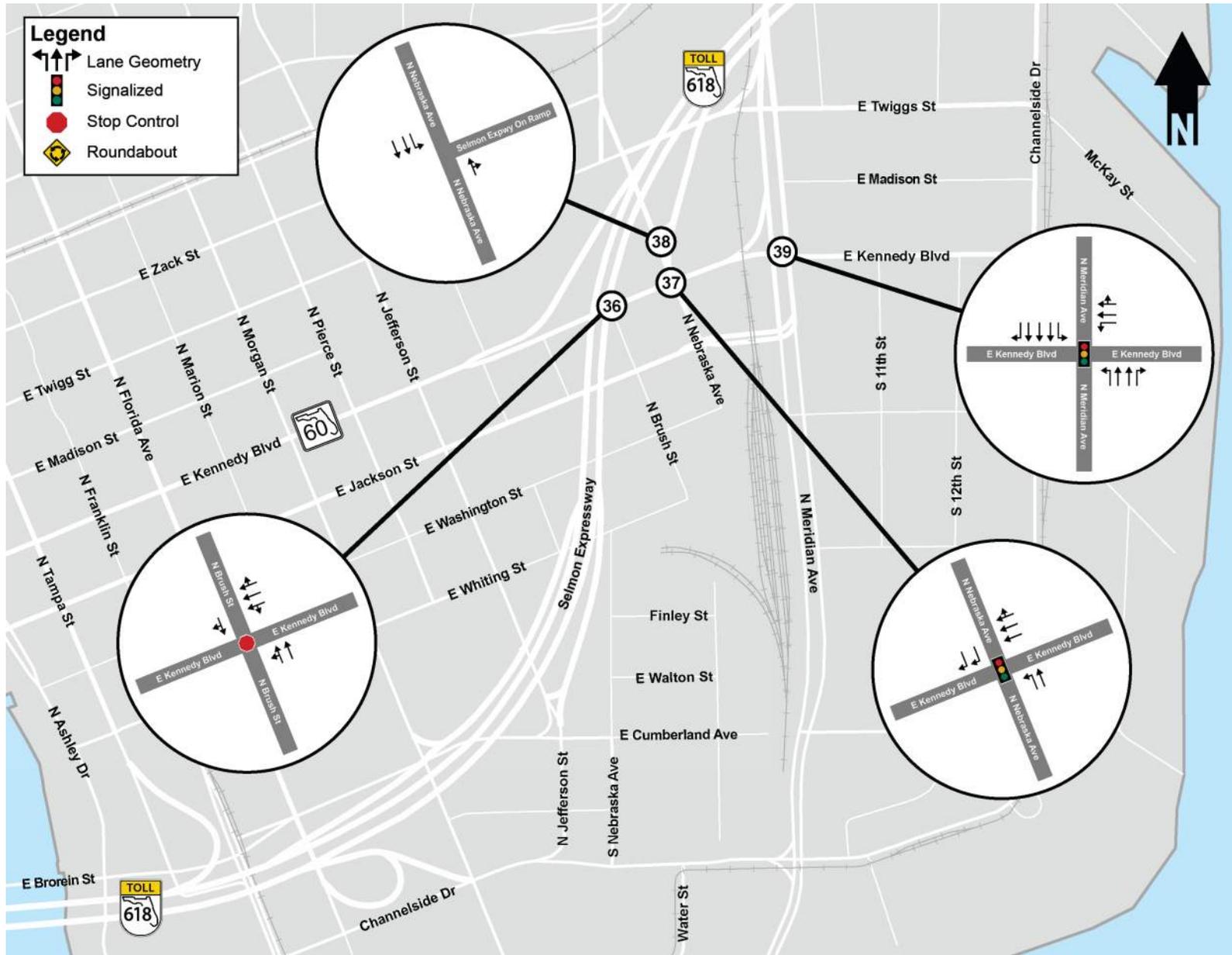


Figure 2.2h: Existing (2019) Lane Geometry

2.3 Existing Year (2019) Volume Development

The following sections summarize the development of the existing year (2019) traffic volumes for the Whiting Street PD&E Study.

2.3.1 Design Traffic Factors

Design traffic factors were determined for the Whiting Street PD&E Study based on the collected traffic data, historically observed factors, and forecasted factors from the TBRPM, Version 8.2 developed specifically for THEA, with base year 2015, interim year 2030, and forecast year 2040. The factors were developed based on the procedures outlined in the *FDOT Project Traffic Forecasting Handbook, 2019*. **Table 2.4** summarizes the recommended design traffic factors that were used in the development of the existing year (2019) design hour turning movement volumes. Further detail can be found in the Volume Development Technical Memorandum, in **Appendix D**.

Table 2.4: Recommended Design Traffic Factors

Factor	Value
Peak Hour Factor	AM: 0.47 to 0.99 (0.92 weighted average) PM: 0.78 to 0.96 (0.95 weighted average)
Peak-to-Daily Ratio (K Factor)	9.0%
Directional Factor	Selmon Expressway: 52.3% to 61.2% Surface Streets: 50.1% to 67.1%
Design Hour Truck Factor	Roadways: 2.0%

2.3.2 Methodology

The following summarizes the steps that were taken to convert the existing year (2019) annual average daily traffic (AADT) for the Whiting Street PD&E Study to existing year (2019) turning movement volumes. Further detail can be found in **Appendix D**.

- 1 Seasonal and axle correction factors were obtained from FDOT Florida Traffic Online (2019) and applied to the 48-hour and 72-hour counts to obtain existing year (2019) AADT for the surface streets. AADTs from FDOT Florida Traffic Online (2019) were directly used for the Selmon Expressway. **Figure 2.3** shows the existing year (2019) AADTs for the Whiting Street PD&E Study.
- 2 The recommended standard K-factor and D-factors, defined in **Table 2.4**, were then applied to the AADTs to determine directional design hour volumes (DDHVs) for each of the external nodes of the study area.
- 3 The external DDHVs were used as inputs to the TFlow Fuzzy methodology of Visum 17 to determine the existing year (2019) turning movement volumes. The existing turning movement percentages from the data collection effort were used as targets within the Visum network.

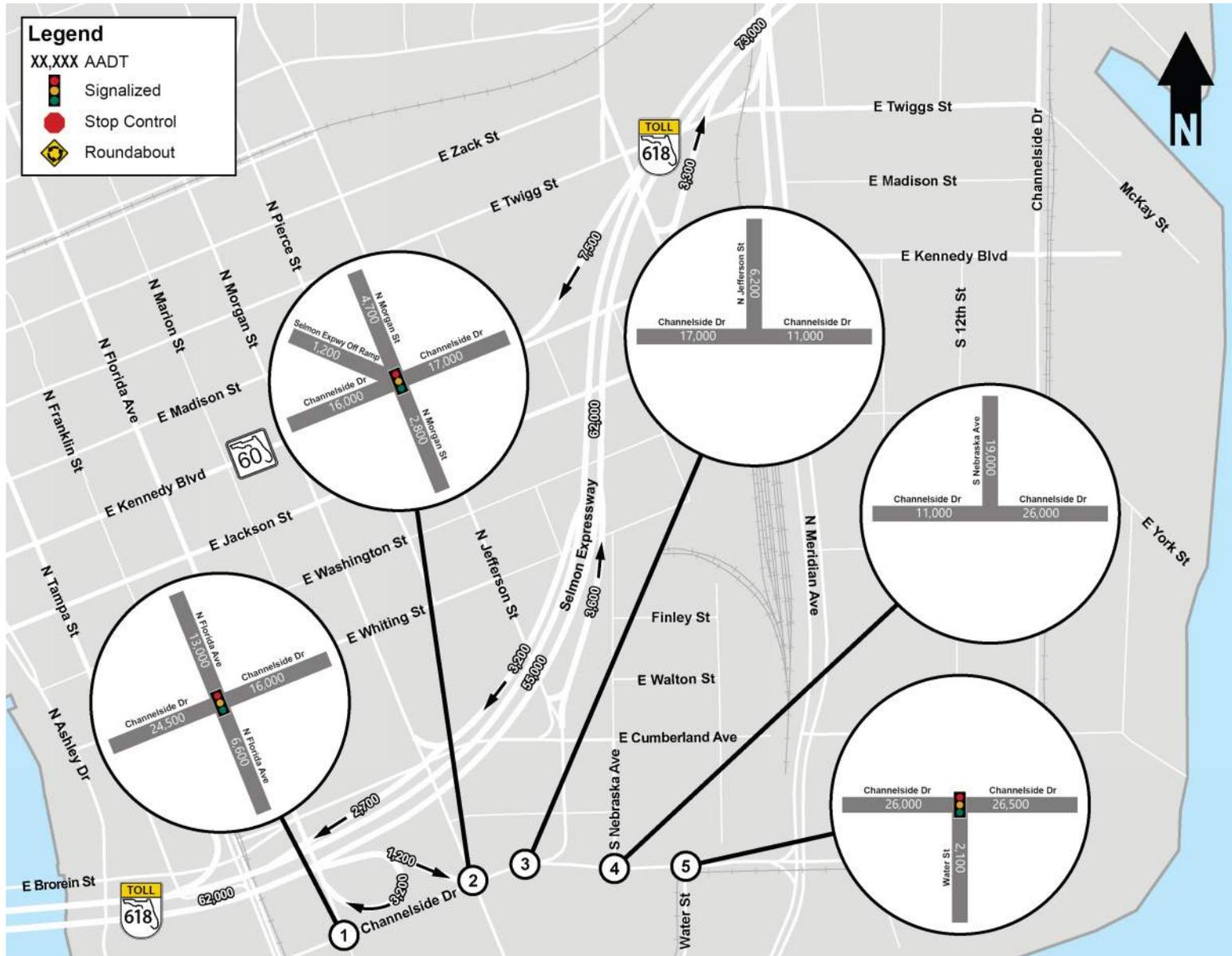


Figure 2.3a: Existing Year (2019) AADT

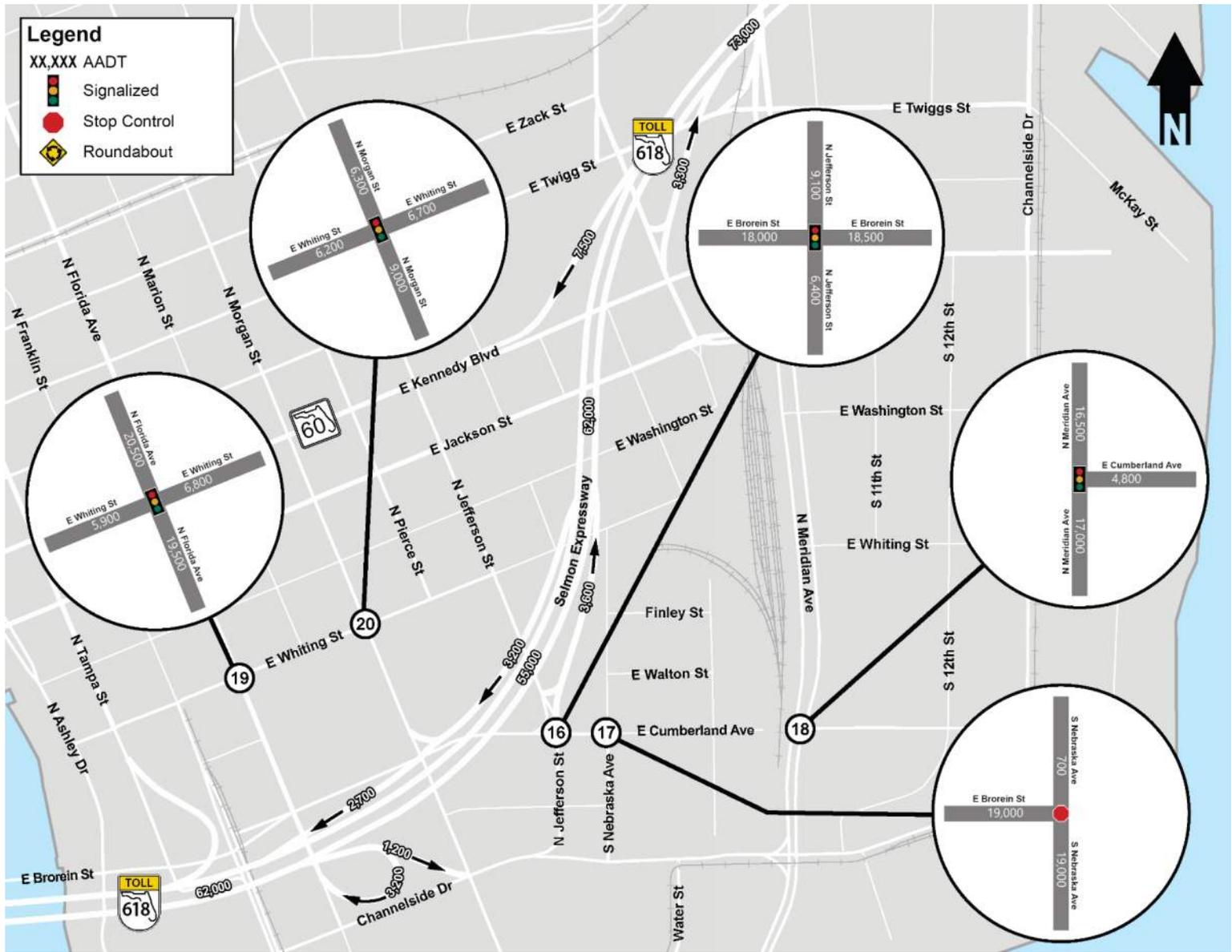


Figure 2.3d: Existing Year (2019) AADT

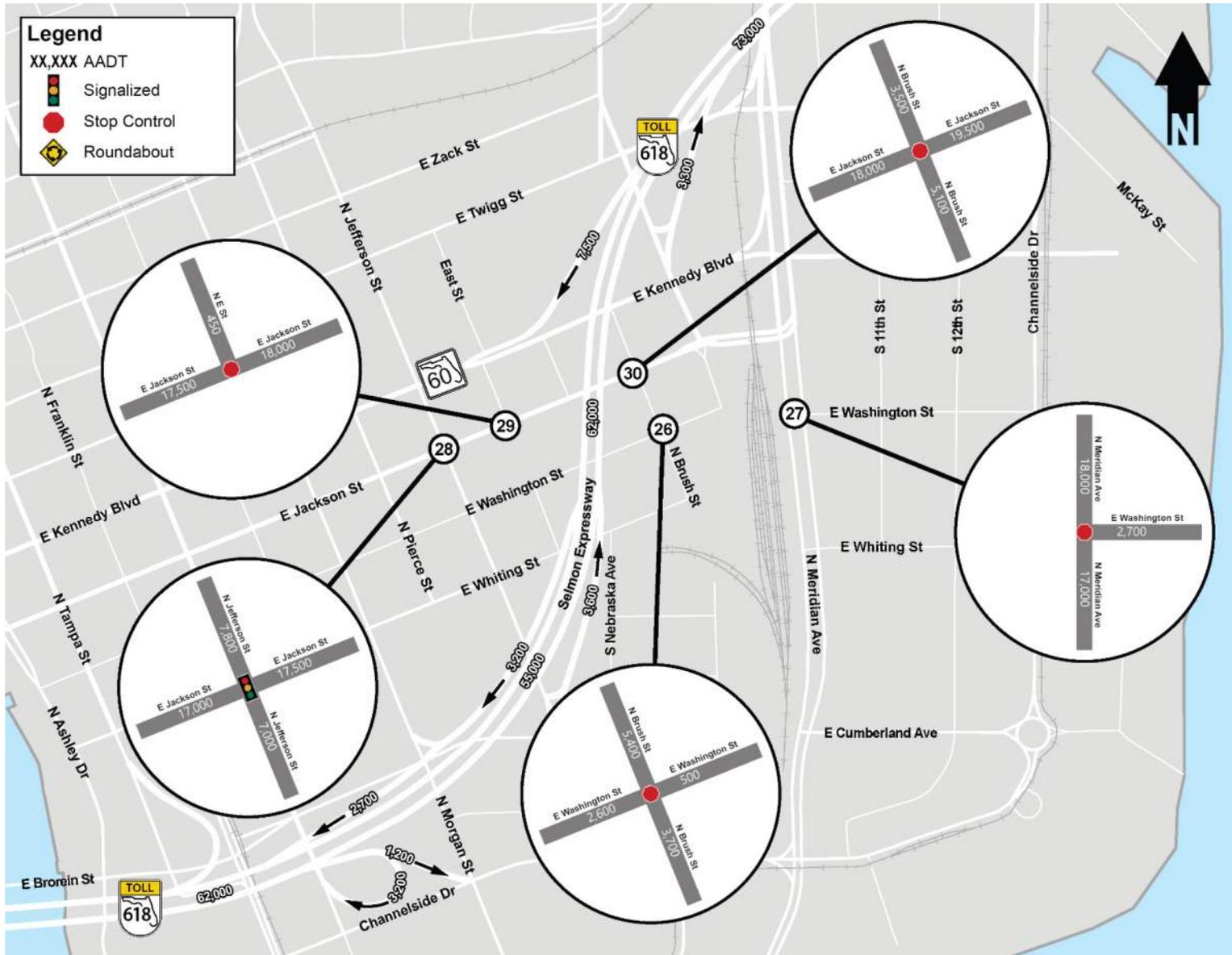


Figure 2.3f: Existing Year (2019) AADT

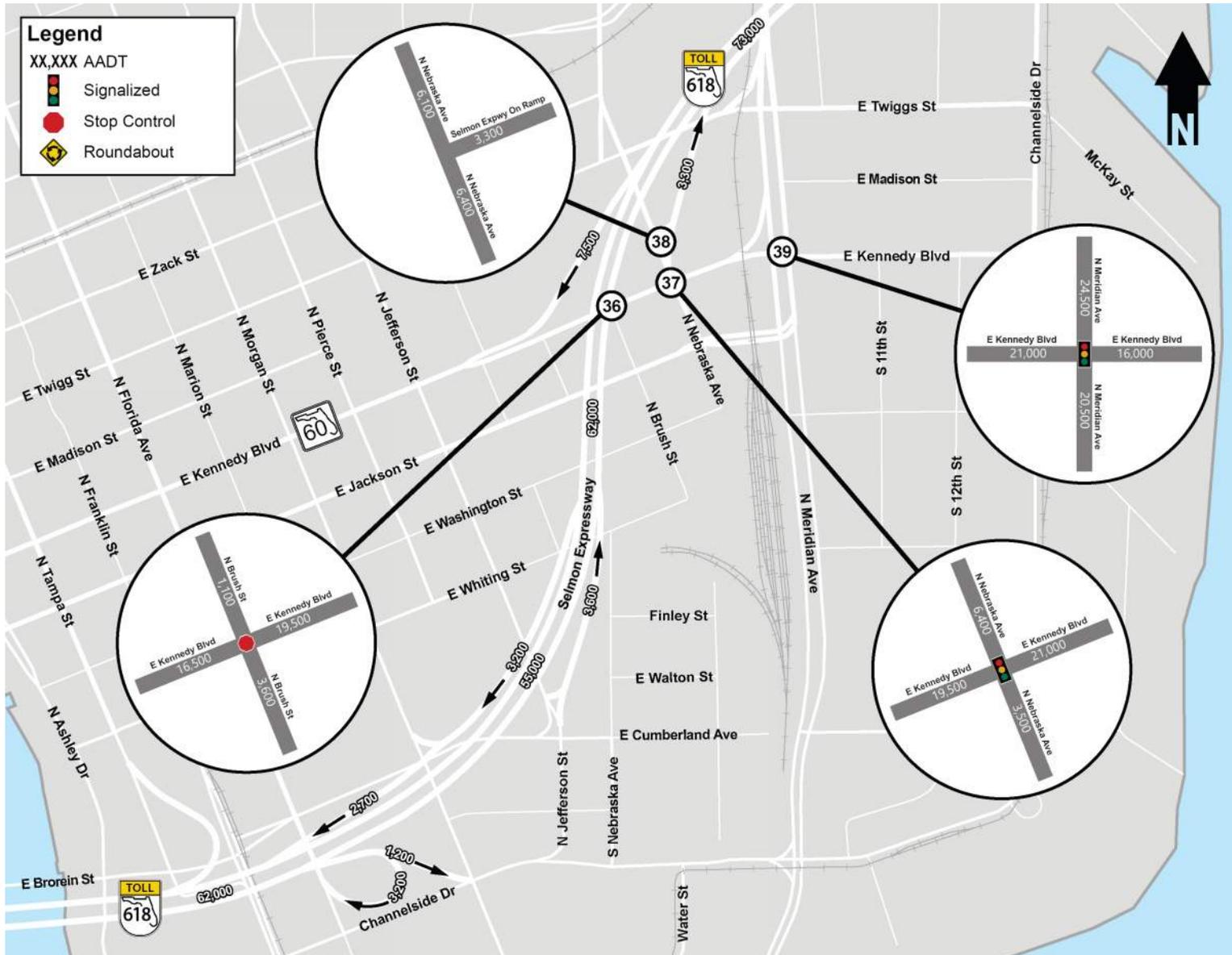


Figure 2.3h: Existing Year (2019) AADT

2.3.3 Sink/Sources

Traffic volumes were balanced where traffic volume breaks could not be validated based on roadway features, such as side streets and driveways. Where imbalances could be validated, the following sinks/sources, summarized in **Table 2.5** and shown in **Figure 2.4**, were added to the existing year (2019) Visum network.

Table 2.5: Sink/Sources

ID	Sink/Source	ID	Sink/Source
101	Premium Parking/Parkway Parking Lot	127	County Center Garage
102	Selmon Expressway CAMLS Lot	128	Courthouse Parking
103	Selmon Expressway 2 Lot	129	Kennedy Boulevard Parking and N Governor Street
104	Eunice Street Parking - Green Lot/Teal Lot	130	Health Center
105	Eunice Street Parking	131	Nebraska Ave Parking Lot
106	Eunice Street Parking (Previously Ferg's)	132	Twiggs Street Garage
107	Empty Lot	133	Sam Rampello School
108	Empty Lot	134	Surface Parking Lot
109	Future SPP Development	135	Collision Repair Shop
110	Future SPP Development	136	Future Planned Development
111	Future SPP Development	137	Future Planned Development
112	Future SPP Development	138	Future Planned Development
113	Fort Brooke Garage	139	Future Planned Development
114	Seven One Seven Parking Lot	140	Future Planned Development
115	Whiting Street Garage	141	The Towers at Channelside and Commercial Space
116	Aurora Apartments	142	Channelside Parking Garage and Office Space
117	Seven One Seven Parking Lot	143	Pierhouse Apartments and Commercial Space
118	Future Planned Development	144	Pierhouse Apartments and Commercial Space
119	Future Planned Development	145	Vacant Space and Commercial Space
120	Future Planned Development	146	SkyHouse Channelside Apartments and Mixed Commercial Space
121	Cacciatore Lot	147	Place At Channelside Condominiums and Mixed Commercial Space
122	East Street/Raymond O. Shelton School Administration Center Parking	148	The Slade at Channelside Apartments, Hampton Inn, and Mixed Occupancy Space
123	Washington Street Garage	149	The Fitzgerald Apartments and Mixed Occupancy Space
124	Whiting Street Surface Lot and Office Space	150	Park4Cruise and Mixed Commercial Space
125	Jackson Street Parking	151	Grand Central at Kennedy Apartments and Commercial Space
126	Carlton Academy Day School and Commercial Space	152	Ventana Apartments and Commercial Space

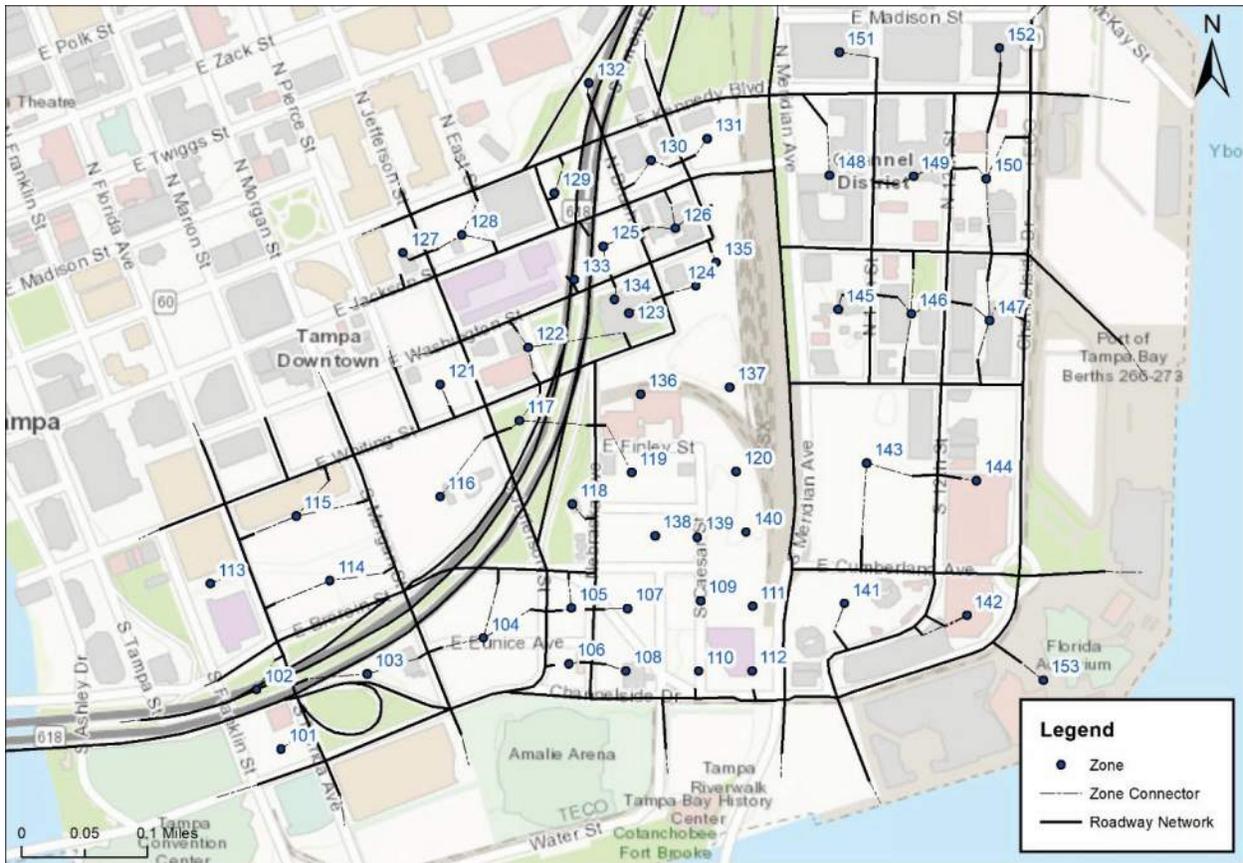


Figure 2.4: Sink/Source Locations

2.3.4 Existing Year (2019) Turning Movement Volumes

Based on the above methodologies, the AM and PM peak hours were determined to occur from 7:30 AM to 8:30 AM and from 4:30 PM to 5:30 PM, respectively. **Figure 2.5** shows the existing year (2019) turning movement volumes for the Whiting Street PD&E Study. Traffic volumes for the sink/sources can be found in the Volume Development Technical Memorandum, in **Appendix D**.

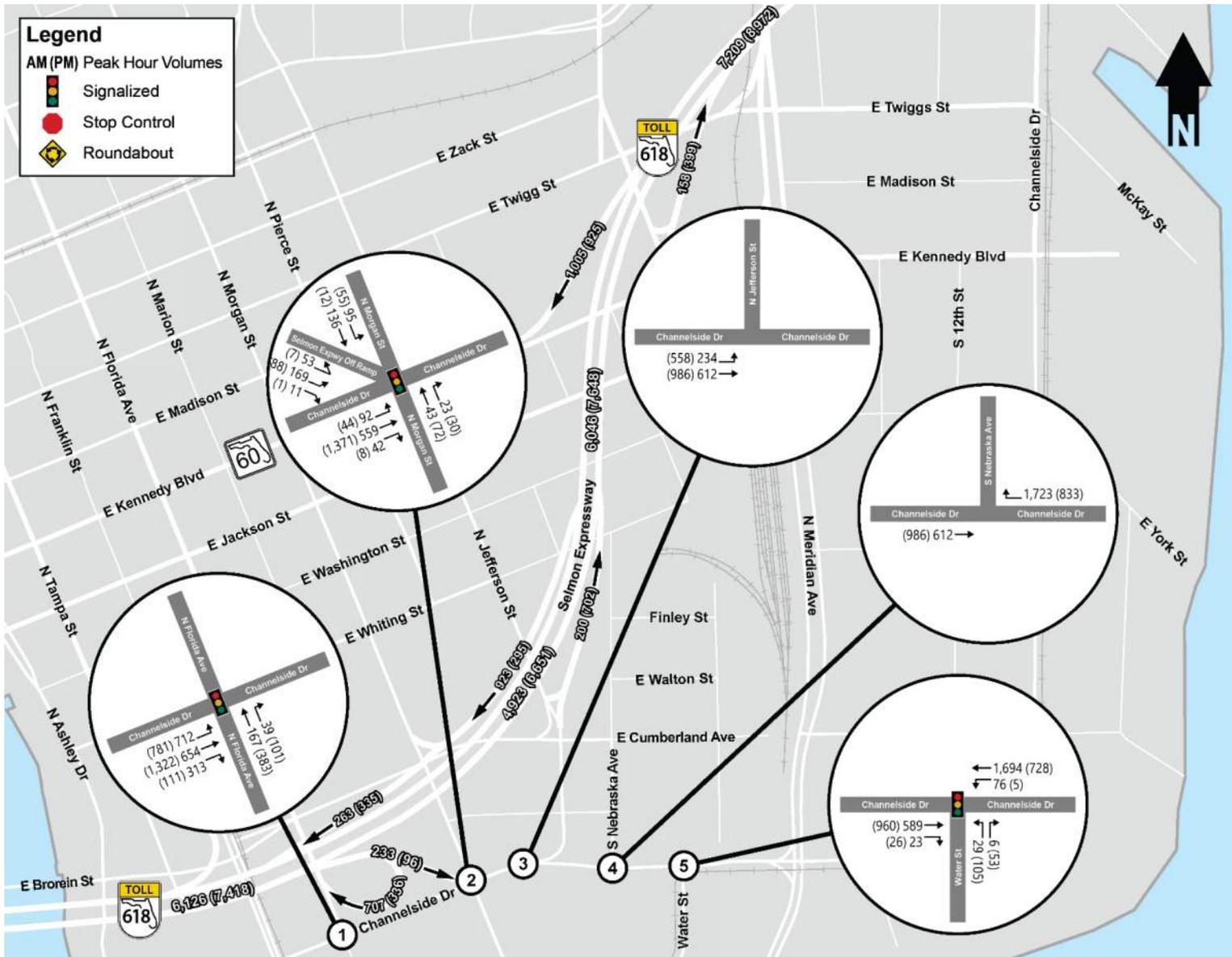


Figure 2.5a: Existing Year (2019) Turning Movement Volumes

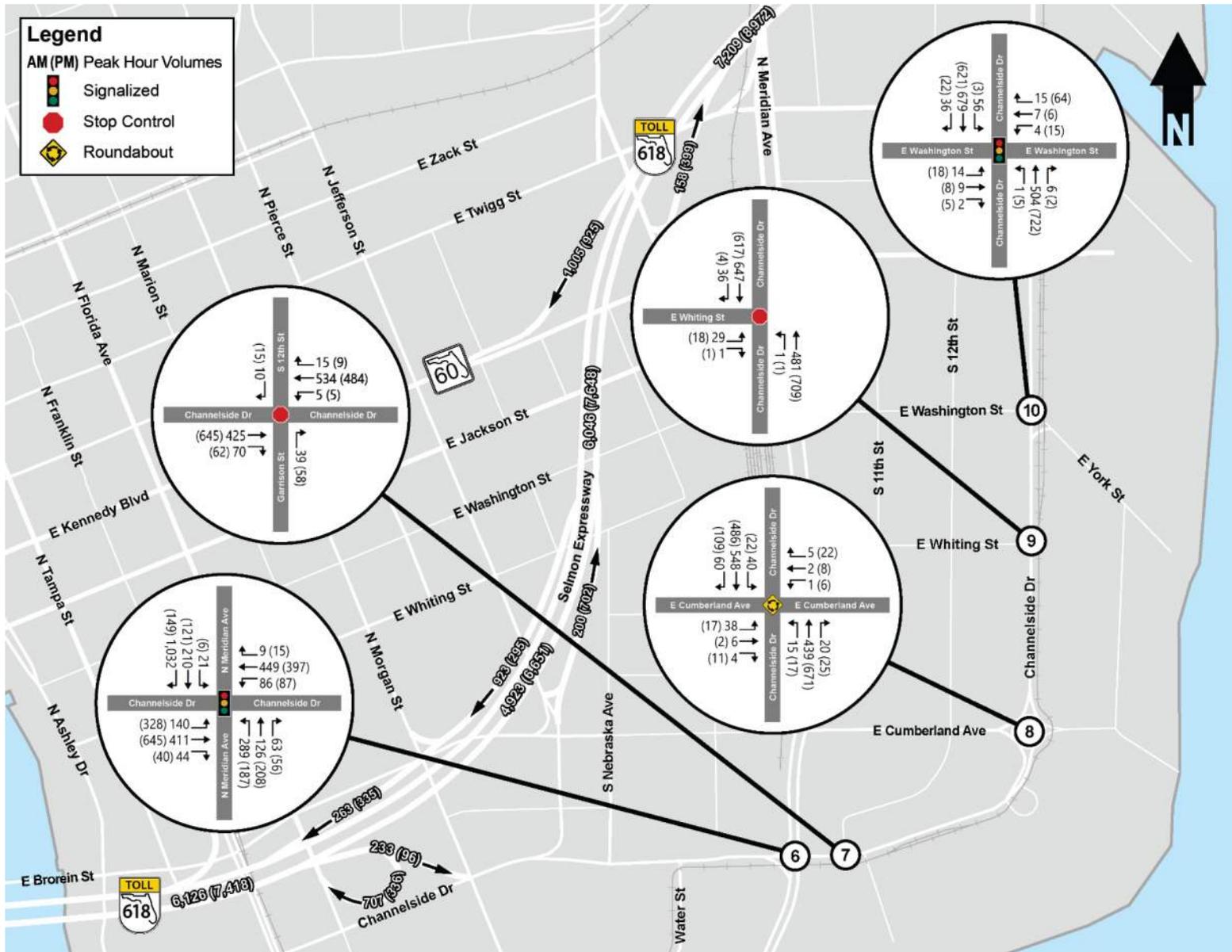


Figure 2.5b: Existing Year (2019) Turning Movement Volumes

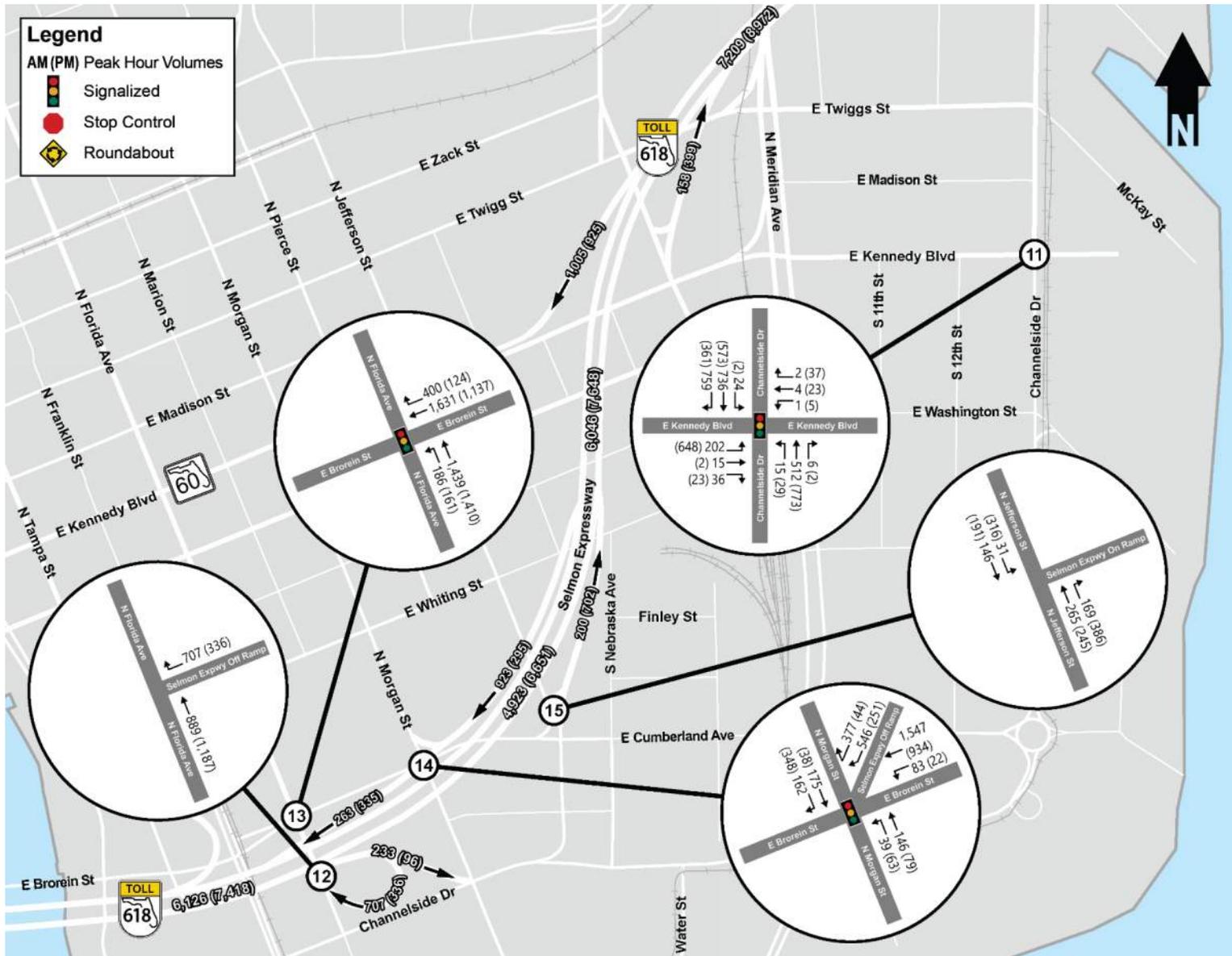


Figure 2.5c: Existing Year (2019) Turning Movement Volumes

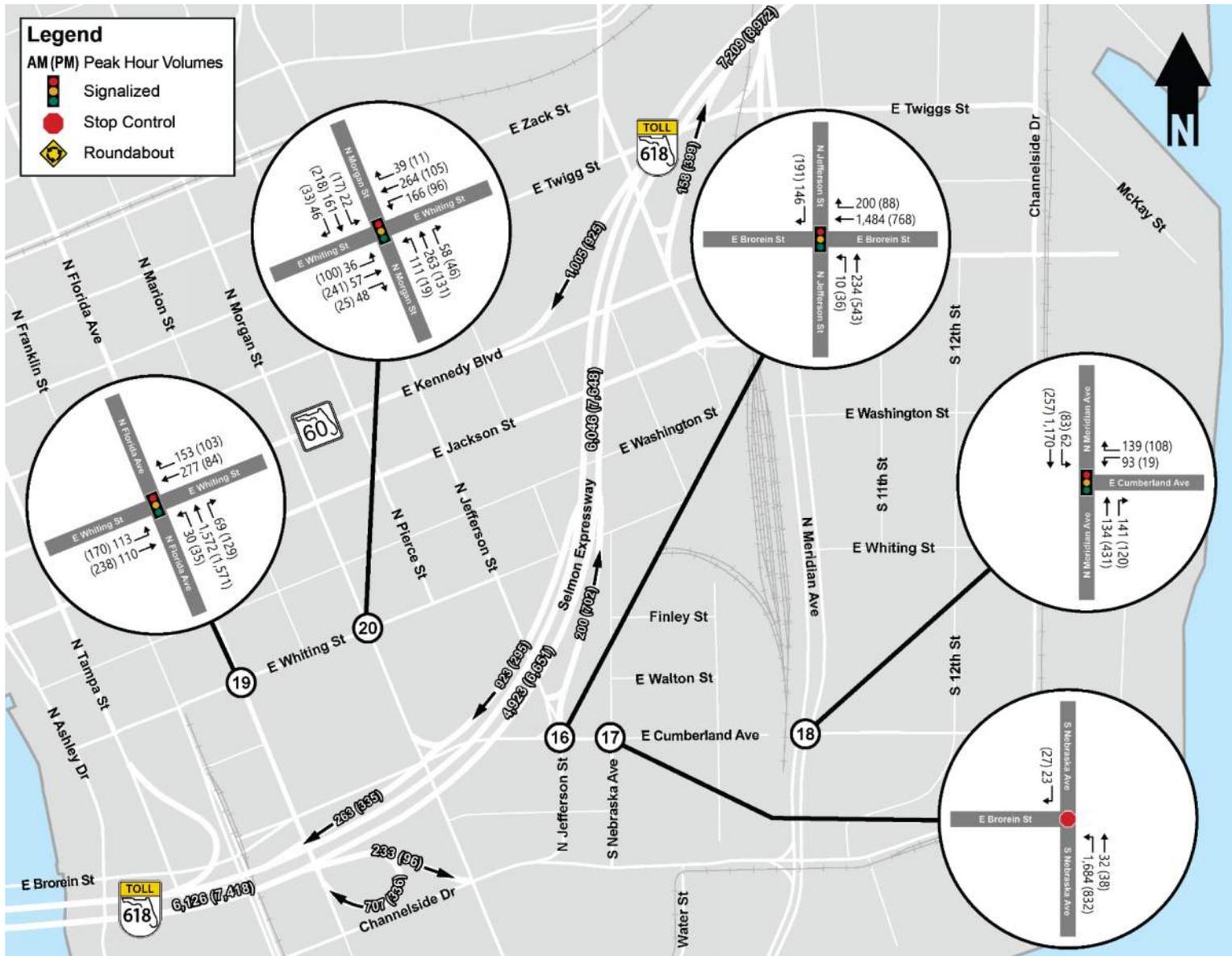


Figure 2.5d: Existing Year (2019) Turning Movement Volumes

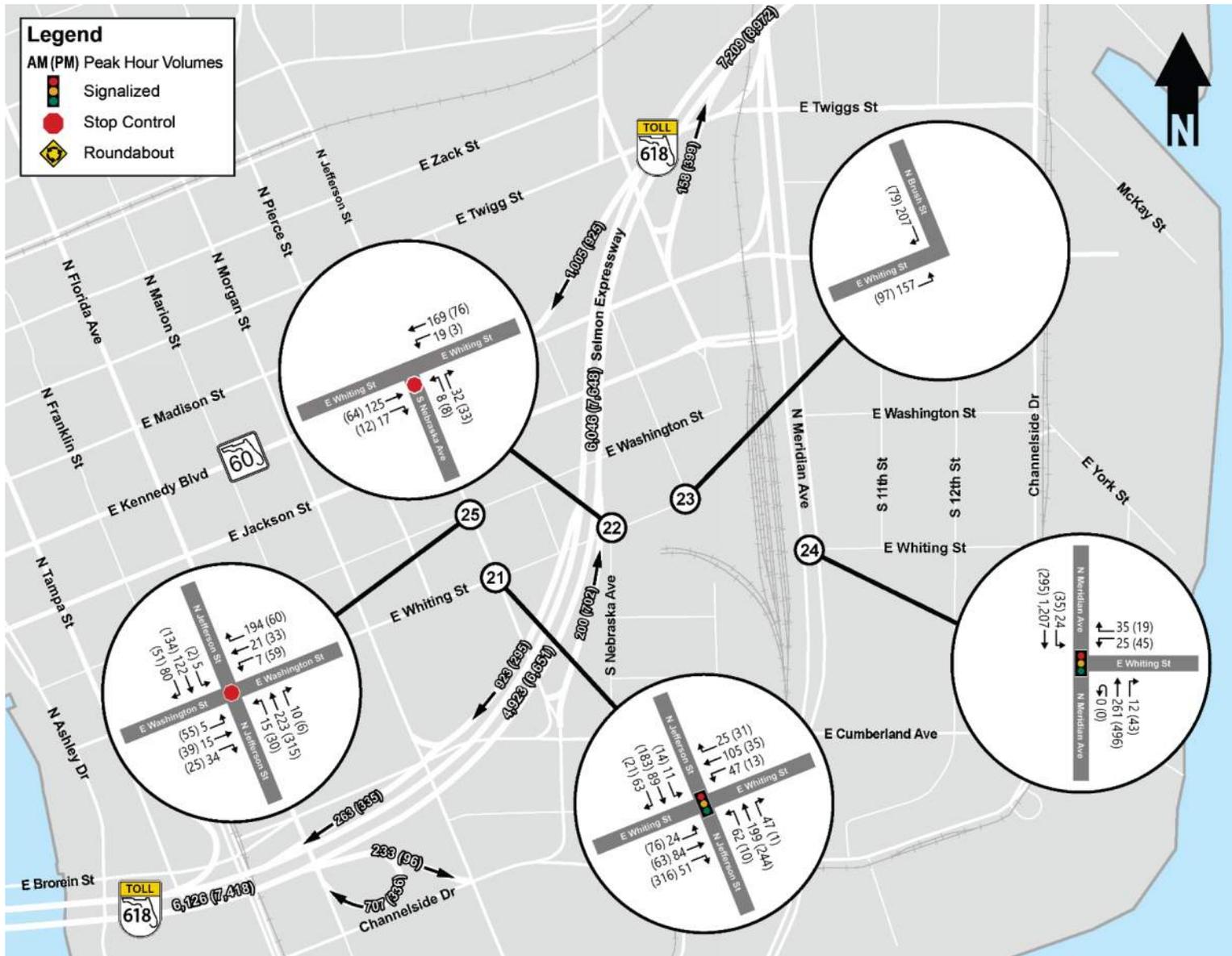


Figure 2.5e: Existing Year (2019) Turning Movement Volumes

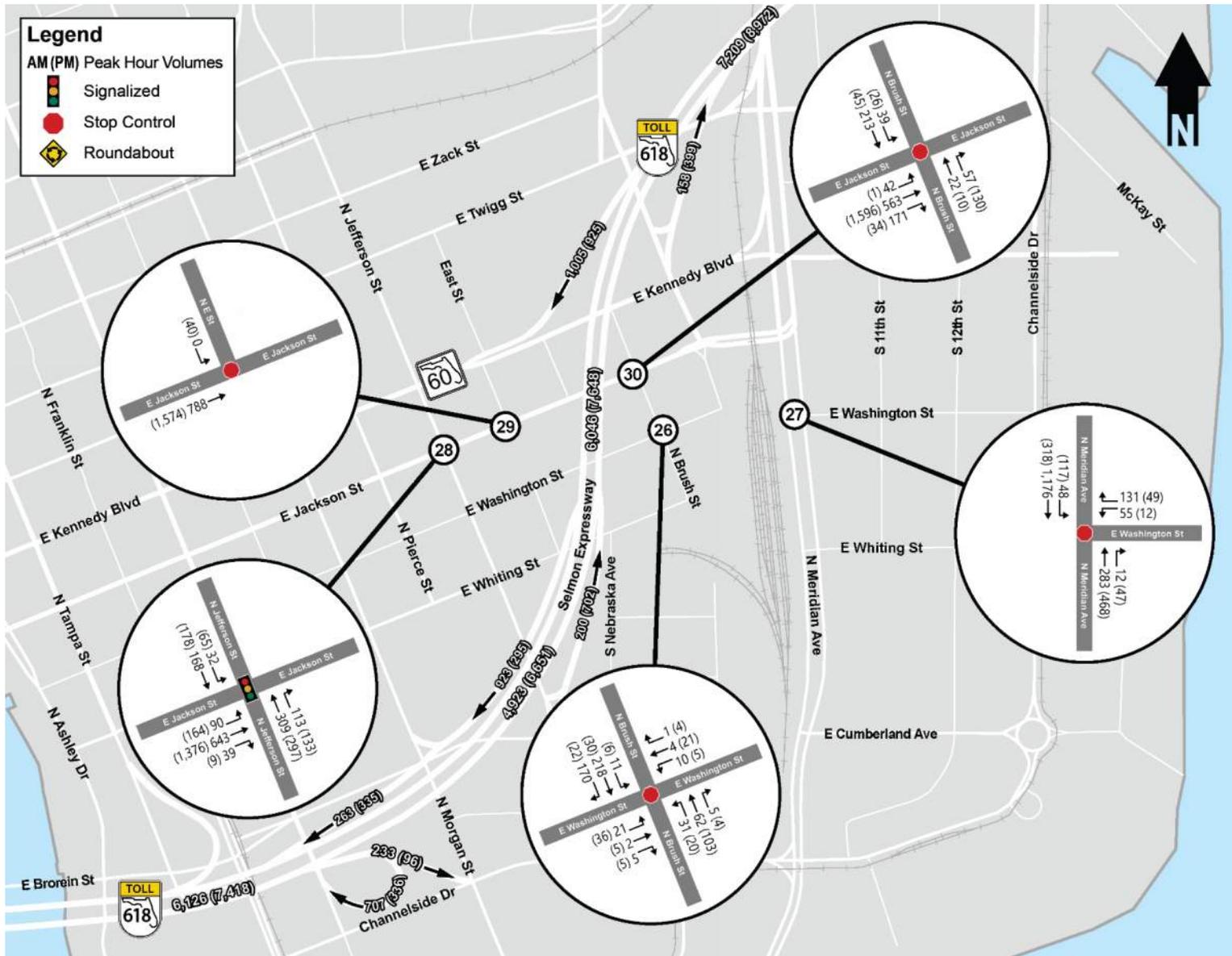


Figure 2.5f: Existing Year (2019) Turning Movement Volumes

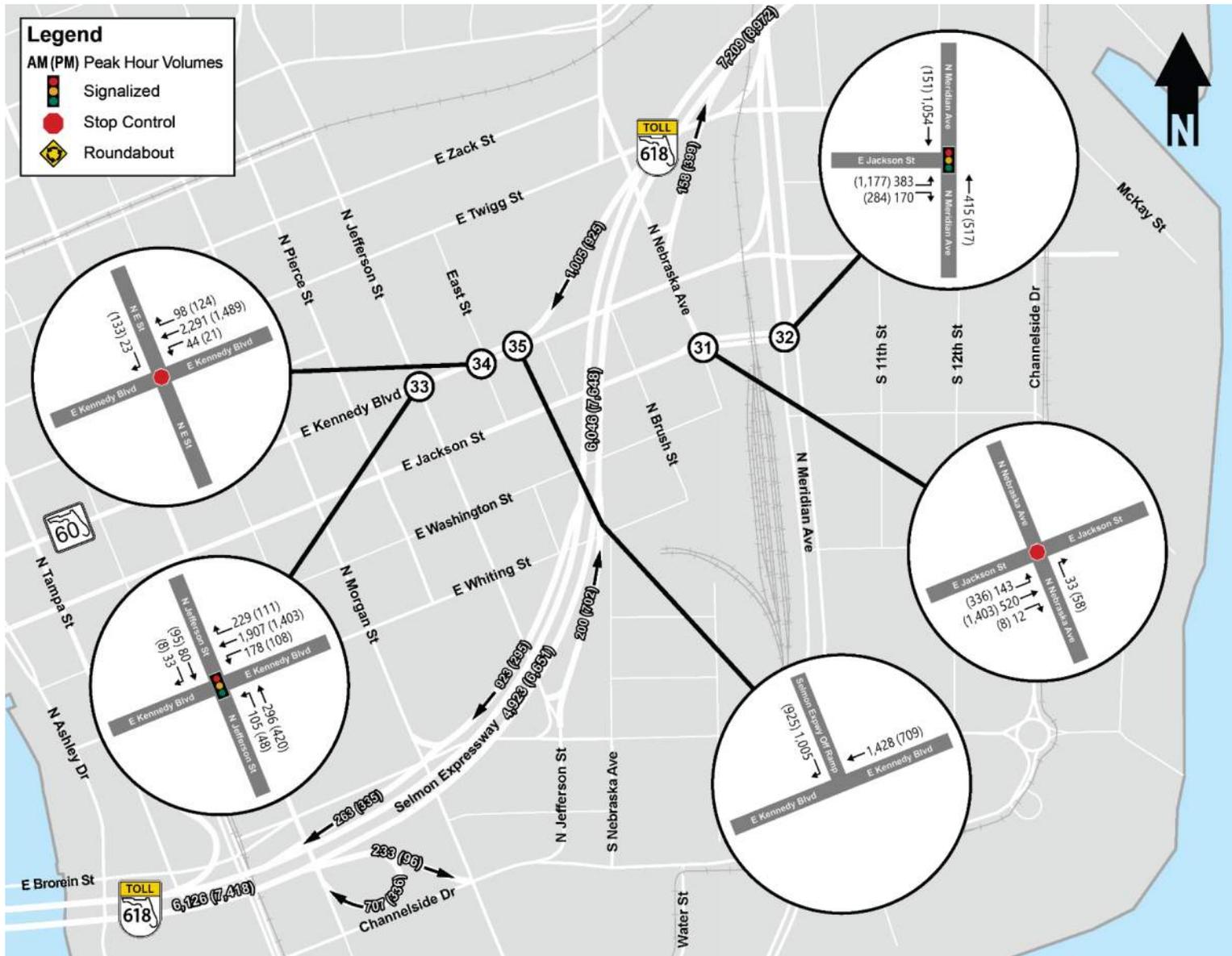


Figure 2.5g: Existing Year (2019) Turning Movement Volumes

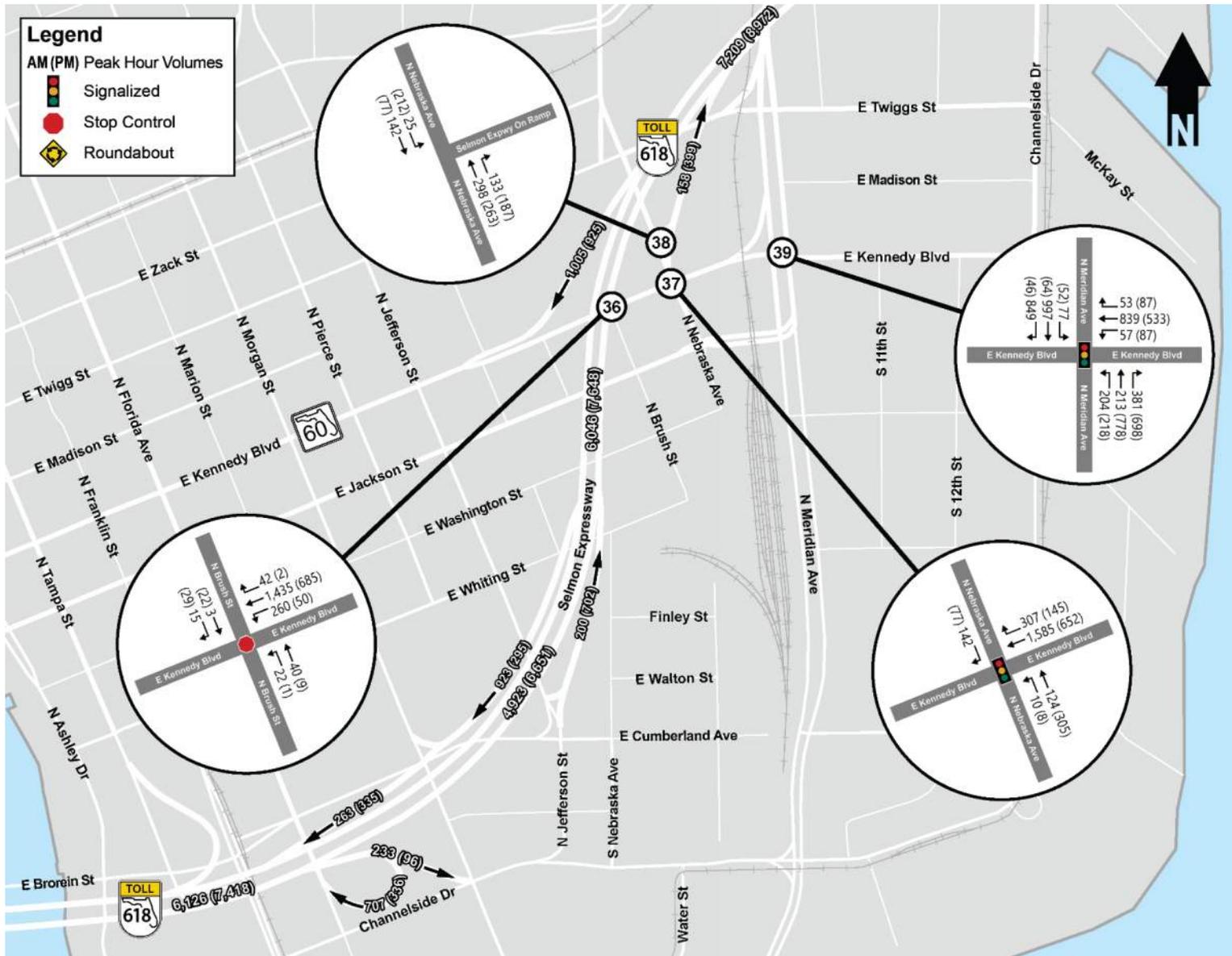


Figure 2.5h: Existing Year (2019) Turning Movement Volumes

2.4 Existing Year (2019) Operational Analysis

To evaluate the existing year (2019) operational characteristics of the Downtown Tampa study area, an operational analysis using Synchro 11 for signalized intersections, SIDRA for the roundabout intersection, and Highway Capacity Software (HCS) for stop-controlled intersections was conducted. The operational analysis consisted of intersection delay, level of service (LOS), and queue analysis. Highway Capacity Manual (HCM) methodologies were used to estimate the LOS for each study intersection based on the intersection delay resulting from the operational analysis. The Synchro 95th percentile queue length was utilized for queue analysis for signalized intersections. The SIDRA and HCS queues were utilized for the roundabout and unsignalized intersections, respectively. The SIDRA and HCS queues are reported as vehicles and were therefore multiplied by 25 and rounded to the nearest 25 feet.

The following sections document the results of the existing year (2019) operational analysis for the Whiting Street PD&E Study. Signal timing plans for the signalized intersections were received from the City of Tampa, and can be found in **Appendix E**. Additionally, the existing year (2019) Synchro, SIDRA and HCS analysis results can be found in **Appendix F**.

2.4.1 Intersection Analysis

Intersection operational analysis was conducted at each of the signalized and stop-controlled intersections in the study area for the existing year (2019). The results of the existing year (2019) intersection analysis for the AM and PM peak hours are shown in **Table 2.6**. The results of the analysis indicate that each of the study intersections meet the LOS target D, except for the Whiting Street at Jefferson Street intersection, as defined for urban areas in the *FDOT 2020 Quality/Level of Service Handbook*, in the AM and PM peak hours. Only a few approaches at the study intersections do not currently meet the LOS target D. However, future operations of the Selmon Expressway off-ramps and within the Whiting Street study area may prove to be a concern as increased demand is expected within the study area by the design year (2046), discussed in further detail in **Section 4.0**.

Table 2.6: Existing Year (2019) Intersection Analysis

ID	Intersection	Eastbound		Westbound		Northbound		Southbound		Off-Ramp		Overall	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
<i>AM Peak Hour</i>													
1	Channelside Dr and Florida Ave	11.2	B	-	-	41.3	D	-	-	-	-	14.5	B
2	Channelside Dr and Morgan St/ Selmon Expy off-ramp	30.7	C	-	-	41.1	D	45.0	D	62.3	E	39.9	D
5	Channelside Dr and Old Water St	17.5	B	14.3	B	68.5	E	-	-	-	-	15.9	B
6	Channelside Dr and Meridian Ave	26.1	C	98.9	F	27.8	C	11.6	B	-	-	33.8	C
7	Channelside Dr and 12th St*	-	-	-	-	11.6	B	12.1	B	-	-	-	-
8	Cumberland Ave and Channelside Dr	5.0	A	4.1	A	6.5	A	6.7	A	-	-	6.5	A
9	Whiting St and Channelside Dr*	20.7	C	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	76.7	E	63.3	E	15.0	B	22.6	C	-	-	21.5	C
11	Kennedy Blvd and Channelside Dr	65.0	E	74.6	E	26.8	C	21.2	C	-	-	27.5	C
13	Brorein St and Florida Ave	-	-	46.0	D	25.8	C	-	-	-	-	37.0	D
14	Brorein St and Morgan St	-	-	10.4	B	27.7	C	41.9	D	14.8	B	16.2	B
16	Brorein St and Jefferson St	-	-	8.2	A	79.0	E	-	-	-	-	15.9	B
18	Cumberland Ave and Meridian Ave	-	-	18.4	B	7.4	A	0.5	A	-	-	4.0	A
19	Whiting St and Florida Ave	27.0	C	26.5	C	15.2	B	-	-	-	-	18.4	B
20	Whiting St and Morgan St	12.9	B	15.4	B	23.2	C	19.4	B	-	-	18.5	B
21	Whiting St and Jefferson St	23.5	C	30.4	C	12.7	B	12.7	B	-	-	18.7	B
22	Whiting St and Nebraska Ave*	-	-	-	-	9.5	A	-	-	-	-	-	-
24	Whiting St and Meridian Ave	-	-	20.6	C	39.2	D	36.7	D	-	-	36.6	D
25	Washington St and Jefferson St*	10.7	B	11.2	B	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	11.5	B	12.3	B	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	14.6	B	-	-	-	-	-	-	-	-

Notes: Red highlight indicates locations where the operations do not meet the LOS target D, as defined for urban areas in the *FDOT 2020 Quality/Level of Service Handbook*.

Operational analysis could not be conducted for the intersection of Brorein Street and Nebraska Avenue due to complex geometry.

*Only stop-controlled approaches have been summarized.

Table 2.6 (continued): Existing Year (2019) Intersection Analysis

ID	Intersection	Eastbound		Westbound		Northbound		Southbound		Off-Ramp		Overall	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
<i>PM Peak Hour</i>													
1	Channelside Dr and Florida Ave	13.6	B	-	-	45.1	D	-	-	-	-	19.3	B
2	Channelside Dr and Morgan St/ Selmon Expy off-ramp	20.8	C	-	-	41.9	D	45.9	D	61.9	E	25.5	C
5	Channelside Dr and Old Water St	34.0	C	11.7	B	61.9	E	-	-	-	-	27.6	C
6	Channelside Dr and Meridian Ave	27.4	C	48.5	D	41.0	D	21.6	C	-	-	34.2	C
7	Channelside Dr and 12th St*	-	-	-	-	14.7	B	11.6	B	-	-	-	-
8	Cumberland Ave and Channelside Dr	4.5	A	5.4	A	8.8	A	5.9	A	-	-	7.3	A
9	Whiting St and Channelside Dr*	21.5	C	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	82.2	F	62.7	E	16.9	B	14.9	B	-	-	20.0	C
11	Kennedy Blvd and Channelside Dr	35.2	D	65.1	E	31.3	C	39.4	D	-	-	36.3	D
13	Brerein St and Florida Ave	-	-	34.3	C	23.6	C	-	-	-	-	28.4	C
14	Brerein St and Morgan St	-	-	4.0	A	42.7	D	46.7	D	11.6	B	17.6	B
16	Brerein St and Jefferson St	-	-	21.5	C	25.3	C	-	-	-	-	20.3	C
18	Cumberland Ave and Meridian Ave	-	-	6.6	A	28.2	C	7.5	A	-	-	18.5	B
19	Whiting St and Florida Ave	37.1	D	38.1	D	18.4	B	-	-	-	-	23.3	C
20	Whiting St and Morgan St	18.3	B	14.9	B	14.4	B	13.6	B	-	-	15.6	B
21	Whiting St and Jefferson St	117.5	F	23.1	C	11.4	B	13.2	B	-	-	60.6	E
22	Whiting St and Nebraska Ave*	-	-	-	-	9.0	A	-	-	-	-	-	-
24	Whiting St and Meridian Ave	-	-	64.4	E	15.0	B	2.5	A	-	-	14.0	B
25	Washington St and Jefferson St*	15.0	C	15.3	C	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	10.2	B	10.2	B	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	12.6	B	-	-	-	-	-	-	-	-

Notes: Red highlight indicates locations where the operations do not meet the LOS target D, as defined for urban areas in the *FDOT 2020 Quality/Level of Service Handbook*.

Operational analysis could not be conducted for the intersection of Brerein Street and Nebraska Avenue due to complex geometry.

*Only stop-controlled approaches have been summarized.

2.4.2 Queue Analysis

Queue analysis was conducted at each of the signalized and stop-controlled intersections in the study area and the intersection of Kennedy Boulevard at Channelside Drive for the existing year (2019). The results of the existing year (2019) queue analysis for the AM and PM peak hours are shown in **Table 2.7**. The results of the analysis indicate that the observed maximum queue lengths spillback into the upstream intersections at seven intersection approaches.

At the Channelside Drive at Florida Avenue eastbound approach, the queue spillback could be due to the fact that they are peripheral links. It can be expected that the queues would otherwise be stopped by the upstream intersection controls that lie outside of the study area.

Therefore, only the queues at the Channelside Drive at Old Water Street westbound approach, Channelside Drive at Meridian Avenue eastbound and southbound approaches, Brorein Street at Florida Avenue westbound approach, Whiting Street at Florida Avenue eastbound approach, and Brorein Street at Jefferson Street westbound approach spillback into the upstream intersections. At the intersection of Brorein Street at Jefferson Street, the reported queue spillback at the westbound approach is likely due to insufficient storage length in the current configuration. At the intersection of Brorein Street at Florida Avenue, the queue spillback at the westbound approach is likely due to the high volume of traffic at this intersection as a result of the Selmon Expressway off-ramps. At the Whiting Street at Florida Avenue eastbound approach, the spillback is likely due to the insufficient green time for the increased volume in the PM peak hour. At the Channelside Drive at Old Water Street westbound approach, the spillback is likely due to the insufficient green time for the increased volume in the AM peak hour. At the intersection of Channelside Drive at Meridian Avenue eastbound approach, the queue is likely due to Channelside Drive being reduced from two lanes to one lane for vehicles traveling eastbound. At the Channelside Drive at Meridian Avenue southbound approach, the backup is likely due to the southbound right turn movement being impacted due to the queue spillback at Channelside Drive at Old Water Street westbound approach.

Table 2.7: Existing Year (2019) Queue Analysis

ID	Intersection	Eastbound			Westbound			Northbound			Southbound			Off-Ramp		
		L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
<i>Storage Length (ft)</i>																
1	Channelside Dr and Florida Ave	200	200	+	-	-	-	-	450	200	-	-	-	-	-	-
2	Channelside Dr and Morgan St/ Selmon Off-Ramp	+	450	350	-	-	-	-	550	550	+	450	-	+	350	+
5	Channelside Dr and Old Water St	-	750	+	+	350	-	1000	-	250	-	-	-	-	-	-
6	Channelside Dr and Meridian Ave	350	350	+	150	1000	+	>1500	>1500	+	450	450	450	-	-	-
7	Channelside Dr and 12th St*	-	-	-	-	-	-	-	-	200	-	-	700	-	-	-
8	Cumberland Ave and Channelside Dr	+	200	+	+	200	+	+	1000	+	+	650	650	-	-	-
9	Whiting St and Channelside Dr*	250	-	+	-	-	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	+	250	+	+	600	450	150	500	+	300	550	+	-	-	-
11	Kennedy Blvd and Channelside Dr	550	550	150	+	200	200	200	550	+	100	550	400	-	-	-
12	Selmon Off-Ramp to Florida Ave	-	-	-	-	-	-	-	-	-	-	-	-	-	500	-
13	Brorein St and Florida Ave	-	-	-	-	500	+	450	450	-	-	-	-	-	-	-
14	Brorein St and Morgan St/ Selmon Off-Ramp	-	-	-	+	500	-	+	450	-	-	500	+	-	1000	1000
16	Brorein St and Jefferson St	-	-	-	-	150	+	+	500	-	-	-	600	-	-	-
18	Cumberland Ave and Meridian Ave	-	-	-	550	-	+	-	450	+	250	650	-	-	-	-
19	Whiting St and Florida Ave	+	200	-	-	500	+	+	550	100	-	-	-	-	-	-
20	Whiting St and Morgan St	500	500	+	500	500	+	+	500	+	+	500	+	-	-	-
21	Whiting St and Jefferson St	+	500	500	+	450	+	+	600	+	+	500	+	-	-	-
22	Whiting St and Nebraska Ave*	-	-	-	-	-	-	850	-	+	-	-	-	-	-	-
24	Whiting St and Meridian Ave	-	-	-	200	-	+	-	650	+	250	500	-	-	-	-
25	Washington St and Jefferson St*	+	200	+	+	750	+	-	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	+	750	+	+	450	+	-	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	-	250	-	+	-	-	-	-	-	-	-	-	-

+Shared Lanes

*Only stop-controlled approaches have been summarized.

Table 2.7 (continued): Existing Year (2019) Queue Analysis

ID	Intersection	Eastbound			Westbound			Northbound			Southbound			Off-Ramp		
		L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
<i>AM Peak Hour Maximum Queue Length (ft)</i>																
1	Channelside Dr and Florida Ave	47	200	+	-	-	-	-	102	31	-	-	-	-	-	-
2	Channelside Dr and Morgan St/ Selmon Off-Ramp	+	205	28	-	-	-	-	68	0	+	151	-	+	310	+
5	Channelside Dr and Old Water St	-	315	+	+	546	-	61	-	15	-	-	-	-	-	-
6	Channelside Dr and Meridian Ave	106	548	+	130	705	+	262	60	+	32	181	802	-	-	-
7	Channelside Dr and 12th St*	-	-	-	-	-	-	-	-	25	-	-	25	-	-	-
8	Cumberland Ave and Channelside Dr**	+	25	+	+	25	+	+	75	+	+	75	25	-	-	-
9	Whiting St and Channelside Dr*	25	-	+	-	-	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	+	45	+	+	31	0	4	217	+	89	402	+	-	-	-
11	Kennedy Blvd and Channelside Dr	171	170	0	+	20	0	32	289	+	24	237	54	-	-	-
12	Selmon Off-Ramp to Florida Ave	-	-	-	-	-	-	-	-	-	-	-	-	-	104***	-
13	Brorein St and Florida Ave	-	-	-	-	582	+	127	404	-	-	-	-	-	-	-
14	Brorein St and Morgan St/ Selmon Off-Ramp	-	-	-	+	284	-	+	83	-	-	190	+	-	377	26
16	Brorein St and Jefferson St	-	-	-	-	461	+	+	161	-	-	-	0	-	-	-
18	Cumberland Ave and Meridian Ave	-	-	-	131	-	+	-	43	+	1	4	-	-	-	-
19	Whiting St and Florida Ave	+	105	-	-	147	+	+	198	7	-	-	-	-	-	-
20	Whiting St and Morgan St	35	58	+	59	127	+	+	118	+	+	60	+	-	-	-
21	Whiting St and Jefferson St	+	62	7	+	117	+	+	66	+	+	29	+	-	-	-
22	Whiting St and Nebraska Ave*	-	-	-	-	-	-	25	-	+	-	-	-	-	-	-
24	Whiting St and Meridian Ave	-	-	-	44	-	+	-	87	+	29	354	-	-	-	-
25	Washington St and Jefferson St*	+	25	+	+	50	+	-	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	+	25	+	+	25	+	-	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	-	50	-	+	-	-	-	-	-	-	-	-	-

Note: Red highlight indicates locations where the queue length exceeds the available storage length.

+Shared Lanes

*Only stop-controlled approaches have been summarized.

**Queue length calculated as 25 feet per vehicle.

***The queue length for the Selmon Expressway off-ramp to Florida Avenue was determined as the queue length of the northbound through movement at the Brorein Street and Florida Avenue intersection minus the distance from the stop bar of the northbound through movement to the off-ramp gore point on Florida Avenue, 300 feet.

Table 2.7 (continued): Existing Year (2019) Queue Analysis

ID	Intersection	Eastbound			Westbound			Northbound			Southbound			Off-Ramp		
		L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
<i>PM Peak Hour Maximum Queue Length (ft)</i>																
1	Channelside Dr and Florida Ave	344	350	+	-	-	-	-	221	85	-	-	-	-	-	-
2	Channelside Dr and Morgan St/ Selmon Off-Ramp	+	447	0	-	-	-	-	101	0	+	54	-	+	148	+
5	Channelside Dr and Old Water St	-	544	+	+	238	-	157	-	41	-	-	-	-	-	-
6	Channelside Dr and Meridian Ave	164	802	+	130	491	+	215	132	+	21	174	0	-	-	-
7	Channelside Dr and 12th St*	-	-	-	-	-	-	-	-	25	-	-	25	-	-	-
8	Cumberland Ave and Channelside Dr**	+	25	+	+	25	+	+	125	+	+	75	25	-	-	-
9	Whiting St and Channelside Dr*	25	-	+	-	-	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	+	59	+	+	49	5	12	323	+	7	225	+	-	-	-
11	Kennedy Blvd and Channelside Dr	352	352	0	+	60	0	37	427	+	8	295	74	-	-	-
12	Selmon Off-Ramp to Florida Ave	-	-	-	-	-	-	-	-	-	-	-	-	-	60***	-
13	Brorein St and Florida Ave	-	-	-	-	311	+	98	360	-	-	-	-	-	-	-
14	Brorein St and Morgan St/ Selmon Off-Ramp	-	-	-	+	50	-	+	93	-	-	203	+	-	147	14
16	Brorein St and Jefferson St	-	-	-	-	416	+	+	164	-	-	-	0	-	-	-
18	Cumberland Ave and Meridian Ave	-	-	-	39	-	+	-	191	+	140	36	-	-	-	-
19	Whiting St and Florida Ave	+	212	-	-	99	+	+	217	40	-	-	-	-	-	-
20	Whiting St and Morgan St	93	218	+	49	50	+	+	65	+	+	60	+	-	-	-
21	Whiting St and Jefferson St	+	125	119	+	45	+	+	64	+	+	50	+	-	-	-
22	Whiting St and Nebraska Ave*	-	-	-	-	-	-	25	-	+	-	-	-	-	-	-
24	Whiting St and Meridian Ave	-	-	-	98	-	+	-	134	+	13	27	-	-	-	-
25	Washington St and Jefferson St*	+	25	+	+	50	+	-	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	+	25	+	+	25	+	-	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	-	25	-	+	-	-	-	-	-	-	-	-	-

Note: Red highlight indicates locations where the queue length exceeds the available storage length.

+Shared Lanes

*Only stop-controlled approaches have been summarized.

**Queue length calculated as 25 feet per vehicle.

***The queue length for the Selmon Expressway off-ramp to Florida Avenue was determined as the queue length of the northbound through movement at the Brorein Street and Florida Avenue intersection minus the distance from the stop bar of the northbound through movement to the off-ramp gore point on Florida Avenue, 300 feet.

2.5 Historical Crash Data

Crash data from January 2014 to December 2019 was extracted from FDOT's Crash Analysis Reporting System (CARS), Signal Four Analytics, and Tindale Oliver's Crash Data Management System (CDMS) within the influence area of the Selmon Expressway and the Downtown East/West interchange, as this is where the areas of improvements are focused for this PD&E Study. During the study period, there were 13 crashes documented within the influence area. There were few crashes identified directly related to vehicles accessing, traveling on, or exiting the ramps. There were nine crashes along the mainline at or near the exit gore, consisting of three rear-end crashes, three sideswipe crashes, and three crashes identified as lost control or hit fixed object. One of the crashes identified as lost control or hit fixed object resulted in an incapacitating injury. Additionally, three single vehicle/fixed object crashes and one sideswipe crash were identified along the off-ramps.

Overall, the reported crash history at the Downtown East/West off-ramps is not significant enough to show patterns of correctable crashes that could be mitigated with the proposed changes to the ramp's geometry and signalization. However, as traffic volumes increase in the future, crash types associated with congestion and queue spillback onto the Selmon Expressway may increase. A more detailed assessment of the historical crash data can be found in the Safety Analysis Technical Memorandum in **Appendix G**.

2.6 Multimodal Accommodations

2.6.1 Pedestrians and Bicyclists

Pedestrian and bicycle count data for the study intersections within the Downtown Tampa study area was recorded concurrently with the turning movement count data. **Table 2.8** summarizes the pedestrian and bicycle crossing volumes at each of the study intersections during the 3-hour AM and PM peak periods. However, pedestrian and bicycle count data was not collected as part of the *Comprehensive Downtown Channelside Traffic Study*. Therefore, there is no pedestrian and bicycle count data for the following intersections:

- Kennedy Boulevard at Channelside Drive
- Washington Street at Channelside Drive
- Whiting Street at Channelside Drive
- Cumberland Avenue at Channelside Drive
- Channelside Drive at 12th Street

Currently, marked crosswalks are provided at all of the signalized intersections within the study area. Also, sidewalks are provided along each corridor in the study area. Bicycle lanes are provided along Jackson Street from Jefferson Street to Nebraska Avenue and along Nebraska Avenue from Jackson Street to Kennedy Boulevard. Additionally, the Selmon Greenway bike trail runs along Meridian Avenue from Channelside Drive to Kennedy Boulevard, along Kennedy Boulevard from the Selmon Expressway to Meridian Avenue and underneath the Selmon Expressway from Florida Avenue to Kennedy Boulevard.

Table 2.8: Existing Year (2019) Pedestrian and Bicycle Movements

ID	Intersection	West		East		South		North		Overall	
		Ped	Bike	Ped	Bike	Ped	Bike	Ped	Bike	Ped	Bike
<i>AM Peak Hour</i>											
1	Channelside Dr and Florida Ave	137	1	155	0	517	5	7	0	816	0
2	Channelside Dr and Morgan St/ Selmon Expy off-ramp	16	4	54	3	92	2	13	1	175	10
3	Channelside Dr and Jefferson St	56	1	37	3	-	-	11	0	104	4
4	Channelside Dr and Nebraska Ave	3	0	2	0	-	-	0	0	5	0
6	Channelside Dr and Meridian Ave	8	3	77	10	211	15	2	1	298	29
13	Brorein St and Florida Ave	195	4	245	2	101	3	210	3	751	12
14	Brorein St and Morgan St	45	5	73	4	11	0	5	1	134	10
16	Brorein St and Jefferson St	43	2	0	0	10	0	0	1	53	3
19	Whiting St and Florida Ave	126	4	162	2	213	5	199	6	700	17
20	Whiting St and Morgan St	110	3	100	10	104	3	70	0	384	16
21	Whiting St and Jefferson St	84	0	5	0	57	1	3	0	149	1
22	Whiting St and Nebraska Ave	4	1	2	0	8	0	11	1	25	2
24	Whiting St and Meridian Ave	-	-	64	6	1	3	8	0	73	9
25	Washington St and Jefferson St	143	1	0	0	29	0	453	1	625	2
26	Washington St and Brush St	0	0	12	0	0	0	15	0	27	0
27	Washington St and Meridian Ave	-	-	61	5	1	0	3	0	65	5
28	Jackson St and Jefferson St	57	2	66	1	0	15	60	0	183	18
30	Jackson St and Brush St	26	0	23	0	0	3	50	3	99	6
31	Jackson St and Nebraska Ave	15	0	0	0	24	3	4	4	43	7
32	Jackson St and Meridian Ave	41	0	-	-	9	0	0	0	50	0
33	Kennedy Blvd and Jefferson St	212	1	81	0	9	0	37	0	339	1
36	Kennedy Blvd and Brush St	42	1	9	0	26	0	0	2	77	3
37	Kennedy Blvd and Nebraska Ave	3	1	0	0	31	3	0	0	34	4
39	Kennedy Blvd and Meridian Ave	4	0	20	0	36	0	0	0	60	0

Table 2.8 (continued): Existing Year (2019) Pedestrian and Bicycle Movements

ID	Intersection	West		East		South		North		Overall	
		Ped	Bike	Ped	Bike	Ped	Bike	Ped	Bike	Ped	Bike
<i>PM Peak Hour</i>											
1	Channelside Dr and Florida Ave	220	1	113	3	463	6	6	0	802	10
2	Channelside Dr and Morgan St/ Selmon Expy off-ramp	33	4	94	0	164	7	13	0	304	11
3	Channelside Dr and Jefferson St	20	0	1053	1	-	-	774	0	1847	1
4	Channelside Dr and Nebraska Ave	193	0	20	0	-	-	0	0	213	0
6	Channelside Dr and Meridian Ave	22	21	104	29	405	31	17	5	548	86
13	Brorein St and Florida Ave	254	4	211	4	148	1	204	0	817	9
14	Brorein St and Morgan St	68	2	58	3	15	2	5	0	146	7
16	Brorein St and Jefferson St	34	1	0	0	10	0	0	0	44	1
19	Whiting St and Florida Ave	198	2	194	3	314	6	178	2	884	13
20	Whiting St and Morgan St	127	3	87	25	104	1	84	0	402	29
21	Whiting St and Jefferson St	74	3	2	0	60	0	3	0	139	3
22	Whiting St and Nebraska Ave	0	0	6	0	6	0	8	0	20	0
24	Whiting St and Meridian Ave	-	-	56	21	3	3	3	0	62	24
25	Washington St and Jefferson St	48	0	11	0	11	0	126	0	196	0
26	Washington St and Brush St	0	0	0	0	0	0	0	0	0	0
27	Washington St and Meridian Ave	-	-	64	24	2	0	1	2	67	26
28	Jackson St and Jefferson St	41	0	37	0	0	0	0	0	78	0
30	Jackson St and Brush St	60	0	7	1	0	0	64	21	131	22
31	Jackson St and Nebraska Ave	0	0	0	0	0	0	0	0	0	0
32	Jackson St and Meridian Ave	0	0	-	-	0	0	0	0	0	0
33	Kennedy Blvd and Jefferson St	107	4	34	0	11	0	9	0	161	4
36	Kennedy Blvd and Brush St	0	0	32	0	34	2	0	0	66	2
37	Kennedy Blvd and Nebraska Ave	3	0	0	0	27	0	0	0	30	0
39	Kennedy Blvd and Meridian Ave	0	0	23	0	23	2	0	0	46	2

2.6.2 Transit

The Hillsborough Area Regional Transit Authority (HART) and Pinellas Suncoast Transit Authority (PSTA) provide bus services throughout much of Downtown Tampa. The following bus routes are provided within the study area:

LOCAL ROUTES (HART)

- The Teco Line Streetcar System provides connection from Downtown Tampa to Ybor City via Old Water Street and Channelside Drive.
- Route 1 provides connection from Downtown Tampa to the University Area via Florida Avenue and Whiting Street.
- Route 8 provides connection from Downtown Tampa to Brandon Mall via Jackson Street, Kennedy Boulevard, Channelside Drive, and Meridian Avenue.
- Route 9 provides connection from Downtown Tampa to the University Area via Channelside Drive, Kennedy Boulevard, Meridian Avenue, Cumberland Avenue, Jefferson Street, and Whiting Street.
- Route 19 provides connection from Downtown Tampa/Tampa General Hospital to Britton Plaza via Channelside Drive and Florida Avenue.
- Route 30 provides connection from Downtown Tampa to Tampa International Airport via Florida Avenue and Whiting Street.
- Route 400 (MetroRapid) provides connection from Downtown Tampa to the University Area via Jackson Street, Kennedy Boulevard, and Nebraska Avenue.

LIMITED EXPRESS ROUTES (HART)

- Route 24LX provides connection from Downtown Tampa to Fish Hawk via the Selmon Expressway, Florida Avenue, Jackson Street, Nebraska Avenue, and Kennedy Boulevard.
- Route 25LX provides connection from Downtown Tampa to South Tampa and to Bloomingdale via the Selmon Expressway, Florida Avenue, Jackson Street, Nebraska Avenue, and Kennedy Boulevard.
- Route 360LX provides connection from South Tampa to Downtown Tampa and to Brandon via the Selmon Expressway, Florida Avenue, Jackson Street, Nebraska Avenue, and Kennedy Boulevard.

EXPRESS ROUTES (PSTA)

- Route 100X provides connection from Downtown St. Petersburg to Downtown Tampa via the Selmon Expressway, Florida Avenue, Whiting Street, Morgan Street, and Brorein Street.
- Route 300X provides connection from Largo to Downtown Tampa via Pierce Street, and Whiting Street.

The City of Tampa has recently completed a PD&E Study for the InVision: Tampa Streetcar in April 2020 and is currently seeking funding from the Federal Transit Administration (FTA), with a request submitted in August 2020. The project will expand and modernize the Tampa Streetcar system with connections in

Downtown Tampa, the Channelside District, and the Ybor City historic district. A portion of this project will travel along Florida Avenue from Brorein Street to north of Whiting Street, which lies within the study area for this PD&E Study.

3.0 Study Alternatives

Two Alternatives were evaluated and are documented in this report. These Alternatives include one No-Build Alternative and one Build Alternative that are described below. Intersection by intersection lane geometry and traffic control is discussed in further detail in **Section 5.0**. The two Alternatives evaluated are:

- No-Build Alternative – Existing year (2019) lane geometry and traffic control with new street connections from the Water Street Tampa development. The concepts for this development can be found in **Appendix H**. The following improvements are made in the No-Build Alternative:
 - Extend Cumberland Avenue from Meridian Avenue to Morgan Street.
 - Convert Channelside Drive to a two-way roadway from Morgan Street to Meridian Avenue.
 - Extend Water Street and Jefferson Street from Channelside Drive to Cumberland Avenue as two-way roadways.
 - Convert Nebraska Avenue to a two-way road between Channelside Drive and Cumberland Avenue.

- Build Alternative – Includes proposed lane geometry as well as new street connections from the Water Street Tampa development. The proposed lane geometry includes the Whiting Street improvements, as well as the modifications to the eastbound Selmon Expressway and Downtown East/West interchange to alleviate existing traffic congestion, improve safety, and provide necessary roadway capacity to allow for future growth and economic development with the study area. Design concepts for the Build Alternative can be found in **Appendix I**. The improvements proposed for the eastbound Selmon Expressway and Downtown East/West interchange consist of:
 - Realigning and widening the eastbound Selmon Expressway off-ramp to Downtown West (Exit 6A) with two lanes off of the Selmon Expressway and three lanes at the Florida Avenue intersection, operating under signal control with no right-turn on red.
 - Clustering the new signal at the Florida Avenue off-ramp with the Channelside Drive at Florida Avenue signal to improve safety for all users.
 - Accommodating two left turn and two through lanes on the eastbound approach of the Channelside Drive at Florida Avenue intersection to remove the split phasing of the approach.
 - Providing a pedestrian underpass at the location of the existing Channelside Drive off-ramp.
 - Relocating the eastbound Selmon Expressway off-ramp to Downtown East (Exit 6B) from its existing access at the Channelside Drive and Morgan Street intersection to new access at Whiting Street with the new ramp terminal intersection operating under signal control with no right-turn on red.

- ❑ Realigning the eastbound Selmon Expressway on-ramp at Jefferson Street to accommodate the new overhead off-ramp to Whiting Street.
- ❑ Connecting Whiting Street from Jefferson Street to Meridian Avenue with a four-lane typical section.
- ❑ Providing a traffic signal at the Whiting Street at Brush Street intersection.
- ❑ Providing two T-intersections at the Whiting Street at Meridian Avenue intersection that operate under a single signal controller.

Additionally, the impacts of the South Selmon PD&E Study were considered in this analysis. The purpose of the South Selmon Study is to evaluate capacity improvements along the southernmost section of Selmon Expressway. The study limits extend from east of the Gandy Boulevard interchange to the overpass at Whiting Street, a distance of approximately 4.5 miles. Various roadway and ramp improvements are being evaluated as part of the study to improve the efficiency and capacity of the Selmon Expressway into the future.

The impacts of the East Selmon PD&E Study were also considered in this analysis. The purpose of the East Selmon PD&E Study is to evaluate capacity improvements along the eastern section of Selmon Expressway. The study limits extend approximately 10 miles, from Brorein Street in Downtown Tampa to I-75 near Brandon. Roadway and ramp improvements are being evaluated to address safety, efficiency, and capacity needs of the Selmon Expressway general lanes and reversible express lanes through the year 2045.

4.0 Development of Future Traffic

The following sections summarize the development of the opening year (2026), interim year (2036), and design year (2046) traffic volumes for the Whiting Street PD&E Study. Further detail can be found in the Volume Development Technical Memorandum, **Appendix D**, and subsequent tables that include the addition of Channelside Drive from Meridian Avenue to Kennedy Boulevard, in **Appendix** .

The development of future traffic for the Whiting Street PD&E study area requires the analysis of the historical growth in the area, an understanding of the traffic patterns of the surrounding facilities, and an understanding of the travel characteristics of the area. Taking into account such analyses, future travel demand was determined for the study area. This section discusses the methodology for determining the opening year (2026), interim year (2036), and design year (2046) design traffic for the No-Build and Build Alternatives.

4.1 Travel Demand Model

The travel demand model used for forecasting the Whiting Street PD&E Study is a modified version of the TBRPM v8.2 created for THEA with a base year of 2015, interim year of 2030, and a horizon year of 2040. This model was previously validated and provided by THEA.

4.2 Methodology for Development of Future Traffic

Traffic volumes were developed for both the No-Build and Build scenarios using the same inputs (productions and attractions from the external zones) for the design year (2046). The No-Build scenario includes roadway improvements which have been committed as part of the on-going Downtown Tampa redevelopment of Water Street Tampa. The Build scenario includes additional roadway improvements proposed by this study.

AADTs developed through the forecasting process were used in conjunction with the K and D-factors, discussed in **Section 2.3.1** to develop design year network inputs at each of the external zones. The design year (2046) and an OD matrix for the Water Street Tampa development trips found in the THEA *Comprehensive Downtown Channelside Traffic Study Technical Memorandum*. The Water Street Tampa trips OD matrix was developed by distributing the trips generated in the THEA *Comprehensive Downtown Channelside Traffic Study Technical Memorandum* using distribution patterns found in the TBRPM.

Following the development of the design year (2046) OD matrix, trips along the Selmon Expressway were reviewed and adjustments were made as necessary to better match the horizon year TBRPM traffic patterns and past studies. The volumes on the western edge of the study area on the Selmon Expressway were compared with the South Selmon PD&E Study to ensure consistency.

Opening year (2026) and interim year (2036) peak hour volumes were subsequently derived by interpolating between the existing year (2019) and design year (2046) peak hour volumes at the network periphery. The volumes were then again assigned utilizing the calibrated existing Visum network.

4.3 Growth Rates

To establish model growth rates at each external zone, methods from *National Cooperative Highway Research Program (NCHRP) Report 765* defined in the 2019 FDOT *Project Traffic Forecasting Handbook* were used to smooth forecasted model volumes. The 2015 and 2040 model AADTs were used as endpoints to interpolate 2019 AADTs, and then compared to the actual 2019 AADTs. A recommended growth rate was then defined between the smoothed 2040 model AADT and the actual 2019 volumes. This growth rate was then applied to the actual 2019 volume to derive opening year (2026), interim year (2036), and design year (2046) AADT for all external network zones. The recommended growth rates can be found within the Volume Development Tables, in **Appendix D**.

4.4 Future Year AADT

Opening year (2026), interim year (2036), and design year (2046) AADT were derived from the application of the standard peak-to-daily ratio (9.0 percent) to the maximum of the AM or PM bi-directional peak hour volumes and then rounded, as guided by the FDOT's *Project Traffic Forecasting Handbook (2019)*. The opening year (2026), interim year (2036), and design year (2046) AADT volumes for the No-Build and Build Alternatives are shown in **Figures 4.1** through **4.6**.

4.5 Future Year Peak Hour Volumes

The opening year (2026), interim year (2036), and design year (2046) AM and PM peak hour volumes were developed utilizing the calibrated existing Visum network for the study area, as documented in the Traffic Methodology Statement included in **Appendix A**. Initial AADTs developed through the forecasting process, outlined previously, were used in conjunction with the standard K and D-factors, discussed in **Section 2.3.1**, to assign demand to the network. The resulting assignment was checked for the reasonableness between the existing year (2019) and design year (2046) by ensuring the OD relationships either remained the same or increased over time. Due to the improvements between existing conditions and the No-Build scenario and between the No-Build scenario and Build scenario stated in **Section 3.0**, there is some shifts in routing that may reduce volumes on specific movements between scenarios, despite the OD relationships always increasing. Opening year (2026), interim year (2036), and design year (2046) peak hour volumes for the No-Build and Build Alternatives are shown in **Figures 4.7** through **4.12**.

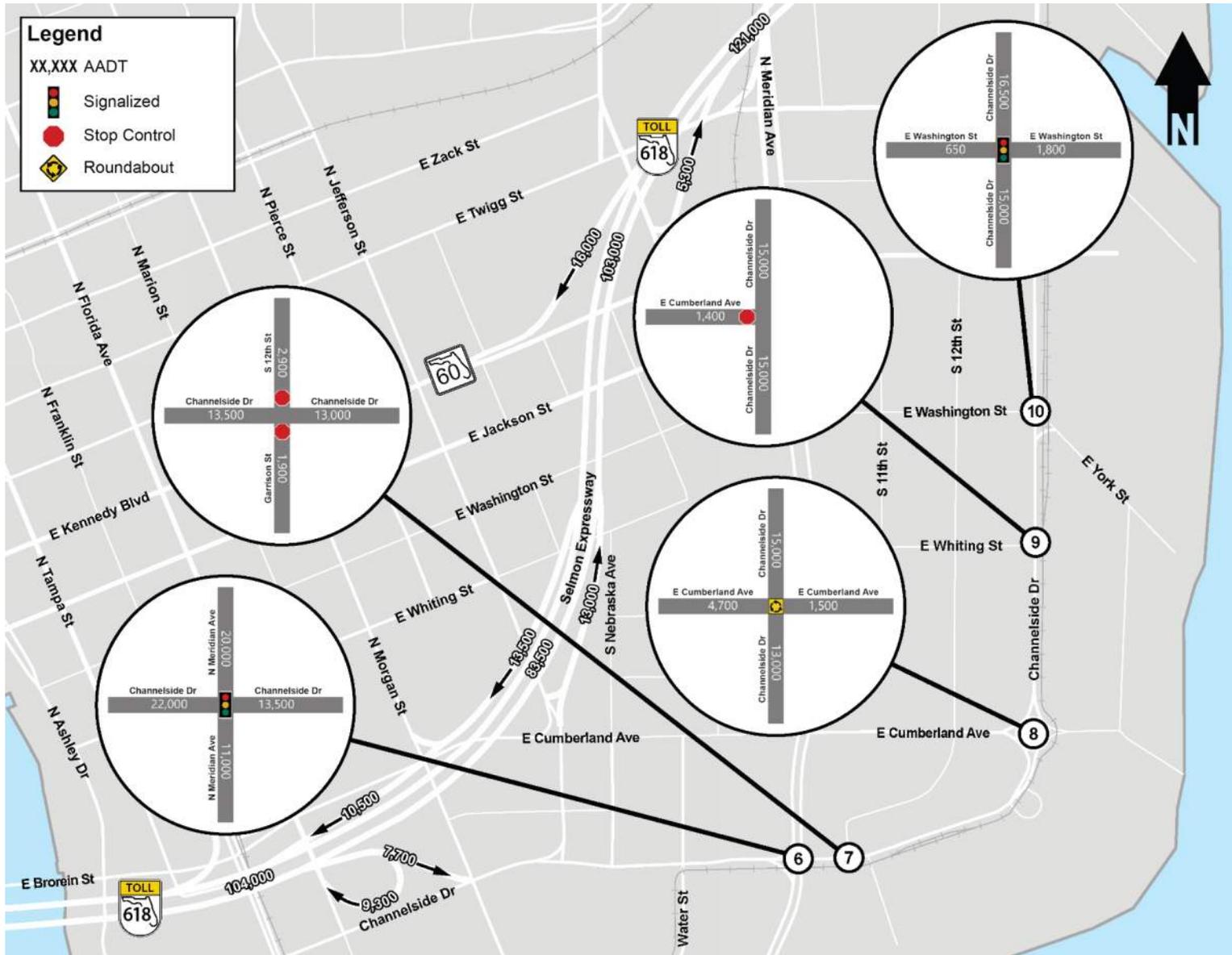


Figure 4.1b: Opening Year (2026) No-Build Alternative AADTs

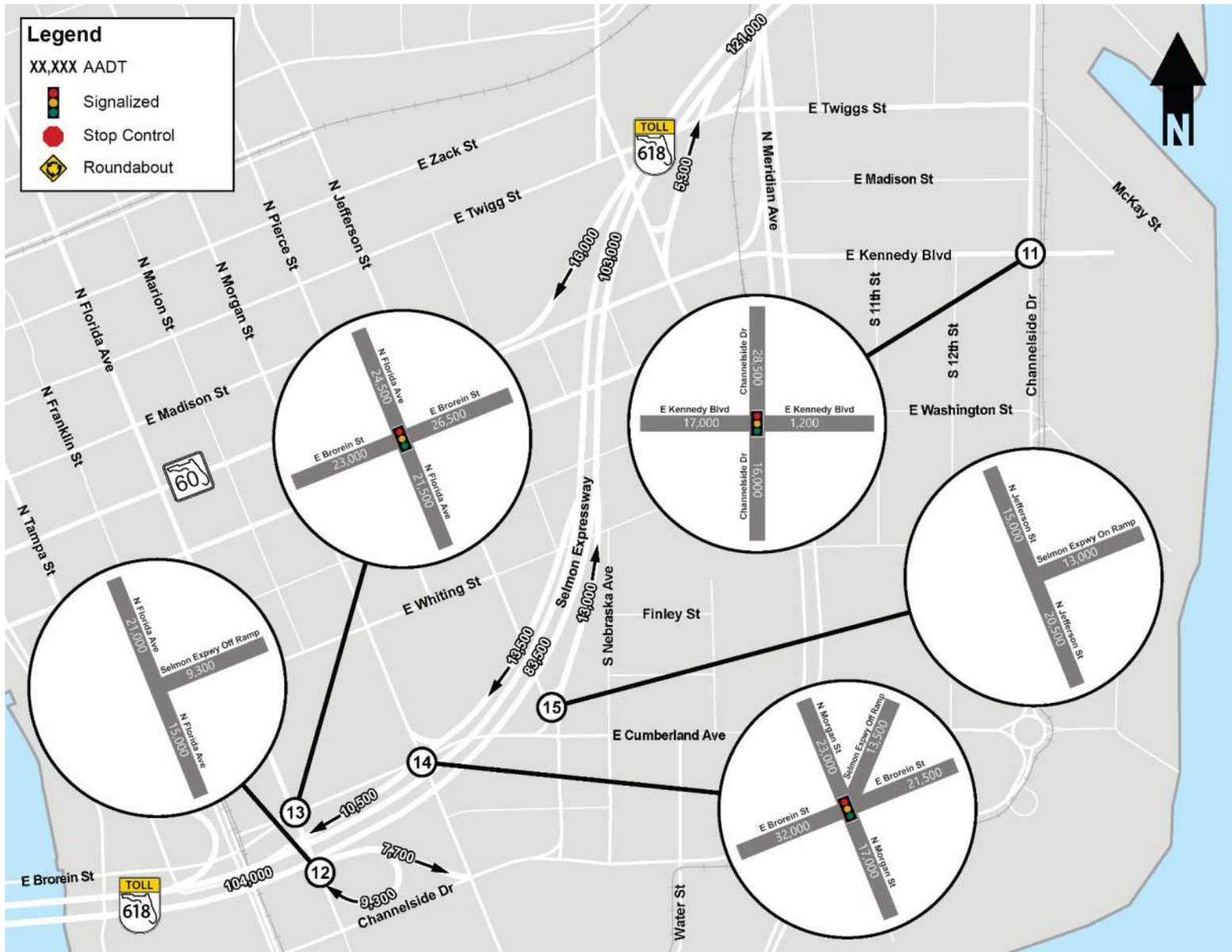


Figure 4.1c: Opening Year (2026) No-Build Alternative AADTs

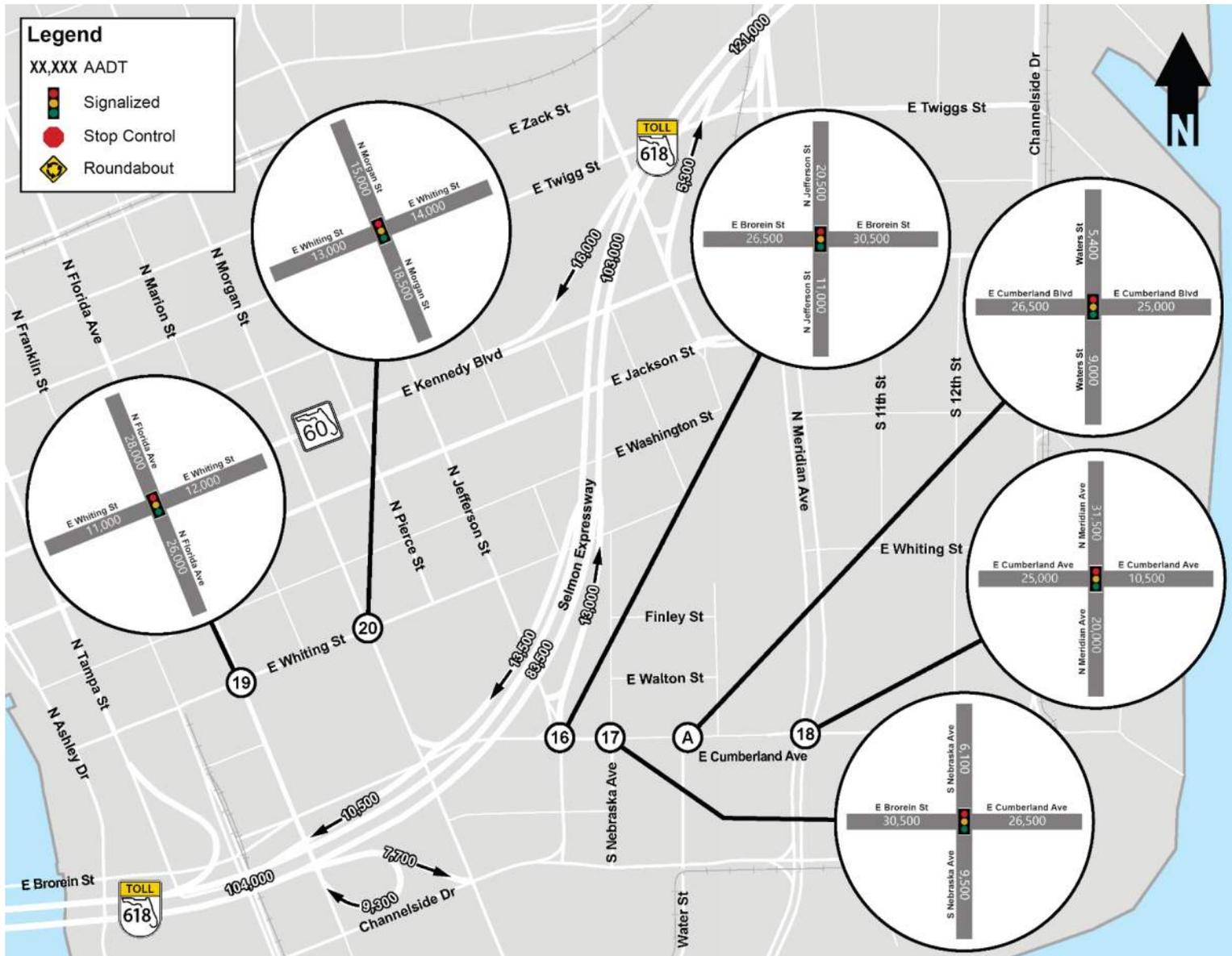


Figure 4.1d: Opening Year (2026) No-Build Alternative AADTs

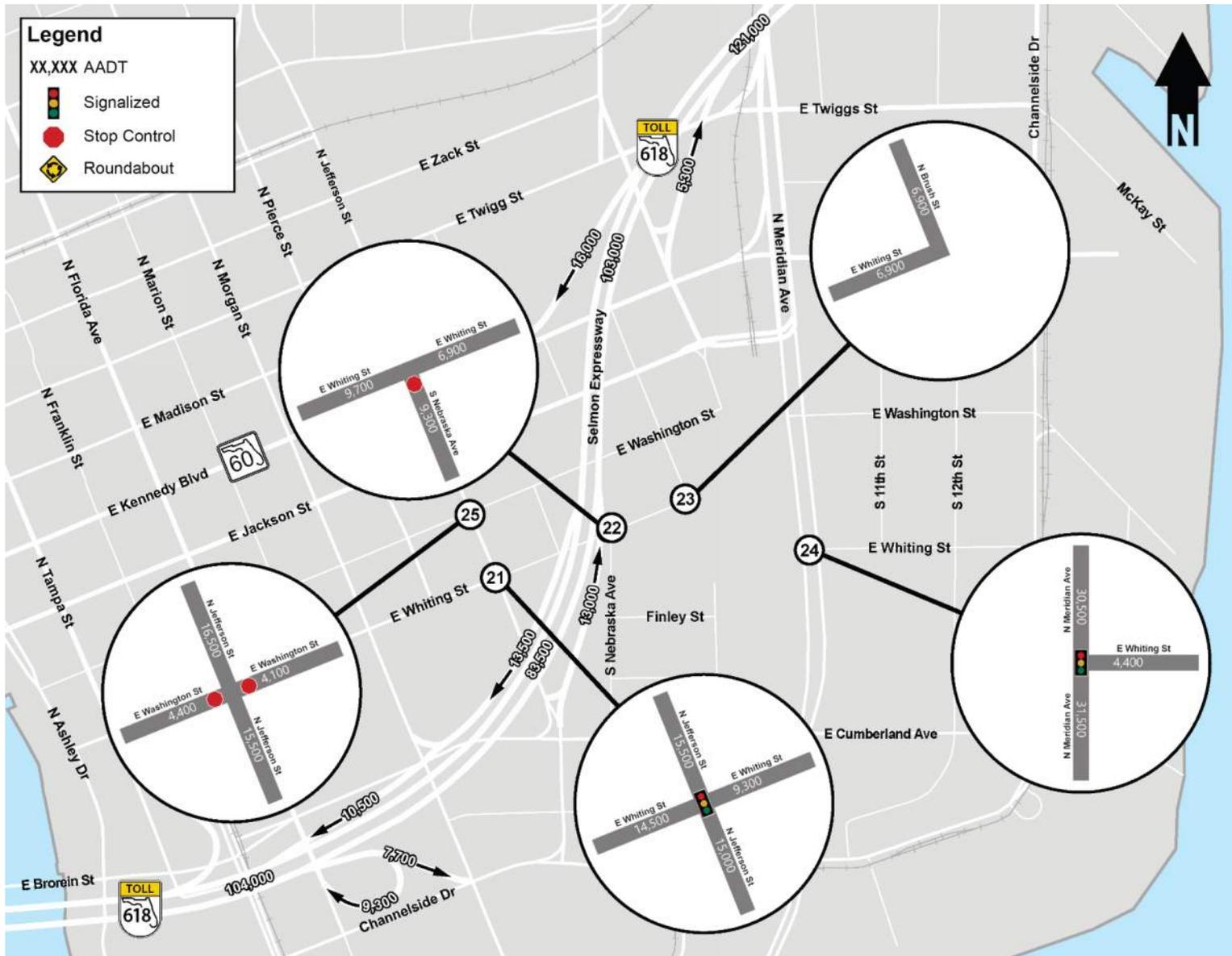


Figure 4.1e: Opening Year (2026) No-Build Alternative AADTs

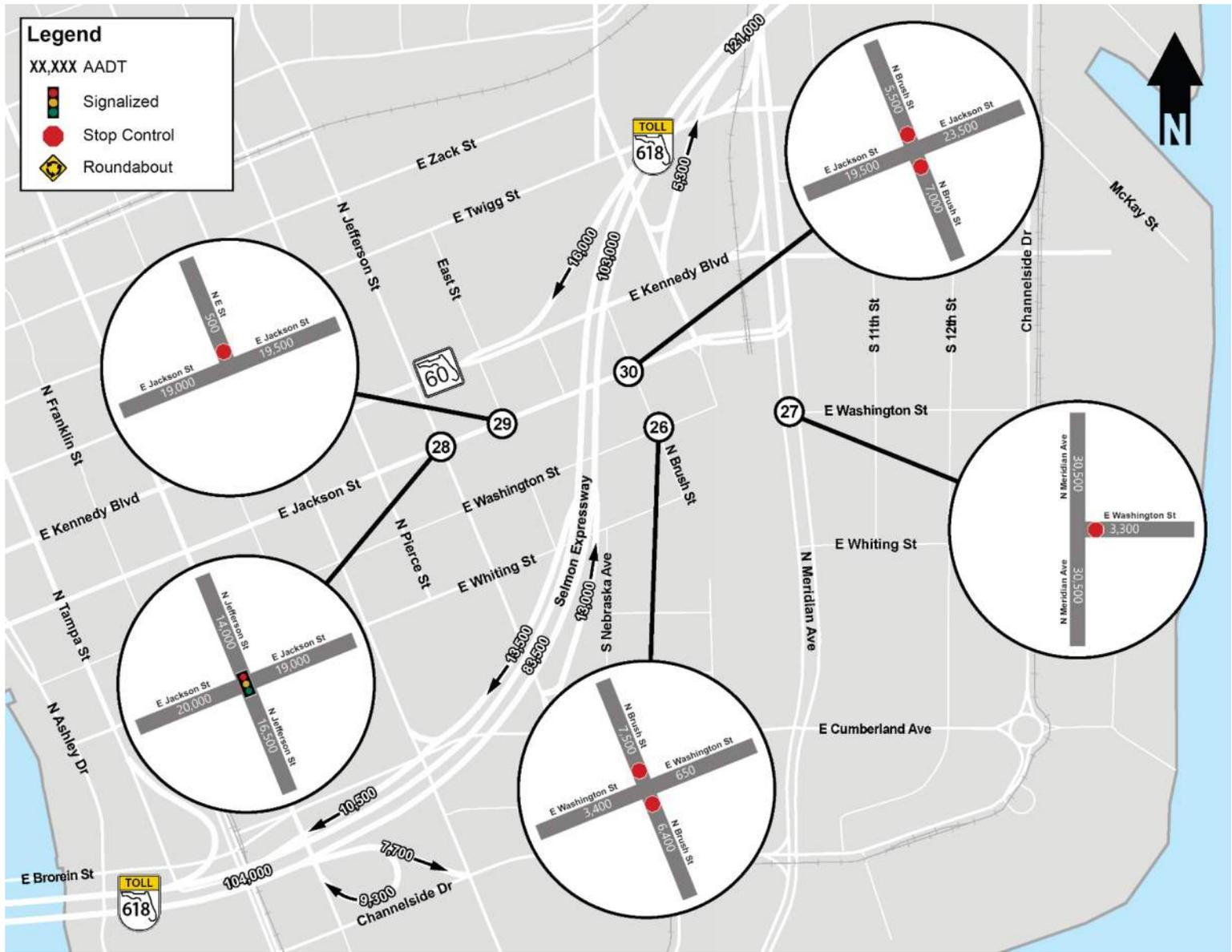


Figure 4.1f: Opening Year (2026) No-Build Alternative AADTs

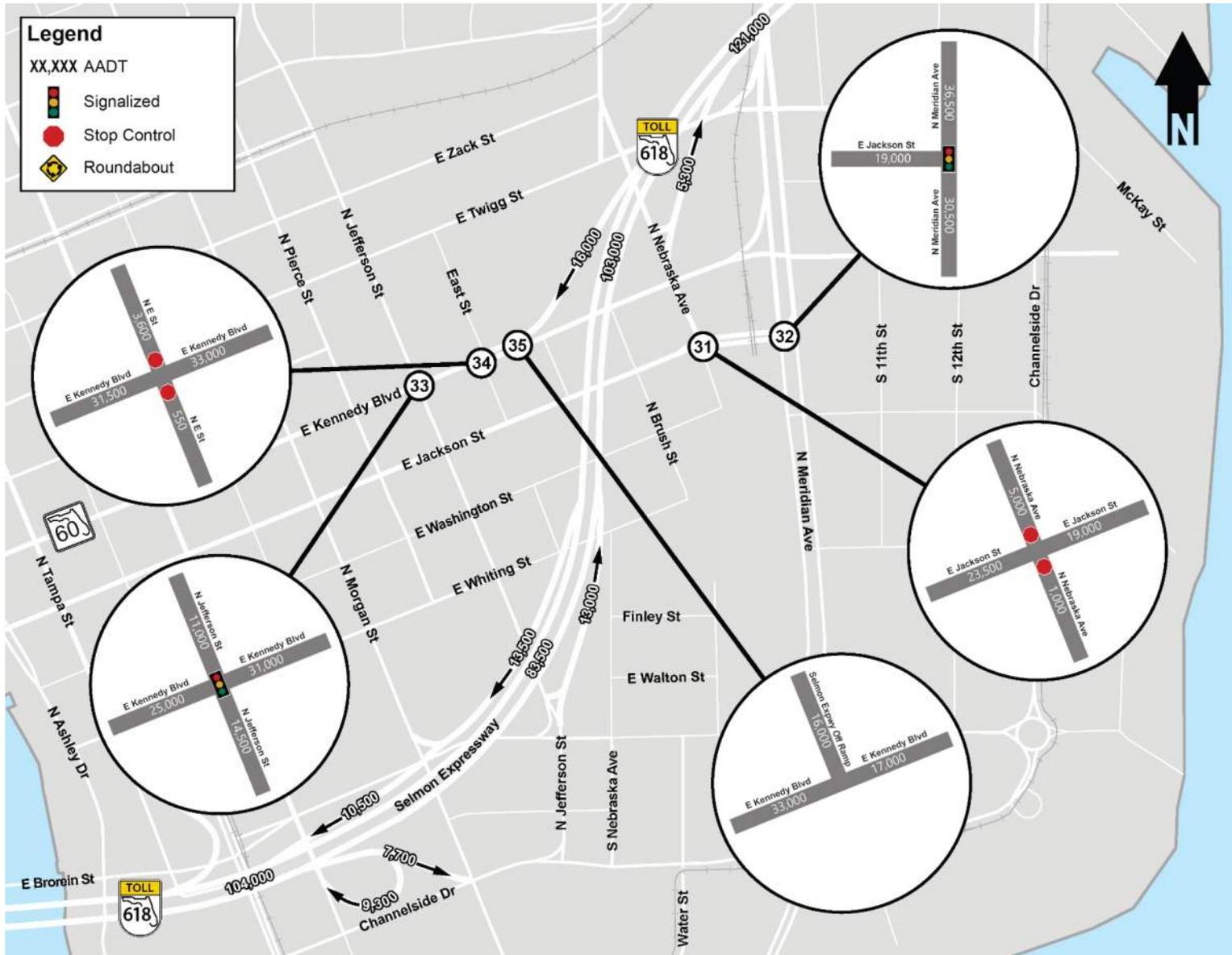


Figure 4.1g: Opening Year (2026) No-Build Alternative AADTs

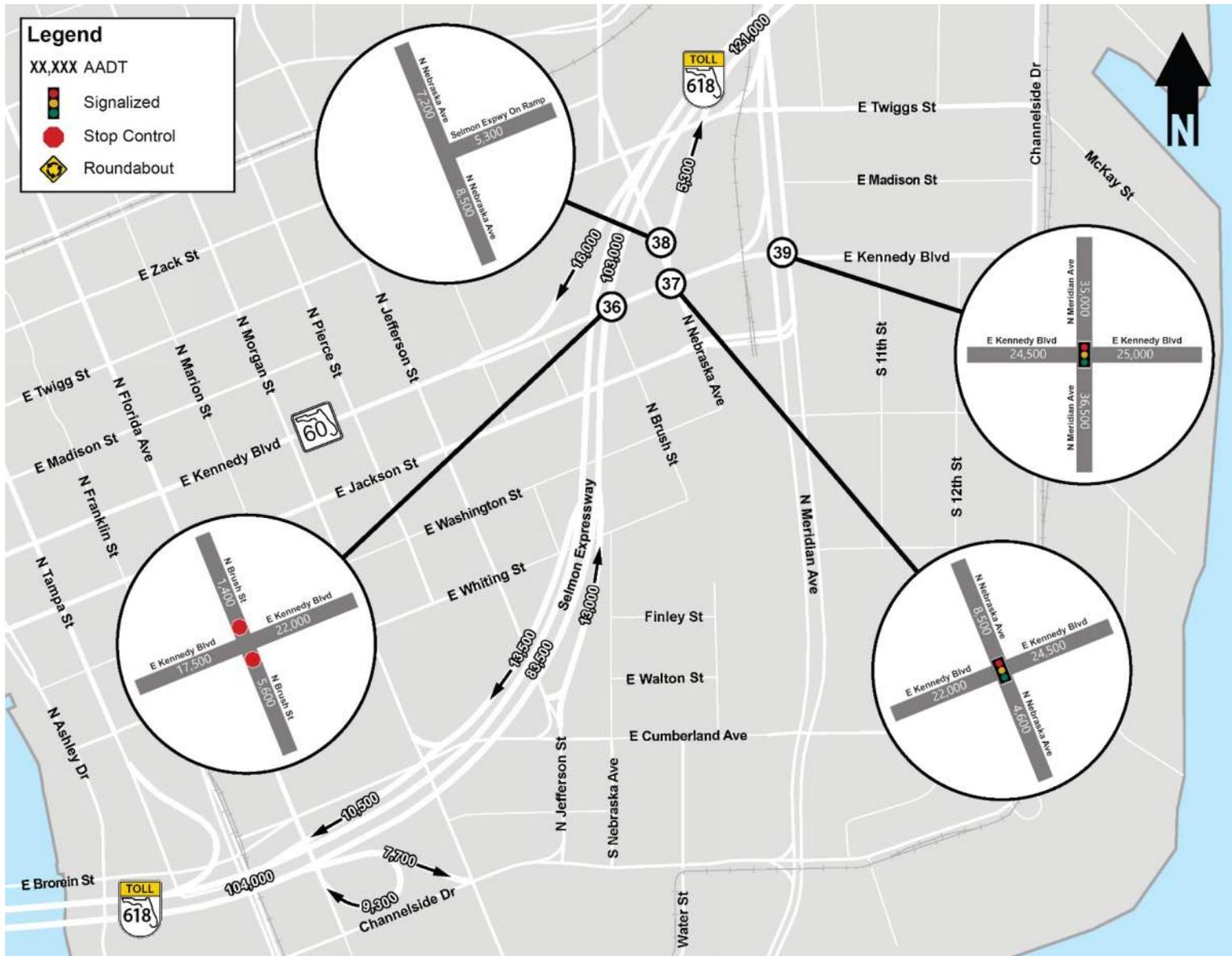


Figure 4.1h: Opening Year (2026) No-Build Alternative AADTs

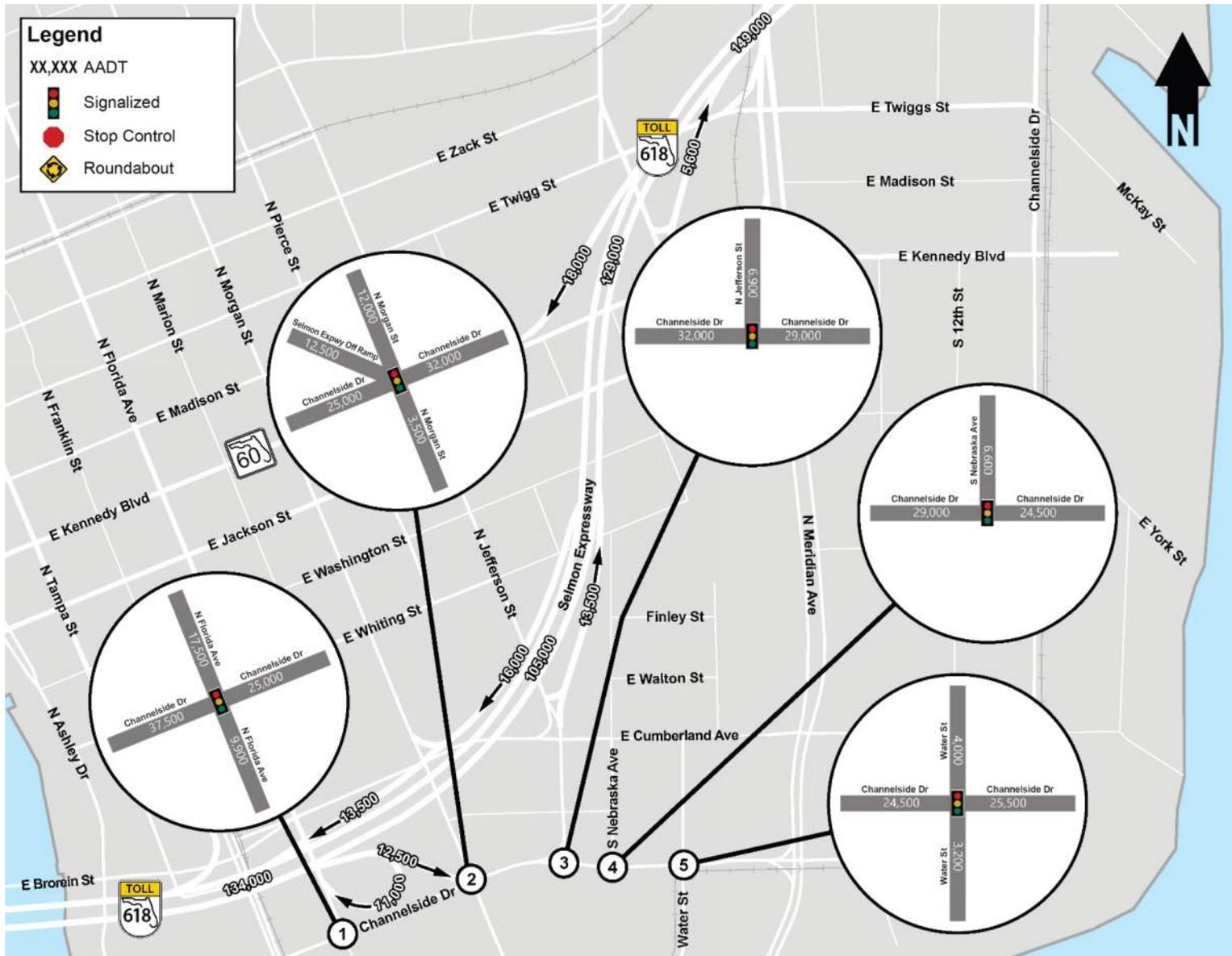


Figure 4.2a: Interim Year (2036) No-Build Alternative AADTs

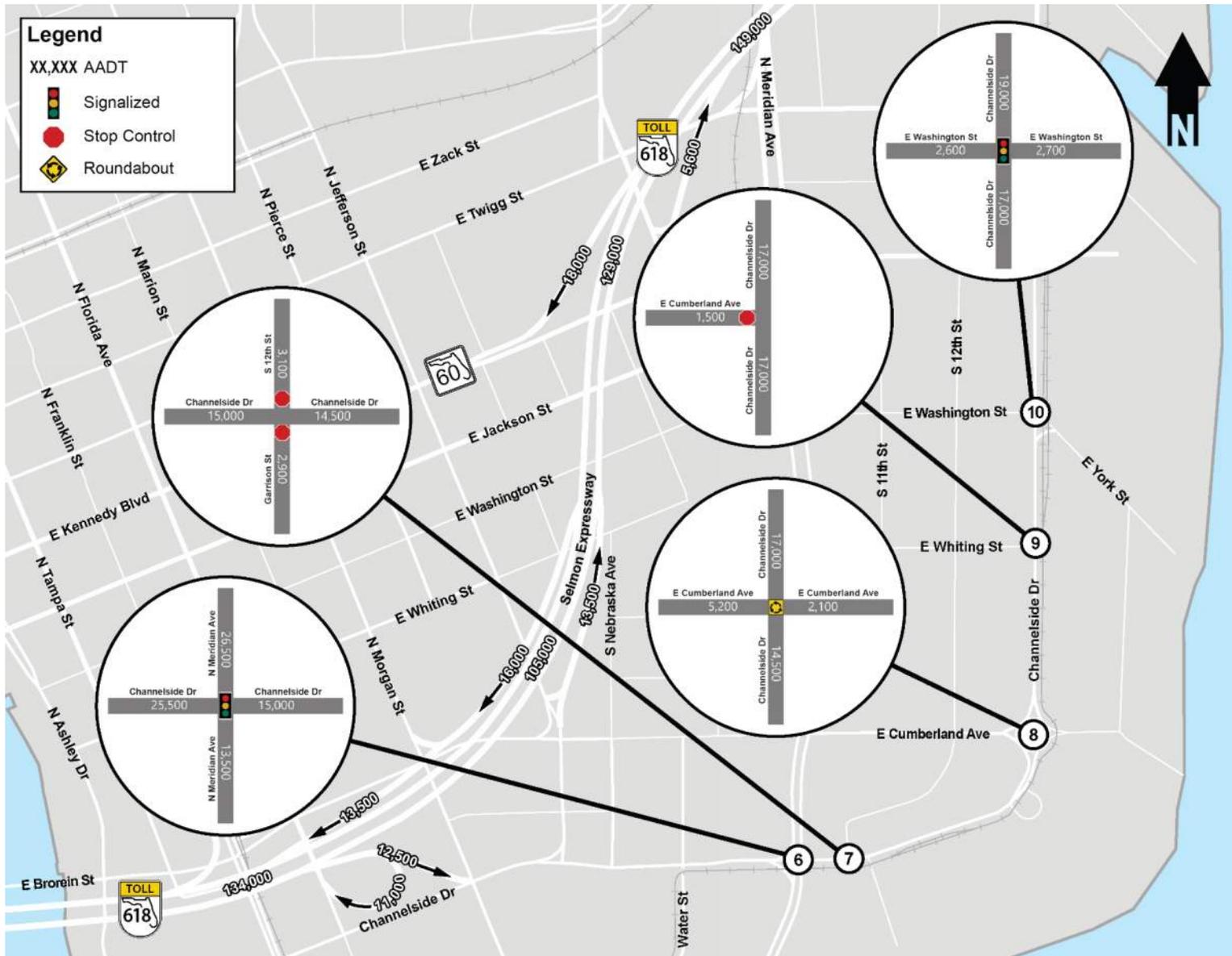


Figure 4.2b: Interim Year (2036) No-Build Alternative AADTs

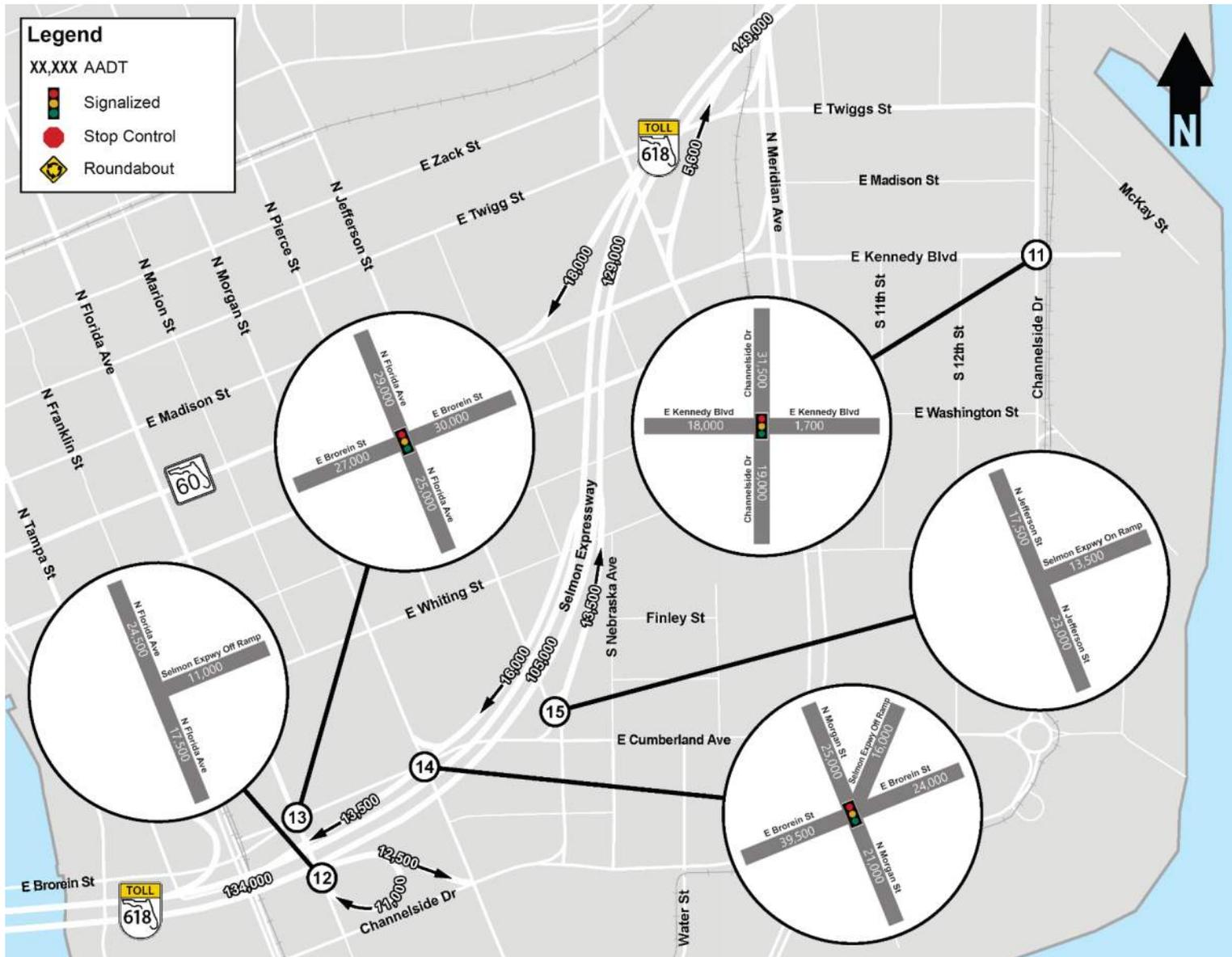


Figure 4.2c: Interim Year (2036) No-Build Alternative AADTs

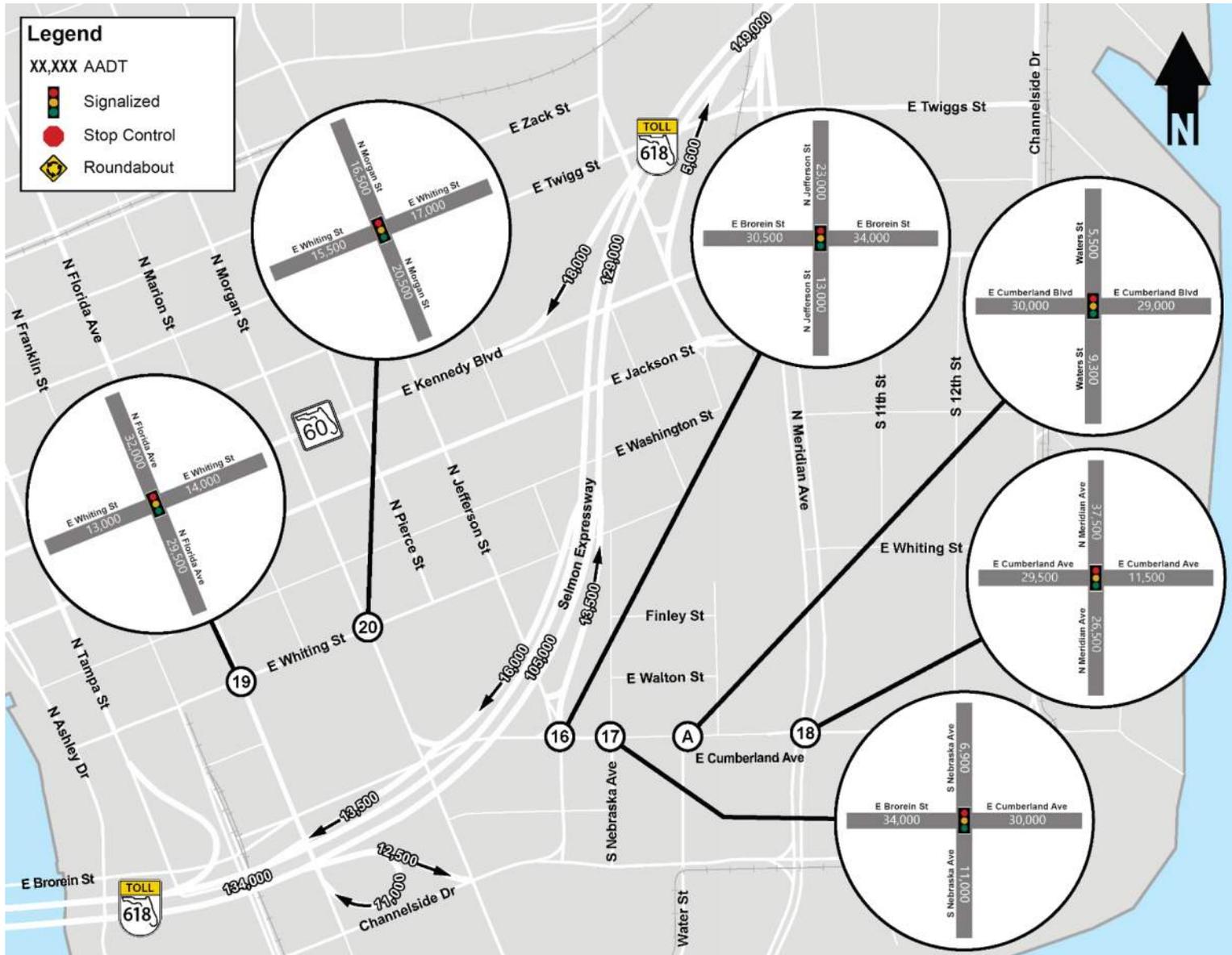


Figure 4.2d: Interim Year (2036) No-Build Alternative AADTs

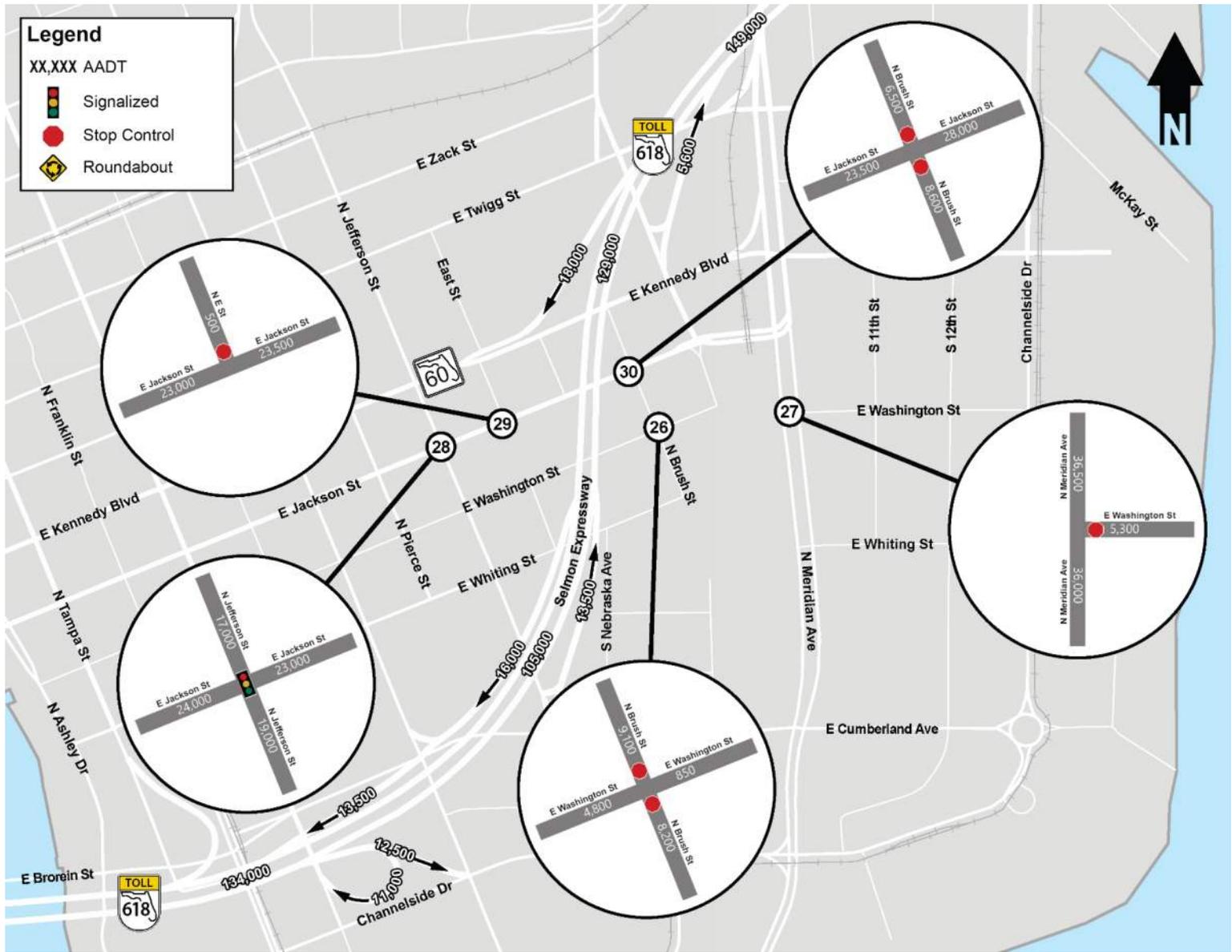


Figure 4.2f: Interim Year (2036) No-Build Alternative AADTs

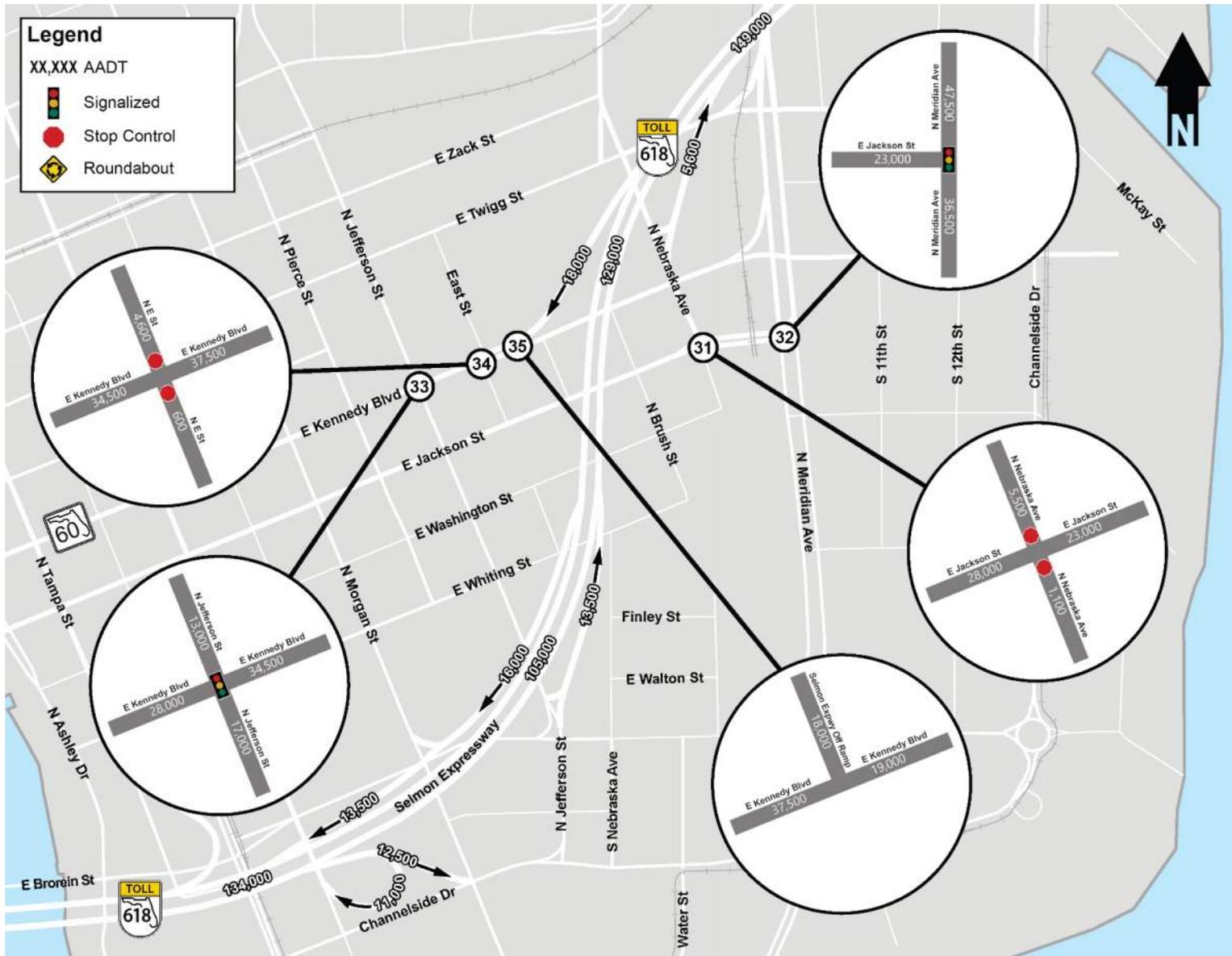


Figure 4.2g: Interim Year (2036) No-Build Alternative AADTs

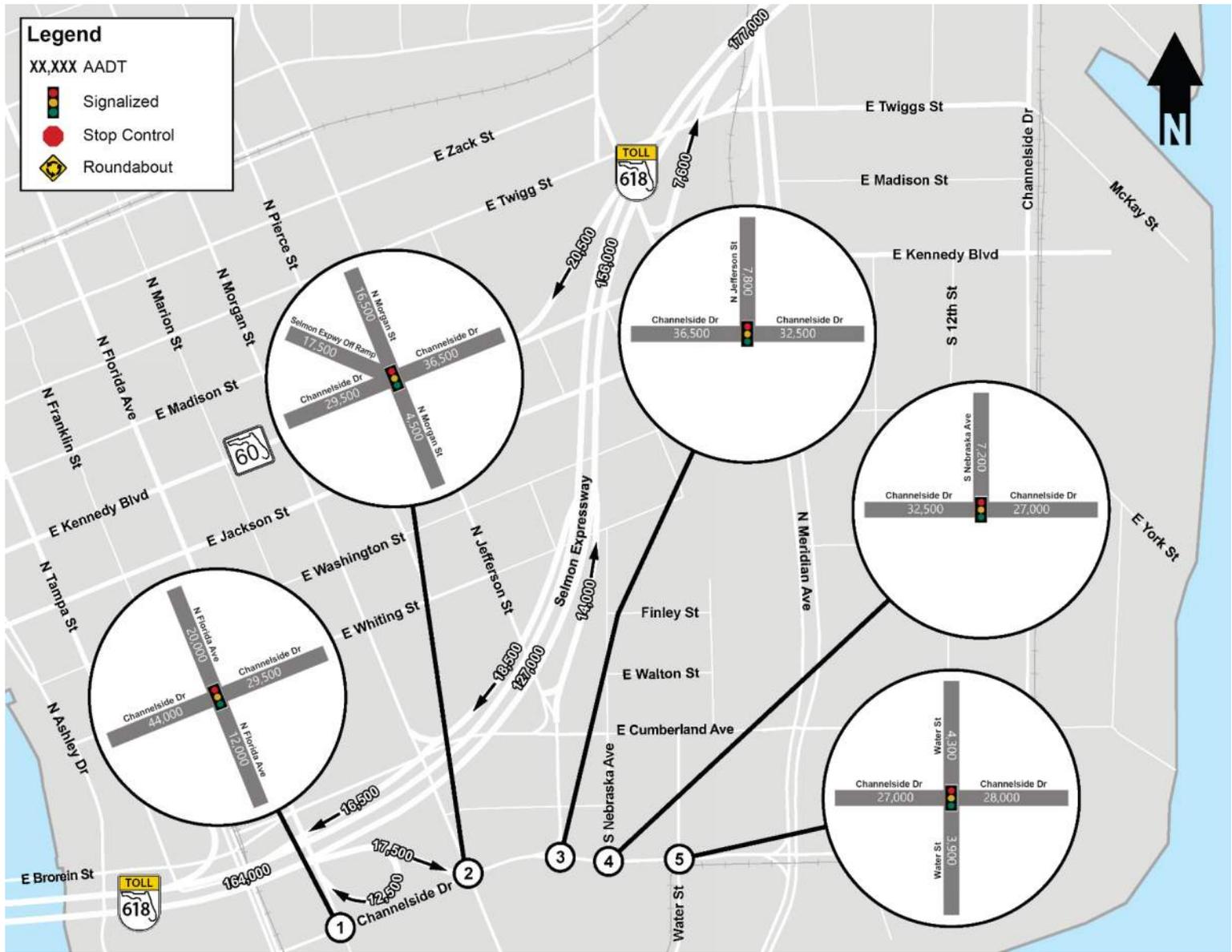


Figure 4.3a: Design Year (2046) No-Build Alternative AADTs

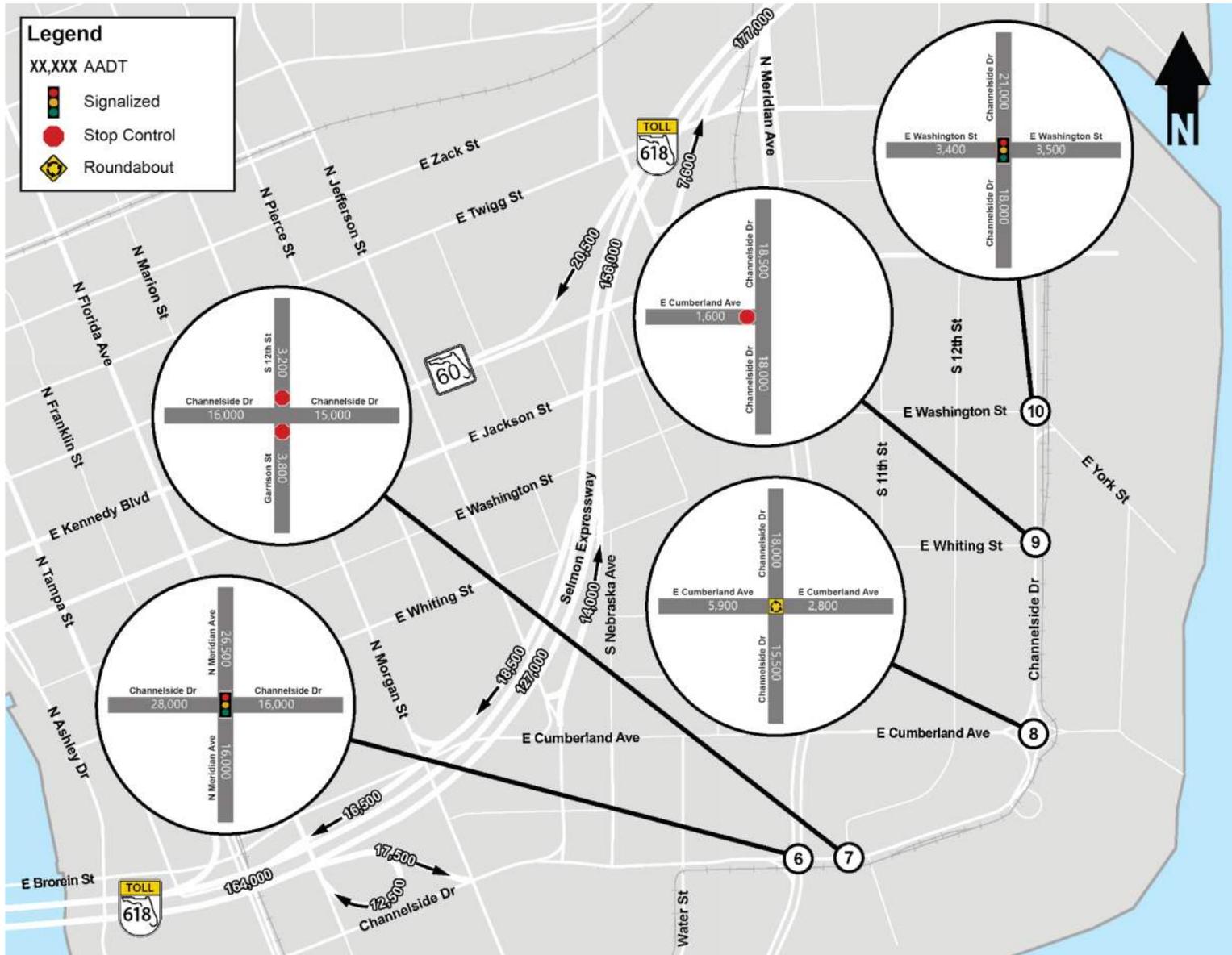


Figure 4.3b: Design Year (2046) No-Build Alternative AADTs

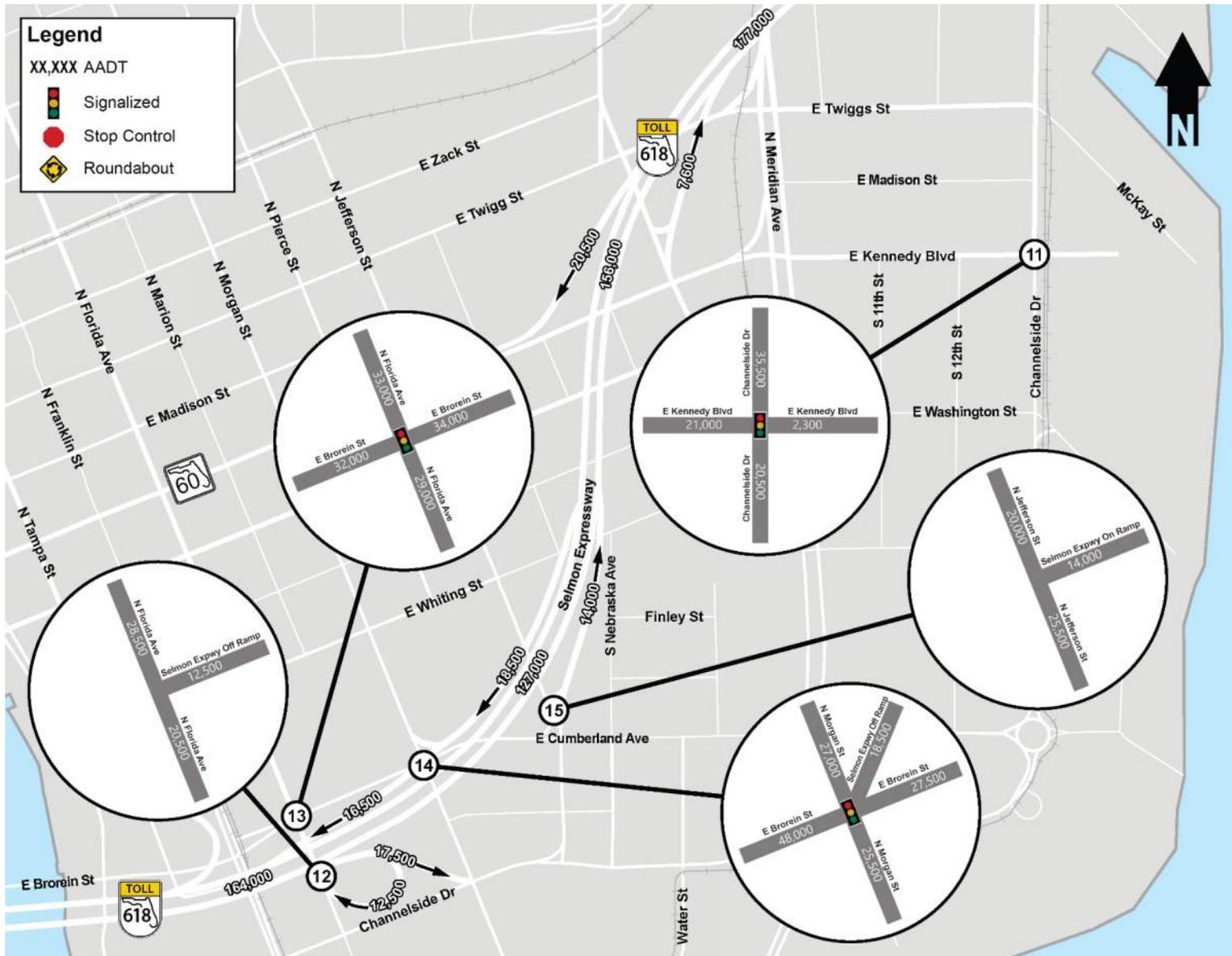


Figure 4.3c: Design Year (2046) No-Build Alternative AADTs

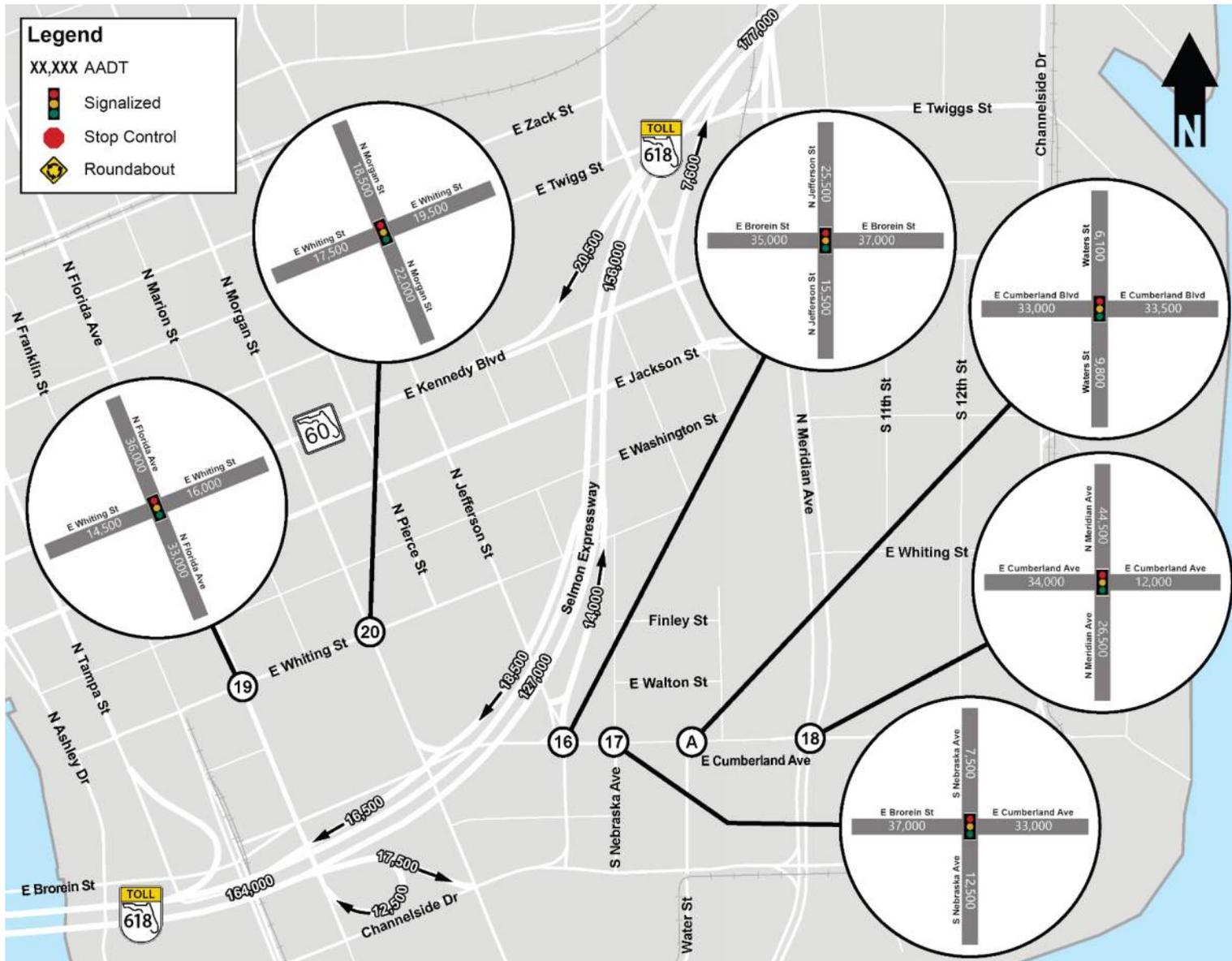


Figure 4.3d: Design Year (2046) No-Build Alternative AADTs

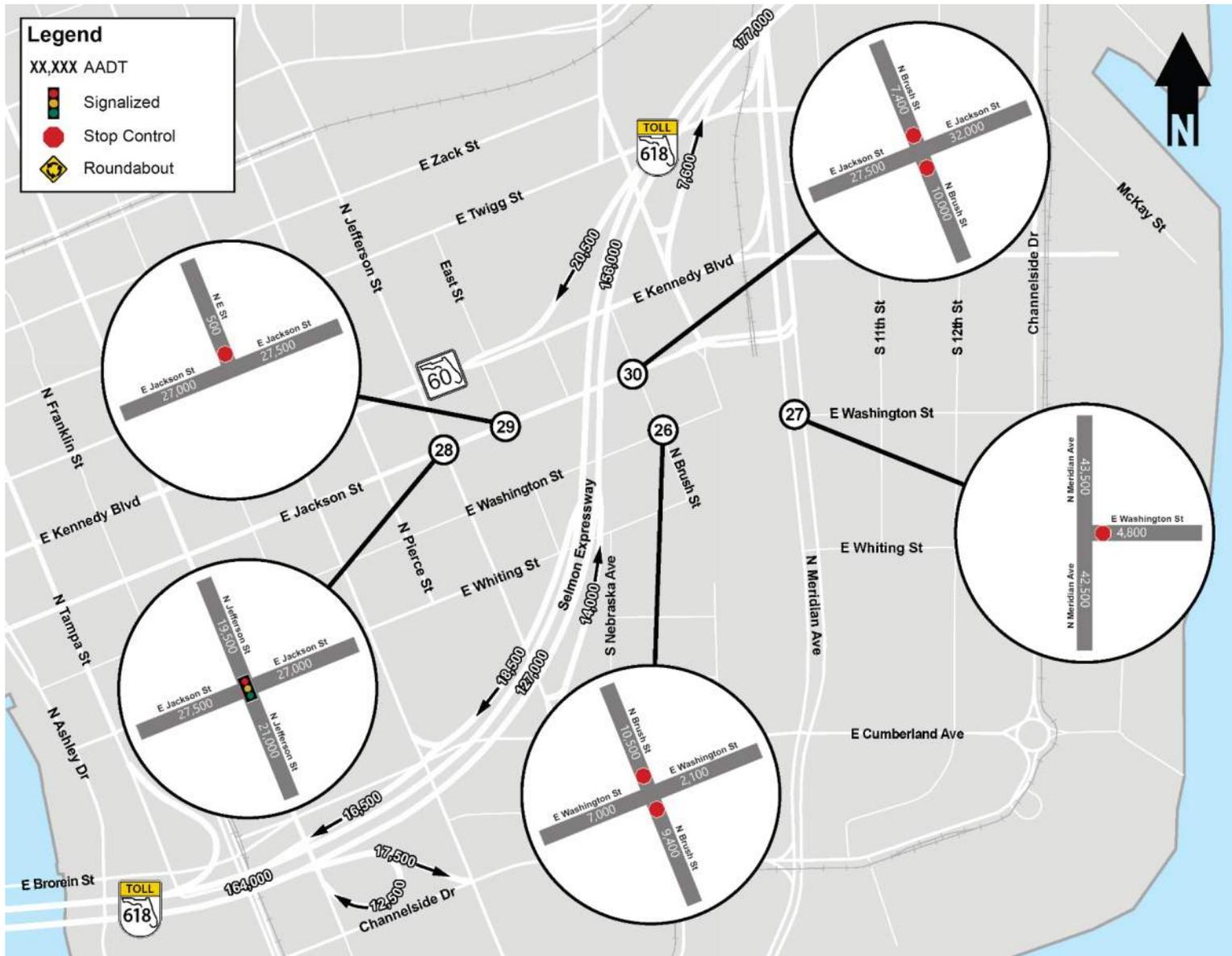


Figure 4.3f: Design Year (2046) No-Build Alternative AADTs

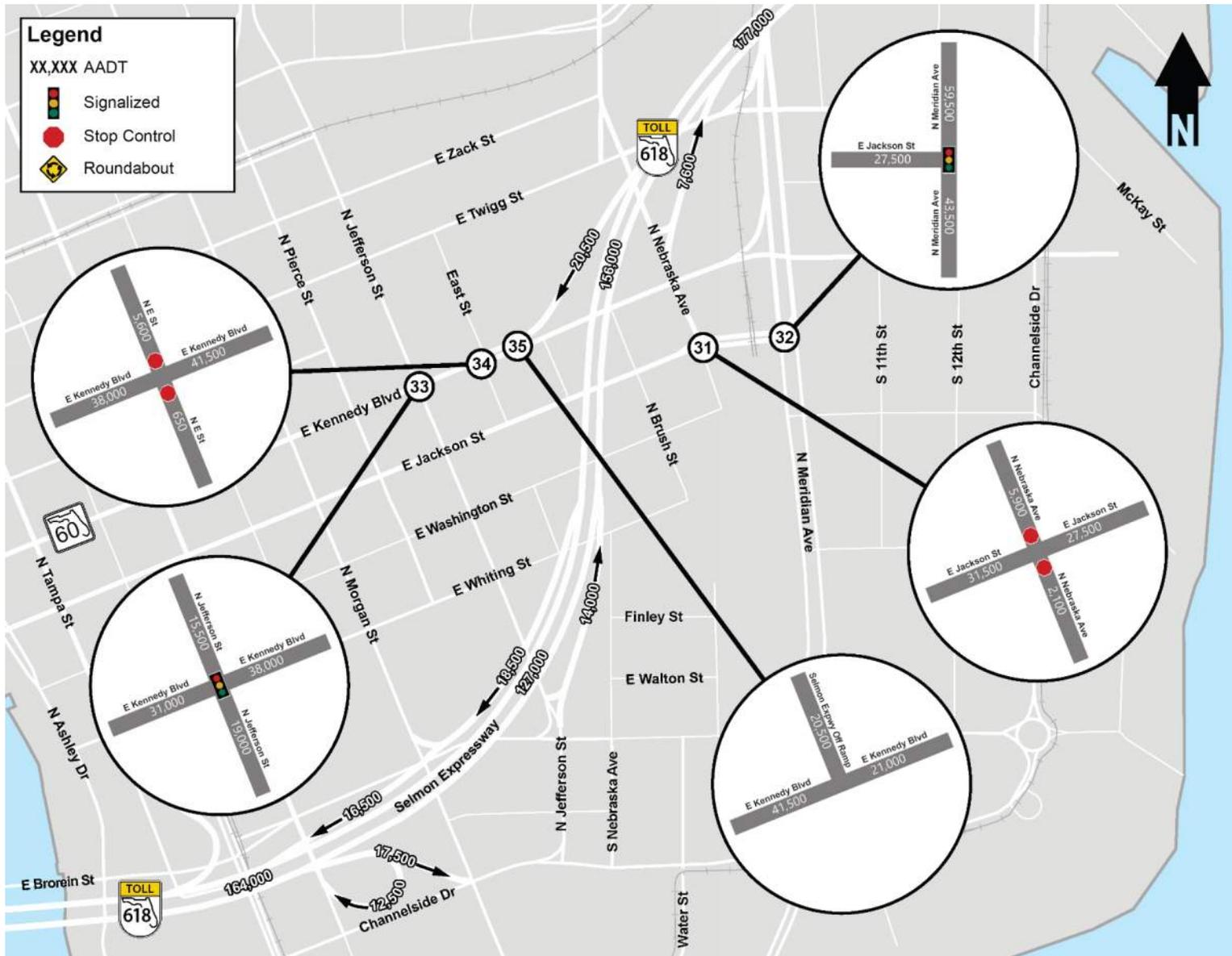


Figure 4.3g: Design Year (2046) No-Build Alternative AADTs

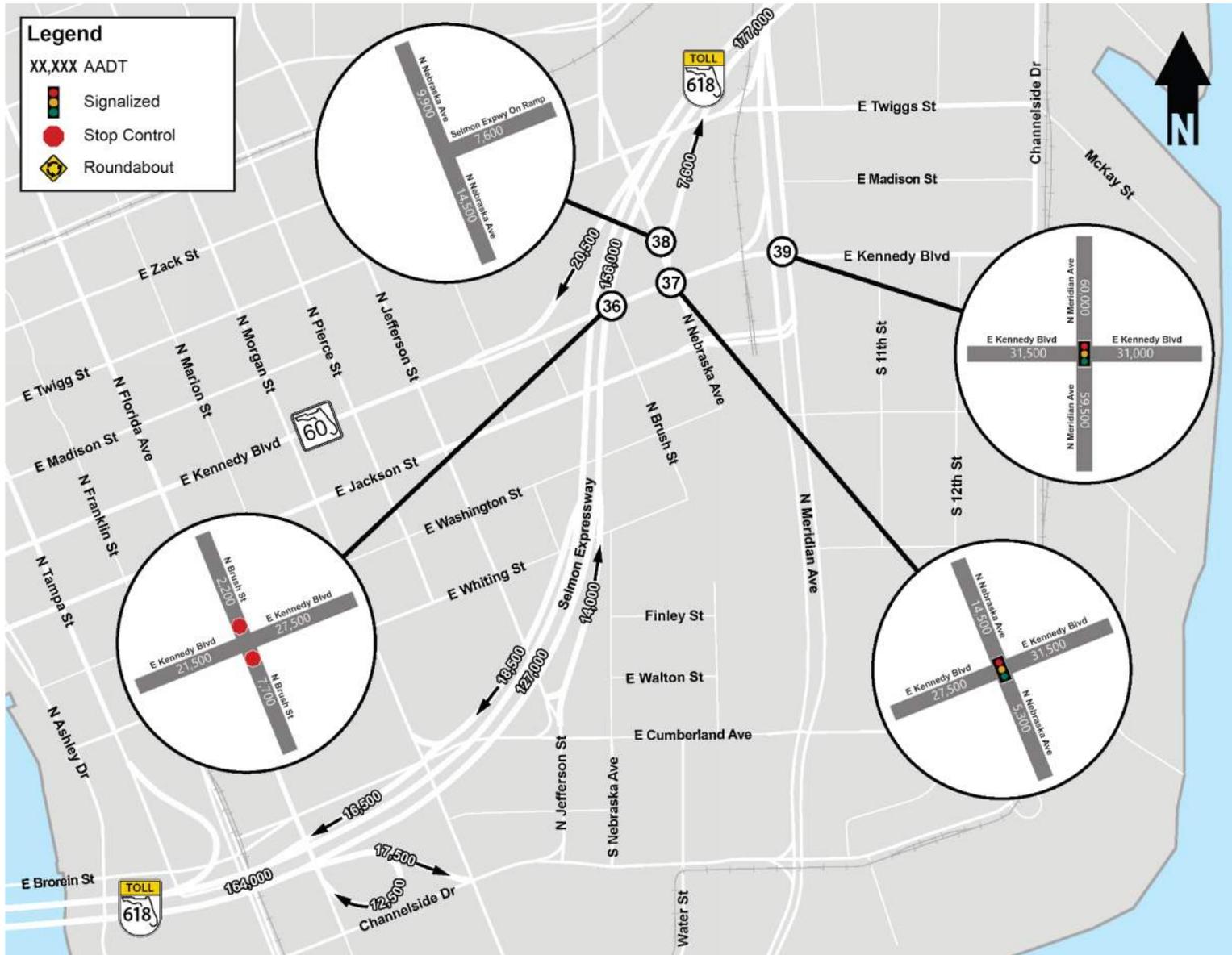


Figure 4.3h: Design Year (2046) No-Build Alternative AADTs

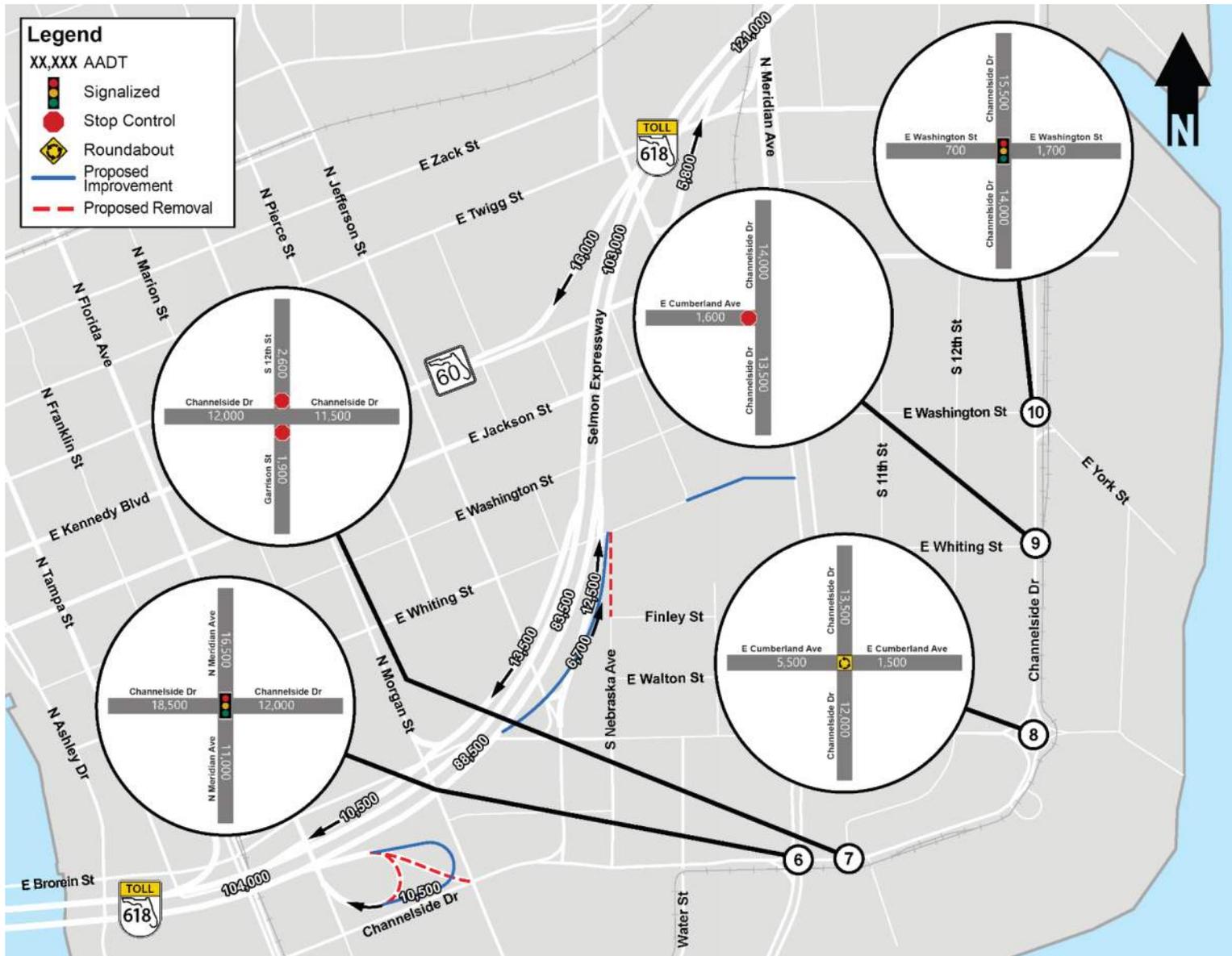


Figure 4.4b: Opening Year (2026) Build Alternative AADTs

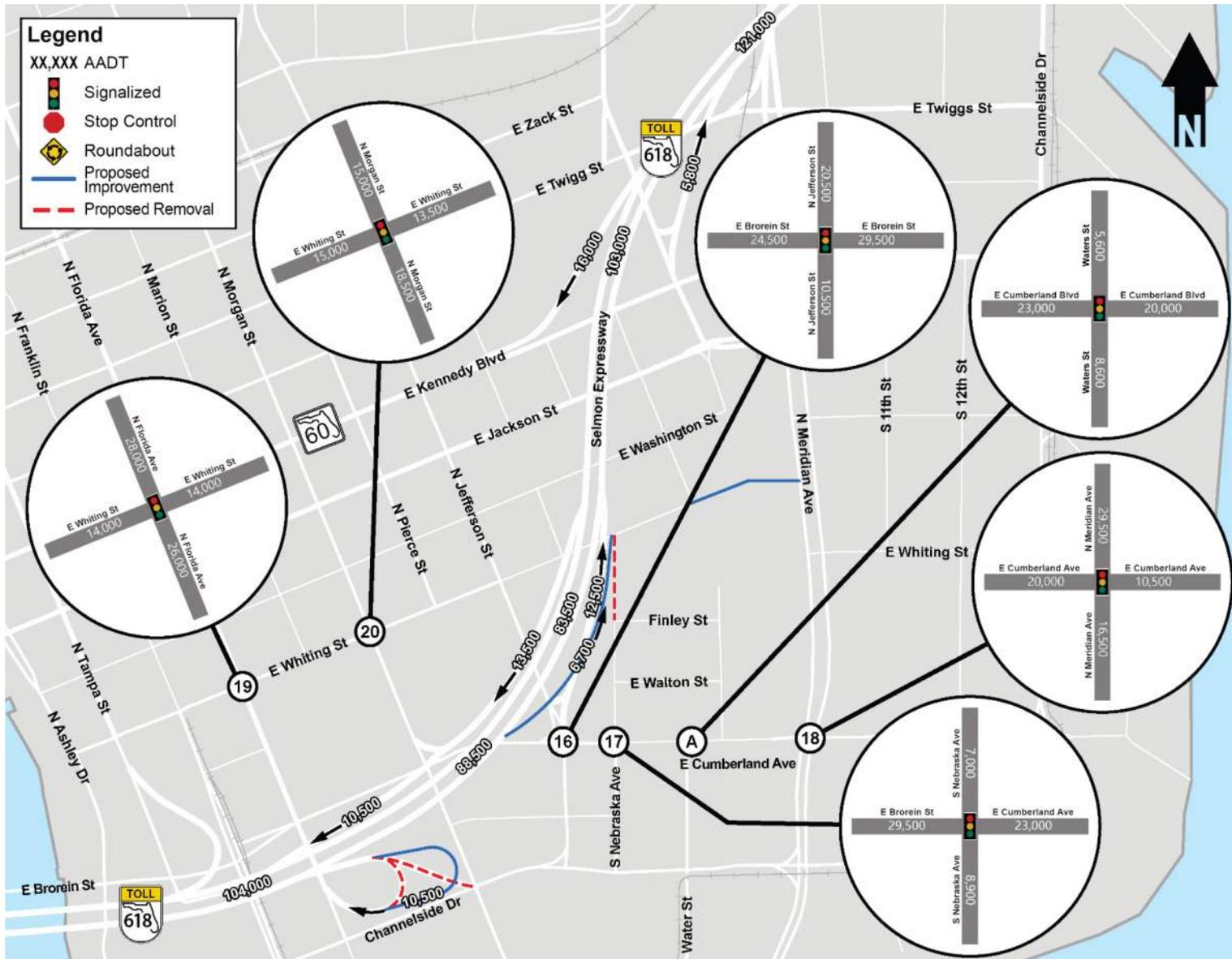


Figure 4.4d: Opening Year (2026) Build Alternative AADTs

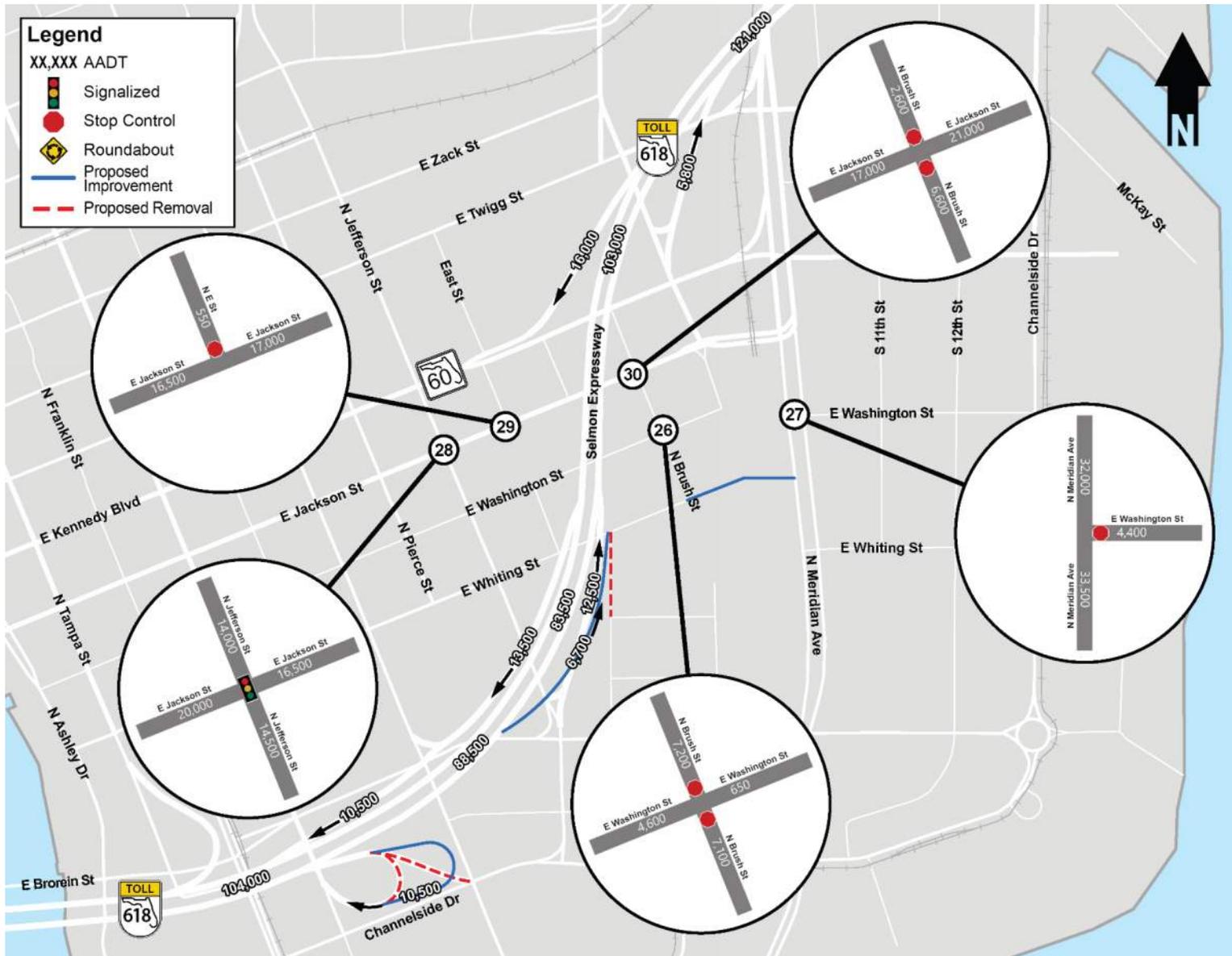


Figure 4.4f: Opening Year (2026) Build Alternative AADTs

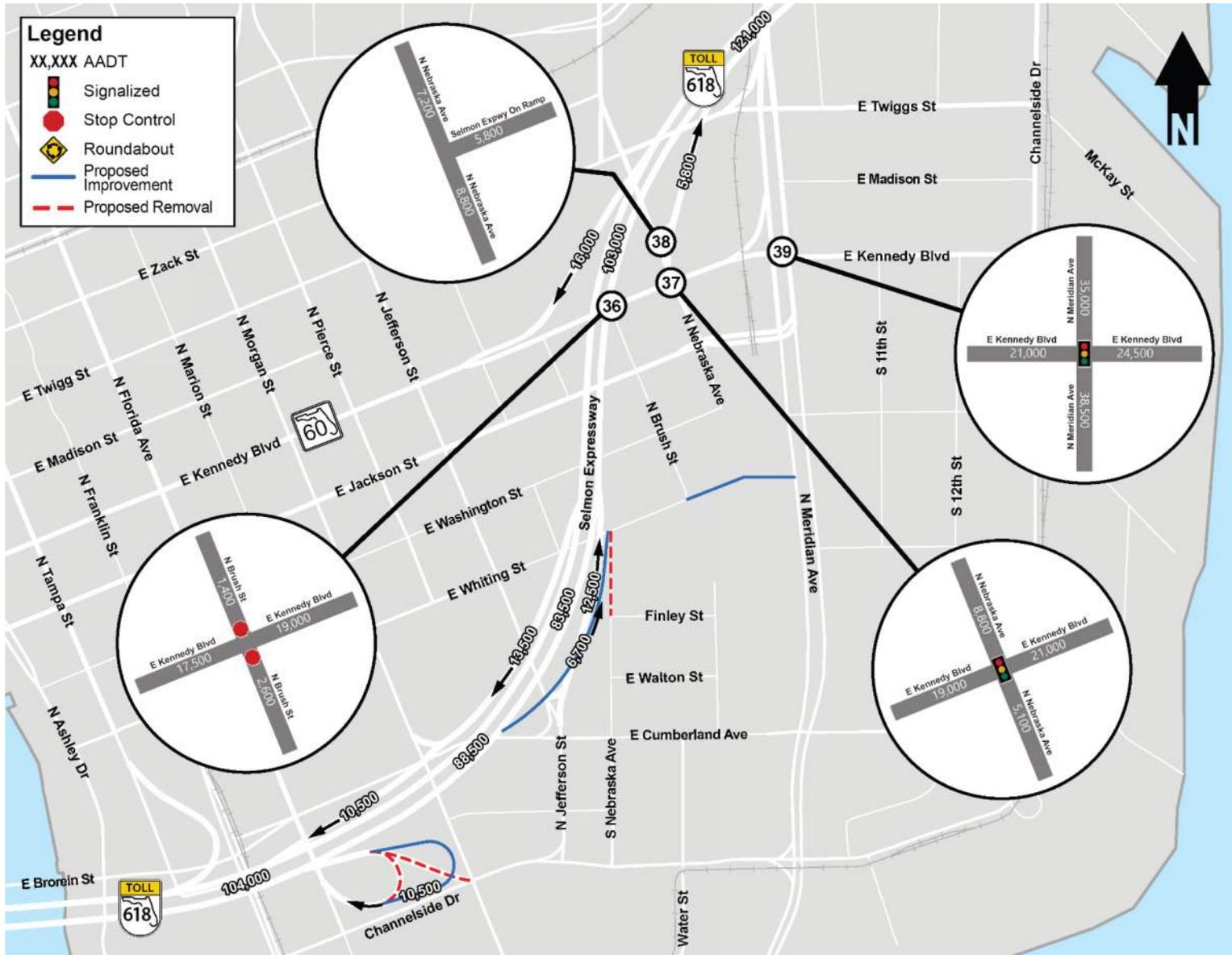


Figure 4.4h: Opening Year (2026) Build Alternative AADTs

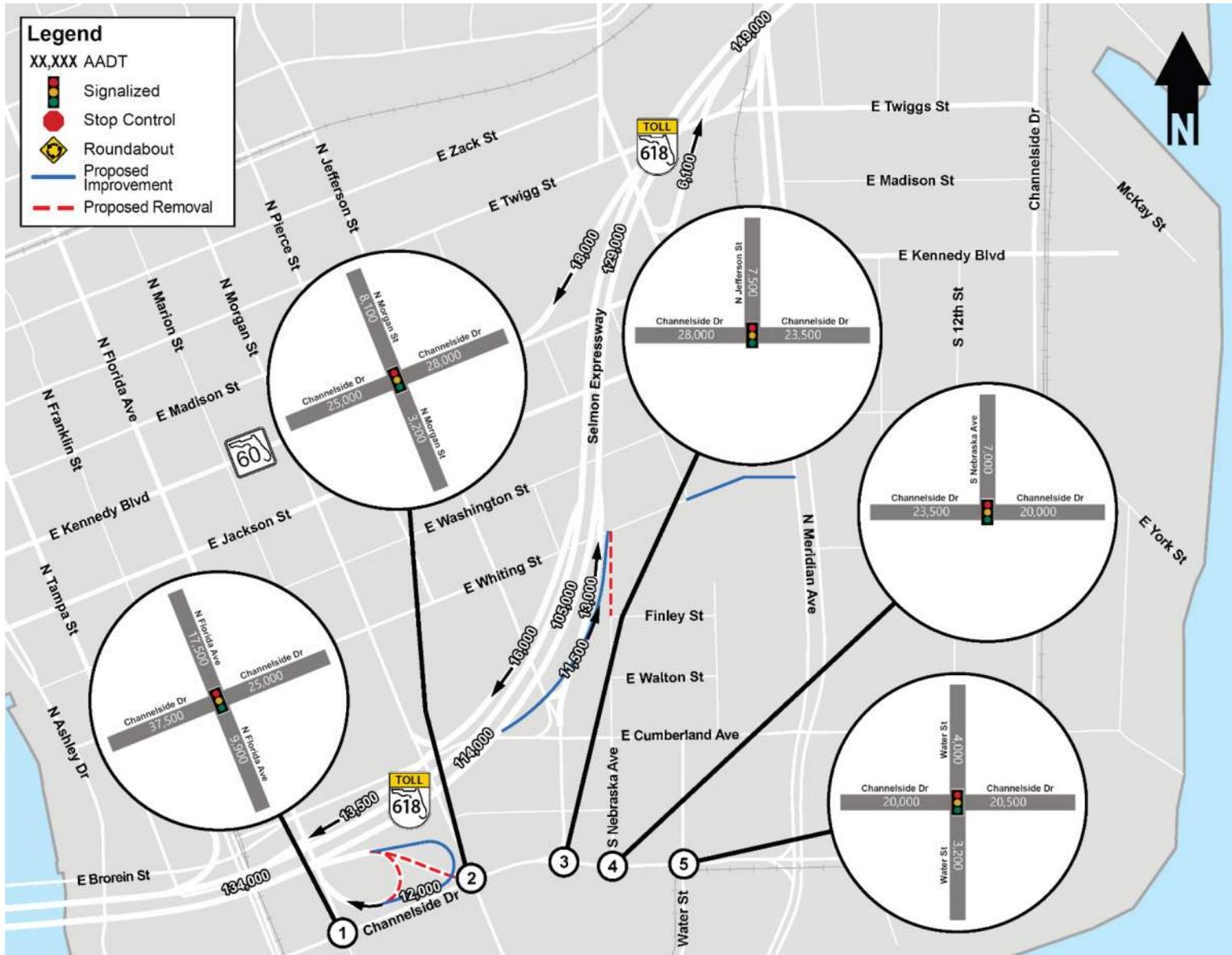


Figure 4.5a: Interim Year (2036) Build Alternative AADTs

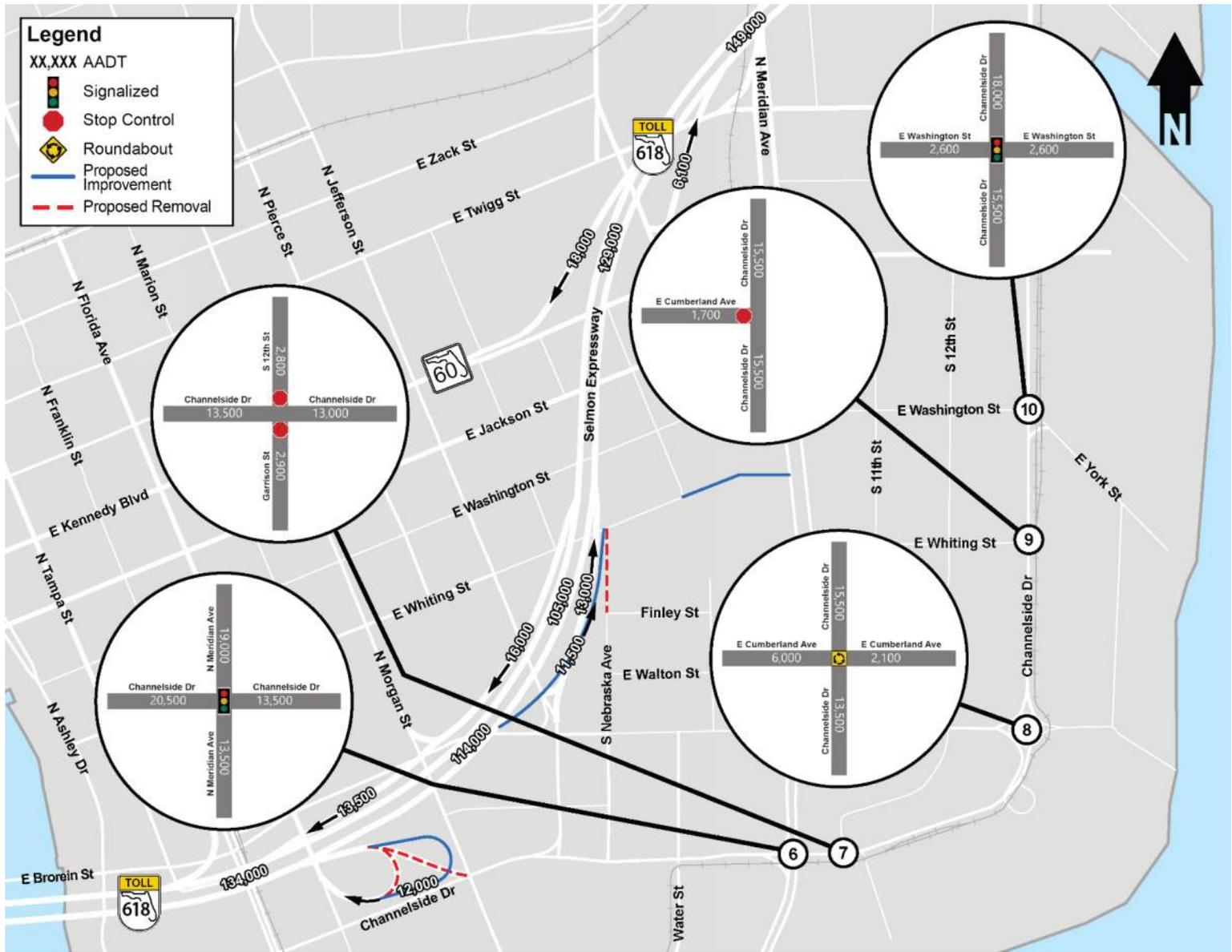


Figure 4.5b: Interim Year (2036) Build Alternative AADTs

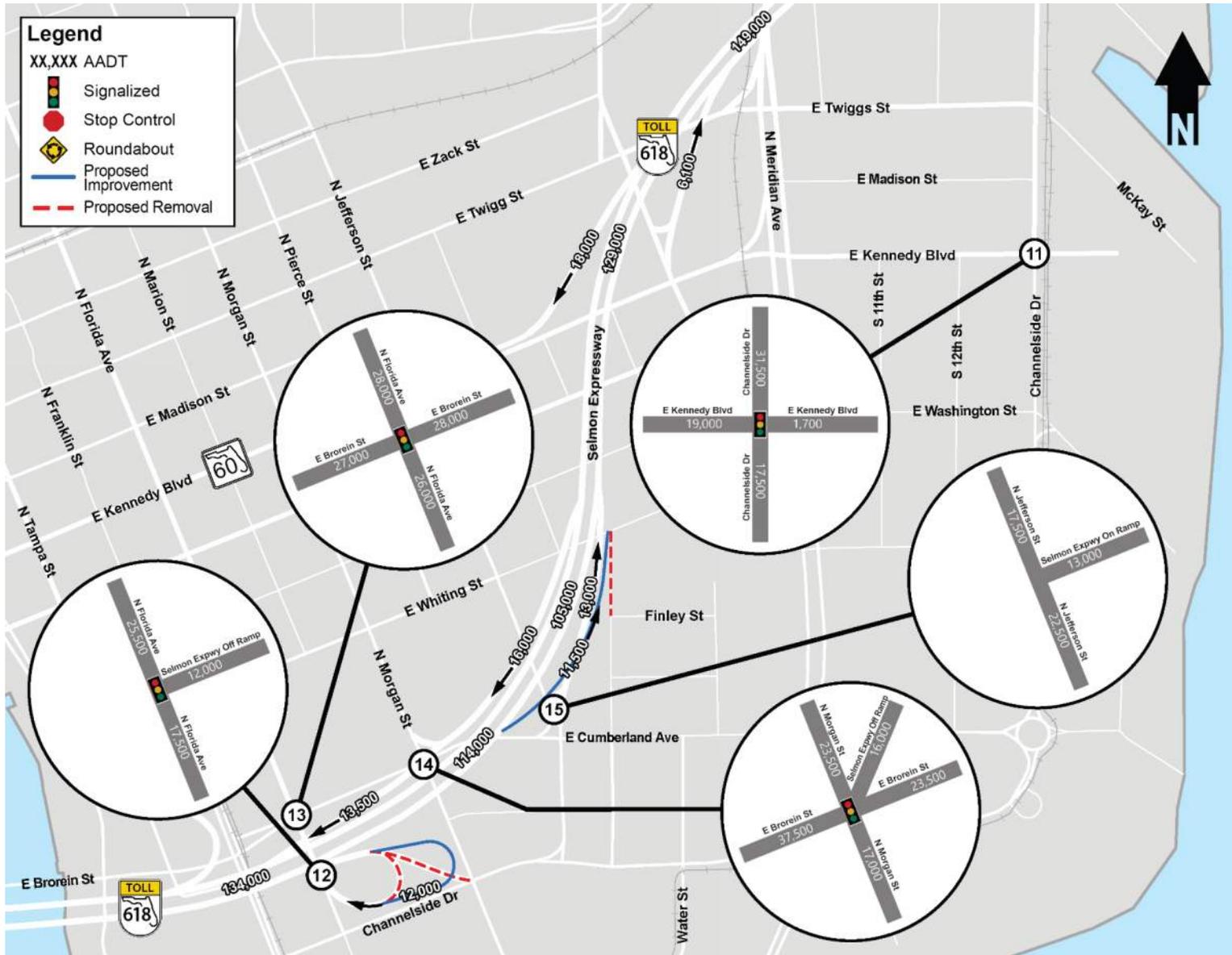


Figure 4.5c: Interim Year (2036) Build Alternative AADTs

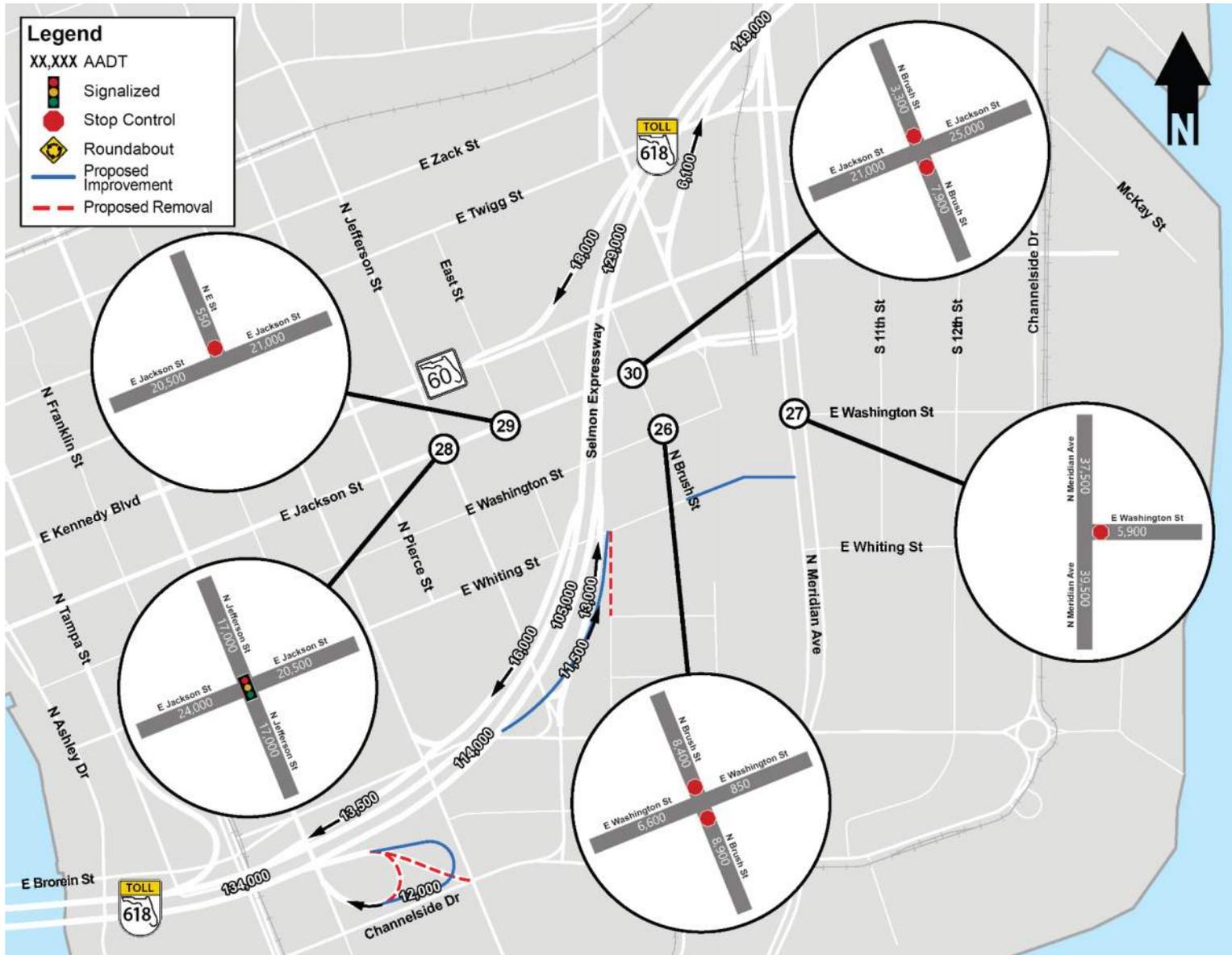


Figure 4.5f: Interim Year (2036) Build Alternative AADTs

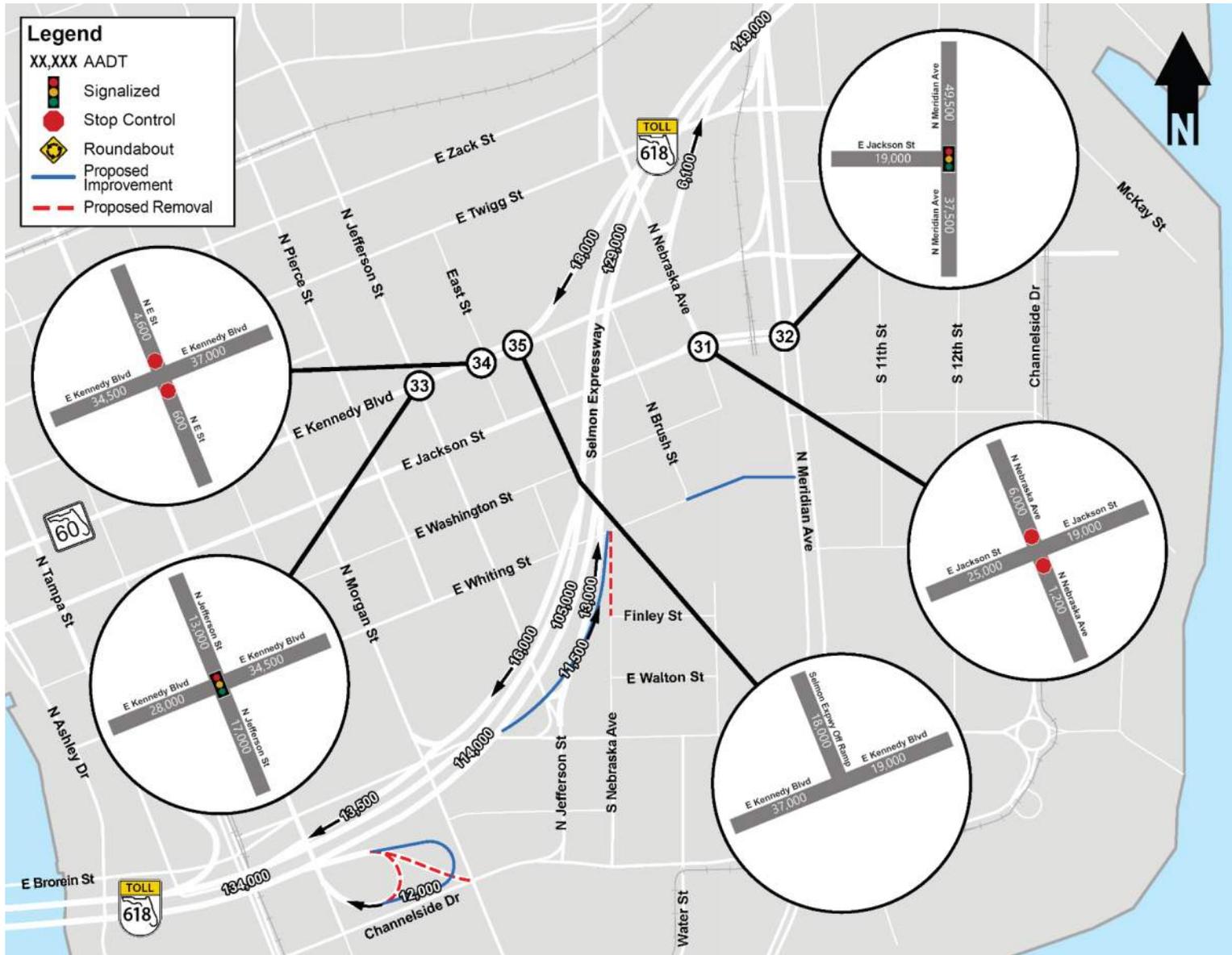


Figure 4.5g: Interim Year (2036) Build Alternative AADTs

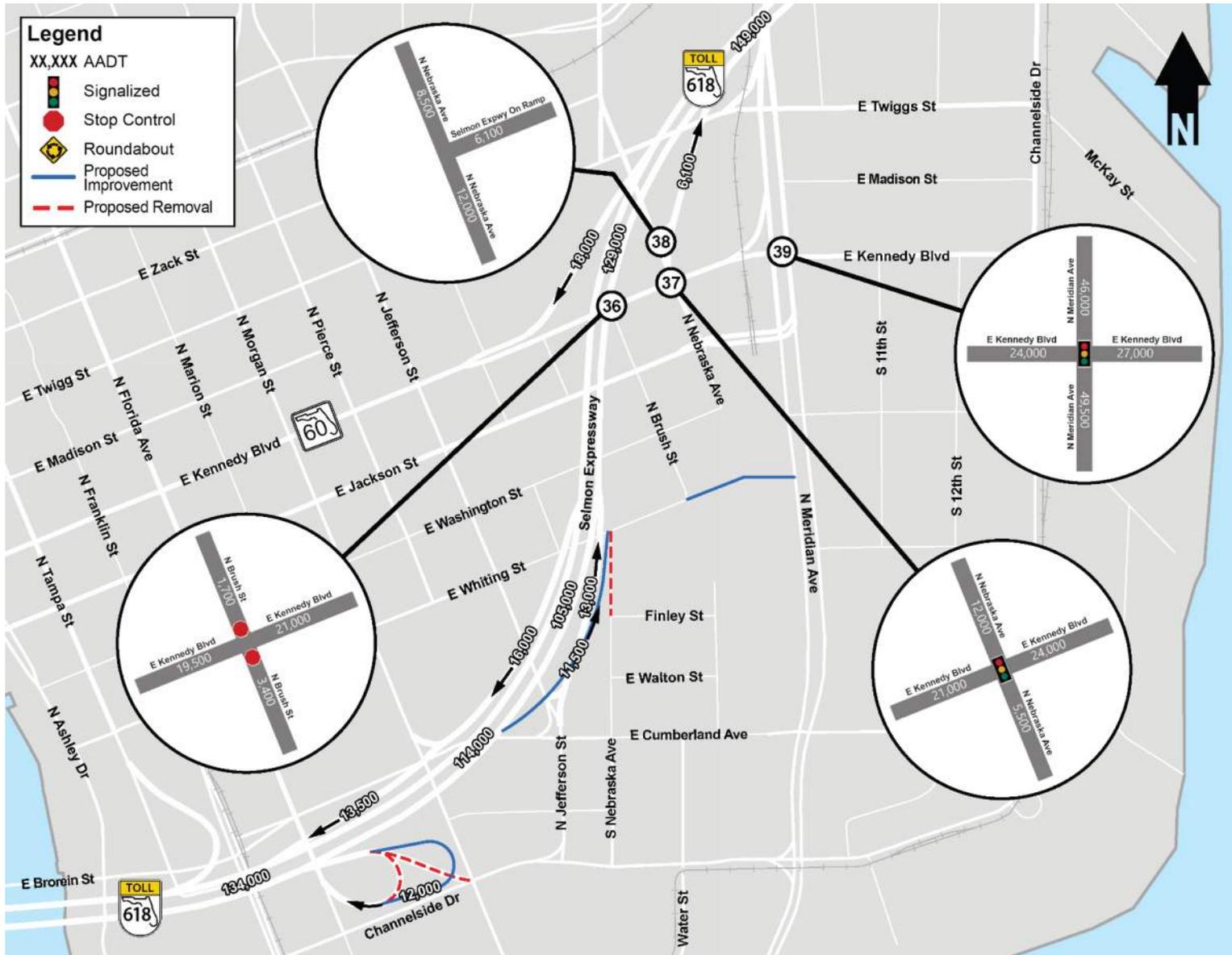


Figure 4.5h: Interim Year (2036) Build Alternative AADTs

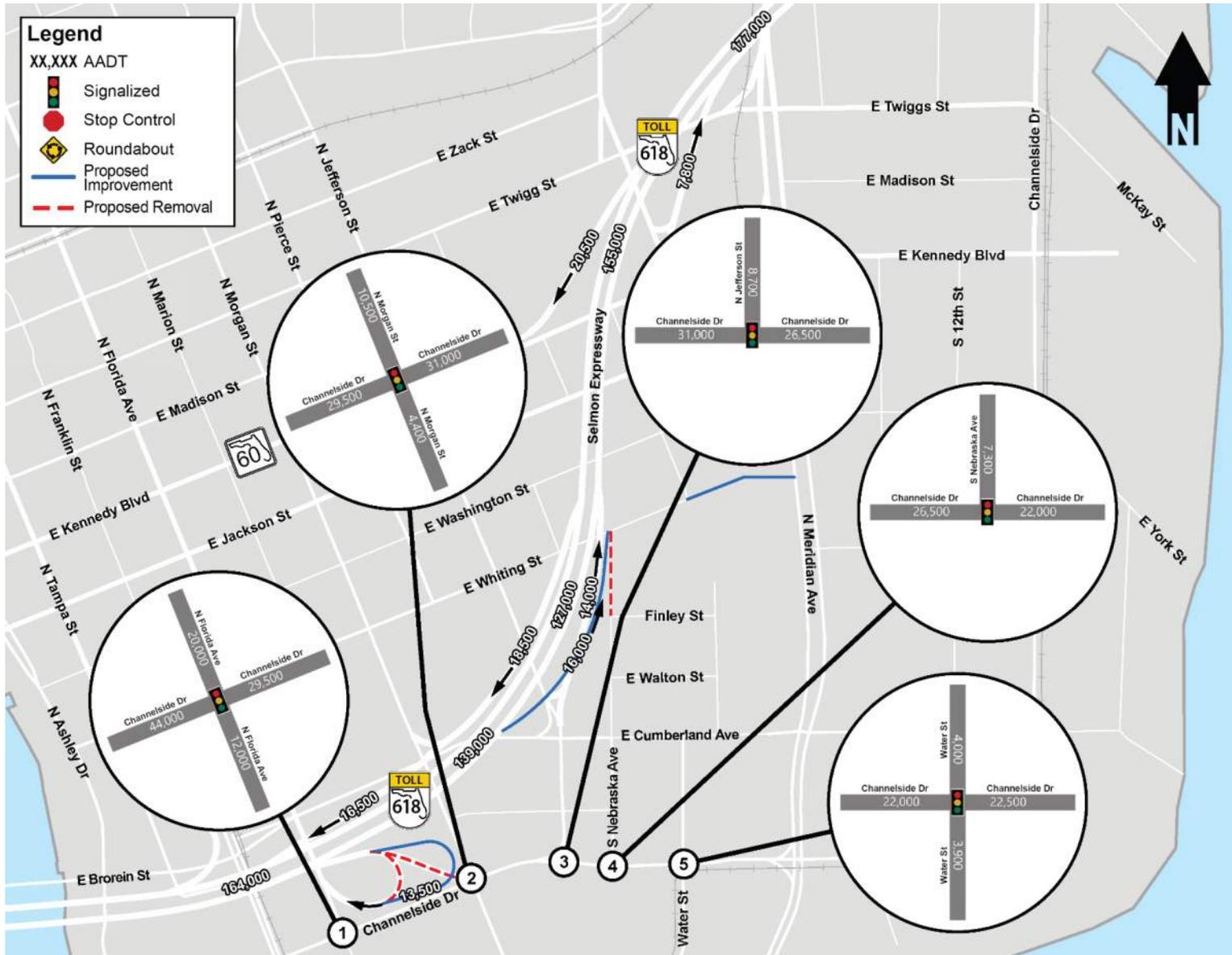


Figure 4.6a: Design Year (2046) Build Alternative AADTs

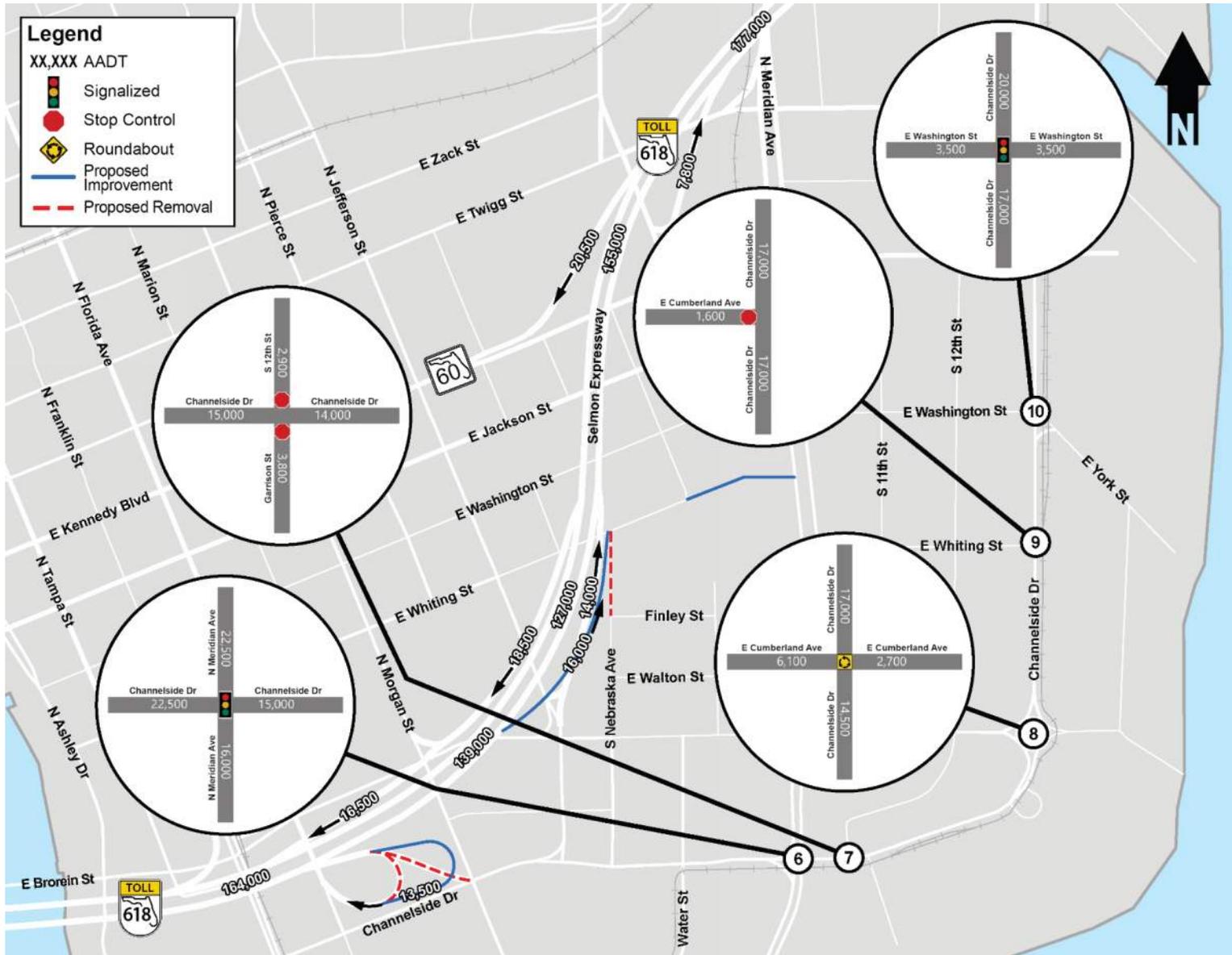


Figure 4.6b: Design Year (2046) Build Alternative AADTs

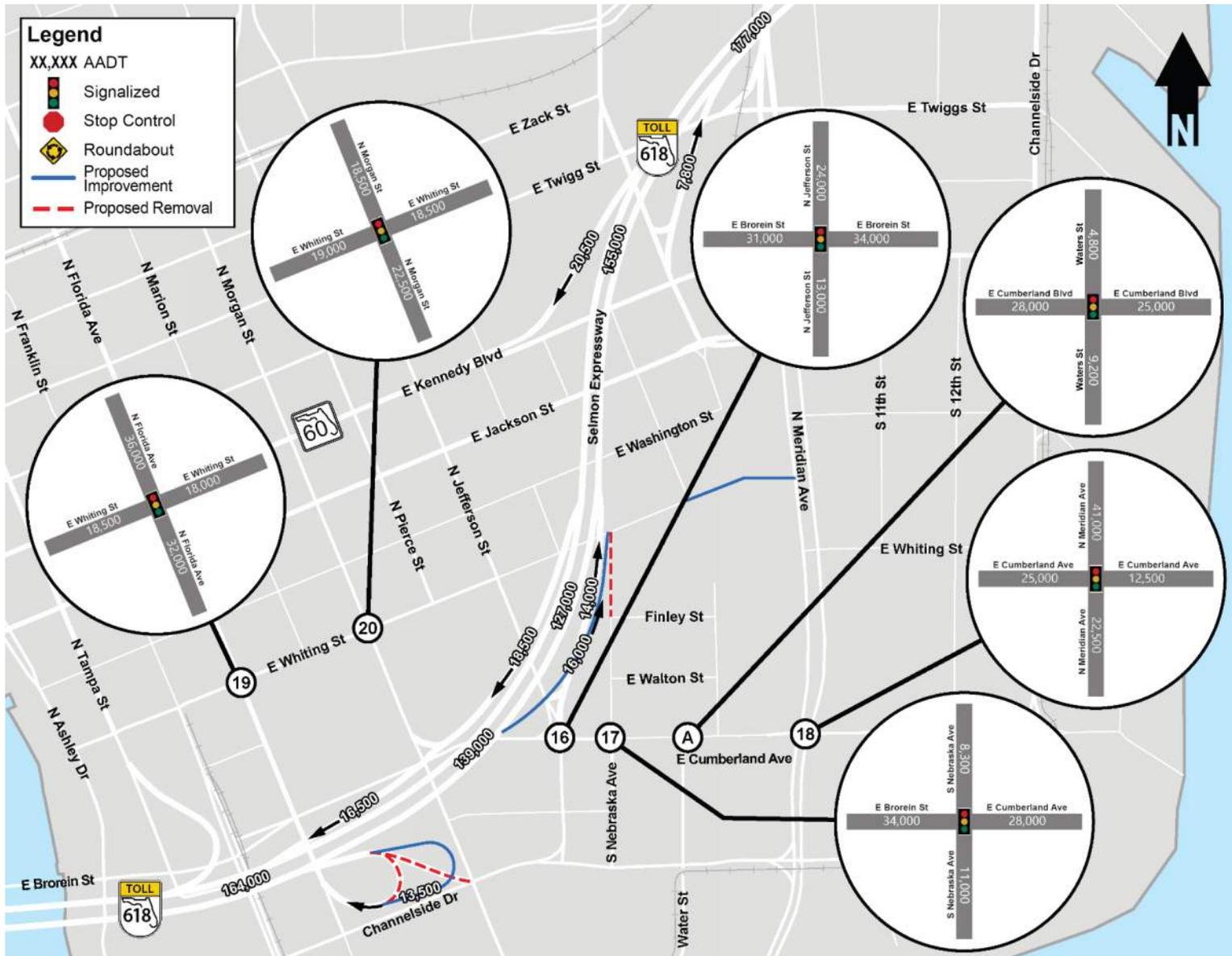


Figure 4.6d: Design Year (2046) Build Alternative AADTs

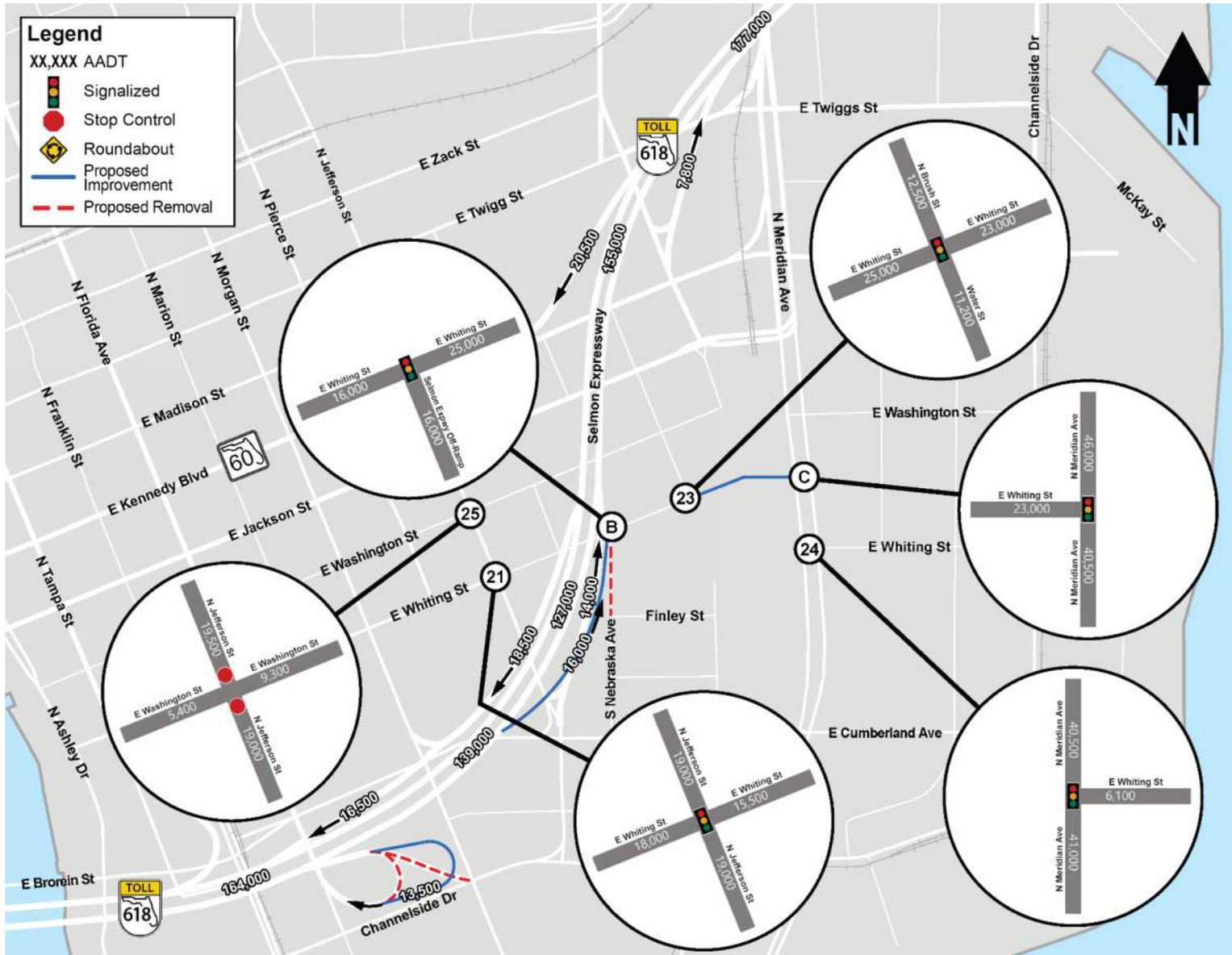


Figure 4.6e: Design Year (2046) Build Alternative AADTs

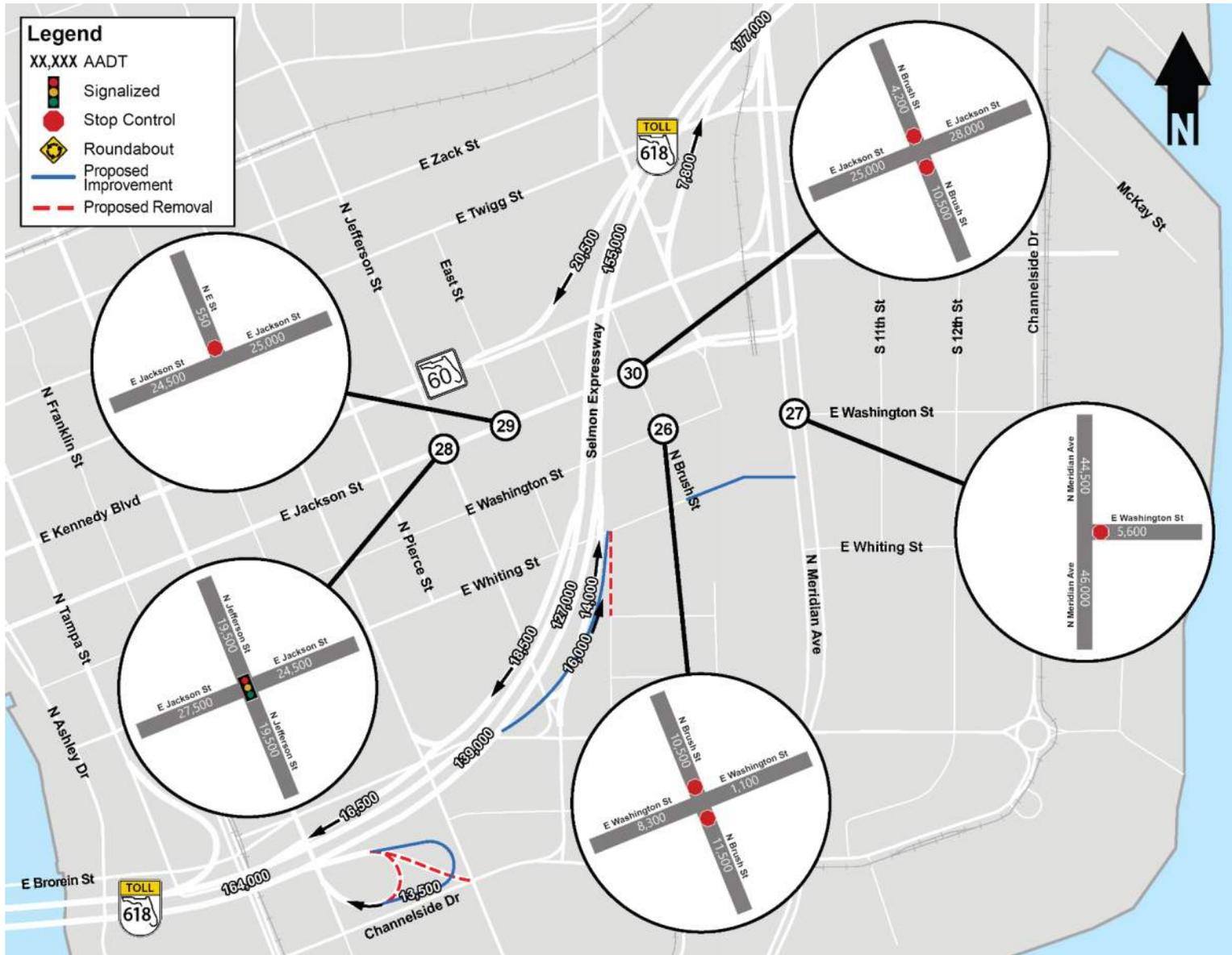


Figure 4.6f: Design Year (2046) Build Alternative AADTs

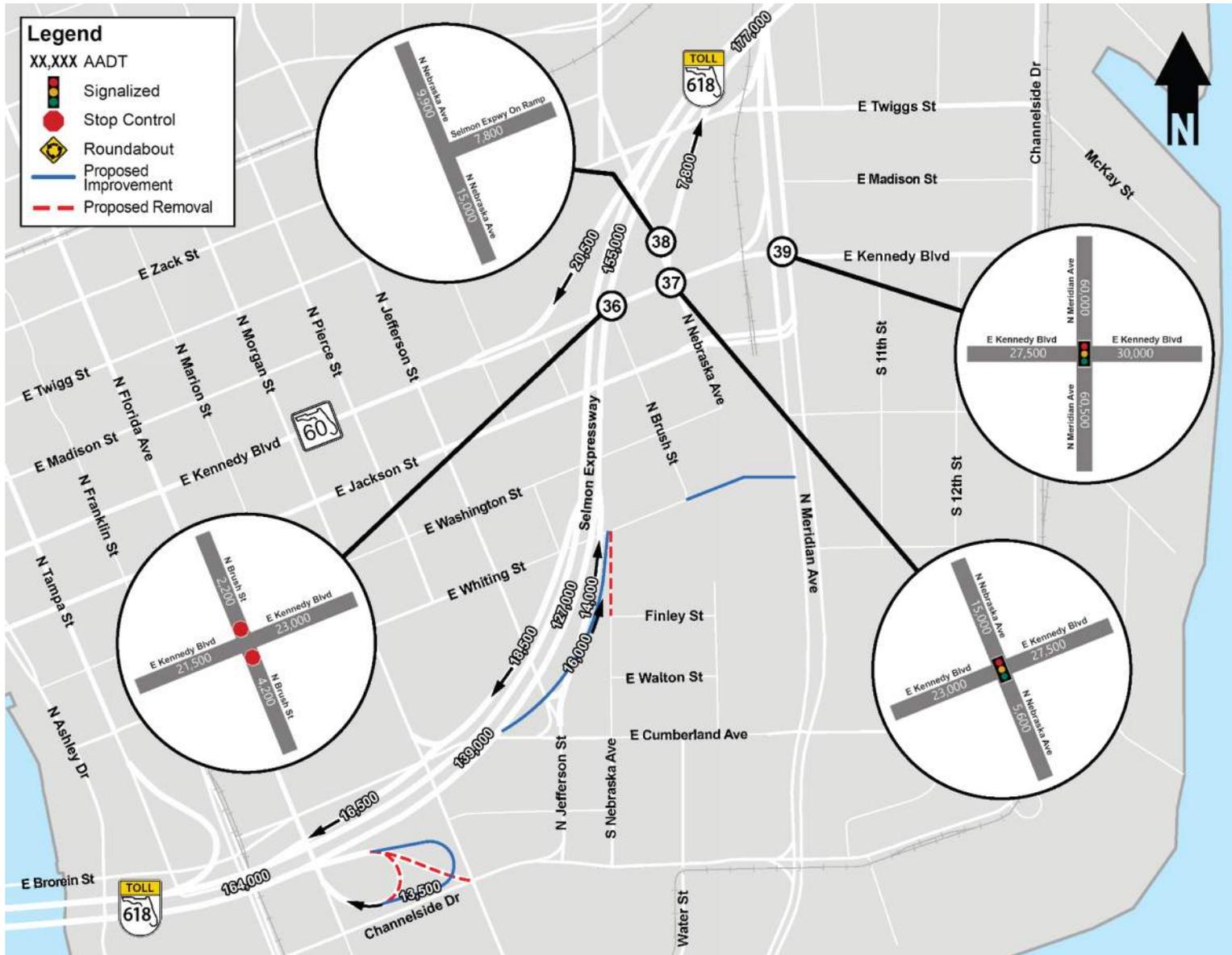


Figure 4.6h: Design Year (2046) Build Alternative AADTs

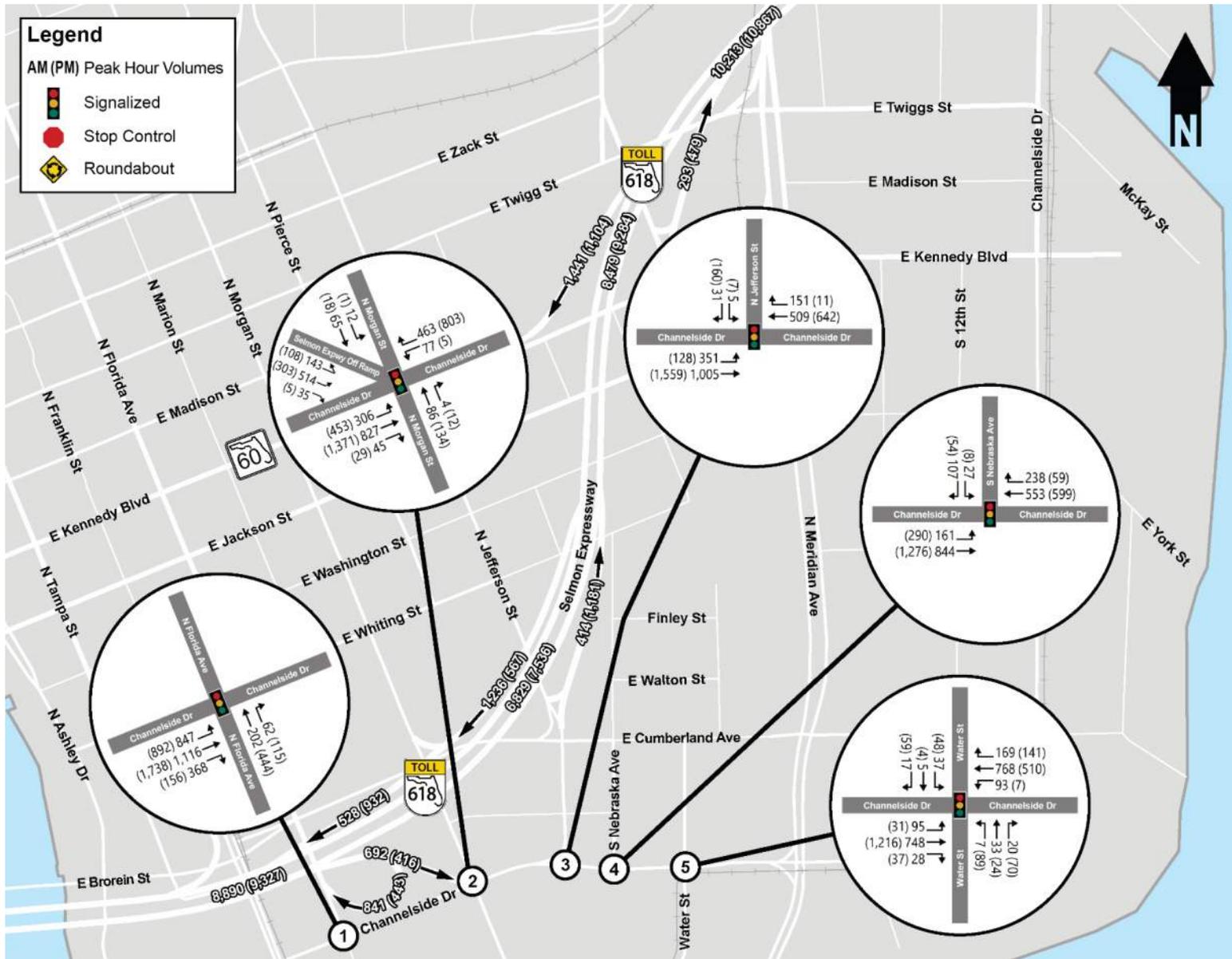


Figure 4.7a: Opening Year (2026) No-Build Alternative Turning Movement Volumes

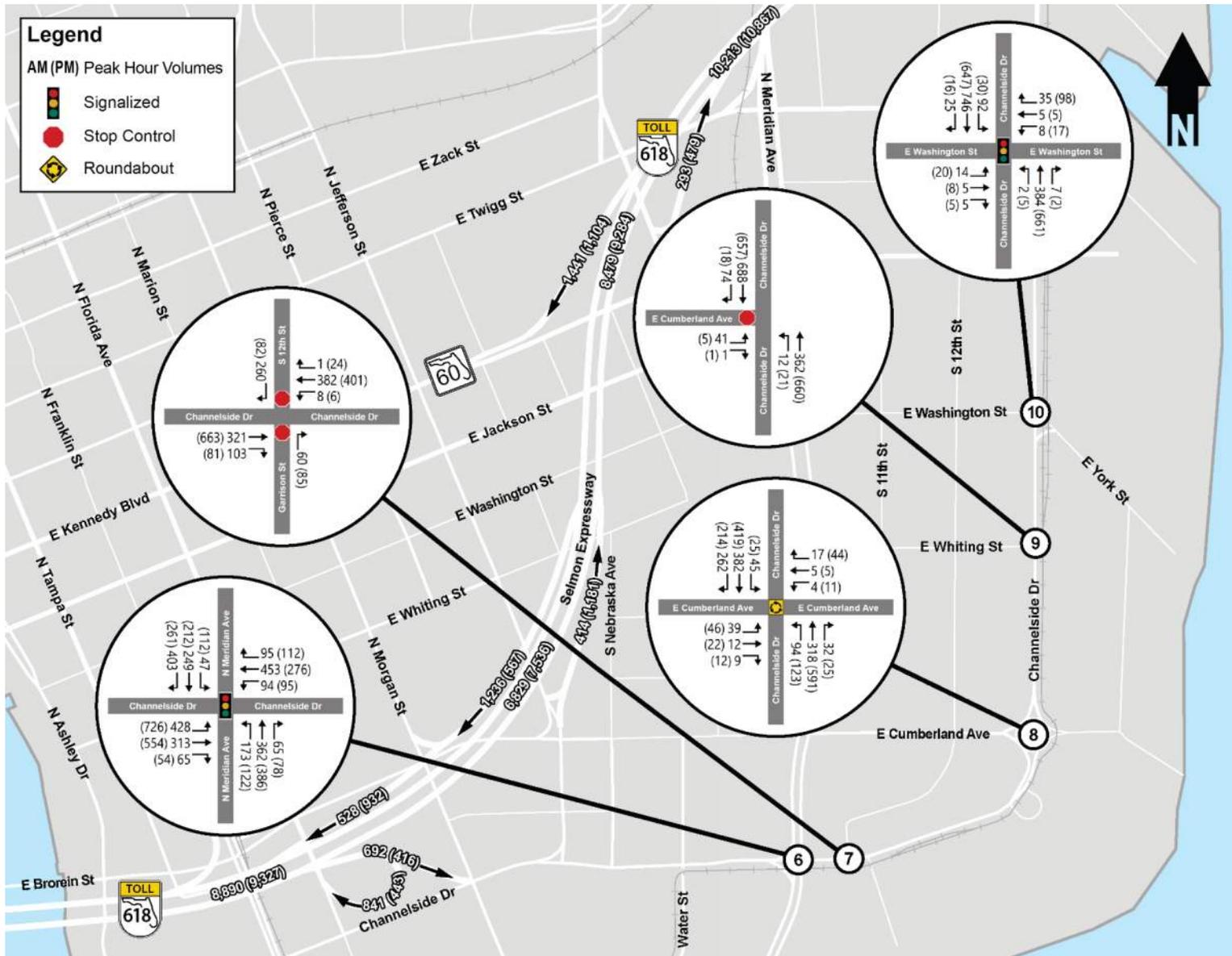


Figure 4.7b: Opening Year (2026) No-Build Alternative Turning Movement Volumes

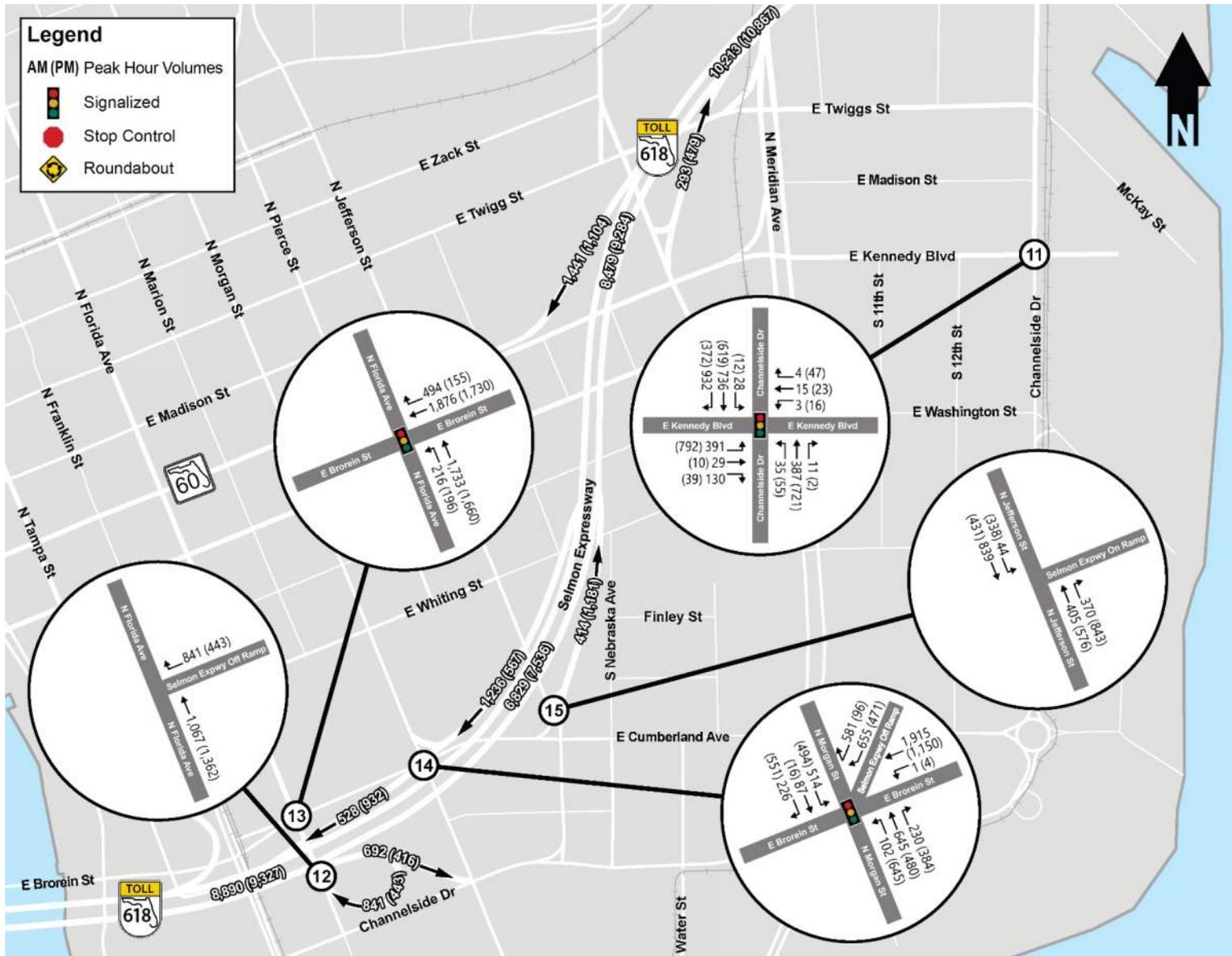


Figure 4.7c: Opening Year (2026) No-Build Alternative Turning Movement Volumes

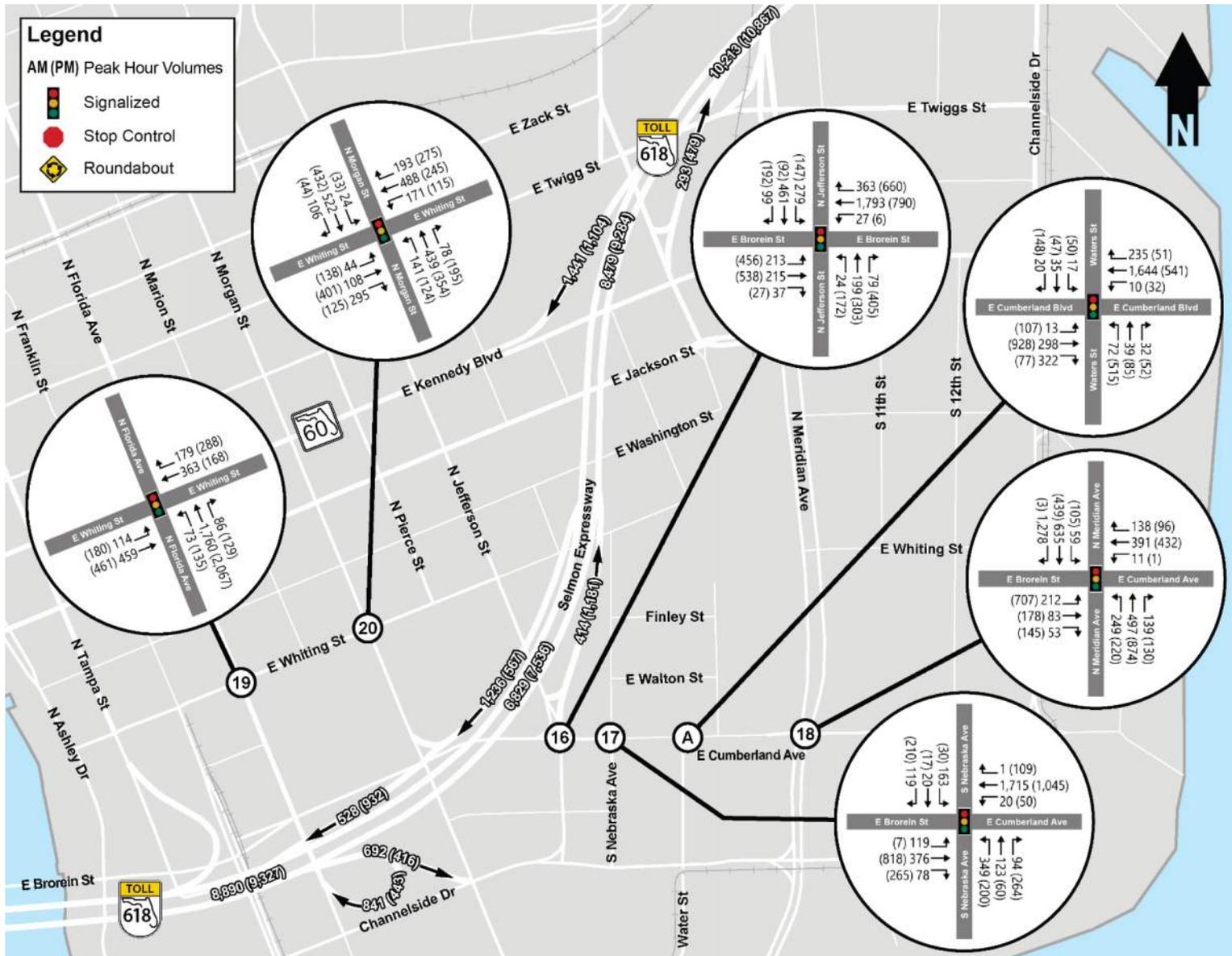


Figure 4.7d: Opening Year (2026) No-Build Alternative Turning Movement Volumes

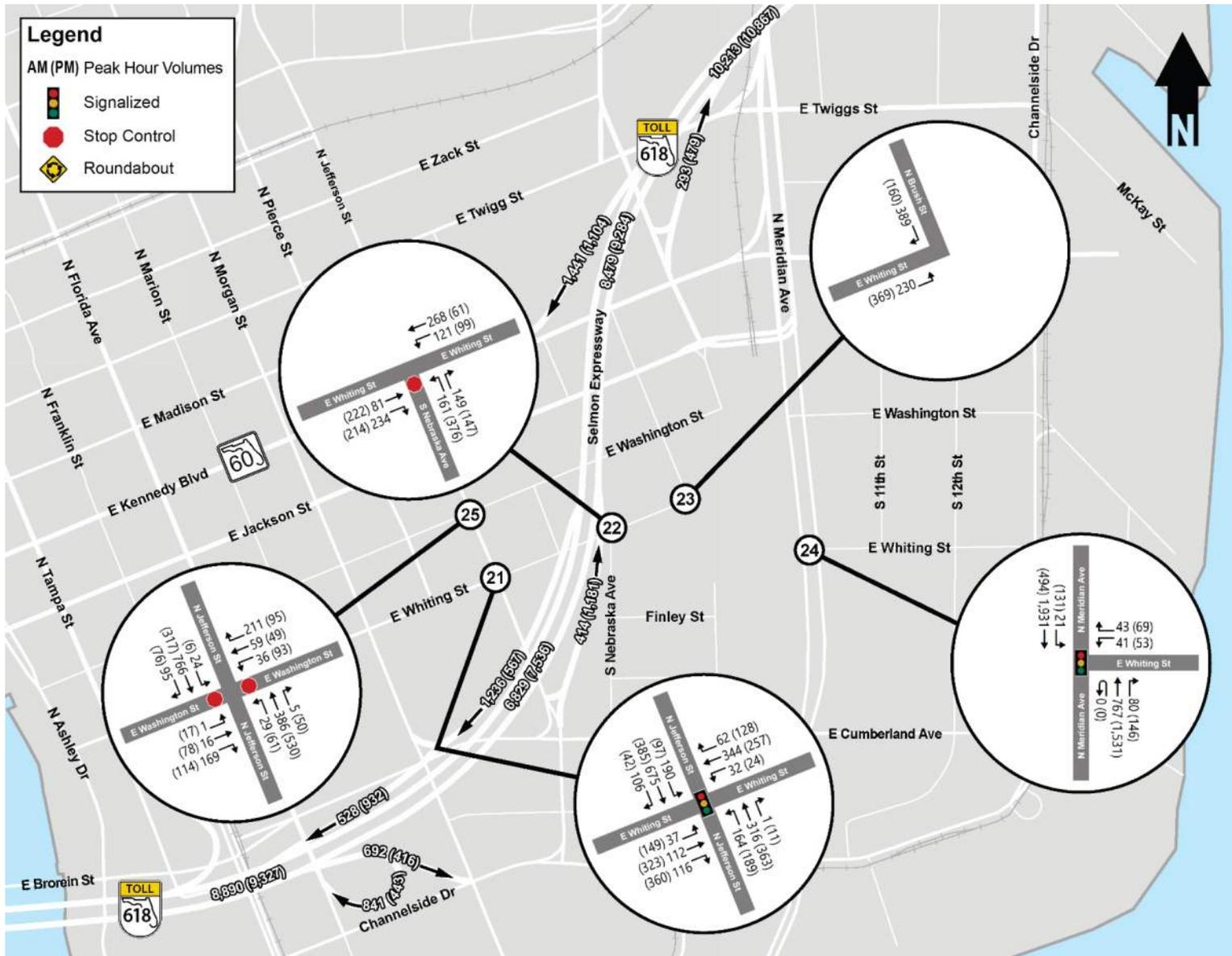


Figure 4.7e: Opening Year (2026) No-Build Alternative Turning Movement Volumes

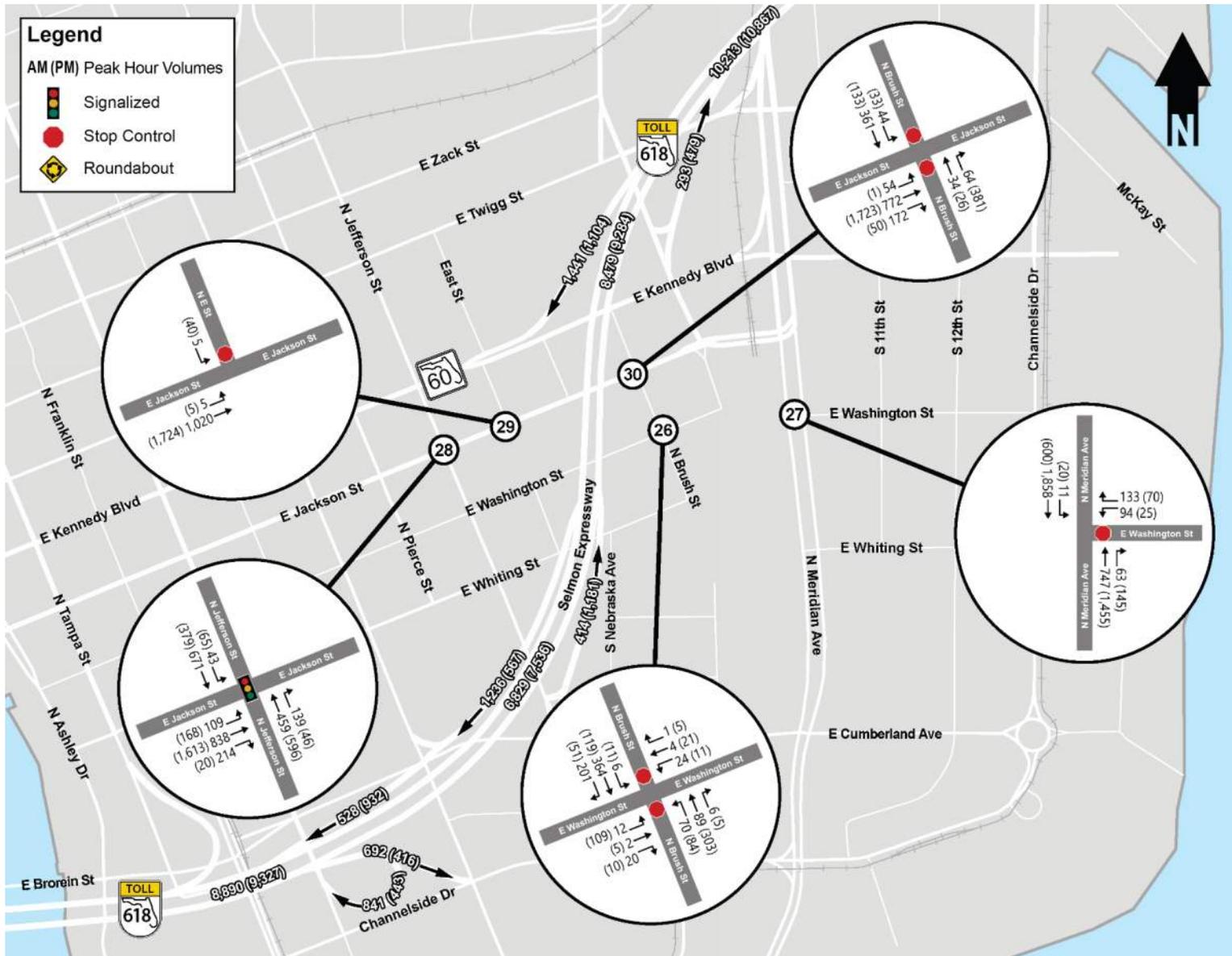


Figure 4.7f: Opening Year (2026) No-Build Alternative Turning Movement Volumes

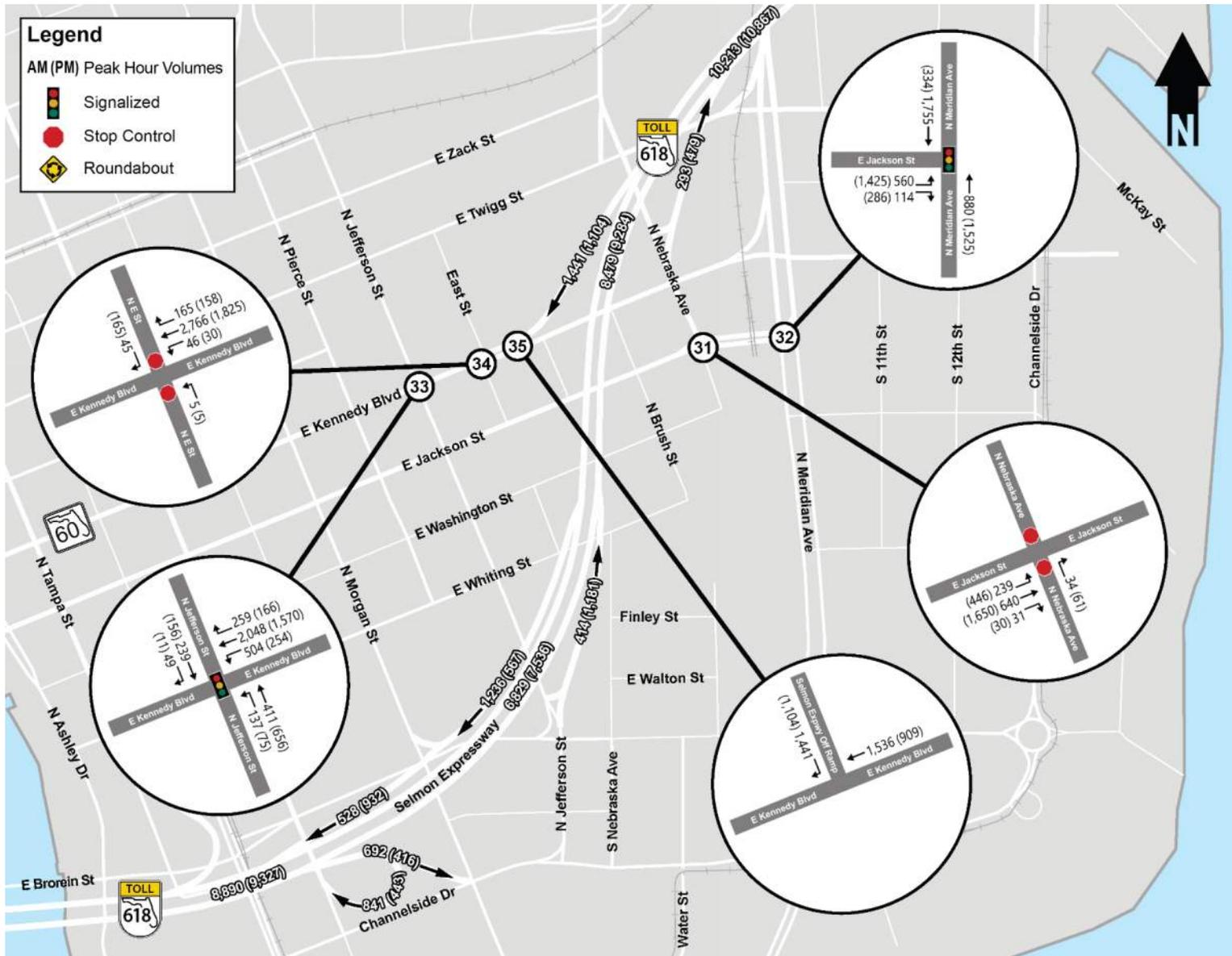


Figure 4.7g: Opening Year (2026) No-Build Alternative Turning Movement Volumes

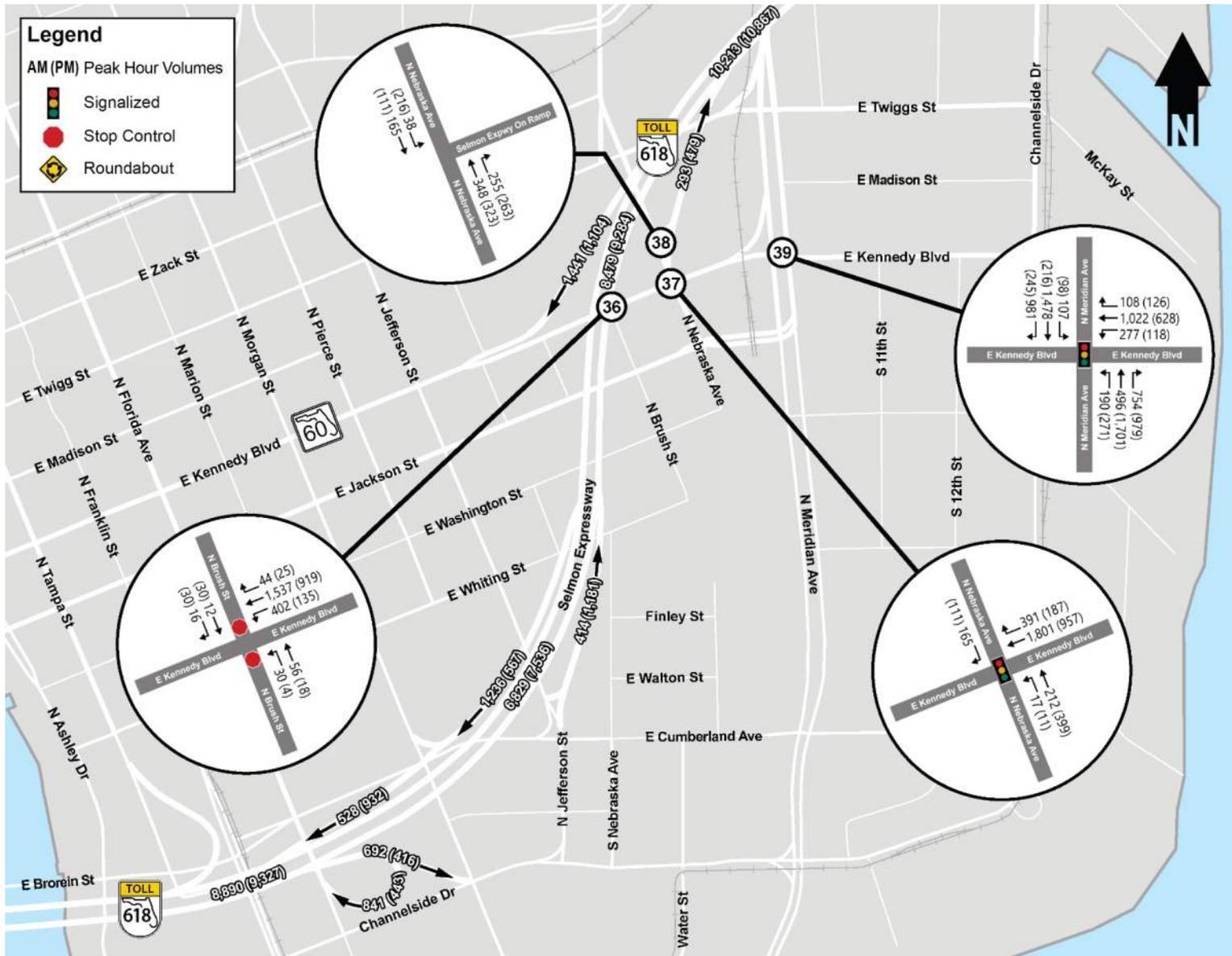


Figure 4.7h: Opening Year (2026) No-Build Alternative Turning Movement Volumes

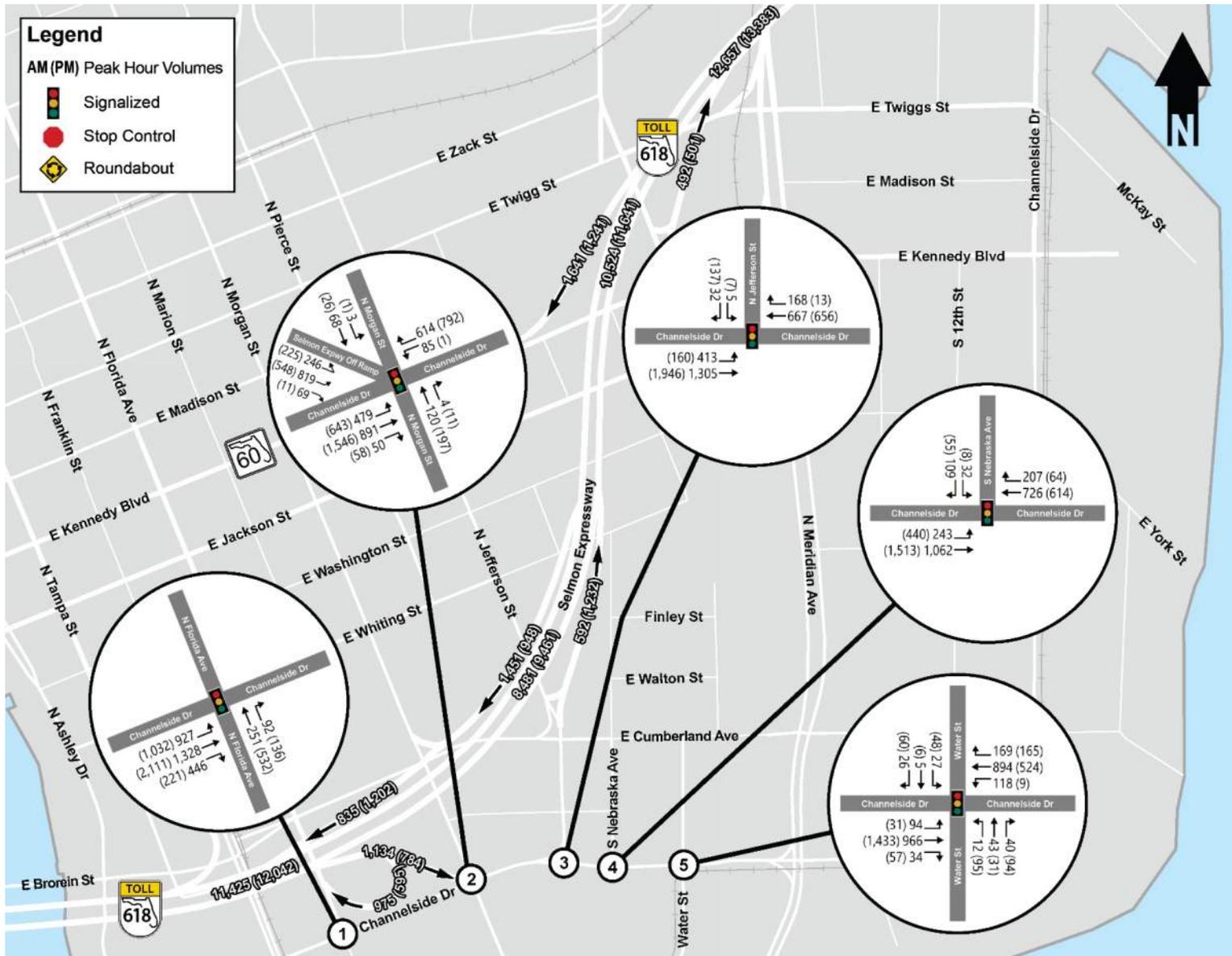


Figure 4.8a: Interim Year (2036) No-Build Alternative Turning Movement Volumes

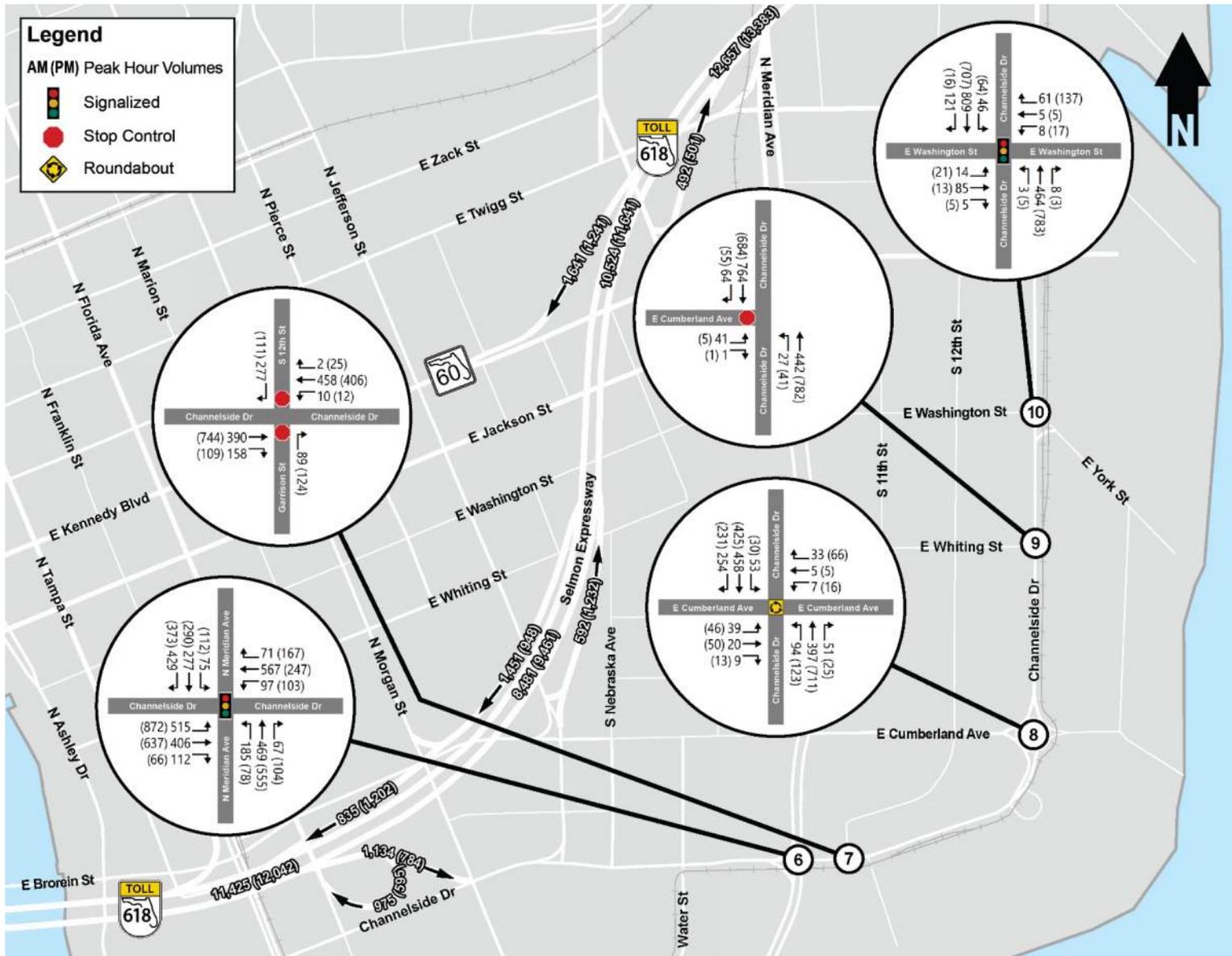


Figure 4.8b: Interim Year (2036) No-Build Alternative Turning Movement Volumes

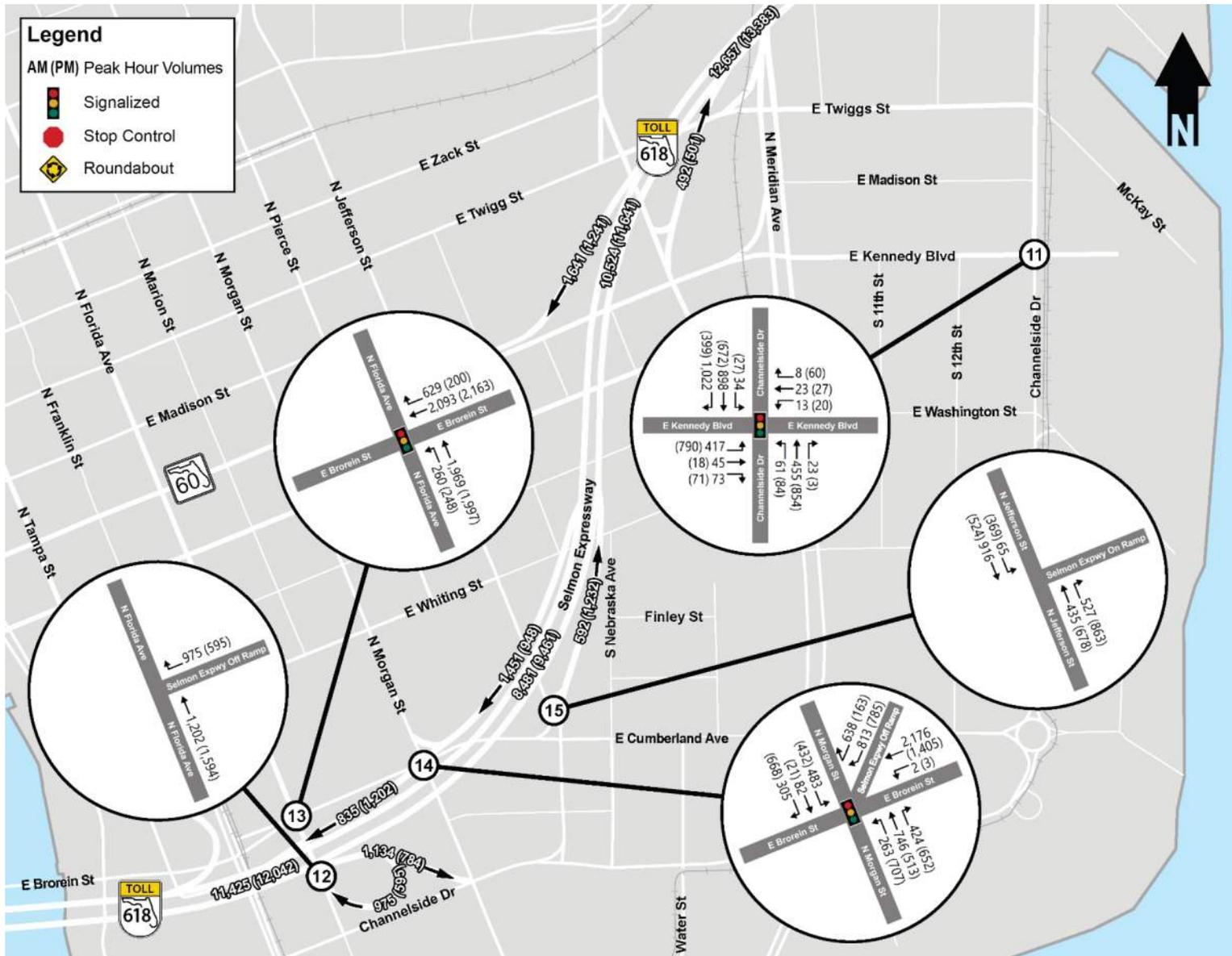


Figure 4.8c: Interim Year (2036) No-Build Alternative Turning Movement Volumes

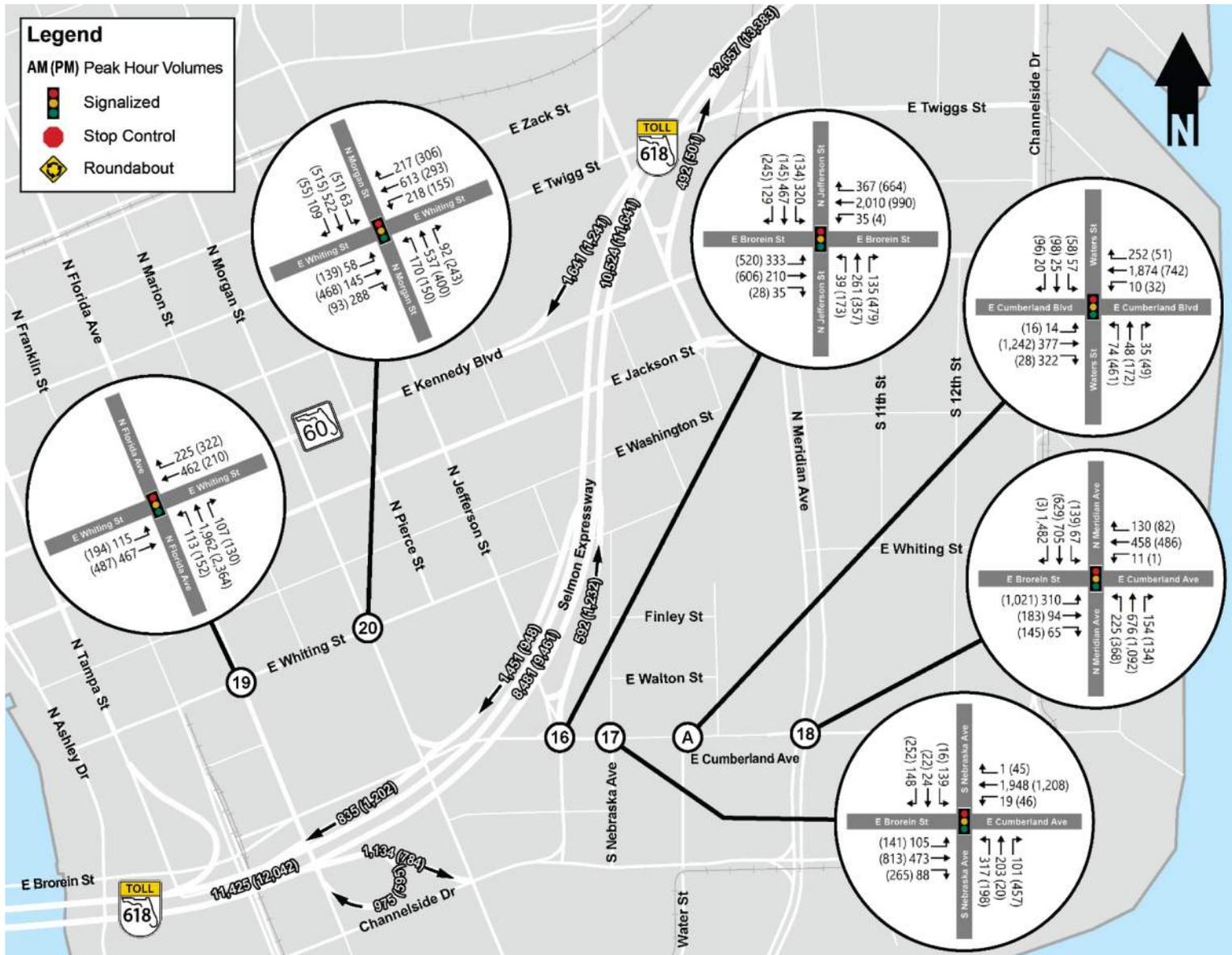


Figure 4.8d: Interim Year (2036) No-Build Alternative Turning Movement Volumes

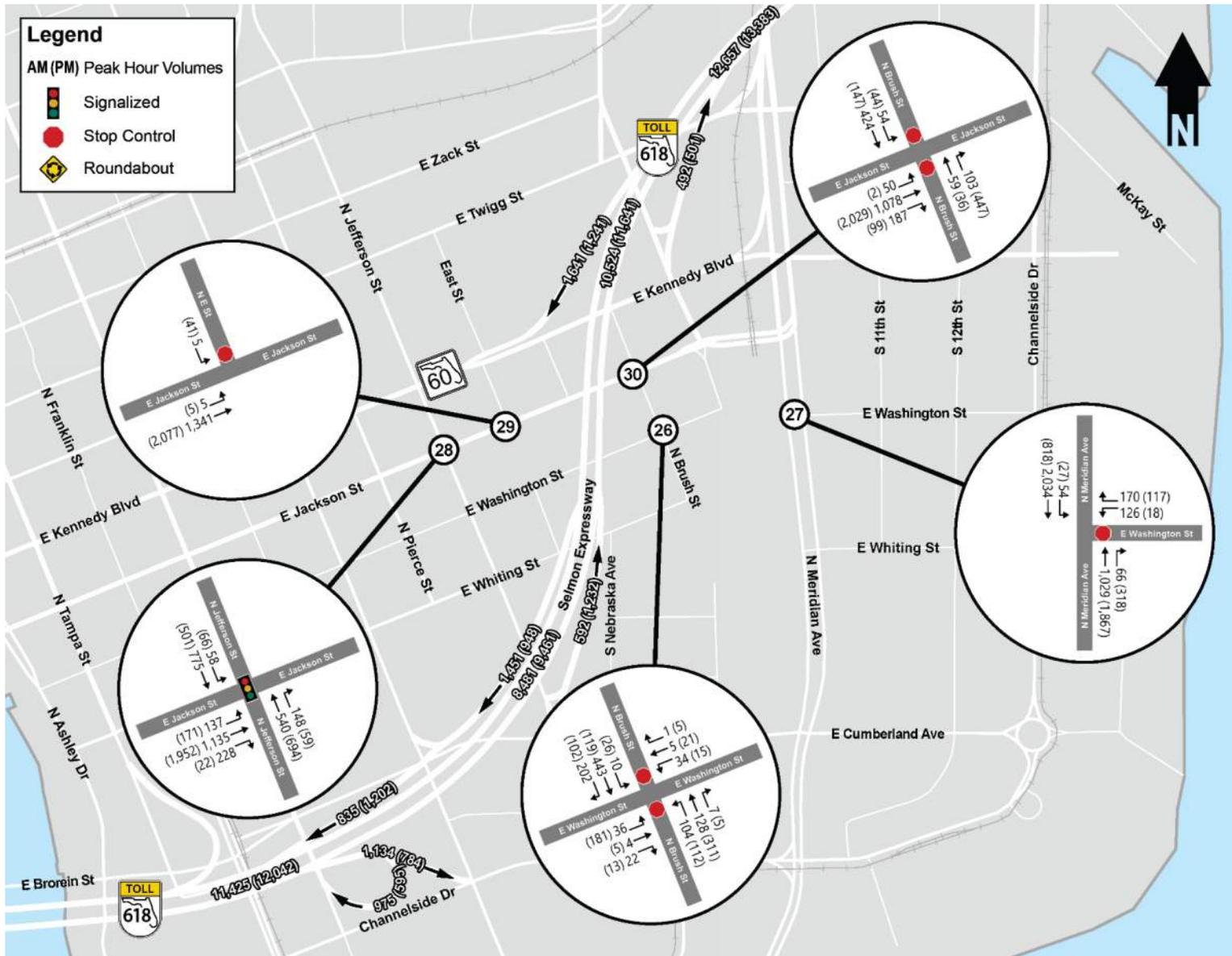


Figure 4.8f: Interim Year (2036) No-Build Alternative Turning Movement Volumes

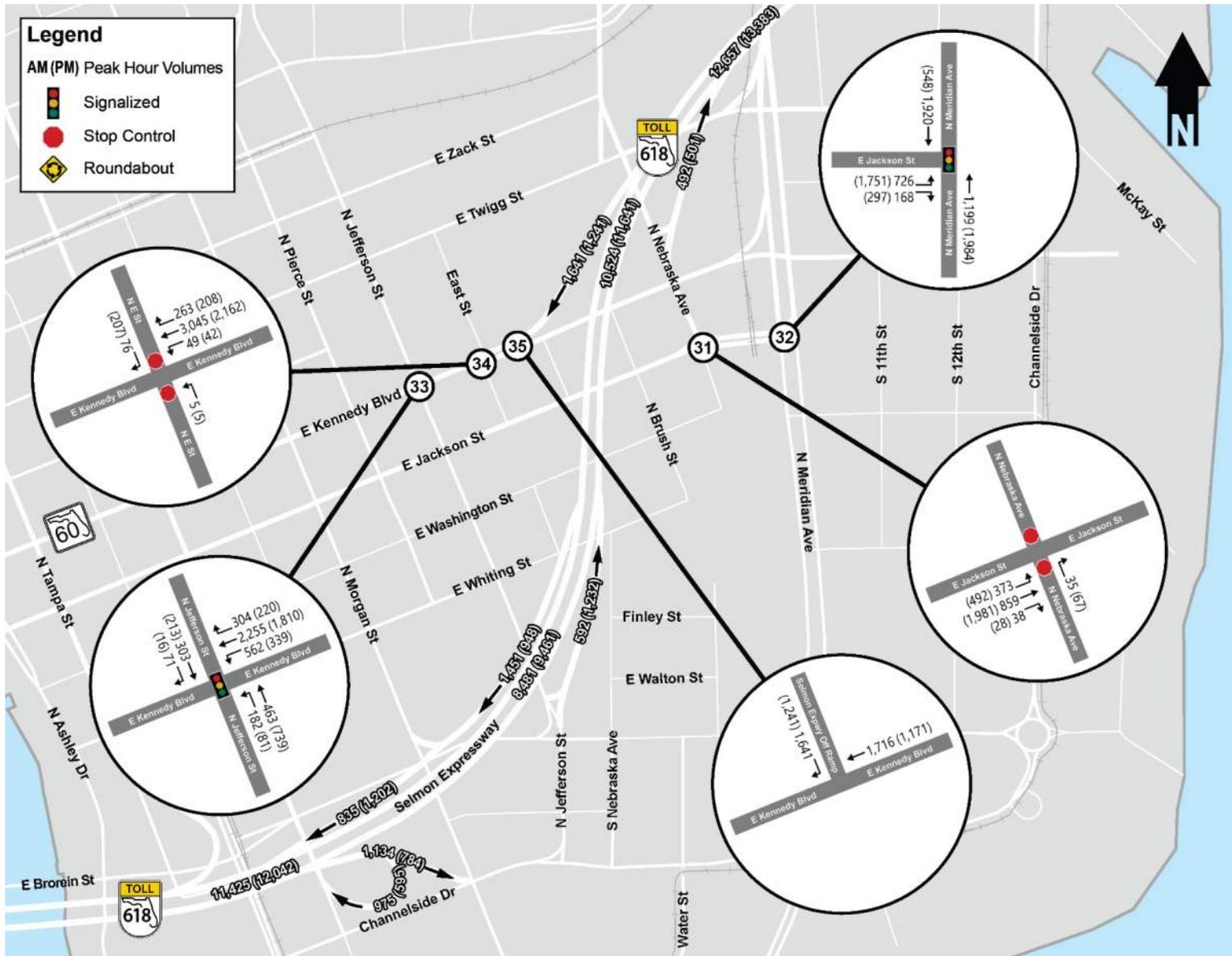


Figure 4.8g: Interim Year (2036) No-Build Alternative Turning Movement Volumes

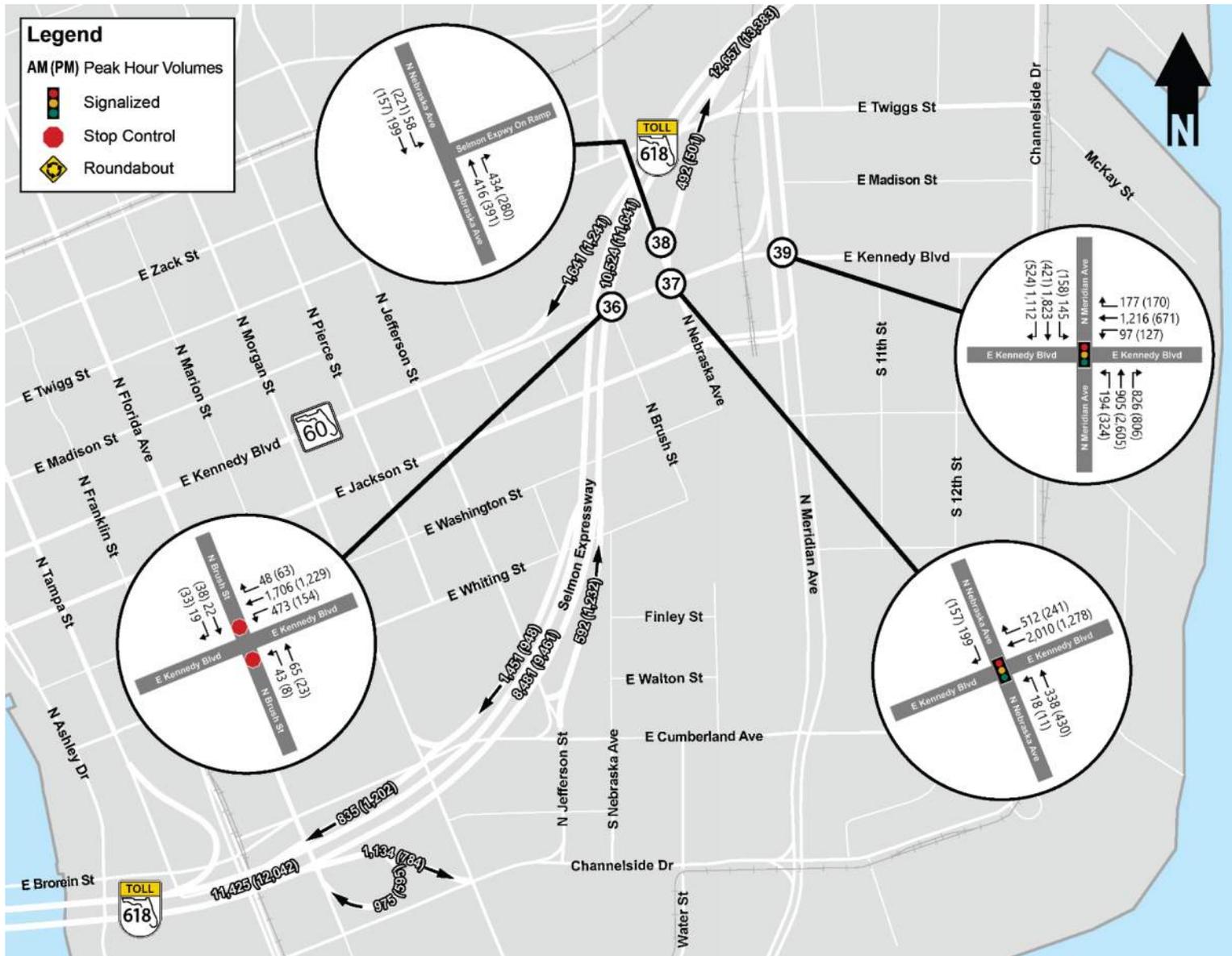


Figure 4.8h: Interim Year (2036) No-Build Alternative Turning Movement Volumes

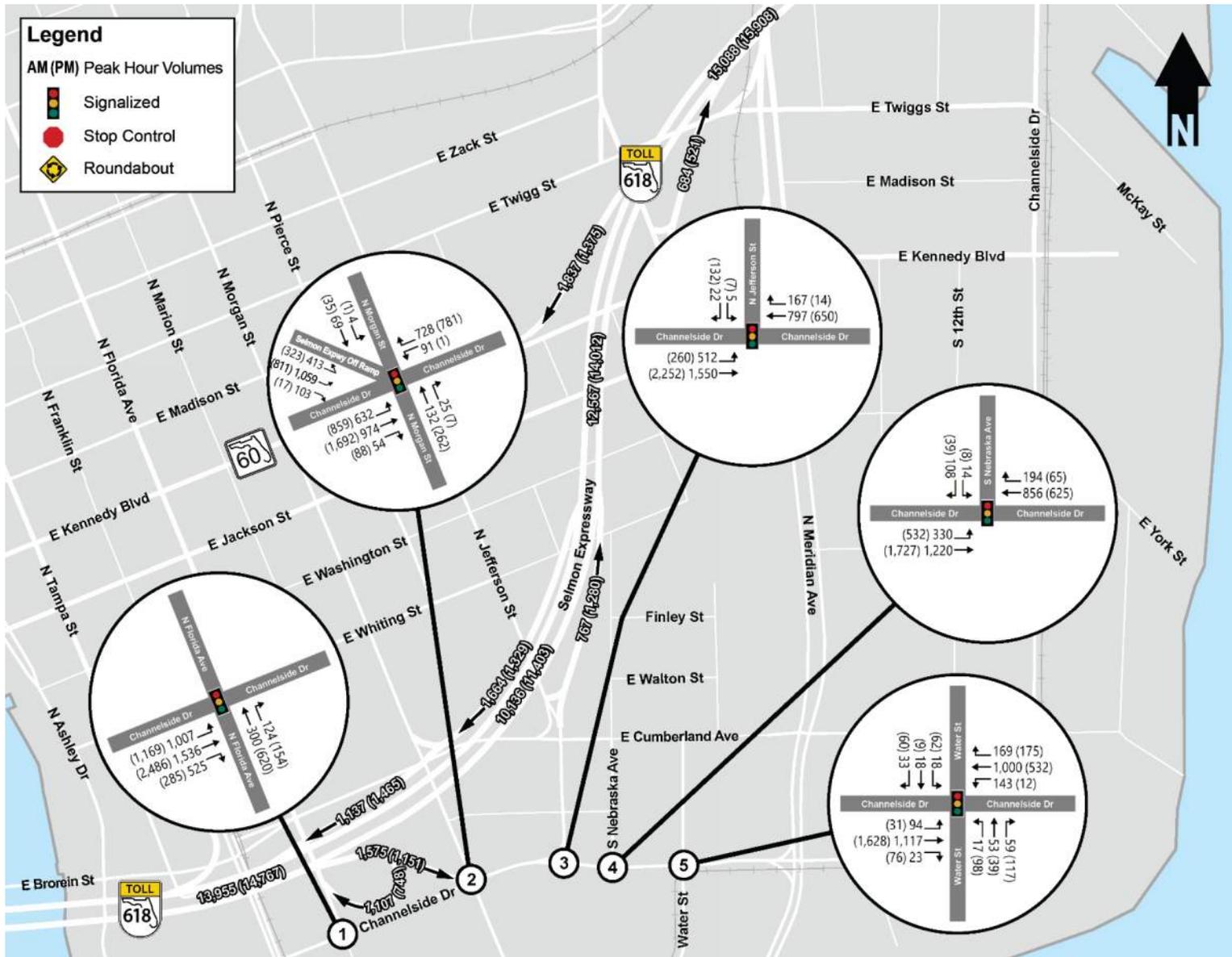


Figure 4.9a: Design Year (2046) No-Build Alternative Turning Movement Volumes

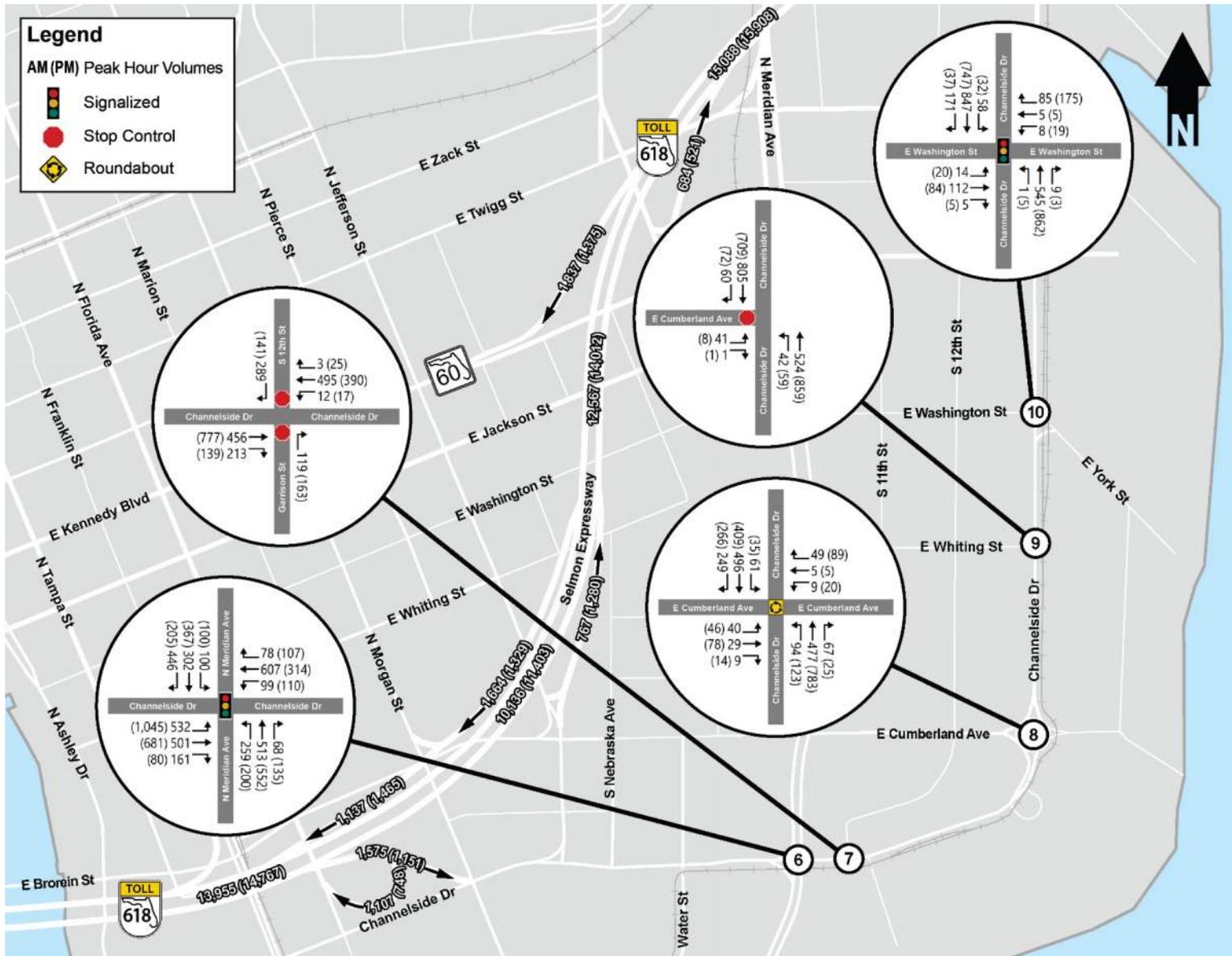


Figure 4.9b: Design Year (2046) No-Build Alternative Turning Movement Volumes

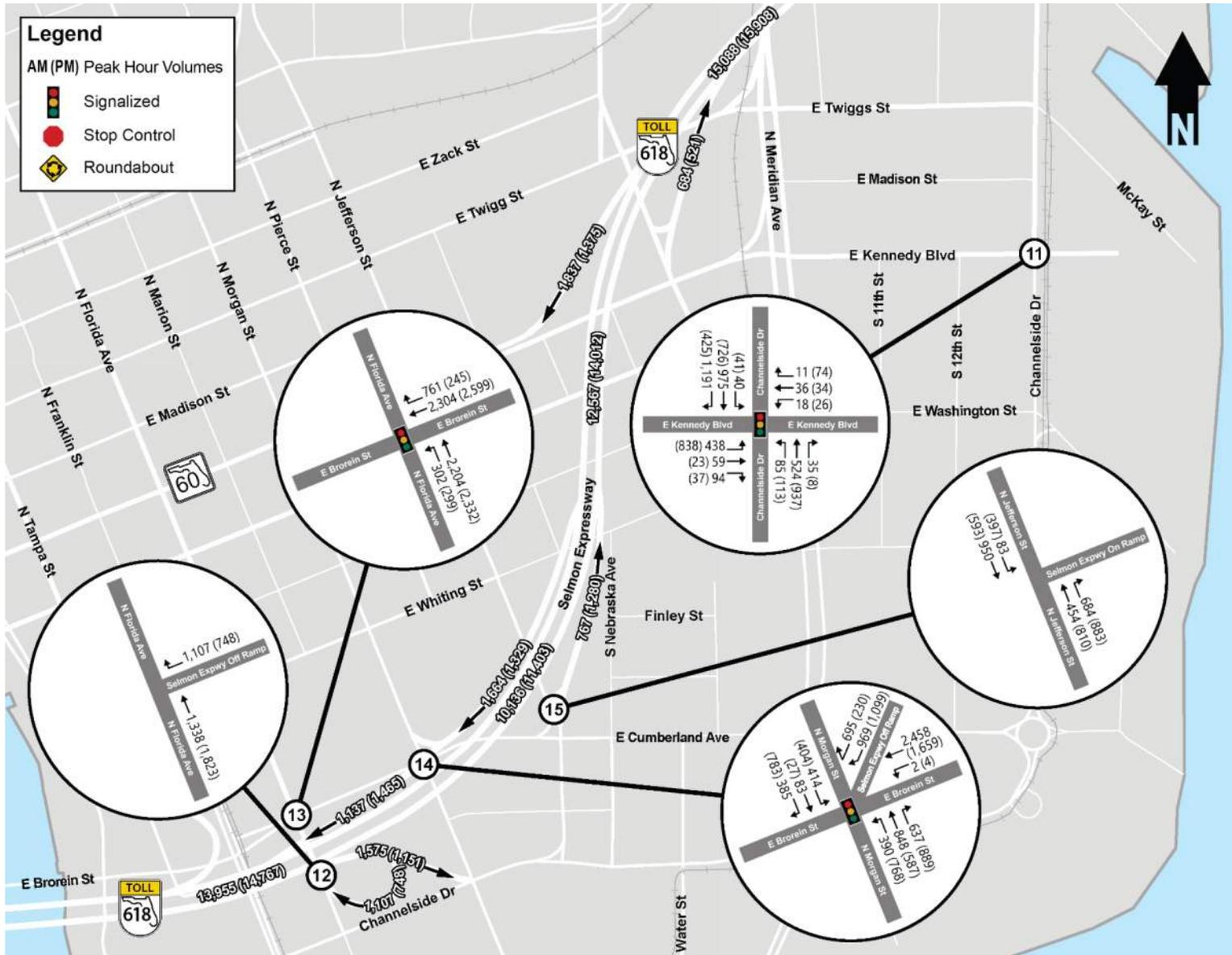


Figure 4.9c: Design Year (2046) No-Build Alternative Turning Movement Volumes

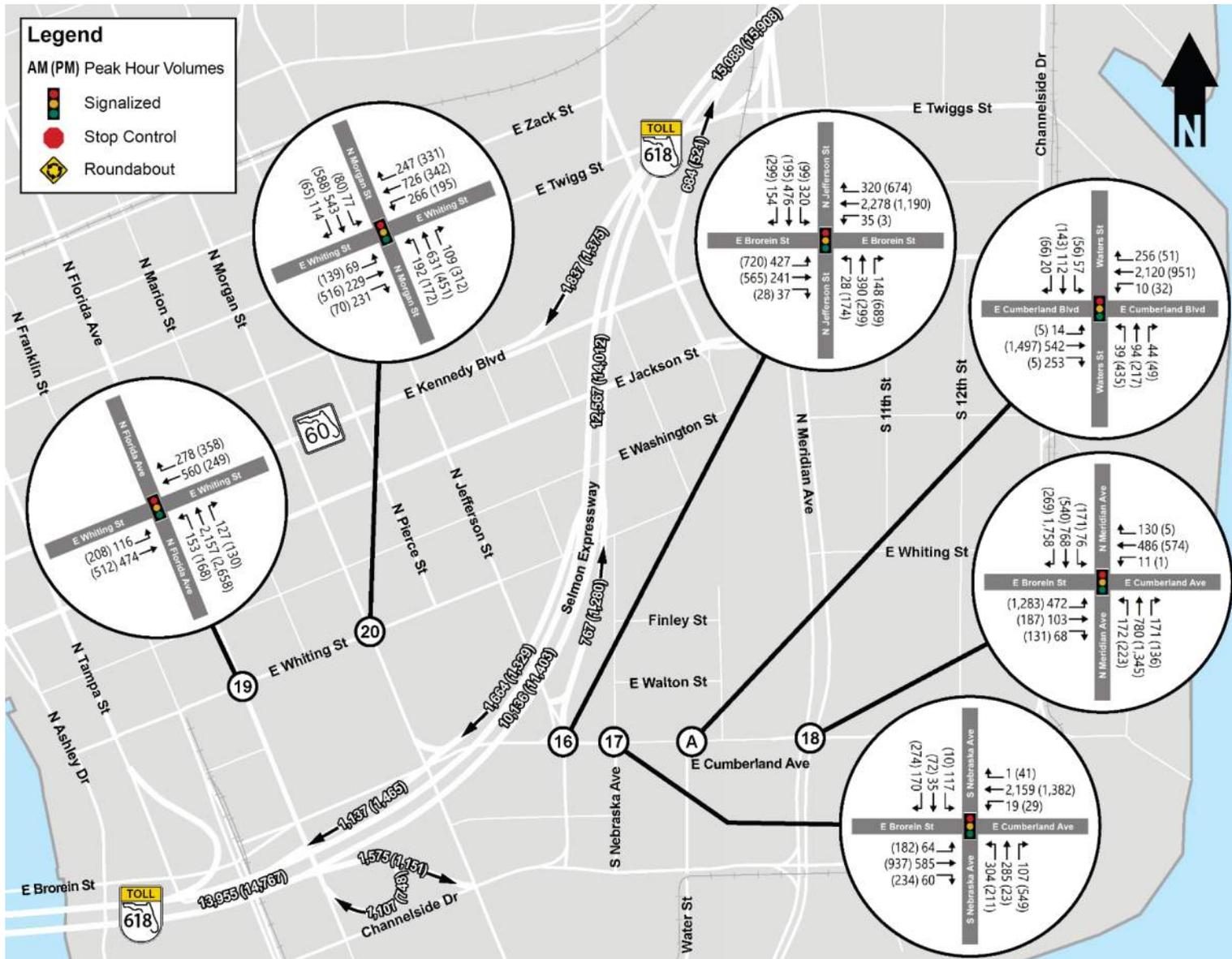


Figure 4.9d: Design Year (2046) No-Build Alternative Turning Movement Volumes

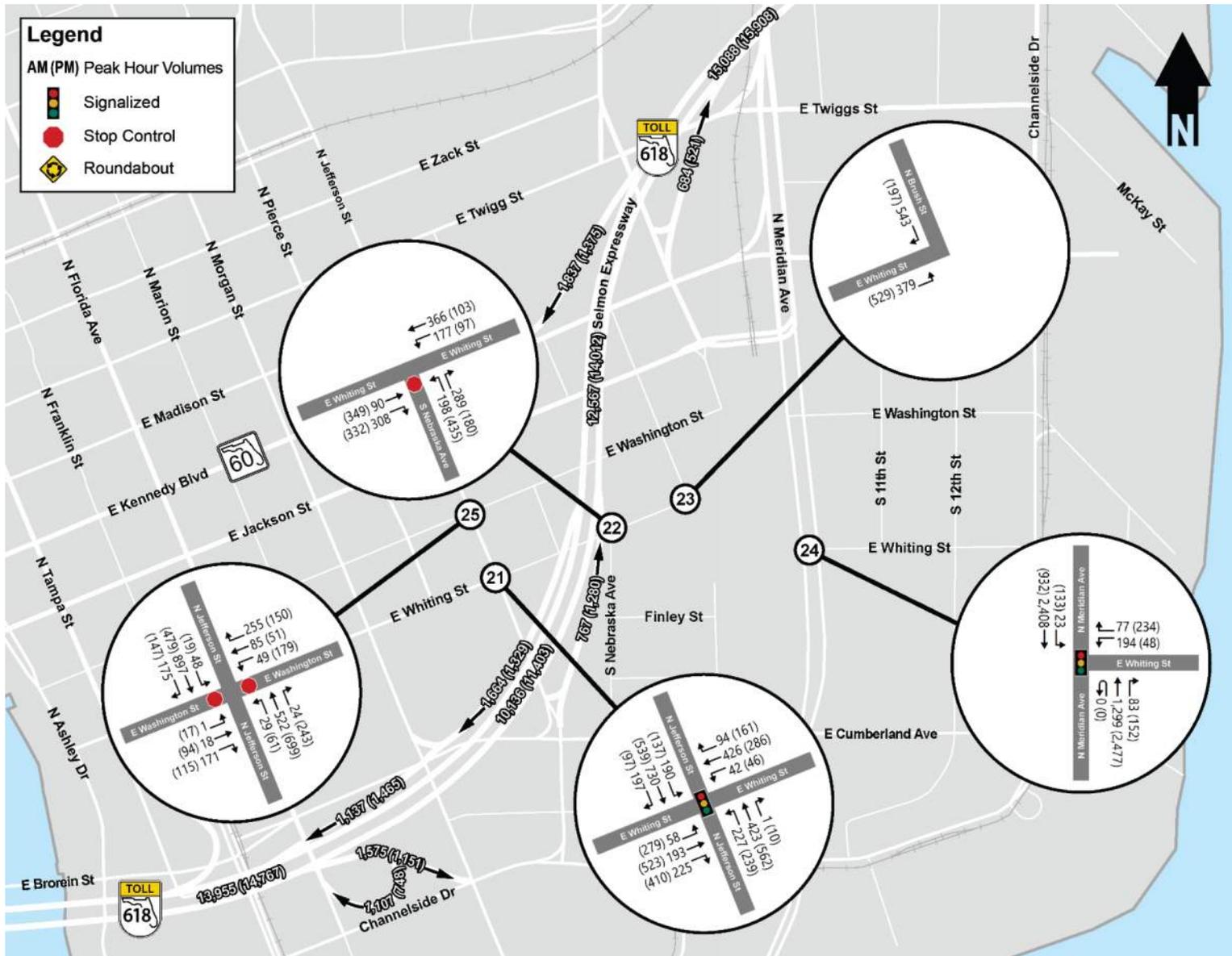


Figure 4.9e: Design Year (2046) No-Build Alternative Turning Movement Volumes



Figure 4.9f: Design Year (2046) No-Build Alternative Turning Movement Volumes

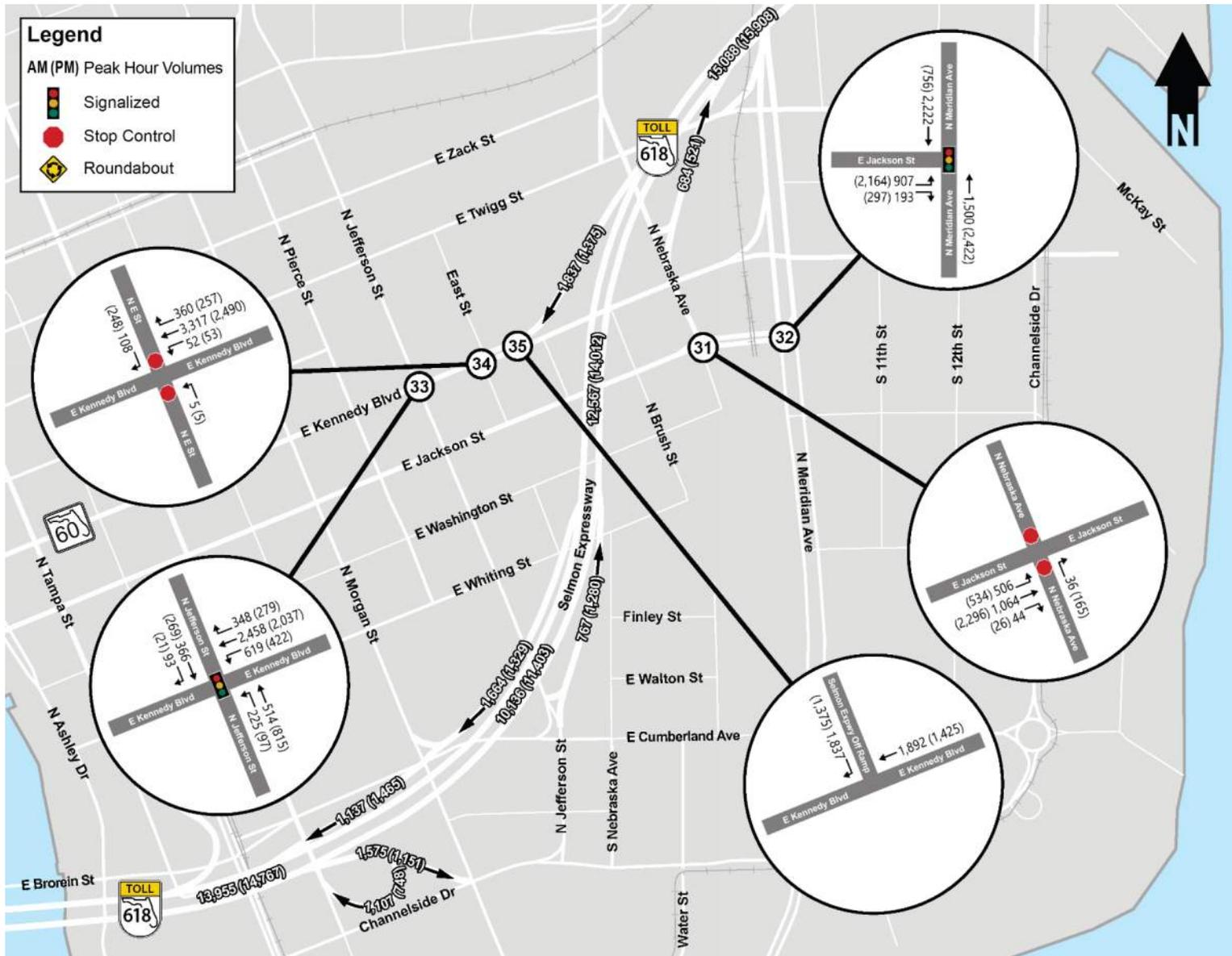


Figure 4.9g: Design Year (2046) No-Build Alternative Turning Movement Volumes

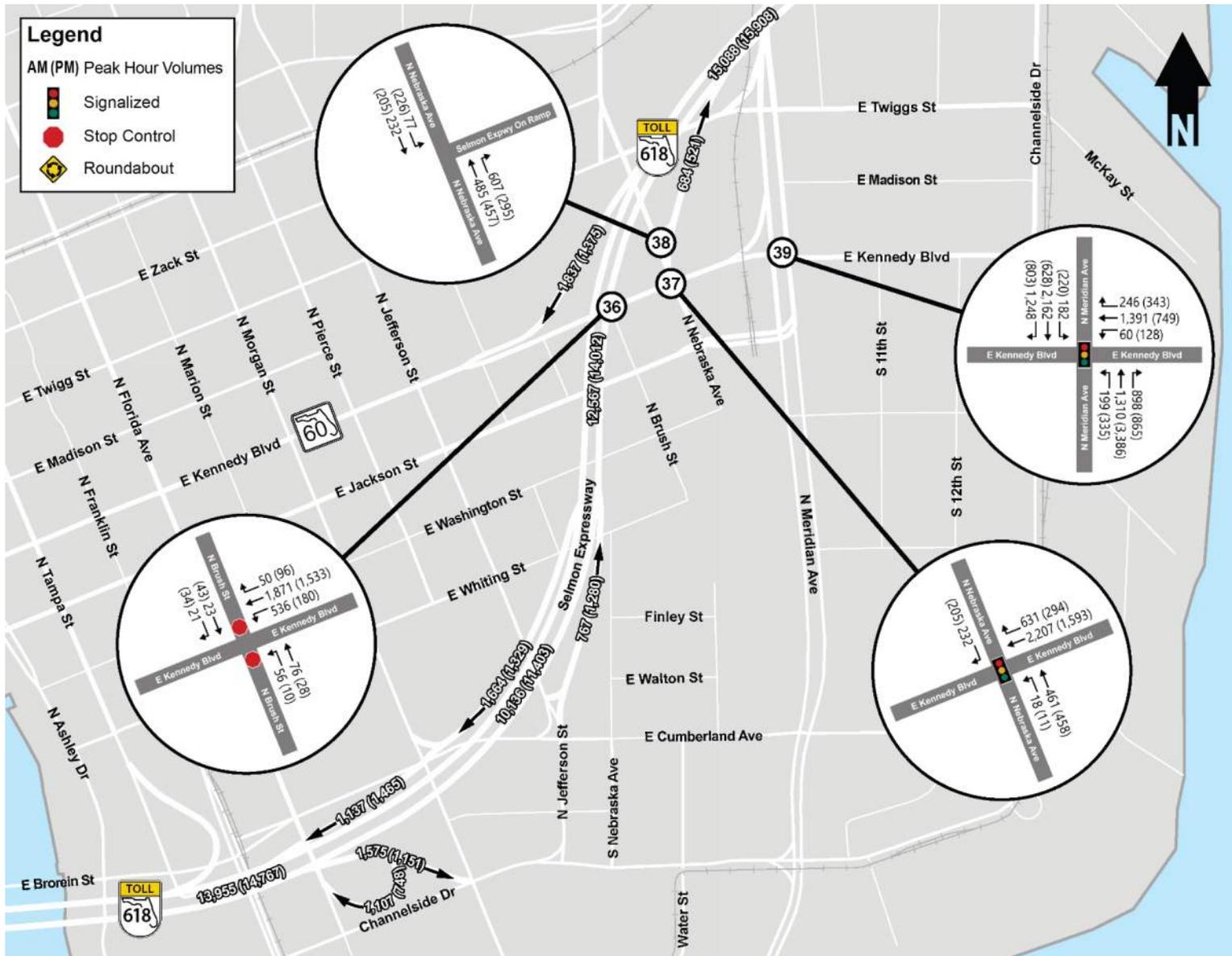


Figure 4.9h: Design Year (2046) No-Build Alternative Turning Movement Volumes

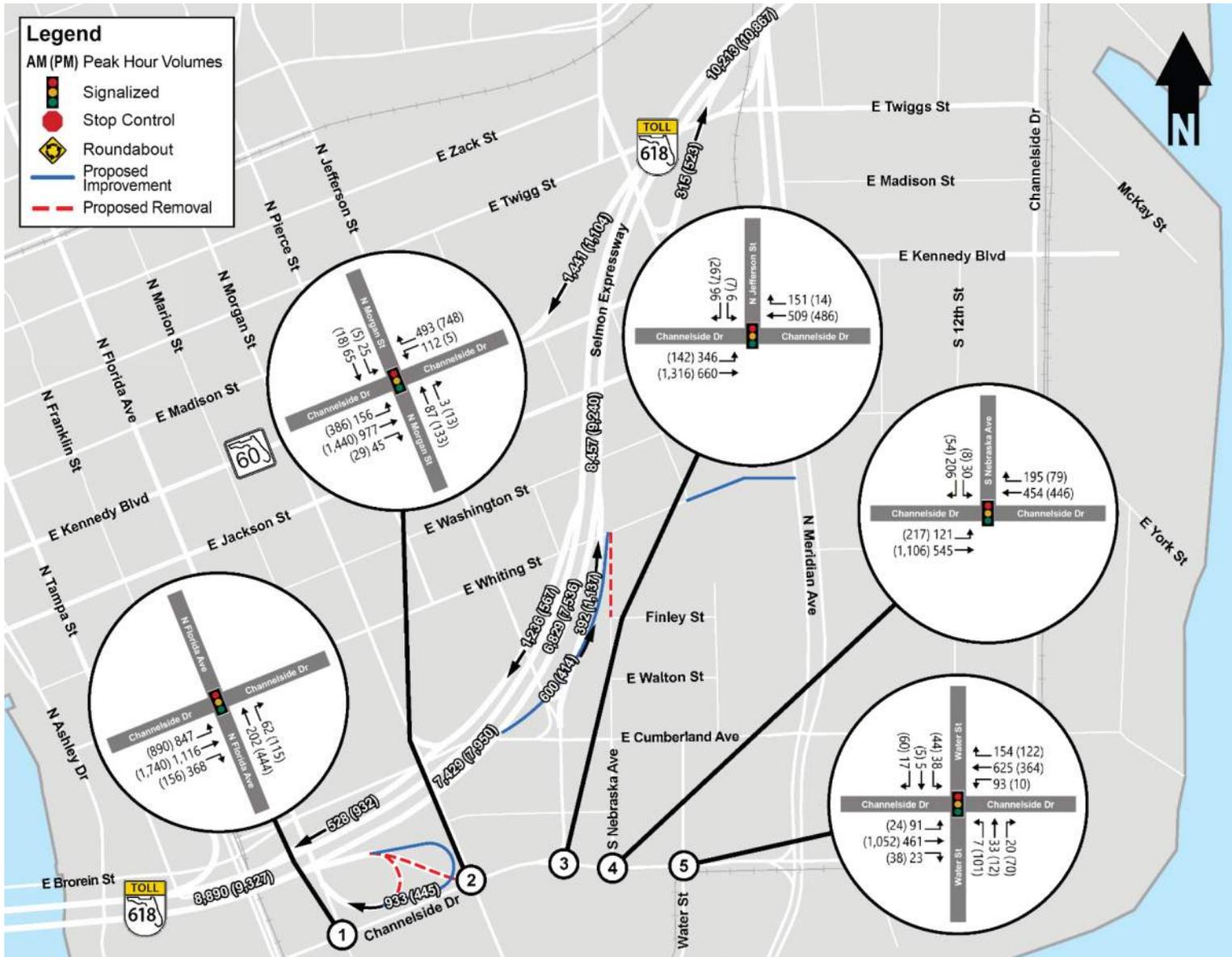


Figure 4.10a: Opening Year (2026) Build Alternative Turning Movement Volumes

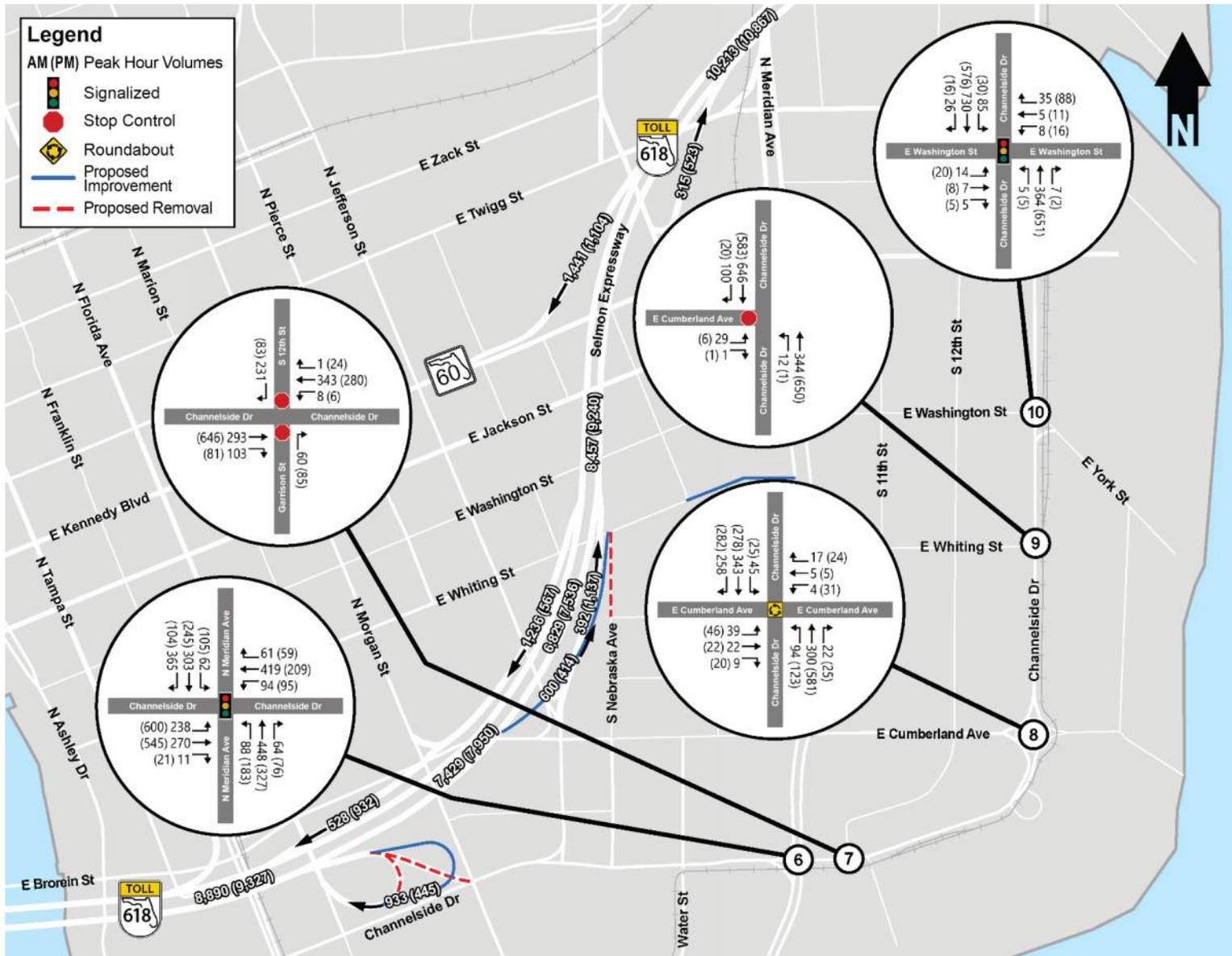


Figure 4.10b: Opening Year (2026) Build Alternative Turning Movement Volumes

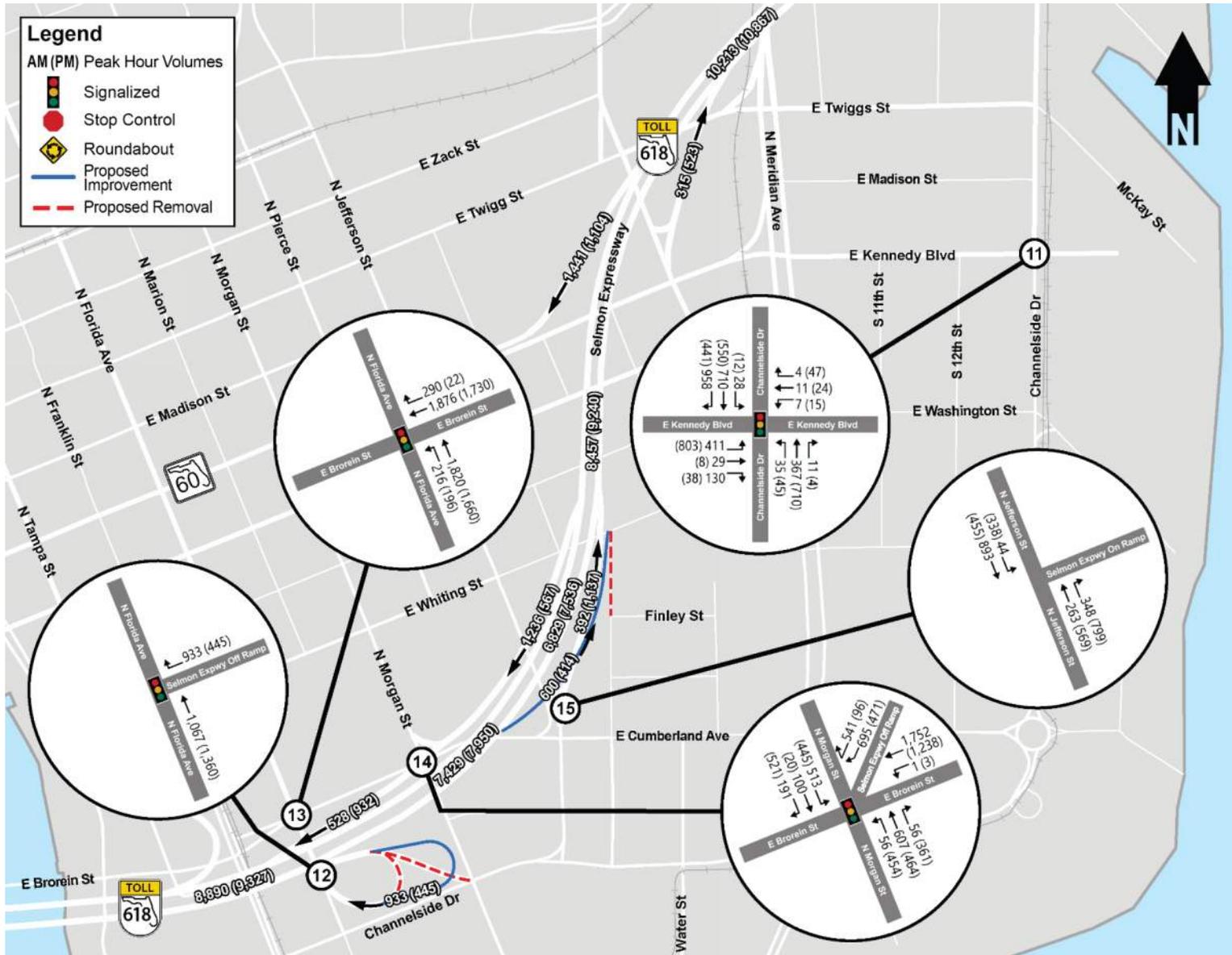


Figure 4.10c: Opening Year (2026) Build Alternative Turning Movement Volumes

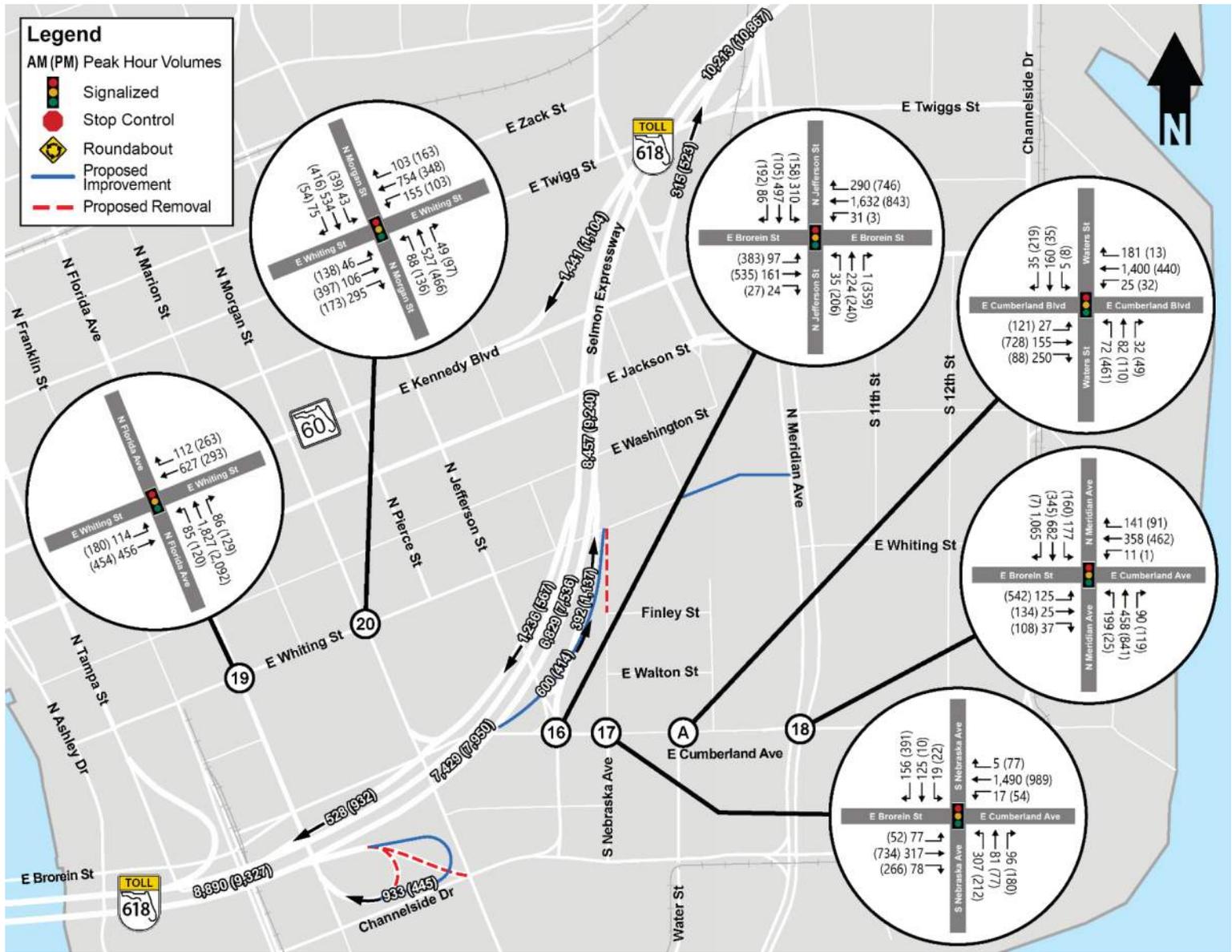


Figure 4.10d: Opening Year (2026) Build Alternative Turning Movement Volumes

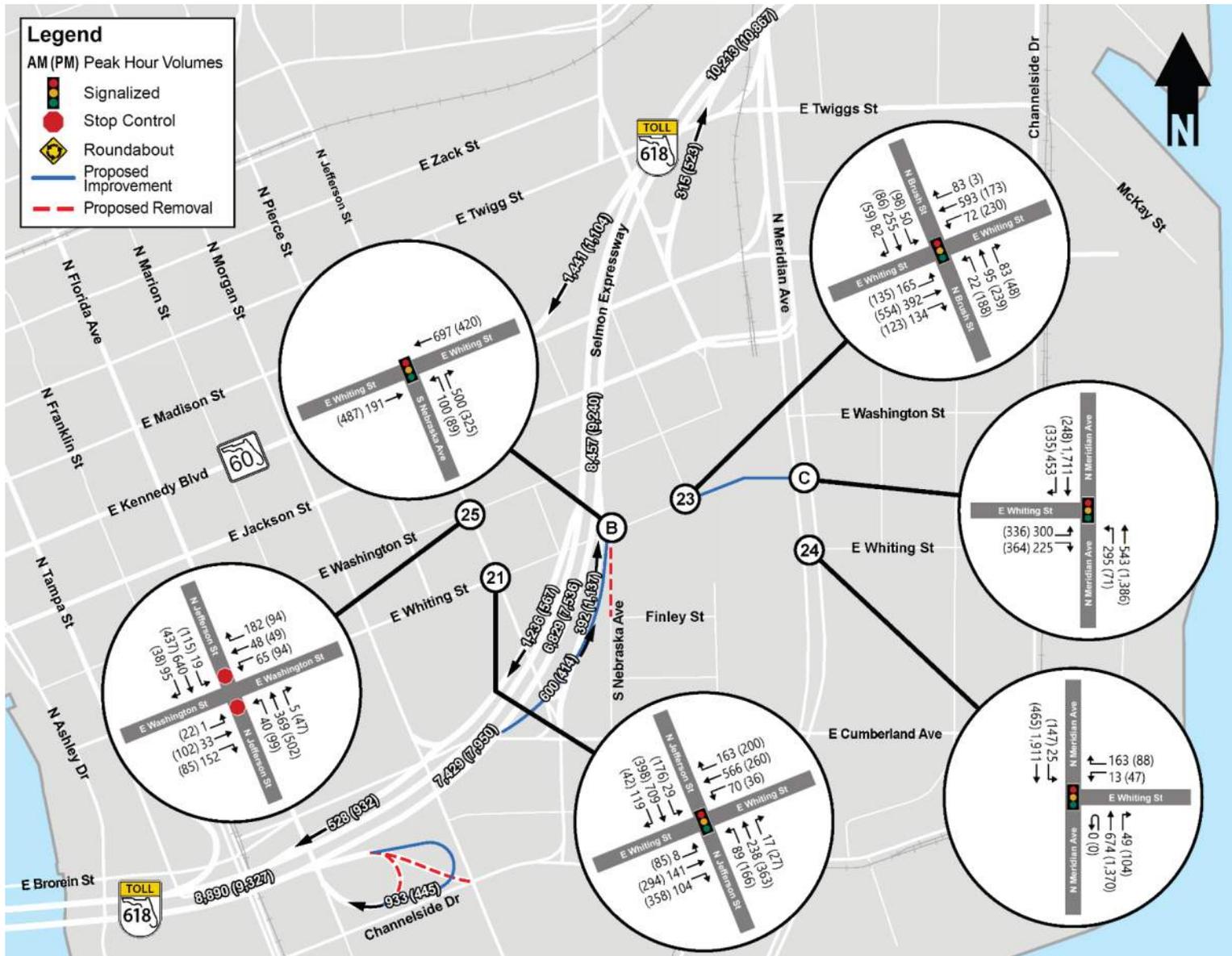


Figure 4.10e: Opening Year (2026) Build Alternative Turning Movement Volumes

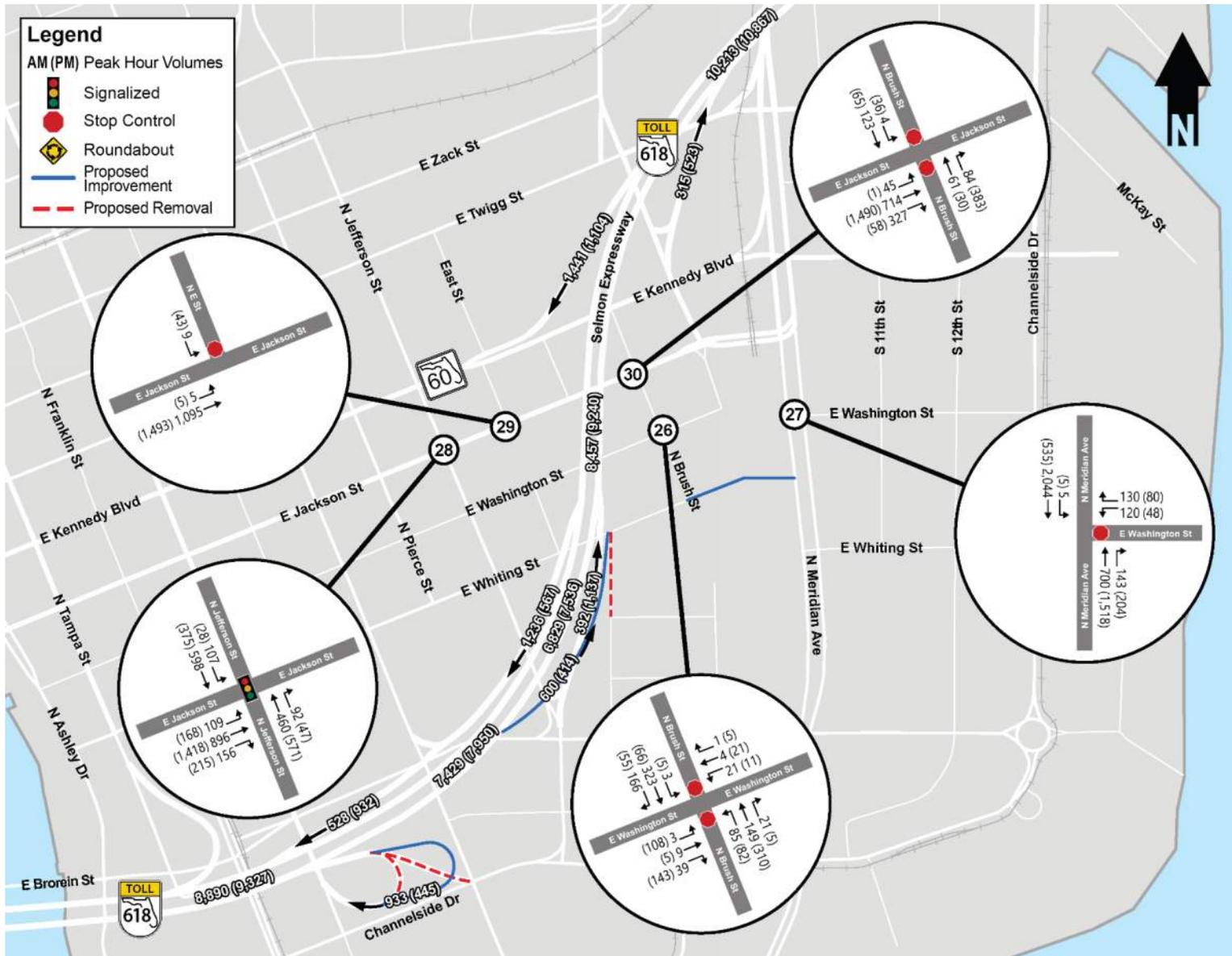


Figure 4.10f: Opening Year (2026) Build Alternative Turning Movement Volumes

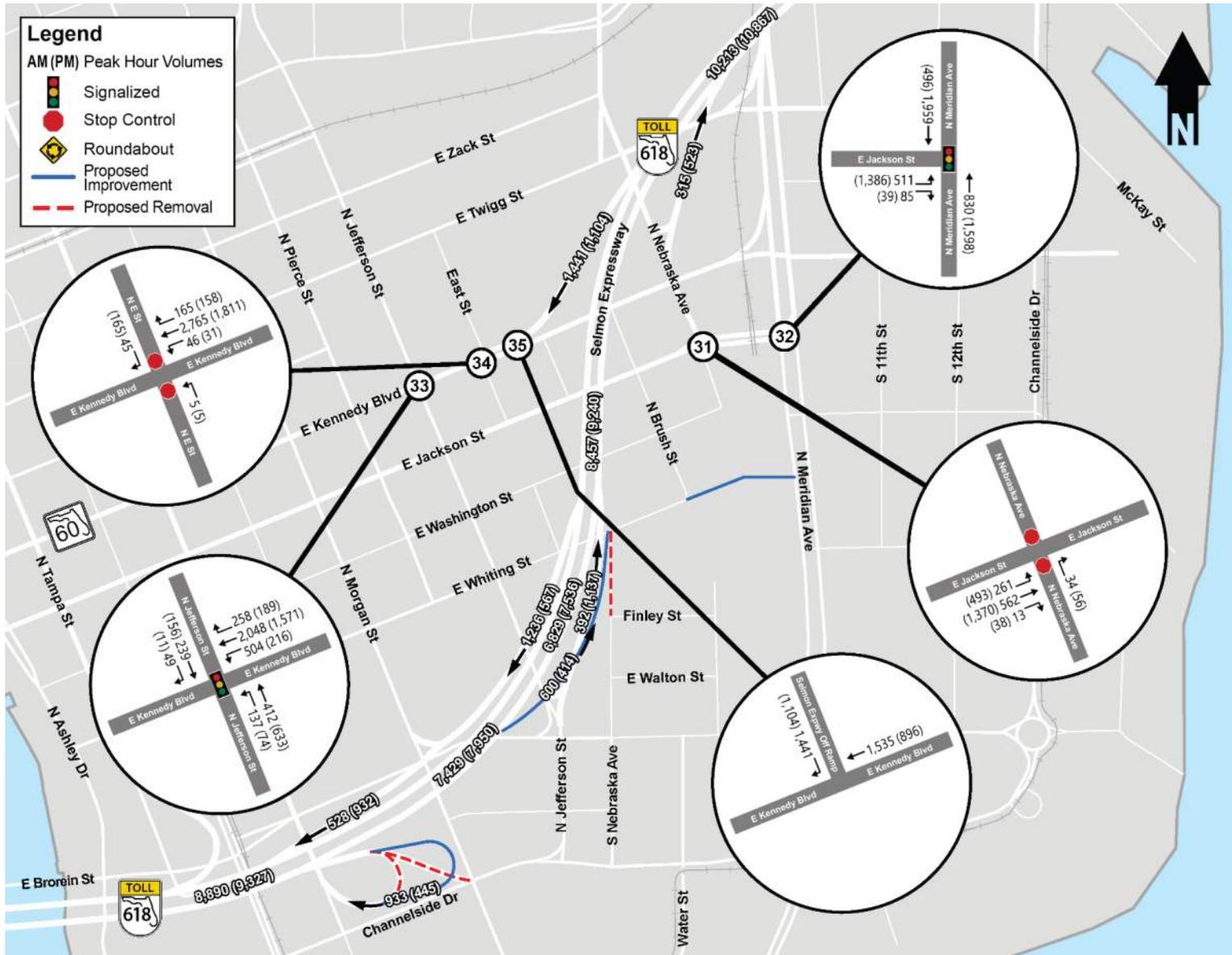


Figure 4.10g: Opening Year (2026) Build Alternative Turning Movement Volumes

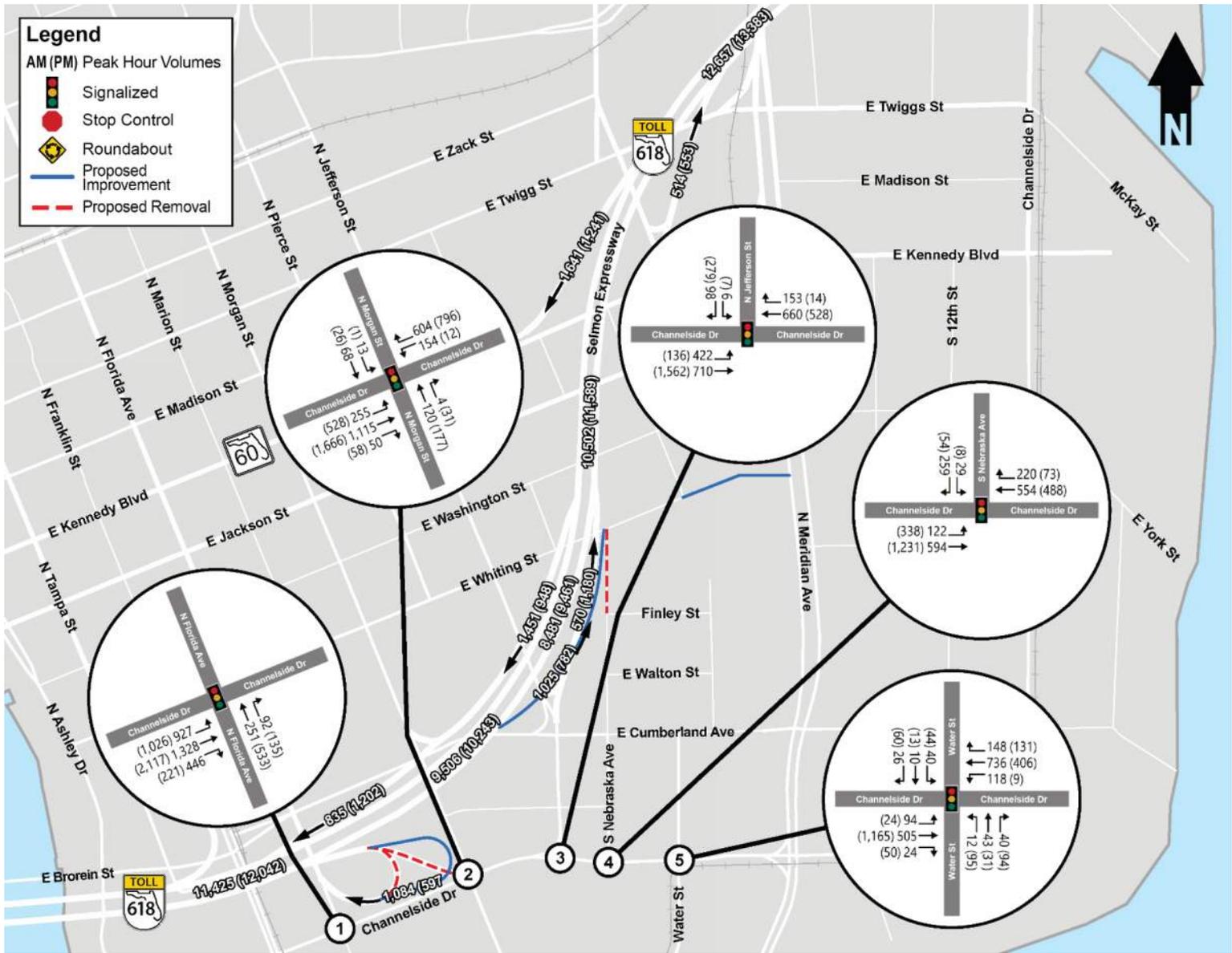


Figure 4.11a: Interim Year (2036) Build Alternative Turning Movement Volumes

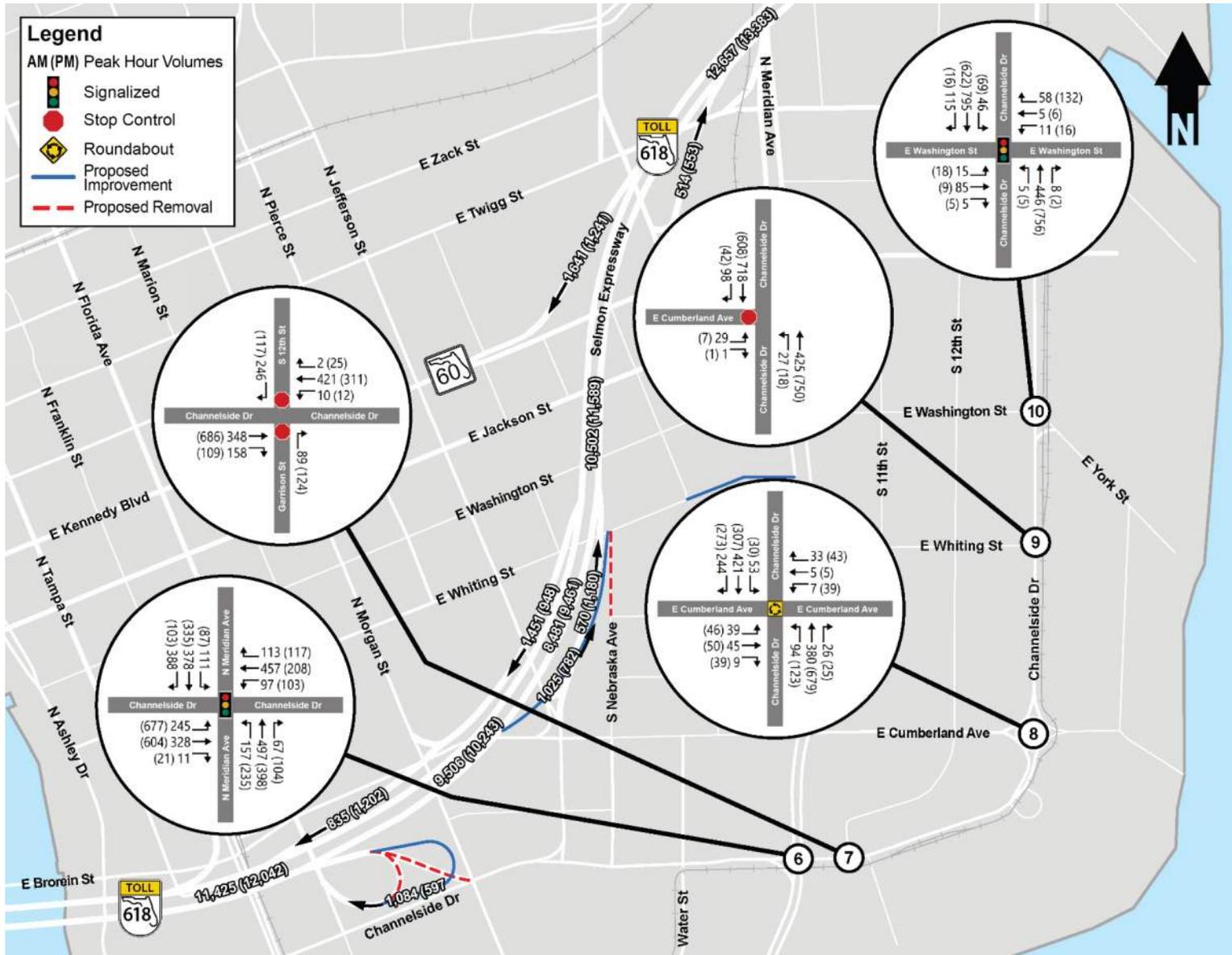


Figure 4.11b: Interim Year (2036) Build Alternative Turning Movement Volumes

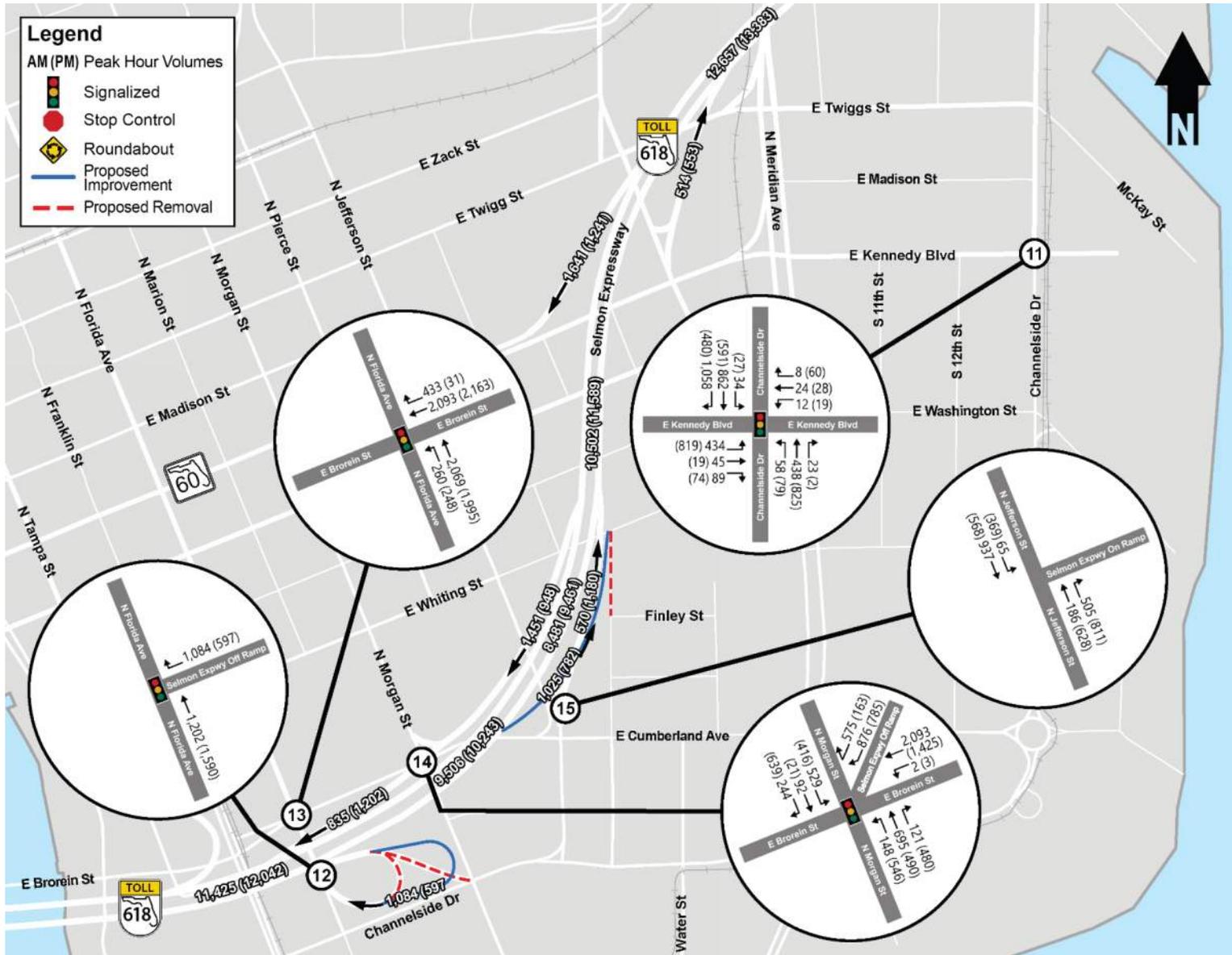


Figure 4.11c: Interim Year (2036) Build Alternative Turning Movement Volumes

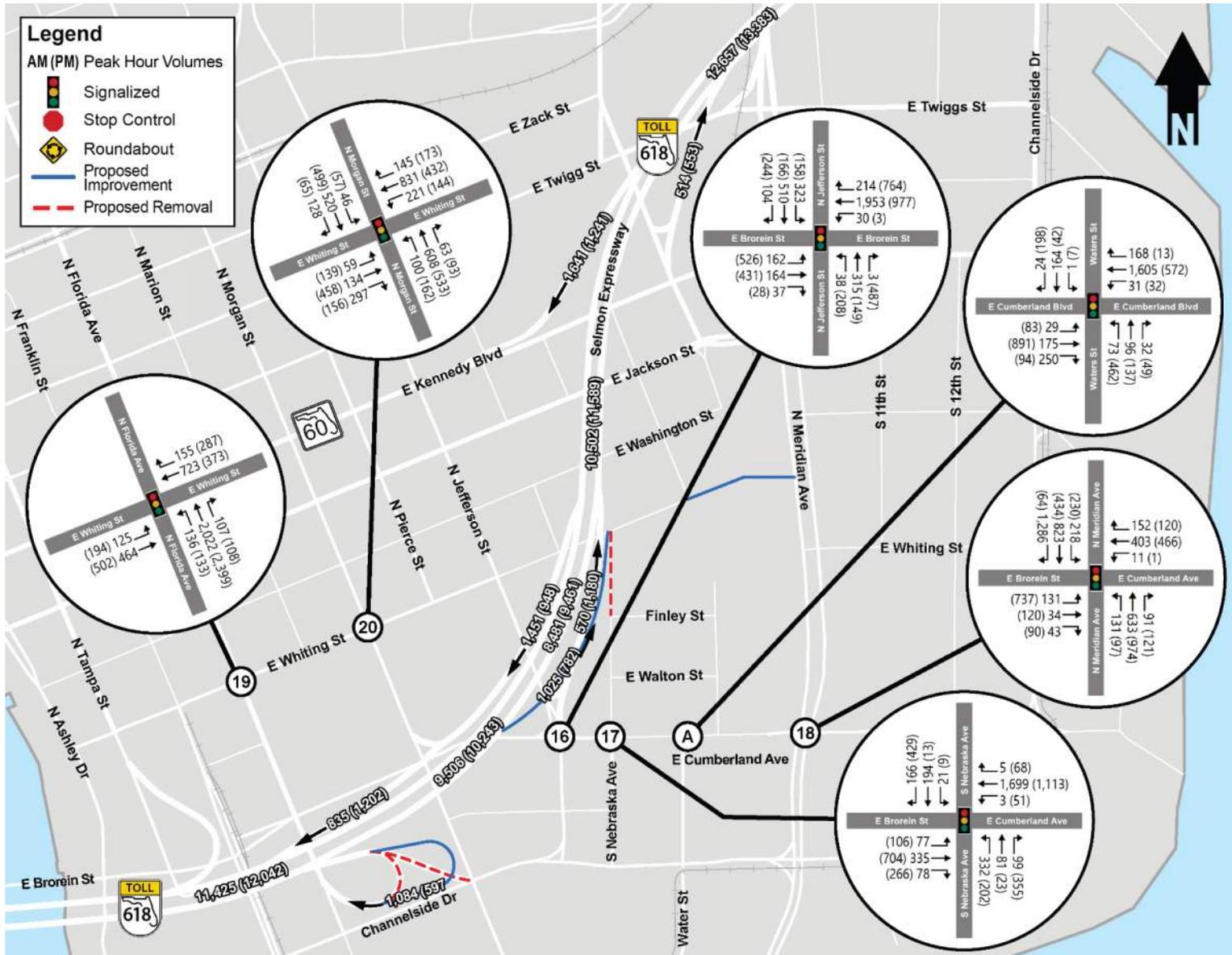


Figure 4.11d: Interim Year (2036) Build Alternative Turning Movement Volumes

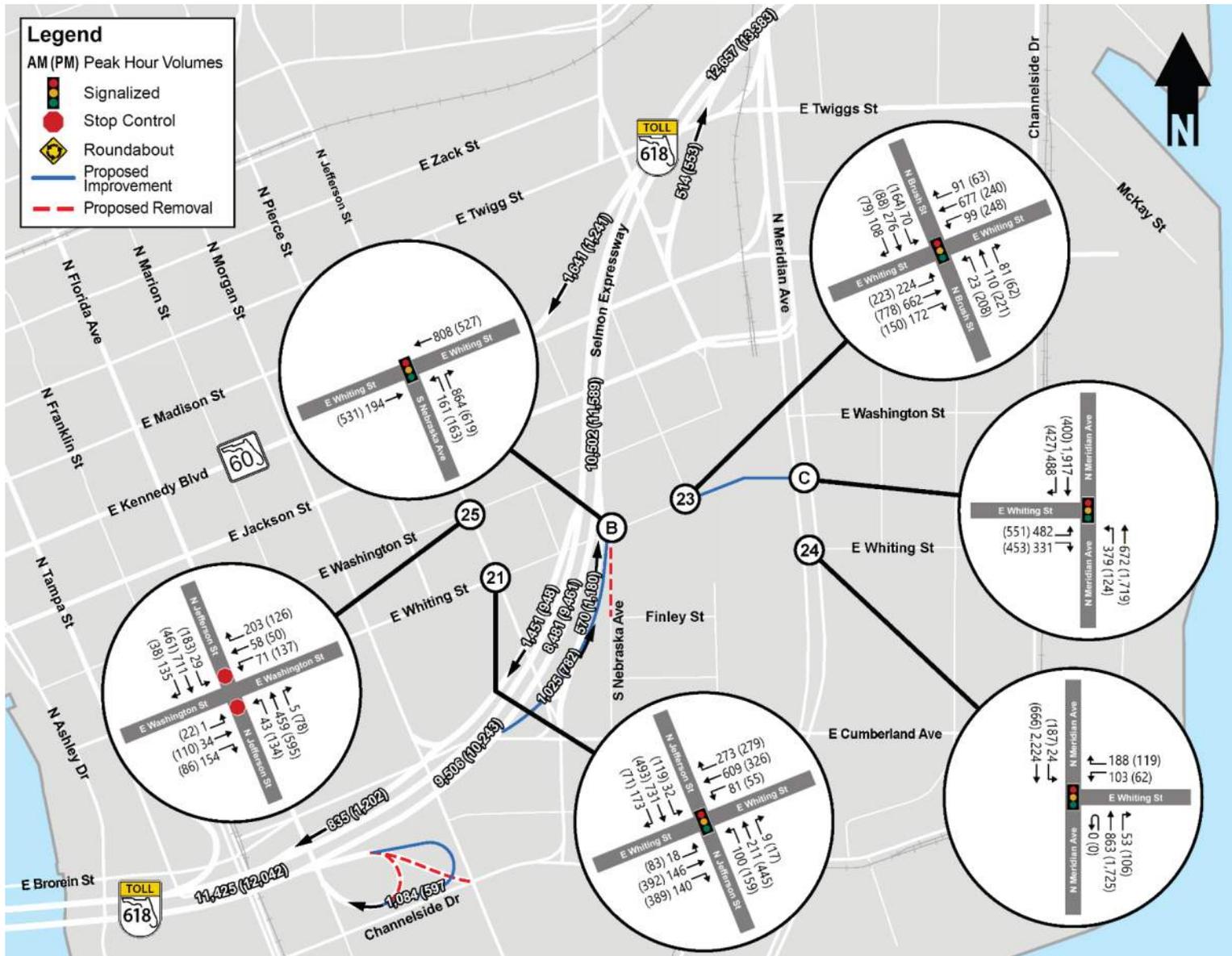


Figure 4.11e: Interim Year (2036) Build Alternative Turning Movement Volumes

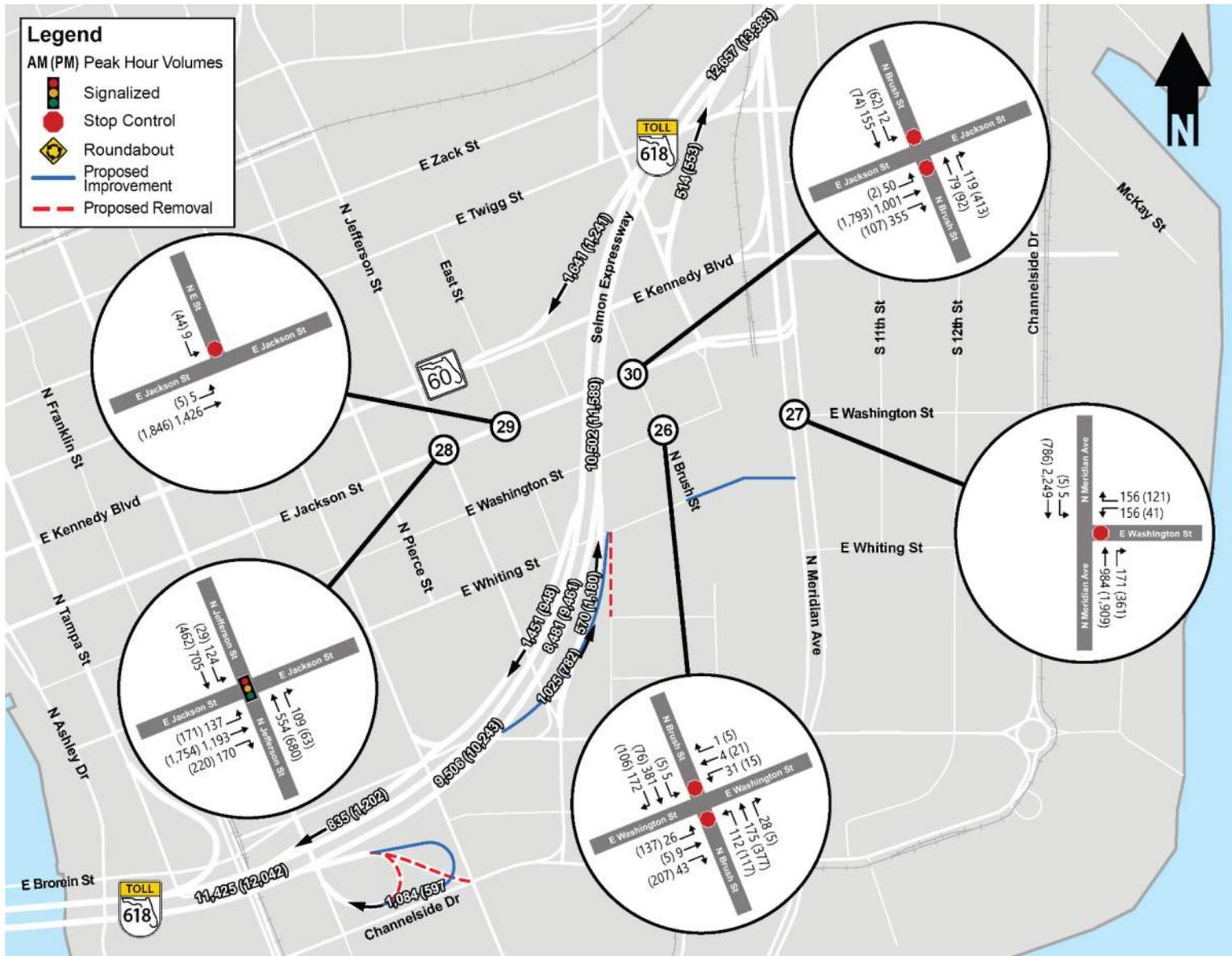


Figure 4.11f: Interim Year (2036) Build Alternative Turning Movement Volumes

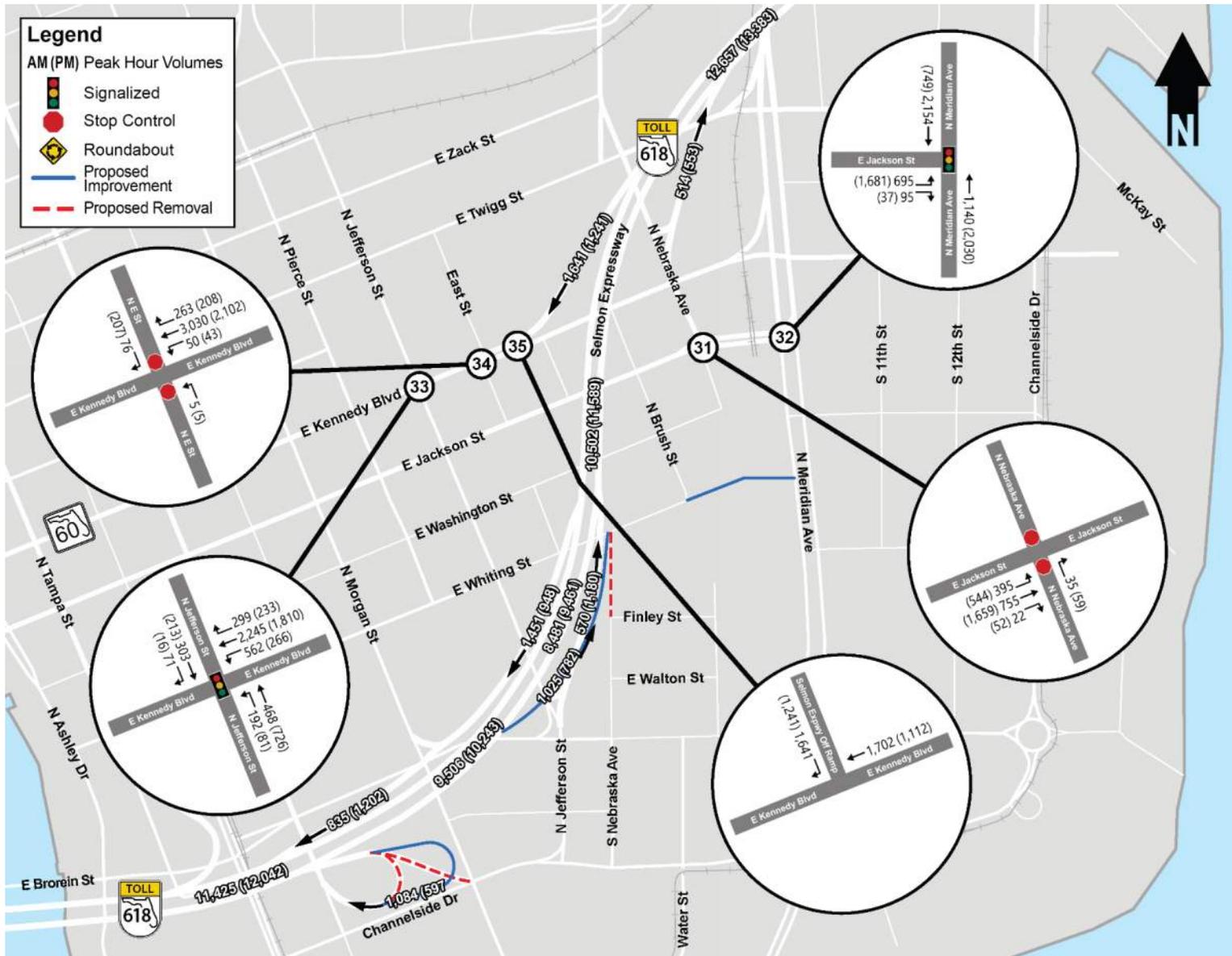


Figure 4.11g: Interim Year (2036) Build Alternative Turning Movement Volumes

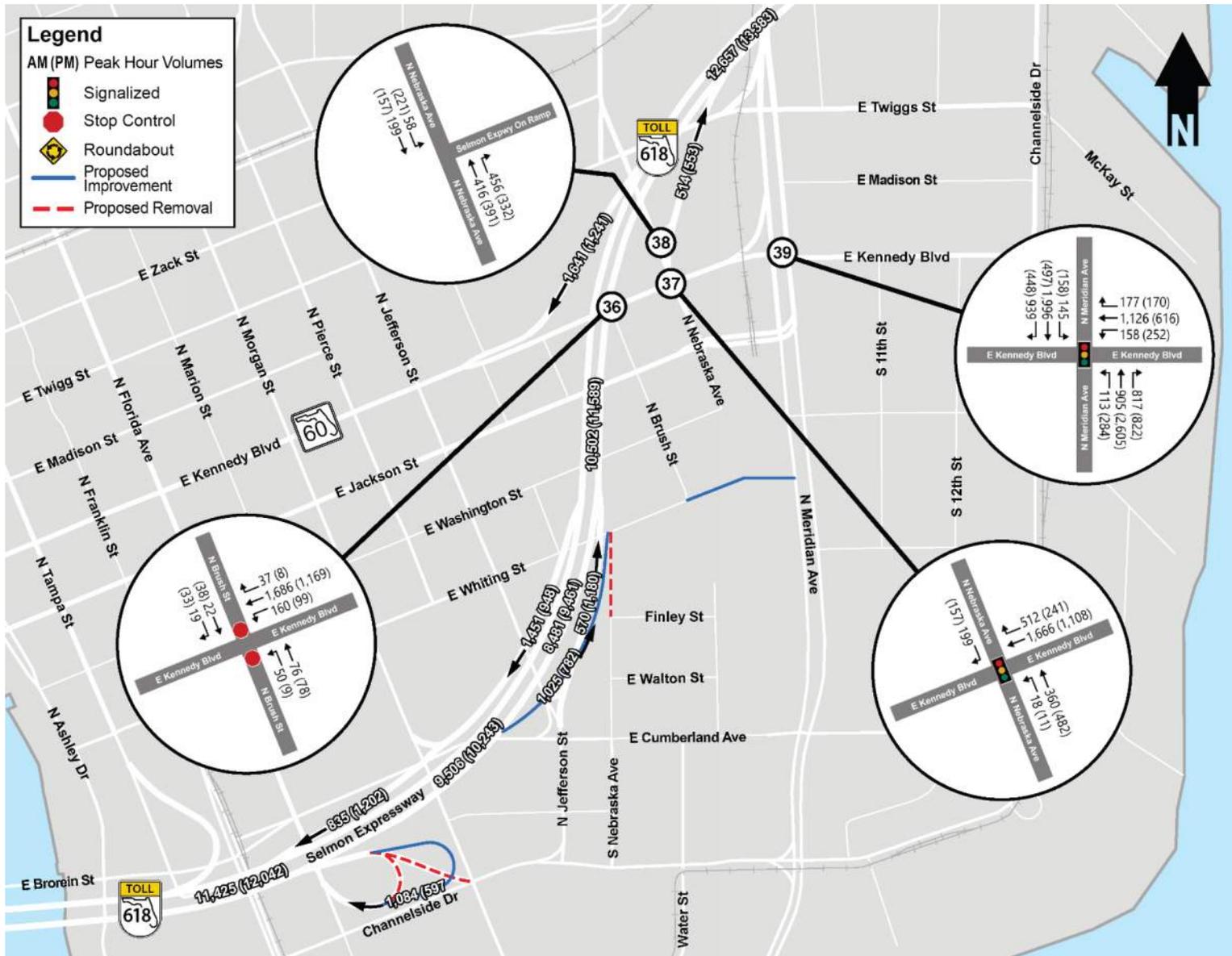


Figure 4.11h: Interim Year (2036) Build Alternative Turning Movement Volumes

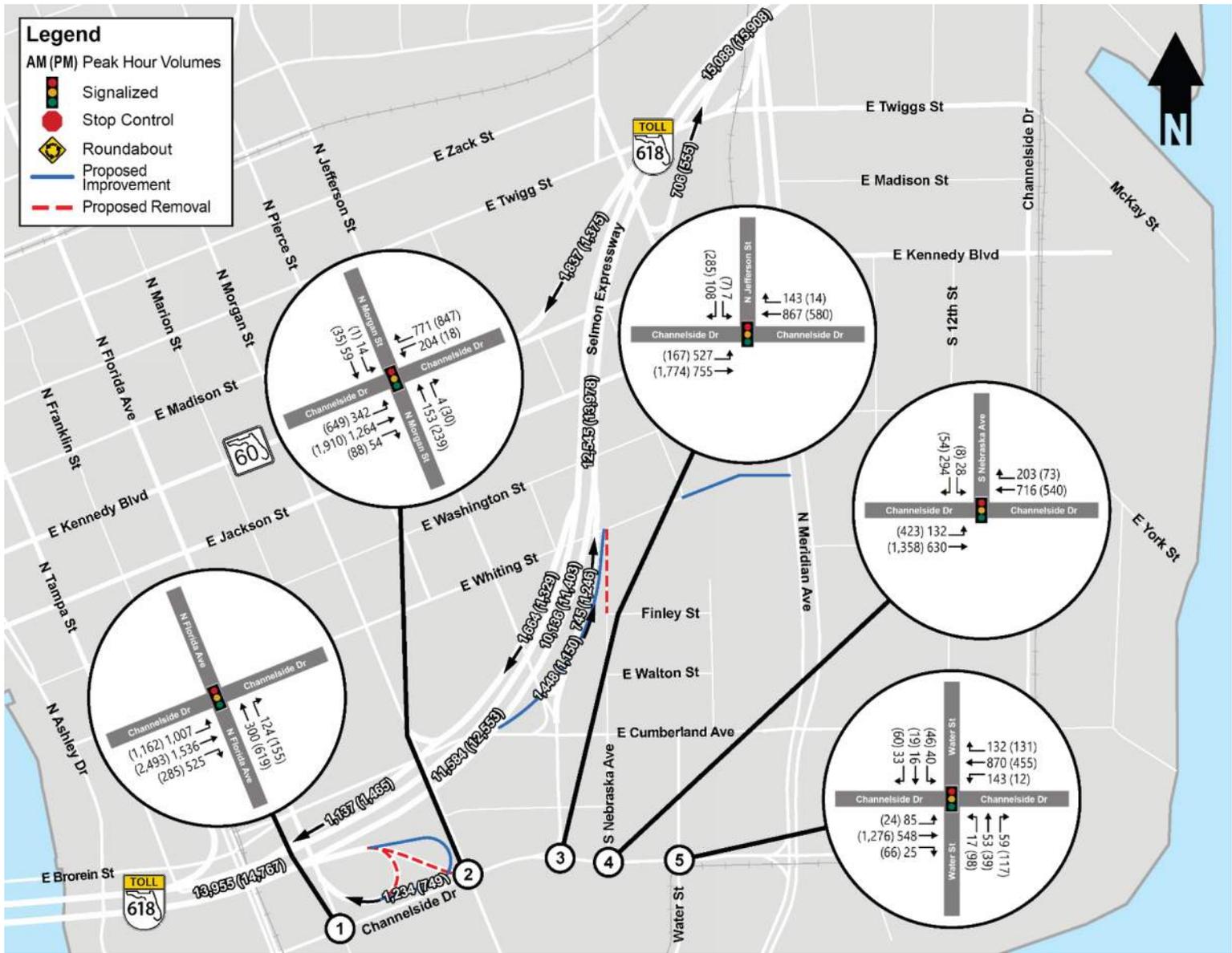


Figure 4.12a: Design Year (2046) Build Alternative Turning Movement Volumes

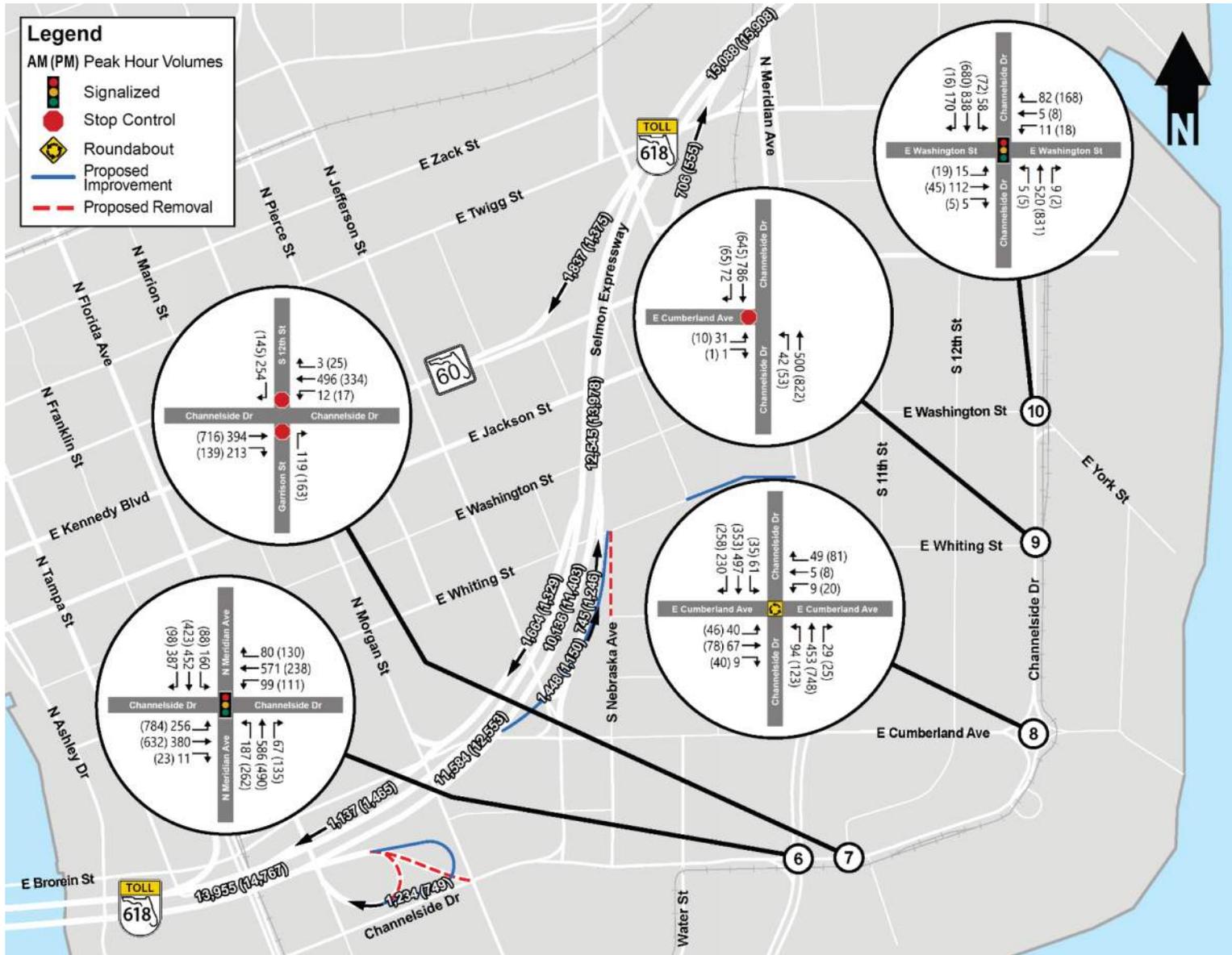


Figure 4.12b: Design Year (2046) Build Alternative Turning Movement Volumes

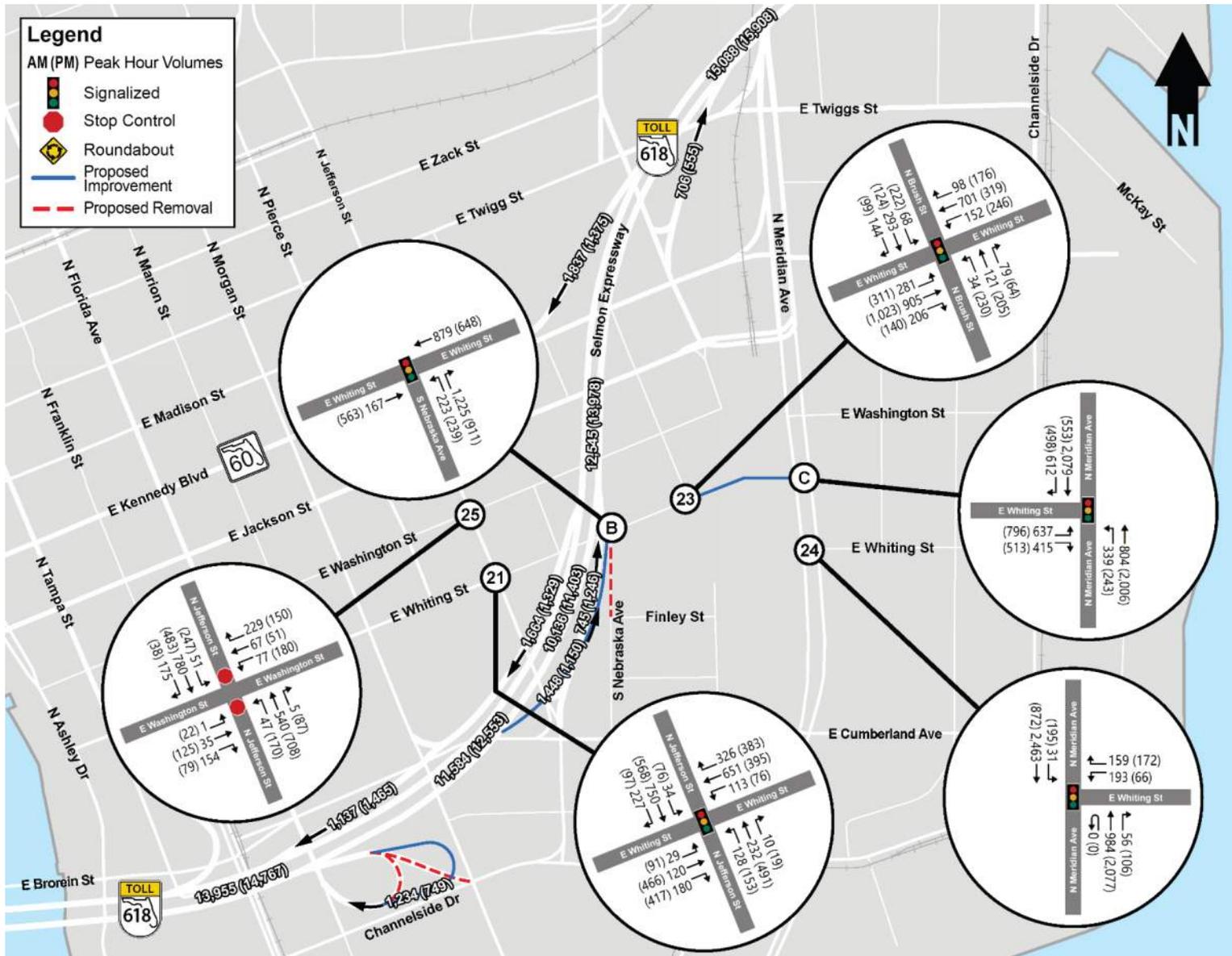


Figure 4.12e: Design Year (2046) Build Alternative Turning Movement Volumes

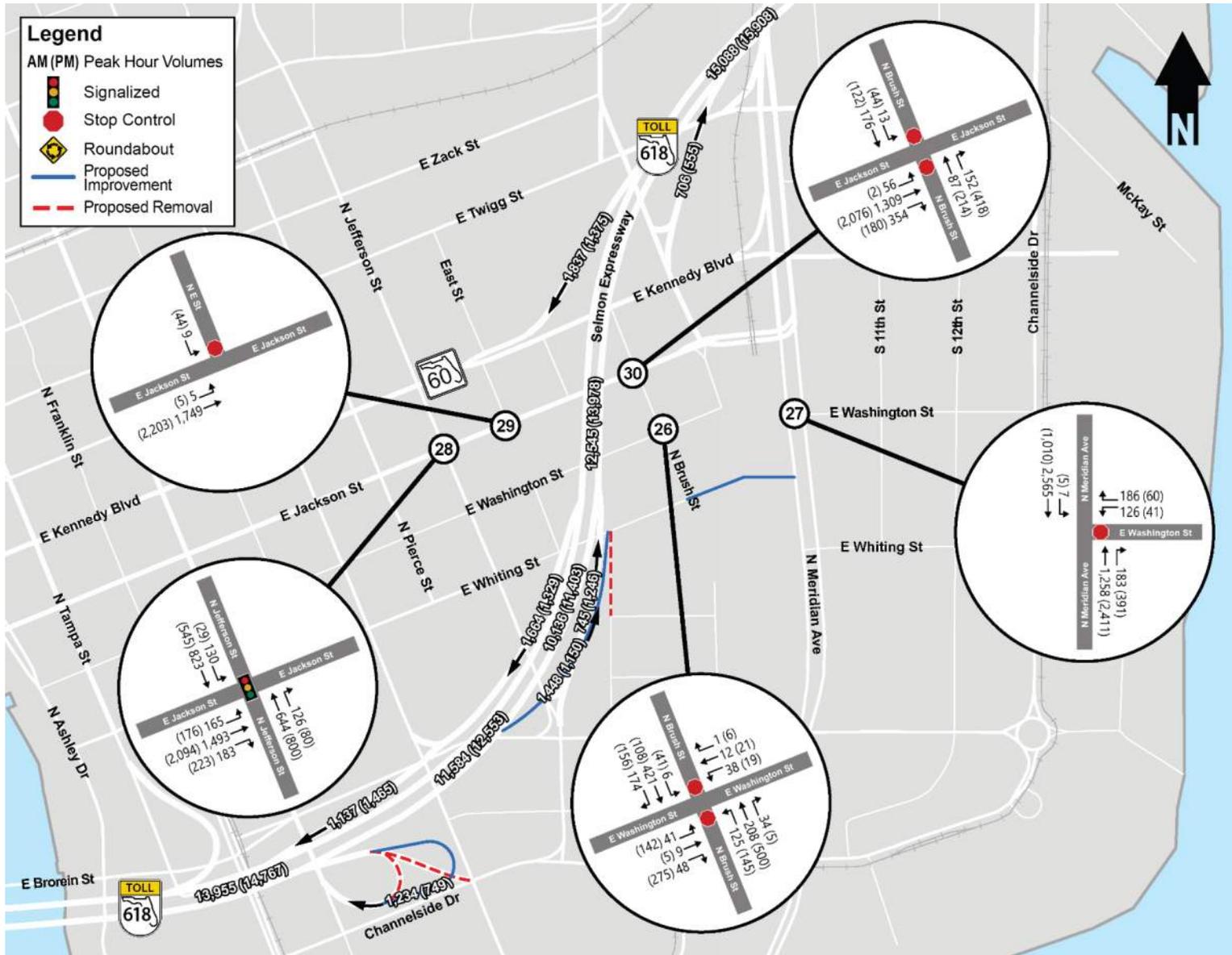


Figure 4.12f: Design Year (2046) Build Alternative Turning Movement Volumes

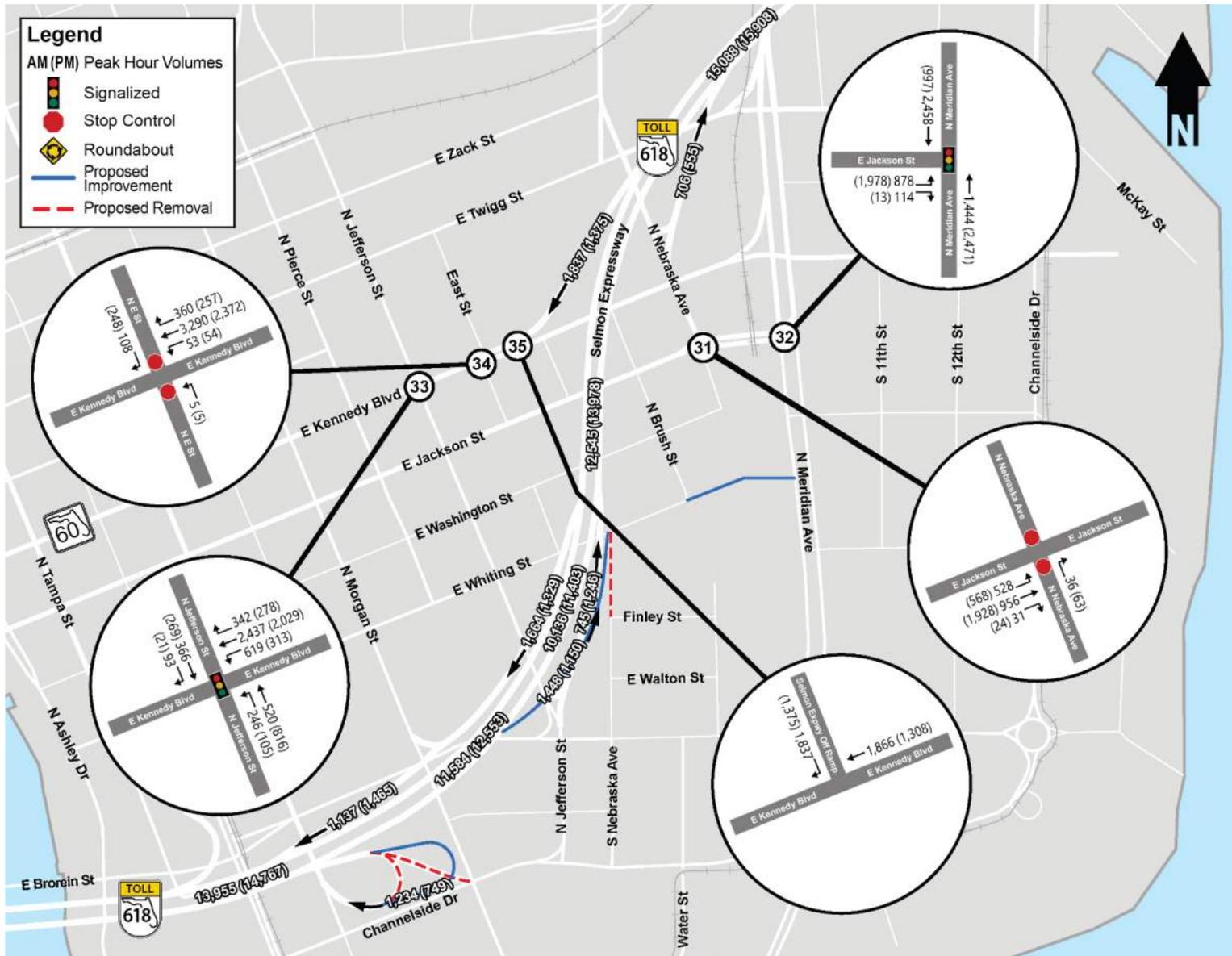


Figure 4.12g: Design Year (2046) Build Alternative Turning Movement Volumes

5.0 Alternatives Analysis

In order to evaluate the operational characteristics of the No-Build and Build Alternatives, a detailed analysis using Synchro 11, SIDRA, and HCS was conducted for the opening year (2026), interim year (2036), and design year (2046). Analysis for the No-Build and Build Alternatives consists of intersection analysis and queue analysis. In Synchro, HCM methodologies were utilized to estimate LOS for intersection analyses and the Synchro 95th percentile queue length was utilized for queue analysis. The SIDRA and HCS queues are reported as vehicles and were therefore multiplied by 25 and rounded to the nearest 25 feet. The following sections document the methodology to analyze the improvements proposed for the Whiting Street PD&E Study.

5.1 No-Build Alternative Operational Analysis

5.1.1 Lane Geometry

Figure 5.1 shows the lane geometry for the No-Build Alternative. The No-Build Alternative assumes that no changes will be made to the existing lane geometry or traffic control operations of the Downtown Tampa study area, with the exception of the following improvements:

- Extend Cumberland Avenue from Meridian Avenue to Morgan Street.
- Convert Channelside Drive to a two-way roadway from Morgan Street to Meridian Avenue.
- Extend Water Street and Jefferson Street from Channelside Drive to Cumberland Avenue as two-way roadways.
- Convert Nebraska Avenue to a two-way road between Channelside Drive and Cumberland Avenue.

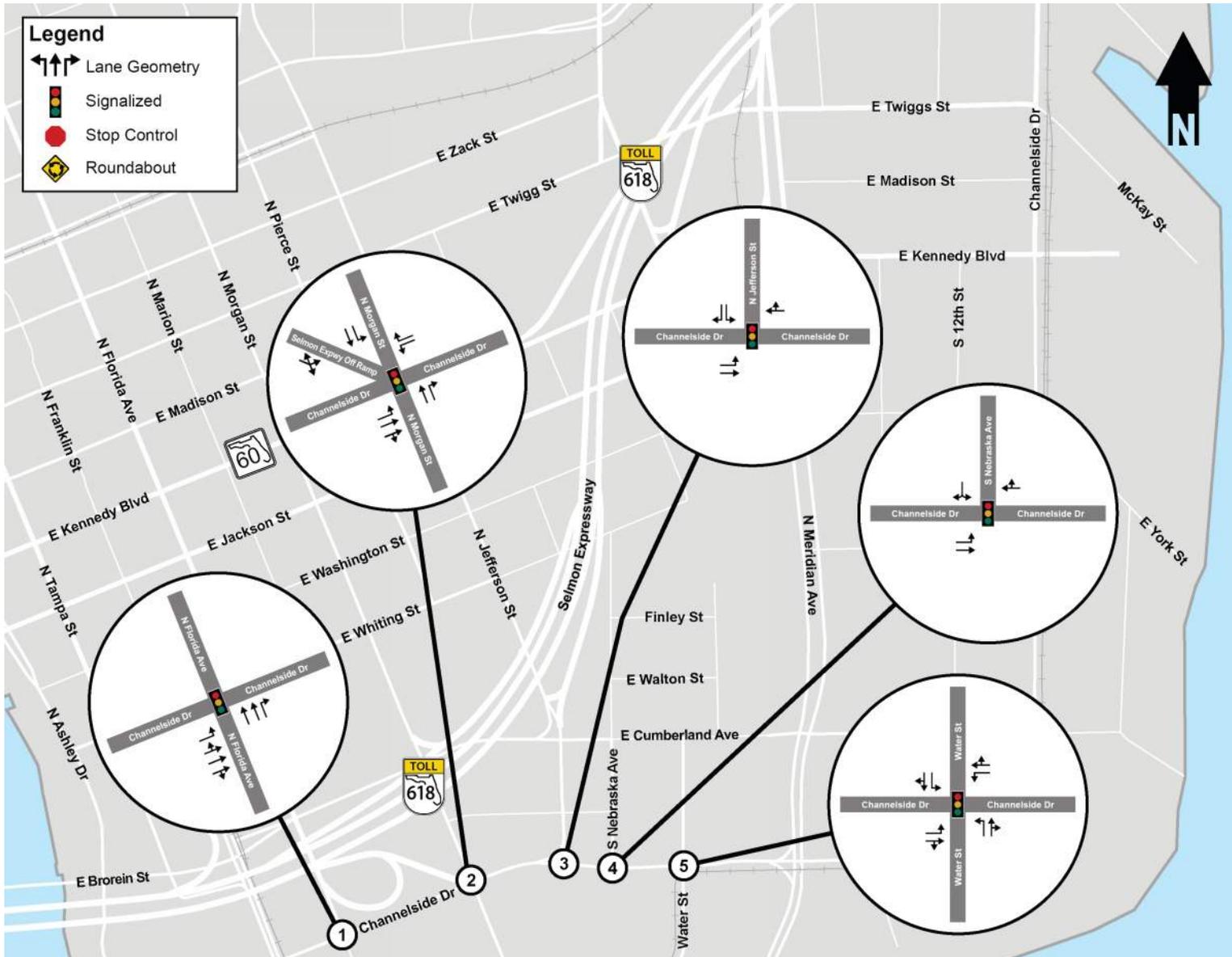


Figure 5.1a: No-Build Alternative Geometry

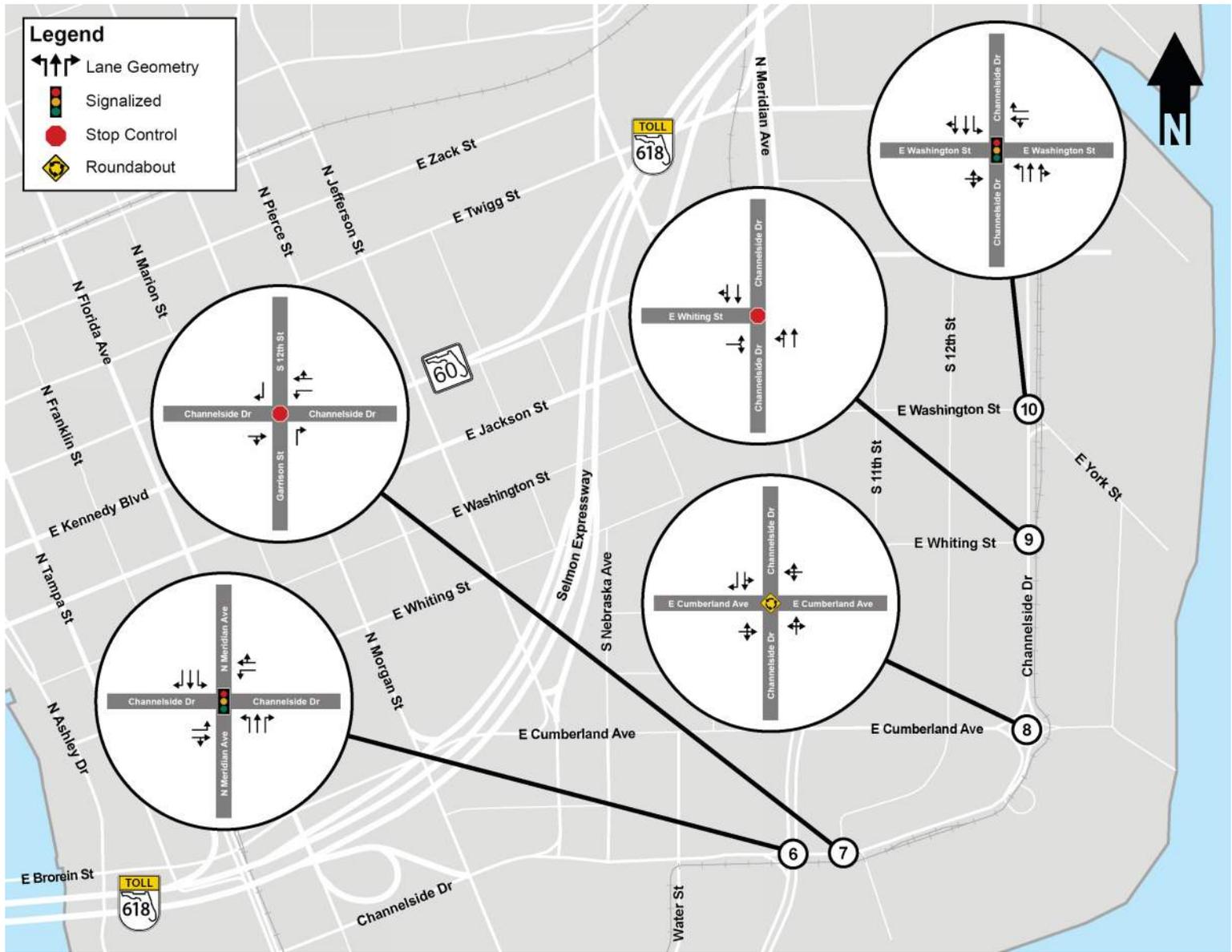


Figure 5.1b: No-Build Alternative Geometry

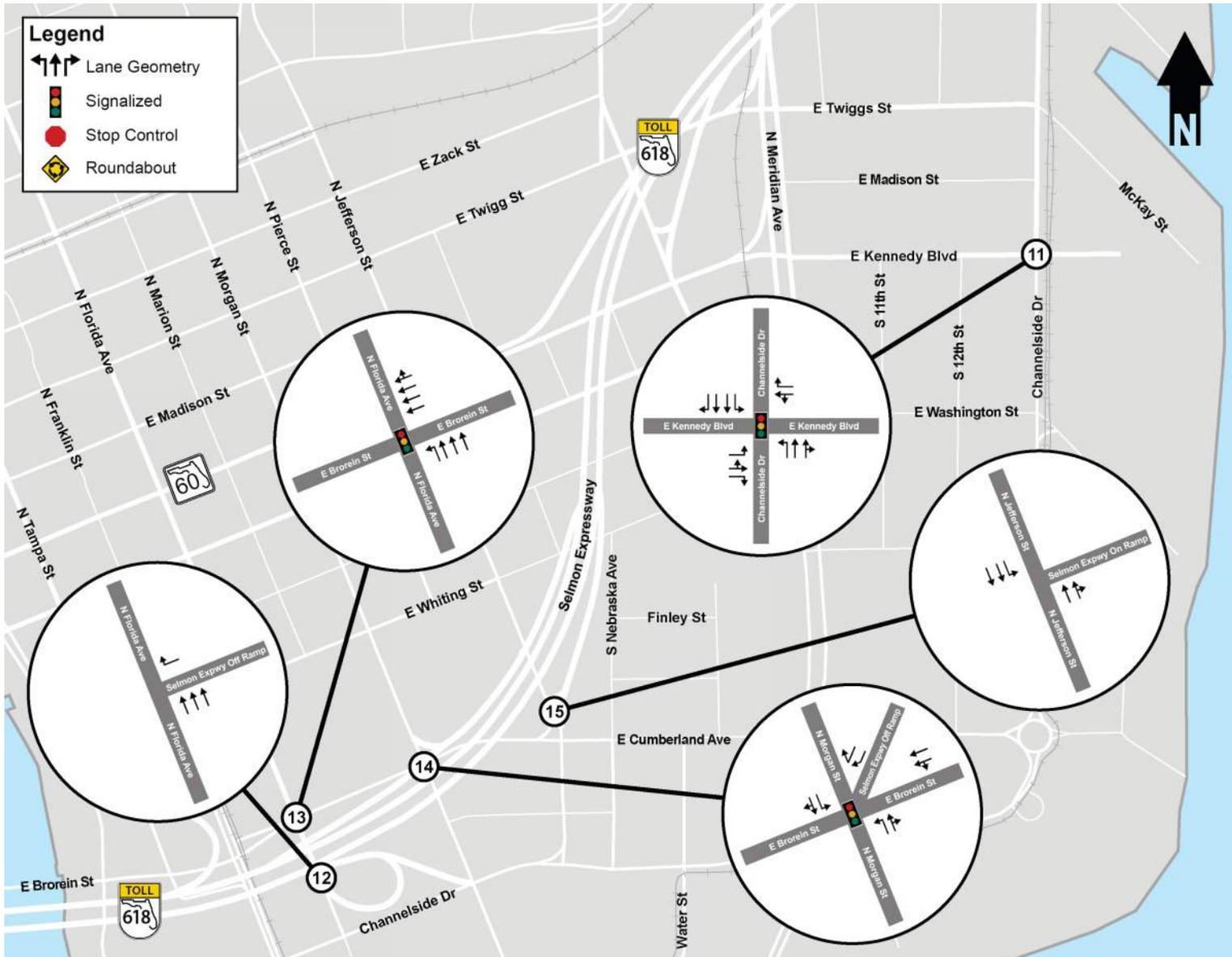


Figure 5.1c: No-Build Alternative Geometry

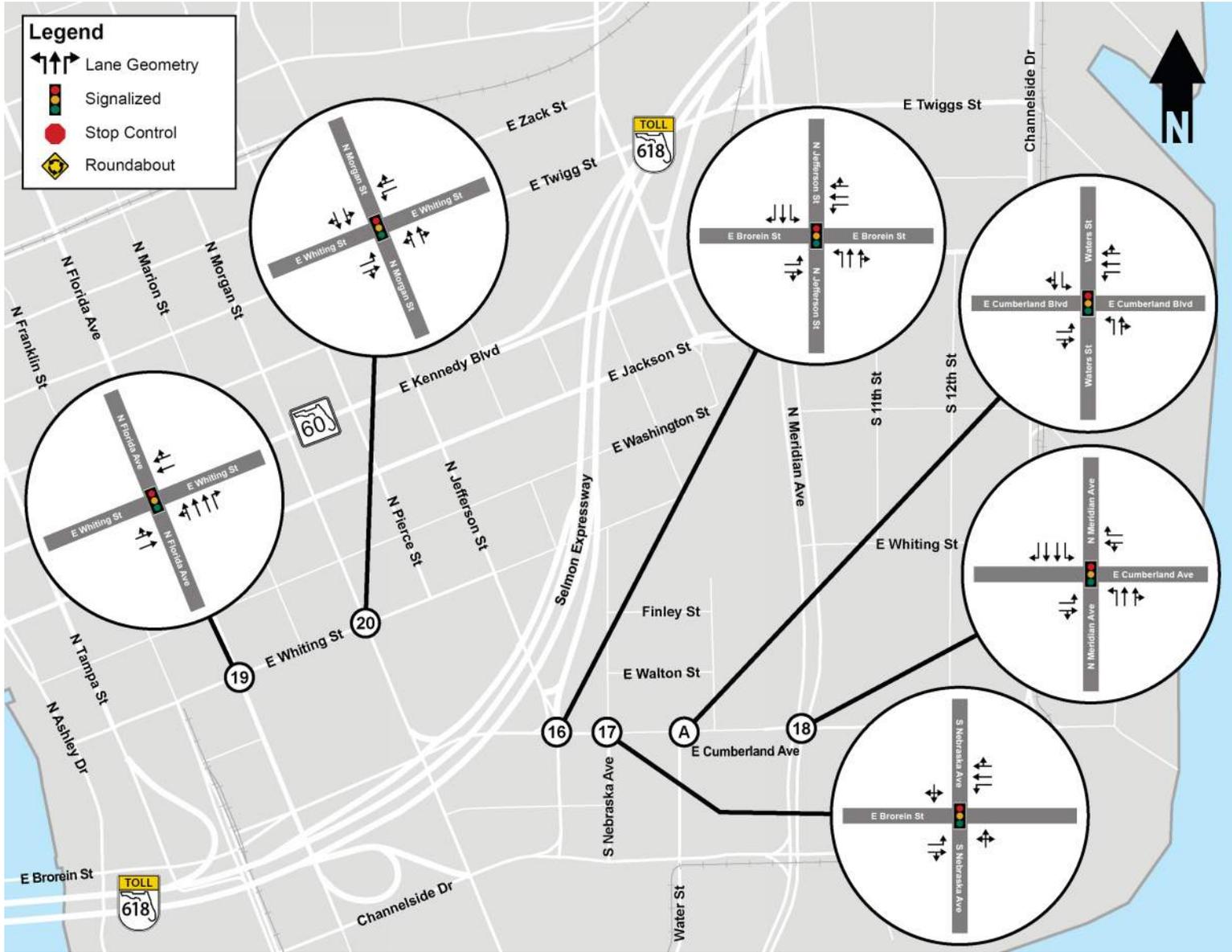


Figure 5.1d: No-Build Alternative Geometry

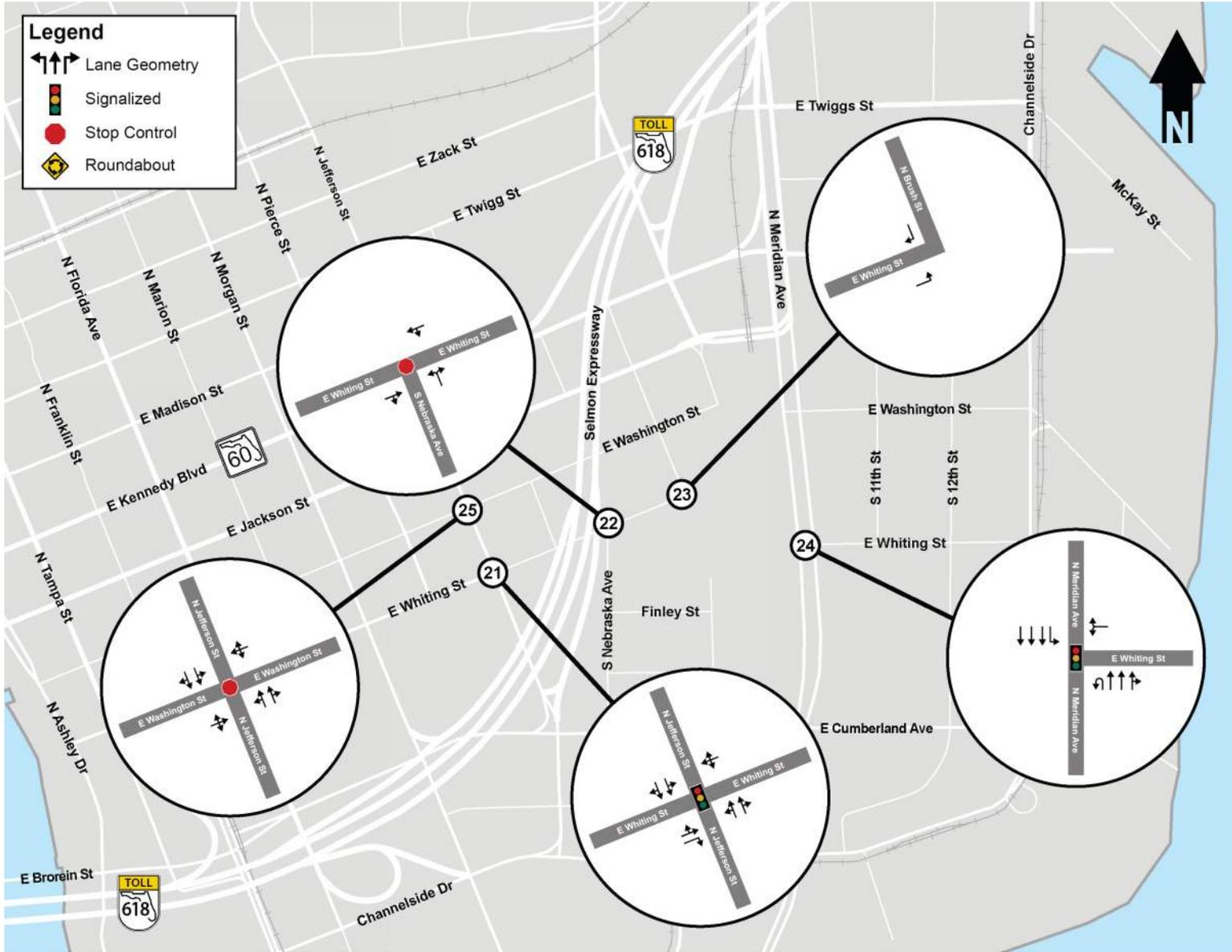


Figure 5.1e: No-Build Alternative Geometry

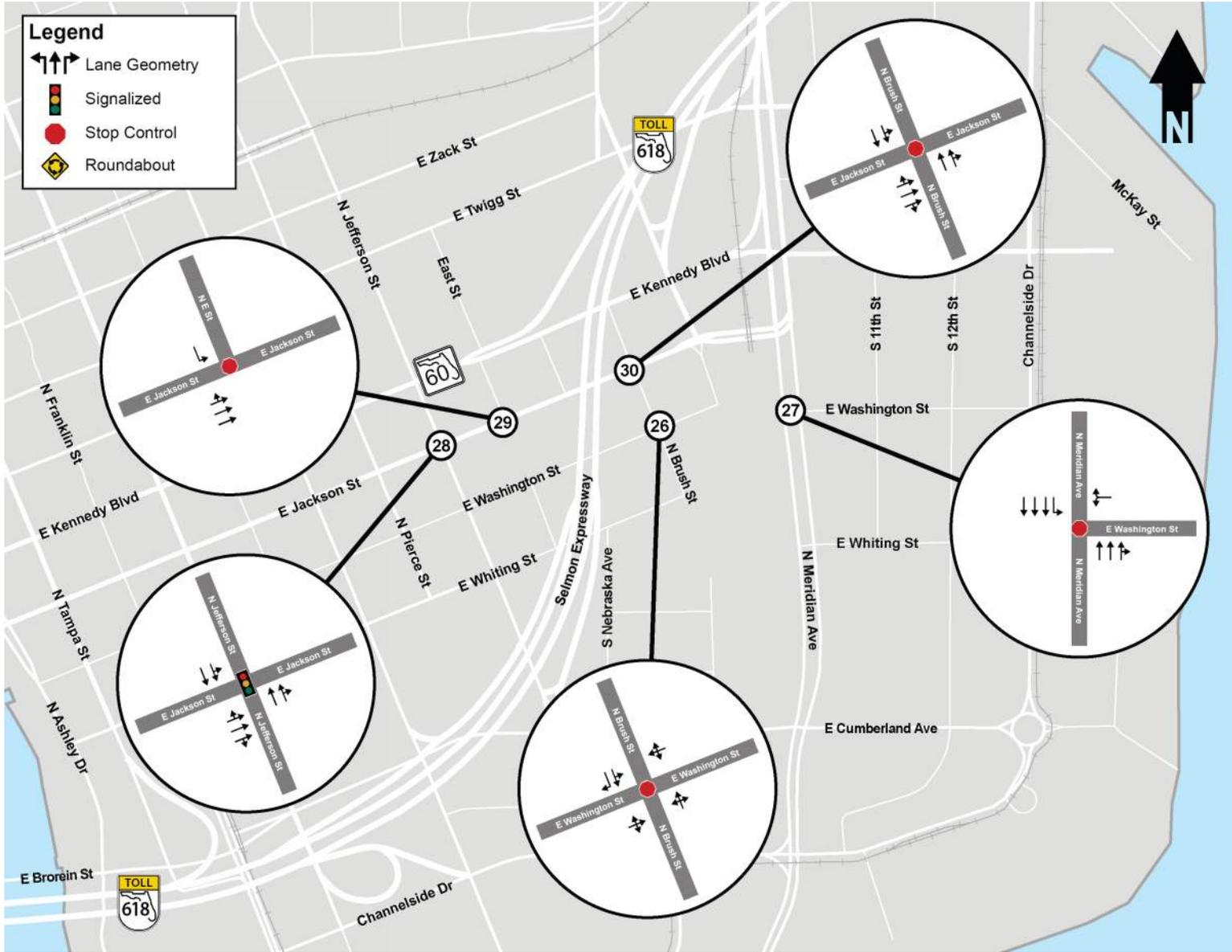


Figure 5.1f: No-Build Alternative Geometry

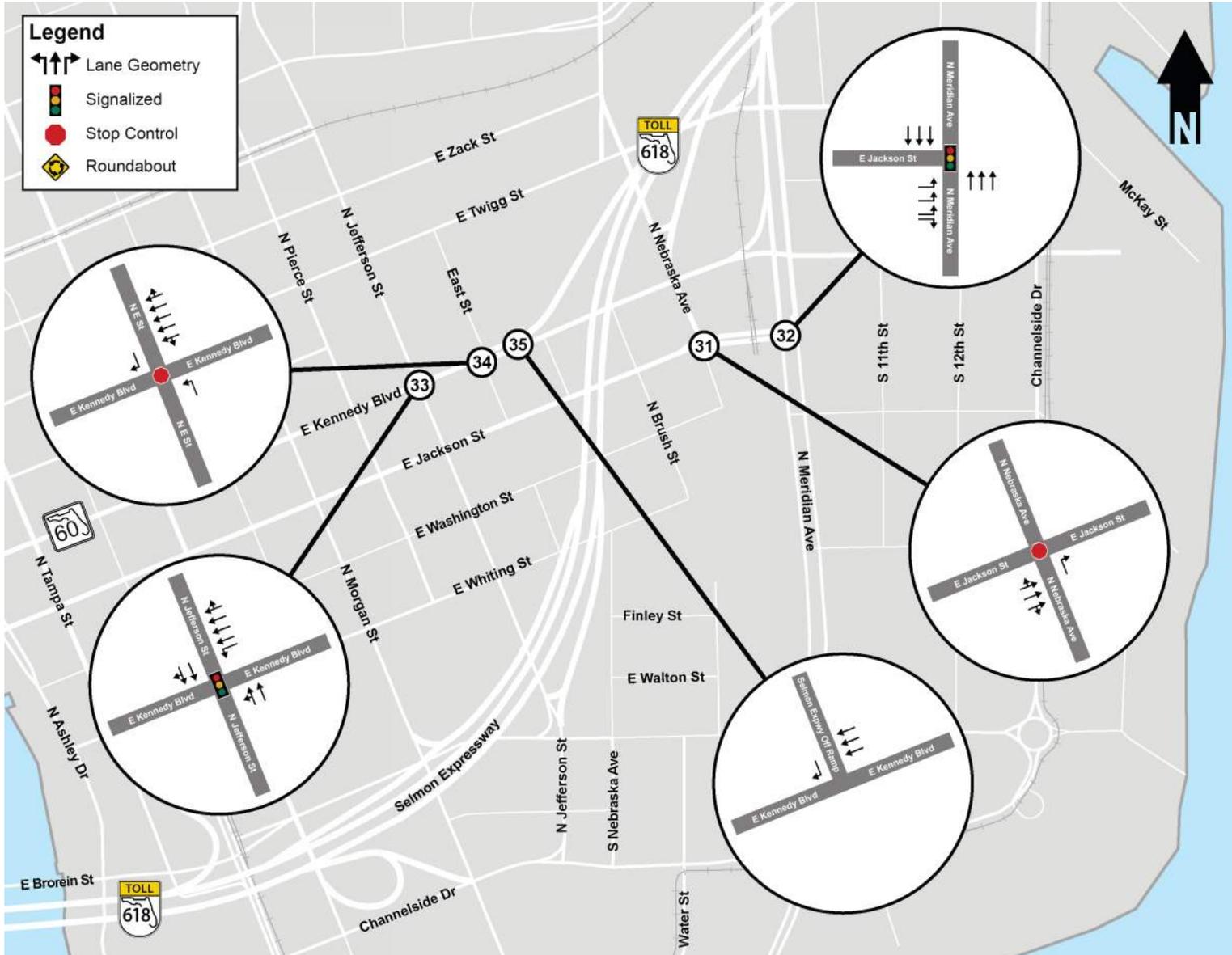


Figure 5.1g: No-Build Alternative Geometry

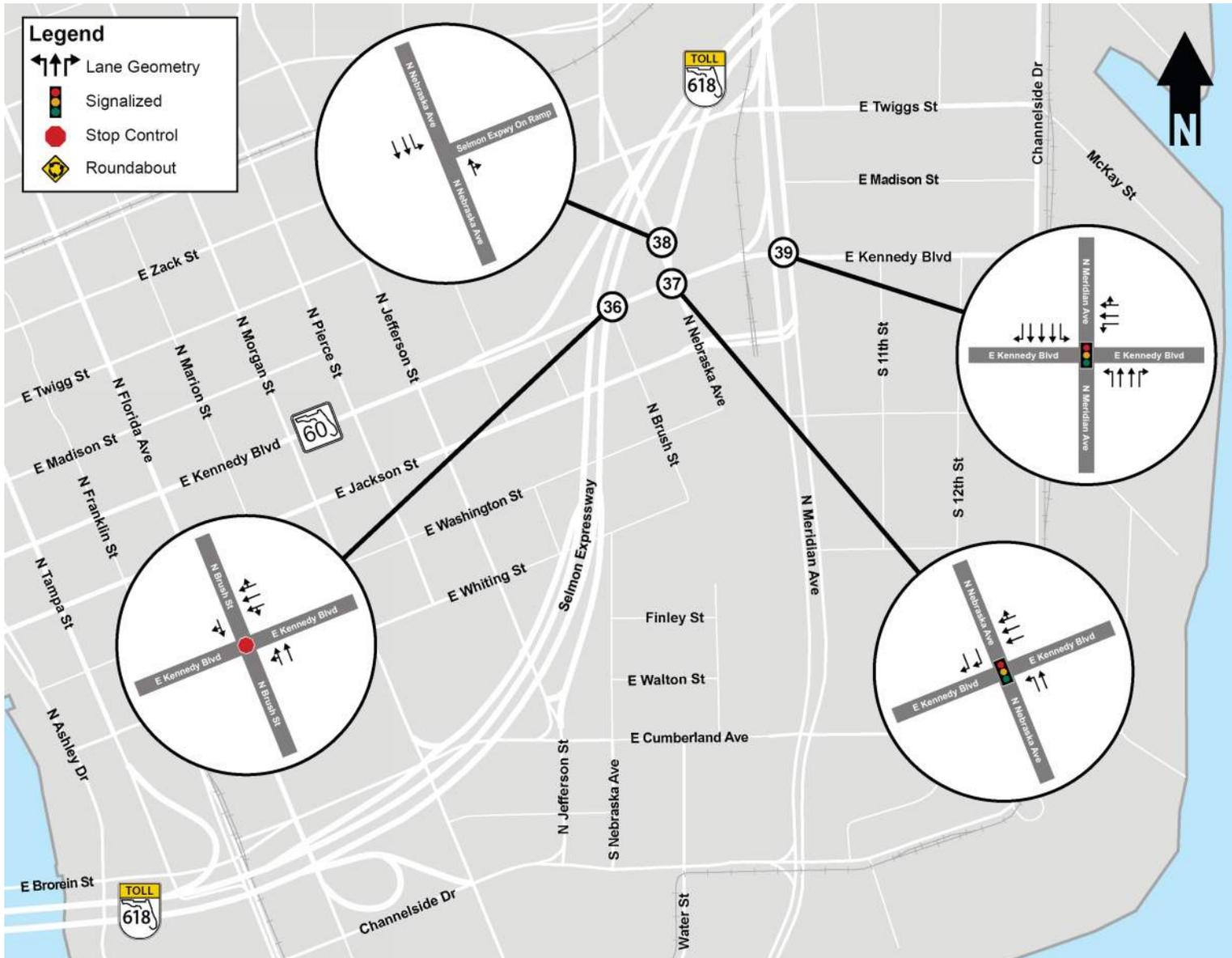


Figure 5.1h: No-Build Alternative Geometry

5.1.2 Intersection Analysis

Intersection operational analysis was conducted at each of the study intersections within the study area for the opening year (2026), interim year (2036), and design year (2046). The No-Build Synchro, SIDRA, and HCS analysis results can be found in **Appendix J**.

The results of the opening year (2026) intersection analysis for the AM and PM peak hours are shown in **Table 5.1**. The results indicate that ten of the signalized study intersections are anticipated to fail and not meet the LOS target D, as defined for urban areas in the *FDOT 2020 Quality/Level of Service Handbook*, in the AM and PM peak hours in the opening year (2026). Additionally, the westbound stop-controlled approaches at the unsignalized intersections of Washington Street at Jefferson Street and Washington Street at Meridian Avenue, and the northbound stop-controlled approach at the unsignalized intersection of Whiting Street at Nebraska Avenue are expected to fail and not meet the LOS target D. By the opening year (2026), the intersection of Channelside Drive at Morgan Street is anticipated to experience significant delay that will impact the queue length at the Selmon Expressway off-ramp to Channelside Drive, discussed further in **Section 5.1.3**. The failing intersections can likely be attributed to changes in travel patterns, increase in congestion, and increase in demand within the study area.

The results of the interim year (2036) intersection analysis for the AM and PM peak hours are shown in **Table 5.2**. The results indicate that thirteen signalized and four unsignalized intersections are anticipated to fail and not meet the LOS target D in the AM and PM peak hours in the interim year (2036). In addition to the intersections that are expected to fail in the opening year (2026), the following additional intersections are expected to fail by the interim year (2036) due to an expected increase in traffic volumes: Channelside Drive at Nebraska Avenue, Channelside Drive at Old Water Street, Whiting Street at Morgan Street and Washington Street at Brush Street.

The results of the design year (2046) intersection analysis for the AM and PM peak hours are shown in **Table 5.3**. The results indicate that fifteen signalized and four unsignalized intersections are anticipated to fail and not meet the LOS target D in the AM and PM peak hours in the design year (2046). The same operational deficiencies that were observed within the interim year (2036) condition are expected to worsen by the design year (2046) under No-Build conditions. The continuation of growth within Downtown Tampa and expected increase in traffic volumes by the design year (2046) will likely cause significant delay and congestion throughout the network.

Table 5.1: Opening Year (2026) No-Build Alternative Intersection Analysis

ID	Intersection	Eastbound		Westbound		Northbound		Southbound		Off-Ramp		Overall	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
<i>AM Peak Hour</i>													
1	Channelside Dr and Florida Ave	14.0	B	-	-	41.8	D	-	-	-	-	16.8	B
2	Channelside Dr and Morgan St/ Selmon Expy off-ramp	23.3	C	50.6	D	61.8	E	40.3	D	370.7	F	124.1	F
3	Channelside Dr and Jefferson St	37.8	D	49.0	D	-	-	55.2	E	-	-	41.7	D
4	Channelside Dr and Nebraska Ave	1.7	A	1.8	A	-	-	62.9	E	-	-	6.0	A
5	Channelside Dr and Old Water St	2.5	A	1.9	A	58.3	E	59.8	E	-	-	5.5	A
6	Channelside Dr and Meridian Ave	197.3	F	145.0	F	25.8	C	157.7	F	-	-	137.5	F
7	Channelside Dr and 12th St*	-	-	-	-	11.1	B	14.6	B	-	-	-	-
8	Cumberland Ave and Channelside Dr	4.4	A	4.2	A	6.3	A	5.7	A	-	-	5.8	A
9	Whiting St and Channelside Dr*	22.8	C	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	69.0	E	63.0	E	14.9	B	19.3	B	-	-	20.5	C
11	Kennedy Blvd and Channelside Dr	66.9	E	69.4	E	25.3	C	21.9	C	-	-	32.0	C
13	Brorein St and Florida Ave	-	-	80.8	F	29.6	C	-	-	-	-	57.7	E
14	Brorein St and Morgan St	-	-	183.6	F	180.7	F	204.4	F	42.4	D	151.3	F
16	Brorein St and Jefferson St	764.5	F	75.0	E	58.7	E	156.4	F	-	-	177.0	F
17	Brorein St and Nebraska Ave	2.1	A	1.7	A	469.0	F	82.4	F	-	-	92.7	F
A	Cumberland Ave and Old Water St	2.2	A	0.5	A	55.0	E	54.7	D	-	-	5.1	A
18	Cumberland Ave and Meridian Ave	88.1	F	46.0	D	78.2	E	284.6	F	-	-	188.4	F
19	Whiting St and Florida Ave	35.6	D	26.6	C	46.9	D	-	-	-	-	41.1	D
20	Whiting St and Morgan St	28.4	C	22.2	C	91.6	F	26.7	C	-	-	41.9	D
21	Whiting St and Jefferson St	27.4	C	27.6	C	15.6	B	21.1	C	-	-	22.0	C
22	Whiting St and Nebraska Ave*	-	-	-	-	29.6	D	-	-	-	-	-	-
24	Whiting St and Meridian Ave	-	-	58.8	E	4.6	A	4.3	A	-	-	6.0	A
25	Washington St and Jefferson St*	21.2	C	275.6	F	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	12.8	B	17.8	C	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	46.2	E	-	-	-	-	-	-	-	-

Note: Red highlight indicates locations where the operations do not meet the LOS target D, as defined for urban areas in the *FDOT 2020 Quality/Level of Service Handbook*.

*Only stop-controlled approaches have been summarized.

Table 5.1 (continued): Opening Year (2026) No-Build Alternative Intersection Analysis

ID	Intersection	Eastbound		Westbound		Northbound		Southbound		Off-Ramp		Overall	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
<i>PM Peak Hour</i>													
1	Channelside Dr and Florida Ave	17.2	B	-	-	46.9	D	-	-	-	-	22.2	C
2	Channelside Dr and Morgan St/ Selmon Expy off-ramp	18.2	B	48.6	D	70.3	E	70.0	E	257.3	F	59.1	E
3	Channelside Dr and Jefferson St	114.5	F	1.2	A	-	-	86.9	F	-	-	83.2	F
4	Channelside Dr and Nebraska Ave	8.2	A	42.9	D	-	-	58.3	E	-	-	19.6	B
5	Channelside Dr and Old Water St	25.2	C	13.8	B	71.7	E	63.9	E	-	-	27.5	C
6	Channelside Dr and Meridian Ave	154.4	F	44.2	D	44.6	D	198.6	F	-	-	123.7	F
7	Channelside Dr and 12th St*	-	-	-	-	16.0	C	11.7	B	-	-	-	-
8	Cumberland Ave and Channelside Dr	4.8	A	6.1	A	10.1	B	6.1	A	-	-	7.9	A
9	Whiting St and Channelside Dr*	21.4	C	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	123.1	F	62.6	E	19.9	B	15.3	B	-	-	23.4	C
11	Kennedy Blvd and Channelside Dr	39.6	D	65.7	E	32.6	C	40.5	D	-	-	38.8	D
13	Brorein St and Florida Ave	-	-	42.2	D	25.1	C	-	-	-	-	33.8	C
14	Brorein St and Morgan St	-	-	70.0	E	244.0	F	138.7	F	51.7	D	145.8	F
16	Brorein St and Jefferson St	55.0	E	97.4	F	233.5	F	119.3	F	-	-	120.1	F
17	Brorein St and Nebraska Ave	99.2	F	6.6	A	138.6	F	35.5	D	-	-	64.4	E
A	Cumberland Ave and Old Water St	40.1	D	4.7	A	149.1	F	75.5	E	-	-	62.0	E
18	Cumberland Ave and Meridian Ave	147.4	F	16.2	B	195.2	F	75.7	E	-	-	135.8	F
19	Whiting St and Florida Ave	57.2	E	36.4	D	29.6	C	-	-	-	-	35.7	D
20	Whiting St and Morgan St	36.8	D	22.1	C	16.3	B	15.5	B	-	-	23.1	C
21	Whiting St and Jefferson St	132.7	F	36.5	D	13.8	B	12.8	B	-	-	60.1	E
22	Whiting St and Nebraska Ave*	-	-	-	-	402.1	F	-	-	-	-	-	-
24	Whiting St and Meridian Ave	-	-	65.1	E	16.4	B	5.1	A	-	-	16.0	B
25	Washington St and Jefferson St*	42.4	E	611.2	F	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	21.2	C	15.7	C	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	50.8	F	-	-	-	-	-	-	-	-

Note: Red highlight indicates locations where the operations do not meet the LOS target D, as defined for urban areas in the *FDOT 2020 Quality/Level of Service Handbook*.

*Only stop-controlled approaches have been summarized.

Table 5.2: Interim Year (2036) No-Build Alternative Intersection Analysis

ID	Intersection	Eastbound		Westbound		Northbound		Southbound		Off-Ramp		Overall	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
<i>AM Peak Hour</i>													
1	Channelside Dr and Florida Ave	16.3	B	-	-	42.8	D	-	-	-	-	19.3	B
2	Channelside Dr and Morgan St/ Selmon Expy off-ramp	28.0	C	54.0	D	67.7	E	34.8	C	851.6	F	305.8	F
3	Channelside Dr and Jefferson St	57.0	E	58.3	E	-	-	55.2	E	-	-	57.4	E
4	Channelside Dr and Nebraska Ave	1.5	A	1.3	A	-	-	61.6	E	-	-	5.0	A
5	Channelside Dr and Old Water St	4.0	A	1.2	A	62.1	E	60.1	E	-	-	6.3	A
6	Channelside Dr and Meridian Ave	262.4	F	217.0	F	28.4	C	94.8	F	-	-	160.6	F
7	Channelside Dr and 12th St*	-	-	-	-	12.5	B	17.3	C	-	-	-	-
8	Cumberland Ave and Channelside Dr	4.9	A	4.7	A	7.5	A	6.4	A	-	-	6.7	A
9	Whiting St and Channelside Dr*	29.4	D	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	246.2	F	63.0	E	26.8	C	32.9	C	-	-	46.0	D
11	Kennedy Blvd and Channelside Dr	72.1	E	76.6	E	24.7	C	24.3	C	-	-	33.4	C
13	Brorein St and Florida Ave	-	-	149.2	F	33.0	C	-	-	-	-	96.9	F
14	Brorein St and Morgan St	-	-	267.7	F	232.4	F	164.9	F	74.7	E	196.7	F
16	Brorein St and Jefferson St	1613.7	F	112.9	F	57.8	E	218.5	F	-	-	332.8	F
17	Brorein St and Nebraska Ave	0.8	A	1.6	A	610.7	F	102.3	F	-	-	116.4	F
A	Cumberland Ave and Old Water St	1.9	A	1.0	A	54.8	D	59.2	E	-	-	5.8	A
18	Cumberland Ave and Meridian Ave	335.6	F	52.0	D	60.8	E	372.5	F	-	-	255.6	F
19	Whiting St and Florida Ave	38.8	D	27.4	C	53.2	D	-	-	-	-	45.6	D
20	Whiting St and Morgan St	30.5	C	31.7	C	218.7	F	91.0	F	-	-	94.4	F
21	Whiting St and Jefferson St	30.5	C	31.4	C	17.0	B	33.3	C	-	-	28.7	C
22	Whiting St and Nebraska Ave*	-	-	-	-	81.4	F	-	-	-	-	-	-
24	Whiting St and Meridian Ave	-	-	66.6	E	7.9	A	8.0	A	-	-	11.0	B
25	Washington St and Jefferson St*	32.5	D	1269.7	F	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	19.2	C	26.1	D	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	881.6	F	-	-	-	-	-	-	-	-

Note: Red highlight indicates locations where the operations do not meet the LOS target D, as defined for urban areas in the *FDOT 2020 Quality/Level of Service Handbook*.

*Only stop-controlled approaches have been summarized.

Table 5.2 (continued): Interim Year (2036) No-Build Alternative Intersection Analysis

ID	Intersection	Eastbound		Westbound		Northbound		Southbound		Off-Ramp		Overall	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
<i>PM Peak Hour</i>													
1	Channelside Dr and Florida Ave	24.2	C	-	-	49.3	D	-	-	-	-	28.3	C
2	Channelside Dr and Morgan St/ Selmon Expy off-ramp	25.6	C	92.1	F	104.7	F	71.3	E	812.0	F	195.0	F
3	Channelside Dr and Jefferson St	231.2	F	1.2	A	-	-	73.0	E	-	-	170.7	F
4	Channelside Dr and Nebraska Ave	61.4	E	43.7	D	-	-	58.4	E	-	-	56.9	E
5	Channelside Dr and Old Water St	104.7	F	14.5	B	77.7	E	66.7	E	-	-	76.1	E
6	Channelside Dr and Meridian Ave	250.5	F	47.1	D	71.1	E	336.4	F	-	-	203.1	F
7	Channelside Dr and 12th St*	-	-	-	-	20.3	C	12.2	B	-	-	-	-
8	Cumberland Ave and Channelside Dr	5.2	A	7.5	A	13.9	B	6.2	A	-	-	10.0	A
9	Whiting St and Channelside Dr*	26.8	D	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	165.0	F	62.2	E	23.2	C	19.1	B	-	-	28.0	C
11	Kennedy Blvd and Channelside Dr	39.4	D	67.2	E	37.8	D	42.0	D	-	-	40.8	D
13	Brorein St and Florida Ave	-	-	74.0	E	29.0	C	-	-	-	-	52.0	D
14	Brorein St and Morgan St	-	-	166.9	F	409.8	F	130.6	F	196.3	F	249.5	F
16	Brorein St and Jefferson St	87.0	F	161.2	F	331.6	F	96.4	F	-	-	177.8	F
17	Brorein St and Nebraska Ave	87.2	F	5.7	A	301.9	F	36.8	D	-	-	94.2	F
A	Cumberland Ave and Old Water St	157.8	F	1.9	A	88.1	F	73.0	E	-	-	92.9	F
18	Cumberland Ave and Meridian Ave	446.9	F	17.1	B	409.6	F	113.5	F	-	-	321.8	F
19	Whiting St and Florida Ave	78.9	E	37.3	D	50.2	D	-	-	-	-	53.5	D
20	Whiting St and Morgan St	58.4	E	25.5	C	24.2	C	17.7	B	-	-	31.3	C
21	Whiting St and Jefferson St	275.3	F	591.5	F	15.2	B	15.2	B	-	-	202.5	F
22	Whiting St and Nebraska Ave*	-	-	-	-	810.8	F	-	-	-	-	-	-
24	Whiting St and Meridian Ave	-	-	74.5	E	32.9	C	12.2	B	-	-	30.2	C
25	Washington St and Jefferson St*	346.5	F	5160.8	F	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	48.5	E	18.7	C	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	526.9	F	-	-	-	-	-	-	-	-

Note: Red highlight indicates locations where the operations do not meet the LOS target D, as defined for urban areas in the *FDOT 2020 Quality/Level of Service Handbook*.

*Only stop-controlled approaches have been summarized.

Table 5.3: Design Year (2046) No-Build Alternative Intersection Analysis

ID	Intersection	Eastbound		Westbound		Northbound		Southbound		Off-Ramp		Overall	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
<i>AM Peak Hour</i>													
1	Channelside Dr and Florida Ave	19.7	B	-	-	44.1	D	-	-	-	-	22.6	C
2	Channelside Dr and Morgan St/ Selmon Expy off-ramp	33.9	C	225.8	F	68.3	E	31.0	C	1335.1	F	550.2	F
3	Channelside Dr and Jefferson St	145.2	F	63.5	E	-	-	54.8	D	-	-	118.6	F
4	Channelside Dr and Nebraska Ave	1.8	A	6.3	A	-	-	60.0	E	-	-	6.1	A
5	Channelside Dr and Old Water St	7.3	A	2.1	A	67.7	E	60.4	E	-	-	9.0	A
6	Channelside Dr and Meridian Ave	252.0	F	283.1	F	31.2	C	78.2	E	-	-	167.8	F
7	Channelside Dr and 12th St*	-	-	-	-	14.4	B	19.3	C	-	-	-	-
8	Cumberland Ave and Channelside Dr	5.3	A	5.3	A	9.0	A	6.8	A	-	-	7.6	A
9	Whiting St and Channelside Dr*	37.4	E	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	380.3	F	63.1	E	28.0	C	34.0	C	-	-	58.1	E
11	Kennedy Blvd and Channelside Dr	75.5	E	116.1	F	26.0	C	39.5	D	-	-	44.5	D
13	Brorein St and Florida Ave	-	-	219.6	F	40.3	D	-	-	-	-	138.9	F
14	Brorein St and Morgan St	-	-	358.2	F	399.3	F	103.5	F	129.2	F	281.4	F
16	Brorein St and Jefferson St	2235.8	F	154.7	F	90.4	F	264.5	F	-	-	477.6	F
17	Brorein St and Nebraska Ave	0.2	A	1.8	A	804.0	F	118.3	F	-	-	153.9	F
A	Cumberland Ave and Old Water St	3.3	A	6.7	A	57.3	E	65.0	E	-	-	11.6	B
18	Cumberland Ave and Meridian Ave	806.9	F	55.6	E	41.7	D	498.6	F	-	-	388.6	F
19	Whiting St and Florida Ave	43.5	D	29.4	C	82.7	F	-	-	-	-	65.1	E
20	Whiting St and Morgan St	33.7	C	65.3	E	343.5	F	214.6	F	-	-	167.9	F
21	Whiting St and Jefferson St	25.8	C	59.2	E	20.0	C	60.4	E	-	-	44.9	D
22	Whiting St and Nebraska Ave*	-	-	-	-	741.9	F	-	-	-	-	-	-
24	Whiting St and Meridian Ave	-	-	68.8	E	13.6	B	14.3	B	-	-	17.7	B
25	Washington St and Jefferson St*	-	-	3365.7	F	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	35.4	E	38.3	E	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	1282.5	F	-	-	-	-	-	-	-	-

Note: Red highlight indicates locations where the operations do not meet the LOS target D, as defined for urban areas in the *FDOT 2020 Quality/Level of Service Handbook*.

*Only stop-controlled approaches have been summarized.

Table 5.3 (continued): Design Year (2046) No-Build Alternative Intersection Analysis

ID	Intersection	Eastbound		Westbound		Northbound		Southbound		Off-Ramp		Overall	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
<i>PM Peak Hour</i>													
1	Channelside Dr and Florida Ave	50.0	D	-	-	52.6	D	-	-	-	-	50.4	D
2	Channelside Dr and Morgan St/ Selmon Expy off-ramp	35.0	D	103.0	F	203.0	F	70.3	E	1368.5	F	370.1	F
3	Channelside Dr and Jefferson St	315.8	F	1.2	A	-	-	68.1	E	-	-	242.4	F
4	Channelside Dr and Nebraska Ave	141.5	F	44.2	D	-	-	56.5	E	-	-	117.7	F
5	Channelside Dr and Old Water St	199.6	F	14.6	B	88.5	F	84.0	F	-	-	137.5	F
6	Channelside Dr and Meridian Ave	362.9	F	49.9	D	126.1	F	218.6	F	-	-	241.5	F
7	Channelside Dr and 12th St*	-	-	-	-	26.1	D	12.5	B	-	-	-	-
8	Cumberland Ave and Channelside Dr	5.5	A	8.8	A	18.6	C	6.2	A	-	-	12.4	B
9	Whiting St and Channelside Dr*	35.0	E	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	491.2	F	62.0	E	31.0	C	22.7	C	-	-	55.8	E
11	Kennedy Blvd and Channelside Dr	41.7	D	65.5	E	45.9	D	44.4	D	-	-	45.0	D
13	Brorein St and Florida Ave	-	-	162.6	F	46.3	D	-	-	-	-	106.7	F
14	Brorein St and Morgan St	-	-	270.8	F	516.5	F	188.4	F	399.9	F	367.4	F
16	Brorein St and Jefferson St	224.9	F	229.4	F	577.1	F	76.9	E	-	-	305.6	F
17	Brorein St and Nebraska Ave	123.2	F	5.1	A	508.5	F	39.7	D	-	-	148.6	F
A	Cumberland Ave and Old Water St	264.3	F	3.6	A	72.0	E	76.3	E	-	-	134.7	F
18	Cumberland Ave and Meridian Ave	854.6	F	18.8	B	455.5	F	124.1	F	-	-	468.5	F
19	Whiting St and Florida Ave	117.0	F	38.6	D	98.1	F	-	-	-	-	92.8	F
20	Whiting St and Morgan St	80.2	F	73.7	E	71.6	E	27.9	C	-	-	64.3	E
21	Whiting St and Jefferson St	485.0	F	1518.9	F	25.8	C	21.6	C	-	-	417.8	F
22	Whiting St and Nebraska Ave*	-	-	-	-	1699.2	F	-	-	-	-	-	-
24	Whiting St and Meridian Ave	-	-	75.2	E	41.5	D	11.3	B	-	-	35.8	D
25	Washington St and Jefferson St*	2082.7	F	**	F	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	896.8	F	29.1	D	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	3180.7	F	-	-	-	-	-	-	-	-

Note: Red highlight indicates locations where the operations do not meet the LOS target D, as defined for urban areas in the *FDOT 2020 Quality/Level of Service Handbook*.

*Only stop-controlled approaches have been summarized.

**Synchro delay not able to be reported due to excessive delay.

5.1.3 Queue Analysis

Queue analysis was conducted at each of the study intersections within the study area for the opening year (2026), interim year (2036), and design year (2046). The results of the opening year (2026) queue analysis for the AM and PM peak hours are shown in **Table 5.4**. By the opening year (2026), the queue spillback of the Selmon Expressway off-ramp to Channelside Drive is expected to extend onto the Selmon Expressway during both the AM and PM peak hours, with the queue spill back reaching its maximum during the AM peak hour. Safety is expected to be greatly impacted on the Selmon Expressway if queues back up into the 55-mph limited access facility. Additionally, several other queues throughout the network are expected to exceed the provided storage length, such as the southbound approach at the intersection of Cumberland Avenue at Meridian Avenue in the AM peak hour, resulting in congestion throughout the network.

The results of the interim year (2036) queue analysis for the AM and PM peak hours are shown in **Table 5.5**. By the interim year (2036), the queue spillback of the Selmon Expressway off-ramp to Channelside Drive at the intersection of Channelside Drive at Morgan Street is expected to continue to increase, further extending onto the Selmon Expressway and worsening congestion. Additionally, the queue spillback of the off-ramp at the intersection of Brorein Street and Morgan Street is expected to extend onto the Selmon Expressway during both the AM and PM peak hours. Queue lengths throughout the network are expected to continue to increase, worsening the congestion throughout the network.

The results of the design year (2046) queue analysis for the AM and PM peak hours are shown in **Table 5.6**. By the design year (2046), the queue spillback of the Selmon Expressway off-ramp to Channelside Drive at the intersection of Channelside Drive at Morgan Street is expected to continue to significantly increase, even further extending onto the Selmon Expressway and resulting in severe congestion. Additionally, queue lengths throughout the network are expected to continue to increase, resulting in exceedingly congested conditions throughout the network.

Table 5.4: Opening Year (2026) No-Build Alternative Queue Analysis

ID	Intersection	Eastbound			Westbound			Northbound			Southbound			Off-Ramp		
		L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
<i>Storage Length (ft)</i>																
1	Channelside Dr and Florida Ave	200	200	+	-	-	-	-	450	200	-	-	-	-	-	-
2	Channelside Dr and Morgan St/ Selmon Off-Ramp	450	450	+	300	-	+	-	550	550	100	450	-	+	350	+
3	Channelside Dr and Jefferson St	300	300	-	-	150	+	-	-	-	100	-	500	-	-	-
4	Channelside Dr and Nebraska Ave	100	150	-	-	250	+	-	-	-	500	-	+	-	-	-
5	Channelside Dr and Old Water St	100	250	+	100	350	+	200	1000	+	150	500	+	-	-	-
6	Channelside Dr and Meridian Ave	150	350	+	150	1000	+	>1500	>1500	400	200	450	450	-	-	-
7	Channelside Dr and 12th St*	-	-	-	-	-	-	-	-	200	-	-	700	-	-	-
8	Cumberland Ave and Channelside Dr	+	200	+	+	200	+	+	1000	+	+	650	650	-	-	-
9	Whiting St and Channelside Dr*	250	-	+	-	-	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	+	250	+	+	600	450	150	500	+	300	550	+	-	-	-
11	Kennedy Blvd and Channelside Dr	550	550	150	+	200	200	200	550	+	100	550	400	-	-	-
12	Selmon Off-Ramp to Florida Ave	-	-	-	-	-	-	-	-	-	-	-	-	-	500	-
13	Brorein St and Florida Ave	-	-	-	-	500	+	450	450	-	-	-	-	-	-	-
14	Brorein St and Morgan St/ Selmon Off-Ramp	-	-	-	+	500	-	250	450	+	500	500	+	-	1000	1000
16	Brorein St and Jefferson St	200	550	+	50	250	+	100	500	+	50	600	600	-	-	-
17	Brorein St and Nebraska Ave	50	250	+	50	250	+	+	500	+	+	850	+	-	-	-
A	Cumberland Ave and Old Water St	50	250	+	50	550	+	150	500	+	150	650	+	-	-	-
18	Cumberland Ave and Meridian Ave	100	550	+	+	550	+	200	450	+	250	650	650	-	-	-
19	Whiting St and Florida Ave	+	200	-	-	500	+	+	550	100	-	-	-	-	-	-
20	Whiting St and Morgan St	500	500	+	500	500	+	+	500	+	+	500	+	-	-	-
21	Whiting St and Jefferson St	+	500	500	+	450	+	+	600	+	+	500	+	-	-	-
22	Whiting St and Nebraska Ave*	-	-	-	-	-	-	850	-	+	-	-	-	-	-	-
24	Whiting St and Meridian Ave	-	-	-	200	-	+	-	650	+	250	500	-	-	-	-
25	Washington St and Jefferson St*	+	200	+	+	750	+	-	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	+	750	+	+	450	+	-	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	-	250	-	+	-	-	-	-	-	-	-	-	-

+Shared Lanes

*Only stop-controlled approaches have been summarized.

Table 5.4 (continued): Opening Year (2026) No-Build Alternative Queue Analysis

ID	Intersection	Eastbound			Westbound			Northbound			Southbound			Off-Ramp		
		L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
<i>AM Peak Hour Maximum Queue Length (ft)</i>																
1	Channelside Dr and Florida Ave	237	370	+	-	-	-	-	122	39	-	-	-	-	-	-
2	Channelside Dr and Morgan St/ Selmon Off-Ramp	210	281	+	673	-	+	-	138	0	22	122	-	+	1247	+
3	Channelside Dr and Jefferson St	151	219	-	-	514	+	-	-	-	5	-	17	-	-	-
4	Channelside Dr and Nebraska Ave	33	138	-	-	60	+	-	-	-	84	-	+	-	-	-
5	Channelside Dr and Old Water St	84	301	+	41	514	+	24	79	+	55	16	+	-	-	-
6	Channelside Dr and Meridian Ave	784	324	+	135	890	+	153	326	27	91	357	339	-	-	-
7	Channelside Dr and 12th St*	-	-	-	-	-	-	-	-	25	-	-	75	-	-	-
8	Cumberland Ave and Channelside Dr**	+	25	+	+	25	+	+	50	+	+	50	25	-	-	-
9	Whiting St and Channelside Dr*	25	-	+	-	-	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	+	49	+	+	36	0	7	170	+	141	367	+	-	-	-
11	Kennedy Blvd and Channelside Dr	310	308	68	+	45	0	63	227	+	27	246	56	-	-	-
12	Selmon Off-Ramp to Florida Ave	-	-	-	-	-	-	-	-	-	-	-	-	-	243***	-
13	Brorein St and Florida Ave	-	-	-	-	812	+	159	543	-	-	-	-	-	-	-
14	Brorein St and Morgan St/ Selmon Off-Ramp	-	-	-	+	1187	-	115	995	+	936	306	+	-	833	276
16	Brorein St and Jefferson St	317	37	+	11	1136	+	24	165	+	385	780	44	-	-	-
17	Brorein St and Nebraska Ave	237	0	+	2	93	+	+	1140	+	+	470	+	-	-	-
A	Cumberland Ave and Old Water St	15	420	+	2	214	+	85	63	+	39	79	+	-	-	-
18	Cumberland Ave and Meridian Ave	470	170	+	+	475	+	146	176	+	47	174	1994	-	-	-
19	Whiting St and Florida Ave	+	304	-	-	217	+	+	598	45	-	-	-	-	-	-
20	Whiting St and Morgan St	25	304	+	65	360	+	+	244	+	+	196	+	-	-	-
21	Whiting St and Jefferson St	+	76	17	+	318	+	+	82	+	+	320	+	-	-	-
22	Whiting St and Nebraska Ave*	-	-	-	-	-	-	25	-	+	-	-	-	-	-	-
24	Whiting St and Meridian Ave	-	-	-	116	-	+	-	79	+	9	234	-	-	-	-
25	Washington St and Jefferson St*	+	75	+	+	750	+	-	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	+	25	+	+	25	+	-	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	-	200	-	+	-	-	-	-	-	-	-	-	-

Note: Red highlight indicates locations where the queue length exceeds the available storage length.

+Shared Lanes

*Only stop-controlled approaches have been summarized. Queue lengths calculated as 25 feet per vehicle.

**Queue length calculated as 25 feet per vehicle.

***The queue length for the Selmon Expressway off-ramp to Florida Avenue was determined as the queue length of the northbound through movement at the Brorein Street and Florida Avenue intersection minus the distance from the stop bar of the northbound through movement to the off-ramp gore point on Florida Avenue, 300 feet.

Table 5.4 (continued): Opening Year (2026) No-Build Alternative Queue Analysis

ID	Intersection	Eastbound			Westbound			Northbound			Southbound			Off-Ramp		
		L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
<i>PM Peak Hour Maximum Queue Length (ft)</i>																
1	Channelside Dr and Florida Ave	593	536	+	-	-	-	-	260	134	-	-	-	-	-	-
2	Channelside Dr and Morgan St/ Selmon Off-Ramp	237	351	+	1243	-	+	-	205	0	1	18	-	+	764	+
3	Channelside Dr and Jefferson St	24	1881	-	-	43	+	-	-	-	21	-	127	-	-	-
4	Channelside Dr and Nebraska Ave	16	314	-	-	429	+	-	-	-	23	-	+	-	-	-
5	Channelside Dr and Old Water St	11	1463	+	1	92	+	149	79	+	59	27	+	-	-	-
6	Channelside Dr and Meridian Ave	798	282	+	130	442	+	143	457	39	197	307	248	-	-	-
7	Channelside Dr and 12th St*	-	-	-	-	-	-	-	-	25	-	-	25	-	-	-
8	Cumberland Ave and Channelside Dr**	+	25	+	+	25	+	+	125	+	+	50	25	-	-	-
9	Whiting St and Channelside Dr*	25	-	+	-	-	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	+	62	+	+	50	51	12	302	+	57	204	+	-	-	-
11	Kennedy Blvd and Channelside Dr	477	468	0	+	77	2	99	427	+	27	333	76	-	-	-
12	Selmon Off-Ramp to Florida Ave	-	-	-	-	-	-	-	-	-	-	-	-	-	168***	-
13	Brorein St and Florida Ave	-	-	-	-	532	+	130	468	-	-	-	-	-	-	-
14	Brorein St and Morgan St/ Selmon Off-Ramp	-	-	-	+	626	-	1121	435	+	843	713	+	-	610	39
16	Brorein St and Jefferson St	438	118	+	6	597	+	212	454	+	257	149	96	-	-	-
17	Brorein St and Nebraska Ave	6	1307	+	95	520	+	+	835	+	+	196	+	-	-	-
A	Cumberland Ave and Old Water St	28	659	+	66	143	+	813	123	+	89	188	+	-	-	-
18	Cumberland Ave and Meridian Ave	537	3	+	+	299	+	153	522	+	179	290	1	-	-	-
19	Whiting St and Florida Ave	+	430	-	-	230	+	+	498	64	-	-	-	-	-	-
20	Whiting St and Morgan St	157	543	+	65	201	+	+	203	+	+	122	+	-	-	-
21	Whiting St and Jefferson St	+	838	62	+	332	+	+	92	+	+	115	+	-	-	-
22	Whiting St and Nebraska Ave*	-	-	-	-	-	-	1475	-	+	-	-	-	-	-	-
24	Whiting St and Meridian Ave	-	-	-	145	-	+	-	332	+	88	51	-	-	-	-
25	Washington St and Jefferson St*	+	175	+	+	950	+	-	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	+	50	+	+	25	+	-	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	-	75	-	+	-	-	-	-	-	-	-	-	-

Note: Red highlight indicates locations where the queue length exceeds the available storage length.

+Shared Lanes

*Only stop-controlled approaches have been summarized. Queue lengths calculated as 25 feet per vehicle.

**Queue length calculated as 25 feet per vehicle.

***The queue length for the Selmon Expressway off-ramp to Florida Avenue was determined as the queue length of the northbound through movement at the Brorein Street and Florida Avenue intersection minus the distance from the stop bar of the northbound through movement to the off-ramp gore point on Florida Avenue, 300 feet.

Table 5.5: Interim Year (2036) No-Build Alternative Queue Analysis

ID	Intersection	Eastbound			Westbound			Northbound			Southbound			Off-Ramp		
		L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
<i>AM Peak Hour Maximum Queue Length (ft)</i>																
1	Channelside Dr and Florida Ave	431	485	+	-	-	-	-	148	78	-	-	-	-	-	-
2	Channelside Dr and Morgan St/ Selmon Off-Ramp	357	343	+	930	-	+	-	185	0	4	99	-	+	2173	+
3	Channelside Dr and Jefferson St	262	167	-	-	989	+	-	-	-	5	-	18	-	-	-
4	Channelside Dr and Nebraska Ave	159	198	-	-	81	+	-	-	-	106	-	+	-	-	-
5	Channelside Dr and Old Water St	63	521	+	40	481	+	33	110	+	36	16	+	-	-	-
6	Channelside Dr and Meridian Ave	963	454	+	150	1090	+	163	450	28	133	390	312	-	-	-
7	Channelside Dr and 12th St*	-	-	-	-	-	-	-	-	25	-	-	74	-	-	-
8	Cumberland Ave and Channelside Dr**	+	25	+	+	25	+	+	75	+	+	75	25	-	-	-
9	Whiting St and Channelside Dr*	25	-	+	-	-	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	+	258	+	+	36	4	8	207	+	81	491	+	-	-	-
11	Kennedy Blvd and Channelside Dr	363	367	27	+	76	0	108	267	+	32	316	266	-	-	-
12	Selmon Off-Ramp to Florida Ave	-	-	-	-	-	-	-	-	-	-	-	-	-	344***	-
13	Brorein St and Florida Ave	-	-	-	-	1023	+	197	644	-	-	-	-	-	-	-
14	Brorein St and Morgan St/ Selmon Off-Ramp	-	-	-	+	1270	-	329	1040	+	710	371	+	-	1167	427
16	Brorein St and Jefferson St	521	41	+	12	553	+	32	182	+	458	685	59	-	-	-
17	Brorein St and Nebraska Ave	192	3	+	2	102	+	+	1253	+	+	490	+	-	-	-
A	Cumberland Ave and Old Water St	10	442	+	1	192	+	85	75	+	99	61	+	-	-	-
18	Cumberland Ave and Meridian Ave	759	181	+	+	603	+	123	213	+	77	328	2404	-	-	-
19	Whiting St and Florida Ave	+	327	-	-	242	+	+	671	52	-	-	-	-	-	-
20	Whiting St and Morgan St	38	241	+	76	606	+	+	328	+	+	301	+	-	-	-
21	Whiting St and Jefferson St	+	74	22	+	372	+	+	92	+	+	374	+	-	-	-
22	Whiting St and Nebraska Ave*	-	-	-	-	-	-	475	-	+	-	-	-	-	-	-
24	Whiting St and Meridian Ave	-	-	-	239	-	+	-	202	+	15	421	-	-	-	-
25	Washington St and Jefferson St*	+	125	+	+	2000	+	-	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	+	25	+	+	25	+	-	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	-	1425	-	+	-	-	-	-	-	-	-	-	-

Note: Red highlight indicates locations where the queue length exceeds the available storage length.

+Shared Lanes

*Only stop-controlled approaches have been summarized.

**Queue length calculated as 25 feet per vehicle.

***The queue length for the Selmon Expressway off-ramp to Florida Avenue was determined as the queue length of the northbound through movement at the Brorein Street and Florida Avenue intersection minus the distance from the stop bar of the northbound through movement to the off-ramp gore point on Florida Avenue, 300 feet.

Table 5.5 (continued): Interim Year (2036) No-Build Alternative Queue Analysis

ID	Intersection	Eastbound		Westbound			Northbound			Southbound			Off-Ramp			
		L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
<i>PM Peak Hour Maximum Queue Length (ft)</i>																
1	Channelside Dr and Florida Ave	1024	799	+	-	-	-	-	315	159	-	-	-	-	-	-
2	Channelside Dr and Morgan St/ Selmon Off-Ramp	391	537	+	1219	-	+	-	356	0	1	24	-	+	1561	+
3	Channelside Dr and Jefferson St	32	2142	-	-	44	+	-	-	-	14	-	163	-	-	-
4	Channelside Dr and Nebraska Ave	20	244	-	-	499	+	-	-	-	23	-	+	-	-	-
5	Channelside Dr and Old Water St	9	1476	+	3	137	+	165	109	+	59	24	+	-	-	-
6	Channelside Dr and Meridian Ave	878	279	+	148	473	+	98	800	44	214	328	287	-	-	-
7	Channelside Dr and 12th St*	-	-	-	-	-	-	-	-	50	-	-	25	-	-	-
8	Cumberland Ave and Channelside Dr**	+	25	+	+	25	+	+	175	+	+	75	25	-	-	-
9	Whiting St and Channelside Dr*	25	-	+	-	-	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	+	58	+	+	50	68	12	371	+	108	240	+	-	-	-
11	Kennedy Blvd and Channelside Dr	476	477	19	+	90	18	137	523	+	67	366	78	-	-	-
12	Selmon Off-Ramp to Florida Ave	-	-	-	-	-	-	-	-	-	-	-	-	-	335***	-
13	Brorein St and Florida Ave	-	-	-	-	802	+	149	635	-	-	-	-	-	-	-
14	Brorein St and Morgan St/ Selmon Off-Ramp	-	-	-	+	750	-	1090	407	+	650	941	+	-	1283	104
16	Brorein St and Jefferson St	625	111	+	3	826	+	234	598	+	217	216	97	-	-	-
17	Brorein St and Nebraska Ave	234	1195	+	94	603	+	+	1063	+	+	201	+	-	-	-
A	Cumberland Ave and Old Water St	4	1124	+	37	184	+	673	210	+	106	251	+	-	-	-
18	Cumberland Ave and Meridian Ave	846	2	+	+	347	+	377	602	+	267	474	0	-	-	-
19	Whiting St and Florida Ave	+	497	-	-	274	+	+	1012	62	-	-	-	-	-	-
20	Whiting St and Morgan St	95	543	+	115	170	+	+	264	+	+	161	+	-	-	-
21	Whiting St and Jefferson St	+	1194	87	+	427	+	+	98	+	+	158	+	-	-	-
22	Whiting St and Nebraska Ave*	-	-	-	-	-	-	2425	-	+	-	-	-	-	-	-
24	Whiting St and Meridian Ave	-	-	-	226	-	+	-	338	+	153	97	-	-	-	-
25	Washington St and Jefferson St*	+	640	+	+	3100	+	-	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	+	175	+	+	25	+	-	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	-	550	-	+	-	-	-	-	-	-	-	-	-

Note: Red highlight indicates locations where the queue length exceeds the available storage length.

+Shared Lanes

*Only stop-controlled approaches have been summarized.

**Queue length calculated as 25 feet per vehicle.

***The queue length for the Selmon Expressway off-ramp to Florida Avenue was determined as the queue length of the northbound through movement at the Brorein Street and Florida Avenue intersection minus the distance from the stop bar of the northbound through movement to the off-ramp gore point on Florida Avenue, 300 feet.

Table 5.6: Design Year (2046) No-Build Alternative Queue Analysis

ID	Intersection	Eastbound			Westbound			Northbound			Southbound			Off-Ramp		
		L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
<i>AM Peak Hour Maximum Queue Length (ft)</i>																
1	Channelside Dr and Florida Ave	667	634	+	-	-	-	-	176	134	-	-	-	-	-	-
2	Channelside Dr and Morgan St/ Selmon Off-Ramp	504	408	+	985	-	+	-	201	0	3	79	-	+	3076	+
3	Channelside Dr and Jefferson St	342	141	-	-	1071	+	-	-	-	5	-	13	-	-	-
4	Channelside Dr and Nebraska Ave	315	192	-	-	91	+	-	-	-	50	-	+	-	-	-
5	Channelside Dr and Old Water St	48	1365	+	119	571	+	40	145	+	26	42	+	-	-	-
6	Channelside Dr and Meridian Ave	851	591	+	255	1192	+	230	509	28	170	418	450	-	-	-
7	Channelside Dr and 12th St*	-	-	-	-	-	-	-	-	25	-	-	100	-	-	-
8	Cumberland Ave and Channelside Dr**	+	25	+	+	25	+	+	100	+	+	75	25	-	-	-
9	Whiting St and Channelside Dr*	50	-	+	-	-	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	+	330	+	+	36	34	4	246	+	99	537	+	-	-	-
11	Kennedy Blvd and Channelside Dr	403	412	51	+	130	0	138	307	+	37	353	1082	-	-	-
12	Selmon Off-Ramp to Florida Ave	-	-	-	-	-	-	-	-	-	-	-	-	-	576***	-
13	Brorein St and Florida Ave	-	-	-	-	1225	+	221	876	-	-	-	-	-	-	-
14	Brorein St and Morgan St/ Selmon Off-Ramp	-	-	-	+	1361	-	458	960	+	427	419	+	-	1494	587
16	Brorein St and Jefferson St	584	57	+	11	1431	+	18	205	+	445	627	75	-	-	-
17	Brorein St and Nebraska Ave	95	5	+	1	74	+	+	1062	+	+	522	+	-	-	-
A	Cumberland Ave and Old Water St	7	457	+	1	160	+	45	133	+	102	191	+	-	-	-
18	Cumberland Ave and Meridian Ave	1140	199	+	+	665	+	95	246	+	85	420	2988	-	-	-
19	Whiting St and Florida Ave	+	352	-	-	253	+	+	854	54	-	-	-	-	-	-
20	Whiting St and Morgan St	47	281	+	86	969	+	+	442	+	+	353	+	-	-	-
21	Whiting St and Jefferson St	+	98	23	+	466	+	+	113	+	+	426	+	-	-	-
22	Whiting St and Nebraska Ave*	-	-	-	-	-	-	2025	-	+	-	-	-	-	-	-
24	Whiting St and Meridian Ave	-	-	-	342	-	+	-	235	+	19	675	-	-	-	-
25	Washington St and Jefferson St*	+	****	+	+	3425	+	-	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	+	75	+	+	50	+	-	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	-	1675	-	+	-	-	-	-	-	-	-	-	-

Note: Red highlight indicates locations where the queue length exceeds the available storage length.

+Shared Lanes

*Only stop-controlled approaches have been summarized.

**Queue length calculated as 25 feet per vehicle.

***The queue length for the Selmon Expressway off-ramp to Florida Avenue was determined as the queue length of the northbound through movement at the Brorein Street and Florida Avenue intersection minus the distance from the stop bar of the northbound through movement to the off-ramp gore point on Florida Avenue, 300 feet.

Table 5.6 (continued): Design Year (2046) No-Build Alternative Queue Analysis

ID	Intersection	Eastbound			Westbound			Northbound			Southbound			Off-Ramp		
		L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
<i>PM Peak Hour Maximum Queue Length (ft)</i>																
1	Channelside Dr and Florida Ave	1465	1292	+	-	-	-	-	374	182	-	-	-	-	-	-
2	Channelside Dr and Morgan St/ Selmon Off-Ramp	455	576	+	1196	-	+	-	509	0	1	29	-	+	2325	+
3	Channelside Dr and Jefferson St	56	2183	-	-	34	+	-	-	-	11	-	150	-	-	-
4	Channelside Dr and Nebraska Ave	21	228	-	-	438	+	-	-	-	16	-	+	-	-	-
5	Channelside Dr and Old Water St	8	1485	+	2	80	+	175	151	+	85	34	+	-	-	-
6	Channelside Dr and Meridian Ave	991	272	+	187	491	+	391	795	49	217	513	183	-	-	-
7	Channelside Dr and 12th St*	-	-	-	-	-	-	-	-	75	-	-	25	-	-	-
8	Cumberland Ave and Channelside Dr**	+	25	+	+	25	+	+	550	+	+	50	50	-	-	-
9	Whiting St and Channelside Dr*	25	-	+	-	-	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	+	213	+	+	54	75	12	418	+	52	267	+	-	-	-
11	Kennedy Blvd and Channelside Dr	514	521	0	+	109	36	219	583	+	121	401	81	-	-	-
12	Selmon Off-Ramp to Florida Ave	-	-	-	-	-	-	-	-	-	-	-	-	-	612***	-
13	Brorein St and Florida Ave	-	-	-	-	1084	+	183	912	-	-	-	-	-	-	-
14	Brorein St and Morgan St/ Selmon Off-Ramp	-	-	-	+	852	-	1116	405	+	518	1111	+	-	1941	177
16	Brorein St and Jefferson St	746	67	+	2	1309	+	218	680	+	115	256	82	-	-	-
17	Brorein St and Nebraska Ave	326	1238	+	38	706	+	+	1097	+	+	224	+	-	-	-
A	Cumberland Ave and Old Water St	1	1230	+	55	348	+	609	252	+	126	312	+	-	-	-
18	Cumberland Ave and Meridian Ave	1088	2	+	+	439	+	104	659	+	345	370	203	-	-	-
19	Whiting St and Florida Ave	+	561	-	-	280	+	+	1128	52	-	-	-	-	-	-
20	Whiting St and Morgan St	209	529	+	245	197	+	+	547	+	+	262	+	-	-	-
21	Whiting St and Jefferson St	+	1508	91	+	559	+	+	131	+	+	237	+	-	-	-
22	Whiting St and Nebraska Ave*	-	-	-	-	-	-	4050	-	+	-	-	-	-	-	-
24	Whiting St and Meridian Ave	-	-	-	229	-	+	-	293	+	154	139	-	-	-	-
25	Washington St and Jefferson St*	+	1700	+	+	****	+	-	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	+	1525	+	+	25	+	-	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	-	625	-	+	-	-	-	-	-	-	-	-	-

Note: Red highlight indicates locations where the queue length exceeds the available storage length.

+Shared Lanes

*Only stop-controlled approaches have been summarized.

**Queue length calculated as 25 feet per vehicle.

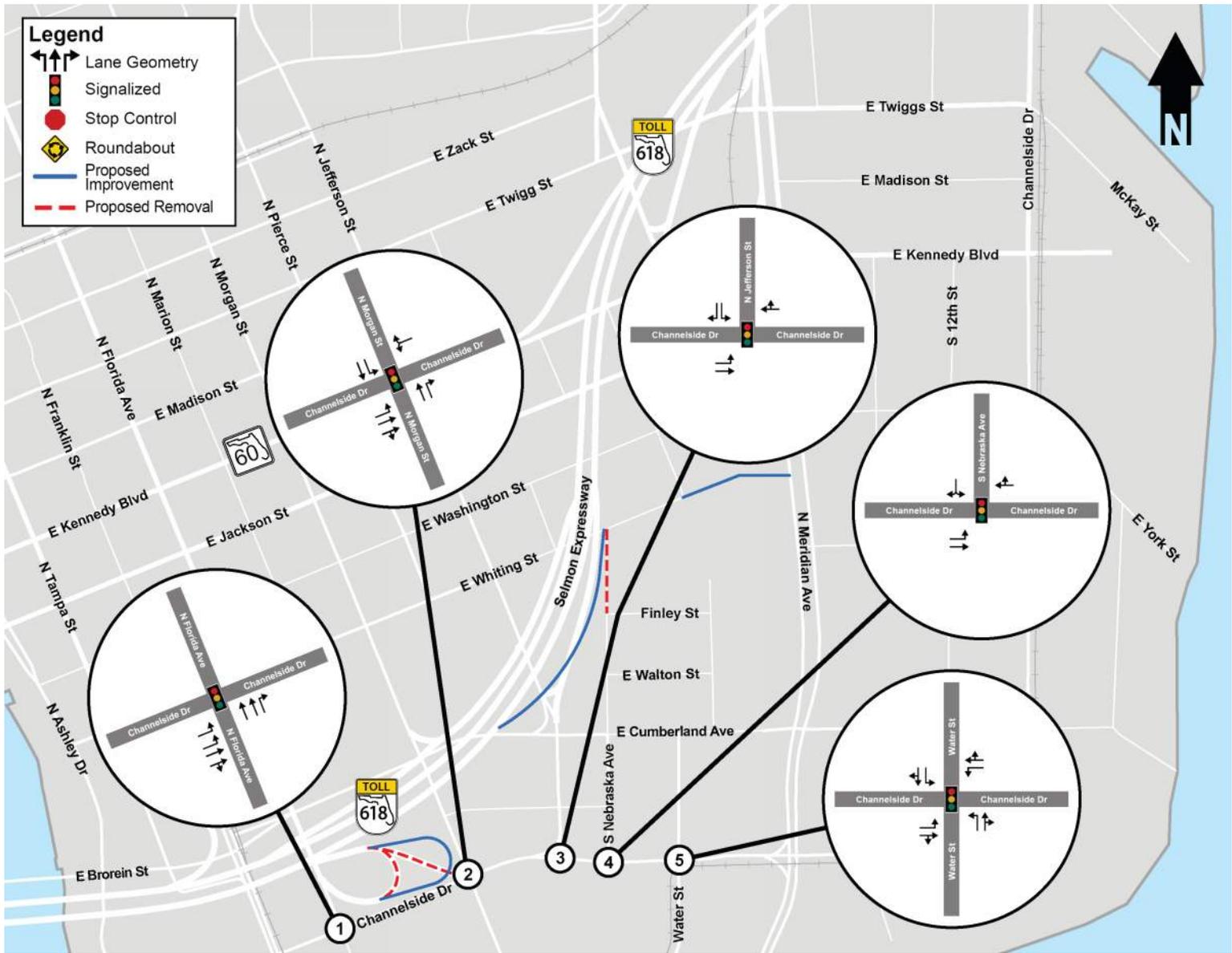
***The queue length for the Selmon Expressway off-ramp to Florida Avenue was determined as the queue length of the northbound through movement at the Brorein Street and Florida Avenue intersection minus the distance from the stop bar of the northbound through movement to the off-ramp gore point on Florida Avenue, 300 feet.

****Synchro queue not able to be reported due to excessive queue.

5.2 Build Alternative Operational Analysis

5.2.1 Lane Geometry

Figure 5.2 shows the lane geometry for the Build Alternative. The Build Alternative includes proposed lane geometry improvements, as well as new street connections from the Water Street Tampa development. The proposed improvements include the Whiting Street extension, as well as the modifications to the eastbound Selmon Expressway and Downtown East/West interchange.



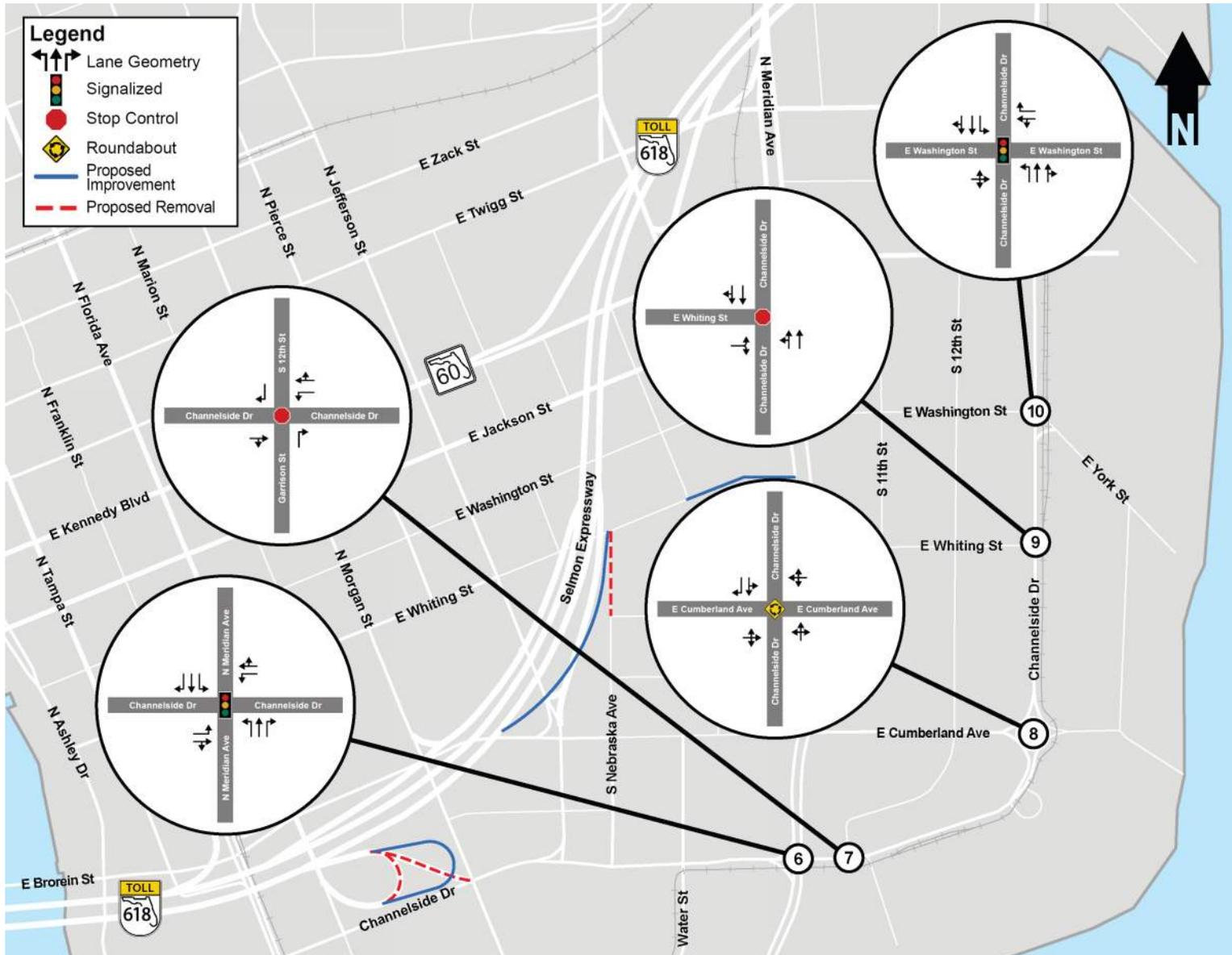


Figure 5.2b: Build Alternative Geometry

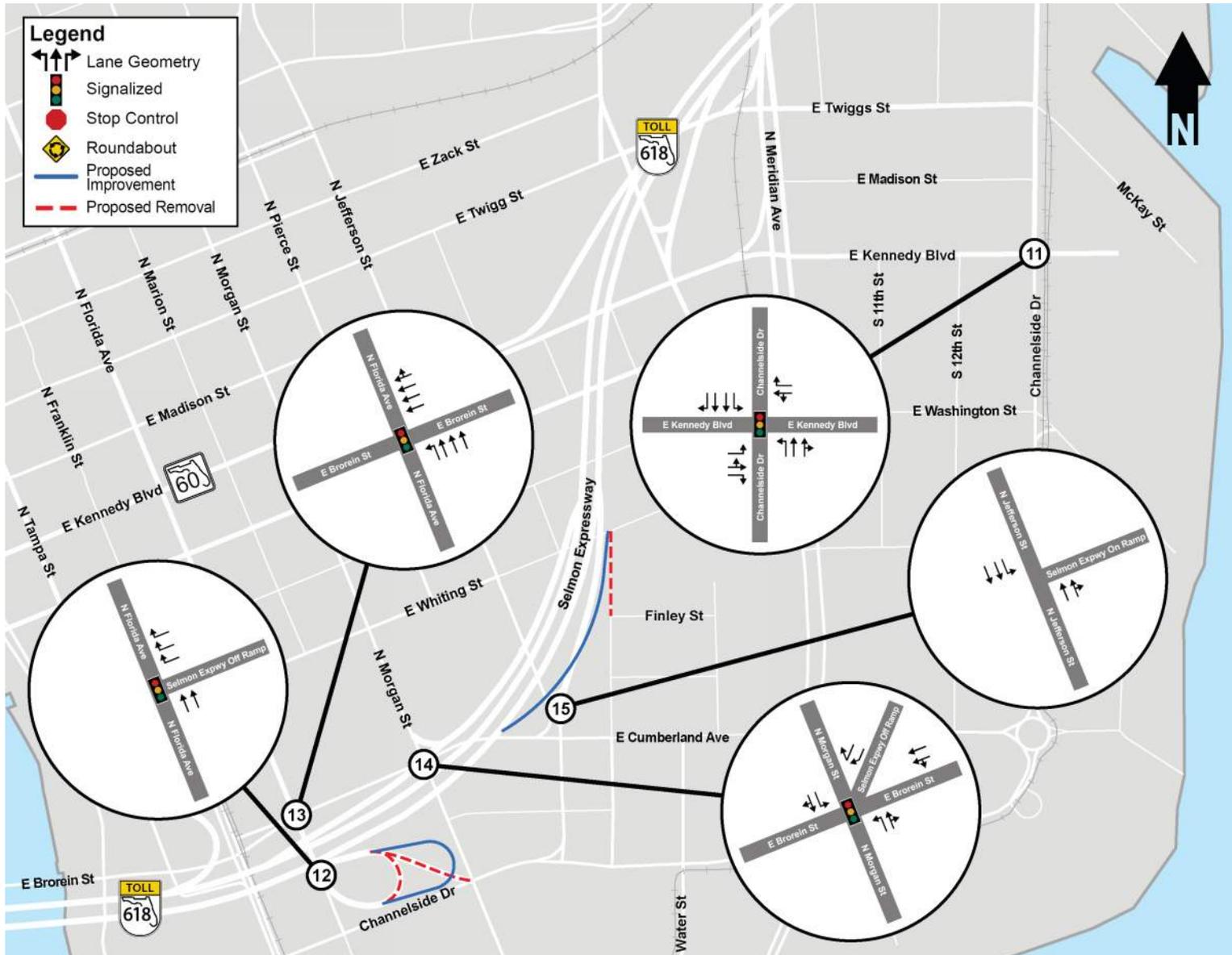


Figure 5.2c: Build Alternative Geometry

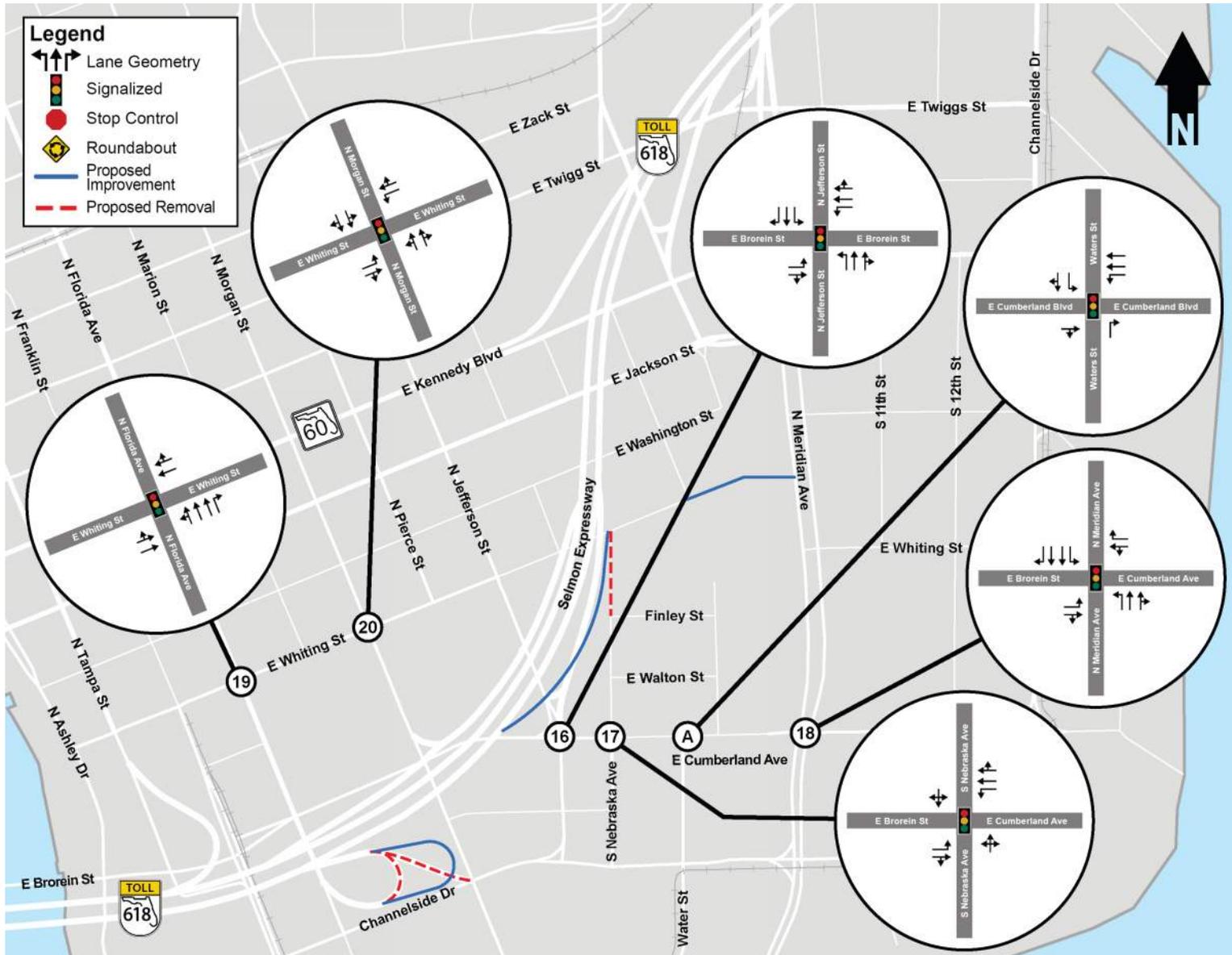


Figure 5.2d: Build Alternative Geometry

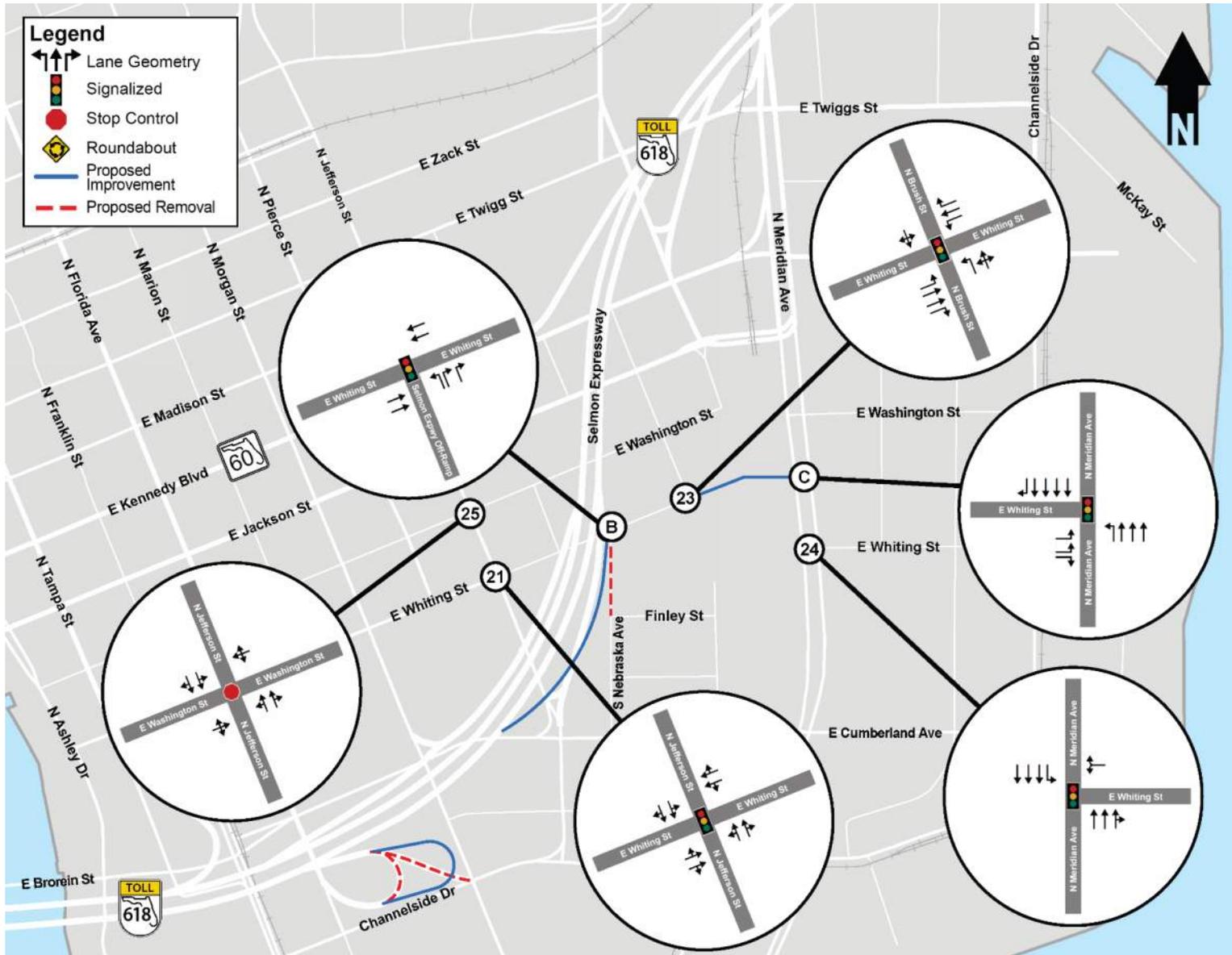


Figure 5.2e: Build Alternative Geometry

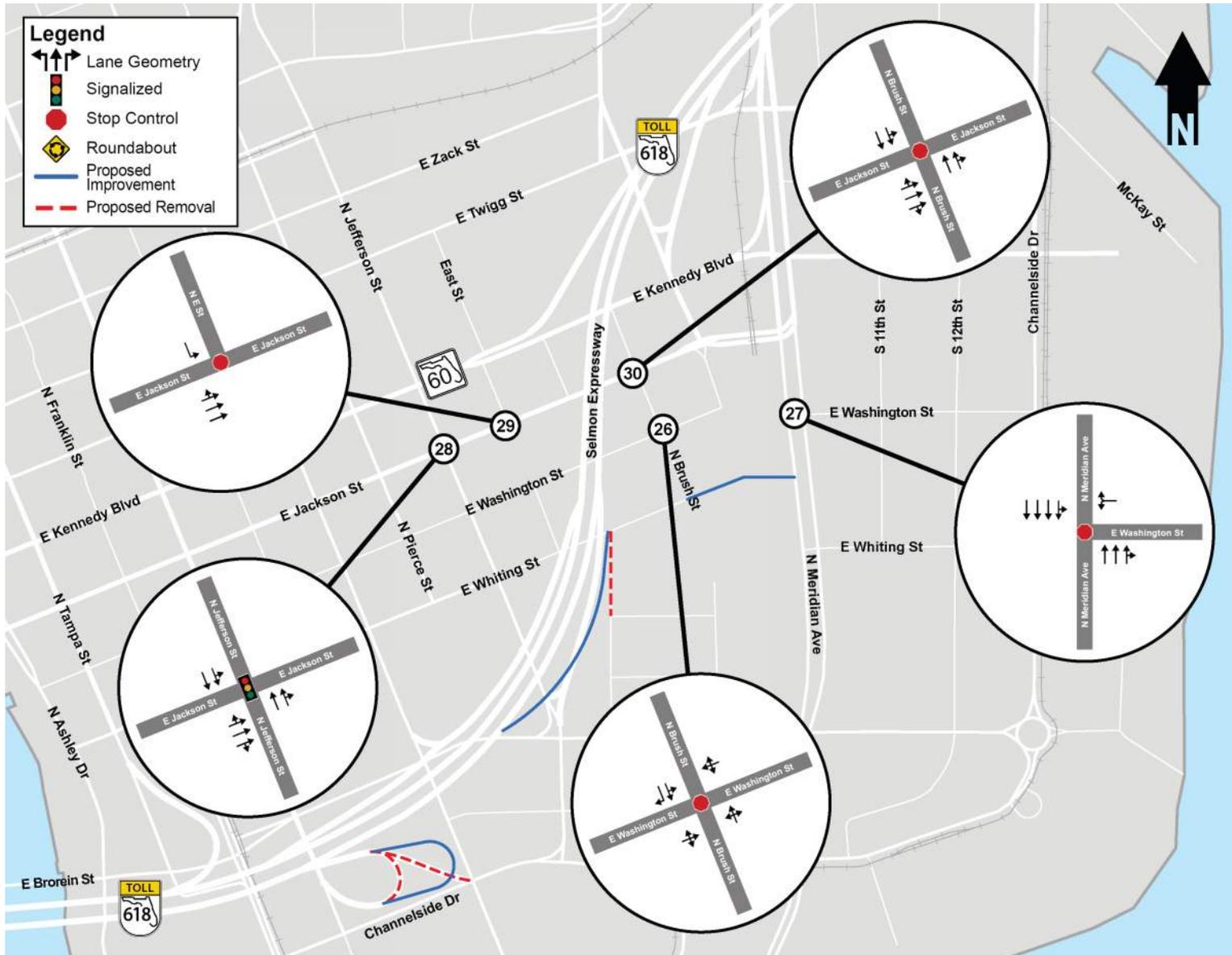


Figure 5.2f: Build Alternative Geometry

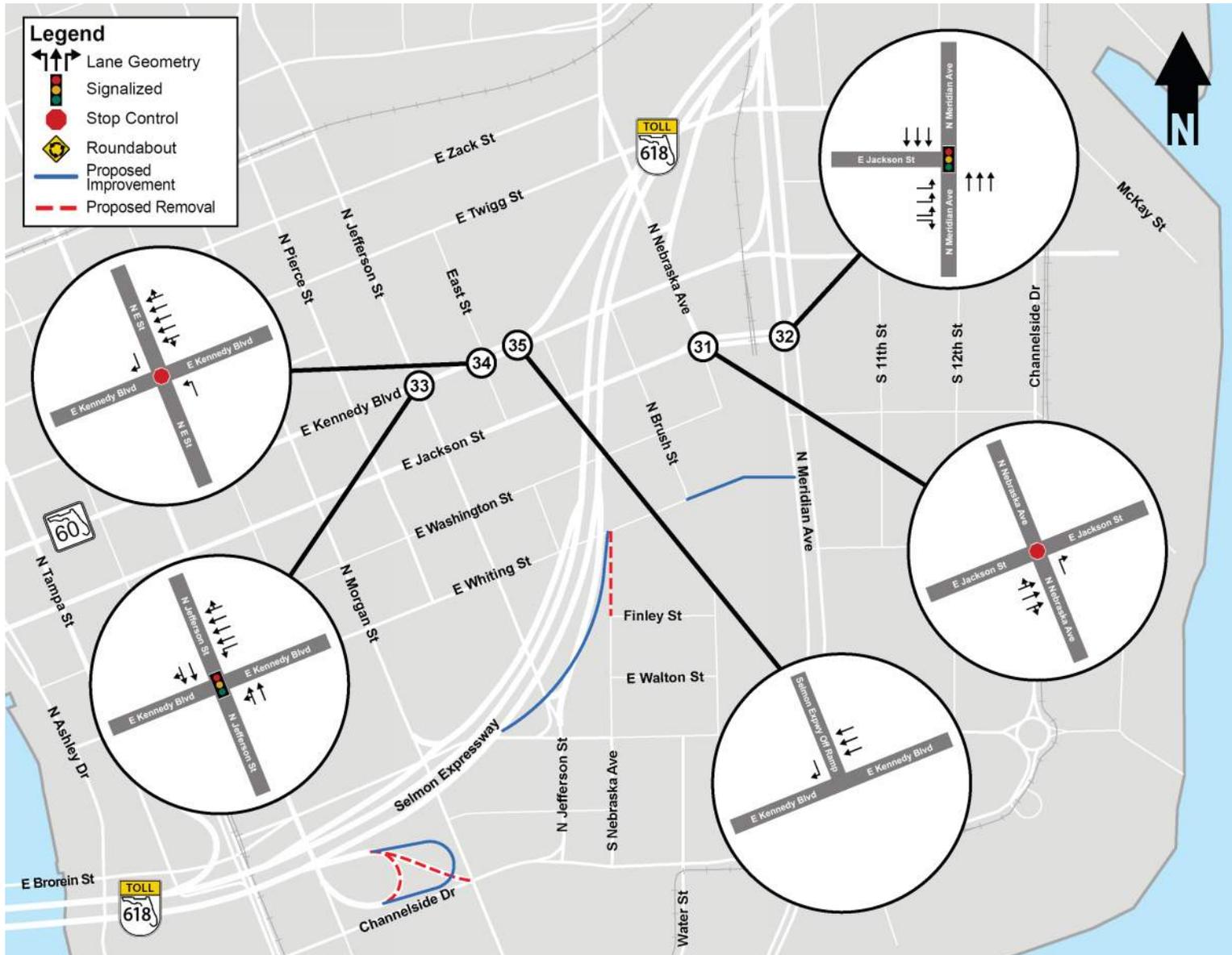


Figure 5.2g: Build Alternative Geometry

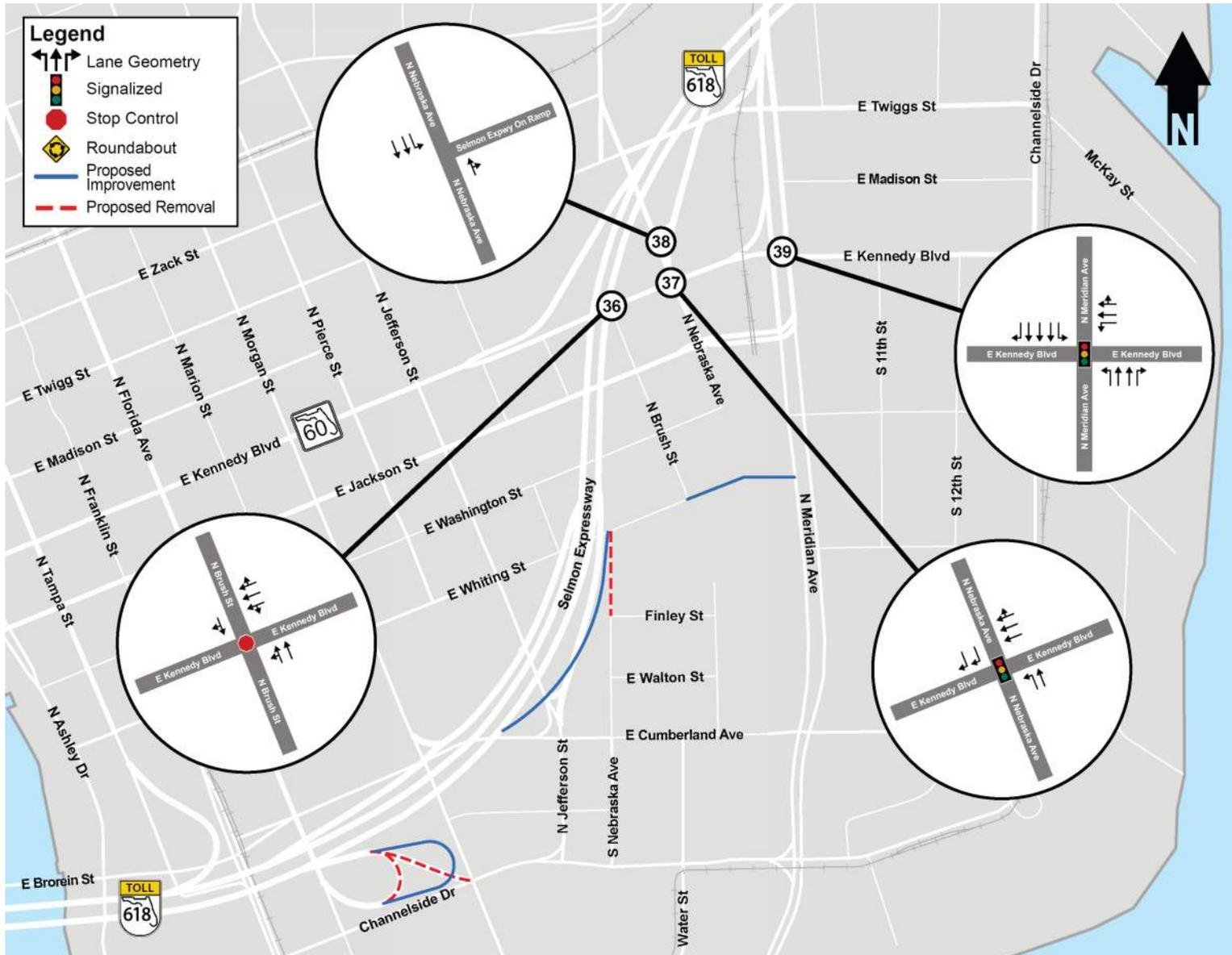


Figure 5.2h: Build Alternative Geometry

5.2.2 Intersection Analysis

Intersection operational analysis was conducted at each of the study intersections within the study area for the opening year (2026), interim year (2036), and design year (2046). The Build Alternative Synchro, SIDRA, and HCS analysis results can be found in **Appendix K**.

The results of the opening year (2026) intersection analysis for the AM and PM peak hours are shown in **Table 5.7**. The results indicate that nine signalized intersections are expected to fail and not meet the LOS target D in the AM and PM peak hours in the opening year (2026). Additionally, the stop-controlled approaches at the unsignalized intersections of Washington Street at Jefferson Street and Washington Street at Meridian Avenue are expected to fail and not meet the LOS target D. The results indicate the relocation of the existing Channelside Drive off-ramp to the new Whiting Street connection is expected to significantly reduce the delay at the intersection of Channelside Drive at Morgan Street, which would aid in the reduction of the queue length at the Selmon Expressway off-ramp to Florida Avenue. However, the results indicate that the delay at the intersection of Channelside Drive at Florida Avenue is expected to increase slightly compared to the No-Build Alternative. This is likely due to the signalization of the Selmon Expressway off-ramp to Florida Avenue and the clustering of the newly signalized intersection with the intersection of Channelside Drive at Florida Avenue. These improvements are expected to improve safety for all users and allow pedestrians to safely cross Florida Avenue and the off-ramp, thereby outweighing the operational impacts to the Channelside Drive at Florida Avenue intersection.

The results of the interim year (2036) intersection analysis for the AM and PM peak hours are shown in **Table 5.8**. The results indicate that fourteen signalized and two unsignalized intersections are expected to fail and not meet the LOS target D in the AM and PM peak hours in the interim year (2036). In addition to the intersections that are expected to fail in the opening year (2026), the following intersections are expected to fail by the interim year (2036): Channelside Drive at Florida Avenue, Channelside Drive at Nebraska Avenue, Brorin Street at Florida Avenue, and Whiting Street at Meridian Avenue (North).

The results of the design year (2046) intersection analysis for the AM and PM peak hours are shown in **Table 5.9**. The results indicate that seventeen signalized and three unsignalized intersections are expected to fail and not meet the LOS target D in the AM and PM peak hours in the design year (2046). In addition to the intersections that are expected to fail in the interim year (2036), the following intersections are expected to fail by the design year (2046): Washington Street at Channelside Drive, Kennedy Boulevard at Channelside Drive, and Whiting Street at Jefferson Street. Additional delay is likely along Whiting Street due to increased traffic volumes, as a result of the relocation of the Selmon Expressway off-ramp, and the expected continued growth of the Downtown Tampa study area. The signal timings for the east-west movements on Whiting Street were prioritized over north-south movements to ensure that the Whiting Street off-ramp queues did not back up on to the Eastbound Selmon Expressway. Similar to the opening (2026) and interim year (2036) results, the results indicate the relocation of the existing Channelside Drive off-ramp to the new Whiting Street connection is expected to continue to significantly reduce the delay at the intersection of Channelside Drive at Morgan Street, which is likely to aid in the reduction of the queue length at the Selmon Expressway off-ramp to Florida Avenue. Overall, the improvements proposed as part of the Build Scenario will either improve conditions in the study area, or at least not harm them. The addition of the Whiting Street ramp to change access from the Selmon Expressway and the extension of Whiting Street will improve flow within the study area.

Table 5.7: Opening Year (2026) Build Alternative Intersection Analysis

ID	Intersection	Eastbound		Westbound		Northbound		Southbound		Off-Ramp		Overall	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
<i>AM Peak Hour</i>													
1	Channelside Dr and Florida Ave	25.3	C	-	-	64.0	E	-	-	-	-	29.3	C
2	Channelside Dr and Morgan St	3.9	A	15.7	B	52.8	D	18.2	B	-	-	10.4	B
3	Channelside Dr and Jefferson St	28.8	C	22.0	C	-	-	54.9	D	-	-	27.8	C
4	Channelside Dr and Nebraska Ave	1.7	A	1.2	A	-	-	218.2	F	-	-	34.6	C
5	Channelside Dr and Old Water St	2.1	A	1.2	A	54.8	D	56.2	E	-	-	5.7	A
6	Channelside Dr and Meridian Ave	11.6	B	87.8	F	51.0	D	63.6	E	-	-	55.0	E
7	Channelside Dr and 12th St*	-	-	-	-	10.8	B	13.2	B	-	-	-	-
8	Cumberland Ave and Channelside Dr	4.4	A	4.1	A	6.1	A	5.5	A	-	-	5.6	A
9	Whiting St and Channelside Dr*	20.6	C	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	66.3	E	63.0	E	15.0	B	18.2	B	-	-	19.9	B
11	Kennedy Blvd and Channelside Dr	57.9	E	69.9	E	25.5	C	47.9	D	-	-	46.8	D
12	Selmon Expy Off-ramp and Florida Ave	-	-	-	-	8.0	A	-	-	47.5	D	26.4	C
13	Brorain St and Florida Ave	-	-	62.6	E	29.6	C	-	-	-	-	46.6	D
14	Brorain St and Morgan St	-	-	314.0	F	25.9	C	346.2	F	114.3	F	219.1	F
16	Brorain St and Jefferson St	19.9	B	87.4	F	51.2	D	132.6	F	-	-	89.9	F
17	Brorain St and Nebraska Ave	26.1	C	9.2	A	119.6	F	30.4	C	-	-	33.7	C
A	Cumberland Ave and Old Water St	2.1	A	25.9	C	57.1	E	60.5	E	-	-	26.9	C
18	Cumberland Ave and Meridian Ave	52.6	D	47.6	D	41.3	D	155.1	F	-	-	110.5	F
19	Whiting St and Florida Ave	64.1	E	24.0	C	27.8	C	-	-	-	-	33.2	C
20	Whiting St and Morgan St	64.8	E	456.6	F	63.8	E	40.3	D	-	-	201.6	F
21	Whiting St and Jefferson St	55.6	E	17.9	B	23.8	C	32.0	C	-	-	28.4	C
B	Whiting St and Selmon Off-ramp	47.1	D	8.0	A	9.8	A	-	-	-	-	13.8	B
23	Whiting St and Brush St	3.0	A	17.6	B	43.9	D	156.7	F	-	-	41.8	D
C	Whiting St and Meridian Ave (North)	43.1	D	8.3	A	-	-	71.1	E	-	-	52.0	D
24	Whiting St and Meridian Ave (South)	-	-	128.7	F	15.6	B	10.0	B	-	-	18.8	B
25	Washington St and Jefferson St*	22.9	C	243.0	F	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	12.2	B	19.6	C	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	88.4	F	-	-	-	-	-	-	-	-

Note: Red highlight indicates locations where the operations do not meet the LOS target D, as defined for urban areas in the *FDOT 2020 Quality/Level of Service Handbook*.

*Only stop-controlled approaches have been summarized.

Table 5.7 (continued): Opening Year (2026) Build Alternative Intersection Analysis

ID	Intersection	Eastbound		Westbound		Northbound		Southbound		Off-Ramp		Overall	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
<i>PM Peak Hour</i>													
1	Channelside Dr and Florida Ave	43.5	D	-	-	70.2	E	-	-	-	-	48.0	D
2	Channelside Dr and Morgan St	3.4	A	28.3	C	55.9	E	55.0	E	-	-	13.4	B
3	Channelside Dr and Jefferson St	64.4	E	16.3	B	-	-	198.2	F	-	-	70.1	E
4	Channelside Dr and Nebraska Ave	1.6	A	1.0	A	-	-	57.5	E	-	-	3.2	A
5	Channelside Dr and Old Water St	7.5	A	0.6	A	66.5	E	58.8	E	-	-	14.3	B
6	Channelside Dr and Meridian Ave	23.2	C	48.3	D	53.8	D	88.2	F	-	-	45.2	D
7	Channelside Dr and 12th St*	-	-	-	-	15.6	C	10.7	B	-	-	-	-
8	Cumberland Ave and Channelside Dr	4.3	A	6.1	A	9.9	A	5.5	A	-	-	7.7	A
9	Whiting St and Channelside Dr*	18.4	C	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	111.5	F	62.5	E	19.5	B	15.1	B	-	-	23.2	C
11	Kennedy Blvd and Channelside Dr	40.0	D	65.8	E	27.5	C	39.5	D	-	-	37.1	D
12	Selmon Expy Off-ramp and Florida Ave	-	-	-	-	4.3	A	-	-	50.7	D	15.7	B
13	Brorein St and Florida Ave	-	-	43.3	D	27.7	C	-	-	-	-	35.3	D
14	Brorein St and Morgan St	-	-	101.7	F	94.2	F	96.9	F	51.7	D	91.2	F
16	Brorein St and Jefferson St	86.6	F	250.2	F	60.5	E	69.7	E	-	-	151.8	F
17	Brorein St and Nebraska Ave	8.9	A	0.1	A	1123.5	F	97.9	F	-	-	188.6	F
A	Cumberland Ave and Old Water St	0.9	A	0.3	A	926.7	F	87.3	F	-	-	259.7	F
18	Cumberland Ave and Meridian Ave	244.4	F	29.4	C	62.2	E	54.1	D	-	-	107.2	F
19	Whiting St and Florida Ave	67.1	E	26.7	C	33.4	C	-	-	-	-	38.4	D
20	Whiting St and Morgan St	21.9	C	33.2	C	29.2	C	26.4	C	-	-	27.5	C
21	Whiting St and Jefferson St	54.4	D	41.7	D	17.6	B	38.5	D	-	-	39.2	D
B	Whiting St and Selmon Off-ramp	41.6	D	14.3	B	14.5	B	-	-	-	-	24.4	C
23	Whiting St and Brush St	22.5	C	13.6	B	56.4	E	291.3	F	-	-	62.7	E
C	Whiting St and Meridian Ave (North)	36.0	D	6.9	A	-	-	8.2	A	-	-	14.6	B
24	Whiting St and Meridian Ave (South)	-	-	66.9	E	9.4	A	11.4	B	-	-	13.4	B
25	Washington St and Jefferson St*	1654.5	F	****	F	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	16.8	C	15.7	C	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	232.4	F	-	-	-	-	-	-	-	-

Note: Red highlight indicates locations where the operations do not meet the LOS target D, as defined for urban areas in the *FDOT 2020 Quality/Level of Service Handbook*.

*Only stop-controlled approaches have been summarized.

Table 5.8: Interim Year (2036) Build Alternative Intersection Analysis

ID	Intersection	Eastbound		Westbound		Northbound		Southbound		Off-Ramp		Overall	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
<i>AM Peak Hour</i>													
1	Channelside Dr and Florida Ave	39.1	D	-	-	74.4	E	-	-	-	-	43.1	D
2	Channelside Dr and Morgan St	4.1	A	19.1	B	55.2	E	20.9	C	-	-	12.1	B
3	Channelside Dr and Jefferson St	23.9	C	15.3	B	-	-	55.0	E	-	-	22.1	C
4	Channelside Dr and Nebraska Ave	1.8	A	1.6	A	-	-	336.5	F	-	-	56.2	E
5	Channelside Dr and Old Water St	2.2	A	0.7	A	57.6	E	57.8	E	-	-	6.6	A
6	Channelside Dr and Meridian Ave	12.4	B	151.4	F	104.9	F	116.0	F	-	-	100.2	F
7	Channelside Dr and 12th St*	-	-	-	-	12.0	B	15.1	C	-	-	-	-
8	Cumberland Ave and Channelside Dr	5.0	A	4.6	A	6.1	A	7.3	A	-	-	6.4	A
9	Whiting St and Channelside Dr*	25.8	D	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	261.9	F	62.8	E	26.6	C	29.4	C	-	-	45.3	D
11	Kennedy Blvd and Channelside Dr	58.7	E	67.2	E	33.5	C	59.2	E	-	-	54.9	D
12	Selmon Expy Off-ramp and Florida Ave	-	-	-	-	7.6	A	-	-	59.6	E	32.3	C
13	Brorein St and Florida Ave	-	-	126.3	F	33.9	C	-	-	-	-	82.0	F
14	Brorein St and Morgan St	-	-	456.7	F	30.6	C	528.2	F	207.0	F	324.4	F
16	Brorein St and Jefferson St	39.3	D	170.1	F	50.9	D	158.8	F	-	-	143.7	F
17	Brorein St and Nebraska Ave	73.8	E	27.6	C	231.5	F	33.1	C	-	-	69.4	E
A	Cumberland Ave and Old Water St	3.0	A	28.6	C	56.7	E	59.3	E	-	-	28.5	C
18	Cumberland Ave and Meridian Ave	60.3	E	51.4	D	19.1	B	227.3	F	-	-	152.2	F
19	Whiting St and Florida Ave	89.7	F	27.3	C	32.2	C	-	-	-	-	40.1	D
20	Whiting St and Morgan St	95.7	F	551.5	F	90.8	F	45.7	D	-	-	256.6	F
21	Whiting St and Jefferson St	50.7	D	20.5	C	24.0	C	33.9	C	-	-	29.5	C
B	Whiting St and Selmon Off-ramp	55.2	E	7.2	A	10.9	B	-	-	-	-	13.7	B
23	Whiting St and Brush St	3.1	A	19.6	B	44.3	D	302.2	F	-	-	64.3	E
C	Whiting St and Meridian Ave (North)	44.8	D	52.9	D	-	-	112.2	F	-	-	84.8	F
24	Whiting St and Meridian Ave (South)	-	-	69.7	E	33.3	C	17.3	B	-	-	26.0	C
25	Washington St and Jefferson St*	36.1	E	1356.2	F	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	17.0	C	26.8	D	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	1083.6	F	-	-	-	-	-	-	-	-

Note: Red highlight indicates locations where the operations do not meet the LOS target D, as defined for urban areas in the *FDOT 2020 Quality/Level of Service Handbook*.

*Only stop-controlled approaches have been summarized.

Table 5.8 (continued): Interim Year (2036) Build Alternative Intersection Analysis

ID	Intersection	Eastbound		Westbound		Northbound		Southbound		Off-Ramp		Overall	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
<i>PM Peak Hour</i>													
1	Channelside Dr and Florida Ave	123.3	F	-	-	108.1	F	-	-	-	-	120.7	F
2	Channelside Dr and Morgan St	3.6	A	34.7	C	59.6	E	56.8	E	-	-	15.2	B
3	Channelside Dr and Jefferson St	126.6	F	17.2	B	-	-	219.2	F	-	-	113.6	F
4	Channelside Dr and Nebraska Ave	2.6	A	1.0	A	-	-	56.7	E	-	-	3.8	A
5	Channelside Dr and Old Water St	23.6	C	0.8	A	68.5	E	61.2	E	-	-	24.5	C
6	Channelside Dr and Meridian Ave	62.5	E	53.0	D	146.6	F	95.3	F	-	-	87.6	F
7	Channelside Dr and 12th St*	-	-	-	-	18.6	C	11.2	B	-	-	-	-
8	Cumberland Ave and Channelside Dr	5.0	A	7.3	A	12.9	B	5.7	A	-	-	9.3	A
9	Whiting St and Channelside Dr*	22.1	C	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	104.3	F	62.2	E	19.8	B	17.8	B	-	-	24.5	C
11	Kennedy Blvd and Channelside Dr	40.3	D	66.8	E	32.9	C	40.8	D	-	-	39.2	D
12	Selmon Expy Off-ramp and Florida Ave	-	-	-	-	4.8	A	-	-	57.4	E	19.2	B
13	Brorein St and Florida Ave	-	-	63.1	E	32.4	C	-	-	-	-	47.6	D
14	Brorein St and Morgan St	-	-	178.8	F	241.2	F	100.9	F	196.3	F	184.3	F
16	Brorein St and Jefferson St	219.5	F	291.7	F	125.3	F	80.9	F	-	-	219.9	F
17	Brorein St and Nebraska Ave	7.5	A	0.2	A	1397.8	F	119.8	F	-	-	261.7	F
A	Cumberland Ave and Old Water St	2.4	A	0.4	A	793.7	F	79.2	E	-	-	208.0	F
18	Cumberland Ave and Meridian Ave	493.3	F	29.5	C	61.0	E	155.0	F	-	-	199.9	F
19	Whiting St and Florida Ave	115.4	F	29.5	C	54.7	D	-	-	-	-	61.1	E
20	Whiting St and Morgan St	33.3	C	58.3	E	37.9	D	30.6	C	-	-	40.4	D
21	Whiting St and Jefferson St	53.7	D	29.3	C	17.2	B	41.1	D	-	-	36.9	D
B	Whiting St and Selmon Off-ramp	42.8	D	13.6	B	16.9	B	-	-	-	-	23.4	C
23	Whiting St and Brush St	17.6	B	16.0	B	56.2	E	593.9	F	-	-	100.4	F
C	Whiting St and Meridian Ave (North)	28.1	C	9.2	A	-	-	13.0	B	-	-	15.2	B
24	Whiting St and Meridian Ave (South)	-	-	65.2	E	15.4	B	14.6	B	-	-	18.3	B
25	Washington St and Jefferson St*	**	F	**	F	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	33.6	D	21.7	C	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	1839.9	F	-	-	-	-	-	-	-	-

Note: Red highlight indicates locations where the operations do not meet the LOS target D, as defined for urban areas in the *FDOT 2020 Quality/Level of Service Handbook*.

*Only stop-controlled approaches have been summarized.

**Synchro delay not able to be reported due to excessive delay.

Table 5.9: Design Year (2046) Build Alternative Intersection Analysis

ID	Intersection	Eastbound		Westbound		Northbound		Southbound		Off-Ramp		Overall	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
<i>AM Peak Hour</i>													
1	Channelside Dr and Florida Ave	69.4	E	-	-	101.4	F	-	-	-	-	73.3	E
2	Channelside Dr and Morgan St	4.8	A	32.1	C	58.3	E	22.2	C	-	-	17.5	B
3	Channelside Dr and Jefferson St	108.8	F	83.0	F	-	-	55.5	E	-	-	95.4	F
4	Channelside Dr and Nebraska Ave	2.0	A	2.0	A	-	-	415.2	F	-	-	68.6	E
5	Channelside Dr and Old Water St	2.1	A	0.8	A	61.2	E	59.5	E	-	-	7.6	A
6	Channelside Dr and Meridian Ave	13.4	B	213.3	F	158.0	F	239.8	F	-	-	167.2	F
7	Channelside Dr and 12th St*	-	-	-	-	13.4	B	17.5	C	-	-	-	-
8	Cumberland Ave and Channelside Dr	5.8	A	5.2	A	8.6	A	6.8	A	-	-	7.3	A
9	Whiting St and Channelside Dr*	32.9	D	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	411.1	F	62.9	E	27.8	C	32.5	C	-	-	60.0	E
11	Kennedy Blvd and Channelside Dr	58.0	E	69.9	E	68.7	E	111.7	F	-	-	94.2	F
12	Selmon Expy Off-ramp and Florida Ave	-	-	-	-	7.6	A	-	-	93.8	F	49.0	D
13	Brorein St and Florida Ave	-	-	201.1	F	44.0	D	-	-	-	-	126.3	F
14	Brorein St and Morgan St	-	-	562.3	F	34.8	C	687.3	F	296.5	F	403.6	F
16	Brorein St and Jefferson St	101.0	F	230.9	F	53.3	D	215.2	F	-	-	194.2	F
17	Brorein St and Nebraska Ave	74.0	E	79.4	E	267.1	F	34.8	C	-	-	100.9	F
A	Cumberland Ave and Old Water St	3.4	A	31.4	C	56.6	E	59.3	E	-	-	30.2	C
18	Cumberland Ave and Meridian Ave	89.7	F	57.0	E	12.8	B	296.2	F	-	-	197.6	F
19	Whiting St and Florida Ave	124.0	F	31.7	C	39.9	D	-	-	-	-	51.4	D
20	Whiting St and Morgan St	116.4	F	695.8	F	172.3	F	45.3	D	-	-	342.8	F
21	Whiting St and Jefferson St	51.5	D	38.2	D	25.0	C	36.2	D	-	-	37.3	D
B	Whiting St and Selmon Off-ramp	59.9	E	8.0	A	12.6	B	-	-	-	-	14.2	B
23	Whiting St and Brush St	3.5	A	22.2	C	43.9	D	371.3	F	-	-	72.6	E
C	Whiting St and Meridian Ave (North)	26.5	C	71.8	E	-	-	142.4	F	-	-	100.9	F
24	Whiting St and Meridian Ave (South)	-	-	67.2	E	40.2	D	25.6	C	-	-	33.3	C
25	Washington St and Jefferson St*	**	F	3937.0	F	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	23.1	C	35.9	E	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	1888.7	F	-	-	-	-	-	-	-	-

Note: Red highlight indicates locations where the operations do not meet the LOS target D, as defined for urban areas in the *FDOT 2020 Quality/Level of Service Handbook*.

*Only stop-controlled approaches have been summarized.

Table 5.9 (continued): Design Year (2046) Build Alternative Intersection Analysis

ID	Intersection	Eastbound		Westbound		Northbound		Southbound		Off-Ramp		Overall	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
<i>PM Peak Hour</i>													
1	Channelside Dr and Florida Ave	219.9	F	-	-	163.3	F	-	-	-	-	210.6	F
2	Channelside Dr and Morgan St	3.9	A	60.0	E	72.5	E	56.8	E	-	-	21.9	C
3	Channelside Dr and Jefferson St	189.0	F	18.5	B	-	-	229.7	F	-	-	157.4	F
4	Channelside Dr and Nebraska Ave	7.4	A	1.2	A	-	-	56.4	E	-	-	7.1	A
5	Channelside Dr and Old Water St	64.7	E	0.9	A	74.2	E	63.8	E	-	-	49.4	D
6	Channelside Dr and Meridian Ave	130.4	F	58.5	E	234.1	F	159.4	F	-	-	152.4	F
7	Channelside Dr and 12th St*	-	-	-	-	24.1	C	12.0	B	-	-	-	-
8	Cumberland Ave and Channelside Dr	5.5	A	8.3	A	16.7	C	5.8	A	-	-	11.3	B
9	Whiting St and Channelside Dr*	30.4	D	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	187.7	F	62.0	E	30.0	C	23.3	C	-	-	36.4	D
11	Kennedy Blvd and Channelside Dr	42.3	D	65.5	E	31.4	C	43.0	D	-	-	40.1	D
12	Selmon Expy Off-ramp and Florida Ave	-	-	-	-	6.2	A	-	-	79.0	E	27.5	C
13	Brorein St and Florida Ave	-	-	139.7	F	44.5	D	-	-	-	-	92.3	F
14	Brorein St and Morgan St	-	-	253.0	F	427.9	F	136.5	F	399.9	F	314.9	F
16	Brorein St and Jefferson St	226.4	F	358.1	F	167.1	F	66.6	E	-	-	259.3	F
17	Brorein St and Nebraska Ave	8.8	A	0.2	A	1571.4	F	156.5	F	-	-	307.7	F
A	Cumberland Ave and Old Water St	9.2	A	0.6	A	702.5	F	72.8	E	-	-	171.8	F
18	Cumberland Ave and Meridian Ave	780.7	F	29.9	C	84.3	F	203.5	F	-	-	304.9	F
19	Whiting St and Florida Ave	221.0	F	32.5	C	93.3	F	-	-	-	-	105.6	F
20	Whiting St and Morgan St	114.2	F	120.9	F	69.7	E	40.0	D	-	-	87.5	F
21	Whiting St and Jefferson St	100.1	F	53.6	D	19.0	B	40.8	D	-	-	57.6	E
B	Whiting St and Selmon Off-ramp	43.2	D	12.7	B	20.3	C	-	-	-	-	23.7	C
23	Whiting St and Brush St	12.7	B	19.7	B	60.6	E	837.9	F	-	-	138.2	F
C	Whiting St and Meridian Ave (North)	19.4	B	13.1	B	-	-	21.3	C	-	-	16.8	B
24	Whiting St and Meridian Ave (South)	-	-	62.9	E	24.2	C	16.1	B	-	-	24.4	C
25	Washington St and Jefferson St*	**	F	**	F	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	553.8	F	47.2	E	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	4238.7	F	-	-	-	-	-	-	-	-

Note: Red highlight indicates locations where the operations do not meet the LOS target D, as defined for urban areas in the *FDOT 2020 Quality/Level of Service Handbook*.

*Only stop-controlled approaches have been summarized.

**Synchro delay not able to be reported due to excessive delay.

5.2.3 Queue Analysis

Queue analysis was conducted at each of the study intersections within the study area for the opening year (2026), interim year (2036), and design year (2046). The results of the opening year (2026) queue analysis for the AM and PM peak hours are shown in **Table 5.10**. The results indicate that the relocation of the Selmon Expressway off-ramp to Channelside Drive to the new Whiting Street connection is expected to reduce the likelihood of the queue spillback from extending onto the Selmon Expressway. The results also indicate that the queue lengths on the westbound approaches at the intersection of Whiting Street at Jefferson Street and the intersection of Whiting Street at Morgan Street are expected to increase compared to the No-Build condition. However, this is expected due to the shifting traffic demand from the new Whiting Street ramp connection and the resulting increased utilization of Whiting Street.

The results of the interim year (2036) queue analysis for the AM and PM peak hours are shown in **Table 5.11**. The results indicate that the relocation of the Selmon Expressway off-ramp to Channelside Drive to the new Whiting Street connection is expected to continue to prevent the queue spillback from extending onto the Selmon Expressway.

The results of the design year (2046) queue analysis for the AM and PM peak hours are shown in **Table 5.12**. The results indicate that the relocation of the Selmon Expressway off-ramp to Channelside Drive to the new Whiting Street connection is expected to continue to prevent the queue spillback from extending onto the Eastbound Selmon Expressway. Similar to the results for the opening year (2026) and interim year (2036) queue analyses, the results indicate that the queue lengths on some of the approaches on Whiting Street are expected to increase compared to the No-Build condition including the off-ramp from the Westbound Selmon Expressway to Brorein Street which is expected to be on the edge of exceeding storage capacity in the No-Build Scenario as well. This is expected due to the shifting traffic demand from the new Whiting Street ramp connection and the resulting increased utilization of Whiting Street, in addition to the expected continued growth of the Downtown Tampa study area. Overall, the queue analysis results indicate that queue spillback onto the eastbound Selmon Expressway will be prevented in the Build condition through the design year (2046).

Table 5.10: Opening Year (2026) Build Alternative Queue Analysis

ID	Intersection	Eastbound			Westbound			Northbound			Southbound			Off-Ramp			
		L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	
<i>Storage Length (ft)</i>																	
1	Channelside Dr and Florida Ave	200	200	+	-	-	-	-	450	200	-	-	-	-	-	-	-
2	Channelside Dr and Morgan St	450	450	+	300	-	+	-	550	550	100	450	-	-	-	-	
3	Channelside Dr and Jefferson St	300	300	-	-	150	+	-	-	-	100	-	500	-	-	-	
4	Channelside Dr and Nebraska Ave	100	150	-	-	250	+	-	-	-	500	-	+	-	-	-	
5	Channelside Dr and Old Water St	100	250	+	100	350	+	200	1000	+	150	500	+	-	-	-	
6	Channelside Dr and Meridian Ave	150	350	+	150	1000	+	>1500	>1500	400	200	450	450	-	-	-	
7	Channelside Dr and 12th St*	-	-	-	-	-	-	-	-	200	-	-	700	-	-	-	
8	Cumberland Ave and Channelside Dr	+	200	+	+	200	+	+	1000	+	+	650	650	-	-	-	
9	Whiting St and Channelside Dr*	250	-	+	-	-	-	-	-	-	-	-	-	-	-	-	
10	Washington St and Channelside Dr	+	250	+	+	600	450	150	500	+	300	550	+	-	-	-	
11	Kennedy Blvd and Channelside Dr	550	550	150	+	200	200	200	550	+	100	550	400	-	-	-	
12	Selmon Off-Ramp to Florida Ave	-	-	-	-	-	-	-	-	-	-	-	-	-	1100	-	
13	Brorein St and Florida Ave	-	-	-	-	500	+	450	450	-	-	-	-	-	-	-	
14	Brorein St and Morgan St	-	-	-	+	500	-	250	450	+	500	500	+	-	1000	1000	
16	Brorein St and Jefferson St	200	550	+	50	250	+	100	500	+	50	600	600	-	-	-	
17	Brorein St and Nebraska Ave	50	250	+	50	250	+	+	500	+	+	850	+	-	-	-	
A	Cumberland Ave and Old Water St	50	250	+	50	550	+	150	500	+	150	650	+	-	-	-	
18	Cumberland Ave and Meridian Ave	100	550	+	+	550	+	200	450	+	250	650	650	-	-	-	
19	Whiting St and Florida Ave	+	200	-	-	500	+	+	550	100	-	-	-	-	-	-	
20	Whiting St and Morgan St	500	500	+	500	500	+	+	500	+	+	500	+	-	-	-	
21	Whiting St and Jefferson St	+	500	+	+	450	+	+	600	+	+	500	+	-	-	-	
B	Whiting St and Selmon Off-ramp	-	450	-	-	300	-	-	-	-	-	-	-	1250	-	+	
23	Whiting St and Brush St	100	300	-	-	350	+	-	-	-	200	-	+	-	-	-	
C	Whiting St and Meridian Ave (North)	350	-	250	-	-	-	200	200	-	-	250	250	-	-	-	
24	Whiting St and Meridian Ave (South)	-	-	-	200	-	+	-	650	+	200	200	-	-	-	-	
25	Washington St and Jefferson St*	+	200	+	+	750	+	-	-	-	-	-	-	-	-	-	
26	Washington St and Brush St*	+	750	+	+	450	+	-	-	-	-	-	-	-	-	-	
27	Washington St and Meridian Ave*	-	-	-	250	-	+	-	-	-	-	-	-	-	-	-	

+Shared Lanes

*Only stop-controlled approaches have been summarized.

Table 5.10 (continued): Opening Year (2026) Build Alternative Queue Analysis

ID	Intersection	Eastbound			Westbound			Northbound			Southbound			Off-Ramp		
		L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
<i>AM Peak Hour Maximum Queue Length (ft)</i>																
1	Channelside Dr and Florida Ave	805	446	+	-	-	-	-	178	40	-	-	-	-	-	-
2	Channelside Dr and Morgan St	29	85	+	129	-	+	-	132	0	26	55	-	-	-	-
3	Channelside Dr and Jefferson St	219	22	-	-	665	+	-	-	-	6	-	57	-	-	-
4	Channelside Dr and Nebraska Ave	10	131	-	+	78	-	-	-	-	129	-	+	-	-	-
5	Channelside Dr and Old Water St	13	55	+	47	491	+	23	77	+	0	27	+	-	-	-
6	Channelside Dr and Meridian Ave	121	90	+	131	728	+	109	581	35	131	356	373	-	-	-
7	Channelside Dr and 12th St*	-	-	-	-	-	-	-	-	25	-	-	50	-	-	-
8	Cumberland Ave and Channelside Dr**	+	25	+	+	25	+	+	50	+	+	50	25	-	-	-
9	Whiting St and Channelside Dr*	25	-	+	-	-	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	+	56	+	+	36	0	12	162	+	133	291	+	-	-	-
11	Kennedy Blvd and Channelside Dr	288	294	53	+	46	0	66	198	+	46	392	164	-	-	-
12	Selmon Off-Ramp to Florida Ave	-	-	-	-	-	-	-	-	-	-	-	-	-	441	-
13	Brorein St and Florida Ave	-	-	-	-	731	+	154	596	-	-	-	-	-	-	-
14	Brorein St and Morgan St	-	-	-	+	1042	-	36	726	+	1008	278	+	-	1092	465
16	Brorein St and Jefferson St	11	4	+	17	773	+	31	143	+	401	813	14	-	-	-
17	Brorein St and Nebraska Ave	144	280	+	5	851	+	+	816	+	+	293	+	-	-	-
A	Cumberland Ave and Old Water St	18	110	+	7	266	+	87	129	+	17	262	+	-	-	-
18	Cumberland Ave and Meridian Ave	247	60	+	+	442	+	82	142	+	34	73	1597	-	-	-
19	Whiting St and Florida Ave	+	407	-	-	75	+	+	595	52	-	-	-	-	-	-
20	Whiting St and Morgan St	63	198	+	146	1606	+	+	443	+	+	355	+	-	-	-
21	Whiting St and Jefferson St	+	100	+	+	101	+	+	132	+	+	409	+	-	-	-
B	Whiting St and Selmon Off-ramp	-	89	-	-	53	-	-	-	-	-	-	-	80	-	+
23	Whiting St and Brush St	75	106	5	79	373	+	38	178	+	+	654	+	-	-	-
C	Whiting St and Meridian Ave (North)	143	-	87	-	-	-	95	32	-	-	614	0	-	-	-
24	Whiting St and Meridian Ave (South)	-	-	-	119	-	+	-	211	+	1	597	-	-	-	-
25	Washington St and Jefferson St*	+	75	+	+	2025	+	-	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	+	25	+	+	25	+	-	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	-	350	-	+	-	-	-	-	-	-	-	-	-

Note: Red highlight indicates locations where the queue length exceeds the available storage length.

+Shared Lanes

*Only stop-controlled approaches have been summarized.

**Queue length calculated as 25 feet per vehicle.

Table 5.10 (continued): Opening Year (2026) Build Alternative Queue Analysis

ID	Intersection	Eastbound			Westbound			Northbound			Southbound			Off-Ramp		
		L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
<i>PM Peak Hour Maximum Queue Length (ft)</i>																
1	Channelside Dr and Florida Ave	901	1450	+	-	-	-	-	393	101	-	-	-	-	-	-
2	Channelside Dr and Morgan St	49	103	+	334	-	+	-	191	0	4	15	-	-	-	-
3	Channelside Dr and Jefferson St	20	1658	-	-	519	+	-	-	-	23	-	128	-	-	-
4	Channelside Dr and Nebraska Ave	6	174	-	+	211	-	-	-	-	21	-	+	-	-	-
5	Channelside Dr and Old Water St	7	1285	+	8	334	+	161	62	+	60	32	+	-	-	-
6	Channelside Dr and Meridian Ave	508	191	+	141	320	+	268	380	39	172	341	97	-	-	-
7	Channelside Dr and 12th St*	-	-	-	-	-	-	-	-	25	-	-	25	-	-	-
8	Cumberland Ave and Channelside Dr**	+	25	+	+	25	+	+	125	+	+	50	50	-	-	-
9	Whiting St and Channelside Dr*	25	-	+	-	-	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	+	76	+	+	59	38	12	297	+	62	185	+	-	-	-
11	Kennedy Blvd and Channelside Dr	472	486	0	+	77	2	72	398	+	27	292	83	-	-	-
12	Selmon Off-Ramp to Florida Ave	-	-	-	-	-	-	-	-	-	-	-	-	-	223	-
13	Brorein St and Florida Ave	-	-	-	-	510	+	137	517	-	-	-	-	-	-	-
14	Brorein St and Morgan St	-	-	-	+	563	-	786	473	+	685	641	+	-	610	39
16	Brorein St and Jefferson St	458	272	+	2	991	+	208	225	+	179	118	58	-	-	-
17	Brorein St and Nebraska Ave	37	1192	+	39	291	+	+	924	+	+	531	+	-	-	-
A	Cumberland Ave and Old Water St	31	313	+	3	16	+	954	196	+	24	160	+	-	-	-
18	Cumberland Ave and Meridian Ave	843	74	+	+	441	+	15	297	+	261	148	0	-	-	-
19	Whiting St and Florida Ave	+	451	-	-	190	+	+	768	80	-	-	-	-	-	-
20	Whiting St and Morgan St	62	222	+	154	459	+	+	254	+	+	221	+	-	-	-
21	Whiting St and Jefferson St	+	370	+	+	115	+	+	129	+	+	341	+	-	-	-
B	Whiting St and Selmon Off-ramp	-	265	-	-	163	-	-	-	-	-	-	-	88	-	+
23	Whiting St and Brush St	34	267	72	165	78	+	290	360	+	+	500	+	-	-	-
C	Whiting St and Meridian Ave (North)	61	-	15	-	-	-	101	64	-	-	61	0	-	-	-
24	Whiting St and Meridian Ave (South)	-	-	-	141	-	+	-	221	+	82	63	-	-	-	-
25	Washington St and Jefferson St*	+	1425	+	+	****	+	-	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	+	75	+	+	25	+	-	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	-	350	-	+	-	-	-	-	-	-	-	-	-

Note: Red highlight indicates locations where the queue length exceeds the available storage length.

+Shared Lanes

*Only stop-controlled approaches have been summarized.

**Queue length calculated as 25 feet per vehicle.

Table 5.11: Interim Year (2036) Build Alternative Queue Analysis

ID	Intersection	Eastbound			Westbound			Northbound			Southbound			Off-Ramp		
		L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
<i>AM Peak Hour Maximum Queue Length (ft)</i>																
1	Channelside Dr and Florida Ave	1012	782	+	-	-	-	-	248	56	-	-	-	-	-	-
2	Channelside Dr and Morgan St	49	117	+	218	-	+	-	274	0	11	56	-	-	-	-
3	Channelside Dr and Jefferson St	620	12	-	-	1026	+	-	-	-	8	-	56	-	-	-
4	Channelside Dr and Nebraska Ave	9	137	-	+	94	-	-	-	-	191	-	+	-	-	-
5	Channelside Dr and Old Water St	15	69	+	51	485	+	32	106	+	74	41	+	-	-	-
6	Channelside Dr and Meridian Ave	145	113	+	136	929	+	310	688	37	250	573	426	-	-	-
7	Channelside Dr and 12th St*	-	-	-	-	-	-	-	-	25	-	-	75	-	-	-
8	Cumberland Ave and Channelside Dr**	+	25	+	+	25	+	+	75	+	+	75	25	-	-	-
9	Whiting St and Channelside Dr*	25	-	+	-	-	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	+	261	+	+	41	0	12	198	+	63	373	+	-	-	-
11	Kennedy Blvd and Channelside Dr	313	312	41	+	73	0	155	240	+	55	496	622	-	-	-
12	Selmon Off-Ramp to Florida Ave	-	-	-	-	-	-	-	-	-	-	-	-	-	575	-
13	Brorein St and Florida Ave	-	-	-	-	956	+	191	737	-	-	-	-	-	-	-
14	Brorein St and Morgan St	-	-	-	+	1162	-	90	848	+	1079	293	+	-	1474	624
16	Brorein St and Jefferson St	37	6	+	14	1261	+	21	156	+	570	842	23	-	-	-
17	Brorein St and Nebraska Ave	125	243	+	1	1097	+	+	930	+	+	393	+	-	-	-
A	Cumberland Ave and Old Water St	52	115	+	8	250	+	76	124	+	6	254	+	-	-	-
18	Cumberland Ave and Meridian Ave	298	79	+	+	508	+	45	183	+	97	239	2079	-	-	-
19	Whiting St and Florida Ave	+	452	-	-	91	+	+	735	67	-	-	-	-	-	-
20	Whiting St and Morgan St	86	254	+	189	1845	+	+	550	+	+	398	+	-	-	-
21	Whiting St and Jefferson St	+	100	+	+	189	+	+	117	+	+	461	+	-	-	-
B	Whiting St and Selmon Off-ramp	-	104	-	-	66	-	-	-	-	-	-	-	161	-	+
23	Whiting St and Brush St	158	214	13	52	386	+	38	197	+	+	813	+	-	-	-
C	Whiting St and Meridian Ave (North)	208	-	181	-	-	-	745	52	-	-	736	0	-	-	-
24	Whiting St and Meridian Ave (South)	-	-	-	291	-	+	-	344	+	2	642	-	-	-	-
25	Washington St and Jefferson St*	+	125	+	+	2000	+	-	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	+	25	+	+	25	+	-	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	-	1675	-	+	-	-	-	-	-	-	-	-	-

Note: Red highlight indicates locations where the queue length exceeds the available storage length.

+Shared Lanes

*Only stop-controlled approaches have been summarized.

**Queue length calculated as 25 feet per vehicle.

Table 5.11 (continued): Interim Year (2036) Build Alternative Queue Analysis

ID	Intersection	Eastbound			Westbound			Northbound			Southbound			Off-Ramp		
		L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
<i>PM Peak Hour Maximum Queue Length (ft)</i>																
1	Channelside Dr and Florida Ave	1212	2043	+	-	-	-	-	515	127	-	-	-	-	-	-
2	Channelside Dr and Morgan St	55	98	+	403	-	+	-	248	5	1	20	-	-	-	-
3	Channelside Dr and Jefferson St	15	2177	-	-	585	+	-	-	-	21	-	203	-	-	-
4	Channelside Dr and Nebraska Ave	9	122	-	+	245	-	-	-	-	22	-	+	-	-	-
5	Channelside Dr and Old Water St	7	1539	+	7	327	+	153	104	+	56	31	+	-	-	-
6	Channelside Dr and Meridian Ave	632	201	+	156	391	+	489	479	48	169	493	104	-	-	-
7	Channelside Dr and 12th St*	-	-	-	-	-	-	-	-	50	-	-	25	-	-	-
8	Cumberland Ave and Channelside Dr**	+	25	+	+	25	+	+	175	+	+	50	50	-	-	-
9	Whiting St and Channelside Dr*	25	-	+	-	-	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	+	47	+	+	51	67	12	354	+	127	213	+	-	-	-
11	Kennedy Blvd and Channelside Dr	498	502	21	+	90	18	130	477	+	59	316	88	-	-	-
12	Selmon Off-Ramp to Florida Ave	-	-	-	-	-	-	-	-	-	-	-	-	-	306	-
13	Brerein St and Florida Ave	-	-	-	-	747	+	180	692	-	-	-	-	-	-	-
14	Brerein St and Morgan St	-	-	-	+	671	-	990	492	+	585	865	+	-	1283	104
16	Brerein St and Jefferson St	769	124	+	2	1130	+	211	211	+	139	172	46	-	-	-
17	Brerein St and Nebraska Ave	149	1028	+	39	351	+	+	1140	+	+	633	+	-	-	-
A	Cumberland Ave and Old Water St	24	460	+	13	67	+	912	231	+	22	191	+	-	-	-
18	Cumberland Ave and Meridian Ave	1189	57	+	+	447	+	53	326	+	494	170	4	-	-	-
19	Whiting St and Florida Ave	+	545	-	-	276	+	+	1056	67	-	-	-	-	-	-
20	Whiting St and Morgan St	174	200	+	287	652	+	+	317	+	+	300	+	-	-	-
21	Whiting St and Jefferson St	+	471	+	+	115	+	+	115	+	+	387	+	-	-	-
B	Whiting St and Selmon Off-ramp	-	260	-	-	194	-	-	-	-	-	-	-	193	-	+
23	Whiting St and Brush St	55	316	50	191	133	+	322	352	+	+	708	+	-	-	-
C	Whiting St and Meridian Ave (North)	110	-	21	-	-	-	138	79	-	-	113	0	-	-	-
24	Whiting St and Meridian Ave (South)	-	-	-	195	-	+	-	289	+	214	84	-	-	-	-
25	Washington St and Jefferson St*	+	****	+	+	****	+	-	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	+	200	+	+	25	+	-	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	-	1175	-	+	-	-	-	-	-	-	-	-	-

Note: Red highlight indicates locations where the queue length exceeds the available storage length.

+Shared Lanes

*Only stop-controlled approaches have been summarized.

**Queue length calculated as 25 feet per vehicle.

***Synchro queue not able to be reported due to excessive queue.

Table 5.12: Design Year (2046) Build Alternative Queue Analysis

ID	Intersection	Eastbound			Westbound			Northbound			Southbound			Off-Ramp		
		L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
<i>AM Peak Hour Maximum Queue Length (ft)</i>																
1	Channelside Dr and Florida Ave	1205	1565	+	-	-	-	-	318	124	-	-	-	-	-	-
2	Channelside Dr and Morgan St	64	132	+	234	-	+	-	216	0	10	51	-	-	-	-
3	Channelside Dr and Jefferson St	868	12	-	-	1442	+	-	-	-	7	-	55	-	-	-
4	Channelside Dr and Nebraska Ave	34	136	-	+	112	-	-	-	-	219	-	+	-	-	-
5	Channelside Dr and Old Water St	64	72	+	51	459	+	39	141	+	75	54	+	-	-	-
6	Channelside Dr and Meridian Ave	172	132	+	143	1105	+	383	881	37	390	736	431	-	-	-
7	Channelside Dr and 12th St*	-	-	-	-	-	-	-	-	25	-	-	75	-	-	-
8	Cumberland Ave and Channelside Dr**	+	25	+	+	25	+	+	100	+	+	75	25	-	-	-
9	Whiting St and Channelside Dr*	25	-	+	-	-	-	-	-	-	-	-	-	-	-	-
10	Washington St and Channelside Dr	+	332	+	+	41	31	12	234	+	70	391	+	-	-	-
11	Kennedy Blvd and Channelside Dr	330	333	25	+	99	0	222	282	+	64	628	912	-	-	-
12	Selmon Off-Ramp to Florida Ave	-	-	-	-	-	-	-	-	-	-	-	-	-	710	-
13	Brorein St and Florida Ave	-	-	-	-	1174	+	227	963	-	-	-	-	-	-	-
14	Brorein St and Morgan St	-	-	-	+	1207	-	252	900	+	1156	358	+	-	1793	773
16	Brorein St and Jefferson St	64	10	+	10	1252	+	17	170	+	547	916	29	-	-	-
17	Brorein St and Nebraska Ave	120	234	+	1	1346	+	+	619	+	+	449	+	-	-	-
A	Cumberland Ave and Old Water St	41	126	+	9	228	+	82	130	+	10	254	+	-	-	-
18	Cumberland Ave and Meridian Ave	350	133	+	+	621	+	25	168	+	125	372	2490	-	-	-
19	Whiting St and Florida Ave	+	530	-	-	94	+	+	869	53	-	-	-	-	-	-
20	Whiting St and Morgan St	86	183	+	208	2076	+	+	650	+	+	418	+	-	-	-
21	Whiting St and Jefferson St	+	85	+	+	677	+	+	137	+	+	515	+	-	-	-
B	Whiting St and Selmon Off-ramp	-	106	-	-	88	-	-	-	-	-	-	-	269	-	+
23	Whiting St and Brush St	253	386	40	90	405	+	51	209	+	+	937	+	-	-	-
C	Whiting St and Meridian Ave (North)	296	-	298	-	-	-	657	50	-	-	830	0	-	-	-
24	Whiting St and Meridian Ave (South)	-	-	-	423	-	+	-	384	+	3	656	-	-	-	-
25	Washington St and Jefferson St*	+	****	+	+	3475	+	-	-	-	-	-	-	-	-	-
26	Washington St and Brush St*	+	50	+	+	50	+	-	-	-	-	-	-	-	-	-
27	Washington St and Meridian Ave*	-	-	-	2225	-	+	-	-	-	-	-	-	-	-	-

Note: Red highlight indicates locations where the queue length exceeds the available storage length.

+Shared Lanes

*Only stop-controlled approaches have been summarized.

**Queue length calculated as 25 feet per vehicle.

Table 5.12 (continued): Design Year (2046) Build Alternative Queue Analysis

ID	Intersection	Eastbound			Westbound			Northbound			Southbound			Off-Ramp		
		L	T	R	L	T	R	L	T	R	L	T	R	L	T	R
<i>PM Peak Hour Maximum Queue Length (ft)</i>																
1	Channelside Dr and Florida Ave	1507	2630	+	-	-	-	-	630	152	-	-	-	-	-	-
2	Channelside Dr and Morgan St	58	98	+	1030	-	+	-	370	4	1	25	-	-	-	
3	Channelside Dr and Jefferson St	13	2618	-	-	636	+	-	-	-	16	-	275	-	-	
4	Channelside Dr and Nebraska Ave	10	108	-	+	272	-	-	-	-	14	-	+	-	-	
5	Channelside Dr and Old Water St	6	1549	+	8	331	+	159	142	+	53	36	+	-	-	
6	Channelside Dr and Meridian Ave	790	192	+	172	466	+	561	673	73	243	694	107	-	-	
7	Channelside Dr and 12th St*	-	-	-	-	-	-	-	-	75	-	-	25	-	-	
8	Cumberland Ave and Channelside Dr**	+	25	+	+	25	+	+	425	+	+	50	50	-	-	
9	Whiting St and Channelside Dr*	25	-	+	-	-	-	-	-	-	-	-	-	-	-	
10	Washington St and Channelside Dr	+	135	+	+	58	73	12	398	+	127	243	+	-	-	
11	Kennedy Blvd and Channelside Dr	547	541	30	+	109	36	132	540	+	121	341	91	-	-	
12	Selmon Off-Ramp to Florida Ave	-	-	-	-	-	-	-	-	-	-	-	-	-	438	
13	Brerein St and Florida Ave	-	-	-	-	1018	+	225	968	-	-	-	-	-	-	
14	Brerein St and Morgan St	-	-	-	+	750	-	1214	469	+	428	1033	+	-	1941	
16	Brerein St and Jefferson St	809	122	+	2	1260	+	213	280	+	102	222	45	-	-	
17	Brerein St and Nebraska Ave	262	1161	+	23	421	+	+	1326	+	+	754	+	-	-	
A	Cumberland Ave and Old Water St	7	549	+	66	132	+	880	239	+	31	246	+	-	-	
18	Cumberland Ave and Meridian Ave	1371	50	+	+	462	+	85	363	+	584	298	71	-	-	
19	Whiting St and Florida Ave	+	677	-	-	294	+	+	1246	64	-	-	-	-	-	
20	Whiting St and Morgan St	213	178	+	318	808	+	+	611	+	+	416	+	-	-	
21	Whiting St and Jefferson St	+	644	+	+	324	+	+	117	+	+	415	+	-	-	
B	Whiting St and Selmon Off-ramp	-	193	-	-	213	-	-	-	-	-	-	-	339	-	
23	Whiting St and Brush St	83	401	40	214	227	+	382	334	+	+	957	+	-	-	
C	Whiting St and Meridian Ave (North)	104	-	20	-	-	-	226	119	-	-	174	0	-	-	
24	Whiting St and Meridian Ave (South)	-	-	-	227	-	+	-	306	+	245	123	-	-	-	
25	Washington St and Jefferson St*	+	****	+	+	****	+	-	-	-	-	-	-	-	-	
26	Washington St and Brush St*	+	1500	+	+	75	+	-	-	-	-	-	-	-	-	
27	Washington St and Meridian Ave*	-	-	-	1025	-	+	-	-	-	-	-	-	-	-	

Note: Red highlight indicates locations where the queue length exceeds the available storage length.

+Shared Lanes

*Only stop-controlled approaches have been summarized.

**Queue length calculated as 25 feet per vehicle.

***Synchro queue not able to be reported due to excessive queue.

5.3 Safety Analysis

A safety analysis was conducted to evaluate the potential safety outcomes of the Build Alternative. The Safety Analysis Technical Memorandum can be found in **Appendix G**. The analysis included the following:

- An analysis of crash history associated with the Florida Avenue off-ramp, previously summarized in **Section 2.5**.
- Comparative analysis of the No-Build and Build Alternative roadway geometry at the Florida Avenue off-ramp.
- Qualitative assessment of the Build Alternatives, including the Florida Avenue off-ramp area, as well as the Whiting Street improvements and Meridian Avenue improvements.

Based on the historical crash data, the reported crash history in the area was not found to be significant enough to show patterns of correctable crashes that could be mitigated as a result of the changes to the Florida Avenue off-ramp geometry and added signalization. However, as traffic demands increase, the likelihood of crash types associated with congestion and queue spillback onto the Selmon Expressway may increase. Therefore, the safety benefits of the Florida Avenue off-ramp geometry and signalization improvements are expected to be necessary for the mitigation of these crash types in the future. Congestion Modification Factors from the FHWA Clearinghouse were reviewed, however analyzing the benefits of these is not applicable to the Build Alternative.

The results of the safety analysis also concluded that the relocation of the existing Channelside Drive off-ramp to the new Whiting Street connection will provide a flat departure curve towards Whiting Street (unlike the Channelside Drive off-ramp today). The flat departure curve will improve the sight distance for vehicles approaching the signal and is expected to reduce the likelihood of rear-end crashes at this location.

6.0 Conclusion

The purpose of this PD&E Study is to evaluate the need for improvements to the access of the eastbound Selmon Expressway at the Downtown East/West interchange and along Whiting Street within Downtown Tampa. The significant development and economic growth of the City of Tampa over the past 20 years is expected to continue with ongoing developments, such as Water Street Tampa, a 56-acre redevelopment project, and Port Tampa Bay, which is also undergoing a major redevelopment. As a result, the traffic demand in the study area is expected to increase by the design year (2046), which will require improvements to the Downtown roadway network, including improvements to the Selmon Expressway off-ramps.

The most concerning existing operational and safety issues of the Whiting Street PD&E Study area are as follows:

- There is a high potential for queue spillback onto the eastbound Selmon Expressway mainline from the Downtown East/West off-ramps by the design year (2046), if the interchange is maintained in its current configuration, the No-Build Alternative.
- Currently, pedestrian accommodations across the Downtown West (Exit 6A) ramp at Florida Avenue are at a free-flow off-ramp, with no protected pedestrian phasing.
- The lack of network connectivity in the study area is likely to result in severe congestion by the design year (2046).

The Build Alternative proposes improvements that will be necessary by the design year (2046). Based on the analyses documented in this PTAR, the following summarizes the operational and safety results of the Build Alternative:

- Relocating the existing Downtown East (Exit 6B) off-ramp to the new Whiting Street connection, operating under signal control, will decrease the potential for queue spillback to extend onto the Selmon Expressway.
- Widening the eastbound off-ramp to accommodate three-lanes at the Florida Avenue intersection, operating under signal control with no right-turn on red, and clustering the new signal with the Florida Avenue at Channelside Drive signal will improve safety for all users and allow pedestrians to safely cross Florida Avenue and the Selmon Expressway off-ramp.
- Providing a pedestrian underpass at the location of the existing Channelside Drive off-ramp access will offer improved network connectivity for pedestrians to access the new Water Street Tampa development, as well as existing attractions such as Amalie Arena.
- Connecting Whiting Street from Jefferson Street to Meridian Avenue with a four-lane typical section will provide another connection for vehicular traffic to reach the east side of Downtown Tampa, thereby providing additional route choice and reducing overall network congestion.

Considering the overall operations at the Selmon Expressway off-ramps and each of the study intersections, the Build Alternative is projected to provide better operating conditions than the No-Build Alternative. The Build Alternative was developed with the intent to improve operations, safety, and traffic circulation of the eastbound Selmon Expressway at the Downtown East/West interchange and within the study area. It is recommended to proceed with the development of the improvements identified in the Build Alternative of this PTAR and the Whiting Street PD&E Study.

Appendices

